University of Oregon

COMPUTING NEWS

SPRING 2001

IN THIS ISSUE...

The university's new Compaq GS80 has considerable additional CPU capacity and memory and should improve the performance of campus administrative applications. See story on page 3.

Tips for Saving Energy on Your Desktop Computer

Configure your computer to save electricity

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Power conservation means more than simply turning down the thermostat.

Desktop computers and monitors can consume as much electricity as five 60-watt light bulbs. Multiply this by the number of computers, monitors, printers and other devices we leave on 24 hours a day and the numbers are staggering.

What is even more staggering is that this waste is needless: nearly every personal computer manufactured since 1998 has the ability to reduce power consumption when idle. Unfortunately, most users are unaware of this feature.

Configuring a computer to save electricity is easy. First, turn your monitor off if it won't be used in the next few hours. Next, activate your computer's power management features by following the Windows or Mac configuration instructions below (Instructions are also available online at **http://micro.uoregon.edu/conservation/**).

Windows 98/ME/2000:

1. Click the Start menu and select "Settings"
2. Select "Control Panel"
3. In the window that opens, double-click "Power Management"
4. Click the "Power Schemes" tab at the top of the window
5. Select "Home/Office Desk"
6. Set "Turn off monitor" and/or "Turn off hard disks" to 30 minutes

Mac OS 7.5.2 or Newer:

1. From the Apple menu, open "Control Panels"
2. Open "Energy Saver"
3. At the top of the Energy Saver window, click the "Sleep Setup" tab
4. Under the heading "Put the system to sleep whenever it's inactive for...", move the slider to 30 minutes
5. If desired, click the "Show Details" button to configure separate sleep times for your display (your monitor) and your hard disk

With these settings, your computer and monitor will turn off after 30 minutes of inactivity. To "wake up" the computer, simply move the mouse or press the space bar.

Calculate Your Savings

If you want to calculate the money saved by using these power management features, see the Energy Star website at **http://www.energystar.gov**

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Micro Services Website Gets New Look

Find answers to your microcomputing questions at http://micro.uoregon.edu/

The Microcomputer Services website has a fresh new look for spring. Created to help you answer common questions about computing at the UO and troubleshoot problems with your personal computer, the redesigned site at **http://micro.uoregon.edu/** is easier to navigate and has built-in flexibility to expand and keep up with changing information.

Topics are now clearly listed by category, and there's a new FAQs (Frequently-Asked Questions) section to help answer such common queries as "How do I change my password?" "How can I get my email?" or "What do I do if my disk quota is exceeded?" We've also added a front page "news" column that headlines important current developments and links to more detailed information on each topic.

The next time you're puzzling over a computer problem, check out **http://micro.uoregon.edu/** Chances are, you'll find just what you're looking for.

20 New X Terminals Ready for Use in Grayson

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Last month, the Computing Center set up 20 new X Windows terminals for use by the campus community. These terminals are located on the ground level of Grayson Hall, in the same area as the CC-Grayson computer lab, Computing Center Documents Room, and Microcomputer Services.

The X terminals provide a graphical user interface to Darkwing, Gladstone, and a number of other campus hosts. You can use them to read your email, surf the web, and use other network features.

Try out the new X terminals on the ground floor of Grayson Hall

Available software includes Pine, Netscape, StarOffice (a Microsoft Office-compatible suite, with word processing, spreadsheet, and presentation applications), and a host of other utilities too numerous to mention. You can use Pine to read your email, or you can read it via Netscape, using one of the web-based email systems at **http://email.uoregon.edu**

The X terminals are situated close to large windows to take advantage of pleasant natural lighting, and there's a café nearby for that early morning pick-me-up. Come read your email, sip a steaming cup of your favorite beverage, and enjoy the new X terminals in Grayson Hall!

New NT servers in the Computing Center machine room run administrative programs for Facilities Services

Recent System Updates Improve SPAM Filtering, Pine, WebMail, and More…

Computing Center staff completed several system upgrades in recent months, including upgrading Daisy from a Compaq 8400 to a new GS80, improving SPAM filtering on Oregon, updating Pine on VMS, and installing the latest version of WebMail. In addition, two new NT servers dedicated to running administrative programs for Facilities Services were installed in the machine room (see photo at left).

Daisy. The Daisy upgrade provides considerable additional CPU capacity and memory and should improve the performance of administrative applications. The new machine is roughly four times faster than the old Daisy.

SPAM filtering. The PMDF upgrade package on Oregon (which includes Pine 4.21) provides increased capability to filter out several varieties of SPAM and includes support for the Relay Spam Stopper (see **http://mail-abuse.org/**).

Pine 4.21. The updated Pine includes new screen navigation commands and improvements to the Addressbook and Preferences configuration. In addition, 4.21 offers both text and HTML support, help screens with hyperlinks to other help screens, SSL security (TLS), and many new setup configuration features.

WebMail 3.61.08. The latest version of WebMail contains some encryption fixes for SSL and TLS, which should ensure trouble-free secure logins to Darkwing and Gladstone.

Cisco Gift Boosts IP Multicast Research at the University of Oregon

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Network equipment manufacturer Cisco Systems, Inc., recently donated nearly half a million dollars to the UO for advanced network broadcast development. Researchers at the Computing Center will use the funding to speed deployment of IP multicast technology, which distributes broadcast-quality multimedia programming on the Internet.

Multicast makes broadcast-quality audio and video possible on the Internet because it uses bandwidth more efficiently than traditional streaming media. Instead of replicating packets at the source like unicast, multicast shifts the burden of replication to the receiver's network. In this way, only a single copy of a stream needs to be sent over the Internet, regardless of audience size.

The primary hurdle facing UO multicast researchers is a shortage of available content. In addition, there are currently few viewers who have the capacity to receive multicast feeds. To solve this problem, the UO will create a digital library of copyright-free videos and will work with other organizations to enable multicast on their campus networks.

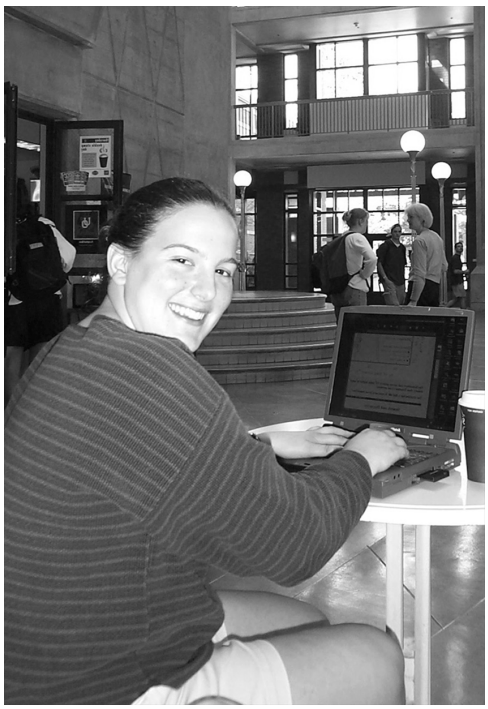
This joint project of the University of Oregon and Cisco Systems has been well-received by the Internet community. Live events like the NetAid benefit concert, Duck football games, and the PreFontaine Classic track meet, all of which were multicast at the UO last year, have been popular with viewers. Most recently, the UO multicast the 50th IETF conference (*see story on page 13*).

Multicast Schedule Information. For information on upcoming multicast events, go to **http://videolab.uoregon.edu/**

Roam Free with Your Laptop: Tap into Wireless Internet at the UO

Current wireless coverage will eventually expand to all libraries on campus and the first and second floors of Grayson Hall

Did you know you can get an 11 Mbs. network card for your laptop that will give you fast wireless Internet access from several campus locations? If you'd like to try out wireless technology, you can borrow one of these cards from the CC-EMU Lab in Room 22 EMU. While faculty, students, and staff may borrow a card at no charge, a $20 refundable deposit is required.



Experience the freedom of wireless access in the Willamette Atrium…

Wireless coverage areas are currently limited to most public areas of the ERB Memorial Union, the Willamette Atrium, and the Computing Center. However, by fall of 2001, wireless coverage will be expanded to include at least all libraries on campus (Knight, Math, Science, AAA, and Law) as well as the first and second floors of Grayson Hall. Other areas of campus may be added as funding and time allows.

Registration required. All wireless users must register their wireless cards prior to use via the web page at **http://ns.uoregon.edu/** using the **IP Address Request** link. Cards borrowed from the EMU computer lab are already registered.

New SSIL Facilities Open in Grayson

Three new Social Science Instructional Lab facilities are now open on the fourth floor of Grayson Hall.

Each lab is equipped with 65 workstations, a color laser printer, two black and white printers, a scanner, and a CD burner. Two of the labs have ceiling-mounted projectors as well as a fully adjustable instructor station.

Available software includes statistical analysis and GIS applications, as well as programs for graphic design and web-authoring.

Your UO Security Package

New SFTP for Windows augments Duckware 2000's encryption options

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"Secure," in computer terminology, means encrypted. Not all electronic communication needs to be encrypted, but anything that requires private information (like a username and password, credit card, or ID numbers) should be encrypted to ensure that eavesdroppers can't monitor your communication or grab your passwords.

This fall we included two security features on the 2000 Duckware CD-ROM: a link to our secure web email programs, and a "Secure Shell" program called *ssh*. *Ssh*, secure web email, and SSL encryption for POP and IMAP are all available on Gladstone, Darkwing and Oregon. (Web browsing is not generally encrypted, but a lock icon in the lower corner of your browser indicates when encryption is active.)

Secure Email

Your communication is automatically encrypted if you read your email at **http://email.uoregon.edu**, and you're also protected if you read your email using the "telnet" links (e.g., *Pine*) provided by Duckware 2000.

Outlook, *Entourage*, and *Netscape* email also support encryption (see sidebar for instructions). But unfortunately, even the most current version of *Eudora* lacks this option.

New! Secure File Transfer for Windows

WS_FTP, the Secure Shell program issued on the Windows version of Duckware 2000, lacks encryption for file transfers. However, there is now an alternative: a new graphical secure file transfer program called **SFTP**, or **Secure File Transfer Protocol**. This program is free, and includes a new Secure Shell program as well as a secure file transfer program. (**Oregon users:** note that SFTP relies on version 2 of *ssh*, which has historically not been compatible with Oregon.)

Go to **ftp://public.uoregon.edu/** to download SFTP. Open the folders "Software," "Network Software," and "Secure," and select "SSH240.exe". Then double-click the downloaded program to activate it.

If you're happy with Duckware 2000's *ssh* program, we recommend you continue to use it because it has good terminal emulation. However, we do recommend using the SFTP component of the new *ssh* program for file transfers, since this represents new functionality not provided on Duckware 2000.

With time, we hope to provide secure programs for all common computing activities.

No SFTP for Mac. Unfortunately, there's currently no SFTP program for the Macintosh platform. While Duckware 2000 includes Secure Shell for the Mac and a secure copy tool called "SCP," these are unfortunately rather cumbersome to use. Mac SCP requires specific path information and is far from being a drag-and-drop kind of program.

If you know of better encryption options for Mac users, please drop us a line at *microhelp@oregon.uoregon.edu*.

Need More Information?

For information on security programs, see **http://micro.uoregon.edu/security/**

How to Use Encryption Tools*

Windows:

Outlook and Outlook Express -

1. Open "Tools" -> "Accounts…" -> "Mail" -> "Properties"-> "Advanced"
2. Check the box under "incoming mail" labeled "this server requires a secure connection (SSL)"

Note: *Do not check the box for outgoing "SMTP"*

Netscape 4 Mail (IMAP only) -

1. Click "Edit" -> "Preferences" -> "Mail and Newsgroups" -> "Servers" -> "IMAP" tab
2. Check the box "use secure sockets layer (SSL) or TLS…"

Netscape 6 -

1. Open "Edit" -> "Mail and News Account Settings" -> "Server"
2. Check the box labeled "use secure connections (SSL)"

Macintosh:

Outlook Express and Entourage -

1. Open "Tools" -> "Accounts…" -> "Mail Tab"
2. Double-click the account listed (i.e., *jersmith@gladstone.uoregon.edu)*
3. Go to the "receiving mail" section and click on the text "click here for advanced receiving options"
4. Check the box labeled "this POP/IMAP service requires a secure connection (SSL)."

Netscape Mail v. 4 -

1. Click "Edit" -> "Preferences"
2. Select your account from the "Incoming Mail Servers" list (i.e., *jersmith@gladstone.uoregon.edu)*
3. Click "Edit" -> "IMAP" tab
4. Check the box labeled "Use secure connections (SSL)."

Netscape 6 -

1. Click "Edit" -> "Mail and News Account Settings" -> "Server"
2. Check the box labeled "Use secure connections (SSL)."

*** Note that all versions of Eudora lack encryption support**

TAKE A LOOK: The local area's list of DSL Internet Service Providers has moved to ***http://www.qwest.com/dsl/learn/isplist.html***

Concerned About File System Integrity?

A number of tools are available to help you track changes to files

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The ability to track changes to files over time is an important tool in a computer system's overall defenses.

Tools that have this ability (i.e., "file system integrity" or "Tripwire-like" tools) give administrators an important edge in host-based intrusion detection by keeping a database of information regarding each file. Such information typically includes the permissions, user and group owners, time modified, size, and cryptographic checksum of a file, among other measurements.

File system integrity tools allow an administrator to detect system changes, whether they're intended or not—and even more importantly, an administrator can quickly determine what files have been changed in the event of a system compromise. Not only is a system compromise noticeable, but recovery is easier. (However, note that file system integrity tools are not a replacement for system hardening. You should also implement whatever measures are necessary to prevent a system compromise.)

A number of file system integrity tools are currently available, some at no charge. You'll find many of them listed at **http://www.securityfocus.com**, under **IDS -> Tools -> File Integrity**. Three commonly used tools are **Tripwire**, **AIDE**, and **FCheck**, all of which are described in more detail below.

It's also possible to write your own set of scripts for monitoring file systems, but no matter which method you choose, be sure to back up the database created by these programs on removable media, such as a floppy or CDR.

Tripwire

http://www.tripwire.com
http://www.tripwire.org

Tripwire is a commercial program that supports a number of platforms, including WindowsNT/Windows2000, Solaris, and Linux (for more details, see **http://www.tripwire.com/products/**). The software, minus some of the commercial version's feature set, is freely available for Linux (see **http://www.tripwire.org)** and comes in *rpm* and *tar* formats (no source code provided).

When you're setting up Tripwire, the program first asks you for a passphrase that's used to sign a number of files such as the policy, configuration, and database files. After it signs them, you must create a baseline database for later comparison with the files on your system.

Tripwire allows you to categorize groups of files according to their security risk. The defaults are SIG_LOW (noncritical files of minimal security impact), SIG_MED (noncritical files of significant security impact), and SIG_HI (critical files of significant security impact). Once you've established these categories, you can then specify which properties to check.

Two important features of Tripwire allow you customize your environment: the ability to check 18 individual different properties, four of which are cryptographic checksums (**md5**, **haval**, **sha1**, and **crc-32**), and the ability to define a variable that specifies your own combination of properties to check.

Besides writing reports to a file, Tripwire can send messages to syslog for specific events, and email notifications to the administrator. The ability to send reports via email is an added convenience.

AIDE

http://www.cs.tut.fi/~rammer/aide.html

AIDE (Advanced Intrusion Detection Environment) runs on many modern Unix platforms and is freely available under GPL. It is compiled and installed like many other software packages (e.g., **./configure; make; make install)**, but unfortunately, it does not run on Windows platforms.

In addition to a compiler, you'll need GNU Flex (**ftp://ftp.gnu.org/pub/gnu/flex**), GNU Bison (**ftp://ftp.gnu.org/pub/gnu/bison**), and GNU Make (**ftp://ftp.gnu.org/pub/gnu/make**) to compile AIDE.

If you want to use mhash support, you'll also need the mhash library (**http://schumann.cx/mhash/**). And finally, if you want to use Postgres SQL for database storage, you'll need the **postgres sql** developer library (**http://www.postgreSQL.org/**).

AIDE's configuration file is very much like Tripwire's. It can check 15 individual properties of a file, four of which

…note that file system integrity tools are not a replacement for system hardening. You should also implement whatever measures are necessary to prevent a system compromise

Try Some of These Useful Tools...

are cryptographic checksums (**md5**, **sha1**, **rmd160**, and **tiger**). It can also optionally support **haval**, **gost**, and **crc-32** cryptographic checksums.

AIDE, like Tripwire, can check combinations of properties. One interesting feature of AIDE is its ability to use regular expressions to determine what parts of the file system to check.

You can also define selections so that AIDE will either not check anything that matches your criteria, or it will only check those that specifically match your criteria. For example, you could define **=/tmp**, which would add only **/tmp** to the database, excluding its children. Or, you could define **!/dev** and ignore the entire **/dev** directory structure.

Finally, you also have the ability to control input and output from AIDE, as long as they don't come from the same place. The options available are STDIN, STDOUT, STDERR, a file, and a file descriptor. Unfortunately, AIDE does not directly support emailing reports after comparing the database with the current status of the file system.

FCheck

http://www.geocities.com/fcheck2000/

FCheck is a Perl script written to monitor changes to files and directories over time. It requires a working distribution of Perl to be in place. Because it's written in Perl, FCheck can run on a large number of systems, including Windows, *BSD, Linux, and Solaris.

FCheck is a simplified version of Tripwire and AIDE. While it can perform cryptographic checksums on files, it relies on external executables to accomplish this. Consequently, support for this on non-Unix platforms is dependent on whether such an executable is available (e.g., *md5sum*). FCheck does check the standard elements such as permissions, device, time last modified, and size of the file. It can also log a report summary to a system log file (e.g., via *syslog*) in addition to printing it to STDOUT.

With FCheck, you can also configure which files and directories to check, and determine whether directories should be checked recursively.

While FCheck is not as comprehensive as either Tripwire or AIDE, its portability and simplicity are appealing.

FCheck is a good example of a the kind of script you might write for yourself. Homegrown scripts, utilizing binaries that already exist on your system, can achieve much of the same functionality as tools like AIDE and Tripwire.

This can easily be implemented on a Unix system with standard utilities such as *find*, *diff*, and *md5sum*. For example, to monitor */bin* and */usr/bin*, you'd write:

```
# find /bin /usr/bin -type f -print0 | xargs \
 -0 ls -l --full-time > permissions

# find /bin /usr/bin -type f -print0 | xargs \
 -0 md5sum > checksums
```

Some operating systems also have the ability to check the integrity of installed packages. For example, on Linux systems that use *rpm*, you could use the command *rpm -V -a* to check the status of all installed packages. This will check the status of each file's md5sum, as well as file size, symlink, time modified, device, user and group owners, and permissions.

If a file fails the md5sum, file size, and permissions test, it may have been compromised. For example,

```
SM5..... /usr/bin/top
```

would show that the file size, permissions, and md5sum have changed for the file */usr/bin/top* since it was installed on the computer.

Properly implemented, a file system integrity tool can be a useful part of a system's defenses. In the event of a system compromise, the tool enables you to quickly identify files than have been tampered with.

When using a file system integrity tool, it's important to remember two things:

1) always keep a backup of the database off-line on a floppy or CDR so that you have a secure copy

2) file system integrity tools are only *one part* of overall system security; other security measures are equally important and should not be neglected.

New DuckWeb Service for Faculty, Staff

Your new PAC number enables you to access your records or change your computing account password

Last term, all UO faculty and staff were issued Personal Access Codes (PACs) for DuckWeb that give them access to their employee information online.

Whether you want to update your mail or email address, or view everything from your pay stubs and deductions to your W-4, W-2, and direct deposit information, just go to **https://duckweb.uoregon.edu** and enter your UO ID number and PAC.

If you'd like to change your computing account password online, you can also use your new PAC to log in to AUTHORIZE and make the changes electronically. For more information on using the AUTHORIZE program to change your password, see

http://micro.uoregon.edu/change/

Protect SSNs, Other Vital Information from Identity Thieves

Students, Instructors: remember not to post sensitive information online!

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Identity fraud is on the rise, and personal information is increasingly used illegally in countless ways for financial gain. Stolen IDs provide thieves with the raw material to pose as their victims—running up bills, borrowing money, or even committing more serious crimes in someone else's name.

Because the Internet is a popular target for identity theft, posting sensitive information online is extremely risky. Instructors should take care never to post student grades (or other information) online with student names or social security numbers.

Likewise, both students and their instructors should never put assignments online that contain their names and social security numbers.

SSH for Macs

Good news for Mac users! Nifty Telnet 1.1 SSH r3, included on the Duckware 2000 Network Applications installer, provides the best security yet for Macs. This product offers very good terminal emulation and secure logins to Gladstone, Darkwing, and Oregon.

So be safe. Use Nifty Telnet SSH.

Be Proactive: Don't Let Computer Viruses Take You by Surprise

Make sure you're running the very latest antiviral software with updated viral definitions

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Over the past few months, Microcomputer Services staff has seen a large number of Windows viruses.

In many cases, affected parties are already running *Norton AntiVirus*, yet they lack current virus definitions. The best solution in cases like this is prevention. (Note that we have not seen this level of trouble or damage on the Macintosh, so updates on that platform may be less pressing—at least at the moment.)

Here are some recommendations to help you stay on top of virus threats:

1. Install NAV 2001 (see **http://micro.uoregon.edu/av**)

2. Click the "Scheduling" button, then "Add Event"

3. Select "Schedule LiveUpdate..." Schedule this event for a time when the computer will not be needed for an hour or so.

4. Consider scheduling some additional time to scan the hard disk. Plan ahead, as this can take several hours.

Note that once installed, NAV 2001 can work completely in the background and will not interrupt your work to perform a Live Update.

If you have further questions about antiviral protection, contact Microcomputer Services at **346-4412** or *microhelp@oregon.uoregon.edu*

Windows 95/98/ME Security Warning: TCP File Sharing Vulnerable to Password Probes

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If you're a Windows 95/98/ME user and you haven't yet installed Microsoft's patch for "share level password" vulnerability, don't delay.

Without this patch (available from **http://www.microsoft.com/technet/security/bulletin/fq00-072.asp**), a file share can be compromised by a malicious user. Your machine is open to a single-character guess for your password, so an intruder can do damage even without knowing the entire password.

Only share level access permissions on Windows 95/98/ME machines are vulnerable. Because they can only be set up with user-level file share access controls, Windows NT and Windows 2000 machines are not susceptible.

For complete information about this security problem, including answers to frequently-asked questions, go to **http://www.microsoft.com/technet/security/bulletin/fq00-072.asp**

Gnutella Virus, Other Problems Expose Limitations of P2P Computing

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Peer-to-peer (P2P) computing, made famous by Napster and other popular file sharing vendors, has recently been showing its dark side.

In late February, a virus attacked users of the Gnutella file sharing service. Named *W32/Gnuman.worm*, or *Mandragore*, it was purportedly the very first virus to affect peer-to-peer communications.

This worm virus generated a malicious file that posed as an ordinary, requested media file. Unsuspecting Gnutella users requesting media files from the infected computer got the virus instead. Because the virus was disguised as a media file, it was not immediately detected (e.g., if users searched for songs containing the word "blue," the infected computer would send them a file named "blue.exe" in response).

Whereas the Gnutella virus was more of a disruptive nuisance than anything else, its appearance highlights the vulnerability of peer-to-peer computing.

For more details on the Gnutella virus, see the *InfoWorld.com* article at

http://www.infoworld.com/articles/hn/xml/01/02/27/010227hnp2pvirus.xml?0227alert

Changes in Terms of Service. Some providers of free internet access are becoming so aggressive in trying to position themselves to offer P2P services that they are making dramatic changes to their Terms of Service agreements. The small print in these agreements authorizes these vendors to virtually take over your PC for whatever purpose they choose, and absolves them of any liability whatsoever, even in cases where they may be at fault.

You'll find a complete discussion of these changes in the article, "Peer-To-Peer's Dark Side: Vendors May Demand a Piece of Your CPU," at

http://www.byte.com/column/BYT20010222S0004

Note Recent *SSH 1* Security Advisories

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Two security advisories relating to SSH 1 came out in February.

The first involves a potential attack against SSH 1 servers that would allow the attacker to recover the session key (usually a 768-bit RSA key pair), which would allow further subversion of the SSH protocol.
http://www.core-sdi.com/advisories/ssh1_sessionkey_recovery.htm

The second advisory relates to an integer overflow in code intended to detect attacks against a previously-discovered vulnerability in the SSH 1 protocol involving the CRC checksums of data packets. Exploiting this overflow can result in arbitrary areas of memory being overwritten, and since the SSH daemon typically runs as root, this opens the possibility of root compromise.
http://www.core-sdi.com/advisories/ssh1_deattack.htm

Note that both of these involve the now-deprecated SSH 1 protocol. **If you are using SSH 2 exclusively, then you are not vulnerable to either of these problems.** However, SSH 1 has the most client support, particularly for Macintosh and Windows users, and it is common to either run the ssh.com SSH 2 daemon with fallback support for SSH 1, or to run OpenSSH which supports both SSH 1 and SSH 2 in the same daemon.

If you're running OpenSSH, you should update to OpenSSH 2.3.0, which is not vulnerable to either of these attacks. A portable version of OpenSSH that runs on many different UNIX systems (the stock OpenSSH is for OpenBSD only) is available from **http://openssh.com/portable.html**

SSH Communications Security *(ssh.com)* has indicated that they will probably be releasing a new version of their SSH 1 server with fixes sometime soon. Patches for existing versions of their SSH 1 are given in the advisories listed above.

Recycle Your Dead CPUs

This year, spring cleaning can take on a new meaning for UO staff and faculty. Very soon, the Office of Environmental Health and Safety will make a campus-wide call for discarded computer and electronic equipment that no longer works.

In the next several weeks, you'll be hearing more details about the collection program. For now, you can help by sorting through monitors, CPUs, keyboards and similar computer and electronic equipment that you no longer use, tagging those that don't work and separating them from those that do. Then, stay tuned for details about pickup locations and dates.

For more information, please contact Connie French at *connie@oregon.uoregon.edu* and use "Computer Harvest" in the subject line of your message.

Who's Who at the

Meet some members of our staff…

Joyce Winslow
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Spencer Smith
Microcomputer Support Specialist
Microcomputer Services

Spencer Smith loves variety. Over the course of his career, Spencer has tried his hand at lobstering in Maine, managing a yarn shop in Berkeley, and overseeing operations at a coffee shop in Corvallis. His college career began at the University of New Hampshire, where he majored in psychology, and ended at the UO, where an initial interest in becoming an English teacher morphed into a passion for computing.

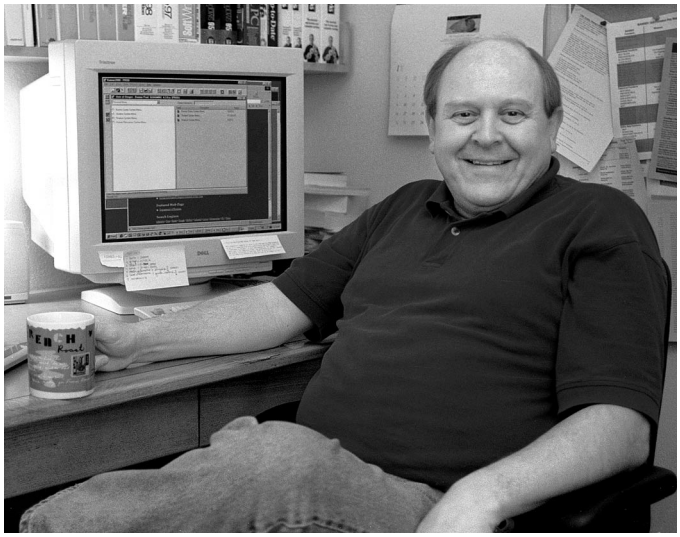
After graduating from the UO in 1996 with a B.S. in computer science, Spencer became a technical consultant for the department of Architecture and Allied Arts. He joined the Computing Center's Microcomputer Services group a little over two years ago, and his eclectic background has prepared him well for the diverse demands of the job, which call upon his skills as both manager and technical consultant.

As a microcomputer support specialist, he trains and manages the students who staff both the Help Desk in 151 Grayson Hall and the Departmental Apprentice Program, which provides in-house technical support to UO departments. In addition, Spencer handles the machine check-ins for software repair and is available to troubleshoot problems and answer a wide range of technical questions.

Spencer says laughingly that he always swore he'd get a job that allowed him to wear a bandanna to work, and his colorful wardrobe of headgear is proof that he's succeeded. He began wearing his trademark scarf in 1977, when he discovered that it not only fit his persona as a Grateful Dead fan, but also had a practical use, stanching both sea water and sweat as he labored on the lobster boat.

His two years as a boat hand had another unexpected side effect: it piqued Spencer's interest in knitting. After many long months of pulling lobsters, Spencer discovered that knitting was the perfect therapy for his cramped hands. Consequently, when the weather turns too cold for bandannas, he can tap into his equally large wardrobe of colorful hand-knit caps.

Spencer met his wife Erica while he was working as the manager of Allann Brothers Beanery in Corvallis. The couple tied the knot in 1991 and have three sons: 11-year-old Zack, an avid reader; 9-year-old Ryan, a sports enthusiast; and 5 1/2-year-old Jordan, a computer whiz. Two years ago, Spencer and Erica also began caring for foster children, and their extended family often includes infants and toddlers.



Jim Bohle
Senior Analyst and Project Manager
Administrative Services

A second-generation Oregonian born just 40 miles north of Eugene, Jim Bohle has never strayed too far from his roots.

Jim's long association with the Computing Center dates back to 1969, when he worked as a student programmer for the Center's business manager, writing machine usage accounting programs.

Computing Center

In 1971, Jim graduated from the UO with a Master's in Computer Science and left the area, first teaching at Cal Poly in San Luis Obispo and later, pursuing a Ph.D. in Washington D.C. But soon he was back in Eugene, doing full-time academic and administrative programming for the Computing Center.

In the decade that followed, Jim was twice lured to the private sector. In 1977, he and two fellow entrepreneurs founded the first retail computer store in Oregon, and some years later, Jim became director of technical services for AlphaHealthcare, a designer of dental and medical office management systems.

But in 1988, Jim signed on as the director of Student Information Services at Computing Center and has been working here ever since. Among his many past and present projects are providing support for University Housing and Printing programs, bringing up the BANNER student and financial aid modules for UO administrative and academic departments, and helping to develop the DuckCall, DuckWeb, and DuckHunt systems.

Last year, Jim's group merged with Auxiliary Services, and Jim traded his managerial duties for the chance to explore new technological developments and assist in developing and implementing BANNER applications.

Currently, Jim is the lead person on the online Degree Audit Reporting System (DARS), which will eventually allow students (and advisers) to electronically assess their progress in satisfying university and major degree requirements. Jim has also been evaluating web "portal" systems such as Campus Pipeline, which customize web interfaces to meet individual information needs—including such items as a calendar of campus events, course and scheduling information, and personal academic records.

Until recently, Jim spent much of his spare time coaching girls' fastpitch softball. His coaching career encompassed not only high school varsity teams, but also a traveling Amateur Softball Association team that boasted five state championships and one regional championship during his tenure.

These days, Jim's leisure time is devoted to studying investing, learning new technologies, and traveling with his wife Ruth, a medical office assistant at Eugene Gastroenterology. The couple has already traveled extensively throughout the southwestern United States, and this summer they're headed for the balmy island of Kauai.

Rob Crossler
Systems Analyst
Administrative Services

January is an important month for Rob Crossler. On January 2, almost immediately after graduating with a B.S. in Business Information Systems from the University of Idaho in his home town of Moscow, Rob started his job as a systems analyst at the Computing Center. It is also the month he married his college sweetheart, Crystal, last year.

His new job as an administrative systems analyst is close to a perfect fit for Rob, who worked for UI's financial aid and finance offices writing BANNER programs while still a student. During that time, Rob was part of a team that got the data warehouse running for the entire campus, integrating the system for departments throughout the university.

Rob's job at the Computing Center also involves administrative programming. His major responsibility is to write programs for, and support, the university's financial aid office, and he's already helped implement Release 4.8 of its BANNER module. In addition, Rob assists with human resources modules and does some general technical troubleshooting and consulting, making house calls when necessary. Rob says his biggest challenge has been moving from UI's UNIX environment to the UO's VMS standard.

Overall, the transition from Moscow to Eugene has gone smoothly. While Rob settles into his Computing Center job, Crystal is working on a degree in education, and she plans to graduate with her B.A. from the UO next June. The couple is active in local church activities and recently joined a bowling league. Almost every Friday night you'll find them at the Emerald Lanes Bowling Alley off Coburg Road, improving their game.

UO Computing Center Staff Assume Leadership Roles in Internet 2

During the Internet2 Member Meeting in Washington D.C. last March, it was announced that Joanne Hugi, Director of the UO Computing Center, had been appointed to NPPAC, the Internet2 Network Policy and Planning Advisory Council.

NPPAC advises the UCAID (University Corporation for Advanced Internet Development) Board of Trustees on matters relating to the planning, development, financing and management of advanced networks for research and education.

The Computing Center is also represented on I2 advisory groups by Joe St Sauver, Assistant Director, Academic User Services. St Sauver sits on the Abilene Technical Advisory Committee, which gives advice on designing, planning, implementing, and operating Abilene, the high-performance academic and research network operated for UCAID by Qwest in conjunction with Cisco and Nortel.

For more information on Internet2 Advisory Councils, see
http://www.internet2.edu/ucaid/html/councils.html

Information about the Technical Advisory Committee can be found at
http://www.internet2.edu/ucaid/abilene/html/tac.html

Want to Get More Involved with Internet2?

If you're interested in becoming more involved with Internet2, an easy way to get started is by participating in one of the Internet2 Working Groups. A list of these groups is available at

http://www.internet2.edu/html/working-groups.html

In most cases, beginning to participate in a working group of interest is as simple as reviewing its web pages for background and then signing up for its mailing list.

Because most group discussions will be technical in nature and list traffic volume may be substantial, you'll probably want to join only those mailing lists that are of particular interest to you.

I2 Performance Initiative Website

The goal of the Internet2 End-to-End Performance Initiative is to create a stable environment for campus network users of Internet2. The Initiative's design team is focusing its efforts on improving performance problem detection and resolution throughout campus, regional, and national networking infrastructures.

To see the latest information on this Initiative, go to

http://www.internet2.edu/e2e

Oregon's K-12 Network to Connect to Internet2

Joe St Sauver
joe@oregon.uoregon.edu

Oregon is one of five states granted permission to connect its statewide K12 network to Internet2 under I2's new sponsored educational group participant (SEGP) program.

This means that the Oregon Public Education Network (OPEN)—and the approximately 600,000 Oregon K12 students who obtain connectivity via OPEN—will soon be able to send traffic over Internet2 via the Oregon Gigapop.

The Oregon Gigapop, located in Eugene, currently provides high performance Internet2 network connectivity to the University of Oregon, Oregon State University, Portland State University, Eastern Oregon University, the Oregon Institute of Technology, Southern Oregon University, and Western Oregon University.

In addition to Oregon, other states winning approval to connect their statewide K12 networks to Internet2 include Michigan, Missouri, Virginia and Washington State.

We'd like to take this opportunity to welcome OPEN to the Oregon Gigapop and Internet2!

For more information, please see

http://www.open.k12.or.us/

http://www.internet2.edu/ucaid/abilene/html/faq-sponsored.html

http://www.ogig.net/

New Microsoft Internet Explorer 5.*x* Vulnerability!

See details at **http://www.microsoft.com/technet/security/bulletin/MS01-020.asp**

UO Multicasts 50th IETF Sessions from Minneapolis

The 50th conference of the Internet Engineering Task Force (IETF) was held last March in Minneapolis, and once again a team from the UO and UC Santa Barbara participated in broadcasting the working group sessions via multicast. This effort, which provided both H.261 and MPEG1 streams, was supported by Cisco Systems, Inc. (*see "Cisco Gift Boosts IP Multicast Research…" on page 4.*)

Muticast Tools can be found at **http://videolab.uoregon.edu/download.html**

For more details about the activities of the IETF, go to **http://www.ietf.org/**

If you have questions about these broadcasts, please send email to *multicast@lists.uoregon.edu*

IPv6 Exchange Points Becoming More Common

Joe St Sauver
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Internet exchange points have long been the glue that binds the Internet together, providing a common location where multiple service providers can meet and exchange customer traffic.

Traditionally, exchange points have focused on IPv4 unicast traffic, or "regular" Internet traffic. However, a growing number of exchange points are now emerging that are designed to facilitate native IPv6 peering (*see related article on page 14*).

As these IPv6 exchange points attract additional participants, IPv6 connectivity will improve, and IPv6 will become a more routine production service.

Current IPv6 exchange points include:

http://www.6iix.net/ (NY and LA)

http://www.6tap.net/ (Chicago; see also **http://www.6ren.net/**)

http://www.ny6ix.net/ (NY)

http://www.nttmcl.com/html/ComIPv6.html

http://www.paix.net/

http://www.ams-ix.net/home.html (Amsterdam)

http://www.uk6x.com/ (London; see also **http://www.labs.bt.com/projects/ipv6.htm)**

http://www.inxs.de/ipv6.shtml (Munich)

http://www.wide.ad.jp/nspixp6/ (Tokyo)

Security Flaw in OpenPGP Key Format

[24 Mar 2001] A Czech information security firm has found a security flaw in the OpenPGP key format, as used by PGP, GnuPG and other PGP implemenations. The flaw makes it possible for attackers to forge a PGP signature if they can get hold of your private key, even if they don't know the pass phrase.

For more information on this problem, see
- *Wired News* article [**http://www.wired.com/news/print/0,1294,42553,00.html**]
- press release [**http://www.i.cz/en/onas/tisk4.html**]
- technical paper [**www.i.cz/en/pdf/openPGP_attack_ENGvktr.pdf**]

Check Out the New, Improved Linux IPv6

Last February the USAGI project released the second stable version of IPv6 for Linux. USAGI is managed by volunteers who are dedicated to providing a free improved IPv6 environment on Linux. Many of these volunteers are already known for their work on the Free BSD Kame IPv6 implementation.

The latest version of Linux IPv6 features the following improvements:

- better source address selection
- CIMPv6
- ICMPv6 Node Information Queries
- SNMP statistics per device
- IPv6 khttpd
- rejoins all-node multicast address on network devices
- enables double bind on the same port
- supports backward compatibility of sin6_scope_id with old glibc
- enables default route when ipv6 forwarding is enabled
- rejects invalid ICMPs
- complies better with RFC regarding Neighbor Discovery Protocol, Stateless Autoaddress Configuration, and Multicast Listener Discovery Protocol
- processes extension headers
- provides INSTALL and Configuration documentation
- fixes bugs in the original kernel

Source codes for Linux IPv6 are available from

ftp://ftp.linux-ipv6.org/pub/usagi/stable/patch/

Binary packages for RedHat, debian, Turbo Linux, Vine Linux, Kondara/MNU Linux are also available.

For more information about USAGI, visit **http://www.linux-ipv6.org/** To get up-to-the-minute news about ongoing developments, you may also want to join their mailing list (**http://www.linux-ipv6.org/ml/**)

What's IPv6... and Why Is It

IPv4 addresses are now a scarce resource, making IPv6 an appealing alternative

Joe St Sauver
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If you've been working on the Internet for a while, you've probably become accustomed to using symbolic domain name system (DNS) names such as **www.uoregon.edu** or **www.yahoo.com**

You may also know that all symbolic DNS entries eventually map to numeric network addresses, most commonly addresses written in "dotted quad" format (four positive integer numbers ranging from 0 to 255, separated by periods). For example, **www.uoregon.edu** resolves to the dotted quad address **128.223.142.13**

At the time most universities originally applied for address space, it was common practice for them to be awarded a so-called "class B" address block containing 65,536 IPv4 addresses (what we now refer to as a "/16"). For example, the University of Oregon was allocated 128.223.0.0/16—the range of addresses going from 128.223.0.1 through 128.223.255.255.[1]

Unfortunately, the number of remaining (IPv4) network addresses still available for allocation is now quite limited, and today all new address allocations are much more tightly controlled than ever before.

While networks with articulable and documentable requirements can still get IPv4 addresses under the guidelines established by RFC 2050 [2], doing so can be an arduous process. Most newly connected companies simply get addresses delegated to them by their upstream provider (most commonly, they are assigned a minimal number of addresses at no cost, and additional addresses are provided at some nominal cost per month).[3] IPv4 addresses are a scarce resource, thus there are incentives to use fewer of them.

Dealing With IPv4 Address Scarcity

To date, there have been two primary approaches to reducing the use of IPv4 addresses: either employing a network address translation box (NAT), or going to IPv6.

NAT. Systems connected via a NAT box all share a single publicly visible IPv4 address, with hosts sitting behind the NAT box using private (non-globally-routable) network addresses following the practices outlined in RFC 1918 [4].

Unfortunately, using NAT breaks a desirable property of IP networks known as "IP transparency" (see [5]) and hence is not a wholly satisfactory solution, although it's quite common. (As a trivial example, if you have a DSL connection at home and connect multiple hosts to your DSL connection via a hub and a Cisco 675 DSL router, the 675 typically also performs network address translation for you.)

IPv6. The other approach to the scarcity of IPv4 addresses is to use IPv6. IPv6 works by increasing the size of network addresses from 32 bits to 128 bits, thereby ensuring that sufficient IPv6 addresses should be available for virtually any conceivable address allocation scenario.

You may or may not realize it, but 128 bit addresses allow for 2^128=340,282,366,920,938,463,463,374,607,431,768,211,456 total theoretically assignable addresses. To understand just how large that number is, recognize that the surface area of the earth is usually considered to be about 196,950,000 square miles.[6] There are 5280*5280 square feet in a square mile, and 12*12 square inches in a square foot. Multiplying 196,950,000*5280*5280*12*12, we find that the approximate surface area of the earth is 790,653,726,720,000,000 square inches.

If you divide 340,282,366,920,938,463,463,374,607,431,768,211,456 (the upper bound on the number of IPv6 addresses) by 790,653,726,720,000,000 (the approximate surface area of the earth in square inches) that implies you can assign over 3.7×10^{21} addresses *per square inch* of the earth's surface. That should be enough addresses for most requirements, at least for the foreseeable future!

Numerical trivia aside, what you need to know is that while IPv6 has gotten off to something of a slow start, it's now time to begin paying attention to it.

Some IPv6 Basics

IPv6 addresses do not resemble IPv4 addresses. Instead of four positive integers between 0 and 255 separated by dots, IPv6 addresses consist of a sequence of values separated by colons, with each chunk comprising from one to four hexadecimal digits (e.g., `3ffe:1500::fffe:0:0:32`) Because of the length of IPv6 addresses, it's common to compress the longest run of zeros in a v6 address at one (and only one) place in the address by substituting two consecutive colons for the zeros.

IPv6 symbolic addresses are currently mapped to host system addresses via DNS "quad A" records, e.g.,

```
% nslookup
Default Server: phloem.uoregon.edu
Address: 128.223.32.35

> set q=aaaa
> marconi.uoregon.edu
Server: phloem.uoregon.edu
Address: 128.223.32.35

marconi.uoregon.edu   IPv6 address = 3ffe:1500::fffe:0:0:32
```

Gaining Ground?

Note that hosts may have one or more IPv6 addresses *and* an IPv4 address. For example, **marconi.uoregon.edu** also has the IPv4 address 128.223.220.31

Until production IPv6 support is available on UO's routers, most UO folks interested in working experimentally with IPv6 will need to arrange for an IPv6 tunnel from Network Services. Because setting up tunnels is somewhat involved, and because we expect to see native IPv6 support on at least some of the university's routers relatively soon,[7] we encourage you to postpone deploying IPv6 in volume for the time being.

Nonetheless, it behooves you to investigate the availability of IPv6 software for your computer's operating system. In some cases, IPv6 support will be routinely available, while in other cases you'll be hard-pressed to get it at this time.

Examples of operating systems now routinely supporting IPv6 include:

1. Sun Solaris (**http://www.sun.com/solaris/ipv6/**)
2. Compaq Tru64 UNIX (**http://www.compaq.com/ipv6/Tru64UNIX.html**)
3. Some Linux distributions (**http://www.bieringer.de/linux/IPv6/** particularly **http://www.bieringer.de/linux/IPv6/status/IPv6+Linux-status-distributions.html**) The recently announced USAGI project (*see page 13, column 3*) is also expected to greatly accelerate the pace of Linux IPv6 deployment
4. FreeBSD (**http://www.freebsd.org/**), NetBSD (**http://www.netbsd.org/**), and OpenBSD (**http://www.openbsd.org**), largely as a result of the outstanding work of the KAME project (**http://www.kame.net/**)

What about OpenVMS?

At the UO, we run Process.Com's Multinet software (**http://www.process.com/tcpip/multinet.html**) on our OpenVMS hosts. Unfortunately, IPv6 support is not yet available in Multinet, although Process.Com has confirmed plans to support it in a future release.

How about Windows PCs and Macs?

Microsoft appears be lagging in the IPv6 area vis `a vis Unix workstation vendors. They do have a "technology preview" release (pre-beta release) for Windows 2000 (see **http://msdn.microsoft.com/downloads/sdks/platform/tpipv6.asp**), but that product is clearly flagged as being "not a released product" and something which "should not be deployed in a production environment." (See also **http://www.research.microsoft.com/msripv6/versions.htm**)

The situation with respect to Apple Macintosh is even murkier. IPv6 is clearly still on Apple's radar (it's mentioned in the announcement of Apple's Worldwide Developer's Conference (**http://www.apple.com/pr/library/2000/march/21wwdc.html**), but we're unable to find any specific information about Apple and IPv6 on Apple's websites.

When Will IPv6 Be Deployed on Our Large Unix Systems?

We will probably begin deploying IPv6 on our large Unix systems this summer, in so-called "dual stack" mode, with both IPv4 and IPv6 enabled. This should be a transparent change for users, except that suddenly remote IPv6-only sites will become accessible from those hosts.

What About IPv6 Applications?

A variety of network applications have already been ported to IPv6. See **http://www.ipv6.org/v6-apps.html** and **http://www.bieringer.de/linux/IPv6/status/IPv6+Linux-status-distributions.html**

What If I've Got a Network Application I Wrote Myself?

An excellent starting point for porting applications to IPv6 is Sun's "Porting Network Applications to the IPv6 APIs" at **http://www.sun.com/software/solaris/ipv6/porting_guide_ipv6.pdf**

Is IPv6 "Real" — or Is It Still Far Off?

IPv6 is very real. The UO has a 24 Bit pTLA (see **http://www.6bone.net/6bone_pTLA_list.html**) and has been one of a comparatively small number of 6Bone core nodes for some time (see **http://www.cs-ipv6.lancs.ac.uk/ftp-archive/6Bone/Maps/backbone.gif** or **http://www.dbnet.ece.ntua.gr/6bone/**). As still more proof that IPv6 is "real," note that if you're working from an IPv6-connected host, you can traceroute to IPv6-only servers from the UO, e.g.,

```
traceroute www.ipv6.digital.com
traceroute to www.ipv6.digital.com (3ffe:1200:2001:1:8000::2): 1-30
hops, 24 byte packets
 1 * uo-marconi (3ffe:1500::fffe:0:0:31) 2.929 ms *
 2 uo-if.6r1.paloalto.ip6.pipex.net (3ffe:1100:0:cc05::1) 35.156 ms * 32.226 ms
 3 3ffe:1280:1001:1::1 (3ffe:1280:1001:1::1) 34.179 ms * 34.179 ms
 4 www.ipv6.digital.com (3ffe:1200:2001:1:8000::2) 43.944 ms 42.968 ms 42.968 ms
```

What About IPv6 and Internet2?

Internet2/Abilene is working on IPv6 deployment; see their IPv6 map at **http://www.abilene.iu.edu/images/v6.pdf** (Please note that a number of 6Bone-connected Internet2 sites do not appear on that map, since it only lists I2 sites that connect to the IPv6 world via Abilene.) There is also an Internet2 IPv6 working group with a website at **http://www.internet2.edu/ipv6**

We believe IPv6 is the next advanced application that most Internet2 sites will begin to tackle, once they have handled IP multicast (if you look at the Abilene IP multicast deployment map at **http://www.abilene.iu.edu/images/ab-mcast.pdf**, you can see that IP multicast has made great strides on Abilene).

- continued on page 16

IPv6, continued...

Questions?

If you have questions about IPv6 at the UO, please contact Joe St Sauver (*joe@oregon.uoregon.edu*)

Notes:

[1] Some institutions, such as Stanford, actually got a rare class "A" address block (63.0.0.0/8) when they initially applied for addresses. That class A netblock represented 16,777,214 addresses, and was only one of 126 theoretically available. Stanford recently returned it, renumbering into a smaller allocation and making those old addresses available for reassignment to others. You can read all about Stanford's renumbering at **http://www.stanford.edu/group/networking/NetConsult/ipchange/indexold.html**

[2] "Internet Registry IP Allocation Guidelines" (**http://www.ietf.org/rfc/rfc2050.txt**)

[3] For example, jump.net charges $5/month for one additional static IP address and $200/month for an additional 255 static IP addresses (e.g., a full class C netblock). See **http://www.jump.net/dslinfo/adsl_prices.html**

[4] "Address Allocation for Private Internets" (**http://www.ietf.org/rfc/rfc1918.txt**)

[5] "Transparency of the network layer" by Brian Carpenter (**http://www.hursley.ibm.com/~bc/transp/transp.htm**)

[6] **http://www.robinsonresearch.com/EARTH/at-a-glance.htm**

[7] For information on Cisco's IPv6 strategy, see **http://www.cisco.com/warp/public/732/ipv6/index.html**

Additional IPv6 References

Tom Lohdan's IPv6 News and Links Site (a great resource): **http://www.hs247.com/**

IPv6 Website: **http://www.ipv6.org/**

"Internetworking IPv6 With Cisco Routers": **http://www.ip6.com/**

IPv6 Forum: **http://www.ipv6forum.com/**

Intel Continues Generous Donations to UO

Intel continues to support campus computing and networking through its generous donations of equipment to the UO. Its most recent contributions include a number of Intel Xeon processors, Intel PCI and PCMCIA ethernet cards, and surplus shrinkwrapped operating system licenses, media, and documentation.

We'd like to take this opportunity to acknowledge Intel's ongoing generosity, and to thank them for their support.

Interested UO departments should watch the departmental computing mailing list (*deptcomp@oregon.uoregon.edu*) for periodic announcements about available donated equipment. If you have any questions about the Intel equipment, feel free to contact Joe St Sauver (*joe@oregon.uoregon.edu*).

DNS Names Poised to Become Multilingual

Joe St Sauver
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Most of us have become accustomed to seeing domain name entries that we can easily read, pronounce, and use. This is largely because most Internet domain names use the same letters and numbers we routinely read and write every day: the letters **a** to **z**, and the digits **0** to **9**.

But now, just for a minute, imagine yourself overseas, and imagine that you speak Chinese, Japanese, Korean, Thai, or Vietnamese. Or imagine that you are accustomed to writing Cyrillic, Arabic, or Tamil characters. Think how alien and arbitrary English domain names would seem to you.

That will all be changing soon. Later this year, if current tests proceed without smoothly, DNS service will be offered worldwide on a level playing field for most commonly used languages.

Given that there are literally hundreds of millions of international Internet users who do *not* routinely use a western alphabet, one can easily see that the introduction of multinational DNS is potentially a huge event—a truly paradigm-shifting event—and one which should serve to dramatically increase interest in, and use of, the Internet by non-Western audiences.

Want to Learn More?

If you are interested in learning more about multilingual DNS, here are some good places to start:

Verisign's Multilingual Domain Names Testbed
http://www.verisign-grs.com/multilingual/multilingual.html

Multilingual Internet Names Consortium
http://www.minc.org/

Internationalising the Domain Names System
http://www.ncne.nlanr.net/training/techs/2001/0128/presentations/200101-park1_files/v3_document.htm

Internationalized Domain Name Working Group
http://www.ncne.nlanr.net/training/techs/2001/0128/presentations/200101-seng1_files/v3_document.htm

Are SDRs the Wave of the Future?

Smart radios may become the industry standard in the not-too-distant future

Joe St Sauver
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We're all familiar with a variety of different kinds of radios—AM/FM broadcast radios, CB radio, amateur ("ham") radio, police/fire/ambulance band radios, and so on. Each of those radios has closely defined parameters governing such factors as available frequencies, allowable power, and required spectral purity.

More recently, however, industry and the federal government (especially military and national security-related agencies) have begun to aggressively develop a new, more agile type of radio known as a "software-defined radio," or SDR.

To understand the potential of SDRs, ask yourself if it makes sense to apply invariant parameters to radio equipment that may operate in vastly different conditions. For example, consider a radio that's being used in New York City, and compare it to a radio being used in a Nevada desert. Obviously, these different locations may have different requirements (i.e., in the absence of congestion or competition for resources, using more power or appropriating unused frequencies might be feasible).

In addition, spectrum-aware software radios have superior potential to survive in hostile environments where intentional or unintentional interference might otherwise block communication.

In the past, radios have not been smart enough to sense the conditions in which they are operating and adapt accordingly. But now that a new class of smart, software-defined radios is on the horizon, increased congestion in radio frequencies and growing pressure to deploy and interconnect a host of new wireless network devices may thrust SDRs to the forefront. While you may not see SDRs widely deployed this year, it's certain they'll be out in force not too many years down the line.

For more information about software defined radios, you may want to see:

FCC Notice of Inquiry Regarding Software-Defined Radios
http://www.ntia.doc.gov/ntiahome/fccfilings/2000/sdrnoi61600.htm

How Software Defined Radios Change The Rules
http://www.dandin.com/pdf/Dandin_Chronicles_2.4.pdf

New Directions in Delivering Broadband Wireless Connectivity
http://www.ncne.nlanr.net/training/techs/2001/0128/presentations/200101-hendricks1_files/v3_document.htm

SDR: Big Hopes for New Tech
http://www.radioscape.com/Version_1_9/CMS.asp?cId=275

SDR Forum
http://www.sdrforum.org/

Software-Defined Radios and the Indefinite Future
http://www.americasnetwork.com/issues/2000issues/20001201/20001201_shapechanger.htm

'Click-through' Payment Programs Unacceptable

Many companies offer payment (either in cash or in other forms of compensation) to individuals who provide a link from their personal website, usually in the form of a banner graphic, to a specific website that the company in question wishes to advertise. These pay-for-web-referral schemes are usually called "click-through" payment programs.

University of Oregon users are reminded that those sorts of schemes are unacceptable under the Addenum to the University of Oregon Acceptable Use Policy (**http://cc.uoregon.edu/policy/aup_addend.html**) which states:

"Banner exchanges that include commercial sites are inappropriate on personal Web pages due to the commercial nature of their content. Links to commercial sites that are intrusive or that facilitate marketing or promotion rather than serving as a simple link to another site are inappropriate due to their commercial content."

Questions about commercial content restrictions or other acceptable use questions may be sent to Jon Miyake (*miyake@oregon.uoregon.edu*).

Do's and Don'ts of Getting Your

Lucy Lynch
Academic User Support Specialist
listmaster@lists.uoregon.edu

If you want to get your word out to a large group on campus, your first thought may be to do an unsolicited mass mailing. But please think again. In today's world, almost everyone is deluged with more daily email messages than they can handle; adding to that burden may not be well received, and your message could even be discarded unread.

Remember, users' needs may differ from yours, and they have several options for dealing with unwanted mail. These include opting out of a list, filtering, and even removing themselves from the UO directory (see the directory information section at the end of this article).

So what should you do? Below is a summary of types of mailings, ranked in order of preference. Five stars indicate the most desirable mailing type, and zero stars, the least desirable. Remember that one of the most tried and true methods of sending out important information campus-wide is to ask your dean or director to send your message to the Deans and Directors' mailing list (*deans-dirs@oregon*). The deans and directors subscribed to that list can then disseminate your information to their groups as they deem appropriate.

Opt-in List ★★★★★

The opt-in list (announced in print, on a website, via a top level web page, etc.). This kind of list can be easily created and maintained using Majordomo.

One-time Mailing to Stand-Alone Database ★★

A one-time mailing to a stand-alone database with opt-in instructions for a Majordomo list and a pointer to your website or list archive.

Subscribers Added without Notice ★

Users are added (without notice) to an ongoing list with a clear statement of purpose and opt-out instructions.

No Easy Way Out ★

Users are added to a list with no way to opt out without extraordinary measures (i.e., lists are built on the fly from a data warehouse for each mailing). This will require that message senders keep a secondary database of email addresses to be deleted from the main database before each mailing in order to honor REMOVE requests—all of which requires custom programming and very good record keeping.

No Way Out at All

No way out for list members. Users' email information will begin to drop out of the campus directory when they realize that the only way to avoid unwanted email is to remove their email address from the directory. This will reduce the usefulness of the directory, and puts the onus on users to provide their email information to the individuals or groups they want to communicate with directly.

Questions to ask before you start

1. Who is your audience? Do they need to see the message you're sending? If your message looks anything like marketing, sending it to users who didn't ask to receive your traffic is a bad idea! See **ftp://ftp.rfc-editor.org/in-notes/rfc2635.txt**

2. Is receiving your email a condition of employment/membership/enrollment/etc.? If so, be clear in the initial mailing, and limit posts to *just* the required messages. Don't use one list for several levels of messages, or recipients will lose interest in your primary message and ignore your mail.

3. Try to estimate your list volume. How many messages will you be sending? How often? If you plan to issue regular bulletins, please consider a one-time announcement with a pointer to a website. If you plan to send more than one message a term, you should plan to use either an opt-in list or (worst case) an opt-out list with clearly defined unsubscribe instructions included in the footer of every message.

4. Is your list for announcements only, or do you want to allow member discussion? Any discussion list should be created as a majordomo list, and users must have the option to drop out.

5. Where do replies go? There should be a human moderator available for any mass mailing. The moderator should respond to all questions about the list in a timely manner, and should be prepared to explain the purpose and constraints of the list when asked.

6. Do you need an archive? Will it need to be web accessible? If you plan to issue regular bulletins, you should consider storing those messages in a web-based archive so users have access to the information even if they don't read their email.

If You Must Send a Mass Mailing…

If you have considered all your options, and *still* feel you have a legitimate reason for sending unsolicited mail, you'll need to follow these guidelines:

1. The Subject line for regular mass mailings should always begin with a keyword that will allow users to filter their incoming mail:

```
Subject: [KEYWORD]: your subject here
```

2. The first line in the body of message should contain the original mailing address (this is needed for debugging if delivery fails):

```
Original message sent to [FULL ADDRESS]
```

3. All unsolicited mass mailing must contain the following boiler plate:

```
You received this email message [BECAUSE] based in
information found in [DATA SOURCE]. If you have questions
or comments about this email please contact [FULL NAME],
[DEPARTMENT/UNIT] at [Phone #] or [EMAIL ADDRESS]
```

Campus Message Out via Email

3. If you want to maintain an opt-out list, add something like the following (and honor requests you receive!):

```
If you would like your name excluded from any future
mailings please reply to this message with the single
word REMOVE in the subject line or body of the message.
```

A message from the listmaster to campus list-owners might look like this:

```
Date: Wed, 14 Mar 2001 14:45:27 -0800
From: Lucy E. Lynch <llynch@darkwing.uoregon.edu>
To: someone@yahoo.com
Subject: LISTOWNERS: Majordomo Workshops Spring
2001
Original message sent to owner-testlist@lists.uoregon.edu
You received this email message for UO majordomo
list owners based on information found in majordomo
configuration files. If you have questions or
comments about this email please contact:
Lucy Lynch, Computing Center at 346-1774 or
listmaster@lists.uoregon.edu
[message body here]
  ------------------------------------------
```

Below are some examples of mass mailing policies at other large institutions:

University of Iowa:
http://www.its.uiowa.edu/its/cs/email/massmail/announce.htm

Indiana University:
http://www.itpo.iu.edu/survey.html
http://www.itpo.iu.edu/bulk.html

University of California at Berkeley:
http://socrates.berkeley.edu:7015/policy/mass.ml.html

Georgia Tech:
http://www.whistle.gatech.edu/archives/98/nov/2/email.html

UO Directory Information

Below is the information you'll need to access and manage your UO directory listings. Links to information on confidentiality are also provided:

Students: Students with university email accounts will appear in the electronic student directory unless they file a Restriction of Directory Information form. For more information, go to

http://registrar.uoregon.edu/students/studentrecords/confid.html

Faculty and Staff: Faculty and staff can manage their email addresses using DuckWeb, and are not required to list an email address. However, removing your addres can make it difficult for others to reach you.

For more information on the confidentiality of UO employee records, see
http://hr.uoregon.edu/records/employee-data.html

For comparison, see how OSU handles confidentiality of directory information at
http://www.orst.edu/registrar/forms/confid.htm

SPRING WORKSHOPS

The Library and Computing Center are committed to making sure you have opportunities to build your technology skills. Toward that end, we provide a full range of computer and Internet training, from novice to advanced skill levels. These information technology ("IT") workshops are free and open to currently enrolled students, as well as staff and faculty.

There is no registration; all seating is available on a first-come, first-served basis. You *must* meet the workshop prerequisites as stated in the description.

Requests for accommodations related to disability should be made to **346-1925** at least one week in advance of the workshop. For more information, contact the Office of Library Instruction (**346-1817**, *cbell@darkwing.uoregon.edu*, **http://libweb.uoregon.edu/instruct**).

Note: The skills taught in these workshops, whether taught in a Mac or Windows environment, are transferable across platforms.

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.
The Spring Workshop Schedule will be available March 15

Basic Computing and Software Skills ✔Prerequisites

EndNote and ProCite: What Are These, and Why Should I Use Them?				
	Mon Apr 30	3:30 - 5:20pm	RSR	Brownmiller, Lenn
	Tue May 1	3:30 - 5:20pm	RSR	Brownmiller, Lenn
Preparing an Electronic Dissertation in PDF				
	Fri May 4	2:00 - 2:50pm	RSR	Johnson
PowerPoint Basics	Thu Apr 26	2 - 3:50pm	EC	Johnson
More PowerPoint - ✔*Prerequisites:* PowerPoint Basics or equivalent knowledge and skills				
	Thu May 10	2 - 3:50pm	ITC	Heerema

Communication and Research Topics ✔Prerequisites

Net a Job: Use the Web! ✔*Prerequisite:* familiarity with a graphical web browser (e.g., Netscape or Internet Explorer)				
	Wed Jun 6	3 - 4:20pm	EC	Haynes

Web Publishing ★✔Prerequisites

Web Publishing I - ★✔*Prerequisites:* Familiarity with a graphical web browser like Netscape or Internet Explorer and an account on Darkwing or Gladstone (not Oregon!); you must know your username and password

Tue Apr 10	10 - 11:50am	EC	Nesselroad
Mon Apr 16	2 - 3:50pm	EC	Frantz

Web Publishing II - ★✔*Prerequisites:* Web Publishing I or equivalent knowledge and skills, and a web page you've created

Tue Apr 17	10 - 11:50am	EC	Benedicto
Mon Apr 23	2 - 3:50pm	EC	Benedicto

Web Publishing III -★ ✔ *Prerequisites:* Web Publishing II or equivalent knowledge and skills

Mon Apr 30	2 - 3:50pm	EC	Bell

* WORKSHOP LOCATION CODES *

EC: Electronic Classroom (Windows)	16 PCs	144 Knight Library
ITC: Macintosh Classroom	20 Macs	267B Knight Library
RSR: Reed Seminar Room (Windows)	7 PCs	235 Knight Library
St A:		Studio A Knight Library

★ **Requires an active account on Darkwing or Gladstone**

SPRING WORKSHOPS

Workshop	Day/Date	Time	Location	Presenter
Web Publishing … continued	***★✔ Prerequisites***			
Introduction to Dreamweaver ✔*Prerequisite:* Web Publishing I & II or equivalent knowledge and skills	Tue May 8	10 - 11:50am	EC	Johnson
Digital Media				
Shooting Great Digital Images	Wed May 16	1 - 2:50pm	St A	Kirkpatrick
Introduction to Photoshop - ✔*Prerequisite:* Shooting Great Digital Images recommended	Wed May 23	1:30 - 2:50pm	ITC	Kim
Introduction to Flash - Learn the basic animations for web or other digital media	Wed May 30	1:30 - 2:50pm	ITC	Kim

*** WORKSHOP LOCATION CODES ***

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★ **Requires an active account on Darkwing or Gladstone**

More Ways to Increase Your Tech Smarts…

Training Videos

Looking for an alternative to the workshop format? The Computing Center Documents Room (175 Grayson Hall) has a growing collection of videos on using computers and computer software, and you can use your UO picture ID to check them out. For a list of available titles and descriptions, visit **http://darkwing.uoregon.edu/~docsrm/video.html** Call **346-4406** for more information.

New Books in Computing Center Documents Room

The following books are just some of the new spring arrivals in the Documents Room (175 Grayson Hall):

- *The Artists' Guide to the GIMP* by Michael J. Hammel
- *C# Essentials* by Brad Merrill, Ben Albahari and Peter Drayton
- *The Complete PC Upgrade and Maintenance Guide* by Mark Minasi
- *Core Web3D* by Aaron E. Walsh and Mikael Bourges-Sevenier
- *Don't Make Me Think: A Common Sense Approach to Web Usability* by Steve Krug
- *Dreamweaver UltraDev: Fast and Easy* by Aneesha Bakharia
- *MacWorld Photoshop 6 Bible* by Deke McClelland
- *Programming Pearls, 2nd Edition* by Jon Bentley
- *SSH, the Secure Shell: The Definitive Guide* by Daniel J. Barrett and Richard E. Silverman
- *UNIX System Administration Handbook, 3rd Edition* by Evl Nemeth, Garth Snyder, Trent R. Hein, and Scott Seebass

The Documents Room also offers CD software collections and a wide range of periodicals on popular computing topics. For more details, see **http://darkwing.uoregon.edu/~docsrm/**

Linux 2.4's *Netfilter* Dramatically

Stephen Fromm
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If you've been using Linux's packet-filter *ipchains* or *ipfwadm*, you may want to consider upgrading to kernel 2.4 to gain the advantages of its new packet filtering system. While 2.4 does contain backward compatibility support for *ipchains* and *ipfwadm*, you can only gain the advantages of the new packet filtering subsystem by using *Netfilter* (**http://netfilter.kernelnotes.org**).

How *Netfilter*'s Packet-Filter Works

Briefly, a packet-filter is a program that uses a set of rules to determine how to handle a received (or about-to-be-sent) packet, and each rule describes specific packet characteristics (e.g., one rule might describe a packet from outside the UO network that is headed to port 25 on your machine). Each rule also has a target, specifying what to do with the packet in the event of a match, either allowing or denying further processing. If a packet fails to match a specific rule, the default policy for that set of rules dictates how to handle the packet.

Netfilter's biggest advantage is its ability to maintain "state," or knowledge of connections going in and out of the system. Many older firewall technologies inspect packets individually, without regard to the overall connection they're a part of. In contrast, Netfilter's "stateful" inspection is a much more powerful form of packet filtering because it is aware of the ongoing connection and the state it is in. States that provide connection-tracking analysis include *New*, *Established*, *Related*, and *Invalid*. You can see open connections in **/proc/ip_conntrack**, e.g.:

```
tcp 6 431990 ESTABLISHED src=192.168.10.36 dst=192.168.10.13
    sport=32922 dport=80 src=192.168.10.13 dst=192.168.10.36 sport=80
    dport=32922 [ASSURED] use=1
udp 17 170 src=192.168.10.36 dst=192.168.10.35 sport=32768 dport=53
    src=192.168.10.35 dst=192.168.10.36 sport=53 dport=32768 [ASSURED] use=1
tcp 6 431962 ESTABLISHED src=192.168.10.36 dst=192.168.10.13
     sport=935 dport=22 src=192.168.10.13 dst=192.168.10.36 sport=22
     dport=935 [ASSURED] use=1
```

Netfilter can use this list of connections as another way of inspecting packets. Its ability to maintain state makes it much easier to write filtering rules under 2.4. An obvious example is FTP. Before 2.4, clumsy, complicated rules had to be written to allow FTP traffic, whereas *Netfilter* can recognize a related connection and allow it to pass through. Consider the following example:

```
# iptables -P INPUT DROP
# iptables -A INPUT -m state —state ESTABLISHED,RELATED \
    -i eth0 -s ! 192.168.10.36 -d 192.168.10.36 -j ACCEPT
```

In this example, we specified a default policy of 'DROP' for anything on the INPUT chain. Next, we accepted anything on the INPUT chain that's part of an existing (or related) connection whose source is anything but the ip address of the destination computer. This takes care of everything: there is no need to write complicated rules to allow DNS, client-based, or other kinds of traffic. To take advantage of this feature, you will want to make sure the appropriate modules are loaded:

```
# modprobe ip_conntrack
# modprobe ip_conntrack_ftp
```

Netfilter's modular design allows you to extend its capabilities with other modules as they become available, or you can write your own (see **http://netfilter.kernelnotes.org/unreliable-guides/netfilter-hacking-HOWTO/index.html**). By default, the maximum number of connections that *Netfilter* will track depends on the amount of memory available. On my test machine with 256MB, this was 16376. However, this can be changed with the *sysctl* interface. The timeout for a given connection depends on the protocol (TCP, UDP, or ICMP) and, if it's TCP, the current state of the connection (e.g. SYN_SENT, ESTABLISHED, TIME_WAIT). While the timeouts cannot be configured at runtime, you can modify the source code as appropriate (e.g., see the timeouts for TCP state tracking specified in the file **/usr/src/linux/net/ipv4/netfilter/ip_conntrack_proto_tcp.c** under the variable **tcp_timeouts**).

Other Notable Features

Aside from its ability to track connections, *Netfilter* offers some other interesting new features, including the ability to match any TCP flag, specify more LOG options, and limit rules.

Matching TCP flags. You can now match any TCP flag, an operation that could be useful in detecting certain types of scans. Suppose you're trying to detect Nmap's XMAS scan, where the FIN, URG, and PSH flags are set. With *Netfilter*, you can write a rule to detect it:

```
# iptables -A INPUT -p tcp —tcp-flags ALL FIN,URG,PSH \
  -j LOG —log-level warning —log-prefix "XMAS scan detected"
```

We specify that ALL flags should be examined, but only FIN, URG, and PSH should be set. This would then yield the following message to syslog:

```
Feb 23 17:45:50 bizarro kernel: XMAS scan detected IN=eth0 OUT=
   MAC=00:10:4b:32:14:4f:00:e0:29:1c:de:12:08:00 SRC=192.168.10.46
   DST=192.168.10.36 LEN=40 TOS=0x00 PREC=0x00 TTL=50 ID=59598 PROTO=TCP
   SPT=40862 DPT=27 WINDOW=3072 RES=0x00 URG PSH FIN URGP=0
```

(For those feeling especially adventurous, there currently is a module in CVS that attempts to detect a port scan.)

More LOG options. The above example, which uses the target LOG, also highlights *Netfilter*'s new logging mechanism. Among other options with LOG, you can specify the log-level (*debug*, *info*, *notice*, *warning*, etc.) and a prefix to the log message so as to distinguish one match from others.

Improves Linux Packet Filtering

Rate limiting. Lastly, *Netfilter* gives you the ability to limit the rate at which a packet can match a given rule. Remember, a packet traverses a chain of rules until it finds a match (or, failing that, follows the default policy for the chain). Once a match is found, it performs the targeted action. With the ability to limit the rate that a specific rule can be matched, you can now say "Once a packet matches this rule *n* times, stop performing the targeted action." You can specify the maximum number of matches allowed per second, minute, hour, or day. You can also specify the maximum burst before the limit is reached. The default is three matches per hour, with a burst limit of five. This feature can be used in conjunction with the LOG target to limit the number of logs generated for a specific match.

This feature may best be highlighted with two examples. Suppose we wanted to block and log NetBIOS traffic, but we don't want to log every NetBIOS packet we receive. We could use a rule such as:

```
# iptables -A INPUT -i eth0 -s 128.223.0.0/16 -p udp,tcp --dport 137:139 \
    -m limit -j LOG --log-level info --log-prefix "Unwanted NetBIOS"
```

By using the "limit" module, this rule will log the first five NetBIOS packets and then begin enforcing the limit of three matches per hour. If more than three NetBIOS packets are received per hour, they will not be logged. This feature can also be used to limit incoming or outgoing traffic. For example, we could limit the number of pings we accept:

```
# iptables -A INPUT -p icmp --icmp-type echo-request \
    -m limit --limit 1/s -j ACCEPT
```

This rule will be enforced once the limit-burst of five packets is reached. Afterwards, only one echo-request per second will be accepted. We can change the limit-burst value with the '--limit-burst' option.

These are just a sample of some of the useful features I've discovered when working with *Netfilter*. I encourage you to investigate *Netfilter* and the advantages it may have for you over *ipchains* and *ipfwadm*.

References

For more information on *Netfilter* and network security, see:

- **http://www.securityportal.com/cover/coverstory20010122.html**
- **http://www.securityportal.com/articles/prereq20010219.html**
- **http://www.securityportal.com/articles/netfilter20010219.html**
- **http://netfilter.kernelnotes.org/unreliable-guides/networking-concepts-HOWTO/index.html**
- **http://netfilter.kernelnotes.org/unreliable-guides/packet-filtering-HOWTO/index.html**
- **http://netfilter.kernelnotes.org/unreliable-guides/NAT-HOWTO/index.html**
- **http://netfilter.kernelnotes.org/unreliable-guides/netfilter-hacking-HOWTO/index.html**
- **http://mirkk.rejva.nu/~monmotha/firewall/firewall/**

Modules

Below is a list of the modules you can compile in support of *Netfilter* when compiling Linux 2.4 (this is from 2.4.2).

CONFIG_IP_NF_MATCH_LIMIT - allows you to control the rate at which a rule can be matched. Mainly useful in combination with the LOG target (see "LOG target support" below) and to avoid some Denial of Service attacks.

CONFIG_IP_NF_MATCH_MAC - allows you to match packets based on the source ethernet address of the packet.

CONFIG_IP_NF_MATCH_MARK - allows you to match packets based on the 'nfmark' value in the packet. This can be set by the MARK target (see below).

CONFIG_IP_NF_MATCH_TOS - allows you to match packets based on the Type Of Service fields of the IP packet.

CONFIG_IP_NF_MATCH_STATE - allows you to match packets based on their relationship to a tracked connection (i.e. previous packets). This is a powerful tool for packet classification.

CONFIG_IP_NF_MATCH_UNCLEAN - matches any strange or invalid packets by looking at a series of fields in the IP, TCP, UDP and ICMP headers.

CONFIG_IP_NF_MATCH_OWNER - allows you to match locally generated packets based on who created them: the user, group, process or session.

CONFIG_IP_NF_FILTER - packet filtering defines a table 'filter', which has a series of rules for simple packet filtering at local input, forwarding and local output. See the man page for iptables(8)

CONFIG_IP_NF_TARGET_REJECT - the REJECT target allows a filtering rule to specify that an ICMP error should be issued in response to an incoming packet, rather than silently being dropped.

CONFIG_IP_NF_TARGET_MIRROR - the MIRROR target allows a filtering rule to specify that an incoming packet should be bounced back to the sender.

CONFIG_IP_NF_TARGET_MASQUERADE - all outgoing connections are changed to look as if they come from a particular interface's address, and if the interface goes down, those connections are lost. This is only useful for dialup accounts with dynamic IP address (i.e. your IP address will be different on next dialup).

CONFIG_IP_NF_TARGET_REDIRECT - all incoming connections are mapped onto the incoming interface's address, causing the packets to come to the local machine instead of passing through. This is useful for transparent proxies.

CONFIG_IP_NF_MANGLE - adds a 'mangle' table to iptables: see the man page for iptables(8). This table is used for various packet alterations which can effect how the packet is routed.

CONFIG_IP_NF_TARGET_TOS - adds a 'TOS' target, which allows you to create rules in the 'mangle' table that alter the Type Of Service field of an IP packet prior to routing.

CONFIG_IP_NF_TARGET_MARK - adds a 'MARK' target, allowing you to create rules in the 'mangle' table that alter the netfilter mark (*nfmark*) field associated with the packet prior to routing. This can change the routing method (see "IP: use netfilter MARK value as routing key") and can also be used by other subsystems to change their behavior.

CONFIG_IP_NF_TARGET_LOG - adds a 'LOG' target, which allows you to create rules in any iptables table that records the packet header to the syslog.

95? 98? ME? 2000? XP? Which Version

Should you upgrade? Weigh these options carefully before deciding

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If you're thinking about purchasing a new personal computer, or upgrading the one you have now, you may be wondering which of the many Windows versions might work best for everyday home use. This review is intended to help you make that decision.

In brief, **Windows 95, 98 and Millennium Edition (ME)** amount to incremental upgrades of Microsoft's offering for home users, while **Windows NT 4** and **Windows 2000** target business users. **Windows XP**, planned for summer release, is designed to incorporate features of both NT4 and 2000.

General Advice

First off, we have to say that if you are completely happy with your existing system, then upgrading doesn't make sense. The only time you should consider upgrading is when you desire or require features offered by the new system, or when purchasing new equipment.

Prior to any upgrade, make sure the new system will be compatible with existing hardware and software. Also be aware that an upgrade may necessitate purchasing updated software programs, and there may be further additional costs, such as adding memory or disk, to accommodate the new system. Finally, take into account the fact that upgrades don't always go smoothly, and don't attempt an upgrade unless you have time to troubleshoot the problems that may arise.

Windows 95

In the same way that Windows 3.1 is generally not considered practical for even the most basic applications today, 95 will eventually be too old to be usable for common applications.

If "usable" is defined as being able to run the current version of Microsoft Office and a current web browser, then Windows 95 still passes those tests. At the moment, 95 is still usable for basic computing and network activities, but watch out for an increasing number of applications that will require something newer (for example, Windows 95 lacks decent USB support, thus limiting your ability to use modern digital cameras, scanners, and other USB devices).

If you need a bigger hard disk and more memory before you can upgrade, you may be best served by buying a new computer rather than making piecemeal upgrades. Systems that are slower than 200Mhz, or have less than 4Gb of disk space and less than 64Mb of memory may be candidates for outright replacement.

Ideally, for best compatibility with the current generation of software and hardware, you should probably be running Windows 98 or higher.

Windows 98

If you currently own Windows 98, you don't need an upgrade. Most current generation software and hardware products work fine with Windows 98.

This is the first version of Windows to have good support for USB devices (e.g., digital cameras or scanners), and it includes VFAT32, an updated file system that supports large hard disks. VFAT32 allows users with disks greater than 2Gb to use the disk as a single volume (one drive letter), and it uses available space more efficiently due to smaller addressable units of disk space (clusters).

Other enhancements include a launch tray for frequently used applications and device support for more recent hardware.

Windows 98 Second Edition includes a feature called "Internet Connection Sharing," which allows modem, DSL, and Cable Modem users to share one IP address with multiple computers. (*This feature should **not** be enabled at the UO!*) Both Windows 98 and 98 Second Edition are good versions, but you may now have trouble acquiring anything but Microsoft's most current versions of Windows (ME and 2000) new. If you currently have 98 and are happy with it, you may want to stick with it for now.

Windows ME

This is the most recent update in the product family for home users, which includes Windows 95 and Windows 98.

In our tests of Windows ME, we found it to be very similar to Windows 98 for all basic applications. The major differences are software packaging (ME includes digital video software), and minor look and feel changes. ME looks more like Windows 2000 in some ways than Windows 98, but the functionality is very similar. In fact, you probably won't find any applications that specifically require ME as opposed to 98. If you're happily using 98, we don't recommend upgrading.

For new computers, ME does have some advantages because it ships with new device drivers, making installation on newer hardware less complex. Moreover, many vendors no longer offer Windows 98 as a choice. ME includes Microsoft's new active directory client software for connecting to Windows 2000 servers. We find the reliability and usability of ME to equal Windows 98, but it does not amount to a substantial upgrade.

Windows 2000

This is perhaps the most interesting version of Windows available at the moment. For a list of features, see

http://www.zdnet.com/zdhelp/stories/main/0,5594,2430571,00.html

Originally known as "NT v5," 2000 amounts to a major upgrade for Win-

# of Windows to Choose...and Why

dows NT 4 users. Windows NT 4 was glaringly deficient in decent plug and play support for new hardware devices. Windows 2000 corrects this and adds USB support. In addition, most computer games now work on 2000.

Under NT 4, the logo "Designed for Windows 95/98" was almost a guarantee that the software would not work with NT, yet many 95/98 applications will work fine on Windows 2000. This helps bridge the gap between business (no frills) computing and consumer applications.

For example, 2000 allows you to use modern USB devices like digital cameras, scanners, and consumer-oriented video cards with TV tuner and videoconferencing functionality (ATI, Matrox, etc.)

While it's probably safe to choose 2000 with a brand-new computer (with the software preinstalled), upgrading does require caution. You need to make sure all of your devices and software are compatible with 2000 before upgrading. In most cases, NT 4 users will find 2000 a welcome improvement, but 95/98 and ME users need to be careful because some device support is still not available, and in some cases no upgrades are even planned.

These caveats aside, most will find 2000 to be more stable than Windows 95/98/ME for basic business applications, and a slightly faster performer. In our tests, Windows 98 and NT 4 machines have been upgraded without problems (we have not tried upgrading from ME). 2000 also lives up to its claim to work well with laptops that have good power management features and stability.

Multiple user feature. Windows 2000's multiple user feature may be a deciding factor for those who are trying to choose one Windows version over another.

The down side of this feature is that you need at least two accounts on any Windows 2000 system. One special account called "Administrator" is used to change network and other system settings, as well as at least one user account. You can configure 2000 to automatically log in as a specified user, but even then you will need to log out and log in again as Administrator for certain functions. In fact, we recommend you install software as Administrator, then create shortcuts in appropriate user directories (a setup which may be beyond some novice users' capabilities).

The good side of multiple user support is that you can create logins for yourself and other family members, so that each person sees a customized view of the same computer. For example, if you log in as yourself, your bookmarks, email, and desktop icons will be distinct from those used by others on the system—even if you use the same browser and email client.

This level of separation between users is not possible with Windows 95/98/ME. While 95/98/ME all allow the creation of user accounts, if two users try to use the same email program or set a different default browser, the other user will be affected.

Windows XP

XP is based on Windows 2000, with more 95/98/ME consumer capabilities. Microsoft hopes that XP will replace both 2000 and ME, merging their two major Windows products into one.

One interesting feature of XP is that applications can continue to run even if you log out, and then log back in as another user. Multiple user support appears to be a feature that's here to stay.

Other than some look and feel changes, XP promises to be a lot like 2000, with some ME features bolted on for compatibility. We'll know more when the product is released this summer.

Need Help?

If you need help making an upgrade decision, feel free to contact Microcomputer Services for additional advice (*microhelp@oregon.uoregon.edu*, **346-4412**).

Get the Fix for Windows 95/98/98SE Network Access-Delay Problems

Microsoft recommends the patch for systems communicating over high-delay networks, such as satellite links

Because of a math error, Windows 95/98/98SE can suffer problems when transmitting data over high-delay networks. If you're a Windows 95/98/98SE user who's working with long-delay links (e.g., satellite-connected sites) and are experiencing this kind of network performance problem, you can get Microsoft's patch for it at

http://support.microsoft.com/support/kb/articles/Q236/9/26.asp

MacOS X a Radical Departure

Overall, the new MacOS is more stable, flexible, and nimble

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The Macintosh Operating System has undergone many changes over the last decade, but none as radical as the shift to MacOS X.

OS X makes a complete break from the previous Mac operating system design. Rather than a monumental, hardware-specific code base, it uses a Unix-style kernel based on the *Mach 3.0* kernel from Carnegie-Mellon University, as well as code from *FreeBSD 3.2* (based on UC Berkeley's *BSD 4.4 Lite*.) The kernel sits on top of the hardware, fielding calls that the operating system and applications make to the hardware services (e.g., hard drive, CD-ROM, speakers, USB devices, and so forth).

With this hardware abstraction in place, the reliance on a specific piece of machinery is lessened, allowing the MacOS to run on a variety of different machine platforms. I have even seen a version of MacOS X running on an Intel Pentium III computer; while the operating system had been heavily modified, it was hopeful evidence that MacOS can eventually migrate to other hardware platforms.

Unix-Style Features

The essentially Unix nature of MacOS X appears in every aspect of its operation. It's a multiuser operating system, although it initially installs with this feature turned off. It offers a host of services (including Telnet, FTP, web services) that we associate with Unix timesharing hosts. The essential services of the computer, those operations that run in the background, are Unix-based services. You can open a terminal window, running the tcsh shell, and issue standard Unix command line directives. *Emacs* is included in the MacOS X package, although it's limited to the terminal window within which it was invoked.

The BSD-style Unix architecture of the operating system brings a host of benefits, most notably a truly protected memory space for running applications. This means that when one application, such as a word processor, stops working, your other running programs and the rest of the operating system will be unaffected.

In addition, MacOS X offers true preemptive multitasking, a threaded execution environment, enhanced virtual memory handling, and symmetric multiprocessing (for those of you lucky enough to have more than one processor in your computer.) All of these benefits add up to a more stable, flexible, and nimble operating system.

To an experienced user, MacOS X's Unix operations may appear somewhat truncated. There is a terminal program for command-line operations, but that terminal is only accessible through the graphical interface. Once the terminal is open, many of the standard Unix commands are available (e.g., *vi*, *top*, *emacs*, *ls*), but the lack of an X Windows environment can be startling. More and more Unix applications and utilities are being ported to MacOS X, but there is still much work to be done.

Appearance, Menu Changes

The new graphical interface is the showcase of the new MacOS. Called "Aqua," the interface is slick, colorful, and full of surprises. While there is still an Apple menu, the apple is Aqua blue. (This predominant color scheme is configurable, currently a choice between blue and graphite. In future, more colors should become available, as well as more intricate, involved interface themes.)

There are some striking differences between the MacOS X Apple Menu and that of previous Mac operating systems. For example, the Chooser no longer exists, and the printer and network browsing functions are handled through control panel utilities and menu items. The Aqua Apple Menu is reserved for OS-specific commands, such as *Force Quit*, *Restart*, *Shut Down*, and *Logout*. You can't add frequently-used applications to the Apple menu, nor can you configure the look and feel of the menu.

Instead of modifying the Apple Menu to keep your applications handy, MacOS X introduces a new interface element: the Dock. This utility stays at the bottom of your screen, with icons showing your currently running programs and open files. To add an application, just drag its icon onto the Dock. Running programs are denoted by a small triangle below the Dock icon. While a program is loading, the application's icon bounces happily in the Dock.

Running Older Applications

Your older applications will still run under MacOS X. When you open an older application, MacOS 9.1 loads as a background processor for handling it. The first legacy application may take some time to load because the whole MacOS 9.1 must load first. Subsequent legacy applications load much more quickly, about as fast as they ever did under MacOS 9.*x*.

When the Apple menu icon reverts to the familiar rainbow fruit with a bite taken out, that means a legacy application is running. This old-style Apple menu has all the features with which you're familiar, including *Recent Applications*, *Recent Documents*, *Control Panels*, and *Chooser*. However, the Chooser will not work, and the control panels will only modify the self-contained MacOS that you're using to run your legacy applications—not the op-

from Its Predecessors

eration of the rest of the machine. Within those restrictions, though, the 9.1 operating system appears to run on top of OS X very well.

Networking Features

The networking for OS X is full-featured, with all the services you'd expect from a Macintosh and many you'd expect from Unix. AppleTalk is supported, both for connecting to remote machines and for serving files from your desktop.

The AppleTalk connectivity is tunneled through TCP/IP, increasing the speed of file transfers and making the network more flexible for upcoming technologies. Ipv6 (the emerging, next-generation Internet Protocol standard) will be supported when the standard stabilizes. The Apache Webserver is included in the distribution, as is an FTP server, WebDAV, NFS, and other emerging technologies.

Pitfalls of using portscan. The networking utilities in MacOS X have a built-in caveat. In the Utilities directory, there is a utility labeled *Network Utility*. This program can give you a lot of information about the network, with graphical interfaces to *ping, nslookup, traceroute, netstat*, and other useful items. However, there is also a graphical interface to portscan built in to the utility. Portscan can scan remote machines for their open ports and services. *Using portscan on campus to check for the open ports on remote machines is considered unauthorized use. Do not port scan any computer on the network without the express permission of the owner of that computer.*

You may want to use portscan to scan your own machine, to increase the security of your computer and check for loopholes. For more information on how portscan can affect your activities here at the UO, see the *Winter 2001 Computing News* article at
http://cc.uoregon.edu/cnews/winter2001/noportscan.html

Summary

Overall, the performance of the new OS seems very good. Older applications run well after the initial wait for the old OS to load. The kernel seems relatively stable, even in the Public Beta release we have been running to test the OS.

The interface is slick and fairly well thought out, although it lacks some of the intuitive feel of the older MacOS. Hard-core Mac enthusiasts may be put off by the lack of intuitive usage, while Unix aficionados will undoubtedly be irritated by the lack of an X Windows environment and many standard utilities. In short, while it won't satisfy everyone, MacOS X seems to be a solid start for a next-generation operating system.

Note: An X11R6 X Windows implementation for MacOS X is available. The Xfree86 project's version 4.0.2 release supports *Darwin*, the Mach-kernel base of MacOS X (see **http://www.xfree86.org/#darwin).** However, the X Windows and MacOS X environments do *not* coexist.

Hardware requirements. For Macs prior to the G3, you will need to stick with the current 9.*x* System Software. MacOS X requires a beige G3 or above, and processor card upgrades are not supported. Apple recommends 128Mb of RAM to run the operating system. As usual, this should be considered a minimum; 256Mb or above will allow your computer to work much better. 1.5Gb of hard drive space is necessary for the install. You should also be aware that support for some hardware and software is somewhat lacking; although we were able to run Adaptec Toast 4.1 in the 9.1 environment, our Plextor CD-R wasn't recognized. Other third-party utilities and programs may also suffer from some incompatibility.

For more information on MacOS X, see **http://www.apple.com/macosx/**

Microsoft to Stop Developing New Java Products

As a result of a lawsuit settlement earlier in the year, Microsoft agreed to stop further development of its own implementations of Sun Microsystems' Java technology. While Microsoft is now barred from using the JAVA COMPATIBLE trademark, according to the terms of the settlement, Sun licensed Microsoft to continue to distribute its existing versions of Java for the foreseeable future.

Sun heralded the settlement as a victory for preserving Java's integrity and consistency, while Microsoft expressed renewed dedication to develop the next generation of its own web software. The impact on the consumer is yet to be determined, but it's likely that Sun's court victory may result in a change in Java's overall deployment pattern.

More details are available from Microsoft's and Sun's websites:
http://www.microsoft.com/presspass/java/
http://www.sun.com/smi/Press/sunflash/2001-01/sunflash.20010123.1.html

SAS-PC Version 8 Offers Increased

SAS 8's improved graphical features offer you the chance to use one system for both data analyses and graphical presentations

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Visual displays of data are one of the most necessary and important components of data analysis.

Previous versions of SAS had rather limited graphical capabilities: you could make crude scatterplots with PROC PLOT, charts with PROC CHART, or histograms and boxplots with PROC UNIVARIATE. These visual aids are still available in Version 8 and are relatively easy to create. They certainly give excellent insights into the nature of your data by showing the "center" and "spread" of continuous data across levels of a categorical variable, or by showing how two or more continuous variables relate to each other, but the output is generally not of adequate quality for publications. SAS GRAPH has also been available to create publication quality visual aids, but it was cumbersome and difficult to use on Darkwing or Oregon.

One way to overcome these limitations was to save the data to be graphed to a text file, and then read that file into a specialized graphics program or a spreadsheet program (such as EXCEL) to create visual displays or to enter the data directly from a computer printout.

While the task of creating high-quality graphics in SAS is still demanding, Version 8 for the PC offers superior capabilities. It is well worth the time and effort required to become acquainted with its graphical features, especially if you already use PC-SAS for other applications and want to have one system for both data analysis and graphical presentations. If you already use SAS on Darkwing or Oregon, you should investigate its capabilities.

As you read this article, it will be helpful to see several examples of programs and their associated displays of what SAS GRAPH is able to create, particularly with the GPLOT procedure, by going to
http://www.sas.com/service/techsup/sample/sample_graph.html

This site shows many features (and more) that I will introduce in this article. In particular, it shows many key statements and types of displays available that are not possible to present here.

Names of the graphical procedures in SAS GRAPH usually begin with the letter "G." That is, instead of using PROC PLOT to make a list file containing a scatterplot, you'll now apply the more sophisticated PROC GPLOT. One notable exception is a new procedure called BOXPLOT (now available in Version 8) that produces the same high-quality graphics as these "G" programs.

GOPTIONS

The first step is to become familiar with the GOPTIONS statement, which performs a function similar to the OPTIONS statement you have probably already used when writing SAS programs. The purpose of the GOPTIONS statement is to apply levels of specific options to graphs created in the session or to override specific default values. It can be located anywhere within your SAS program; however, in order for the requested options to be applied to it, it must be placed before the graphics procedure.

Most options can be listed in any order in a GOPTIONS statement. One exception is the RESET=<> option that performs the function of restoring all or specific types of graphics options to their default values. When it is used, always place it as the first option immediately following the GOPTIONS key word.

Graphics options are cumulative; the value of any given option remains in effect until it is explicitly changed. When you enter additional GOPTIONS statements, the graphic options already selected remain in effect. All options return to their default values when apply the RESET=ALL option or exit SAS completely and start a new session.

To reset a specific option to its default value, submit the name of the option without a value after the = sign (i.e., a null graphics option) such as Htext= or Ftext= in the GOPTIONS statement.

The following GOPTIONS statement first resets all graphic options to their default values, and then specifies several desired qualities of a graph including text font, units of measurement, background color, and no printed border:

```
GOPTIONS RESET=all FTEXT=swissb GUNIT=pct CBACK=white NOBORDER ;
```

These options and many more are explained in the Graphics Options and Device Parameters Dictionary, which provides a complete description of how to use them. You can find these descriptions at
http://sas.uoregon.edu/sashtml/gref/z0713550.htm

SYMBOL

SYMBOL statements define the characteristics of plotting symbols used by PROC GPLOT. They create definitions used to control:

- the appearance of symbols and lines plotted on the graph, including points, lines, bars, boxes, and the confidence interval limits
- interpolation methods (i.e., how to "connect" the points)
- how plots handle data out of range

Graphical Capability

When you create new SYMBOL definitions, they are automatically applied to the next graph created by the GPLOT procedure. If you do not create SYMBOL definitions, GPLOT will use default values and apply them as needed. SAS also allows you to overlay plots of two or more variables on the same graph. When this is done you will need to use separate SYMBOL statements for each variable indexed by a number. For example, to plot the first variable, SYMBOL statement number 1 will be defined as

```
SYMBOL1 value=star height=2;
```

In this statement, note that:

• the "1" at the end of the SYMBOL keyword means to assign the options that follow to the first variable that is to be plotted

• **value=star** means to use a star "*" as the plotting symbol

• **height=2** refers to size of the plotted symbol, i.e., the size of the star. When the syntax of an option includes units, use one of these:

CELLS: character cells
CM: centimeters
IN: inches
PCT: percentage of the graphics output area
PT: points

If you omit units, a unit specification is searched for in this order:

1. the **GUNIT**= option in a GOPTIONS statement
2. the default unit, **CELLS**

For more information about the SYMBOL statement, see
http://sas.uoregon.edu/sashtml/gref/zbolchap.htm#z0751130

Example
To show how these two statements work together to produce a graph with PROC GPLOT, GOPTIONS, and SYMBOL1 statements will now be applied to create a scatterplot for two quantitative variables, height (**y**) and weight (**x**). Several features of SAS are shown here that could be applied in other ways, but only one approach is shown here:

```
GOPTIONS RESET=all Ftext=swissb gunit=pct Cback=white NOborder
     ROTATE=landscape PAPERSIZE=(11,8.5) TARGETDEVICE=hpljs2
     Horigin=1.5 in Vorigin=1.5 in Hsize=8 in Vsize=5 in ;
SYMBOL1 value=star height=2;

PROC GPLOT DATA=measurements;
PLOT y*x / haxis=axis1 vaxis=axis2;
AXIS1 COLOR=black LABEL=(c=black h=3 "Weight (Pounds)")
   WIDTH=2 MINOR=none ORDER=(20 30 40 50 60 70 80 90 100)
   VALUE=(COLOR=black HEIGHT=2
   '20' ' ' '40' ' ' '60' ' ' '80' ' ' '100');
AXIS2 COLOR=black LABEL=(COLOR=black HEIGHT=3 "Height (Inches)")
   WIDTH=2 MINOR=none ORDER=(0 to 100 by 10)
   VALUE=(COLOR=black HEIGHT=2
   '00' ' ' '20' ' ' '40' '50' '60' ' ' '80' ' ' '100' );
TITLE1 Height=5 "Height vs Weight";
TITLE2 Height=3 "Scatter Plot of Data";
```

This SAS program demonstrates a useful programming convention: place the keywords that SAS expects in capital letters; place the options you specify in lower case letters. The graphical output of this procedure is shown in **Figure 1** on the following page.

The first SAS statement (**PROC GPLOT DATA=measurements;**) invokes the plot procedure to create a scatter plot. The specific SAS data set used is called measurements. If no data set is specified, SAS uses the most recently created one:

```
PLOT y*x / <options>;
```

The PLOT statement tells SAS which numerical variables to plot. Variable **y** (height) is placed on the vertical axis and variable **x** (weight) on the horizontal axis. Note that the PLOT statement request two options that call for the horizontal axis to be specified by **HAXIS=axis1** and the vertical axis specified by **VAXIS=axis2** (both statements are defined next).

AXIS1 and AXIS2

These two statements allow you to define, in great detail, the structure and format of both the horizontal and vertical axes—including labels, range of data values, fonts, weights, and values plotted at the major and minor tick marks. The options from the previous PLOT statement specify which axis statement is assigned to the vertical axis (**VAXIS=axis1**) and to the horizontal axis (**HAXIS=axis2**).

One potentially nice feature of these two statements is that the sample program above shows how you can write distinct values as needed for the tick marks on each axis without necessarily being required to use numbers or equally spaced values.

You can also include options in the SYMBOL1 statement used above to superimpose a linear regression line with 99% confidence limits for the predicted values:

```
SYMBOL1 value=star height=2
    interpol=rlcli99 width=2 line=5;
```

• **interpol=rlcli99** means to add a linear regression line (rl) to the scatter plot and to print upper and lower confidence limits for the individual predicted values (cli) at 99% (99)

• **width=2** sets the width of interpolation line

• **line=5** requests the line be printed as type 5 (out of 46 possible line types)

These short examples demonstrate how with just a few statements you can literally "program" a graph to the exact specifications required for your document. Other useful statements include FOOTNOTE, PATTERN, and FORMAT. You can also annotate the graph with special text created in a DATA step and then applied with the annotate option.

SAS 8 Graphics, *continued...*

Produce GIF Graphics Files for Your Documents

Using SAS Graph to print a graph directly to a printer is often tricky. It's difficult to fit the graph on the page because you need to specify exact values for several options. One way of getting over this hurdle is to create gif files of the graphs. The gif format is more flexible, and you can easily adjust the layout of the document so that the graph will print out exactly as you wish.

To do this, you will need to add the **device=<>** option to a GOPTIONS statement. Inserting a two other statements as shown below, PROC GPLOT will produce a file called **gplot.gif** that contains a picture of your graph. You can then insert it directly into a Word document, making it much easier to adjust the size and layout of the graph on the printed page.

```
GOPTIONS device=gif; * include the option to create a gif
file;

* open the html destination to send the file;
ODS HTML path="c:\d\sas\graph" body="plot_exmp.html";

PROC GPLOT DATA=measurements;
< insert SAS GPLOT statements >
RUN;

ODS HTML close; * close the html destination ;
RUN;
```

To read more details on how to make this process work, you can download an annotated example of this program from

http://darkwing.uoregon.edu/~robinh/scatter.txt

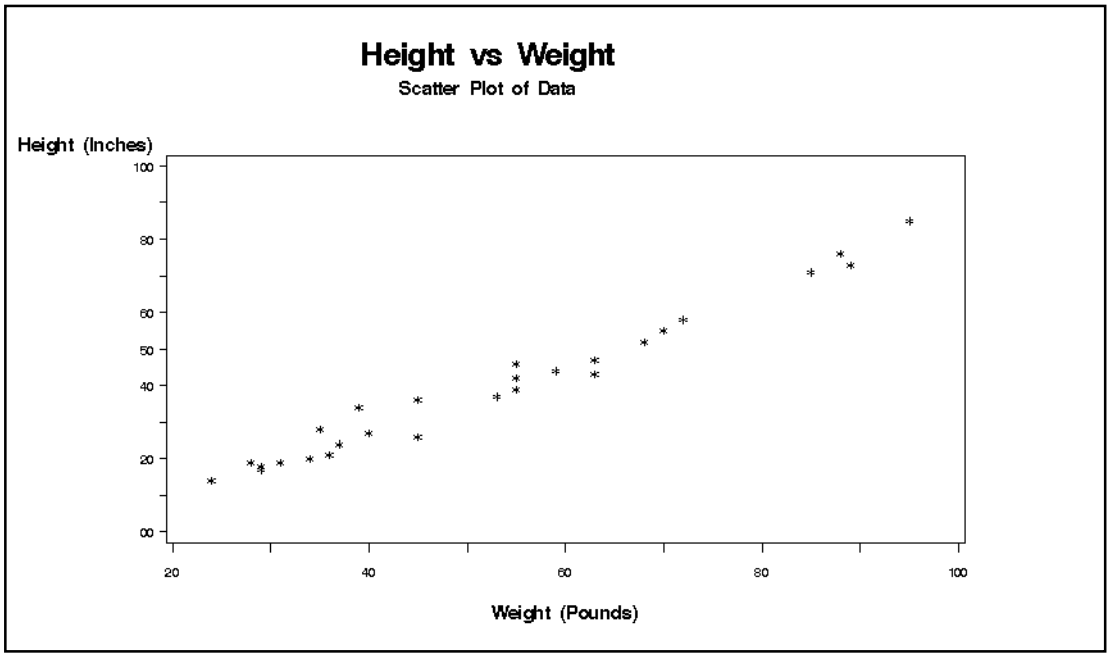

Figure 1. **A scatterplot for two quantitative variables, height (y) and weight (x), created by using PROC GPLOT, GOPTIONS, and SYMBOL1 statements.**

GLOBIX, EFN Join Oregon-IX

The Oregon Internet Exchange (Oregon-IX) recently added two new partners: Globix Corporation, a leading provider of Internet business solutions, and Eugene Free Community Network (EFN), a nonprofit community Internet service provided by Oregon Public Networking. Globix and EFN joined 11 other Oregon-IX partners this last March.

Oregon-IX, which is located at the University of Oregon, provides a meet point where Internet providers can exchange traffic, keeping local traffic local. Its partners connect to the exchange by bringing a leased line or fiber to the Oregon-IX and co-locating a router here. For more information on the Oregon-IX partnership, see **http://www.oregon-ix.net/**

New, Improved *News* Server Replaces *news.uoregon.edu*

We recently upgraded the old **news.uoregon.edu** server (aka **pith.uoregon.edu**) with a new server offering more than 350GB (over a third of a terabyte) worth of article storage, improved network connectivity and CPU horsepower.

While we're delighted to be able to bring you this new server, you should be aware that it's running an experimental version of the ISC's INN news server software, which is still under development. We generally prefer to run production code on production servers, but this time we have no choice. The production versions of INN do not support critical features we require (such as files greater than 2GB, which are needed to accommodate large files such as the server's article history files).

As always, users can use the alternative news server called **platform.uoregon.edu**, although article numbering and group coverage may vary between the two machines.

Send questions about **news.uoregon.edu** to *joe@oregon.uoregon.edu* Questions about **platform.uoregon.edu** may be sent to *joelja@darkwing.uoregon.edu*

Outside DNS Entries Pointing into UO Network Address Blocks Prohibited

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Acceptable Use Policy Officer
miyake@oregon.uoregon.edu

The University of Oregon uses IP addresses in the 128.223.0.0/16 netblock, and provides forward and reverse domain name service for those addresses from several name servers.

Domain name service allows symbolic host names (e.g., **darkwing.uoregon.edu**) to be translated into numeric IP addresses (such as 128.223.142.13). As you might expect, reverse domain name services do the opposite, allowing numeric IP addresses to be resolved into symbolic host names.

Users who want to register a host name in the uoregon.edu domain customarily do so by filling out a form provided by Network Services (**http://ns.uoregon.edu/get_connected/ip_request.html)** At the time a host is registered, a static IP address is issued.

Occasionally, we encounter users who have registered a *non*-uoregon.edu domain name against an address from the UO's address block (128.223.0.0/16). Unless prior written authorization from the Computing Center has been obtained for such a registration, this is not permitted.

Problems in this area seem to arise most often in conjunction with so-called dynamic DNS services such as **dyndns.org**, **yi.org**, or **myip.org**, which attempt to make DHCP'd (temporarily assigned) addresses act like static addresses, which they are not.

The other time we commonly see DNS-related problems is when an organization attempts to register a new non-uoregon.edu domain, and the organization then attempts to "park" that non-uoregon.edu domain within the university's netblock. Again, unless prior permission has been obtained, this is not allowed (regardless of whether the domain to be parked is a **.com** domain name, a **.org** domain name, or something else). The controlling issue here is, as noted in the Addendum to the University's Acceptable Use Policy, that:

"It is inappropriate for any third party organization's primary Web pages to be served from a University Web server, even if such pages are offered on a volunteer basis without remuneration and with no commercial content thereon; exceptions to this policy need to be approved by the University."

If you have any questions about either of these domain name issues, feel free to contact Jon Miyake at *miyake@oregon.uoregon.edu*

Microsoft Digital Certificate Stolen

A cyber criminal posing as a Microsoft employee recently tricked Verisign Inc. into issuing two digital certificates bearing Microsoft's name and authority. The fraudulent certificates could fool users into believing that it's safe to allow code from a dynamic website to run on their machine.

For more details about this security breach, see the article at **http://www.msnbc.com/news/548228.asp?cp1=1&cp1=1&cp1=1&cp1=1**

Wonder What Application is Using Port x ?

Find out at **www.practicallynetworked.com/sharing/app_port_list.htm**

COMPUTING CENTER GUIDE

UO Website
http://www.uoregon.edu/

Computing Center Website
http://cc.uoregon.edu/

Microcomputer Services
(Room151 Grayson Hall)

- microcomputer technical support
- help with computing accounts, passwords
- scanning, CD-burning, digital video
- help with damaged disks, files
- system software help
- Internet connections, file transfers
- public domain software, virus protection
- software repair (carry-in only, $60/hour, 1/2 hour minimum)

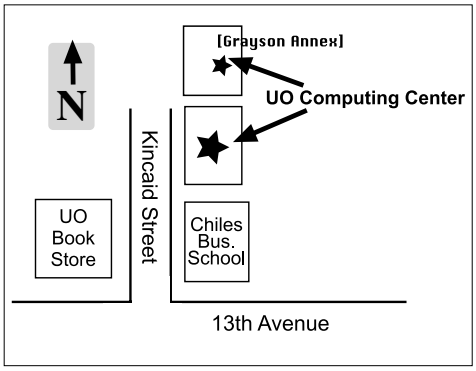
346-4412
microhelp@oregon.uoregon.edu
http://micro.uoregon.edu/

Statistics Consulting
Robin High
346-1718
robinh@darkwing.uoregon.edu
http://darkwing.uoregon.edu/~robinh/statistics.html

Large Systems Consulting
(Rooms 233-239 Computing Center)

- VMS, UNIX (Gladstone, Darkwing, Oregon)
- email, multimedia delivery
- scientific and cgi programming
- web page development

346-1758
consult@darkwing.uoregon.edu
consult@gladstone.uoregon.edu
consult@oregon.uoregon.edu
http://cc.uoregon.edu/unixvmsconsulting.html



Documents Room Library
(Room 175 Grayson Hall)

346-4406
http://darkwing.uoregon.edu/~docsrm

Electronics Shop (151 Grayson Hall)
For computer hardware repair, installation, and upgrade services, call **346-3548** or write *hardwarehelp@oregon.uoregon.edu*
Also see ***http://cc.uoregon.edu/e_shop.html***

Network Services
Provides central data communication and networking services to the UO community.
346-4395
nethelp@oregon.uoregon.edu
http://ns.uoregon.edu/

Administrative Services
Provides programming support for administrative computing on campus, including BANNER, A/R, FIS, HRIS, and SIS. Call **346-1725**.

Modem Number
Dial-in modem number for UOnet, the campus network: **225-2200**

Computing Center Hours
Monday - Friday 7:30 am - 5:00 pm

Grayson Hours

Monday - Thursday	7:30 am - 11:30 pm
Friday	7:30 am - 7:30 pm
Saturday	9 am - 9:30 pm
Sunday	9 am - 8:30 pm

COMPUTING NEWS
UO COMPUTING CENTER
1212 UNIVERSITY OF OREGON
EUGENE, OR 97403-1212