MATLAB pmode

An Interactive Parallel Environment in the Distributed Computing Toolbox

Yeo Eng Hee
(SVU/Academic Computing, Computer Centre)

Matlab users are familiar with the Matlab command prompt where they can interactively type in their Matlab commands to manipulate their matrices and perform all other Matlab functions. With the new Matlab Distributed Computing Toolbox (DCT), users can now have access to the Matlab “workers” in the Matlab Distributed Computing Environment (DCE) within MyWinCluster. An interesting feature provided by the DCT is the interactive parallel environment (pmode) where users can have interactive control of parallel interactive sessions (or “labs”) in the DCE.

Connecting to Matlab DCE in MyWinCluster

Before starting up pmode, a connection to the Matlab workers in MyWinCluster has to be established. This is done by clicking on the “Distributed” menu item and selecting “Manage Configurations...” as shown below:

In the Configurations Manager, define a new jobmanager with Job manager hostname (LookupURL) atlas3-m00 and Job manager name (Name) svu jm. Set this as the default as shown:
The Matlab on the local PC is now ready to connect to the Matlab DCE on MyWinCluster.

Starting up pmode

At the Matlab prompt, type:

>> pmode start 2

This will initiate a connection to the svu_jm jobmanager, and start up 2 “lab” sessions (note: if there is a connection failure, retry the pmode command as the PC may be slow in connecting to the DCE in MyWinCluster and subsequently time-out). A new pmode interface will pop up with a new command prompt as shown:

The pmode prompt is now ready to accept commands. Each of the labs will execute the commands in their own workspace using their own local copy of matrices and other data. A couple of useful global variables are labindex (which gives you the assigned number of each lab) and numlabs (which gives you the total number of labs in the session). Matlab also provides a number of functions for users to move data between the labs and the local PC (called “client”) using the lab2client and client2lab functions. Data on each of the separate memory spaces in each lab can also be combined with the darray and gather functions before moving them back to the PC client as show below:
Note that the Matlab DCE is installed with the full range of Toolboxes that Matlab supports, and users will be able to run all their non-graphical toolboxes in each of the labs, as long as their local version of Matlab has the appropriate toolbox licenses. Graphical functions will still have to be done on the local PC client, after importing the processed data back to the PC.

For more information on Matlab Distributed Computing Toolbox, please contact Yeo Eng Hee at ccesvuhelp@nus.edu.sg.