

The computer lab up on the 4th floor of Gardner (room 415) is for Economics graduate student use. It is not a public cluster and the upkeep (paper, toner, mice) is funded by the EGSA (see below for more information). There is hardly any cleaning service up there so please clean up after yourself and try to keep the lab as tidy as possible. The following guide answers a lot of questions you may have on UNC computing and using the Gardner Lab in particular.

A. Lab Use

A.1 SECURITY

You gain entry to the lab by swiping your OneCard at the card reader to the left of the door. During the day, the door is often propped open to aid in air circulation. The powers that be decided to turn a blind eye to this. However, should you be the last person to leave the lab at any point, you should pull the door closed behind you. Humidity and other climatic factors can make closing this solid wood door a bit harder. At the moment (July 2004), the door only closes if it is physically pulled all the way. Since others may close the door in your absence you should keep your OneCard on you at all times.

A.2. LOGGING ON AND PASSWORDS

When you try to log for the first time onto one of the Gardner lab machines you might find it frustrating that your Onyen password doesn't work (that happened to me the first time I tried it). The truth is that from the lab you're accessing the network through ASNTDOMAIN1 domain, which is affiliated with OASIS. By default OASIS doesn't associate your Onyen with your Onyen password. You can change your OASIS password to your Onyen password for simplicity (I find it extremely convenient). More importantly, as of now we all have to change our Onyen passwords as well as OASIS passwords every 90 days. Changing it to one single password every time is not a bad idea, as it makes life easier.

A.3. THE IMPORTANCE OF LOGGING OFF

There are two very good reasons why I should log off whenever I have finished working on one of the computers in Gardner.

(a) Not all the machines in Gardner have the same software (or even hardware) capabilities. So there's a chance that the computer I am not using but occupying is needed or at least wanted by another graduate student. This may be because some fancy version of Scientific Word won't run anywhere else. Or maybe they have left an important file on the harddrive, and only there. Or maybe they have a certain personal connection with that particular machine.

(b) As long as you are logged on, the files on your J- and Z-drives (see section B.2 STORING DATA) are exposed, and terrible things might happen to them. In fact, a colleague may come along and modify or even erase something before they realize they aren't looking at their own files.

* This guide was prepared by Joon-Suk Lee, Ron Oertel, Betty Tao, and Slava Zayats. Remaining errors are the computer's fault.

A.4. WHO TO TELL ABOUT COMPUTER TROUBLE

Unlike the general use labs in the libraries and elsewhere, our lab is administered and serviced by OASIS (that's the "Office of Arts and Sciences Information Services"), and hence not by ATN ("Academic Technology and Networks"). Years ago, I sent a request to ATN. Their reply claimed that our lab doesn't exist.

Whenever the machines in Gardner 415 give you trouble, you should complain at <http://oasis.unc.edu>. Select "Make a Service Request" from the menu on the bottom left. This will prompt you to log-in with your onyen and password. You can then proceed to describe the problem(s). The folks at OASIS are very attentive and competent, and they respond promptly to our complaints (not within minutes, but usually within hours).

Sometimes our computer troubles are home-made. For instance this happens when ethernet cables are unplugged and are left unplugged. This is not a good idea.

A.5. PRINTING AND PRINTER SUPPLIES

OASIS's responsibilities do not include printing supplies. If we are out of paper or toner, go to the main office and let Vickie know. She might even have a toner cartridge right there, and if not, she'll order one for us.

EGSA (that's the "Economics Graduate Students' Association", Betty Tao being the current boss) pays for paper and toner. But when the money's gone (it's a world of scarcity), it's gone. On the other hand, if you take that handout for your class or recitation section to your secretary, then the department pays, and (from our perspective at least), that well won't run dry. So if you have things that require multiple copies, you should get it copied. Please do your best to take handouts for class to the secretaries. You can even email them a copy before class. However, it is a bad idea to leave it to the last minute before class, because the secretaries may be busy. If you see anyone else making copies by massive printing, please give them a hard time and send them downstairs.

Double-sided printing is currently not the default setting on our computers, but it is always an option, and - again owing to scarcity- a very good idea.

There are many computer labs around campus where you can print to your heart's content (and you technically paid for them through those hefty student fees). The closest one is in Venable, behind Gardner. The lab in the Undergrad Library also has lots of machines and industrial strength printers. This website gives you a guide to computer labs at UNC: <http://www.unc.edu/atn/labs/>

B. Important How-to's

B.1. FINDING SOFTWARE

Matlab and Stata and many other frequently used software are available on the computers in the lab. There are shortcuts on each desktop pointing to these packages (in AFS space). However, if you're looking for something else, or even an updated version of something that is on the computer, there are a few other places to look before you think about trying to fund the purchase yourself.

In order to use some of the applications in the Applications folder on the computer desktop, you will need to make sure you have mapped the correct drive to AFS space. All new users will have to do this once. Double click on the lock on the bottom righthand side of the desktop. Choose the drive letters tab and make sure the box next to **Drive J: \afs** is checked. Since some of the application icons are links to this drive, they should now all work.

UNC also has many available programs on its servers. All of the computers in the lab have an AFS client installed on them. Through this client you can browse to `j:/isis.unc.edu/pc-pkgs/` where software like Stata, Maple, Mathematica, Matlab, etc. are located. If you are on your home computer you can also access UNC servers by downloading the AFS client from <http://shareware.unc.edu>. The AFS client also allows you to map to your AFS home directory so you can treat it like a local drive on your computer.

OASIS (Office of Arts and Sciences Information Services) provides software you can use off their Citrix Application Server. You can access this site from home, too. The site is <http://oasis.unc.edu>. Click "Citrix Applications". First-time users will need to download a plug-in.

Note that if you are using software off UNC's server you will be limited by the speed of your home computer and internet connection. If you're on campus, everything is nice and fast, but if you're using dial-up you might want to get software installed locally on your computer. UNC provides some free or heavily subsidized software for you to purchase. You can browse what's available at <http://www.unc.edu/atn/software>. For example, if you bring in blank CDs, they will burn you a copy of SAS free.

B.2. STORING DATA

Whenever you have a file that is too large to fit on a diskette or that you would like to access from multiple locations, storing the file online is probably the most convenient option

Q: What kinds of data storage are available, and how do I use/access them ?

As an econgrad you have four primary data storage options:

- (a) AFS space (comes with your email/ONYEN account)

Your account comes with 250 MB of AFS space. You can save a file to your AFS space either by using WS_FTP, transferring files to your email/ONYEN account on `isis.unc.edu` or if your particular computer is equipped with an AFS client by selecting the drive that represents your ONYEN account. More info on how to use AFS and the AFS client at <http://help.unc.edu/?id=142>.

In Gardner, this drive is the J-drive by default, and you will have to click your way to your own AFS space by selecting "J", "isis", "home", "first letter of your onyen", "second letter of your onyen", and finally "your onyen".

(b) Online storage (the "Z: drive" on the Gardner lab computers)

If you click on the "My computer" icon on the top left of the desktop screen a window will display all the drives that that computer has access to. It will always display a drive labeled "Z:", which is your personal storage space (provided you logged in under your own name) which is again different from the AFS file space. The current storage limit is 500 MB, but can be increased if you request it.

You can save files to the "Z:" drive just the way you would save it to a diskette or the local hard-drive.

The "Z:" drive is only directly available when working on one of the computers in the 4th floor lab. However, you can access the "Z:" drive also from any other computer that has internet connection, and a web browser with the CITRIX Application Server plug-in installed (for more information see section B.1. FINDING SOFTWARE). Go to <http://oasis.unc.edu/citrix>, log-in using your usual userID/password and select the "File Manager 5" program. Your data storage will be listed as the "Z:" drive.

(c) Short-term storage space on statapps ("Scratch Space (/scr)")

To use this storage space, you have to have subscribed to Statistical Services on statapps (see section D.1. below). Storage space under "/scr" is virtually unlimited but short-term only - that is, your files may or may not be there in a month (more info under <http://help.unc.edu/?id=1617>).

Also, by default this is completely "public access". Anybody has complete access to your files. You can change access rights by using "chmod" command (see more on this in "Introduction to Unix", <http://help.unc.edu/?id=188>)

To access "/scr" via WS_FTP you have to connect to statapps.unc.edu (connecting to isis.unc.edu WILL NOT DO). Once connected, click the "ChgDir" button on the right and type "cd /scr" - you can now save/download files as usual. It may be useful to create your own directory, so as to not to confuse your files with others'.

(d) Long term storage ("Mass Storage (MS)")

To use this you must go to <http://onyen.unc.edu> and scroll down to Subscribe to Services. After you fill in your password, choose Subscribe to Mass Storage. After you do this read below:

Under your AFS home directory you will see a folder or link to ms. This leads to your mass storage space. You can store as much as you want here, but it is saved onto tapes that are filed away so you cannot work off mass storage. This is a good place to save datasets that you are not currently using or back up work when you are done at the end of the day. If you want to work on something stored in mass storage, you will have to copy the dataset over to scratch or your home directory. The copying process may take awhile depending on how long ago you last modified the data in mass storage and how large the dataset is. Before you start using mass storage please refer to http://www.unc.edu/atn/mass_storage/

B.3. JSTOR AND OTHER ELECTRONIC LIBRARY RESOURCES

Q: What is JSTOR ? Why is this relevant?

JSTOR (access at <http://www.jstor.org/>) is a huge online database of academic journal articles. A lot of the articles that come as assigned or recommended reading for classes (and later for your research) can be found here. Since JSTOR is actually a subscriber-only service, the database is only accessible from computers on-campus. However, the university has set up a system that allows students to use it off-campus.

Q: How do I access JSTOR from off-campus?

In order to access JSTOR from off-campus you need to reconfigure the web browser you are using from off-campus. Detailed instructions for each web browser type are available at <http://proxy.lib.unc.edu/>.

Once set up, you need to "trigger" the authentication process that allows you to use JSTOR. Go to <http://libproxy.lib.unc.edu/login?url=http://www.jstor.org/cgi-bin/jstor/gensearch>, click "Continue" and enter your Student ID number.

Another way to get access to JSTOR off-campus is using VPN client (<https://shareware.unc.edu/software.html#v>). In a nutshell, through the secure connection with campus network, VPN client assigns your home computer an on-campus IP address i.e. it's as if you were on campus!

Q. What about other electronic resources?

On the university library's webpage <http://www.lib.unc.edu/>, you will find a list of other electronic resources under "Articles & More". To use these services off-campus you have to go through a similar authentication process.

B.4. SETTING UP YOUR PERSONAL WEBPAGE and GETTING WEBSpace

Q. What are the first steps to take?

First you need to subscribe to "Web page publication". To do so, go to <http://onyen.unc.edu> , scroll to the bottom to "Subscribe to Services".

Q. What is the address of my webpage(s)? Where can I obtain additional information?

The address for your webpages is <http://www.unc.edu/~myuserid/mywebpage.html>, where myuserid is your userid and mywebpage.html is the webpage you created and placed in the public_html folder in your AFS file space. You can obtain more information about how to create webpages under <http://help.unc.edu/?id=108>

C. Software and hardware available only on some Gardner Computers

C.1. SCIENTIFIC WORD on Econlab 10,11,12

Scientific Word is a word processor that is particularly powerful in typesetting documents that contain a lot of mathematical and scientific notation.

The computers Econlab 10, 11 and 12 in the computer lab (computers facing the right-side wall as you enter the lab) now have Scientific Word installed on them. You can access Scientific Word by going to the folder "Scientific Word" on the D: drive.

C.2. CD/DVD -BURNERS

CD and DVD burners are available on all the lab machines.

C.3. SCANNER on Econlab 01

The scanner is accessible from one machine only (econlab01). If for some reason this machine is not available (i.e. harddrive died, someone is running an extremely important simulation, etc.) you can unplug the scanner and plug it to the computer that is located right across from econlab01. That machine has all the necessary software installed too. There are no other machines with the software (required for the scanner) in the lab.

The easiest way to access the software is to turn the scanner on -- a new dialog window will pop up. Otherwise, you'll need to find a folder with the software on one of the local drives (there're no shortcuts on the desktop and you won't find the software if you go to Start--Programs. The guy from OASIS said that they could add it but it would show up on ALL the machines in the lab, which would have been misleading).

D. Research Computing

D.1. INTRODUCTION

Eventually you will have computing needs that cannot be addressed by any single machine in the Gardner lab. But you have access to the vastly more powerful resources of the scientific and statistical servers on campus. For details, see <http://www.unc.edu/atn/hpc/hardware/index.shtml?id=4353>) To get access to one of these computing clusters you'll need to subscribe first. To do so go to <http://onyen.unc.edu>, scroll to the bottom to "Subscribe to Services", follow the instructions.

With these servers, you will be able to, among many other wondrous things,
(a) access additional software,
(b) submit "batch jobs" that run even when you are not logged on,
(c) run several "jobs" simultaneously.

[A "job" here refers to a time-limited use of shared computing resources. A "batch" job is a set of commands submitted for later execution. When running an "interactive" job, by contrast, I open an application and submit commands one by one, as needed.]

D.2. THE STATISTICAL SERVER: "StatApps"

For batch jobs of moderate size, and to use applications interactively, you should consider StatApps, which is also known as "Sunny". StatApps is a "domain within a Sun E15K server with 24 processors and 48 GB of shared memory". Impressed? For more details, see <http://www.unc.edu/atn/statistical/> For a list of applications see <http://www.unc.edu/atn/statistical/applications/index.html> as well as <http://www.unc.edu/atn/hpc/applications/index.shtml?id=4237>.

D.3. THE SCIENTIFIC SERVERS: "Baobab" and "Chastity"

Your dissertation is very likely to involve certain memory-intensive "jobs"- that is, unless you are a theorist. For such memory-intensive jobs, you should consider using the scientific servers. There, jobs run much faster than on StatApps. However your use of these resources is not limitless, so you'd want to keep running smaller jobs on StatApps. The scientific servers also carry fewer software applications than StatApps. ITS's [Linux cluster](#) goes by the name of "baobab"; the [SGI Origin 3800 scientific server](#) is called "chastity". For more detail see <http://www.unc.edu/atn/scientific/> For a list of applications see <http://www.unc.edu/atn/scientific/sciapp/index.html>

D.4. SUBMITTING JOBS

At UNC, use of shared computing resources is managed through LSF ("Load Sharing Facility"). Anytime you have a "job" to complete, you must submit it to a "queue", where the job's priority will be determined. This sounds time-consuming, but only normal circumstances it won't take more than a second. For more information, see http://www.unc.edu/atn/hpc/job_management/index.shtml?id=4484 as well as the section on LSF in <http://www.unc.edu/atn/statistical/statapps.html>

and

http://www.unc.edu/atn/dci/dci_components/lsf/.

D.4.1 Batch jobs

Suppose I have a job called *jobname*, and I wish to submit it to the queue called *queuename*, to be run on a remote computer called *machinename*. I would type the following at the unix-prompt (\$):

```
bsub -m machinename -q queuename jobname
```

For some cases, there are simpler, ready-made ways to do this. A job can be submitted to the queue *batch* and the machine *sunny* by simply typing

```
stat jobname
```

D.4.2 Interactive jobs

For whatever reason, we sometimes wish to run certain applications like stata on one the remote servers.

On statapps, there are quick ways to invoke these. For example, running plain unix-based stata on "Sunny" through the interactive queue only requires typing

```
istata
```

at the the \$ prompt.