ResNet and Remote Access

From
www.ncsu.edu/it/essentials/connections/off_campus/internetbody.html
and http://www.ncsu.edu/resnet/

Students, faculty, and staff can access the campus network if they have
an Eos/Unity account and a computer with a modem and appropriate
communications software. Because so few dialup lines are available,
users are encouraged to have an Internet Service Provider to provide them
with remote access support. Dormitory residents can make a direct
connection to the campus network via ResNet without going through
a modem/dialup connection.

NC State ResNet

ResNet is the residential computer network service provided to students
living on campus. When equipped with a 10/100BaseT Ethernet adapter,
student-owned computers in the dorms can connect directly to the
University’s computer network and to the Internet. For questions about
ResNet, first consult the Web site at http://www.ncsu.edu/resnet/. If you
still need help, e-mail resnet@ncsu.edu or help@ncsu.edu, or call ITD
at 515-HELP (515-4357). NC State’s Communication Technologies
also has information for students at http://comtech.ncsu.edu/students/.

Who Can Connect. All residence halls and houses on Fraternity Court.
Beginning with the 2001-02 academic year, all students living in the
residence halls received ResNet service. Road Runner cable modem
service is available for residents of E.S. King Village for $20 per month.

Who Cannot Connect. University Towers provides residents with
10BaseT Ethernet service and a connection to the Internet similar to
ResNet via their “University Towers Connect” program. UT has
contracted with CampusLink to provide Ethernet service, so contact
University Towers (755-1943) or CampusLink (800-962-4772).

computer, when equipped with a 10BaseT Ethernet adapter, directly to
NCSU’s data communications network, and through the university
network, to the Internet. It enables you to perform many tasks from your
dorm room: exchange e-mail, browse and publish information on the
Web, access campus information and the library, submit assignments to professors, conduct research for papers, participate in electronic groups (mailing lists and news groups), work in programs in text mode, and access your Eos/Unity network file space via applications like ssh and ftp.

**What It Does Not Give You.** The Windows and X/Motif application software in the Eos/Unity environment with graphical user interfaces (such as Pro/ENGINEER, AutoCAD, MATLAB, etc.) cannot be accessed from a computer connected to ResNet services.

**How to Sign Up.** All subscriptions to and cancellations of ResNet service are conducted online through either University Housing’s Assignment process or the Greek Court Communication Technologies/ResNet services application process. Before signing up, read the ResNet terms and conditions at [http://www.ncsu.edu/resnet/policy/](http://www.ncsu.edu/resnet/policy/). Then sign up online at [http://www.ncsu.edu/resnet/app/](http://www.ncsu.edu/resnet/app/).

**What it Costs.** The fee for ResNet service is $80 per semester. Beginning with the 2001-02 academic year, ResNet will be provided automatically for all students living in University Housing’s residence halls. All ResNet data jacks will be active in students’ rooms. This change does not affect Greek Court. Students living in the residence halls will be billed for ResNet at the same time they are billed for their on-campus housing, with the charge showing up on their student account.

**Recommended Computers:** [http://www.ncsu.edu/it/compspecs/](http://www.ncsu.edu/it/compspecs/) and [http://www.ncsu.edu/resnet/info/minimum.html](http://www.ncsu.edu/resnet/info/minimum.html) provide specifications for purchasing computers to bring to NCSU. Residence halls and Greek Court houses are wired with 10/100BaseT (also known as twisted pair) Ethernet cable. All adapters must have a 10BaseT or 10/100BaseT Ethernet connection, see [http://www.ncsu.edu/resnet/help/](http://www.ncsu.edu/resnet/help/). Purchase only an Ethernet adapter that has a 10BaseT or 10/100BaseT connection!

---

**Remote Access to Eos/Unity**

**Off-Campus Internet Protocol (IP) Connections**

Modem access is provided for free of charge, but be warned that this service tends to be very busy. Configure your computer’s communication/modem software to dial 515-6320. Modem access via Internet Service Providers is quicker and better.

**On or Off-Campus telnet and ftp Hosts**

Telnet is a text-only Internet protocol for remote login. Most computers have telnet software included among the basic software applications. It acts as a terminal emulator that you can use to access and work in your Eos/Unity file space. This is useful when working from a computer that is not a realm workstation, either on campus or off.
However, telnet is an older protocol and is not secure. For this reason, the campus recommends downloading a secure shell client (ssh) like PuTTY to run from home (see http://www.eos.ncsu.edu/remoteaccess/). For more, see SSH and PuTTY.

FTP is another text-only Internet protocol. If you are not using an Eos/Unity workstation, you can use ftp to transfer files from your computer to your Unity file space. ftp to the host machine, ftp.ncsu.edu (see File Transfer Protocol). Like telnet, ftp is not secure and passes passwords in the clear, so look at the secure clients available for download from http://www.eos.ncsu.edu/remoteaccess.

Dialup Services

NC State University students, faculty, and staff can get telephone access to the campus computing network if they have an Unity account, a computer with Internet capability, and a modem. Unity accounts are automatically generated for all NCSU students, faculty and staff, and all account owners must abide by current account policies (see Policies, http://www.ncsu.edu/it/rulesregs/remote-access/)

Service Providers

Computing Services supports a free dialup service, but because the demand for this service has increased beyond what University resources can provide, phone lines are often busy. Callers may have to wait a long time to gain phone access to the system.

515-6320 NCSU Dialup Services. To use the campus dialup services, first make sure your computer is Internet capable, then create a dialup connection to 515-6320. When your computer connects with the campus dialup servers, login to the system with your Unity username and password.

Commercial Internet Service Providers (ISPs). To obtain more reliable dialup access to the Internet and the campus computing network, most students, staff, and faculty subscribe to commercial Internet Service Providers (ISP). While Computing Services does not endorse a particular ISP, it has gathered a list of local ISPs in Choosing an Internet Service Provider (http://www.ncsu.edu/cc-consult/ISPs.html), which also provides a checklist of features to consider when subscribing to a commercial service.

Types of Dialup Connections and Software

Internet Protocol (IP) connections. Point-to-Point Protocol (PPP) client software gives your computer a temporary Internet address, which allows the use of Graphical User Interface (GUI) applications, such as
Netscape or Internet Explorer. Most new computers come already equipped with a modem that can handle PPP connections. At the very least, a 56K modem or better is strongly recommended.

**Line-mode connections (also called text-mode or TTY).** Line-mode modem connections provide basic network services—e-mail, ftp, telnet and Web access—but in text mode, not graphical formats. For example, e-mail is done with **pine** (IMAP), **elm** (POP), and Web browsing in **lynx**. Users need a computer, telephone line, modem with appropriate cables, and communications software that will emulate a VT100 series terminal or better. The phone number is 515-3980.

### What Can I Do on Dialup?

Anything you can type at an eos% or unity% prompt and get a response that does not require additional windows to pop up or non-ASCII graphics, you can also do on a dialup machine. This includes sending and receiving mail, reading and posting news, editing, compiling and running programs, using **lynx** (line-mode Web browser), communicating with other users, and ssh-ing and ftp-ing to other sites.

Many users become very proficient at working from home using these and other applications. Some of the principal Eos/Unity software packages (see [http://www.eos.ncsu.edu/software/](http://www.eos.ncsu.edu/software/)) also have line-mode interfaces that users can access. See also the last section of this chapter for use of X-Win32 to display applications in graphical mode from Eos remote-access servers.

### What Can’t I Do on Dialup?

Anything that requires X-Windows or graphical screen displays will not work over dialup (Maple, Matlab, FrameMaker, NExS, etc.). There are alternatives available for some applications. You can use command-line options (such as the -ttymode option on Zephyr), or applications other than those you typically use at the workstation (e.g., editing with vi or pico instead of NEdit). With applications you use a lot, you may wish to buy a copy for your machine at home and then transfer files between it and campus computers.

Because there are too few dialup lines available for the large number of users demanding access, people are not permitted to play games. Similarly, running very large and intricate programs that take up large amounts of CPU time are not recommended on dialup. In addition, some dialup machines restrict the number of processes users may have at any one time. For batch jobs, look at using Load-Sharing Facility (LSF) [http://www.eos.ncsu.edu/software/lsf/](http://www.eos.ncsu.edu/software/lsf/)

### Reading Mail from Dialup Machines

Campus users are being moved from the POP mail protocol to IMAP, but POP users can still use the line-mode program **elm**. IMAP users can use [515-3980](http://www.eos.ncsu.edu/software/lsf/)
pine. Consult the following URLs for guidance on accessing mail from home if you are not yet getting your mail through IMAP: http://webmail.ncsu.edu/ and http://www.ncsu.edu/imap/

**Compiling and Running Programs on Dialup**

Every computer language has a method of compiling programs from the prompt. As long as it does not require an X window to pop up, you should be able to compile and run programs without difficulty.

**Editing Files on Dialup**

The editor recommended for use over dialup is vi. The documentation for vi is too extensive to reproduce here, but some documentation is available in man vi. A table of vi commands appears in Appendix B. Also add editors and cd /ncsu/editors/bin/ for other editors you might use. See also Common Text Editors.

**Communicating Directly with Other Users**

Because the Zephyr system will not work in quite the same way as it does on a standard workstation, you will have to use it in TTY terminal mode. To start up Zephyr over dialup, type:

```
/usr/athena/etc/zwgc -ttymode
```

The -ttymode option will redirect incoming zephrys to you in an all-text format that the dialup machine can handle (see also man zwgc).

**Principal NCSU Server Addresses**

Dialup server (all Eos and Unity accounts):

```
login.ncsu.edu
```

This address names a large pool of dialup machines that handle access for NCSU students, staff, and faculty. The login.ncsu.edu name is a hostname alias that points to this pool and automatically finds a dialup connection on one of the machines.

ftp server (all Eos and Unity accounts): ftp.ncsu.edu

ftp server (College of Engineering only): ftp.eos.ncsu.edu

**Eos Remote-Access Services**

The College of Engineering is developing more remote-access services to support its student-owned computing and distance education initiatives. Software and information are available from:
A high-speed connection through an Internet Service Provider (DSL or cable modem rather than a dialup modem) is recommended with some types of connections (file transfer) and essential in others (XWin32). To protect the privacy of those who use these services, all technologies provided use secure, encrypted communication. Also, open-source technologies are used whenever possible to implement remote access.

Running Windows from Home

Most users run Windows on their home computers but need access to their AFS file space and to Solaris/Linux resources on campus (no access to campus Windows resources is yet available). Because of fundamental differences in the operating systems, remote access from Windows to Solaris/Linux can be problematic. Also, the X Window System, used in both realm Solaris and Linux, is not in any distribution of Windows.

To make a Windows computer access Unix-based resources remotely requires the installation of several programs.

- Secure file transfer requires WinSCP or F-Secure.
- Terminal access for command-line execution of commands and applications remotely requires PuTTY or F-Secure.
- Running an application in graphical mode requires X-Win32 running with PuTTY or F-Secure.
- Native AFS access requires WolfCall, Kerberos for Windows, and OpenAFS.
- Batch processing through LSF requires PuTTY or F-Secure and connecting to separate lsf.ncsu.edu batch servers.

Secure File Transfer

Two file-transfer packages are available for download: WinSCP and F-Secure. Conventional ftp software is not recommended because it is not secure. For file transfer only, WinSCP is easier to install and use. However, if you also want telnet-type connection through Secure SHell terminal access, then you may wish to consider F-Secure.

It is important to note that you do not connect through ftp.eos.ncsu.edu or ftp.ncsu.edu with this software but to the ssh-configured servers, remote.eos.ncsu.edu and remote-linux.eos.ncsu.edu.

Running Applications Remotely

To run applications remotely from a Windows computer also requires connecting to the remote-access servers: remote.eos.ncsu.edu to run
Solaris applications and remote-linux.eos.ncsu.edu to run Linux applications. The applications you connect to actually run on these remote computers, not on your Windows machine, so such things as printing locally from the application will not work. Also, the speed at which the application runs is determined by the capacity of the remote server and the load it is carrying. Remote-access servers are shared resources.

For command-line execution of applications like pine, elm, pico, etc. and to execute Unix and AFS commands at an eos% prompt requires the installation of either F-Secure or PuTTY. To run an application in full graphical mode (one application at a time only) requires X-Win32 to be downloaded each time you make a connection, see also

http://www.eos.ncsu.edu/software/putty
http://www.eos.ncsu.edu/software/xwin32

**Native AFS Access** (Windows 2000/XP only)

WolfCall (http://www.eos.ncsu.edu/wolfcall) is a replacement for KAUTH. WolfCall makes it possible for you to map your home directory (K: drive) and AFS root directory (J: drive) on your home computer so that you can work directly with files in your campus AFS space without going through file transfer or terminal access. You open, save, copy, and delete files just like they were on your local machine, or, like you were sitting in an Eos lab.

**Batch Processing**

Remote batch processing is the same as working from a campus machine except that you need to download an SSH client, such as F-Secure or PuTTY, to make a secure connection to the lsf.ncsu.edu batch servers and the application you need (see http://www.eos.ncsu.edu/software/lsf/).

Consult http://www.eos.ncsu.edu/remoteaccess for more information and access to the resources described above, plus more.

**Important!** Don’t forget to maintain current anti-virus software on your home computer. Norton Anti-Virus software with regular anti-virus updates is free for download to all NCSU faculty, staff and students.

http://www.ncsu.edu/antivirus/