Getting Started with QC

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April 13, 2018

hat is QC?

C stands for “Quality Control”

NITA and ARA both have simulation packages

- Icemc for ANITA: https://github.com/anitaNeutrino/icemc
- AraSim for ARA: https://delos.mps.ohio-state.edu/RadioSim/AraSim/

ey can change quickly (few times per month)

e QCs:

- Download the new versions of the software
- Run the simulation to generate fake data
- Make plots of that data for us to examine and check for problems.

hat are we gonna do to start?

start, we're just gonna learn how to make plots out of the emc/AraSim data output

hat's the focus of this starting document

ep 0: Get Familiar with the Command Line

l of our work will be done on computing clusters

interact with the computing cluster, we will need to use the *mmand line*

will allow us to go inside files, delete them, make new ones, run ograms, etc.

llow this link to learn how to use it:
tps://www.codecademy.com/learn/learn-the-command-line

ep 1: Get a Unity Account

r the time being, lets start by having you all do your work on
e computing cluster known as ”unity”

is maintained by the College of Arts and Sciences here at OSU

your QC coordiantor (Brian, Amy, etc.) to get you an account

ep 2: Prepare to Log-In

-into unity, you will need to be on the arts and sciences ork

an either plug into an ethernet port in the PRB

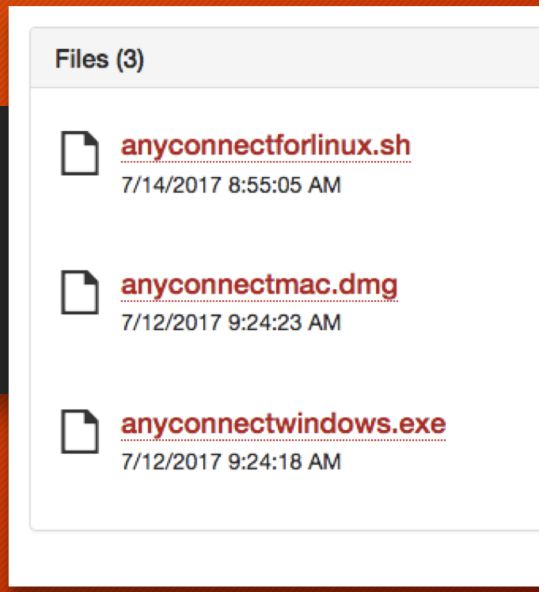
u must set up a VPN (virtual private network)

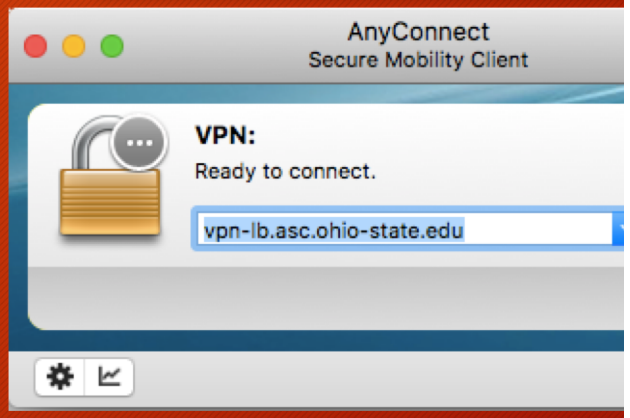
up a VPN, follow the instructions here: //osuasc.teamdynamix.com/TDClient/KB/ArticleDet?ID 2

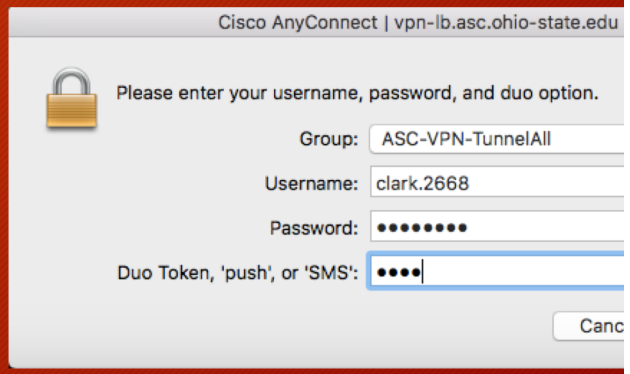
load and install the appropriate software for your uter (mac, linux, windows); it'll be on the right of the n

and open the VPN software; enter "vpn.asc.ohio-edu" into connect window, press connect

username will be your "name.#", your password is your yelink password, and use whatever Duo option you y use to log-in to buckeyelink (I recommend push)







ep 3: Log-In

w to log in!

ux or Mac:

n the terminal, and type "`ssh name.#@unity.asc.ohio-te.edu`"

ight ask you to agree to an SSH security token; say yes

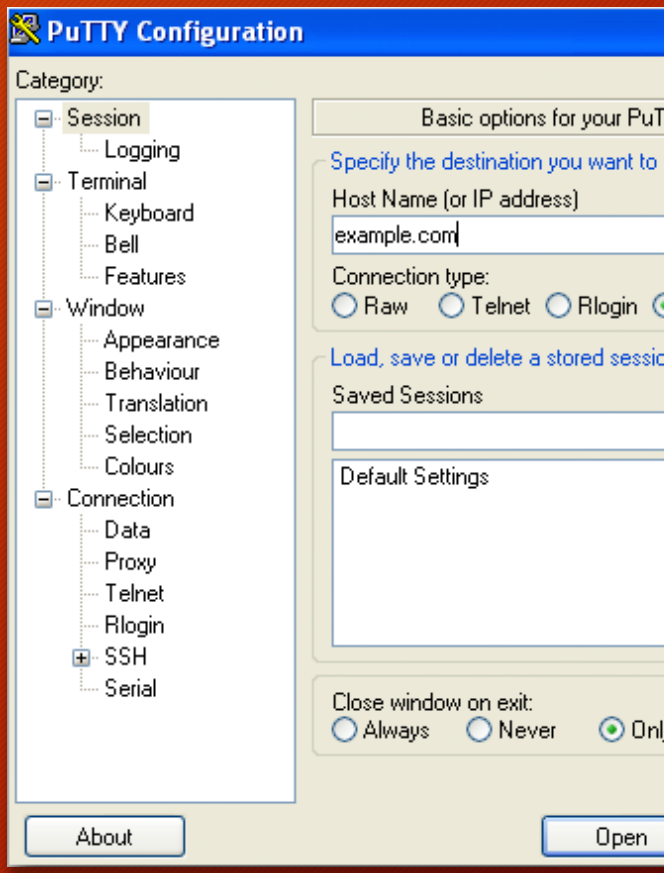
n enter your Buckeyelink password

will need to download and install an *ssh tunneling client*

easiest is one called "putty": https://www.putty.org/

all putty, and then open it:

- For "Host Name", put "unity.asc.ohio-state.edu"
- For Port choose "22"
- For "Connection type" choose "SSH"
- Click "Open"
- You will then enter your name.# as your username, and your Buckeyelink password as your password



ep 4: Learn How to Transfer Files

out your time working on any supercomputer, you'll need to files

est way to transfer files is by using a file transfer client

nend Filezilla: https://filezilla-project.org/

d and install it

nch it

ew Site"

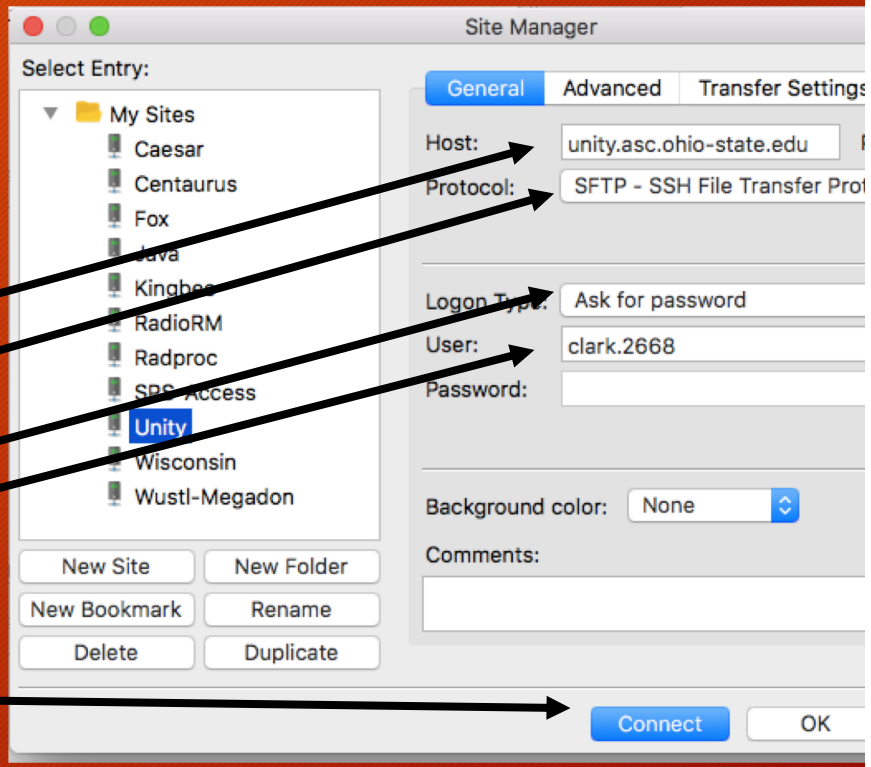
er "Host" put "unity.asc.ohio-state.edu"

er "Protocol" select "SFTP"

er "Logon Type" put "Ask for password"

er "User" put "clark.2668"

n click "connect"



ep 4: Pt 2

ay FileZilla works is very straightforward

ft panel of your screen is *your* computer

ght panel of the screen is the remote machine

nsfer files you literally drag them from one screen
next

it

re some nice tutorial:
ps://www.youtube.com/watch?v=rUNQphoGVwQ
ps://www.youtube.com/watch?v=adxmlHDim6c

ep 5: Set Up Your Shell Environment

ur *shell environment* defines variables you want to use

rst, put the files "`bashrc_qctools_arasim.sh`" and `ashrc_qctools_icemc.sh`" into your home directory.

pen your "`.bashrc`" file and copy the contents of `ample_bashrc.sh`" into it. Do the same with "`.bash_profile`".

you want to do work with AraSim, go into your `.bashrc` and comment the line before "`bashrc_qctools_arasim.sh`". If you ant to do work with icemc, uncomment the line before `ashrc_qctools_icemc.sh`".

m having you do this because it will *source* several pieces of software u will need (like ROOT) that I've already installed for you to save me

ep 6: Download a copy of AraSim

- download a copy of AraSim we are going to use a piece of ftware called "`svn`"
- is is what's known as a version control system, which allows velopers to track how a piece of code evolves
- e won't use that feature for a while; for now, we're just gonna e it to access the AraSim Code
- llow the instructions here: http://ara.physics.ohio-ate.edu/documentation/svndirections.php

ep 7: Compile AraSim

- avigate to the AraSim/trunk directory
- pe "`make`" to compile the code
- the code compile fails, chat with your other QC folks to try and nd a solution

ep 8: Test Run AraSim

ow we'll run a basic test of AraSim

rst, move the file "`test_setup.txt`" into your AraSim/trunk rectory

ow, execute the command "`./AraSim test_setup.txt`"

- This will simualte 100 neutrinos at the energy of 10^{21} eV

e if it execute successfully; also, you should check the outputs rectory for a file called `AraOut.root`

it did, well done!

ep 9: Make your First Plot

now that we have data, we can make our first plot!

he following two files into your AraSim/trunk directory:

.plotting_example": the makefile, which tells the computer how to put t
ur code

lotting_example.cc": the code to be put together

ake -f M.plotting_example" (the -f says "use this file")

execute the plot making code: ".`/plotting_example outputs/AraOut`

ill produce a plot! Revel in your brilliance.

ur result in our Dropbox folder, under Daily Updates, in a folder with the date
ame.

ould actually *read* "`plotting_example.cc`" ***very carefully*** to understand
hing it's doing (the explanations are in the comments)

ep 10: Make More Plots

e first goal here is to replicate most of the plots originally put gether by Steven Hoover:
tps://www.phys.hawaii.edu/elog/anita_notes/32

u can do this for AraSim first, and then we can transition to emc