

Module Outline

Parallel Programming for HPC

Mairéad Stephens | 17 July 2013 | 1.0

Introduction

This document is the course outline for the "Parallel Programming for HPC" course.

Summary

This module is targeted at participants who:

- Want to improve their coding skills and exploit parallelism in HPC
- Have a "parallel" problem, e.g. who have a single application that needs to be rerun many times with different parameters
- Want to make use of the large memory available on Intersect & NCI HPC facilities

This module assumes knowledge of:

- Writing batch jobs in Unix (or have completed the Introductory & Intermediate courses in Unix & HPC)
- Are familiar with using HPC
- Are experienced in writing code in either C or Fortran
- Have experience of writing programs for HPC

By the end of the modules, participants will understand:

- Different parallel programming methods (necessity & paradigms)
- Different parallel programming models
- Designing parallel programs and the related costs
- HPC hardware available through Intersect & NCI
- OpenMP as a wide-spread method for a shared memory programming model
- MPI as the standard for a distributed memory programming model

Further Reading

The following resources will help consolidate or extend the information presented here:

Location	Description
http://www.intersect.org.au/hpc	Introduction to HPC and why you should use it
http://www.intersect.org.au/introduction-hpc	Introduction to HPC
http://www.intersect.org.au/useful-links	General useful links about HPC and Intersect and NCI's HPC facilities
http://www.intersect.org.au/hpc-resource-allocation	This page contains details about the HPC Resources Allocation round and how to request service units
http://www.intersect.org.au/orange	This page contains details about Intersect's HPC server called Orange
http://www.intersect.org.au/orange-handbook	This contains details about how to access Orange
http://nf.nci.org.au/facilities/software/index.php?site=INT	This contains details about what software is installed on Orange
http://nf.nci.org.au/facilities/software/index.php?site=ANU	This contains details about what software is installed on Raijin

Revision History

Version No.	Revision Date	Summary of Changes	Revised by
1.0	17/07/2013	Initial draft	Mairéad Stephens