**THE USER INTERFACE**

**operating system**: the system software that enables a computer to accept programs, store data, and initiate interaction with electronic components. Unix, Linux, and Windows are the operating systems on Eos/Unity.

The “look and feel” of the workstation environment is defined by the operating system and interface software that govern how the user interacts with the system. Unix (Sun Solaris), Linux (Red Hat), and Windows have substantially different user interfaces, although they access common applications, network file space, and computing infrastructure. You can move among them with little problem, but you have to learn to do many things in different ways.

**The Solaris FVWM Interface**

When a user successfully logs in to the Sun Solaris workstation, the login screen disappears and the following screen takes its place. While not very colorful or inviting, this default interface is created by the F(?) Virtual Window Manager for X11. It is designed to minimize memory consumption, provide a 3D look to window frames, and a virtual desktop.

No applications are displayed on the desktop by default. Instead, applications are launched via a pop-up menu (middle mouse button in the background, see next chapter) or the command line.
The gray background defines an area called the *root window*. The small window that first appears in the upper left corner of the screen is called the *console window*. It contains system and error messages, and it also monitors the user’s session and what goes on in the system. Users do not work in the console window, and closing it will log the user off! Rather, they should watch it closely for messages and other information.

**Command Line Interpreter**

The Xterm window is the *terminal* window that appears in the center of the screen. It contains a *shell prompt*, which is the location of the command line where commands may be typed into the system.

Users will often have to instruct a Unix workstation through commands typed at the prompt. These commands are interpreted, executed, and passed on to the Unix operating system by a *shell* program, which controls the user’s interactions with the operating system. The shell prompt tells which shell the system is running. The percent sign ( % ) means that Eos/Unity runs a C shell (csh) (see *The C Shell*).

A command is entered by typing it after the prompt in an Xterm window and pressing the **RETURN** key. Commands must be typed in the precise syntax that the interpreting shell program accepts. When the shell finishes processing a command, it comes back and displays the prompt again, which asks (or prompts) the user for the next command.

**The Unix operating system is case-sensitive!** The user must be careful to use uppercase and lowercase letters as specified. In Unix, commands and filenames are usually lowercase. For example, the command to copy must be typed as cp, not CP. The same is true of the filenames README, readme, and Readme. All are viewed as different files to Unix.

**Graphical User Interface**

Users also work through a graphical user interface, or GUI (pronounced “gooey”), which keeps them from having to type commands into the system. On this pictorial plane are windows, menus, and postage-stamp images called “icons,” which a user manipulates with a mouse to perform operations. A GUI is an easier and often more engaging way to interact with a computer. It can be used without much initial instruction and does not require that users look up or memorize commands.

Although the dominant metaphor of the graphical environment is the window, the interface also employs the metaphor of the desktop. Windowed applications can be viewed as documents and folders that are moved, arranged, and stacked on a desk. The console and Xterm windows are two of many windows that can appear and run on the Solaris desktop, as seen below.
Each window is self-contained, and the applications running in them do not interfere with each other, even if their windows overlap, hide one another, or are scaled down to a size too small to read. All Eos/Unity platforms support multitasking, the ability to run more than one program at a time. Information can also be copied, moved, and shared among the windowed applications.

The Windows 2000 Interface

The Microsoft Windows interface is a “point-and-click” GUI. Rarely will the user need to work from the Command Prompt, the equivalent of the Unix command line. Users will find the Windows interface more familiar to them than Unix’s because of the widespread use of Windows at home and in the workplace. The desktop is a colorful plane of icons that can be double-clicked to launch programs or access data.

Unlike the Solaris platform, which always looks the same no matter where you log in, the desktop you see on 2000 may vary some depending on where you log in and what your NCSU affiliation is.

For example, students in the labs will see different desktops depending on the college they are in because the colleges provide and support different applications. Engineering applications in the Engineering Applications folder are shown in the figure below and are only available...
Unity Applications are principally general-use applications for all campus users. However, the applications in the Unity Applications folder and subfolders are available to everyone using the standard installation, so those applications do not change from lab to lab. Users should look in the other folders that appear on their desktops to see what else is available to them. **Note:** The NAL shown here is as it was organized and appeared at the time of publication and may be slightly different from what users see.

**The Linux GNOME Interface**

The Red Hat Linux operating system, which is used in the College of Engineering on over 170 students machines, is taught to entering engineering students in the course, E115: Introduction to Computing Environments ([http://courses.ncsu.edu/e115/](http://courses.ncsu.edu/e115/)). Linux is a freely distributable open-source implementation of Unix that runs on the Intel (or PC) platform, a less expensive but very similar platform to the Eos/Unity Sun Solaris platform.

GNOME (GNU Network Object Model Environment) is the desktop environment that runs on this platform and creates the graphical user interface. It has been customized to give users easy access to Eos/Unity applications and utilities that run under Linux.
As seen below, the GNOME interface has a Windows-style look and feel with the Realm Kit Application Launcher (RKAL), icons on the desktop for easy execution of programs. It also has a programs menu available from the GNOME footprint icon in the lower left corner of the screen (similar to the Windows Start menu). However, also seen are the familiar Unix Xterm window for command-line entry and the console window.

**Interface To What?**

Unix has been the principal operating system on Eos/Unity for nearly a decade, and a number of Eos/Unity packages run on the Solaris platform only. However, some of them are also available for Linux and Windows (see Appendix C: Licensed Commercial Software on Eos/Unity). A few packages run on all three platforms (Matlab, Maple, Visual SlickEdit, NAGware Fortran compiler, and the Java Development Kit). However, the greatest number and most popular applications are on the Windows platform.

Most of the applications that run on Solaris are science and engineering programs. The management and scalability of the Solaris platform was so successful that it was decided that MS Windows and Linux must run similarly in order to be realm clients.
System administration is handled remotely via the network since it is not practical to configure each machine individually and on site. The configuration is downloaded to the machine upon login, giving the user access to a commonly configured interface, shared hardware devices like printers, legally licensed software, and both shared and personal file space on servers that are backed up nightly.

User customization of the interface and software is still possible but kept in user file space on servers rather than locally on the machine or with the software. These customizations are applied upon login, making the phrase from the movie Buckaroo Banzai apt in describing the system: “Wherever you go, there you are.”

However, less customization is possible on Windows than Solaris because of its reliance on the local C: drive, which is wiped clean upon logout from lab machines. As a result, much of the customization you might usually do in applications, or via the Control Panel and Accessories, is not available to you on the lab machines. (Faculty and staff are permitted administrative access to alter settings in their office machines, however.) You will get error messages when you try to reconfigure settings and devices.

By the same token, no backup of the local drives is made, either of software or data. This means also that all your data (the files you create) must be saved to your home directory (the K: drive on Windows machines) or to other AFS directories to which you have access (the J: drive on Windows machines).

Users should view the Unix, Linux, and Windows interfaces as different paths to a common campus network of shared software, hardware, data, file space, and services. The developers of Eos/Unity recognize the importance of maintaining standards across colleges and have worked to minimize the differences in platforms and interfaces as much as possible.