The TLAB Cluster

The TLAB cluster consists of 16 dual-boot Pentium III hosts connected with a switched 100 Mbps Ethernet network. The cluster is located in the undergrad lab in room 125 on the first floor of 1890 Maple Avenue. All CS students, as well as non-CS students taking CS courses, may use the TLAB cluster. You may use these machines from their consoles or log into them remotely (when they are running Linux). To use them from their consoles you will need the appropriate keycard to get into the lab.

Hosts

The machines are Dell 4100s with the following specifications:

- 800 MHz Intel Pentium III processor
- 256 MB DRAM
- 45 GB IDE (Ultra ATA) hard drive
- NVIDIA Geforce2 DDR 32 MB video card
- 3COM 3C905C-TXM 10/100 Mbps Ethernet adaptor
- SoundBlaster 64V PCI soundcard
- Dell P991 19" FD Trinitron (flat screen) monitor

The hosts are named TLAB-1.cs.northwestern.edu to TLAB-16.cs.northwestern.edu.

Software

Each host can be booted to Windows or Linux. The Windows side includes:

- Microsoft Windows 2000 Professional SR1
- Microsoft Office 2000 Professional SR1
- Microsoft Visual Studio 6.0 SP4
- Sun Java2 Platform, Standard Edition
- SecureCRT
- X-Win32
- … and many other goodies

The Linux side includes:

- Red Hat Linux 6.2 "Everything" installation (many services are disabled due to security concerns)
- Kernel 2.2.14-5.0
- NVIDIA_GLX-0.9-5 and NVIDIA_kernel-0.9-5 drivers
- Libpcap 0.4-19 and Libnet 1.0.1b
- SSH 1.2.27-7i
- XEmacs 21.1.3-1
- GCC 2.95.2 19991024 release (full installation)
- GDB 5.0
- GNU Make 3.78.1-4
- … and many other goodies

Network

The hosts are connected via CAT5 cables to a 24 port 3COM SuperStack II 3300XM switch named TLAB-SWITCH.cs.northwestern.edu. Each pair of hosts can simultaneously communicate at a peak rate of 100 Mbps, full duplex, resulting in a peak bisection bandwidth of 1.6 Gbps over the 16 hosts. The hosts are configured at boot time using DHCP. The DHCP server is configured to always map each host to the same IP address.

The switch is also connected to a 17th machine, TLAB-FW.cs.northwestern.edu, which is also connected to the CS Department network. TLAB-FW prevents certain traffic from leaking off the TLAB network onto the broader CS network. It also helps us run insecure rsh within the TLAB cluster for compatibility with PVM and other tools.

Accounts

The TLAB machines are intended for instructional and research use. If you take a class that requires their use, you will be given an appropriate account via class mechanisms. If you are a CS student, you already have accounts. You can log into the Linux side using your Godzilla login name and password. You can log into the Windows side using your ILSPC or CS domain accounts. To otherwise acquire a Windows or Linux account, send mail to request@cs.northwestern.edu explaining why you need the account. If someone is sponsoring your account, please cc that person in your email. To get a keycard to the lab, see Pam Kearfott.

The home directory of your TLAB Linux account is your home directory on Godzilla. /home1 on Godzilla is NFS-mounted on each of the TLAB machines so that you will have the same environment regardless of which machine you log into. If your home directory on Godzilla is /home1/foo, it will also be /home1/foo on the TLAB machines. In addition, you may also place files locally in /home/scratch/foo on a particular TLAB machine. Please note that while there are gigabytes of scratch space for you to use, it is **volatile**. The next time you log into the machine, your scratch space may have been garbage-collected. It is your responsibility to manage your NFS and scratch disk space. There many tools, such as tar, cvs, gzip, and scp that can help you with this.

A TLAB Windows account includes a small amount of SMB space on a NT file server that is accessible from all the machines, a roaming profile, and access to large amount of volatile scratch space on each individual machine.

Logging Into Windows Locally

If you are running Linux, logout and restart the machine from the login screen. DO NOT SIMPLY POWERCYCLE THE MACHINE. At the "LILO:" prompt, type "dos". Once the Windows login screen appears, log in.

Logging Into Linux Locally

If you are running Windows, logout and restart the machine from the login screen. DO NOT SIMPLY POWERCYCLE THE MACHINE. At the "LILO:" prompt, type "linux". Once the Linux login screen appears, log in.

Logging Into Linux Remotely

You can log into the TLAB hosts from any SSH client. For security reasons, the TLAB hosts do not support telnet, rsh, rcmd, rlogin, or unencrypted ssh logins. An excellent free SSH-based terminal emulator for Windows is TTSSH (http://www.zip.com.au/~roca/ttssh.html). TTSSH will fit on a single floppy. On Unix machines, you will typically find a command-line ssh tool that has the same interface as rsh. If you cannot log into a specific machine, it may be running Windows. Try several machines before concluding that there is a problem.

If you are logging in from a machine that is running an X Server (a Unix machine, or a Windows machine running Exceed, Xwin32, or similar software), you can greatly improve your work environment by using X remotely. Here is how to set up to use X, assuming you are logging into the machine TLAB-5.cs.northwestern.edu from the machine FOO.BAR.northwestern.edu

1. On FOO, start up your X server and give TLAB-5 access to your screen. If you're using X on some form of Unix, the typical way to do this is "xhost +TLAB-5.cs.northwestern.edu" (or "xhost +" to let any host connect).
2. Ssh to TLAB-5
3. Set DISPLAY on TLAB-5 to be FOO:0.0. If you're using an sh style shell, you need to run "DISPLAY=FOO.BAR.northwestern.edu:0.0 ; export DISPLAY". For a csh style shell, the command is "setenv DISPLAY FOO.BAR.northwestern.edu:0.0"
4. Test using an xterm. On TLAB-5, run "xterm". In a few seconds, an xterm window should pop up on FOO. If you get an error, check that DISPLAY is set correctly and that FOO is set up to allow access to TLAB-5.

Dedicated Machines

In some cases, machines may be dedicated to running a particular operating system or to a particular set of users. For example, the networking class requires that several machines run Linux at all times. When a machine is so dedicated, a sign on the machine will make it clear. DO NOT DISREGARD THESE SIGNS OR ATTEMPT TO "CRACK" THE MACHINES. DOING SO WILL RESULT IN YOUR LAB PRIVELEGES BEING REVOKED AND POSSIBLY STRONGER ACTION BEING TAKEN.