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WordPerfect 5.0 on the VAX VX

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Why WordPerfect on the VAX? We already have EDT and EVE text editors on the VAX.

Well, first of all, some of you requested this popular PC text editor when we conducted our user survey last year. You undoubtedly knew that WordPerfect Corporation supplies versions of WordPerfect for many central systems. But, still, another text editor on the VAX?

A more cogent answer to the question is like the answer to the famous or infamous Marx Brothers query, "Viaduct?" After you ponder this for a moment, you may get the response, "Have you ever tried to walk on water?"

PC/VAX users experience a similar frustration as they use one machine and then the other. On the PC, the **Backspace** and **Delete** keys work the way that the Supreme Being of Computing intended them to work—**Backspace** deletes the character to the left of the cursor and **Delete** deletes the character above the cursor. Sadly, when you switch to the VAX, **Backspace** jumps you to the beginning of the line and **Delete** deletes the character before the cursor. If you watch PC/VAX users, you will notice their right hands frequently suffer from paralysis as they pause between the two keys while their brains try to translate between PC editing and VAX editing.

Other problems arise. While EDT will wrap lines, it doesn't reformat when lines are lengthened or shortened. And lots of PC users who become PC/VAX users just don't want to learn another text editor. So, enough justification. The point is, for a PC user, using the VAX editors is like trying to walk on water: Much of what the PC user is accustomed to doing and expecting in the PC environment no longer works.

However, WordPerfect's equally famous (or infamous) **Ctrl/Shift/Alt**-Function key interface is a new problem for the standard communications packages; they just don't handle it.

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ACS

Academic Computing Services

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At least one package does. This package is EM320, which contains a special WordPerfect mode and which is available from Diversified Computer Systems, Inc., 3775 Iris Ave., Suite 1B, Boulder, CO 80301, (800) 247-3834 at a cost of \$79.

An alternative is to use a keystroke table, available from a file on the VAX—the WPKEYS document within ListDoc or the WPKEYS Brief in 1 Nicholson Hall. Using this table seems cumbersome at first but normal operations are easy to do with ProComm Plus because it maps the VT100 keypad to the PC keypad. With NumLock on, cursor control works the same as on the PC. Other WP commands begin with Ctrl and F or a keypad character or Function keys 1 to 4.

With ProComm 2.4, normal operations are more difficult because 2.4 transfers the functions of the VT100 keypad to the PC Functions keys, normal and shifted.

Figure 1 shows how the Function keys on a PC emulate the usual WP operations from the VT100 keys. SF1 indicates that the Shift and F1 keys are held down. If your keyboard has separate arrow keys, they will also move the cursor.

For example, after writing the draft of this document on VAX WP 5.0, we wanted an ASCII text version to E-mail to our newsletter editor. The sequence listed in the Keystroke table is <CTRL>-F,T,E. That is, press keys Control and F (upper or lower case) at the same time and then the key T and then key E. At this point the Text In/Out menu appears at the bottom of the screen and you proceed from there.

When we finished this article, we could also check spelling with <CTRL>-F,S,P. Notice that there does tend to be a mnemonic quality to the sequences: T,E for Text and S,P for Spell.

To use this package on the VAX, just type in WP or WP *filename*, the latter if you have an existing WordPerfect file to edit. WP files are not ASCII text files and cannot be displayed with the VMS TYPE command.

Depending on cost and usage, we may upgrade to WordPerfect Version 5.1 when WordPerfect makes this version available.

Now to Exit this WordPerfect document, I'll just use the usual VMS <CTRL>-Z.

<CTRL>-Z

Figure 1: The VT100 Keypad Functions in WordPerfect 5.0

F1 PF1	F2 PF2	SF1 PF3	SF2 PF4
F3 Home	F4 ↑	SF3 Page Up	SF4 —
F5 ←	F6	SF5 →	SF6 +
F7 End	F8 ↓	SF7 Page Down	SF8 or SF10 Enter
F9 or F10 Insert		SF9 Delete	

TeX Version 3.1 Installed on VX and VZ

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On June 10 we installed Version 3.1 of the TeX technical typesetting package on the VAX VX and VZ machines.

When you use the **TEXLOGIN** command, the software prompts you for the version number, as shown here:

```
$ TEXLOGIN
Enter 20 to use TeX version 2.0
or 31 to use TeX version 3.1
(new, 6/10/91) : 31
```

In response to the prompt, type **31** for Version 3.1 (which is the default) or **20** for the old version 2.0. We believe the new version is completely upwardly compatible with the old.

The program that enables you to print TeX output on the Xerox 8700 laser printer isn't available at this time. The Apple LaserWriter, with output density of 300 dots per inch, continues to be the main output device using the DVIALW program. The new version also comes with the XDVI program that can preview a TeX DVI (Device Independent) file on a DECwindows terminal.

We expect to delete the old 2.0 version around September 15 unless users report compatibility problems.

Related Programs

TeX version 3.1 includes several other related programs. They are:

LaTeX	TeX macro package that simplifies TeX usage
-------	---------------------------------------------

BIBTeX	A utility to compile a bibliography file for LaTeX
GloTeX	A utility to generate glossaries in LaTeX documents
IdxTeX	A utility to make an index in a LaTeX document
TeXIDX	Another utility to make an index in a LaTeX document
MAKEINDEX	Still another utility to make an index in a LaTeX document
SliTeX	A version of LaTeX for making black and white or color slides
AMSTeX	American Mathematical Society TeX macro package
MF	The METAFONT package that creates font files for TeX

You must type the **TEXLOGIN** command at least once in your timesharing session before you can use any of these programs.

TeX and LaTeX expect input files of file type **.TEX** and produce files with type **.DVI** and type **.LIS**, while DVIALW and XDVI expect input files of type **.DVI**.

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Example

Here is a sample TeX input file STORY.TEX created using the EDT text editor:

```

\hrule
\vskip 1in
\centerline{\bf A SHORT STORY}
\vskip 6pt
\centerline{\sl      by A. U. Thor}
\vskip .5cm
Once upon a time, in a distant
  galaxy called "O"o\c c,
there lived a computer
named R.~J. Drofnats.

Mr.~Drofnats—or "R. J.," as
he preferred to be called—
was happiest when he was at work
typesetting beautiful documents.
\vskip 1in
\hrule
\vfill\eject
\end

```

The TeX and DVIALW session using STORY.TEX is:

```

$ TEXLOGIN
Enter 20 to use TeX version 2.0
or 31 to use TeX version 3.1 (new, 6/10/91) : 31
$ TEX STORY
$ DVIALW STORY
$ PRINT /QUEUE=NICH1A /NAME=EA*425 STORY.DVI-ALW

```

This produces files STORY.LIS, STORY.DVI, and STORY.DVI-ALW, prints the output on the Nicholson Hall LaserWriter, and has the computer operator put it into bin 425 there. Note that the file type .DVI-ALW must be part of the filename in the **PRINT** command. The file type is not used in the **TEX** and **DVIALW** commands because they know what file type to expect, whereas **PRINT** doesn't. Figure 1 (on page 122) contains the output from this run.

Figure 1: An Example of TeX Output

A SHORT STORY

by A. U. Thor

Once upon a time, in a distant galaxy called Ööç, there lived a computer named R. J. Drofnats. Mr. Drofnats—or “R. J.,” as he preferred to be called—was happiest when he was at work typesetting beautiful documents.

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Documentation

VMS HELP files have been added for TeX, LaTeX, BIBTeX, GloTeX, IdxTeX, TeXIDX, MAKEINDEX, SliTeX, AMSTeX, DVIALW, XDVI, and MF. For example, enter the VMS command **HELP LATEX** to read help information about LaTeX.

The definitive description of TeX is *The TeXbook* by Donald E. Knuth, published in 1986 by Addison-Wesley. For a description of LaTeX, you should consult *A Docu-*

ment Preparation System: LaTeX by Leslie Lamport, also published in 1986 by Addison-Wesley. Metafont is described in *The METAFONTbook* by Donald E. Knuth, 1986, Addison-Wesley. Copies of the *TeXbook* and the *LaTeX* book are on reserve in the Computing Information Center, 1 Nicholson Hall, 625-7397.

If you have questions about TeX Version 3.1 or other parts of the package, please call the HELP-Line at 626-5592 or send a mail message to CONSULT.

VAX MAIL Users: SET Your PERSONAL_NAME

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Whenever you send an electronic mail message with VAX mail on our VMS systems, the system tells the recipient of the message the E-mail address of the sender. This address appears in the `From` line:

```
From: ACSVX::SKB
```

In this example, the address of the sender is SKB on the VX system. If you're sending network mail, the address will change accordingly (e.g., SKB@UMNACVX, SKB@vx.acs.umn.edu, etc.)

But by default this `From` line in VAX MAIL does not provide your real name. That means the recipient of the message will not know who sent him this message unless he recognizes your E-mail address in the `From` line or you remembered to include your name elsewhere in your message. Of course, your correspondent could reply and ask you who you are, but there is a way to avoid this inconvenience for you and your correspondents.

Avoid puzzling your E-mail correspondents by setting your personal name in VMS MAIL. After you do this, your real name will always be included in the `From` line of the messages you send. The `From` line will then look like this:

```
From: ACSVX::SKB "Steven Brehe"
```

To set your personal name, begin VMS MAIL and, at the MAIL prompt, simply type the `SET PERSONAL_NAME` command:

```
MAIL> SET PERSONAL_NAME "Steven Brehe"
```

From then on, your name will appear in the messages you send. If you ever need to change your personal name, use the `SET PERSONAL_NAME` command again.

A few words on the format on the `SET PERSONAL_NAME` command: The quotation marks around the name are not required, but if I'd omitted them, the system would have printed my name entirely in capital letters. The name should be no more than 127 characters—and preferably shorter, of course. For more information about the command, go into VMS MAIL and type `HELP SET PERSONAL_NAME`.

If you don't recall if you've set your personal name, use the `SHOW PERSONAL_NAME` command within MAIL, which will display your current personal name, if you've set one:

```
MAIL> SHOW PERSONAL_NAME
Your personal name is "Steven Brehe"
```

Don't get cute. Don't use excessively long personal identifications, allegedly humorous remarks or fictional names, or other content that really doesn't belong in the `From` line. Save your humor and personal statements for the body of your letters. Remember that your recipients will see the `From` line in *every* message you send, and a remark that was funny the first time will be tedious indeed on the twentieth reading. Keeping your personal name short and to the point is a fundamental courtesy.

Technology Update: Good Passwords Are Ugly

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Why Passwords?

There are three good reasons to protect your account with passwords: 1) The peace of mind that comes from knowing your computing information will not be compromised or damaged by uncivil attackers. 2) Computing resources billed against your account number should be for attaining *your* goals and not those of an interloper. 3) Your reputation may be stained if your account is compromised and used as a springboard to attack or damage others.

Passwords Protect Workstation, Too

Many users assume that password protection is needed on central systems, but believe their workstations are secure. Often this assumption is false if you are connected to a network. For example, you and your data are at risk if NCSA Telnet was installed on your Macintosh; but passwording was not enabled. As described in an article in the *Microcomputer Newsletter*, cited below, the built-in FTP capability of the NCSA Telnet package introduces a privacy and security breach. This can be avoided if the *Telpas* application is employed to type a user name and password and the `passfile=` line in the `config.tel` file points to the Macintosh folder with the password file.

How Passwords Are Kept and Used

Most passwords are encrypted by slightly modifying the Federal Data Encryption Standard (DES) algorithm to make passwords that are impossible to invert and are then stored in that form. The reason for modifying the DES algorithm is to prevent attackers from using DES encoding chips to encrypt quickly a large set of test passwords for massive attacks against a system.

Some systems (for example, many UNIX systems) allow the encrypted password file to be read (i.e., associated with the corresponding login file) for extended verification needs, while other systems keep it hidden. When a user enters a trial password, it is encrypted and checked against the current stored encrypted password.

Password Cracking

A couple of years ago, as many readers will recall, a worm program attacked UNIX systems on the Internet using four stages.

First Stage

In the first stage the worm read the `/etc/host.equiv` and `.rhosts` files to gather names of future hosts to attack. It then saved the following information about each account: its name, encrypted password, home directory, and all user information fields. To look for other victims, it also saved host names found in the user's mail forwarding file. The remaining stages used the following techniques to crack passwords.

Second Stage

For each user, the worm encrypted the "null," the account name and its concatenation with itself, the user's first name, last name, and the account name reversed and checked these as passwords against the user's password. Fifty accounts at a time were done before advancing upon failure to the next fifty.

Third Stage

The worm encrypted a list of 432 favorite passwords and then passed each, one at a time, against all the passwords in the password file. In this stage, according to Donn Seeley, "it will take at least nine hours for the worm to scan its built-in password list and proceed to the next state."

The UNIX on-line dictionary */usr/dict/words* is encrypted one word at a time (for capitalized words, lower case is also tried) and then passed against all encrypted user passwords, taking "something like four weeks for the worm to finish a typical dictionary," Seeley says.

As you might expect, techniques used by the Internet worm have served as the basis for newly developed password security changes to many systems.

What Computing Systems Do to Increase Password Security

- Force password verification: When changing the password, the new password must be entered again for verification. This assures a difficult password can be retyped.
- Force the password to be a minimum number of characters: When the passwords are formed from numbers and letters and have a minimum length greater than 6, the possible set of passwords is at least 36 raised to the 7th power (or 78,364,164,096, fairly large even for a computer).
- Force regular password changing: Assigning an expiration time from the last change (month, semester, etc.) and giving warnings just before expiration keeps new passwords in vogue. The University of Minnesota at Duluth began one-month expiration intervals last June.
- Force password change at next login: ACS uses pre-expired passwords for printed ones handed out to students using the VMS system. This insures a new password upon first opening the account. At Duluth, if you are on vacation when your current password expires, you will be forced to enter a new one when logging in upon your return.
- Report incorrect passwords attempts: By revealing the number of incorrect password

tries (often with repeated beeps or other specific sounds at your terminal to attract your attention), the system presents facts that require your action. If the number of times you messed up typing a password before getting it correct matched the login message count, no action is required. Otherwise, users should inform administrators of possible attacks against their accounts.

- Report date of last login: By reporting the date and time of your last login or system entry for batch or file transfer, the system includes you in the pursuit of security. Because you know when you last used a system, a differing date or time show a serious problem or compromised data to be reported. If you do not use a system frequently, you may have to keep a written record of when you login to that system to check event times that may become hazy in your memory.
- Screen new passwords: The Internet worm experience suggests that the password utility should check passwords against trivial and system dictionary words. VMS 5.4 screens all new password changes against a 50,000 word dictionary, a file containing the 100 last passwords you have used, and your login name before permitting you to change to that password. All this makes it harder for unauthorized users to guess your password.

What Users Can Do to Help Password Security

- Mix letter and digits to form your password: The best password is a random sequence of upper and lower case letters that includes some digits. Often this will mean remembering the initial letters of the words in a phrase. For example: One might use the leading characters from the phrase *The Quick Brown Fox Jumps Over The Lazy Dog*

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(TQBFJOTLD) and some digits to form a password. This might result in 321TQBF or BF88JOTLD.

- Do not use words from a dictionary or words and numbers that are associated with you in information databases: This includes account and login names, and also proper names, nicknames, birthdays, FICA numbers, and any other string of digits or letters that might be kept about you in this or any system at the University. Do not use the reverse of any of the above as passwords.
- Be alert to system information provided at login: This will allow you to compare your knowledge of your use with the login information provided by the system to calculate if the last login to this account was really you or a partner and *not* an intruder. The system will give the time of the last login and number of incorrect password tries against your account.
- Keep your password a secret! The first time you log on to a new system, change any assigned password that was given to you on paper or over the phone whether or not you are forced to do so. Do not give your favorite password to open an account; instead use a simple one and save the other for protection later. Use mnemonics to remember your password. Do not let others watch you enter a password, since many can remember sequences of keystrokes by observation. Above all, do not write your password anywhere, which will test how good your memory still is.

Examples of Added VMS Password Security

We installed VMS 5.4 on December 17, 1990. The following new error messages appear when you try to change your passwords to those printed in bold face type:

Abigail or Alabama or Appaloosas or idiotic or Yosemite or 43,000 others:

%SYSTEM-F-PWDINDIC, password found in system dictionary; please choose another string

superman. I had changed my password to superman and then tried to renew using the same password on the system.

%SET-F-PWDNOTDIF, new password must be different from current password

liddiard. This is my account name.

%SYSTEM-F-PWDWEAK, password is too easy to guess; please choose another string

superman. My attempt to revert to an older password. (VMS now remembers the last 100.)

%SYSTEM-F-PWDINHIS, password found in history list; please choose a new password

Conclusion

The above rules make passwording a very impersonal and incomprehensible action instead of a user-friendly experience—definitely another example of machines making demands on people, rather than vice versa. We encourage you to change your password several times a year (we will not force you to do so currently), and we promise not to tell if **misspiggy** or another favorite password can get through the new screening process. Good luck with your passwords.

References

"Connections: Telnet." *Microcomputer Newsletter*, February 1989, pp. 57-58.

Guide to VAX/VMS System Security. Maynard, Massachusetts: Digital Equipment Corporation, July 1985.

How to Choose a Good Password. University Networking Services, August 6, 1990.

Seeley, Donn. "Password Cracking: A Game of Wits." *Communications of the ACM* 32 (June 1989), pp. 700-704.

Computing at the U: Important Changes Coming

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As some of our readers may already know, the academic computing departments at the University of Minnesota are being reorganized into a single department called **Computer and Information Services (CIS)**. This new department will combine these former computing organizations:

Academic Computing Services
Health Sciences Computing Services
The Microcomputer and Workstation Networks Center
St. Paul Computing Services
University Networking Services

At this writing the reorganization will officially take place July 1. After that date you'll see a series of changes in the way computing services are run at the U. It's impossible to provide details here—plans are still being made—but University computing services will change in many ways during the 1991-92 academic year.

One of the first changes you'll notice will be in the computing newsletters you subscribe to. All the present newsletters—including the one you're reading now—will be replaced by a single monthly publication that will provide information about CIS computing services.

If you're a subscriber to any of the current newsletters (including the *ACS Newsletter*), you'll automatically receive the new unified CIS newsletter.

Watch for more information about changes in computing services later this summer and in the fall.

Short Courses

Free Central System Computing Courses Summer 1991

Offered by St. Paul Computing Services (SPCS), Academic Computing Services (ACS), and Health Sciences Computing Services (HSCS).

Our courses teach you the operating systems and software on **central system** computers, large systems used by many people at the same time. These courses do not cover microcomputer software unless otherwise indicated in the following descriptions.

How to Register

To register call 626-0032, 8:00 am to 4:30 pm, Monday through Friday.

Registration is located at the Computing Information Center, 1 Nicholson Hall. Mail registrations are accepted or you can also register by electronic mail—write to classes@umnacvx or classes@vx.acs.umn.edu. Include a day-time phone number.

Please call to cancel if you later decide not to attend, so we know how many to expect. Deadline for registering is 4:30 pm on the last working day before the class begins.

Operating Systems

CMS Tapes (SPCS)

Friday, July 12, 9:30-11:30 am

Specifying, reading, and writing tapes. You must know the CMS operating system.

Introduction to NOS/VE (HSCS)

Two sections: Wednesday, July 10, 2 pm-4 pm; Thursday, July 25, 10 am-12 noon

Connecting to NOS/VE, entering commands, creating, editing and managing files, obtaining output and on-line help, batch jobs and file transfers.

Introduction to VAX/VMS Operating System (ACS)

Tuesday and Thursday, July 16-25, 2:30-4:30 pm

An extensive introduction to the VAX/VMS operating system, including files and directories, Help and ListDoc, editing, DCL commands, and procedures.

Communications

CMS Electronic Mail (SPCS)

Tuesday, July 23, 9:30-11:30 am

Corresponding with other computer users locally and worldwide, via BITNET.

Internet Overview (SPCS)

Wednesday, July 17, 10:30-11:30 am

Using the CMS system to log on and transfer files to/from other computers on the Internet.

ProComm (SPCS)

Wednesday, July 10, 10:30-11:30 am

Demonstration of the ProComm terminal emulation package, as used with the CMS operating system.

ProComm—Computing by Phone (ACS)

Tuesday, June 25, 2:30-4:30 pm

Using ProComm microcomputer software to connect to LUMINA and other campus central system computers, and to upload and download files.

TinCan (SPCS)

Thursday, July 11, 10:30-11:30 am

Demonstration of the TinCan terminal emulation package, as used with the CMS operating system.

Graphics

PicSure Interactive Graphics (HSCS)

Tuesday, July 16, 2 pm-4 pm

Using PicSure to create bar charts, scattergrams, line charts, pie charts, and combinations. Demonstrated on the NOS/VE operating system.

SAS/GRAPH (SPCS)

Tuesday, July 16, 9:30-11:30 am

Exploring SAS graphics for presentation of your data as plots, charts, maps, and contour plots. You must know an operating system.

Statistics

SAS on the PC (SPCS)

Thursday, July 18, 9:30-11:30 am

Discussion of features specific to the IBM-PC version of SAS.

Using SPSS (ACS, HSCS, SPCS)

Monday, Wednesday, Friday, July 22-26, 2:30-4:30 pm

How to use the Statistical Package for the Social Sciences, available on several central computing systems. You must know a central computing system.

Statistics Conversion (ACS)

Monday, Wednesday, Friday, July 15-19, 2:30-4:30 pm

For those converting statistics (SPSS, SAS, or other) on one computer system (particularly the CYBER CA) to any other computing platform—VMS, UNIX, CMS, or PC.

Other

NOMAD2 (SPCS)

Wednesday, July 24, 2:00-4:00 pm

Demonstration of NOMAD2, a database management system on the CMS operating system.

PROFS Calendars (SPCS)

Monday, July 15, 10:00-11:00 am

Viewing, maintaining, and changing your electronic calendar on the CMS operating system.

Tapes Conversion (ACS)

Monday and Wednesday, July 29-August 7, 2:30-4:30 pm

For those using magnetic tapes, to convert them to another format—to another tape on a different system, or to floppy disks. Come the first day for general information, then one other session for specific data on your own situation.

MinnesotaMEDLINE

Call 626-5808 to registration for MEDLINE courses.

Basics of MinnesotaMEDLINE Searching (HSCS)

Thursday, July 18, 1-2:45 pm

Wednesday, August 7, 10-11:45 am

Basic commands and the use of Medical Subject Headings (MeSH) in searching the medical literature database on the NOS/VE operating system.

Intermediate MinnesotaMEDLINE Searching (HSCS)

Wednesday, July 31, 2:30-4:00 pm; Thursday, August 15, 10-11:30 am

Advanced searching capabilities of the MinnesotaMEDLINE system on the NOS/VE operating system, with emphasis on ways to narrow and broaden search strategy.

**Take a
Computing Class
this Summer!**

Help Page

ACS HELP-Lines

Central Systems (UX,VX,VZ,CA):

Software (including Graphics, Databases, and Statistics Packages), Hardware, Networking

626-5592 8:30 am to 4:30 pm, weekdays

Artificial Intelligence:

625-8332 3 to 4 pm, Monday, Wednesday, Friday

Humanities, Text Analysis:

625-8332 3 to 4 pm, Monday, Wednesday, Friday

Equipment Repair:

625-1595 8 am to 4:30 pm, weekdays

Lauderdale Tape Library:

626-1838 9 am to 3 pm, weekdays

Other HELP-Lines

Health Science Computing Services:

5-235 Moos Tower 625-2666
7:45 am to 4:30 pm, weekdays

LUMINA (communications questions):

626-2272
8 am to 5 pm, weekdays

Microcomputer and Workstation Networks Center:

125 Shepherd Lab 626-4276
9 am to 4 pm, weekdays

St. Paul Computing Services:

90 Coffey Hall 624-6235
9 am to 5 pm, Monday-Thursday; 9 am to 4 pm, Friday

Supercomputer Center:

3030 SCC 626-0808 (limited 24-hours)
9 am to 4 pm, weekdays

Telecommunications:

30 TelecomB 625-6333
7:45 am-4:30 pm, weekdays

Consulting

Walk-In Consulting

1 Nicholson Hall 10 am to 4 pm, Monday through Friday

Electronic Mail Consulting

Consulting is now available via the mail facility on all ACS systems (the UX, VX, VZ, and CA). Send mail to user name CONSULT for questions after hours and for low-priority questions that are not critical to your immediate computing work. Replies will be sent to your account through the mail facility on your system.

Instructional Computing Consultant

Department instructors may call 626-0200 for assistance in choosing ACS systems (ENCORE/UNIX, VAX/VMS, CYBER/NOS), software, and for answers to any other inquiries on using computers for instructional computing.

Computing Information Center

1 Nicholson Hall, 625-7397
MAD@UMNACVX, MAD@VX.ACS.UMN.EDU

Computing account and grant applications available for ENCORE, VAX, and CYBER computers.

Short course enrollment. Short course schedules and class descriptions available. Call 626-0032.

Assistance in ordering vendor documentation. Vendor documentation is not always available in the University bookstores and may be ordered directly from the company.

Complete documentation collection. Reference copies of vendor and all other documentation for ACS software.

Free ACS documentation. General information and central system information available.

Computing Newsletters. Subscribe to the *ACS Newsletter*. Newsletters from other computing centers are also available for reference.

ACS Directory

100 Laud CF (campus mail)	626-1600	Info/Public Information Service	626-1527
FAX	626-7440	LaudCF: Computer Consoles	626-0550
Director—Michael Skow	625-6349	File Restoration	626-0595
Deputy Director—Lawrence Liddiard	625-4016	Magnetic Media Lib/Operations (9 am-3 pm)	626-1838
Adm. Assistant Dir—James Foster	625-1511	Operations Coordinator	626-1646
Access: ACS systems (UX, VX, VZ, CA)		Services (tapes, laser disks, CD ROMs, Xerox, plotters) Supervisor	626-1661
3/12/2400 bps + 7/Even/1	626-1630	Users' room	626-0386
12/2400 bps + 8/None/1	626-1631	Networking—Paul Tranby	626-0815
Access: All campus systems		Newsletter and Publications:	
1200 bps 8/None/1	626-1200	ACS newsletter subscriptions	625-7397
2400 bps 8/None/1	626-2400	Technical Publications—Steven Brehe	626-1828
9600 bps 8/None/1	626-9600	NOS Systems—David Bianchi	626-1827
Accounts: (8 am-12 pm, 1-4:30 pm)		Operations, Asst Director—Richard Folden	626-0031
ENCORE, VAX, CYBER	625-1511	Programming Environments—Jim Miner	626-1091
Assistance and Information:		Shuttle Service	625-9525
HELP-Line (including Graphics, Databases, Statistics Packages, and Text Processing)	626-5592	System Status (recording) status and hours	626-1819
Equipment repair	625-1595	UNIX systems—David Bianchi	626-1827
Computing Information Center	625-7397	User Services—Richard Hotchkiss	625-0795
Short Course Registration	626-0032	VMS Systems—Marisa Riviere	626-0268
Artificial Intelligence	625-8332		
BITNET/Electronic mail	625-1543		
Faculty Instructional Computing	626-0200		
Humanities/Text Analysis	625-8332		
Math and Engineering Packages	625-5830		
Contract Services—Cheryl Vollhaber	625-2303		
DEC CSLG/ESL Software Distribution	626-0268		
Engineering Services, LaudCF	625-1595		
Asst Director—Donald Clark	625-1583		
Equipment Maintenance/Repair	625-1595		

Other University Computing Services

Health Sciences Computing Services	625-5444
LUMINA	625-6009
Microcomputer and Workstation Networks Center	625-1300
St. Paul Computing Services	624-7788
Supercomputer Center	626-1888
Telecommunications	625-6333

Central Computing Systems

The UX research and instructional system, an ENCORE Multi-max multiprocessor running the UMAX 4.3 operating system (4.3 BSD UNIX).

The VX research and instructional cluster: a Digital Equipment Corporation VAX 6000-510, clustered with other VAX systems using the VMS 5.4 operating system.

The VZ system for non-University users: a Digital Equipment Corporation VAX 3100 using the VMS 5.4 operating system. The VZ is part of the VMS cluster system.

The CA research and instructional system: a Control Data Corporation CYBER 830, using the NOS 2 operating system. The CA provides interactive and batch computing for University researchers and students.

Accounts

To use our central computer systems, you need a user name. This user name (with a secret password) is your authorization to use the computer systems. You can get application forms and rate information from ACS Accounting, 100 LaudCF (625-1511).

Operating Hours

The ENCORE UX, VAX VX, VAX VZ, and CYBER CA systems run continuously from 6 pm Sunday until 6 am the following Sunday.

On the second and fourth Fridays of each month from 5 am to 7 am the CYBER CA system is unavailable. Low-rate hours are from 8 pm to 8 am Monday through Friday, and all operating hours on Saturday and Sunday.

ACS Newsletter Subscription Request

Send to ACS Computing Information Center, 1 Nicholson Hall, 216 Pillsbury Drive SE, Minneapolis, MN 55455

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