1. Sign-Up with Amazon Web Services and obtain Access Key ID and Secret Access Key
   1. Log in to AWS
   2. Navigate to IAM console under the Services tab
      * Create or Select an IAM user name
      * Click User Actions, then click Manage Access Keys
      * Click Create Access Key
      * Download Credentials – store in safe location
2. Install StarCluster
   1. On Mac/ Linux computers
      * Open Terminal and type:
        + sudo easy\_install StarCluster
        + (enter admin password)
   2. On Windows
      * Install python 2.7 from python.org
      * Install dependencies listed here:
        + <http://star.mit.edu/cluster/docs/latest/installation.html>
      * in python 2.7 type:
        + easy\_install StarCluster
3. Configure StarCluster
   1. To set up the configuration file - Type:
      * starcluster help
        + choose the second option type:
      * 2
   2. Customize the configuration file using Vi text editor
      * Tips for using Vi
        + vi filename #to start edit filename at line 1
        + While in Vi type:
          - i #insert text before cursor, until <Esc> hit
          - u #undo whatever you just did
          - x #delete single character under cursor
          - :x #quit vi, writing out modified file to file named in original invocation
          - :q! #quit vi even though latest changes have not been saved for this vi call
      * vi ~/.starcluster/config #to enter the configuration file
        + Under AWS access key and AWS Secret access key, place keys obtained from IAM
        + AWS User ID - leave as is – not necessary to change
        + Create a keypair from AWS website
        + Defining EC2 Keypairs
          - Type name of key pair: [key keypairname]
          - Specify key pair location: KEY\_LOCATION=/Users/patrickemedom/Desktop/key/amazonpair.pem
        + Defining Cluster Templates
          - Rename small cluster to your own liking (e.g. [cluster chiricluster])

Must also rename default template option on top of page to the same name

* + - * + Specify keyname and cluster size = 2 (once custom image is created assign your own cluster size)
        + Name cluster user to your liking: e.g. ubuntu
        + Uncomment line DNS\_PREFIX = TRUE
        + Node Image ID: ami-a3d126c8 (Bioconductor AMI)
        + Specify node instance type – follow instructions on file
        + Under the line reading #PERMISSIONS = ssh, http, add the line permissions = http
      * Configuring Security Group Permissions
        + Remove the comments (#) from the four lines starting with [permission http]
      * Save and Leave file type:
        + :x <return>

1. Create the Cluster
   1. In Terminal type: starcluster start chiricluster (name assigned to cluster)
   2. Customize the Master Instance to your liking
      * Login to master
        + starcluster sshmaster --user=ubuntu chiricluster
      * Call up R
        + R
      * Install all required required packages for project
        + q() #when finished
      * Issue following commands
        + sudo clean\_ami
        + exit
2. Create a Custom Bioconductor AMI (Amazon Machine Image)
   1. Log on to AWS
   2. Move to EC2 console and stop master instance
      * Use the stop command under Instance Actions
   3. Create an Image of the Instance
      * Select master instance
      * Under Instance Actions menu 🡪 Create Image (EBS AMI)
        + Enter desired name
      * Go to Images 🡪 AMIs
        + Once the image is created copy the AMI ID
   4. Now terminate the Master instance and the node
3. Repeat step 3 to now create a Cluster with the custom image
   1. This step is necessary to ensure that all of the nodes have the required packages to run desired code
   2. Test – log in to a node and make sure packages installed
      * starcluster sshnode chiricluster chiricluster—node001
      * R
      * > installed.packages()