University of Oregon

COMPUTING NEWS

WINTER 1999

IN THIS ISSUE...

The Ins and Outs of Student Accounts: Answers to Some Common Questions

By Rick Milhollin
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At the beginning of each term, new students frequently have questions about their usernames and passwords. To help answer some of these questions before they arise, we're publishing a brief refresher course on UO account policies, along with some updated information.

How Do I Get an Account?

If you're currently enrolled as a UO student, you should already have one. Incoming students are assigned "pregenerated" usernames and passwords. Before you can use your account for the first time, however, you'll need to ac-

cess your account information. You may do this in one of two ways:

1. *Via DuckWeb.* Using *Netscape* or *Internet Explorer*, access the DuckWeb site at ***http://duckweb.uoregon.edu*** You must know your student ID number and your personal access code (PAC).

Log in to DuckWeb and at the main menu, select the option "**View UO Computing Accounts Information**"

or…

2. Come to the Computing Center Help Desk. Bring your photo ID to the Help Desk in the Computing Center's south entry lobby, and a Help Desk consultant will give you your personalized *Student Account Information* sheet.

What if I Don't Have a Pregenerated Account?

If for some reason you don't have a pregenerated account, you can still use the AUTHORIZE program to get one. Here's how:

Telnet to AUTHORIZE and type "authorize" at the "Username:" prompt. Then follow the instructions as they appear on your screen. (If you don't know how to telnet, get a copy of the handout "How to Telnet" from the Computing Center Documents Room upstairs in Room 205.)

Note: If you're not registered for the current term but are registered for the *next* term, you may create your account 45 days after the current term began.

How Long Will My Account Stay Active?

Your UO computing account remains active as long as you're registered, *and* during the term immediately following your last active registration. For example, if you were registered in spring term, your account would remain active through the summer.

After the last day to add classes in each term, accounts are disabled for students who didn't register for either the current term or the previous term.

Please Be a Considerate Modem User

By Lucy Lynch
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To help maintain modem accessibility to UOnet, modem activity at the UO is automatically monitored.

Because we don't have enough modems to let everyone have a dedicated personal modem connection, we ask for your cooperation in limiting your connect time to no more than an average of two hours a day (or 14 hours per week). Those who exceed 14 hours of connect time per week will be contacted by a Computing Center staff member and encouraged to subscribe to a commercial network service provider. A list of local providers is available at **http://darkwing.uoregon.edu/~llynch/eug-access.html**

We recognize that occasionally a pressing project or other special circumstance may require you to exceed the 14 hours-a-week target, and that is something we can accommodate—on the *rare* occasions when special circumstances develop. What concerns us is a consistent and unsustainable pattern far in excess of the target usage threshold.

Remember, too, that sharing your modem account with others is strictly prohibited (see "Acceptable Use of Computing Resources," **http://cc.uoregon.edu/acceptableuse.html**)

Please cooperate in helping us make the most of the limited resources we have available!

Trojan Horse Making the Rounds on Campus

■ Protect Your *Windows 95/98* Machines!

By Joel Jaeggli
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A new trojan horse called "Back Orifice" appears to be making the rounds of *Windows 95/98*-based machines on campus. Unlike a computer virus, a trojan horse cannot be transmitted without human intervention.

Like the original steed of Greek fame, *Back Orifice* is most often cleverly disguised. It frequently appears as something you'd be least likely to suspect, including applications found on the Internet or received as attachments to email messages. To further confuse you, applications which contain or install *Back Orifice* may still work or appear to work correctly, meanwhile installing the trojan program invisibly in the background.

Applications that have contained *Back Orifice* in the past have included, among others, an application that purports to detect *Back Orifice* and a pornographic tetris game. Realistically, the treacherous program could be part of any application coming from a questionable source.

If installed, *Back Orifice* can allow hackers on the Internet to view the contents of your machine, edit files, capture keystrokes, and carry out attacks against other Internet hosts using your machine as a proxy for their own activity. Any or all of these actions have potentially serious security and privacy implications which make it in the interest of users to ensure their machine is clean.

How to Detect *Back Orifice:* The best way to check for *Back Orifice* is to install the latest version of *Norton Antivirus* for *Windows*, either by ftp from *public.uoregon.edu* or from the Duckware CD. The Norton utility will automatically detect and remove *Back Orifice* as well as several hundred other viruses and trojans. Or, you could use a single-purpose utility like "BoDetect" to detect its presence. You'll find "BoDetect" at http://www.spiritone.com/~cbenson/current_projects/backorifice/backorifice.htm

Getting "All circuits busy" Modem Message?

By José Domínguez and John Kemp
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kemp@network-services.uoregon.edu

At the beginning of fall term, users dialing the UO modem pool via **346-6520** didn't get a normal busy signal when all lines were in use. Instead, they heard a prerecorded "all circuits busy" message.

After extensive testing and debugging, staff from Network Services, Telecomm Services and US West determined that this unusual response was the result of several factors, including recent upgrades to both the telephone switch serving the City of Eugene and the PBX serving the UO, as well as the way the modem pool was configured.

To correct the problem, Network Services and Telecomm Services plan to reengineer the modem pool configuration. Corrective procedures should begin during the winter break and could extend into the first weeks of the winter quarter. We apologize in advance for any inconvenience this may cause.

Forthcoming Changes

The addition of newer faster modems and the change in configuration of the dialin lines should greatly improve the quality of service to the UO dialin community. The new configuration (shown in the table below) differs from the old one in two important ways:

1. The 346-3565 number will convert to a V.90-capable modem pool, and expand to include an additional 64 high-speed modems. These additional and faster modems should considerably ease the burden that has been seen on the 346-6520 number.

2. The 346-1586 number goes away. These older, slower modems have become less useful over time. Users previously operating at 14,400 and using the 346-1586 number might want to consider upgrading to the V.90 standard.

New Modem Pool Configuration				
Modem Pool	**Number of Modems**	**Modem Protocols**	**Maximum Speed**	**Services**
346-6520	192	V.90, X2 V.34+, V.34, V.32bis V.42, V.42bis, MNP	57600 bps	PPP w/ PAP, IP, IPX, AppleTalk ARA2, ARA3 SLIP Terminal Emulation
346-3565	96	V.90, 56KFlex V.34+, V.34, V.32bis V.42, V.42bis, MNP	57600 bps	PPP w/ PAP, IP, IPX, AppleTalk ARA2, ARA3 SLIP Terminal Emulation
346-5975	64	V.34+, V.34, V.32bis V.42, V.42bis, MNP	33100 bps	PPP w/ PAP, IP, IPX, AppleTalk ARA2, ARA3 SLIP Terminal Emulation

Who's Who at the

■ **Meet four more Computing Center staff members**

By Vickie Nelson
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This is the second in a continuing series of profiles on Computing Center employees, introducing you to some of the people who work behind the scenes to facilitate your computing experience on campus.

Our winter issue focuses on some faces you may find familiar, as well as one that's relatively new. You'll probably recognize Lara Miyahira as the friendly face at the downstairs reception desk, and you may also have glimpsed both Dale Smith and Steve VanDevender, as they have been working here in various capacities since their student days. Noreen Hogan is a more recent addition to our staff, having joined the Center just a little over a year ago.

Lara Miyahira
Receptionist
Business Services

A familiar face with a new name, Lara started working at the Computing Center in 1995 as Lara Moore, and became Lara Miyahira last summer when she married her husband, Ryan.

After growing up in Westford, Massachusetts, and beginning her college education at Johnson State College in Vermont, Lara followed the American tradition of moving west by transferring to the University of Oregon. Upon receiving her degree in Sociology at the UO, she decided to stay in Eugene.

Lara first heard of the Computing Center from a colleague at Womenspace, where she was working as a volunteer. Shortly thereafter, she applied for, and got, a job at the Center's downstairs reception desk. Now she handles general reception duties for the Computing Center: answering phones, directing people to the resources they need, and checking in tapes and equipment for repair. She also orders supplies, handles shipping and receiving, and creates BANNER account passwords.

Jewelry-making, sewing, singing, hiking, and biking are among Lara's major interests. She also continues to work at Womenspace, providing child care one evening a week.

Adobe Acrobat 3.0 Available on DARKWING,
GLADSTONE

■ **Create PDF Files for your Web Page**

By Hans Kuhn
hak@oregon.uoregon.edu

Now that *Adobe Acrobat 3.0* has been installed on DARKWING and GLADSTONE, you'll be able to easily translate your documents into Portable Document Format (PDF) for web publication.

PDF is useful for distributing documents and forms with heavy formatting and graphics because the document will look the same on all computer platforms, provided the viewer has installed the *Acrobat Reader* client. *Acrobat Reader* is available free from Adobe's web site at **http://www.adobe.com/**

Acrobat's main components are *Acrobat Distiller* (distill) and *Exchange* (acroexch). *Distiller* converts Postscript files to PDF, while *Exchange* allows you to add hypertext links, rearrange pages, and perform other editorial changes to PDF documents.

How to Use *Acrobat 3.0*

Converting a Postscript file to PDF format is simple. For example, to convert a Postscript file named "inputfile.ps" to PDF, you'd type

% **distill inputfile.ps**

at the % prompt. *Acrobat* then automatically performs the conversion for you.

The first time you distill a document, you'll be asked whether you want to use the new features available in *Acrobat 3.0*. Your answer is saved in a preference file so you won't have to answer this question every time you use *Distiller*. However, if you wish, you can always override this setting by using command line options.

To see a summary of individual command options, type the command followed by the phrase "-help-all," e.g.,

% **distill -help all**

Need More Information?

Complete documentation on PDF file conversion is available on the web in PDF format at
http://www.uoregon.edu/acrobat/

If you have questions about *Acrobat*, feel free to contact Hans Kuhn (*hak@oregon.uoregon.edu*, **346-1714**).

Computing Center

Noreen Hogan
Systems Analyst
Auxiliary Services

Steve VanDevender
Academic UNIX Systems Manager
Computing Facilities

Dale Smith
Assistant Director for
Network Services

Steve grew up in Junction City, Oregon, and earned a degree in Computer and Information Science from the UO. He began working at the Computing Center in 1985 as a student assistant and was one of the first employees of the old Microcomputer Purchase Program, which sold computer hardware and software at academic discount.

After graduating from the UO, Steve worked as a programmer for Dynamix and as a system administrator for Eugene Free Net (EFN) and others.

Steve started his current position at the Computing Center in June 1996. As an Academic UNIX Systems Manager, his primary responsibility is helping to keep DARKWING and GLADSTONE running, particularly in the areas of mail system management, security, and software installation. Steve says he enjoys the variety and challenge of working on such large systems.

Swimming and skiing are among Steve's favorite athletic pursuits. He continues to volunteer for EFN, teaches sit-skiing for Eugene's Alpine Adventures adapted ski program, and serves on the City of Eugene's Accessibility Committee.

Born on the outskirts of London, Noreen arrived in the U.S. with her family when she was three.

She received a degree in General Science from the UO, worked for several years for Alpha Health Care, a medical and dental software company, and then took a year off to complete her Computer Programming degree at Lane Community College.

Since coming to the Computing Center in July 1997, Noreen has been heavily involved with the BANNER Graphical User Interface (GUI). She provides NT administration and support for people who currently use BANNER GUI, and has created a web page providing the program and instructions for installing it. (The old character-mode access to BANNER will be phased out by September 1999.)

Noreen also provides programming and support for the Financial Information System (FIS) and Human Resources Information System (HRIS) data warehouses.

When she's not working here or on her home network, Noreen can often be found hiking or out on the river flyfishing with her husband in their driftboat.
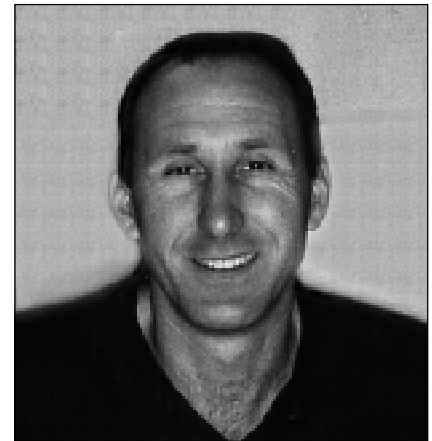
Dale Smith's career at the Computing Center stretches all the way back to December 1977 and his days as a student system programmer on the PDP 10.

By the time Dale graduated in 1980, he was taking care of the entire campus timesharing system. It was "either hire me or turn it off," he says with a laugh. The Center hired him as a full-time systems programmer, a position he held for several years. In the late 80s Dale moved into Network Services, where he's been ever since.

Today, as head of Network Services, Dale says his prime responsibility is to make it possible for his staff to keep the campus network up and running.

Dale also does high-level facilities design and works on special projects, such as the UO's impressive new scoreboard in Autzen stadium.

Dale grew up in Seneca, a town of 200 in Eastern Oregon, so it's no surprise to hear he enjoys outdoor activities—including fishing, hiking, and camping—with his wife Leah and kids McKenzie, Samantha, Connie, and Chris.

WINTER WORKSHOPS

What is The IT Curriculum? "IT" stands for Information Technology, and the Library and Computing Center are committed to making sure you have opportunities to build your technology skills. Want to learn how to publish a web page? How about find what you need on the 'net? Or just how to use that darned computer? We provide a full range of computer and Internet training, from novice to advanced skill levels.

These workshops are free and open to currently enrolled students, as well as staff and faculty. No advance registration is necessary; just show up a few minutes before the scheduled start. All seating is available on a first-come, first-served basis. We do ask, however, that you meet the workshop prerequisites as stated in the description; otherwise, you may be asked to relinquish your place. If fewer than five people are present ten minutes after the scheduled start, the workshop may be canceled or rescheduled at the discretion of the instructor.

This publication will be made available in accessible formats upon request to the Office of Library Instruction, **346-1817**. Requests for accommodations related to disability should be made to Jon Cawthorne (**346-1897**) at least one week in advance of the workshop.

Workshop	Day/Date	Time	Location	Presenter

This schedule is subject to change. See *http://libweb.uoregon.edu/it/* for course outlines/materials and the most current information.

Computer Operating Systems

Basic UNIX   *(http://www.uoregon.edu/~hak/unix-ws.html)* - ✔ **Prerequisites** ☆

	Mon Jan 18	11 - 11:50am	EC	Jaeggli

Computer Software Applications

Endnote/Procite: What Are These, and Why Should I Use Them?

	Mon Feb 15	3:30 - 4:50pm	RSR	Brownmiller, Lenn
	Tues Feb 16	3:30 - 4:50pm	RSR	Brownmiller, Lenn

Using the Internet

Workshop	Day/Date	Time	Location	Presenter
1: Introduction to the World Wide Web	Tue Jan 12	1 - 2:20pm	EC	Stark
	Wed Jan 20	10 - 11:20am	EC	Bennett
	Mon Jan 25	3 - 4:20pm	EC	Felsing
2: Beyond Just Surfing - ✔ Prerequisites	Thu Jan 21	1 - 2:20pm	EC	Darling, Frantz
	Wed Jan 27	3 - 4:20pm	ITC	Heinzkill
	Mon Feb 1	10 - 11:20am	EC	Ward
3: Power Web Searching - ✔ Prerequisites	Thu Jan 28	1 - 2:20pm	EC	Jenkins
	Wed Feb 3	3 - 4:20pm	ITC	Paynter
	Mon Feb 8	10 - 11:20am	EC	Paynter

Electronic Communication

Managing a Majordomo List (*http://darkwing.uoregon.edu/~llynch/majordomo*)

	Tue Jan 19	3 - 3:50pm	EC	Lynch

Using MHonArc to Create a Web Archive for a Majordomo List   (*http://darkwing.uoregon.edu/~consult/deptcomp/*)

	Tue Jan 26	3 - 3:50pm	EC	Lynch

Procmail: Filtering Your Email - ✔ Prerequisites ☆

	Tue Jan 26	2 - 2:50pm	EC	Kuhn
	Mon Feb 1	2 - 2:50pm	ITC	Kuhn

* WORKSHOP LOCATION CODES *

EC: Electronic Classroom (*Windows*)	144 Knight Library
ITC: Macintosh Classroom	267B Knight Library
RSR: Reed Seminar Room (*Windows*)	235 Knight Library

☆ **Requires an active account on DARKWING or GLADSTONE**

WINTER WORKSHOPS

Workshop	Day/Date	Time	Location	Presenter
Electronic Research Resources				
Database Concepts: Search Like a Pro!	Thu Jan 14	1 - 2:20pm	EC	Frantz
Janus: Access to the World Online	Fri Jan 29	10 - 11:20am	EC	Chadwell
	Thu Feb 4	1 - 2:20pm	EC	Klos
	Tue Feb 9	3 - 4:20pm	EC	Esau
Net a Job: Use the Web (Call the Career Center at **346-3235** to register for this workshop)				
	Tue Feb 2	3 - 4:20pm	EC	Songer
	Wed Mar 3	3 - 4:20pm	EC	Songer
PsycINFO	Mon Jan 25	7 - 7:50pm	EC	Benedicto
	Tue Feb 9	7 - 7:50pm	EC	Benedicto
	Thu Feb 25	7 - 7:50pm	EC	Benedicto
Publishing on the Web				
Introduction to Web Publishing (*http://libweb.uoregon.edu/govdocs/webpub/*) - ✔ **Prerequisites** ☆				
	Mon Jan 25	10 -11:50am	EC	Bell
	Thu Feb 11	1 - 2:50pm	EC	TD Smith, Sotak
Intermediate Workshops in Web Publishing				
1: More HTML (*http://darkwing.uoregon.edu/~jqj/inter-pub/morehtml/*)				
	Wed Jan 27	2 - 3:50pm	RSR	Johnson
2: Images on Web Pages (*http://darkwing.uoregon.edu/~jqj/inter-pub/images/*)				
	Wed Feb 3	2 - 3:50pm	RSR	Holman
3: Imagemaps & Access Counters (*http://darkwing.uoregon.edu/~jqj/inter-pub/maps/*)				
	Wed Feb 10	2 - 3:50pm	RSR	Holman
4: Designing for the Web (*http://darkwing.uoregon.edu/~cbell/design/*)				
	Wed Feb 17	2 - 3:50pm	RSR	Bell
5: HTML Tools and Tricks (*http://darkwing.uoregon.edu/~jqj/inter-pub/debugging/*)				
	Wed Feb 24	2 - 3:50pm	RSR	Johnson
6: Organizing Your Web Site (*http://libweb.uoregon.edu/govdocs/webpub/orgindex.html*)				
	Wed Mar 3	2 - 3:50pm	RSR	TD Smith
Miscellaneous Workshops in Web Publishing				
Designing Web Access for Users w/Disabilities	Mon Mar 1	3 - 4:50pm	EC	Bailey

Workshops Available on Video

Looking for an alternative to the workshop format? The Computing Center Documents Room and Media Services in Knight Library have a growing collection of videos on using computers and computer software. You can use your UO picture ID to check out these videos, or schedule a viewing room in Media Services. For a list of available titles and descriptions, visit *http://micro.uoregon.edu/workshops/*   Call **346-4406** or **346-3091** for more information.

* WORKSHOP LOCATION CODES *

EC: Electronic Classroom (*Windows*)   144 Knight Library
RSR: Reed Seminar Room (*Windows*)   235 Knight Library
☆ **Requires an active account on** DARKWING **or** GLADSTONE

Tips for More Effective Web Searches

■ **How to find what you're looking for quicker and more efficiently**

By Lucy Lynch
llynch@darkwing.uoregon.edu

As the amount of material stored on web servers grows, the ability to perform efficient and timely searches becomes increasingly important. Most users are already familiar with the major web search engines like *Alta Vista*, *Excite*, and *HotBot* and general indexes like *Yahoo*. Some have even learned to use the arcane boolean syntax that most search engines employ. But few people have explored some of the more specialized features of standard services like *Alta Vista* or the more exotic "niche" services.

Almost every service recognizes basic boolean search criteria like AND, OR, and NOT and many allow the use of " " (for a specific phrase), **+** (must include), and **-** (exclude). Each service has its own special features, so be sure to read the online help or explore the advanced search options.

Alta Vista users (**http://www.altavista.com**) can significantly improve the quality of their web queries by spending a little time reading through the online help (**http://www.altavista.com/av/content/help.htm**) and by learning to use special keywords to limit searches by host, URL, or even content type (applets, images, etc.). For explicit examples of limited searches, see the table on the facing page.

Even when using a highly refined query, the major search engines will often return far more information than the average user is willing to sort through. This is when you may want to turn to the niche market services.

How to Find a Special Search Service: If you're looking for niche market service, a good starting point might be the All-in-One Search Page (**http://www.albany.net/allinone/**), which provides a sort of index of indexes.

You'll also want to try Martindale's "The Reference Desk" (**http://www-sci.lib.uci.edu/~martindale/Ref.html**), which includes links to special tools like calculators and dictionaries.

A few examples of niche services:

• **FindLaw**
  http://www.findlaw.com/
This site combines both a topical index and a range of targeted search services which allow the user to narrow a search to legal sites, mailing lists, or government documents.

• **Northern Light**
  http://www.northernlight.com/
This service is a hybrid, combining a classic web search with a for-pay search of over 4500 periodicals. One of the more interesting features is the use of 'custom folders,' which presort all of the links found into rough categories.

• **Fast FTP Search**
  http://ftpsearch.lycos.com/
One of the under-utilized capabilities of the web is the ability to transfer program files from remote locations. This service helps you locate files and provides the links to download files to your desktop.

• **The Awesome Library**
  http://www.awesomelibrary.org/
This site is a particularly good example of a growing trend: search engines that have been configured for use by children. Most searches will return a short list of links, but you can be confident that the content will be "kid-safe." The site also includes an index of other kid-safe search engines:
http://www.awesomelibrary.org/searchek.html

• **Deja News**
  http://www.dejanews.com/
If you've ever needed to use USENET news for a quick answer to a subject-specific question, you'll love Deja News. A simple query here will search through several years' worth of messages and you may find that someone else has already asked your question.

• **Google**
  http://www.google.com/
This service, originally developed at Stanford, tries to take the work out of formatting queries by making some assumptions about your key words. Google will give preference to a series of words found as a phrase, and assumes that every word is required. Note that Google orders hits hierarchically by the number of sites that link to each hit.

• **The MetaCrawler**
  http://www.metacrawler.com/
One of several meta search services, all of which query several popular services on your behalf and return a list extracted from the top 10 links from each service. This one is quick and dirty—you'll get a short list of good matches, but you'll miss the depth of material available.

Solve Complex Computations with UO's Beowulf Cluster

By Hans Kuhn
hak@oregon.uoregon.edu

If you have a large, complex computational problem to solve, you might be interested in the University of Oregon's Beowulf cluster.

This parallel virtual supercomputer uses the network protocol PVM to pass instructions to a group of slave PCs. Currently, the Beowulf cluster has 18 Pentium Pro PCs, making it more powerful than DARKWING, GLADSTONE, and OREGON combined.

The main difficulty in using a parallel supercomputer is the need to port source code to solve computations in parallel. Fortunately, advances in software (such as Paralogic's Bert77 package) make this process much easier.

To learn more about the UO's Beowulf computer, contact Hans Kuhn (*hak@oregon.uoregon.edu*) or visit
http://limestone.uoregon.edu/beowulf/

Examples of Limited Searches in AltaVista

Keyword	Function
anchor:text	Finds pages that contain the specified word or phrase in the text of a hyperlink. **anchor:"Click here to visit AltaVista"** would find pages with "Click here to visit AltaVista" as a link.
domain:domainname	Finds pages within the specified domain. Use **domain:de** to find pages from Germany, or use **domain:org** to find pages from organizations.
host:name	Finds pages on a specific computer. The search **host:altavista.digital.com** would find pages on the AltaVista computer, and **host:dilbert.unitedmedia.com** would find pages on the computer called **dilbert** at unitedmedia.com.
image:filename	Finds pages with images having a specific filename. Use **image:elvis** to find pages with images called **elvis**.
link:URLtext	Finds pages with a link to a page with the specified URL text. Use **link:altavista.digital.com** to find all pages linking to AltaVista.
text:text	Finds pages that contain the specified text in any part of the page other than an image tag, link, or URL. The search **text:cow9** would find all pages with the term **cow9** in them.
title:text	Finds pages that contain the specified word or phrase in the page title (which appears in the title bar of most browsers). The search **title:Elvis** would find pages with **Elvis** in the title.
url:text	Finds pages with a specific word or phrase in the URL. Use **url:altavista** to find all pages on all servers that have the word **altavista** in the host name, path, or filename—the complete URL, in other words.

What's *ccMail*'s Life Expectancy?

By Don Gathers
dgathers@network-services.uoregon.edu

Recently, many campus administrators have been asking how much longer the *ccMail* system will continue to run. The plan is as follows: As of **July 1**, **1999**, the *ccMail* routers will be shut down permanently. By that time, all UO departments should have a new system in place for sending and receiving electronic mail.

No mail will be delivered to the individual post offices starting July 1. The main post office running on Zeus and the *ccMail* gateway will continue to run until they die a slow death on January 1, 2000.

This means that for the period from July 1 to December 31, 1999, the *ccMail* system will not be operational but will continue to forward mail for those users who have had an alias created on the hub post office.

After December 31, 1999, mail sent to *users@ccmail.uoregon.edu* **will bounce**. Many departments have already finished their email migration and others are near completion. This announcement should give those of you who are still working on a solution a timeline so that you can better plan and implement a migration strategy.

If you have questions regarding the final days of *ccMail,* contact network engineer Don Gathers (**346-4316**; *dgathers@network-services.uoregon.edu*)

Financial Research Data Service Available

The Lundquist College of Business recently purchased access to the Wharton Research Data Service, which supplies access to such vital tools for financial and economic research as the *Compustat* and *CRSP* datasets.

UO faculty, Ph.D. candidates, and instructors can request access to the WRDS system for research and/or student use via a web page at **http://wrdsx.wharton.upenn.edu/**

If you have problems accessing WRDS, send email to Mick Westrick: *westrick@oregon.uoregon.edu*

Address questions about database content to John Chalmers: *jchalmer@oregon.uoregon.edu*

Looking for a Great Stand-Try Macromedia's

By Hervey Allen
Microcomputer Support Specialist, Computing Center
hervey@oregon.uoregon.edu

After having tested and used several of the current popular WYSIWYG (What You See Is What You Get) HTML editors, Microcomputer Services' staff chose Macromedia's *Dreamweaver* to create its web site at **micro.uoregon.edu**.

Here are some of the questions we asked ourselves when evaluating a WYSIWYG HTML editor:

• is it available on both the Mac and PC?

• is it stable on both platforms?

• does it have robust upload and download features?

• can it display web pages and all images in WYSIWYG format without extra effort?

• does it leave previously created HTML alone?

Of all the products described in this article, *Dreamweaver* emerged the clear winner when measured against these criteria.

Below we review a few of the relative merits and peculiarities of *Dreamweaver* and some of the more popular products available today— *GoLive Cyberstudio 3.1, NetObjects Fusion 3.0, FrontPage Express, Claris Home Page 3.0,* and *Netscape Composer*. Keep in mind that all these products undergo constant revision, so by the time you read this, newer versions may already be available

Macromedia Dreamweaver 2.0

Availability. *Dreamweaver 2.0* is available for both the Mac and PC. Only *Netscape* and *NetObjects Fusion* can say the same of equivalent versions of their products.

If you'd like to try *Dreamweaver,* a demo of version 1.2 is available on the 1998 Duckware CD-ROM.

Stability. *Dreamweaver* is more stable than *GoLive CyberStudio* on the Mac.

(*Dreamweaver 1.2* doesn't crash on the PC, but it definitely had a memory leak. We have not determined if this has been resolved in version 2.0.) The program slowed down with very large documents. Still, for almost all our documents this is not a problem.

FTP. The *FTP* client included with *Dreamweaver* is great. The one included on the Mac version is the only FTP client we've seen that can download large directory structures from UNIX machines to the Mac. *Anarchie* (older versions) and *Fetch* (all versions) often fail if you attempt to download many directories and hundreds of files, which is what we needed to do with the **micro.uoregon.edu** site. *Dreamweaver* handles this with no problems.

Another nice feature of *Dreamweaver*'s *FTP* client is its interface. To upload or download a file, you simply drag your file(s)—or an entire directory structure—between two windows. (A quick aside: *Dreamweaver*, including version 2, will not connect with VMS machines (e.g., OREGON and DONALD) as it doesn't support *FTP* service with the VMS operating system.)

Display. We particularly wanted an editor that would let us replicate the directory structure on the web server on our local hard drives, tell the editor the location of the "root" directory of our site, and then display files and all associated graphics without any complicated code changes. *Dreamweaver* does this by default and it does it very well. This makes *Dreamweaver* incredibly useful if you already have a web site that you want to update quickly.

Dreamweaver does "fix" your code if it finds errors, but it appears to do a very good job of this. *Dreamweaver* will only adjust improperly nested, closed, or extra tags, and you have the option of displaying each change it's going to make. You also have the option of turning off code "fixing," if you prefer.

While all HTML editors generate erroneous code from time to time, the

code generated by *Dreamweaver* is quite clean and only rarely includes errors. If it does have errors, they're not common code sequences and you can readily correct them via quick access to the HTML code.

Some *Dreamweaver* Hints

Dreamweaver will close all "<P>" (paragraph) HTML statements with a "</P>" (end paragraph) statement. While this is structurally correct, it can be annoying because you'll always have an extra line at the end of each paragraph and at the bottom of your files. (However, most other WYSIWYG HTML editors do the same thing.) You can adjust this by editing the code directly.

Line endings on DARKWING and GLADSTONE. If you're using *Dreamweaver* with DARKWING or GLADSTONE, note that these machines run UNIX for their operating system. By default, *Dreamweaver 1.2* will upload your HTML files using either Mac or PC end-of-line conventions. While your pages will still load correctly, the actual HTML code does not have the correct line endings if you look at your files on DARKWING or GLADSTONE.

To get around this, tell *Dreamweaver* to always use the UNIX "end-of-line" format. Open *Dreamweaver'*s Edit menu, choose Preferences, and then select Source Format. In the pop-up menu, set the "end-of-line" option to "UNIX (LF)." Do this before you upload any files to a UNIX-based Web server.

GoLive CyberStudio 3.1

This product ran a close second to *Dreamweaver,* but it had a few limitations that kept us from using it:

• **It's only available for the Mac.** For our group this was a critical shortcoming. But if you use a Mac, this may be an excellent choice for you.

If you'd like to try out the product, a 20-day demo is available on the 1998 CD-ROM.

alone HTML Editor?
Dreamweaver

• **The included FTP client is good, but not as stable as** *Dreamweaver's*

• **It adjusts your HTML code a little too much for our taste**. While this doesn't cause too many problems, if you've already written a web page, *GoLive* will update your code as it sees fit. This includes indenting text, adding META tags, and making "corrections" to some code.

• **The interface to this product was somewhat confusing.** It's not easy to set up a mirror of a web site on your hard drive and then open a page and see that page, including all downloaded, associated images. (This is what *Dreamweaver* excels at.)

• *GoLive* **crashed more often than** *Dreamweaver*, our number one choice.

NetObjects Fusion 3.0

NetObjects is a product aimed at the business user who wants to create a web site from the ground up. If you've already created a web site, we don't recommend using this product.

(Note that *NetObjects* version 3.0 is available for both Mac and *Windows*.)

Some of the specifics that kept us from using this product included:

• **If you download your preexisting site for use with** *NetObjects*, **the entire site is saved in a proprietary database format that you can't edit directly.**

• **When we downloaded our preexisting** *micro.uoregon.edu* **site and opened it using** *NetObjects Fusion* **we saw extensive changes to our code.** Still, if you're starting from scratch and want a site created "out of the box," this product may work well for you.

• **Some users have complained that sites created with** *NetObjects Fusion* **have a certain "look" to them that's particular to the product.** While this look is quite profes-

sional, it may not be as original as you'd like. This can, of course, be changed by adding your own images, icons, and layouts.

FrontPage Express

Actually, *FrontPage* comes in three flavors: *FrontPage 98*, *FrontPage 1.0* for the Macintosh (both commercial products), and *FrontPage Express*, which is included free with *Internet Explorer* version 4 for *Windows 95 / 98* and *Windows NT 4.0*. (Note that *FrontPage Express* is not available for the Mac, *Windows 3.1*, or *Windows NT 3.51*.) *FrontPage 2000* is currently in development.

This product has some excellent features—not the least of which is that it's free—but it also has some serious flaws. One thing to watch out for: if you use the product to update a web site from two places (say, work and home) you can lose data if you allow *FrontPage* to "update site" instead of updating the individual file you're working on. For example, suppose you updated one file at work and later updated a different version of the same file at home. If you then opted to have *FrontPage* update your entire web site, the editor would replace your updated file from work with an older version of the file at home.

Confusing? Yes, and that's why this should never be a default feature in a product like *FrontPage*. Unfortunately, Microcomputer Services has seen a number of Microsoft Products that have excellent feature sets but include default settings that cause no end of problems for the user. This is true of the Microsoft *Outlook Express* products as well. We sincerely hope that Microsoft will listen to user feedback and update these products accordingly.

If you use *FrontPage* at the UO you'll need to upload and download files using the *FTP* protocol. If you use DARKWING or GLADSTONE, *FrontPage* should correctly detect this when you start to upload your first file. By default, Microsoft wants system admin-

istrators to run *FrontPage* extensions on their operating systems (i.e., additions to large systems like DARKWING and GLADSTONE) to allow the *FrontPage* product to work to its full ability. Unfortunately, Microsoft doesn't publish the source code for these extensions. This means that if they cause problems or compromise security there's no way for a system administrator to update them.

In addition to these issues, there were a few more that kept us from choosing *FrontPage* for the **micro.uoregon.edu** web site. Still, if you use the product and are aware of its limitations, it can work well for you.

To summarize, we didn't choose *FrontPage* for the following reasons:

• **Default settings can cause possible data loss.** With a large site like **micro.uoregon.edu** this was not acceptable.

• **The product is not uniformly available on both the Mac and PC** (i.e., versions differ).

• *FrontPage* **edits your code in ways we did not like.**

• **To utilize the full features of** *FrontPage* **you must run proprietary Microsoft** *FrontPage* **extensions on your web server.** For large systems like GLADSTONE and DARKWING this is not an option, as Microsoft doesn't make the source code available for these extensions. (To give you an example of why this is so important: GLADSTONE has over **15,000** user accounts. If a single product, such as *FrontPage*, were to bring down a machine serving this large a community, it could create havoc.)

Claris Home Page 3.0

There is a group of HTML WYSIWYG editors that are less expensive and include free-trial versions that you can use. One of the most popular of these is *Claris Home Page 3.0*, which is available for both the Mac and PC. (You can get *Claris Home Page* from the 1998 Duckware CD-ROM.)

HTML Editors, continued…

This product can work if you're a beginning web publisher and you haven't already created web pages. In fact, this product is probably the most intuitive and easiest to use of all those cited here. This is directly attributable to the fact that *Claris Home Page 3.0* has less features than the other products, making it less confusing to use.

One caveat: if you've already created a page and are planning to open it using *Home Page,* be **absolutely certain** that you have a backup copy of your file. In some cases we have seen *Claris Home Page* actually remove large sections of HTML code from previously created files. This is equivalent to losing a big chunk of your work if you save the changed file.

Remember, for new web publishers, this product can work well. For advanced users or for those who already have a site, like **micro.uoregon.edu**, it's not recommended for the following reasons:

• **Pages that include nested tables don't open correctly.** In numerous cases, *Claris Home Page* removed much of the file's original HTML code.

• *Claris Home Page* will "update" your code while you open a file. Often the code it generates is usable but *very* messy.

• Some web browsers had problems reading *Claris*-generated code (especially nested or precisely formatted tables).

• *Home Page* lacked features that we found useful.

Netscape Composer

This is the web editor included with *Netscape Communicator*. We tested the version of *Composer* included with *Netscape Communicator 4.06*. *Communicator 4.5* is currently available for Power Macintosh, *Windows 95/98*, and *Windows NT 4.0*. Version 4.07 of *Communicator* is available for 68K Macintosh and *Windows 3.1* users.

Overall, *Netscape Composer* works reasonably well for basic web pages. The code it generates has improved greatly and is generally acceptable. But for advanced web publishing or editing existing web pages, we don't recommend this product.

One of the major problems we encountered with *Composer* is publishing pages on the web. Once you've finished creating your page you must publish it on the server where it will reside. Most products will allow you do this using either *FTP* or *HTTP Push* (the latter is not supported at the UO for security reasons).

While *Composer* allows this, its interface is very counter-intuitive. In fact, version 4.0*x* required that you enter the absolute directory path to your files on DARKWING or GLADSTONE to publish a page. In nontechnical terms, this meant that you had to log in on DARKWING or GLADSTONE, type the command "pwd" to see where your files resided on these machines, and then type this *exact* directory path in *Composer*'s "Publish" dialogue to upload your files.

Because user accounts move to different locations from time to time, *Composer*'s publishing requirement could paralyze your uploads until you logged back in, used "pwd" again, and updated your directory path in *Composer*. These are all details that should be hidden from the end user—and can be if the product works correctly.

In short, *Composer* works well for basic files, but isn't sufficiently robust to use with larger web sites. *Composer* also makes it very difficult to publish your web pages once they're completed.

Conclusion

As noted, most of the WYSIWYG HTML products listed here may work well for your particular situation. Still, after having used and tested these products, we prefer *Dreamweaver* over the others for its rich feature set, ease of use, and good behavior when opening previously created files and publishing HTML files.

For the beginner, *Dreamweaver* may seem a bit confusing at first. Still, once the basic concepts are understood this product is very powerful and can increase productivity dramatically. We have found that we can implement new web pages much faster than we did previously when we used products such as straight *FTP*, *BBEdit* on the Mac (still this author's favorite text editor), *emacs* with UNIX, etc.

Dreamweaver's newest version, 2.0, has a considerable list of improvements, including some new site management features that appear very promising.

To learn more, see
http://www.macromedia.com/software/ dreamweaver/productinfo/newfeatures/

IP/TV Broadcast Opportunity for UO Faculty

Do you have video content you'd like to share with the campus community?

Perhaps you have student-produced videos, tape from an overseas sabbatical, or videotaped lectures you'd like to be able to rebroadcast for class members to watch.

If so, the Computing Center would be glad to broadcast those videos for you on UOnet via IP/TV. Just leave your VHS cassette with Vickie Nelson in the Computing Center Documents Room (Room 205), and we'll do the rest.

(Note that we cannot rebroadcast copywritten tapes without written permission from the copyright holder, and we reserve the right to schedule, limit, or decline any submission.)

Web Proxy Server Update

- **A new disk gives yet another performance boost to the campus web proxy server**

By Joel Jaeggli
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With the arrival of a new disk that brings the proxy cache up to 6GB, the UO campus web proxy server, **proxy.uoregon.edu**, is better able than ever to serve an increased number of users.

Proxy servers speed up access to web-based resources by locally storing copies of frequently-accessed web sites. After a web page is first viewed, users don't have to wait for it to load from a very remote or slow web server. Instead, the web page is served from the local proxy cache to all users who request that page, resulting in much faster page views.

For more information on proxy server enhancements, see

http://proxy.uoregon.edu

SP4 Released for *Windows NT 4.0*

Microsoft has released *Service Pack 4* (*SP4*) for *Windows NT 4.0*, incorporating all post-*SP3* hotfixes plus patches for numerous bugs, including fixes for a number of security vulnerabilities.

You can obtain and install *SP4* from **http://www.microsoft.com/support/winnt/default.htm** As always, before installing the new service pack, be sure you have a clean backup in case you run into unexpected difficulties.

Note also that an excellent summary of post-*SP4* hotfixes is available at **http://www.conitech.com/windows/nt4sp4.html**

Required by Law...

By Matthew Latterell
*Assistant Dean,
Educational and
Information Technology
UO School of Law*

■ **...a new column designed to share the lessons learned from the UO School of Law computer requirement and the use of technology in enhancing an academic curriculum**

Law students are trained to argue, debate and question assumptions. Since its inception, the notebook computer requirement at the School of Law has generated an often very heated conversation among our students. If there were suddenly no injustice in the world against which to fight, Law students would still be able to complain about their computers.

And not without good reason. Strongly encouraging incoming students to purchase a notebook computer package with the promise that a notebook computer is vital to a legal education at the UO is one thing— living up to that promise is another.

The UO School of Law aspires to provide students with both a technological education as well as an education enhanced through the use of technology. The former includes providing training on current tools and technologies, such as learning good word processing, database, web browsing and email skills. This requires a commitment of staff, equipment, repair services, and facilities.

Students at the Law School are already incredibly active computer users. Email is a primary means of communication, computers are used regularly in class to take notes (and, recently, to take exams), and online legal resources are used daily for academic and post-graduate

research. Our students have a wealth of technological skills.

The real challenge we now face at the School of Law is how to use current and emerging technologies to enhance the legal education of our students. We also need to identify the obstacles we must overcome before we can offer a substantive technology-rich education.

Faculty and staff need access to technology and need to be trained to apply that technology to their courses. Classrooms need adequate infrastructure, including power, networking, and multimedia equipment. And computer support staff need to be available to make it all work.

Ultimately, it must be the faculty and staff who drive the computer requirement for the School of Law. Encouraging students to purchase notebook computers is just one aspect of the computer requirement. An even more important aspect is encouraging faculty to enrich their teaching with technology.

What does this mean? The answer depends upon the faculty member, the material, and the students. Active discussions over email, extensive web sites filled with lecture materials, supplemental information, online exercises and assignments, the use of *PowerPoint* and other presentation software to deliver class materials, and collaboration with other faculty using web-based tools are just a few possibilities.

Our next task is to build on the efforts of the faculty and staff currently utilizing technology as a learning tool and develop a technologically enhanced academic curriculum for the entire school. This is the challenge of the School of Law computer requirement: to go beyond the basics of using technology as simply an alternative to notepad and pen and foster an environment where innovation in teaching and learning is a reality.

Editor's Note: Formerly a consultant with the Computing Center's Microcomputer Services, Matthew Latterell joined the staff of the Law School last fall.

Campus Departments May Benefit from Web Virtual Host

By Joel Jaeggli
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Many campus departments have web pages stored on DARKWING. It's now possible to add a virtual web host pointing at those pages, a tactic which can make site addresses easier to remember.

For example, if the URL for your department's web page is currently something like

http://darkwing.uoregon.edu/~german

you can request that Computing Center Systems staff create a virtual host for this page with a less cumbersome address, such as **http://german.uoregon.edu**

Who May Create a Virtual Host?

Keep in mind that this service is available *only* to colleges and departments and campus institutes and centers, *not* to individuals. The virtual host would be pointed at your current document root (i.e., the **public_html** directory in the home directory of your organization account).

Virtual host names may not already be otherwise registered, and they must be descriptive. Quota restrictions still apply.

Note: Web virtual hosts are not available on GLADSTONE at this time, and virtual hosts may only be used for World Wide Web URLs, *not* for email addresses or other purposes.
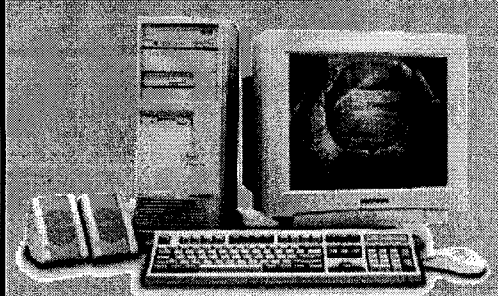
Need More Information?

For more information on creating a virtual host for a DARKWING account, email *consult@darkwing.uoregon.edu*

System Administrators: What to Do

■ **In recent months, UNIX system administrators at the university have seen an upsurge in hacker/crackers targeting UO systems for break-ins and abuse. If a system you manage gets violated, here are some basic steps you'll want to take:**

I. Report the Incident

The first thing to do is report the violation. There are several organizations you may need to contact, such as

• Network Services (Computing Center)

• law enforcement authorities

• Computer Emergency Response Team (CERT)

• other system administrators and users who may have been affected

Suggestions for action and referrals to other information sources are given below.

1. Network Services

Assuming the computer crime occurred on a system connected to UOnet, report the incident to Network Services at **abuse@uoregon.edu** or call **346-4395**. *Be careful NOT to send mail to the usual Network Services address* (nethelp@ns.uoregon.edu), as that alias is widely distributed and is also the gateway to USENET News. This means hackers may routinely monitor that traffic.

Do *not* report the incident using email from the system you believe was compromised, since email on that system may be monitored or interfered with by the intruder. If you forward mail to the compromised system from another system (such as DARKWING), you should also turn off forwarding until the compromised system has been fixed.

2. Law Enforcement

Computer crimes, like any other crime, should be reported to appropriate law enforcement authorities. However, you should be aware that once you do, you will become a *de facto* agent of law enforcement and will be less free to gather information from users' accounts because of legal privacy issues. It's best to gather as much evidence as possible *before* contacting law enforcement agencies.

That said, the primary reason for contacting law enforcement early on is to determine what, if any, evidence they'd like to collect from your system, and whether they'd be interested in using your system in an effort to catch an intruder in the act.

Federal authorities: If the crime was perpetrated from a system outside Oregon, federal authorities will have jurisdiction over the incident, given the definition of "Federal interest computers" appearing at 18 USC 1030 (e) (2). See **http://www.law.cornell.edu/uscode/18/1030.shtml** as well as other applicable statutes.

Practically speaking, it is unlikely Federal law enforcement officials will be interested in minor security incidents, but all major computing incidents (especially all incidents involving a Federal interest computer and significant out-of-pocket financial losses) should be reported.

Local authorities: If a computer incident is not of interest to federal law enforcement authorities, it's possible that the Oregon State Police, the Eugene Police Department, or UO Campus Security may want to pursue the matter.

3. CERT

All computer crimes meeting at least the minimum definition of computer incidents should also be reported to CERT, the Computer Emergency Response Team. For more information on reporting to CERT, see **http://www.cert.org/tech_tips/incident_reporting.html**

4. Others Who May be Affected

The final reporting step is to contact other systems administrators and users who may be affected by the host compromise.

For example, if you discover logs from network-monitoring software that include usernames and passwords for other hosts, the administrators of those hosts need to be notified. Likewise, if your logs include an indication of where an attack originated, you'll need to contact the administrators of that host, as they may also have a security breach.

Preserve the Evidence
If authorities do want to gather evidence from your system, be prepared for any one of the following scenarios:

• they may ask you to remove one or more system disks for further investigation or for use as evidence (which means you'll need to replace them with new units)

• they may ask you to do a complete backup of the system to tape

• they may ask you to save/print copies of relevant log files

II. Take Steps to Recover

After you've reported the break-in to the proper authorities, take the following steps to recover:

1. Remove the system from the network. If law enforcement is not interested in using your system in an effort to catch an intruder in the act, the next step is to remove the compromised system from the network so it cannot be used as a base from which to attack other systems.

2. Do a full backup for your own use. With the system removed from the network, do a full backup to local media for your own use.

3. Reinstall the operating system from original media. You should install the latest stable release of your operating system from original media, i.e., from original CD-ROM. Until you do this, you cannot be sure that the operating

if Your System is Hacked/Cracked

system running on the compromised system hasn't been modified to defeat system security features or to provide the hackers/crackers with a "back door" to that host.

4. Apply all recommended operating system patches. You should also apply all vendor-recommended operating system patches applicable to the release you've just reinstalled. If you fail to do this, the intruder may be able to exploit a known vulnerability to recrack your system as soon as it comes back up on the network.

5. Change the passwords on all accounts. You need to assume that all accounts on your system have also been compromised, and you must assign and securely distribute new passwords for all those accounts. Yes, this is a pain. Yes, users will be unhappy, at least until you explain why it is necessary. Be sure to check that no "extra"/unauthorized accounts have been created, and that all accounts which may be created by default during the installation process are secured by passwords or removed if unneeded.

6. Check for setuid files or other configuration problems. You should also use the *Cops* program to check for setuid files (files installed so that they can be run with special permissions/special access) and other system configuration vulnerabilities. *Cops* is available from
ftp://ftp.cert.org/pub/tools/cops/

The presence of executable files in unexpected places should also be investigated and resolved.

III. Harden the System

Next, you'll need to take some steps to "harden the system" against further break-ins:

1. Disable all unneeded services. Disable all unneeded Internet services running on your system. For example, if you aren't using NFS to share files, don't run NFS by default. If

you aren't actively using/encouraging the use of *finger*, don't enable it by default (and give strong consideration to disabling *Telnet* in favor of *ssh* if possible…see below.)

2. Install TCP Wrappers. Installation of TCP Wrappers will improve logging and your ability to block attempts to hack/crack your system. TCP Wrappers are available from
ftp://ftp.cert.org/pub/tools/tcp_wrappers/

3. Install *sshd* and disable *telnetd*, *pop*, and *ftpd*. Because transmission of unencrypted passwords over the network is such a significant vulnerability, give strong consideration to installing *sshd* and disabling *telnetd* and *ftpd* so passwords won't be transmitted in plain text when you log in or transfer files. *sshd* is available from **http://www.ssh.org/**

A free *ssh* client for PCs running *Windows 95/NT* is included on this year's Duckware CD-ROM; pointers to commercial *ssh* clients for the PC and the Mac are available from the **ssh.org** site mentioned above.

4. Install *tripwire* so that you will know if crucial files have been changed. Installation of *tripwire* will let you know if crucial system files have been modified without authorization. *Tripwire* is available from
ftp://ftp.cert.org/pub/tools/tripwire/

5. Install anti-relay/anti-spam sendmail rulesets. To prevent your system from being abused by spammers, modify your sendmail installation to use anti-relay and anti-spam sendmail rulesets. See:
http://www.sendmail.org/tips/relaying html http://maps.vix.com/

6. Reinstall all application software from original media. Just as your operating system was rendered untrustworthy when your system was compromised, all of your applications also immediately became suspect. You need to reinstall them from scratch unless you are able to verify their integrity (à la *tripwire* checksums).

7. Request installation of a switched network port. Multiuser systems and network servers should also be run from a switched network port, rather than from a normal shared network port, to further reduce or eliminate packet sniffing opportunities. In many buildings, switched 100 Mbps (fast ethernet) service is available from Network Services for a one-time charge of $250/port. This is a particularly good idea in labs, where public access (including the ability to potentially install a sniffer on a lab machine) is a given.

IV. Increase Your Awareness

Finally, take preventative measures to assure you'll be less vulnerable in future:

1. CERT Mailing List
If you are responsible for the administration of a system, subscribe to the CERT Advisory Mailing List. See
http://www.cert.org/contact_cert/certmaillist.html

2. Bugtraq
Another excellent mailing list for system administrators is Bugtraq. See
http://www.cert.org/other_sources/usenet.html

3. Vendor Mailing Lists/Security Web Sites. You should also investigate whether your operating system vendor offers a security mailing list or has a security web site, or if there is a USENET News group discussing security or system administration issues for your operating system.

4. Watch your system's logs and load. The final and most important step is to check your system's logs *regularly* and monitor its load. (Automating system log checks via a semi-intelligent log parser would increase chances of detecting unauthorized activities on the system.)

Know what's normal for your system and investigate unusual behavior, particularly unusual behavior occurring at odd times or from odd places. Be proactive if you notice any unexpected jobs running.

UO Connects to Internet 2

By Joe St Sauver

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The University of Oregon is in the process of connecting to Abilene / Internet 2 via two new packet over SONET (POS) OC3c (155 Mbps) circuits, one going to Sacramento, California, and the other to Denver, Colorado.

These new high-performance connections were made possible by a $350,000 National Science Foundation award made this October to Provost John Mosely, Computing Center Director Joanne Hugi, Professor Greg Bothun of Physics, and Dave Meyer of the Computing Center's Advanced Network Technology Center, along with generous financial support from the Oregon University System and networking equipment vendor Cisco Systems, Inc.

The two new circuits , each running at a hundred times the speed of an ISP's typical T1 connection (1.55 Mbps), will enable UO scientists to collaborate with colleagues across the country on heretofore-impossible high-performance computing projects, while also enabling general university-wide access to Internet 2 (I2), the new high speed / restricted-access research and education network backbone.

High-Performance Computing Projects

Some of the specific high-performance computing projects enabled by I2 connections will include:

• Experimental high-energy physics focusing on the electroweak interaction and the weak decays of heavy quarks and experiments aimed at fully understanding the Z0 particle in conjunction with collaborators at SLAC, Yale, MIT, Washington, Columbia, Fermilab, Rutherford Lab, CERN and others

• Gravitational radiation / laser interferometer gravitational wave observatory (LIGO) in conjunction with the California Institute of Technology, MIT, Florida, Stanford and others.

• The formation and evolution of low surface brightness galaxies in

Even if you aren't doing cutting-edge scientific or computational research, the new connections will still be important to you

collaboration with Arizona, Washington, Groningen, and Cardiff

• Remote scientific instrument operation, including remote observation at the Pine Mountain Observatory

• Tomographic imaging for ridge research and analysis with the Pacific Northwest Geodetic Array and Woods Hole

• Numerical modeling for geological and environmental sciences in collaboration with UC Berkeley

• Crystallization, vesiculation and eruption of magmas

• Parallel computing tool development, parallel performance environments, and parallel performance evaluation and modeling (Para Ducks)

• Electronic courseware development and *Java*-based experiments

• Scalable multicast routing, including work on GUM (Grand Unified Multicast)

• IPv6 multicast routing, including implementation and deployment of PIM-DM for IPv6 with prune refresh

• Scalable differentiated service, including work on RSVP, wRED and ATM QoS

• Quality of service dynamic validation qualifiers (The DARPA-funded Quorum ASSERT project)

What Internet 2 Means for the Campus as a Whole

Even if you aren't doing cutting-edge scientific or computational research,

the new connections will still be important to you. Over 135 schools are currently I2 participants, including virtually all major Carnegie Research I institutions. As soon as I2 connectivity is established at each of these sites, traffic between any of those sites and the UO will take place via I2's fast and uncongested connections. (A list of I2 institutions, by region, is shown at the bottom of page 19):

How Can You Take Advantage of Internet 2?

Routing of traffic between the UO and other I2 sites will automatically occur as I2 sites come up; you do *not* need to explicitly request that your traffic be routed via I2—it will automatically happen wherever feasible. On the other hand, if you want your application to take full advantage of the fast connections between I2 sites, there are some things you may want to consider:

• **Contact Your Colleagues at Other I2 Schools:** To take advantage of I2's capabilities, you'll naturally need to be working with peers at other I2-connected schools. If you're not talking with them and working to identify projects where high bandwidth connections can be exploited, you'll only see incidental benefit from the University's I2 connections.

• **Learn About Optimizing Your Operating System:** The default configuration of your operating system will typically not be tailored to take full advantage of high-performance networks such as I2. To obtain sustained high throughput, you may need to tweak various OS kernel parameters. An excellent starting point for understanding this process is the document "Enabling High Performance Data Transfers" (**http://www.psc.edu/networking/perf_tune.html**)

• **Buy a switched hundred megabit connection to UOnet:** If you're planning to use I2 extensively, it may be worthwhile to consider paying for switched hundred megabit service for the UO system(s) you'll be using. To understand why, consider that most campus connections are conventional ten megabit shared ethernet connec-

High-Performance Network

tions, which will limit your throughput (even under the best of possible circumstances) to no more than a 6 or 7 Mbps. A switched hundred connection, on the other hand, will let you use more than 10 Mbps (though network traffic characteristics will probably not result in throughput at the full nominal capacity of that circuit to remote destinations). Fast ethernet connections can be ordered from Network Services, where available, for a one-time charge of $250/each.

• **Review Hardware Bottlenecks:** In many cases, the biggest inhibitor of high-performance networking may be your disk I/O subsystem. If you plan to sustain high throughput transfers, multiple drives acting as a striped RAID-0 array (preferably serviced by a hardware RAID controller or multiple wide or ultrawide SCSI controllers) will probably be required. On most UNIX operating systems, iostat and sar will help you begin to identify I/O hardware bottlenecks.

• **Learn More About High-Performance Networking:** Some excellent information is available on the following web pages:

Internet 2: **http://www.internet2.edu**
Abilene: **http://www.ucaid.edu/abilene/**
The vBNS: **http://www.vbns.net/**
NLANR: **http://www.nlanr.net/**
STAR TAP: **http://www.startap.net/**
CANARIE: **http://www.canarie.ca/frames/ startnetworks_e.html**

Internet 2 Institutions

West
California Institute of Technology, Pasadena
California State University System
Oregon State University, Corvallis
Stanford University, Palo Alto, CA
Univ. of Alaska, Fairbanks
Univ. of California, Berkeley
Univ. of California, Davis
Univ. of California, Irvine
Univ. of California, Los Angeles
Univ. of California Office of the President
Univ. of California, San Diego
Univ. of Hawaii, Manoa
Univ. of Oregon, Eugene
Univ. of Southern California, Los Angeles
Univ. of Washington, Seattle
Washington State University, Pullman

Intermountain West
Brigham Young Univ., Salt Lake City, UT
Colorado State University, Fort Collins
Montana State University, Bozeman
Univ. of Colorado, Boulder
Univ. of Colorado, Denver
Univ. of Idaho, Moscow
Univ. of Utah, Salt Lake City
Univ. of Wyoming, Laramie
Utah State University, Logan

Southwest
Arizona State University, Tempe
New Mexico State University, Las Cruces
Rice University, Houston, TX
Southern Methodist Univ., Dallas, TX
Texas A & M Univ., College Station
Texas Tech University, Lubbock
Univ. of Arizona, Tucson
Univ. of Houston, TX
Univ. of Nevada, Las Vegas
Univ. of Nevada, Reno
Univ. of New Mexico, Albuquerque
Univ. of Texas, Austin

Great Lakes
Case Western Reserve Univ., Cleveland, OH
Indiana University, Bloomington
Kent State University, Kent, OH
Michigan State University, East Lansing
Northwestern University, Evanston, IL
Ohio State University, Columbus

Ohio University, Athens, OH
Purdue University, West Lafayette, IN
Univ. of Akron, OH
Univ. of Chicago, IL
Univ. of Cincinnati, Ohio
Univ. of Illinois, Chicago
Univ. of Illinois, Urbana-Champaign
Univ. of Michigan, Ann Arbor
Univ. of Minnesota, Twin Cities
Univ. of Notre Dame, Notre Dame, IN
Univ. of Wisconsin, Madison
Univ. of Wisconsin, Milwaukee

Great Plains
Iowa State University, Ames
Kansas State University, Manhattan
North Dakota State University, Fargo
Oklahoma State University, Stillwater
Univ. of Iowa, Iowa City
Univ. of Kansas, Lawrence
Univ. of Nebraska, Lincoln
Univ. of North Dakota, Grand Forks
Univ. of Oklahoma, Norman

Northeast
Boston University, MA
Brown University, Providence, RI
Carnegie Mellon Univ., Pittsburgh, PA
Columbia University, NY
Cornell University, Ithaca, NY
Dartmouth College, Hanover, NH
Harvard University, Cambridge, MA
Johns Hopkins University, Baltimore, MD
Lehigh University, Bethlehem, PA
MIT, Cambridge, MA
New York University, NY
Northeastern University, Boston, MA
Pennsylvania State Univ., University Park
Princeton University, Princeton, NJ
RPI, Troy, NY
Rutgers University, New Brunswick, NJ
State Univ. of New York, Buffalo
Syracuse University, Syracuse, NY
Univ. of Connecticut, Storrs
Univ. of Maine, Orono
Univ. of Massachusetts, Amherst
Univ. of New Hampshire, Durham
Univ. of Pennsylvania, Philadelphia
Univ. of Pittsburgh, PA
Univ. of Rochester, Rochester, NY
Univ. of Vermont, Burlington

Worcester Polytechnic Inst., Worcester, MA
Yale University, New Haven, CN

Mid-Atlantic
Duke Univ., Durham, NC
Gallaudet Univ., Washington, DC
George Mason University, Fairfax, VA
George Washington Univ., Washington, DC
Georgetown Univ., Washington, DC
North Carolina State Univ., Raleigh, NC
Old Dominion University, Norfolk, VA
Univ. of Delaware, Newark
Univ. of Maryland, Baltimore County
Univ. of Maryland, College Park
Univ. of North Carolina, Chapel Hill
Univ. of Virginia, Charlottesville VA
Commonwealth University, Richmond
Virginia Polytechnic Univ., Blacksburg
Wake Forest Univ., Winston-Salem, NC
West Virginia University, Morgantown

Midsouth
Univ. of Kentucky, Lexington
Univ. of Missouri, Columbia
Univ. of Tennessee, Knoxville
Vanderbilt University, Nashville, TN
Washington University, Saint Louis, MO

Southeast
Auburn University, Alabama
Clemson University, Clemson, SC
Emory University, Atlanta, GA
Florida A & M University, Tallahassee
Florida Atlantic University, Boca Raton
Florida International Univ., University Park (Miami-Dade)
Florida State University, Tallahassee
Georgia Inst. of Technology, Atlanta
Georgia State University, Atlanta
Louisiana State University, Baton Rouge
Mississippi State Univ., Mississippi
Tulane University, New Orleans, LA
Univ. of Alabama, Birmingham
Univ. of Alabama, Tuscaloosa
Univ. of Arkansas, Fayetteville
Univ. of Central Florida, Orlando
Univ. of Florida, Gainesville
Univ. of Georgia, Athens
Univ. of Miami, Florida
Univ. of Puerto Rico
Univ. of South Carolina, Columbia
Univ. of South Florida, Tampa

INTERNET 2 LINKS

To clarify the often cryptic acronyms and specialized terms associated with high-performance

Networks/Organizations

• **Internet 2 (I2)** (http://www.internet2.edu): A new high-speed academic and research network connecting 135 leading higher education institutions directly or via a Gigapop. Gigapops and directly-connected I2 schools interconnect with each other via the vBNS or Abilene.

• **vBNS** (http://www.vbns.net): The Federal Very High Speed Backbone Network Service, operated by MCI for the NSF/ANIR. A high-speed academic and research network that predates Abilene. Most connections to it were at DS3 or OC3 speeds.

• **Abilene** (http://www.ucaid.edu/abilene): Another very high-speed academic and research network backbone, operated by Qwest in conjunction with Cisco and Nortel for UCAID. Connections to Abilene will be at OC3 or OC12 speeds. The UO will connect to it via two OC3 circuits. See **http://boardwatch.internet.com/mag/98/jun/bwm61.html**

• **NSF/ANIR** (http://www.cise.nsf.gov/ncri/index.html): The National Science Foundation's Advanced Networking Infrastructure and Research Division, which approves institutions for connections to the vBNS and related federally authorized high-performance academic and research networks like Abilene.

• **UCAID** (http://www.ucaid.edu/): University Corporation for Advanced Internet Development, formed by I2 largely to facilitate deployment of Abilene.

• **MCI** (http://www.governmentmci.com/mcigm/98/index.cfm): MCI Worldcom is a leading international telecommunication provider, formed via the merger of Worldcom and MCI in September 1998. Cable and Wireless (CWIX: **http://www.cw-usa.net/)** purchased most of MCI's Internet business in July 1998, excluding its vBNS and a few other governmental networking programs.

• **Qwest** (http://www.qwest.com/): Telecommunication company that operates the Abilene network. See **http://www.wired.com/wired/archive/6.05/qwest.html?topic=connectivity&topic_set=newtechnology**

• **NGI** (http://www.ngi.gov/): Next Generation Internet. Umbrella name for all Federal high-speed networking initiatives.

• **NCO** (http://www.ccic.gov/): Nat'l Coordination Office for Computing, Information and Communications. Coordinates Federal high-performance computing and networking initiatives.

• **DARPA ITO** (http://www.darpa.mil/ito/ResearchAreas.html): Defense Advanced Research Projects Agency Information Technology Office. Sponsors Supernet and many other high-performance networking and computing projects.

• **Federal Mission Networks:** Specialized, limited-access, high-speed networks deployed by individual Federal agencies in support of specific research programs or as a testbed for advanced technologies. Examples include

- **DREN (http://www.hpcm.dren.net/Htdocs/DREN/):** Defense Research & Engineering Network

- **ESNet (http://www.es.net/):** Department of Energy's Energy Sciences Net

- **NI (http://nic.nasa.gov/ni/):** NASA Internet

- **NREN (http://www.nren.nasa.gov/):** NASA Research & Engineering Network

- **Supernet (http://ale.east.isi.edu/NGI-S/):** DARPA's Next Generation Internet

• **Supercomputer Centers:** Federally-funded centers that initially provided impetus for deploying many high-speed networking initiatives:

- **NCAR (http://www.ncar.ucar.edu/):** National Center for Atmospheric Research

- **NCSA (http://www.ncsa.uiuc.edu/):** National Computational Science Alliance

- **PSC (http://www.psc.edu/):** Pittsburgh Supercomputer Center

- **SDSC (http://www.sdsc.edu/):** San Diego Supercomputer Center. See also the National Partnership for Advanced Computational Infrastructure **(http://www.npaci.edu/)**

• **NSF specialized networking support centers:**

- **CAIDA (http://www.caida.org/):** Cooperative Association for Internet Data Analysis

- **NLANR (http://www.nlanr.net/):** Nat'l Laboratory for Applied Network Research. Charged with providing technical, engineering, and traffic analysis support of NSF High Performance Connections sites and HPNSP (high-performance network service providers) such as vBNS. NLANR projects include the development of Squid **(http://squid.nlanr.net/),** the leading web cache software product.

- **NSRC (http://www.nsrc.org/):** Network Startup Resource Center, based at the UO. For the past decade, the NSRC has been involved in the deployment and integration of appropriate networking technology in various projects throughout the world.

- **StarTap (http://www.startap.net/):** Science, Technology and Research Transit Access Point, located in Chicago, where approved foreign high-performance research networks connect to their American counterparts, such as the vBNS. Participating foreign networks currently include Canarie (Canada), SingAREN (Singapore), Transpac (APAN/Japan), MirNET (Russia), and TANet (Taiwan).

• **ISOC** (http://www.isoc.org/): A professional membership society with over 100 organizational and 6,000 individual members in 100+ countries. A leader in addressing issues confronting the future of the Internet and a home to the groups responsible for Internet infrastructure standards, including the Internet Engineering Task Force (IETF) and the Internet Architecture Board (IAB).

•**IETF** (http://www.ietf.org/: A large international community of network designers, operators, vendors, and researchers concerned with the evolution and smooth operation of the Internet. Open to any individual.

• **NANOG** (http://www.nanog.org): North American Network Operators Group. An association of network service providers and others interested in operational details of national networks.

AND **GLOSSARY**

networking, here's a brief glossary with some links to web resources…

Networking Technology

• **Wide area circuit speeds**

- **DS0:** 64 kilobits a second (about the speed of a fast dialup modem)
- **T1:** 1.544 megabits a second (typical speed of a small/mid-sized ISP's connection to the net)
- **DS3:** 45 megabits a second (the speed of OSU's vBNS connection)
- **OC3:** 155 megabits a second (the UO will be connected to Abilene via two OC3 circuits)
- **OC12:** 622 megabits a second (the speed of the highest speed national commodity network backbones)
- **OC48:** 2.4 gigabits a second (the Abilene backbone speed at startup)
- **OC192:** 9.6 gigabits a second (eventual speed of the Abilene backbone)

• **Ethernet/fast/gigabit ethernet**

- **ethernet:** 10 megabits/second (the speed of most UOnet connections)
- **fast ethernet:** 100 megabits/second (the speed at which many campus servers connect to UOnet. Where available, individual users can purchase fast ethernet connects for $250 each)
- **gigabit ethernet:** 1000 megabits/second (current speed of UOnet backbone)

• **Shared/switched ethernet:**

- **shared ethernet:** traditionally, ethernet has been a shared media, with all users on a subnet sharing the bandwidth available on that circuit. Cost-effective, but a poor choice for high-performance connections.
- **switched ethernet:** Connections that dedicate the full capacity of a connection to a particular workstation or server, and limit the traffic sent to a particular host to traffic that is destined for, or coming from, that host. Switched ethernet is normally how high-performance systems will connect to UOnet.

• **Half duplex/full duplex:**

- **half duplex:** on a half duplex connection, a connection talks or listens, but doesn't do both at the same time.
- **full duplex:** on a full duplex connection, a workstation or server can simultaneously transmit and receive data.

• **FDDI:** an older 100 megabit-per-second competitor to fast ethernet. See a comparison of FDDI and Fast Ethernet at **http://www.cisco.com/warp/public/729/c5000/swfet_wp.htm**

• **ATM:** Asynchronous Transfer Mode. Circuit-switched (rather than packet-switched) network technology that chops data into 53 byte cells. Often used for wide-area high-performance connectivity. For an excellent ATM tutorial, see **http://www.scan-technologies.com/tutorials/ATM%20Tutorial.htm**

• **SONET (and Packet Over SONET):** The alternative to ATM for wide-area, high-performance connectivity via Abilene, and the option the UO will be using. Quoting Cisco's Packet Over SONET whitepaper: "For expensive WAN links, Packet over SONET can provide as much as 25- to 30-percent higher throughput than Asynchronous Transfer Mode (ATM)-based networks. By transporting frames directly into the SONET/SDH payload, the overhead required in ATM cell header, IP over ATM encapsulation, and segmentation and reassembly (SAR) functionality is eliminated." For the complete discussion, see **http://www.cisco.com/warp/public/733/12000/gspos_an.htm**
A general SONET tutorial is available at **http://www.webproforum.com/tektronix/index.html**

• **WDM/DWDM:** Wave Division Multiplexing/Dense Wave Division Multiplexing. The underlying technology allowing carriers with existing fiber to obtain huge amounts of incremental bandwidth without having to pull additional fiber. Allows a single strand of fiber to simultaneously carry multiple parallel transmissions on different light wavelengths ("lambdas"). A good WDM tutorial is available at **http://www.webproforum.com/lucent3/**

• **GSR:** Cisco's 12000-series Gigabit Switch Router, the special high-performance router that many sites, including the UO, are using to connect to Abilene. See **http://www.cisco.com/warp/public/733/12000/**

Network Architecture and Operations

• **Gigapop:** Gigabit point-of-presence. As originally envisioned, I2 sites would connect to the I2 backbone via a regional "Gigapop." Gigapops would combine the traffic from directly connected I2 member sites and exchange it with other Gigapops via I2 backbone links. By aggregating individual I2 sites behind Gigapops, the size of the I2 routing matrices can be kept small and efficient, and network problems could be resolved via contact between Gigapop NOCs. The Oregon Gigapop is located in Eugene and operated by the UO.

• **POP (Point-of-Presence):** Location at which an internet service provider connects to the Internet and offers local connections to customers, whether via leased circuits or dialup connections. A small ISP might have only one POP, while a national ISP might have a POP in virtually every major metro area.

• **Exchange point** (also, "meet point")**:** A location where network service providers can peer and exchange network traffic with each other. The UO operates the Oregon Internet Exchange in Eugene (**see http://antc.uoregon.edu/**OREGON-EXCHANGE**/**)

• **Peering/Transit:** When two networks peer, they agree to cooperatively exchange their network customers' traffic—and only their customers' traffic—typically at no charge. These traffic exchanges take place at an exchange point. Contrast peering with buying transit bandwidth from a network service provider: when you buy transit bandwidth, the network service provider agrees to accept and transfer traffic on your behalf to *any* other destination on the Internet, whether it's for another customer of the NSP's or for a customer of some other network service provider.

Network Architecture and Operations, *continued…*

• **Meritorious/Commodity Traffic:** Meritorious traffic meets the Acceptable Use Policy (AUP) adopted by a particular network. For example, I2's AUP limits use of I2 to traffic destined for other I2 sites or comparable/approved research and education networks. Other traffic, such as a mail message to an AOL user or a web page from CNN's web site, would be considered "commodity traffic" and would not be eligible to travel over I2.

• **NOC:** Network Operation Center. A NOC is a facility, typically staffed 24 hours a day/7 days a week, by NOC technicians who can monitor, detect and arrange for a response to network problems. There's usually one NOC per network.

• **Colocation:** While most networked companies or schools want to have machines in their facilities connected to the Internet, some companies don't

• **IPv4/IPv6:** IP (also, "IPv4") is the Internet Protocol that underlies virtually all Internet traffic today. A new version of the IP protocol, IPv6, is on experimental use on the so-called 6Bone (see **http://www.6bone.net/**). IPv6 access is an example of the sort of advanced services that Internet 2 will likely support. See the tutorial at **http://www.6bone.net/case-for-ipv6.txt** or see **http://playground.sun.com/pub/ipng/html/INET-IPng-Paper.html**

• **IP multicast video:** With IP multicast, a single network video stream services *all* viewers on a given network segment, rather than requiring separate streams for each viewer. IP multicast scales well to virtually unlimited-sized global audiences. Cisco's excellent IP multicast training materials are available online at **ftp://ftpeng.cisco.com/ipmulticast/multicast_training.html** An easy way to

really care where their servers are physically located. For example, a company's main web server might just as easily live in a locked rack at an exchange point as in a company office. Servers located at network service provider facilities rather than at corporate or campus locations are said to be "colocated" and are typically able to buy bandwidth for less than the cost of a traditional Internet connection due to the elimination of local loop charges and reduced equipment requirements for the network service provider. Colocation also typically offers the server owner access to conditioned/uninterruptable power, improved physical security, geographical flexibility in siting servers, etc.

• **Local Loop:** A synonym for "local access circuits" or the physical wire or fiber optic cable that connects a site to their Network Service

Advanced Services

begin using IP multicast is to install Cisco/Precept's IP/TV from the UO Duckware CD-ROM, or see **http://darkwing.uoregon.edu/~joelja/project/mbone.html**

• **QoS (Quality of Service):** There has been a lot of interest among I2 participants in Quality of Service-related issues, or efforts to provide better than "best-efforts" access to Internet resources. For example, some Internet applications (such as tele-surgery or remote management of a scientific instrument) require bounds on latency and jitter, or a reserved amount of bandwidth from end-to-end. An excellent series of papers are available at **http://www.internet2.edu/qos/may98Workshop/html/presentations.html**

• **Bandwidth and Latency:** Bandwidth can be considered the effective rate at which bits are delivered from their

Provider's POP. Local loops are typically purchased from the local phone company or from a competitive local exchange carrier. For example, the UO buys its local loops from USWest and Electric Lightwave (ELI). Local loop charges are in addition to a network service provider's port charges.

• **Port Charge:** The payment made to a network service provider so they will accept and transfer your transit traffic. Port charges are normally sized according to the maximum capacity of the circuit to the network service provider.

• **Backhaul:** If a network service provider doesn't have sufficient capacity (or required services) at a local POP, they may need to "backhaul" a circuit you've ordered to another better-equipped location, which adds to the cost of obtaining that service (unless backhaul charges are waived).

source to their destination—or the "size of the pipe" between two sites. Latency is the delay a packet experiences while being transmitted from its origin to its destination. This is a crucial issue in high-performance networking because there is a close relationship between packet latency and the maximum effective bandwidth which a connection can sustain. See **http://engr.ans.net/slides.html#nanog-feb-1997-tcp-congested**

• **Jitter:** The variance in the time it takes for a packet to be transmitted from its origin to its destination. Jitter is a problem in advanced applications such as IP multicast video because even small deviations in delivery pacing can translate into noticeable interruptions in otherwise smooth video delivery, unless buffering or other similar techniques are employed.

Students: Interested in Networking Opportunities?

If you're a UO student interested in the computer networking field, here's an opportunity to gain experience and skills while contributing to the enhance-

ment of the global Interent infrastructure: The Network Startup Resource Center (see article on page 23) is currently seeking students with initiative

to assist with applied research, education, and service projects. For more information, contact Steve Huter (*sghuter@nsrc.org*)

NSRC, Computing Center Staff Assist Network Support Services in Angola

By Steve Huter and Hervey Allen
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hervey@oregon.uoregon.edu

How did the UO Computing Center become involved with network support services in Luanda?

The project began last July, when two Angolan students at a TCP/IP workshop in Geneva, Switzerland, asked the Network Resource Center (NSRC) for ideas about how to improve their user support services. The NSRC, which helped organize the Geneva workshop, has been dedicated to making affordable networking technology available around the globe for the past decade, and is now based at the UO Computing Center.

The NSRC had worked with the Angolans in the early 1990s using FidoNet technology, and provided some technical advice to them when they transitioned to a TCP/IP network, dubbed EBOnet, at the end of 1996. The EBONet engineers explained that their network user base had expanded dramatically since then, outpacing their current ability to meet the demand for support.

As EBONet is the primary resource in Angola for full Internet access, its constituency had quickly grown from a handful of former FidoNet users to nearly a thousand users, including not only Angolan individuals and companies, but also researchers and employees of the US Embassy, the US Information Agency (USIA), the United Nations, and various international nongovernmental organizations. While EBONet staff had already begun developing a Help Desk service, they wanted to learn more about how to support their growing user population.

The NSRC turned to Hervey Allen, of the Computing Center's Help Desk and microcomputer consulting ser-vices, to help EBONet staff design some systems and procedures.

After extensive email and telephone communications to plan the work agenda and make decisions about what software and hardware to bring along, Hervey flew to Luanda on November 11.

> *"The spirit of team-work and collaboration between EBONet, the NSRC, and the Computing Center was great to see and be a part of."*

In keeping with the philosophy of the NSRC, Hervey worked in cooperation with EBONet staff—suggesting some changes, answering questions, and demonstrating how to use various tools and resources—but always stressing that the real work must be done by the EBONet staff itself.

Using Spanish and some English to communicate with the primarily Portuguese-speaking Angolans, Hervey

• observed traffic flow at the Help Desk and suggested improvements

• initiated a set of Help Desk web pages disseminating user support information

• introduced the staff to other NSRC resources for assistance in network management and system administration

• gave a public presentation on customer service and the role of the Internet

Occasionally, questions arose that required more help, and Hervey was able to call freely on the expertise of half a dozen other Computing Center staff via email. Everyone pitched in willingly to give EBONet support services a boost.

Before leaving Angola, Hervey drew up a final report with specific recommendations for improving EBONet's existing services and adding new resources as needed.

Barely two weeks after Hervey's return to the states, EBONet staff reported that a number of his recommendations had already been implemented. Haymee Perez Cogle wrote recently, "We thank the NSRC and Hervey a lot for the assistance and hope that our collaboration will continue. Your visit was very useful, Hervey, and our staff is now very motivated. We're working on the installer, reorganizing our schedules and procedures, finishing the FAQ for our web site, and improving the technical assistance services of our Help Desk."

As for Hervey, he discovered that many of the same issues confronting the UO are also faced by the EBONet staff in Angola: busy modem lines, modem and password problems, and struggles with connectivity.

Hervey also noted some interesting differences, such as the total absence of Macintosh computers, the overwhelming number of Toshiba portables in use (by those who had portables), and the surprising fact that almost no old machines (486 class) are employed by EBONet's users—the hardware is quite modern.

Hervey affirms that the Angolan training sessions were mutually beneficial. "The chance to apply what I do every day at the University of Oregon to help a group of people who are getting an entire country started with the Internet was a truly gratifying experience," he says. "The spirit of teamwork and collaboration between EBONet, the NSRC, and the Computing Center was great to see and be a part of."