How to do Parallel Cloud Computing on Amazon EC2 with Ubuntu Linux and GNU Octave

-Go into the EC2 management console

- click “launch instance”

-select Ubuntu server 12.x.x 64 bit

-During step 5: under key says “Name”, put “Master”/”Slave1”/etc under Value

-During step 6: click “add rule” use Port 12501 and source “anywhere”

-Do the same thing for Port 12502

(GNU Octave Parallel Package uses these ports)

-Put security group name “Octave-Parallel”

-Launch Instance, select keypair need to login by ssh, name keypair “ubuntukey”

-repeat process for “slave1” and “slave2” etc, or save ami of master after installing octave and parallel package, then create instance from ami to avoid multiple installations

-open terminal on mac/local linux installation, cd to folder with ubuntukey.pem

-run command to fish pem file permisions

$ chmod 600 ubuntukey.pem

-connect to server by ssh through the public IP

$ ssh –i ubuntukey.pem ubuntu@54.201.97.71

-to install octave run commands

$ sudo apt-add-repository –y ppa:octave/stable

$ sudo apt-get update

$ sudo apt-get install octave

$ sudo apt-get install liboctave-dev

-the ubuntu version of ec2 is missing make, so run the following command to install

$ sudo apt-get install make

-need to make root password, then login to root

$ sudo passwd root

$ su

-login to octave

$ octave

-install parallel package

$ pkg install –forge parallel

-exit: octave, root user, ec2 server, and close terminal

$ exit

$ exit

$ exit

$ exit

-in instances tab select “master” server, under actions select “create image”, for name use “linux-octave-parallel”, click “create image”

-click “launch instance”, click “my amis”, select “linux-octave-parallel”

-during step 3: number of instances set to # of slave machines

-during step 5: use name “slave”

-during step 6: use security group “octave-parallel”

-launch and use ubuntukey.pem for keypair

-transfer the following files to the slaves using scp ssh command or ftp:

reactor\_adiabatic\_volfunct\_3d.f

run\_reactor\_adiabatic\_volfunct\_3d.m

compile\_reactor\_adiabatic\_volfunct\_3d.m

mechspecific.f

-to connect by ftp all you need is the slave IP address, username is “ubuntu”, and use the ubuntukey.pem file

-to transfer to slaves by scp ssh command use command

$ scp –i ubuntukey.pem mechspecific.f ubuntu@54.200.5.169:/home/ubuntu/

-need to connect to slave servers and run server.m

$ ssh –i ubuntukey.pem ubuntu@54.200.5.169

$ octave /usr/share/octave/packages/parallel-2.0.5/server.m

$ exit

In file reactor\_3dplotcode.m:

In list of hosts, the first ip address is the master server, where you run the reactor\_3dplotcode.m program, then the next ip’s are the slaves. Change the variable N to equal the total number of slaves you are using.

After program is done, download data.mat file and run the reactor\_3dplotcode\_plot.m program to plot the 3d graphs in your local linux/octave.