

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

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Contact info for Max Plomer
email: maxplomer@gmail.com
cell: 203-945-8606

- 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 "ubuntkey"
- 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 ubuntkey.pem
- run command to fish pem file permissions
 - \$ chmod 600 ubuntkey.pem
- connect to server by ssh through the public IP
 - \$ ssh -i ubuntkey.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.

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