

Mr. Jordan

acs academic computing services Newsletter

Volume 24, Number 6

University of Minnesota, Twin Cities

June, 1990

In this Issue

System and rate changes

UNIX, VMS, and NOS system and rate changes for FY91. 115

DEC systems support

Information on ACS-supported discount programs with DEC. 117

VMS 5.3 Update

The ACS VMS cluster will be updated to VMS Version 5.3 on June 10. 121

BMDP 90 now on VX

Learn to use the new BMDP 90 upgrade on the VX. 123

More NETLIB software

New libraries have been added to the NETLIB public domain. 125

**Independence
Day Hours.**
See page 125.

**Short Course
Schedule for
Summer 1990.**
See page 126.

Sending and Receiving Files on VX and CA

Jerry Stearns

JSTEARN@UMNACVX
JSTEARN@VX.ACS.UMN.EDU

It's useful to know how to send files without using electronic mail programs. A user of the **SEND /FILE** method of file transfer tells us that he and a colleague were sending revisions of a paper back and forth until the text was satisfactory to both parties. If they had used the U.S. mail, it would have taken them at least two weeks to finish the project. Using electronic file transfer, they finished it in three days.

Sending Files from the VAX VX

SEND /FILE is a VMS command for sending files via BITNET without using the **MAIL** program, so the files arrive as ASCII format files. The file arrives without any header information, so the recipient can use the file without further editing.

See **Example 1**, page 113, for the format of the **SEND /FILE** command.

This command does not work with Internet addresses. For transferring files via the Internet you would use the **FTP** command (File Transfer Protocol). One of the advantages of using **SEND /FILE** is that you do not need to know the password of the account receiving the file you are sending, information you do require to **FTP** a file to an account on another computer.

There are a few command qualifiers that make sending files by this method more convenient, and allow you to send files with varying characteristics—for example, having longer lines than the normal 80 characters. See **HELP SEND /FILE** for more details on these command qualifiers and formats. (You can abbreviate each qualifier to four characters, sometimes fewer, on the command line.)

The following are two command qualifiers that you may find useful when you want to send several files to a colleague at another computer site.

continued on page 112

Help Page

ACS HELP-LINES

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

626-5592 8 am to 5 pm, weekdays

Artificial Intelligence:

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

Database:

626-1887 10 to 11 am, weekdays

Liberal Arts, Text Analysis:

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

Statistics:

626-1887 1 to 3 pm, weekdays

Other HELP-LINES

LUMINA (communications questions):

626-2272 8 am to 5 pm, weekdays

Microcomputer and Workstation Networks Center:

626-4276 9 am to 4 pm, weekdays

Lauderdale Tape Library

626-1838 9 am to 3 pm, weekdays

CONSULTING

Walk-In

ACS, East Bank:

128C Lind Hall 10 am to 4 pm,
Monday through Friday

Microcomputer and Workstation Networks Center:

125 Shepherd Lab 9 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

128A Lind Hall, 625-7397, MAD@UMNACVX, MAD@VX.ACS.UMN.EDU
8 am to noon and 1:00 to 4:30 pm, Monday through Friday

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

Short course enrollment. Short course schedules and class descriptions available.

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

Academic Computing Services

Director, ACS: Michael Skow
 Editors: Steven Brehe, Paula Goblirsch

The *ACS Newsletter* is published monthly by Academic Computing Services of the University of Minnesota, Twin Cities. Deadline for articles is the 5th of the month preceding publication; deadline for short announcements is the 10th.

Direct comments, suggestions, articles, and announcements to the editors, ACS, Technical Publications, 2520 Broadway Drive, Lauderdale, MN 55113, or call (612) 626-1828, or 626-1093. SKB@UMNACVX/SKB@VX.ACS.UMN.EDU, PMG@UMNACVX/PMG@VX.ACS.UMN.EDU.

For a free subscription call (612) 625-7397, or send your name and address to the Computing Information Center, 128A Lind Hall, University of Minnesota, 207 Church St. SE, Minneapolis, MN 55455. MAD@UMNACVX/MAD@VX.ACS.UMN.EDU. On-campus address changes *must* include your department name and address.

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, religion, color, sex, national origin, handicap, age, veteran status, or sexual orientation.

The *ACS Newsletter* is produced on an Apple Macintosh IIcx running Microsoft Word, AppleScan, OmniPage, Adobe Illustrator, and Aldus PageMaker software. Camera-ready copy is produced on an Apple LaserWriter Plus and then printed at the University Printing Dept.

Copyright © 1990 University of Minnesota. Permission to copy is hereby granted, provided proper acknowledgement is given.

Contents

HELP PAGE	110
SYSTEMS	
Sending and Receiving Files on VX and CA	109
System Changes and Rate Changes for FY91	115
DEC Systems Support from ACS	117
VAX Cluster	
VMS 5.3 Update	121
SOFTWARE	
Statistics	
BMDP 90 Now on VX	123
Math and Engineering Packages	
More NETLIB Public Domain Mathematical Software	125
HOLIDAY HOURS	125
SHORT COURSES	126
PHONES/HOURS/LABS	127

continued from page 109

/CONCATENATE

Writes all files listed (and separated by commas) into a single file to be sent. The name of the file sent will be the same as the first file on the file list, unless the **/NAME=** qualifier is also used. It might also be used with **/NEW_PAGE**, which separates individual files by a form-feed character within the new concatenated file.

/NAME=name.type

Specifies the name and type of the file being sent. If you omit this qualifier, the file's name and type are the same as the VAX file sent.

Sending Files from the CYBER CA

On the CYBER CA, there's a utility called **BITSEND** that performs a similar function to the **VX SEND /FILE** command. Enter **BITSEND** at the **/** prompt. The utility will prompt you for a *local* file name, a BITNET Destination Node, and a Destination User Name. Type a **?** after each question to see what information is required. Most of the file type qualifiers that are available with **SEND/FILE** do *not* work in **BITSEND**.

Receiving Files on the VAX VX

When the file is received by the other computer, the user is notified that a BITNET file has been received. The user then must retrieve the file from a Receive Queue. On the VX there is a **RECEIVE** utility with which you can retrieve files from the Queue. This gives you control over incoming information, so your directory does not collect unwanted files without your consent.

See **Example 2**, page 113, for information about using **RECEIVE**. (This example describes the cur-

rent practice on the VX. In the future, we will eliminate the login message about received files, and, instead, provide an automatic MAIL message informing you about a received file.)

Remember that when transferring files via BITNET it will save time to send only the text back and forth at first. You only need to make special arrangements to send the formatted file when the text is completed.

Files waiting in the Receive Queue are kept there for up to thirty days. After that the file will be deleted from the queue. You will receive a mail message after two weeks, reminding you that you have a file waiting, and you'll receive further reminders with increasing frequency as the deletion deadline approaches.

Receiving Files on the CYBER CA

The CYBER CA system also has a **RECEIVE** utility for receiving BITNET files. It performs many of the same functions as the VX version but has slightly different commands. Files are kept in the queue for thirty days, but you do not receive a mail warning about how long it has been there—you just receive the usual login message that it's waiting in the queue.

See **Example 3**, page 114, for information about using **RECEIVE** on CA.

Confirming the Transfer

It's often helpful to both parties to send an electronic mail message informing the recipient that the file is being sent and asking for confirmation of its reception via reply mail. Without this polite convention, you might not know whether the file was received.

Example 1: The SEND /FILE Command on VX

The general format for the command is:

```
$ SEND /FILE /qualifier filename[,file2,...] username@nodename
```

where *username@nodename* is a BITNET address only.

Let's say a colleague in Duluth has asked you to write an introduction to his new book. You compose the piece on your word processor, save it as a text-only file with line breaks, and upload it to your directory on the VAX VX as file INTRODUCTION.TEXT;1. You decide to shorten the file name when you send it because the longer the command line, the better the chances for a typographical error. Now you use the following format:

```
$ SEND /FILE /NAME=INTRO.TEXT INTRODUCTION.TEXT;1 KROBERTS@UMNDUL
```

Example 2: Receiving a File on VX

When you log in to your VX account, a message will appear informing you to

```
Type RECEIVE * to process n new BITNET files.
```

The number of received files will replace *n* in this message. When this message appears, the terminal also beeps at you. The easiest way to get the files is to type

```
$ RECEIVE *
```

which writes the file from the queue to your current directory.

You may also type just **RECEIVE** to enter the RECEIVE utility. The system will respond with a prompt like this:

```
RECEIVE>
```

indicating that the utility is ready to execute commands. Type **HELP** to see a list of the commands available to you. The response will look like this:

```
HELP
```

```
The RECEIVE utility is used to process incoming network files from other users of the computer network.
```

```
Additional information available:
```

```
COPY          DELETE          DIRECTORY      EXIT          HELP
RECEIVE      TRANSLATE      TYPE          USE
```

```
Topic?
```

continued on page 114

Systems

continued from page 113

The utility will also automatically list the files that are waiting in the queue for you, if you have any there. You can use the **DIRECTORY** command to repeat that list any time while you are in the utility.

Use **TYPE filename** to look at a file in the Receive Queue, to see if it is what you expected, or something that you want to keep. If it is not a file you want to keep or write to your directory, use

```
RECEIVE> DELETE filename
```

to remove it. If you do want to keep the file, type

```
RECEIVE> RECEIVE filename
```

to write it to your directory. Returning to our earlier example, to receive the file that your colleague in Duluth returns to you with suggested revisions, use the command

```
RECEIVE> RECEIVE INTRO.TEXT INTRO2.TEXT
```

where **INTRO2.TEXT** is a name to help you differentiate it from the file that you sent to him. Somehow you need to keep track of the various revisions of the file as it goes back and forth between you, and VMS file version numbers may not be enough to tell which ones are yours and which are your colleague's.

Example 3: Receiving a File on CA

Type **RECEIVE** at the system prompt to execute the **RECEIVE** utility. The command prompt on the CA looks like this:

```
Command?
```

Then type **HELP**. The system responds with:

```
Legal commands are:
```

```
DELETE      END        EXIT      GET       HELP      LIST      QUIT
RECEIVE     SEND      XQUIT
```

LIST will show you what files are waiting for you in the queue. **GET** or **RECEIVE** will write the received file to a local or permanent file, prompting you for information about the file number (from the List) and the new file name. **END**, **EXIT**, **QUIT**, or **XQUIT** will end the session. The **SEND** command actually allows you to send a local file via BITNET. See **HELP** for details on the command formats.

System Changes and Rate Changes for FY91

Lawrence Liddiard

LIDDIARD@VX.ACS.UMN.EDU

LIDDIARD@UMNACVX

UNIX Service

The processor and memory upgrade in October 1989 made our Multimax into a 520 system with six processors, each rated at 8.5 million integer instructions per second (integer MIPS). ACS also doubled the Multimax's memory to 128 megabytes and added 3 gigabytes of additional mass storage. To meet expected increasing demands in fiscal year 1991 (FY91), ACS will add two more processors and 2 gigabytes of mass storage.

The changeover to 4.3 bsd UNIX occurred in FY90. Besides the SPSS package installed this year, a standard database package (INGRES) will be added in FY91.

VMS Service

The actual changes that occurred in FY90 were quite different from those announced in my June 1989 article. ACS clustered a VAX 6410 and two VAX 3100s with its VAX 8650. ACS still plans to add a modular VAX 6XXX series (supporting up to six processors) to upgrade our VMS capacity in FY91. We also expect new versions of VMS beyond 5.3 that will have improved windowing.

ACS negotiated with DEC for low-cost University-wide software licenses for 140 products for VAX systems used for University research, instruction, and administration. Since these new licenses did not apply to systems used by those outside the University, ACS transferred its non-University users to the VAX 3100 system, VZ.

ACS is the designated distributor and consulting service for this integrated University-wide DEC VMS and Ultrix agreement that has yielded savings for over 95 DEC system users at the University. More information about DEC's Campus-wide Software License Grant (CSLG)

and Educational Software Library (ESL) programs is available in another article in this newsletter.

The VAX 3100 systems allowed ACS to install CD-ROM readers for both VAX software distribution and on-line documentation. Finally, we added two TA90 cartridge tape units to the VMS cluster to enable reading 200 megabyte cartridges that are compatible with the IBM 3480 cartridge reader. By fall we expect to upgrade the tape units to read cartridges having a capacity of 600 megabytes.

NOS Service

Currently the CYBER CA system software is "frozen" at the last release of NOS 2.7 issued by CDC. Last August we downgraded the CYBER 855 to an 845 (33 percent less CPU power) to more closely match user demand. This July ACS expects to transfer its NOS service from the 845 hardware system to a smaller CYBER system that again will match the expected NOS usage for FY91.

Note: We plan to transfer our NOS service on Monday, July 2. Our NOS service will be unavailable for an extended period that day.

ACS's director, Michael Skow, met with many NOS users over the past year and concluded that ACS should continue its NOS service for a couple of years. We plan to give at least a year's notice before discontinuing this service. This means that the **summer of 1992** is the **earliest** that ACS will stop providing the NOS operating system.

Please contact me at 625-4016 if you need help converting any on-going NOS production system that you will need beyond that date.

continued on page 116

Systems

continued from page 115

NOS/VE Service

FY90 usage on the IT NV system has been about 75 percent of that in FY89. After discussions earlier this year with IT faculty about the future of this system, ACS agreed to continue the current configuration for FY91. Note in the discussion of rate reductions, accompanying this article, that high usage these past two years have allowed us to cut the FY91 SBU rate for NV in half.

Networking Systems

ACS is in the third year of replacing the ACSSnet (9600 baud Tellab equipment) with "telnet" servers that allow up to 57,000 baud. We will add more network monitoring devices to improve the system further. We added a Sun SPARC print server to the network to offload the ENCORE system and to deliver higher uptime for distributed printing. We are now evaluating X-Window terminals for network activity and ACS system compatibility.

Rate Changes Effective July 1, 1990

Rate Increases

None are anticipated.

Rate Decreases for Mass Storage

The cost of mass storage will be reduced by 48 percent from \$0.27 per megabyte day to \$0.14 per megabyte day on the UX, VX, and NV systems to reflect the lower cost of mass storage devices. ACS's FY90 bulk rate will be discontinued for FY91.

Rate Decreases for Processor Charges

Large resource usage continued on the UNIX and NV systems in FY90. To match usage/expenses ratios, ACS will lower the SBU rates on these two systems. The SBU normal rate of 6.5 cents will drop to 3 cents on NV and from 2 cents to 1.5 cents on UX. On all of ACS systems, the rate for delayed processing continues to be 60 percent of the normal rate.

DEC Systems Support from ACS

Marisa Riviere
MARISA@UMNACVX

In past years, ACS has negotiated discount programs with Digital Equipment Corporation (DEC) on behalf of University DEC systems. The success of those programs is reflected in the growing number of VMS and Ultrix systems at the University. This ACS effort for DEC system users has expanded in several directions.

Discount programs include:

- software distribution and consulting support for the most commonly used VMS and Ultrix software products in academic environments for a low yearly membership fee (ESL).
- discounts of up to 50 percent for software licenses not available through the Campus-wide Software License Grant (Market Basket).
- licenses at no charge for a large number of DEC products for educational VAX systems (Campus-wide Software License Grant).
- reduced costs for VMS software product support that is not available through ESL.
- discount grants are also available for hardware and documentation.

ACS support programs for VMS and Ultrix include:

- phone consulting
- training courses and on-line VMS training software and documentation
- technical support for the DEC system manager
- coordination of DEC system managers working groups
- full or partial facility management services for DEC systems, and network configuration planning and maintenance
- coordination of the University-wide DECnet networks

- negotiations for DEC hardware maintenance umbrella contracts
- third-party software and umbrella contracts
- "tailoring" of DEC or third-party software for specific systems or groups of users
- special projects analysis, consulting, and programming
- general purpose software—databases, text processing, statistics, and graphics

Discounts are currently available for hardware maintenance only under a third-party master maintenance agreement through June 1990. ACS is pursuing a DEC master maintenance agreement for fiscal year 1991.

Short descriptions of the current DEC contracts and ACS support services for DEC systems follow.

Educational Software Library (ESL)

The Educational Software Library entitles University owners of DEC systems, ranging from workstations to mainframes, to use a large number of VMS and Ultrix products for a low yearly membership fee. This fee is less than the yearly maintenance costs of one or two software products alone. ACS handles the distribution of software to University sites that purchase an ESL contract.

The products offered through ESL include VMS and ULTRIX system software; DECnet; and workstation windowing software; a large number of compilers such as Ada, Fortran, Pascal, C, Cobol, and Basic; VMS programming tools; the GKS graphics library; LISP; DATA-TRIEVE; and more.

ACS helps ESL members who have questions related to system software installation and bug problems. Problems that cannot be resolved by ACS personnel are referred to DEC.

continued on page 118

continued from page 117

The ESL contract is established yearly. A new contract will begin on July 1, 1990. The membership cost for the program for 1989-1990 ranged from \$83 for a VAXStation to \$1,848 for a 6400 CPU. We do not expect major rate changes for next year.

A detailed description of the ESL program and a full list of the products that it includes can be found on the ACS **ESL Booklet** publication. The **ESL Booklet** is an on-line document on the ACS VX system. Individuals with accounts on that system can view or obtain a copy of the document using the ListDoc utility. Copies can also be obtained by calling User Services at 626-0200.

Campus-wide Software License Grant (CSLG)

This program grants "no-charge" licenses for over 160 DEC products for educational VAX systems at the University and is the basic DEC software license mechanism. To be eligible, a system must be used exclusively by the University. In addition, quarterly reports on software usage are required by the contract.

It is desirable that systems obtaining software from the ESL program also obtain a license from the CSLG plan. A full list of contract terms and the products that the CSLG plan covers is also included in the **ESL Booklet**. ACS administers the CSLG contract for the University. The CSLG program is offered in combination with the ESL, but does not imply any additional cost.

Right-To-Copy Program (RTC)

The right-to-copy contract entitles managers of any University DEC system to obtain VMS and Ultrix software products at reduced costs by a shared approach across member systems.

Although the extensive ESL program covers most DEC software, there are a few products that University systems would need to copy from ACS. ACS acts as a coordinator for systems needing RTC arrangements for distribution. Once any University site obtains a given product not included in the ESL, other sites can benefit from shared

maintenance costs. ACS can arrange the RTC contracts with DEC and handle the distribution of the media.

DEC's Educational Market Basket Program

Systems that do not qualify for the ESL program or that require software not available on a Right-to-Copy basis can benefit from DEC's Educational Market Basket. This program offers software licenses for DEC systems to universities at up to 50 percent off normal list prices.

Hardware and Documentation Discounts

Discount grants from DEC are available for hardware and documentation. ACS and the Micro Workstation Center, working with the Purchasing Department, provide special proposals. Hardware acquisitions at discounted prices can be handled directly through the Purchasing Department of the University under special bids. Currently they are SP#105 for workstations and 3X00 servers and SP#106 for 6X00 servers. DEC documentation discounts are available and can be up to 50 percent when you place a catalog order through ACS.

For more information on hardware purchases or documentation contracts speak to Ron Fleagle, 625-0704. Contact Michael Dunham at 625-7397 for help and information on preparing catalog orders.

Phone Consulting

The ACS HELP-Line provides general support for operating system questions in VMS and Ultrix. The HELP-Line will also answer questions on programming languages, statistics, databases, and media storage. Questions that are not resolved by the HELP-Line Personnel will be referred to the appropriate staff. Problems that cannot be resolved by ACS personnel are referred to DEC or other software vendors. HELP-Line assistance is provided from Monday to Friday from 8:00 am to 5:00 pm. The number to call is 626-5592. Be prepared to send all essential information, if necessary, by electronic mail to the support staff. There is no charge for phone or E-mail consultation.

VMS and UNIX Training Courses, Training Software, and Documentation

All the following classes are offered by ACS at least once during the academic quarter or school year. Course are free but require advance registration. To register for classes, call the Computing Information Center at 625-7397.

Introduction to Computing
Introduction to VAX/VMS
Electronic Mail and Networks
Using SAS
Using SPSSX
Overview of the UNIX Operating System
vi: UNIX Editor

On-line training courses for VMS, EDT, and EVE are available on the VX system.

We maintain a reference library of VMS and Ultrix manuals at the ACS Computing Information Center. On-line documentation is available in DEC windows Bookreader format.

Technical Support for the System Manager

For owners of new systems registered in the ESL program, the ACS VMS Systems Group will help them to master the basic VMS or Ultrix system management tasks. Additional help is available as consulting services for hourly rate or through facility management contracts. Call Marisa Riviere at 626-0268 for information.

VMS and Ultrix System Managers Working Group

The University of Minnesota VMS Managers Group was formed several years ago and meets regularly every second Thursday of each month. It provides a forum for exchange of technical expertise and references among the VMS user community. The group organizes seminars and invites special speakers to address VMS topics. It also provides a VMS related on-line conference on the ACS VX system. Currently, the group is expanding to provide a forum for Ultrix users. The group meets in 15 Architec-

ture from 3:15-5 pm. Call Marisa Riviere at 626-0268 for more information.

Facility Management Services

ACS offers a wide range of options and services for managing VMS and Ultrix systems. You can select from the services listed below, combining them according to the requirements of your particular site. Service costs are negotiated for each combination of choices and system configuration. Currently, ACS is managing a VAX 6400 system for the Telecommunications Department and a cluster configuration consisting of a VAX 3800 and three VAXStation 3100s for the Colon Cancer Control Study Center.

- system and network configuration planning
- help with software and hardware planning strategies
- full operational assistance by "housing" the system at Lauderdale with uninterruptable power
- assistance with hardware installation
- software system and layered products upgrades—on site or over the University network
- file backup—on-site or over University networks
- VMS system tuning
- resource utilization, performance and capacity evaluations
- VMS system security and user's data integrity reviews
- terminal server support

Networks

Both VMS and Ultrix systems can use DECnet and TCP/IP protocols on the University networks. Both protocols are provided by DEC for Ultrix. VMS systems include only DECnet, but versions of TCP/IP are available for VMS. ACS supports "Multinet" TCP/IP for VMS systems.

The University Telecommunications Department coordinates the TCP/IP networks. The ACS VMS Group coordinates the DECnet network at the University. Sites planning to run either of these protocols should contact Telecommunications and/or ACS to get addresses as-

continued on page 120

continued from page 119

signed and for network tuning information. Not all types of network activity are recommended for the University-wide network because of unscreened broadcasts. Sites planning to purchase computing systems that are to be networked should contact ACS at 626-0200 or Telecommunications for additional information during the planning stages.

Hardware Maintenance Contracts

Discounts are available through master hardware maintenance agreements under umbrella contracts negotiated yearly with different hardware maintenance companies. ACS can provide assistance to departments for clarifying their hardware maintenance needs and to evaluate the available options. The University Purchasing Department is currently evaluating two maintenance proposals: DEC's and Bell Atlantic (SORBUS). Both should be in place for the 1990-1991 fiscal year.

Third-party Software and Umbrella Contracts

ACS works on handling umbrella contracts for third-party vendors of VMS products for all type of systems. If you are planning to purchase software from third-party vendors—languages, graphics, statistics, databases, or other packages—please call 626-0200. An umbrella contract may already exist or we may be able to give recommendations on current software products. Our Contract Services group will assist in outlining software contracts.

Software "Tailoring" and Group Projects

Programmers within the ACS organization can work with end users to install or modify third party software on VMS systems for particular tasks. They can recommend and implement strategies for group's projects based on the VMS features for file protection, administrative control, mail and other electronic communication systems. These services are provided on an hourly basis after an initial consultation. Call Contract Services at 625-2303 for more information.

Analysis and Programming

ACS can provide programmers to do limited analysis and programming on a contract basis. Programs can be written in Fortran, Pascal, C, and COBOL. Contract programming and consulting is available for graphics software such as DISSPLA and the Precision Visuals products DI-3000, Grafmaker, PicSure, and the Contour System, and for statistical packages such as SPSS, SAS, and BMDP. All analysis and programming is done on an hourly basis through Contract Services. Call 625-2303 for further information.

General-purpose Software: Databases, Text Processing, Statistics, and Graphics

In addition to the DEC software most commonly used in academic environments, ACS offers several major software packages on its VMS machines that satisfy the demands of many different users with a variety of computer needs. Examples are:

- Databases: INGRES, Rdb, DTR
- Graphics: DISSPLA, DI-3000, Grafmaker, Contour System, PicSure
- Text processing: TEX
- Statistics: SPSS, BMDP, RATS, SAS
- Mathematics applications and libraries: IMSL, MACSYMA, REDUCE, etc.
- Network: DECnet, "Multinet" TCP/IP

Owners of small DEC systems can choose to prepare and debug jobs on their own systems and then transfer the command files and data files to the ACS VMS cluster for final and/or faster processing.

For More Information

Please contact our computing consultant at 626-0200 for more information about these programs or to make arrangements to help you to evaluate, purchase, or maintain your system.

VMS 5.3 Update

Marisa Riviere

MARISA@UMNACVX

On June 10 we will update the ACS VMS cluster to VMS Version 5.3_1. This is the latest version of the operating system released by DEC.

The update includes new versions of most layered products and a change in the third-party TCP/IP network support software. **Table 1** contains a list of the new revision levels for the layered products. The new TCP/IP software is from Multinet.

We believe that this update is upwardly compatible with the current 5.2 operating system and users will not be inconvenienced by the change. This article lists the most relevant changes that users should consider. Additional information about changes and new features is available through ListDoc, including information discovered during the staff test sessions and the sessions offered for general users on May 27 and June 3, when this article will be in press.

Two important features of the 5.3 update are:

- 1) more consolidation and enhancements for DECwindows.
- 2) extensive network support features through DNS (Distributed Name Server).

Extensions of windowing are present in the EVE editor and TPU applications, in compilers and run time libraries,

and in layered products such as Notes. The DNS programming interface allows for easier and organized sharing of system resources such as printers, queues, files, etc.

Users with VMS windowing terminals will benefit immediately from the new windowing applications. (As we stated in our May issue, we are working on providing the windowing features of VMS to users of windowing terminals from all types of network access, not just DECnet.) DNS will set up the basis for the conversion to DECnet Phase V, in which it will be easier and more efficient to access and refer to other systems within DECnet networks. DNS will also give us the tools to improve remote printing services and the opportunity to explore remote file support mechanisms.

Although windowing and DNS may not, at present, be issues of concern for many of our users, the entire ACS VMS cluster will benefit from this upgrade. For example, one Version 5.3 improvement that is not directly visible but helpful will reduce the waiting time users experience on one node in the VMS cluster when another node leaves or joins the cluster. Thus those times when a clustered system appears to be "frozen" will be less frequent.

We are pleased that we continue to accomplish our overall goal of keeping up with the latest operating system releases—within the necessary time constraints for testing and other practical limitations.

continued on page 122

Table 1: New Revision Levels for Layered VMS Software

Ada 2.1	CDD 4.1A	FMS 2.4	OPS5 3.0
All-in-1 2.3	CMS 3.3	Fortran 5.4	Pascal 4.0
APL 3.2	Cobol 4.3	Lisp 3.1	PCA 2.2
Basic 3.4	DTM 3.1A	LSE 3.0	SCA 2.0
C 3.1	DTR 5.0	Notes 2.1	

Systems

continued from page 121

Most Important Changes

When you use qualifiers indicating file search criteria (for example, `/SINCE`, `/EXCLUDE`, or `/BY_OWNER`) in either the `PRINT` or the `SUBMIT` command, and the system finds no files that meet the criteria specified by the qualifiers accompanying the two commands, the system will display a message containing the symbol `$$STATUS`, indicating a fatal error.

If you issue a `SUBMIT /DELETE` command and include in that command's parameter list the name of a file to which you do not have delete (`D`) access, the `SUBMIT` command processing stops, and creates no batch job.

ANSI-labeled magnetic tape volume sets are limited to 9999 files. In previous versions, the system did not check this limit when creating a new file, and as a result the ten-thousandth file and subsequent files would have invalid file headers.

The removal of the `MACRO-32 POLYF` code from the `MTH$$SINCOS` routine has given rise to a possible 1 least significant bit (`LSB`) difference between separate `MTH$$SIN/MTH$$COS` calls and one `MTH$$SINCOS CALL`.

When you are using the Debugger, if you enter a `GO` command after the program terminates and specify an address expression with that command, the system ignores any previously set breakpoints, tracepoints, or watchpoints and does not report them.

If you link a program with the command `LINK /DEBUG` and then execute the program in a detached process (with the command `RUN /DETACHED`), the Debugger goes into an infinite loop. You should instead specify the command `RUN /DETACHED /OUTPUT` to circumvent this problem.

The Debugger does not run if you have specified a search list for `SY$$LIBRARY`, such as

```
$ DEFINE SY$$LIBRARY SY$$DISK: [], SY$$LIBRARY
```

In such cases, enter the following definition to correct the problem.

```
$ DEFINE DEBUGSHR SY$$SYSROOT: [SYSLIB]DEBUGSHR.EXE
```

Telnet and FTP utility programs will also be supplied with the new Multinet product. Telnet and FTP will function as they did before but their user interfaces will vary. See `HELP TELNET` and `HELP FTP` in VMS 5.3 for information about the interfaces. Also, the Telnet utility automatically sets its protocol to `TN3270` if you are Telnetting to an IBM machine.

SCA V2.0 library is not compatible with SCA V1.3. There is a `CONVERT LIBRARY` command offered that will convert V1 libraries to the V2 format, but we recommend that you use `LOAD` command to load `ANA` files to create a new library. (The `CONVERT LIBRARY` command takes longer than `LOAD` and requires large disk space.) The command language for SCA V2 is similar to the SCA V1 command language, but there are some differences.

VAX ADA V2.1 is a major change to the current V1.5 compiler. VAX ADA uses a new program library format that is incompatible with the current format. Users must convert their current libraries to the Version 2 format using the `ACS CONVERT LIBRARY` command. The conversion makes all units in the library obsolete; you must recompile before you can link or perform other operations that require units that are current. In addition, changes were made to a number of the VAX ADA predefined packages. These changes require you to reenter these packages, and units that depend on any of the reentered packages will need to be recompiled.

BMDP 90 Now on VX

Bruce A. Center
BAC@UMNACVX

We have had BMDP on our VAX VX for only four months, and already they are improving it. BMDP 90 is now available. (Our current version is BMDP 88.)

BMDP 90 adds two new statistical programs and a host of improvements. It *should* be totally compatible with BMDP 88.

Using BMDP 90

To invoke BMDP 90, type:

```
$ BMDP90 pn IN=inputfile OUT=outputfile LEN=workspace length
```

where

- pn*** is the two-character program name (i.e., 2V or 4F). Required.
- IN** is the input file of BMDP commands. (The default is your terminal; i.e., SYSS\$INPUT.)
- OUT** is the BMDP output file. (The default is your terminal; i.e., SYSS\$OUTPUT.)
- LEN** is the number of words of workspace allocated. The default is 20,000 words. If this is insufficient, BMDP will let you know what you need.

You can get more complete information on running BMDP 90 by typing:

```
$ BMDP90
```

You can also use BMDP interactively, provided that *no* input or output files are specified. Type:

```
$ BMDP90 pn
```

This will prompt you for your input and output files. Just hit the carriage return. You will now be in EDT, where you can create a BMDP program. After you exit EDT, the program runs, and output appears on your screen a page at a time. Afterwards, you return to EDT to make corrections or to perform further analyses. You can also save your BMDP commands using EDT's **WRITE** command.

continued on page 124

continued from page 123

Improvements in BMDP 90

A substantial number of improvements have been made in BMDP. These include:

- Interactive BMDP. BMDP 90 will let you use EDT as an interactive editor rather than BMDP's unwieldy line editor. All of the capabilities of EDT are available, including the ability to INCLUDE other files, edit them, and WRITE them. Since interactive BMDP mandates *only* terminal input and output, this feature is essential.
- Program prompts and messages have been revised for clarity, a task that should probably have been undertaken for this article as well.
- Eight new transformations have been added: These are the normal, the t, the chi-square, and the F cumulative distribution functions; and the inverse normal, inverse t, inverse chi-square and inverse F cumulative distribution functions.
- The STACK command in the GROUP or the CATEGORY paragraph can now be used to stack individual variables, to stack previously stacked variables, or to stack any combination of the two types of variables.
- Correspondence Analysis (CA), new in BMDP 88, can now perform Multiple Correspondence Analysis. Multiple Correspondence Analysis is an extension of simple Correspondence Analysis to the case of three or more categorical variables.
- A number of other individual programs have been enhanced as well. Use the

`/PRINT NEWS.`

command within your BMDP program to learn what changes have been made to that program. Documentation of all of the enhancements will also be made available through ListDoc at a later date.

New Programs

LE: MAXIMUM LIKELIHOOD ESTIMATION. LE estimates the parameters that maximize the likelihood function, using the iterative Newton-Raphson algorithm. Given a collection of independent observations, the program computes the analytically exact first and second derivatives to estimate the gradient vector and the Hessian matrix.

LE is best used for general analyses in maximum likelihood estimation. You can use other BMDP programs for analyzing specific models. The 3R and AR programs can compute maximum likelihood estimations by iteratively reweighting cases. The LR, PR, 2L, and 4F programs should be used for reporting results that are relevant to specific models. The advantage to using LE is that it can perform the computations for models for which specialized routines do not exist, such as conditional logistic regression with more than one matched control.

PR: POLYCHOTOMOUS LOGISTIC REGRESSION. PR computes the maximum likelihood estimates of parameters of logistic models for multinomial data. (Multinomial data are data in a discrete distribution associated with events which might have more than one outcome.) The concepts and commands associated with PR are very similar to those for stepwise logistic regression (LR).

Polychotomous logistic regression is sometimes referred to as "multivalued logistic regression" or the "generalized logistic model." But usually it isn't referred to at all.

Documentation

BMDP 90 is documented in the *BMDP Statistical Software Manual*, two volumes, W. J. Dixon et al., University of California Press, Berkeley, 1990. There is also the handy *BMDP User's Digest*, 1990 revision, University of California Press, Berkeley, 1990.

These manuals will be available for perusal in the Computing Information Center, 128 Lind Hall. Our February 1990 issue contains a basic introduction to BMDP on the VAX.

More NETLIB Public Domain Mathematical Software

Michael J. Frisch

MJFRISCH@UMNACVX

We've recently added the following items to the list of libraries in the NETLIB electronic mail system for distributing the source code of public domain mathematical software.

MADPACK solves linear systems using multi-grid or aggregation-disaggregation methods

PARALLEL information on parallel processing and high-performance computing

PARMACS parallel programming macros for monitor and send/receive

PICL portable instrumented communication library for multiprocessors

TOEPLITZ linear systems in Toeplitz or circulant form by Garbow

To find out more about accessing these and other NETLIB libraries, use this command on the VAX VAX:

`$ LISTDOC`

Once in ListDoc, select the category **MathEng_Software** and then the sub-category **Libraries**. In that sub-category, you will find a document entitled NETLIB.

Holiday Hours for July

Donna Strovers

In observance of Independence Day, all ACS systems will run in unattended mode from 15 minutes after midnight the morning of Wednesday, July 4, until 1 minute after midnight, Thursday, July 5. It is unlikely that any tape requests or printing will be processed during these hours. Normal operations on all systems will resume at 1 minute after midnight, Thursday, July 5.

Short Courses

Central Systems Summer 1990

Central Systems courses are free. To register call 625-7397.
Some classes have size limitations: Register early.

Introductory Courses

Introduction to Computing	June 12-20	TW	2:30-4:30 pm
Introduction to VAX/VMS Operating System	June 26-July 3	TTh	2:30-4:30 pm
Overview of the UNIX Operating System	July 2	M	2:30-5:00 pm

Elective Courses

Using SPSSX (Statistics Package)	July 9-13	MWF	2:30-4:30 pm
vi: UNIX Editor	July 10	T	2:30-5:00 pm
Using SAS (Statistical Analysis System)	July 16-20	MWF	2:30-4:30 pm
Electronic Mail and Networks	July 17-19	TTh	2:30-4:30 pm

Registration Information

Prerequisites: Please check the course description list to see if there are any prerequisites for the class you are interested in. Instructors will not be able to review any prerequisite information. For more information on prerequisites, call the Computing Information Center at 625-7397.

Limits: Some central systems classes have limits to class size. Please try to register early to be sure of getting a place. If you decide to cancel from a class, please do so as soon as possible, so that we can make the space available to others.

Registration: Registration is located at ACS's Computing Information Center, 128A Lind Hall. (Hours: 8:00 am to noon and 1:00 to 4:30 pm, Monday through Friday.) To register, call 625-7397. Mail registrations will be accepted. You can also register by electronic mail—write to mad@umnacvx or mad@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 4:00 pm on the last working day before the class begins. For registration information, call 625-7397. **Note:** Wednesday, July 4, is a University holiday. No classes will be held.

Course Descriptions

INTRODUCTION TO COMPUTING. An introduction to basic terms and concepts in computing. Students receive free computer time to practice basic procedures like logging in, creating and editing a text file, etc. Four meetings.

INTRODUCTION TO VAX/VMS OPERATING SYSTEM. Overview of the VMS 5.3 operating system running on the VAX cluster. Logging on and off; Utilities; Files and directory structure; Commands and syntax; the EDT editor; Symbols and logical names; Procedure files; Batch jobs. Three meetings.

OVERVIEW OF THE UNIX OPERATING SYSTEM. An overview of the UNIX operating system, running on the ENCORE UMAX. Logging on and off; Simple utilities; Files and directory structure; Access permissions; The Shell, redirection, pipes and filters; Metacharacters; Editors—ed, vi; Mail, write, talk, mesg; Compilation and execution, (Fortran, C, Pascal); Background and foreground; Processors, Shells and subshells. One meeting.

USING SPSSX (Statistical Analysis Package). Basic structure, job setup, and required statements; data manipulation and

selection, commands that control internal and external files. Familiarity with UNIX and vi, or VAX/VMS operating system and EDT editor, or equivalent knowledge, is required. Three meetings.

vi: UNIX EDITOR. Editing files on UNIX systems with ex (line editing) and vi (full screen editing). All the commands will be covered. Additional topics include terminal definitions, '.exrc', view, and examples of where an ex command is superior to a vi command in ease of use. One meeting.

USING SAS (Statistical Analysis System). Basic structure, job setup, and required statements, data manipulation and selection, commands that control internal and external files. Prerequisites: Familiarity with VAX/VMS operating system and EDT editor is required. Three meetings.

ELECTRONIC MAIL AND NETWORKS. Introduction to electronic mail and networks. Mail on the VAX 8650; sending, receiving, and managing mail, commands. BITNET addressing and uses. Other networks. Prerequisites: Introduction to VMS Operating System or experience using VMS. Two meetings.

ACS PHONE NUMBERS

Administrative Office: 626-1600
HELP-Line 626-5592

Access:

ACS systems (UX, VX, VZ, CA)
3/12/2400 bps + 7/Even/1 **626-1630**
12/2400 bps + 8/None/1 **626-1631**
LUMINA **626-2206**

Accounts:

ENCORE, VAX, CYBER	625-1511
Computer Hours (recorded message)	626-1819
Computing Information Center, 128A Lind	625-7397
Contract Services	625-2303
East Bank I/O, 128C Lind Hall	625-5082
Engineering Services	625-1595
Equipment Maintenance/Repair	625-1595
E-mail	625-1543
FAX	626-7440
Graphics Software	626-5592
Information, Lauderdale	626-1600
Lauderdale Computer Room	626-0550
LUMINA	626-2206
LUMINA Consultant	626-2272
Math and Engineering Software	625-5830
Microlab (WBCS-170 Anderson)	624-6526
Newsletter Subscription	625-7397
Permanent File Restoration	626-0595
Public Labs (with ACSnet)	
140 Blegen Hall	624-5278
B40 Central Library	no phone
207/270 Diehl Hall	624-3128
4-204/4-250 EE/CSci	625-9081
121 Elliott Hall	624-0866
14 Folwell Hall	625-4896
1 Lind Hall	625-0801
128C Lind Hall	625-5082
308 Mechanical Engineering	625-7352
130 Physics	625-6820
9 Walter Library	626-1899
MWNC Lab Manager (14 Folwell Hall)	625-7850
Publications Information	626-1093
Short Course Registration	625-7397
Shuttle Bus Service	625-9525
System Status (recorded message)	626-1819
Tape Librarian/Operations Services	626-1838
West Bank Computing Services	624-0877

PUBLIC LABS TWIN CITIES CAMPUS

	Central System Printing	Interactive	Micro
<i>East Bank</i>			
ApH 117			X
Arch 148			X
CentH		X	
ComH		X	
DiehlH 207/ 270	L	X	X
EddyH Annex 54			X
EE/CSci 4-204/250	I, L	X	X
EltH 121	I, L	X	X
FolH 14, 14a	L	X	X
FronH		X	
LindH 1	I	X	
LindH 26			X
LindH 128C	L	X	
LindH 306B			X
MasCanCtr M39		X	
MechE 308	L	X	
MoosT 8-425			X
Phys 130	L	X	X
PioH		X	
SanH		X	
TerrH		X	
VinH 203			X
WaLib 9	L	X	X
<i>West Bank</i>			
AndH 170	L		X
BlegH 140	I	X	
MdbH		X	
OMWL B2			X
<i>St. Paul</i>			
BaH		X	
CentLib B40	I	X	
CentLib B50			X
ClaOff 135	L		X
McNH 69			X
Vet 436			X

I - Impact line printers.
L - Laser printers.

SYSTEM 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. The systems are in unattended production mode Saturday and Sunday from midnight until 6 am. It is unlikely that any tape requests or printing will be processed during these hours. Normal operations resume at 6 am each day except Sunday.

On the first and third 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, 128A Lind Hall, 207 Church St. SE, Minneapolis, MN 55455**

Add

Cancel

Change

Name _____

Campus Mail (You must provide your department's name and departmental address.)

Department _____

Room _____ Building _____

U. S. Mail

Address _____

City _____ State _____ Zip _____

Change/Old Address

Department _____

Room _____ Building _____

Address _____

University of Minnesota Affiliation

Department

Faculty

Staff

Student

Alumni

Other

acs

Academic Computing Services

Technical Publications
100 Lauderdale CF
University of Minnesota
2520 Broadway Drive
Lauderdale, Minnesota 55113

Nonprofit Org.
U.S. Postage
PAID
Minneapolis, Mn.
Permit No. 155

UNIVERSITY ARCHIVES
10 WeLib