Running MATLAB at SHARCNET

Jemmy Hu

SHARCNET HPC Consultant
University of Waterloo

May 21, 2014
Agenda

• Site licenses (Western, UW, McMaster)
• Options for non-site license users
• MATLAB Parallel Computing Toolbox
• Demos
• Questions
Site licenses

• UW, Western, McMaster: license is managed on a campus license server, e.g., by IST at UW.

• License number is limited
  UW: 300 basic MATLAB license campus wide,
     limit to 50 on SHARCNET systems
     fewer licenses for many toolboxes

• username match: your SHARCNET username should be the same as your institution username

• Run MATLAB on the site specific SHARCNET systems
  UW: orca, hound (R2012b, R2014a)
  Western: goblin, kraken (R2012a)
  McMaster: wobbie, cat, iqaluk (R2012b), requin (R2009a)
Options for non-site license users

• MATLAB Compiler Runtime (MCR)
  your license have MATLAB compiler, mcc
  compile your MATLAB codes on a Linux system
  run the compiled code on SHARCNET systems

• MATLAB PCT
  you have a client PCT license
  parallel your code makes a big difference
  you can modify your code to make use of PCT

• Using Octave
MATLAB PCT Architecture (client-server)
Key Function List

- **Job Creation**
  - `createJob` Create job object in scheduler and client
  - `createTask` Create new task in job
  - `dfeval` Evaluate function using cluster

- **Interlab Communication Within a Parallel Job**
  - `labBarrier` Block execution until all labs reach this call
  - `labBroadcast` Send data to all labs or receive data sent to all labs
  - `labIndex` Index of this lab
  - `labReceive` Receive data from another lab
  - `labSend` Send data to another lab
  - `numLabs` Total number of labs operating in parallel on current job

- **Job Management**
  - `cancel` Cancel job or task
  - `destroy` Remove job or task object from parent and memory
  - `getAllOutputArguments` Output arguments from evaluation of all tasks in job
  - `submit` Queue job in scheduler
  - `wait` Wait for job to finish or change states
Configure MATLAB and PCT on PC

• **Cluster server side**
  - setup MATLAB distributed computing server engine
  - setup ‘matlab’ queue
  - command/script for job submission

• **Client side configuration**
  - clusterInfo.m (set up cpu, memory, PATH etc., copy and modify)
  - runscript.m (copy and modify)
  - your own .m files
  - create local data directory, e.g., ‘C:\temp’ on a Windows PC
  -* create data directory on SHARCNET cluster side (scratch/userid/matlab)

Install and configure instruction in the online document
https://www.sharcnet.ca/help/index.php/MATLAB