Texas A&M University-Kingsville
Frank H. Dotterweich College of Engineering

High-Performance Computing Laboratory
User Application/Project Description

The High-Performance Computing Laboratory houses a collection of data-center grade servers. The High-Performance Computing Cluster (HPCC) itself is comprised of a subset of these machines. Consequently, it is possible to run a project on a single dedicated machine that typically has a more powerful processor and more RAM than a typical desktop workstation. Or, a project may be run on a multi-node cluster if it has been constructed in a way that allows it to exploit the parallelism available on a cluster. It is important for prospective users to understand what is available and what can and can't be done. The following discussion is necessarily simplified.

To take advantage of multiple cores on a single physical processor or multiple processors with multiple cores spread across multiple physical nodes, at least one, and perhaps more than one, of the following must be true.

- The application must have been designed and written to take advantage of the parallelism. For example, tasks may need to communicate with each other during execution.
- There is a way to decompose the job in such a way that independent parts that need no interaction with each other can run independently.
- There is a way to decompose the job in a way that allows job steps to overlap with each other in a pipelined manner.

If none of the above is true, and you have no control over the design and implementation of the application, then there is probably nothing to be gained from using a cluster.

In the case where there is no inherent parallelism, and no way to create parallelism, then you may still need access to a machine with more horsepower than your typical desktop/laptop. In order to get you access to the resources you need, please supply the information requested on the following page. You may hand deliver your request to EC 271 or e-mail it to HPCC@tamuk.edu.

All systems comprising the HPCC use the CentOS operating system. Consequently, depending on your project you will need some level of expertise with the Linux command structure. Typically, machines are accessed via an SSH client such as putty. If the application you are using or developing has a graphical user interface (GUI), that GUI will be usable providing you have an X-windows server installed on your workstation. Specific login information will be provided when your project/account is approved.

At the present time, the HPCC staff does not provide programming or consulting services.

Please answer the questions on the following page as completely as possible. The information requested will help us determine how we can support your project.

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K-Number or UIN: _____ **Name:** _____ **Email:** _____

Classification: ___ Faculty, ___ Doctoral Student, _ __ Master's Student, ___ Undergraduate Student, ___ University Staff

Is your project: ___ PhD research, ___ MS research, ___ class assignment, ___ honors project, ___ other?

Who is your faculty supervisor: _____

Where will you login from: ___ A CoE lab computer, ___ your own laptop, ___ from home (note that not all systems/applications are available from off the campus network)

Briefly describe your project:

What services do you need? (You may mark more than one item.)

_____ Access to a single machine more powerful that the typical desktop

_____ Access to a large amount of storage

_____ Access to multiple physical machines

_____ Install and use a commercial application

What is the application? _____

_____ Install and use an open-source application

What is the application? _____

_____ Write and use my own application

What programming languages/environments do you need? _____

What is your level of expertise?

How would you rate your level of expertise with the Linux operating system?

_____ Minimal, _____ Intermediate, _____ Advanced, _____ Power User

If you are developing your own application, how would you rate you expertise with the programming languages/tools you will be using?

_____ Minimal, _____ Intermediate, _____ Advanced, _____ Power User

If you are working with an application that will use multiple machines or multiple cores on a single machine, how would you rate your expertise with parallel programming?

_____ Minimal, _____ Intermediate, _____ Advanced, _____ Power User

Certification: By signing this application for an HPCC account, you agree to follow any and all applicable technology policies and procedures established by the Frank H. Dotterweich College of Engineering and the University Department of Information Technology (iTech).

_____ _____

Signature Date