The ACSS
Newsletter

University of Minnesota
Twin Cities
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Communications

Networking Update

Dr. Roger L. Gulbranson
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We've made a number of improvements related to campus networking over the course of the last year.

LANmark Ethernet Added to Phone System

One of the most significant improvements has been the addition of LANmark Ethernet to the campus IBX phone system. LANmark Ethernet allows the user to have an ethernet-like connection *anywhere* a digital phone can be placed, enabling you to communicate with any mainframe or department network that is connected to the Campus Internet.

Using these LANmark connections, our campus ethernet can grow to proportions much larger than allowed by the original Ethernet specification.

ACSS has installed a DIU5 Ethernet Gateway connection to LANmark. Our VX and UX systems currently support the Internet protocol suite, allowing file transfer (ftp) and virtual terminal access (telnet) by remote users across the campus. Users interested in LANmark connections should contact Telecommunication Services for more information.

Electronic Mail

Electronic Mail (EM) is becoming a hot topic across the University. The almost universal connectivity becoming available has made it possible to send messages among a very large number of systems. Access to national networks, such as BITNET, expands this even further.

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Welcome to ACSS . . .

and, to returning readers, patrons, and other friends of **Academic Computing Services and Systems**, welcome back.

The October issue of the *ACSS Newsletter* traditionally introduces new and returning readers to ACSS. This issue features overviews of our computing hardware, software, consulting services, programming languages, and more.

This special issue is mailed to all University faculty. If you would like to be on our *Newsletter* mailing list and on our *Microcomputer Newsletter* mailing list, call 625-7397. Subscriptions are free.

To all of you we wish a pleasant and productive year.

Services,
(p. 234)

Software,
(p. 241)

Hardware,
(p. 254)

and more.

Help Page

Walk-in Consulting

East Bank: 128C Lind Hall; 10 am to 4 pm, weekdays; 7 to 9 pm Wednesday

West Bank: 140 Blegen Hall; noon to 3 pm, Tuesday; 10 am to 12:45 pm, Wednesday; 2:15 to 3 pm, Thursday

Micro: 125 Shepherd Lab; 9 am to noon and 1:30 to 4 pm, Monday, Tuesday, Friday; 9 am to 4 pm Wednesday and Thursday

HELP-Lines

Mainframes CYBER, ENCORE,VAX	626-5592	8 am to 5 pm weekdays
Artificial Intelligence	625-8332	3 to 4 pm weekdays
Data Bases	626-1887	10 to 11 am weekdays
Microcomputer	626-4276	9 am to noon and 1:30 to 4 pm, Monday, Tuesday, Friday; 9 am to 4 pm Wednesday and Thursday
Statistics	626-1887	1 to 3 pm weekdays
Text Analysis	625-8332	3 to 4 pm weekdays
Text Processing	625-1391	10 am to noon, Tuesday, Wednesday, Thursday

Consulting by Electronic Mail

Consulting is now available via the mail facility on all ACSS systems (the CA, NV,UX, and VX). 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 ACSS systems (CYBER/NOS, CYBER/VE, ENCORE/UNIX,VAX/VMS), software, and for answers to any other inquiries on using computers for instructional computing.

Computing Information Center

128A Lind Hall, 625-7397, YZE6075@UMNACCA or MAD@UMNACVX

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

Free ACSS documentation available.

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

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One major addition to the EM community at the University is the installation of a BITNET to Internet mail gateway on our VX (UMNACVX/ vx.acss.umn.edu) system. Users on the Campus Internet (the computer systems connected by various ethernet-like media and running the Internet TCP/IP protocols) can send mail to and receive mail from the University's BITNET connection. See Linda Gray's article, on page 233, discussing the gateway.

The *Electronic Postmaster* will help you locate electronic mail addresses.

Additionally, we have networked EM packages on three of our major systems (CA, UX, and VX). It is possible to send mail between these systems as well as to other locations. Please see Paul Fakler's article, on page 229, which helps explain what you must do to use these mail systems.

The Electronic Postmaster

We are also installing, on a trial basis, something we have termed the *Electronic Postmaster* (EP). The EP is designed to help users locate the electronic mail address of people to whom they wish to send mail. We are initially building the data base for the EP from among the organizations within Information Systems (ACSS, HSCS, SPCS, and coordinate campus computing service centers). The EP is currently installed on VX and UX. A future article will describe the features of the EP. Administrators of other systems who wish to add names to the data base should contact Linda Gray at 626-1321.

Printing Services

One of our projects this last year was to select a new standard for our printing services. We have selected the PostScript language as the preferred method of sending information to our print servers. Our UX system has the TranScript package, which will convert UNIX print file formats (typically text and **troff**) into PostScript for use by the Apple LaserWriter printers that we have attached to it. Our VX system has **print** options which will send text files to the UX printers. (See the article in the July *ACSS Newsletter* for further information).

We have installed the necessary hardware and software to attach our Xerox 8700 laser printer directly to the VX computer. We are also working on a transparent mechanism to get print files from our CA computer onto the VX system, allowing the printer to be operated in its on-line mode most of the time. This will decrease turnaround times, especially for the VX system. Future improvements should decrease turnaround times for all systems. We plan on adding more connections between systems so that you can print on any printer, independent of which computer it is actually attached to.

The ENCORE Multimax

We continue to be impressed with the hardware architecture of our ENCORE Multimax computer, UX. We have recently performed a major upgrade of the system, simply by replacing or adding boards.

The memory was upgraded from 16MB (megabytes) to 64MB. The old DPC processor boards utilizing National Semiconductor (NS) 32032 microprocessors were replaced by APC processor boards using NS 32332s. The NS 32332 runs 2+ times faster than its predecessor (1.7 million instructions per second [MIPS] compared to 0.75 MIPS). Since we never experienced CPU saturation under the old configuration, we reduced the number of CPUs from 8 to 6. Overall, we quadrupled the memory and almost doubled the CPU throughput capacity of the system.

You can send electronic mail among any of our three major systems.

Finally, we made some major improvements to the I/O system. Previously this was the major bottleneck on the system. We replaced the disk controllers with new models

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that make better use of the intermediate SCSI (Small Computer System Interconnect) connection as well as adding additional SCSI channels. Overall, we expect to see as much as a four-fold improvement in I/O capability. Additionally, the new controllers perform bad-block replacement, which should help eliminate disk related failures. These failures have been the largest source of hardware-related downtime.

We are not as satisfied with the software on the system, as our dedicated UX customers are aware. In many regards, we are now at a point where we expected to be a year ago. ENCORE has made great improvements with regard to both stability and software portability. We continue to work with ENCORE to improve the software situation. We plan on adding many software packages to this system over the course of this next year. We would like the software environment to be as *rich* as those on other ACSS systems.

TCP/IP

Our major disappointment for this last year was our inability to add Internet TCP/IP (Transmission Control Protocol/ Internet Protocol) software to our CYBER CA system. This software is *crucial* for us to deliver services within ACSS without requiring users to be connected to specific computers.

The intermediate solution supplied by Control Data this last year was never able to function in our environment. We were expecting that the CDCNET implementation of the Internet software would have been delivered by this time. Unfortunately, as we were going to press, CDC informed us that the complete package may not be available for another 6 months. This is *not* good news. This will continue to hamper ACSS's efforts to achieve the *uniformly connected* computing environment that we are committed to providing.

We've selected the PostScript language as the preferred method of sending information to printers.

Phone Connections

We believe we have solved our problems with the unstable DIU3 phone connections used by ACSS-net. Our current theories attribute these failures to the inability of the DOB/DIU3 power supply to run with standard *non-ideal* commercial power. We have seen major improvements in the last few months and we are greatly encouraged to believe that the instabilities are a thing of the past. We will continue to work with Telecommunications Services to make sure that the problems do not recur.

Internet Expansion

The University is currently involved in the formation of a local regional network. The Minnesota Regional Network, or MRnet, is intended to provide a statewide network for Minnesota. The network will use the Internet TCP/IP protocols for communication between member institutions. The forming members include educational and commercial institutions. MRnet will have a connection to the NSF-net backbone network currently installed between the national supercomputer centers.

A related goal within Information Systems is to provide Internet connections among the Twin Cities campus and three of the four Coordinate campuses (Crookston, Duluth, and Morris). This will allow these coordinate campuses to participate in the connectivity that has been installed on the Twin Cities campus. (Duluth currently has an Internet connection to the Twin Cities campus.)

ACSS Network Mail

Paul W. Fakler
BITNET: PWF@UMNACVX, PWF@UMNACCA
Internet: pwf@vx.acss.umn.edu, pwf@ux.acss.umn.edu

The electronic mail systems on ACSS systems, especially those on the CA and VX machines, have been upgraded over the summer. This article briefly describes those changes and how to transmit and receive network mail on each of the ACSS mainframes after the upgrades. Table 1, on page 232 of this *Newsletter,* displays the network mail address formats for the CYBER CA, the ENCORE UX, and the VAX VX.

Changes on CA

On CA, the ACSS mail utility (MAIL Version 3.0) has been modified by Mike Pritchard. You can now send and receive BITNET messages within CYBER MAIL—you no longer need to use the **BITSEND**, **NJROUTE**, or **QGET** commands to use BITNET. See Mike Pritchard's article on page 231.

Changes on the VX

On VX, the various network mail software packages have been integrated with VMS Mail, because of the installation of PMDF (Pascal Memo Distribution Facility), a general purpose system for delivering computer-based mail.

On VX, we installed a mail gateway between UMN.EDU (the Campus Internet) and BITNET. VMS Mail now allows you to send all network MAIL from within VMS Mail—you no longer need to use GMAIL to send to networks other than BITNET.

Network Mail: What You Have to Know

You need the following information to send and receive network mail on ACSS machines:

- A node or host is any machine that you can communicate with using network mail.
- A *user* is the name by which a person receives mail on a node. It can be your login name (as on UX or VX), or it can be your mail name (as on CA).
- A *gateway* is a node that forwards mail between two or more networks.

Network Mail on CA

CA (the CYBER 855) is BITNET node **UMNACCA**. You can send BITNET mail from inside CYBER MAIL. WRITEUP,MAIL, an on-line document on CA, will give you information on how to use MAIL.

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You must join the CYBER MAIL utility (with MAIL's **join** command) to receive BITNET mail. I suggest that you join with an easy-to-remember mail name (for example: first initial, middle initial, and the first 6 letters of your last name). If you join with a name longer than 8 characters, you will not be able to receive BITNET mail. After you have joined MAIL, I suggest that you use your CA user name (if unique) as your mail alias. That way you will also receive BITNET mail addressed to your user name.

Users on networks other than BITNET can send and receive mail using BITNET gateways. The on-line document WRITEUP,BGATES contains a list of all "domains" you can reach via BITNET gateways from CA. WRITEUP,BNODES contains a current list of all BITNET nodes.

Forwarding: If you have accounts on several ACSS systems, you may wish to have all of your mail forwarded to one user name on a single system. To forward your mail to UX, type the following in response to a prompt from CYBER MAIL:

```
Mail? SETFORWARD
Enter address or codename to forward messages to?
user@UX.ACSS.UMN.EDU
```

Replace ***user*** with your user name on UX.

The CYBER MAIL command **status** will show your present forwarding address (plus a lot of other information) if you've set one.

To forward your mail to VX, type the following after a prompt from CYBER MAIL:

```
Mail? SETFORWARD
Enter address or codename to forward messages to?
user@UMNACVX
```

See Table 1 (page 232) for address formats for sending network mail from the CYBER CA.

Network Mail on VX

VX (the VAX 8600) is connected to both BITNET and to UMN.EDU, the Campus Internet. Its BITNET name is **UMNACVX**. Its Internet name is **VX.ACSS.UMN.EDU**. VX also functions as a gateway for these networks, forwarding messages back and forth between them. See the on-line VX Writeup MAIL for more information on this utility.

If there are people sending mail to you using the old Internet name (UMN-ACSS-VX.ARPA) or any of the local aliases, then they must use the new Internet name. Eventually the old names will fade away, and your friend may have a hard time finding your new address. The way we recommend sending network mail from inside of VMS Mail is to use the **IN%"..."** notation. This calls up the PMDF server to deliver your mail.

The on-line document NET$DOCS:BITNET.LINKS contains a list of all BITNET nodes. A list of all official BITNET gateways to other domains is on NET$DOCS:BITNET.GATES.

To forward your mail from the VX to UX, type the following lines from within VMS Mail:

```
MAIL>  SET FORWARD "IN%""user@UX.ACSS.UMN.EDU"""
MAIL>  SHOW FORWARD
```

Your mail will be forwarded to: **IN%"*user*@UX.ACSS.UMN.EDU"**. Replace ***user*** with your user name on the VX. Note the multiple quotation marks!

To forward your mail to CA, type:

```
MAIL>  SET FORWARD "IN%""user@UMNACCA"""
```

Note: If you try to send mail and receive an error message:

```
PMDF-F-FCRT,  File create error
```

you have run out of disk space, and PMDF cannot create a temporary mail file to send you. Delete some of your unnecessary files and try again.

See Table 1 (p. 232) for address formats for sending network mail from the VAX VX.

Network Mail on the UX

UX (an ENCORE Multimax running the UMAX operating system, a version of UNIX) is also connected to UMN.EDU, the Campus Internet. The full Internet node name for UX is **UX.ACSS.UMN.EDU**. If there are people sending mail to you via the old Internet name (UMN-ACSS-UX.ARPA) or any of the local aliases, then they must use the new Internet name.

To forward your mail on UX, you must create a file called **.forward** on your UX login directory. The file must contain *only* the address where you want your mail forwarded. For example, your file would contain ***user*@UMNACCA** when forwarding to CA, and ***user*@VX.ACSS.UMN.EDU** when forwarding to VX. In each case, replace ***user*** with your user name on the CA or VX.

See Table 1 (p. 232) for address formats for sending mail from the ENCORE UX.

New MAIL on CYBER CA Makes BITNET Easier

Mike Pritchard
BITNET: MPP@UMNACCA

A new version of CYBER MAIL supports the sending and receiving of BITNET mail; we installed this version in September.

If you are currently using the **NJROUTE** and **QGET** command to send and receive BITNET mail files, you should join CYBER MAIL, because it is a more reliable way to send mail over BITNET and will become the *only* method of sending CYBER BITNET mail sometime in the future.

For information on how to use CYBER MAIL and on how to send BITNET mail, see WRITEUP,MAIL=INTRO.

Table 1: Network Address Formats

Use the address formats shown here to send network mail from our CA, VX, and UX mainframes.

CYBER CA

Destination Network	Address Format	Example Address
BITNET	*user@node*	SAM@UMNACVX
	user@node.BITNET	SAM@UMNACVX.BITNET
UMN.EDU	*user@host*	SAM@UX.ACSS.UMN.EDU
Network accessible via any BITNET gateway.	*user@host*	SAM@SH.CS.NET
Network *not* accessible via a BITNET gateway, but that can be explicitly addressed.	*user%host@host**	SAM%MICHST@UMICH-MTS.MAILNET

* Some hosts are not available directly, but are accessible via an intermediary system you can send mail to; one of these is the Michigan Time Sharing Network. In this case you must explicitly address the message placing the intermediary host last.

VAX VX

Destination Network	Address Format	Example Address
BITNET	IN%"*user@node*"	IN%"SAM@UMNACCA"
	IN%"*user@node*.BITNET"IN%"	SAM@UMNACCA.BITNET"
UMN.EDU	IN%"*user@host*"	IN%"SAM@UX.ACSS.UMN.EDU"
Network accessible via any BITNET gateway.	IN%"*user@host*"	IN%"SAM@SH.CS.NET"
Network *not* accessible via a BITNET gateway, but that can be explicitly addressed.	IN%"*user%host@host*"	IN%"SAM%MICHST@UMICH-MTS.MAILNET"

ENCORE UX

Destination Network	Address Format	Example Address
BITNET	*user@node**	SAM@UMNACCA
	user@node.BITNET*	SAM@UMNACCA.BITNET
	user%node@VX	SAM%UMNACCA@VX
UMN.EDU	*user@host*	SAM@UC.MSC.UMN.EDU
Network accessible via any BITNET gateway.	*user@host**	SAM@SH.CS.NET
	user%host@VX	SAM%SH.CS.NET@VX
Network *not* accessible via a BITNET gateway, but that can be explicitly addressed.	*user%host@host**	SAM%MICHST@UMICH-MTS.MAILNET
	user%host%host@VX	SAM%MICHST%UMICH-MTS.MAILNET@VX

* All mail to BITNET nodes or sent via BITNET gateways is routed through VX by the mailer program on UX. (UX is not a BITNET node.)

WISCVM Gateway Departs December 1

Linda S. Gray
Internet Mail: lsg@ux.acss.umn.edu
lsg@vx.acss.umn.edu
BITNET Mail: LSG@UMNACVX

WISCVM, a primary electronic mail gateway, will no longer be available as of December 1, 1987. This system has been the major mail routing node between the two major educational and research networks in this country, BITNET and ARPAnet, typically passing five to ten thousand messages a day between them.

To help compensate for this loss, ACSS has installed a mail gateway on its VX system that will route mail between BITNET hosts and hosts on the campus Internet (those computers using the TCP/IP protocols and attached to one of the campus backbone networks). This gateway is registered as the BITNET gateway to the UMN.EDU domain.

To send mail to BITNET from a host on the campus Internet, the address of your correspondent should be of this format:

***user*%*host*.bitnet@vx.acss.umn.edu**

Replace ***user*** with the specific user name of your correspondent on her/his computer, and ***host*** with the BITNET code name for your correspondent's computer.

You may need to alter this address slightly, depending on the configuration of the mail software on the computer you're using. Alternatively, system managers can alter their software configurations to recognize shorter addresses and automatically send the messages to the VX system. System managers requiring assistance should contact Linda Gray at 626-1321.

When someone on another campus sends messages from BITNET hosts to the Minnesota Internet, they may face more difficulties. If the system host is running one of the standard BITNET mailer programs (e.g., PMDF, GMAIL, Columbia/Crosswell Mailer, Pony Express), your correspondent can put your address into the following format, which is usually sufficient:

***user*@*host*.umn.edu**

Your correspondent replaces ***user*** with your user name on your computer, and host with the full name of your computer as specified in the University host tables, in proper domain format. UMN.EDU is the domain name of our Campus Internet.

There are now many University hosts–mainframes, networked workstations, etc.–on which you can receive mail. If you are unsure as to the name of the system on which you want to receive mail, talk to your system administrator or contact Linda Gray.

If the format above does not work on your correspondent's computer, your correspondent should contact the BITNET information representative or the electronic mail manager at their site. ACSS can supply some help in this area, but we cannot always supply information on all the mailer software packages running on different systems within BITNET or on the Campus Internet.

ACSS Consulting Services

John Larsen

ACSS provides several services for users of our mainframe computers and for users of microcomputers.

Telephone Consulting Services

We have a general **HELP-Line (626-5592)** that is available nine hours a day, from 8 a.m. to 5 p.m. Monday through Friday. When you call the HELP-Line with a question, please try to have information at hand about your problem—a dayfile, a program, or a job stream file—to help us analyze the problem. Most problems you encounter can be dealt with by general consultants any time consulting is open. Occasionally, though, you may need truly specialized assistance. At those times, consult the other HELP-Lines.

The **Data Base HELP-Line (626-1887)** is available from 10 a.m. to 11 a.m. every week day. This service is for those who need help using data base packages like SIR, System 2000, or INGRES.

The **Statistics HELP-Line (626-1887)**, is available from 1 p.m. to 3 p.m. every weekday, providing consulting on statistical packages like SPSS, SAS, or BMDP.

Our consulting services for **Artificial Intelligence Computing** and **Humanities Computing (625-8332)** are available every weekday from 3 p.m. to 4 p.m.

Our consulting services for **Text Processing Packages (625-1391)** like Scribe and TeX, are available from 10 a.m. to 12 p.m. Tuesday through Thursday.

The **Instructional Computing Consultant (626-0200)** is available to assist with a variety of computing services for instruction and research computing.

ACSS provides phone consulting for mainframes, micros, and five software application areas.

Our Microcomputer and Workstation Systems group provides its **Micro HELP-Line (626-4276)** from 9 a.m. to 4 p.m. Monday through Friday except for a break from 12 p.m. to 1:30 p.m. on Monday, Tuesday, and Friday.

On-Campus Consulting Services

We have an **East Bank walk-in consulting service in 128C Lind Hall.** The consultants for this service are available from 10 a.m. to 4 p.m. every weekday and 7 to 9 p.m. Wednesday. Evening hours are also available for users who work after hours.

Our **West Bank walk-in consulting service in 140 Blegen Hall** is available from noon to 3 p.m. Tuesday, 10 a.m. to 12:45 p.m. Wednesday, and 2:15 to 3 p.m. Thursday.

Our **Microcomputer and Workstation Systems Group** provides walk-in consulting at 125 Shepherd Labs at the same hours as its HELP-Line: 9 a.m. to 4 p.m. Wednesday and Thursday, and 9 a.m. to noon and 1:30 to 4 p.m. Monday, Tuesday, and Friday.

Consulting Schedules

Current consulting schedules are available on-line. On the CYBER CA: Type `WRITEUP,CONSKED` and `WRITEUP,CONSULT`. On the VAX VX: Type `MOREHELP CONSULTING`.

Consulting hours are also listed in every issue of this *Newsletter*. A *Consulting Schedule* Brief, which also provides hours and numbers, is available free at 128A Lind Hall.

New Manuals, Free Documentation

Steven Brehe
BITNET: SKB@UMNACVX

New Edition of the *Introduction to CYBER Computing*

The third edition of ACSS's *Introduction to CYBER NOS Computing* is now available: You can buy copies at the Electronics Desk in the Minnesota Book Center (in Williamson Hall) and in the Student Book Store (310 15th Ave. S.E., in the Dinkytown Dome building). Other University bookstores will also order our manuals for you. All users of the CYBER CA should be familiar with the information in this new *Introduction*.

New *Introduction to UNIX Computing*

In press as we prepare this issue is our new *Introduction to UNIX Computing*, for users of our ENCORE UNIX machine, the UX, covering basic information on using the UX, including using file commands, text editors, and language processors. This new *Introduction* is available in the Student Book Store and the Minnesota Book Center.

Other UNIX Manuals

ACSS has reprinted portions from the Berkeley UNIX Reference Set. Our reprints include these five volumes:

UNIX Beginner's Guide
UNIX Beginner's Reference
UNIX Programmer's Guide
UNIX Programmer's Reference
UNIX Text Processing

All these volumes are available through the Minnesota Book Center and the Student Book Store.

Free Documentation for Mainframes

ACSS publishes a number of shorter free documents, many of them listed in Paula Goblirsch's article in our September issue. They include the *Computing Facilities Map*, which displays the locations of all campus computing labs and lists the equipment therein.

Among our other free documents are the *Software* Brief, which briefly describes application packages and language processors on all our systems, and the *Central Configuration Diagram*, which describes our mainframe computers and attached devices. We also have a number of new Briefs on using our NOS/VE system, the NV.

All of our free documents are available in the Computing Information Center, 128A Lind Hall, as are reference copies of all ACSS documentation and all vendor manuals for our software and operating systems.

For multiple copies of the *Computing Facilities Map* and our *XEDIT Summary*, call Paula Goblirsch at 626-1093.

Free Documentation for Microcomputers

The ACSS Microcomputer Systems and Workstation Group provides a number of free documents on the micro hardware and software available through the University discount program.

These documents provide descriptions, advice, and prices on micro hardware:

IBM, Zenith, and Hewlett-Packard Microcomputers

Peripherals: Plotters, Printers, Mice, Modems

Apple Macintosh: Plus, SE, and II

These provides titles and prices on micro software:

IBM and Compatibles Software

Macintosh Software

These free micro documents are available at 125 Shepherd Lab.

For More Information . . .

The Computing Information Center, 128A Lind

If you want to

- Open an account on an ACSS mainframe,
- Apply for a research computing grant,
- Enroll in a short course,
- Subscribe to ACSS newsletters,
- Order vendor documentation, or
- Learn more about the software and services described in this issue,

visit our Computing Information Center (CIC) in 128A Lind Hall, open from 8 to 4:30 p.m. Monday through Friday. You can also call 625-7397 for more information.

Consulting Corner

Instructional Computing Consulting

Peter Oberg
BITNET: PJO@UMNACVX

ACSS provides instructional computing consulting to assist faculty and teaching assistants in the following ways:

- Helping you determine how to use ACSS systems to meet the current quarter's instructional computing requirements.
- Helping you install your class software on our computers.
- Reviewing any training and documentation that students may need (Briefs, on-line tutorials, and short course offerings).
- Consulting with students regarding system problems in 128 Lind Hall, Monday through Friday 10:00 to 4:00 p.m. and some evenings.
- Helping you with administrative software to manage your class accounts.

If you have any questions, please call the instructional computing consultant at 626-0200.

ACSS SHORT COURSE SCHEDULE
Fall 1987

All these courses are *free*. To register call 625-7397.
Some classes have size limitations: Register early.

Introductory Mainframe Courses

Using Magnetic Tapes in NOS 2	Oct 20-29	TTh	2:15-4 pm
Electronic Mail (VAX, BITNET)	Oct 21-23	WF	2:15-4 pm

Advanced Mainframe Courses

SPSSX for SPSS Users	Oct 19	M	3:15-5 pm
Using SPSSX (Statistics)	Oct 23-30	MWF	3:15-5 pm
Beginning 'C' Programming	Oct 26-Nov 6	MWF	3:15-5 pm
Math and Engineering Software	Nov 3-5	TTh	3:15-5 pm
Beginning Pascal	Nov 3-19	TTh	3:15-5 pm
Using SAS (Statistics)	Nov 9-13	MWF	3:15-5 pm
INGRES (Data Base Management)	Nov 11-16	MWF	2:15-4 pm
PicSure Graphics	Nov 10-19	TTh	2:15-4 pm
Intermediate 'C' Language	Nov 16-25	MWF	2:15-4 pm

Note: Thursday and Friday, November 26-27, are University of Minnesota holidays. No classes will be held.

ACSS Short Course Information

Prerequisites: Some short courses have prerequisites, and are designed to build on knowledge we assume you already have. Without this knowledge you may not be able to keep up with the instructor's presentation. This prior knowledge is your responsibility. The instructor will not be able to go back over material in previous classes. Our *Short Course* Brief, available in 128A Lind, provides information about prerequisites.

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

Registration: Register at ACSS's Computing Information Center, 128A Lind Hall. (Hours: 8:00 a.m. to 4:30 p.m., Monday through Friday) Please call and give us your name if you plan to attend a free class; also call to cancel if you later decide not to attend, so we know how many to expect. We reserve the right to cancel a course if registration is insufficient. For registration information, call 625-7397.

SPCS COMPUTER SHORT COURSES

St. Paul Computing Services
Fall 1987

Introduction to CMS	Oct. 20,22,27,28	T,Th,T,W	3:00-5:00
CMS MAIL and BITNET	Oct. 23	F	3:00-5:00
YTERM Demo	Oct. 30	F	10:00-11:00
SAS	Oct. 30, Nov. 3,4	F,T,W	3:00-5:00
Introduction to SAS/GRAPH	Nov. 2	M	1:00-3:00
TinCan Demo	Nov. 6	F	10:00-11:00
PC SAS Overview	Nov. 9	M	3:00-5:00
CMS, Advanced Topics	Nov. 12	Th	2:00-5:00
Introduction to NOMAD2	Nov. 13	F	3:00-5:00
NOMAD2 Application Development	Dec. 9,10,11	W,Th,F	10:00-4:00

Registration

To register for the short courses, please obtain and complete a registration form from SPCS (624-7788; 50 Coffey Hall). Return it to the main office prior to the start of the class. Many short courses have a small fee associated with them and require full payment with registration. Sorry, no refunds are made after the class begins. Call 624-7788 for information about the classes.

Project Assist: Fall Workshops

Linda Fletcher

Project Assist is offering the following workshops on computer-based instruction during fall quarter:

Preparing a Design Document for CBI	October 20	9:15-10:15	335 Peik
Evaluation of Instructional Software	October 27	10:15-12:15	335 Peik
PC/PILOT: An Authoring Language	November 4	9:15-11:15	335 Peik
Introduction to Interactive Videodisc	November 10	2:15-3:15	204 Pattee

For more information about these workshops, call (612) 626-1090 and ask for the workshop coordinator.

Need Help? Call Contract Services

Phil Kachelmyer and Paulina Shur
PHK@UMNACVX

How can you use computers in your business, research, and teaching? How can computers—from micros to mainframes—help you solve your problems? What hardware and software are suitable for your needs?

The ACSS Contract Services Group can help you answer these questions and solve your computing problems.

- We can help you understand what your computer needs are.
- We can help you select the hardware and software you need for your project and provide every kind of assistance—from unpacking your computer, setting it up, and installing your software to teaching you (in our offices or yours) how to use your computer and software.
- If you want to include our services into your proposal budget, we can help you write a section of your proposal dealing with applications of computers to your research.
- We are available for consulting and custom programming in dBase II and III, LOTUS 1-2-3, Excel, Omnis 3, Reflex, Pascal, Fortran, BASIC, and other computer languages. We can also teach you beginning programming skills.
- We provide individual or group contract classes and consulting.

Contract Services provides custom programming for research and instruction.

The following are just a few examples of the programming we perform:

- We can write computer-aided instruction programs for your course complete with drills, tutorials, and on-line help.
- We can do a computer-assisted text analysis helping different research projects in humanities.
- We can set up for a data base of literature references on the subject of your research. You will be able to find references by author's name, key words, or date, and have optional descriptions of articles on file.
- If you work with tables of numbers or simple graphs, we can convert your research data to two- or three-dimensional color graphics suitable for analysis or presentation.
- We can set up an electronic mail system in your department using standard phone lines and standard micros.
- We can convert your IBM micro programs to Macintosh, or Macintosh to IBM.
- We can do statistical analyses of responses to a survey, write technical manuals, transfer files, and much, much more.

The Contract Services Group employs professional analysts and programmers with

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backgrounds in computer science, statistics, management information systems, business administration, and liberal arts. We have experience with both mainframes and microcomputers.

If you would like our assistance on a project, your first step is to call Phil Kachelmyer at 625-2303 and arrange a meeting. There is no charge for the first meeting, and our University-subsidized rates are very reasonable.

The Contract Services Group is a unique and valuable University resource. In using it, you'll benefit from applying computer technology to your work. Call us at 625-2303.

Engineering Services

Computer Maintenance

Gene Kath

Engineering Services provides full-service maintenance for microcomputer systems, workstations, and their related peripherals.

Services contracts, time and material, hardware and software installation, and consulting are some of the services available at very competitive rates.

We are located at 790 Transfer Road; see the accompanying map.

We support these systems:

Microcomputers
Apple, Macintosh
IBM PC's, XT's, AT's
IBM System/2's
Zenith Data Systems
Victor 9000
Terak
Xerox 820

Printers
Epson
Okidata
NEC
IBM
Diablo

Workstations
Digital Equipment Corp.
SUN Micro Systems

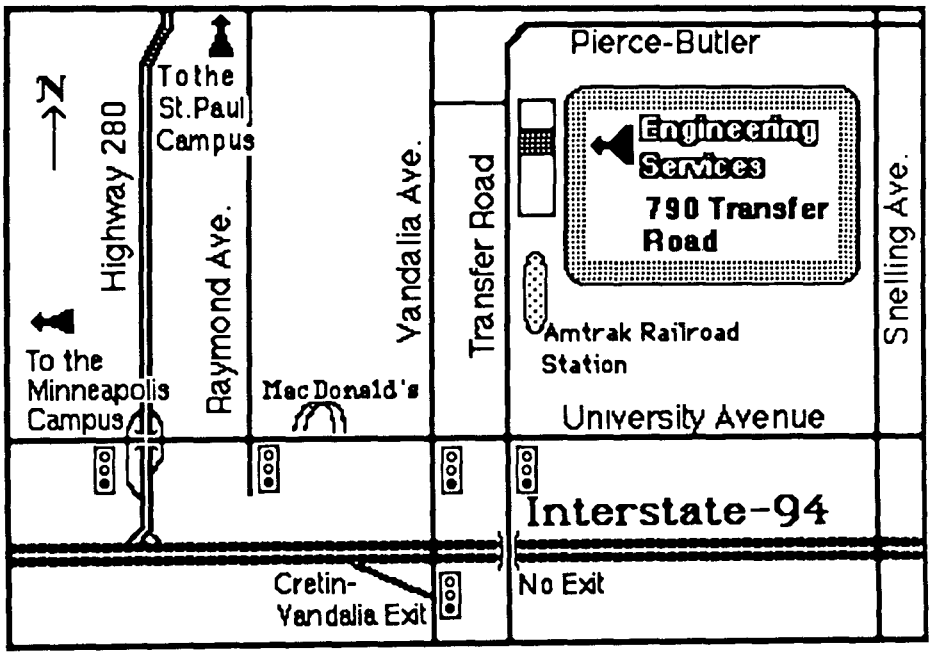
Interactive Terminals
Wyse 50,75
DEC LA34,36,120
VT100,220,240
Micro Term 301,320
Teletype 43KSR
Telray 3500,3700,3800,3900
10,1061
Zenith Z-19, Z-29

Laser Printers
Apple Laser Writer
H.P. Laser Jet

For more information call:

Engineering Services
790 Transfer Road
St. Paul, MN 55114

For information call the Engineering Services HELP-Line: 627-4357 (627-Help).



Software...

Statistical Packages

Bruce Center
BITNET: BAC@UMNACVX

ACSS provides a number of statistical packages for research and instructional use. Unless otherwise noted, all of the packages described in this article run exclusively on the CYBER CA. We have several statistical packages available on the VAX VX, and we are expanding our research capabilities on this machine. Statistical packages on the ENCORE UX are intended primarily for instructional use.

ACSS supports several microcomputer statistical packages as well, and these are included in the list below.

Help for any of our packages can be obtained by calling the Statistical HELP-Line at 626-1887, 1:00 to 3:00 Monday through Friday.

All of the documents referred to in this article are available for perusal in our Computing Information Center in 128A Lind. If there are any packages currently available for the CYBER or the VAX that you don't see here, but would like us to purchase, don't hesitate to call me at 625-2538.

General-Purpose Packages

SPSS is an integrated system of statistical procedures for the analysis of numerical data. It contains most everything from descriptive statistics to multivariate analysis of variance (MANOVA), and many others. Its documentation is somewhat scattered. It includes the maroon SPSS User's Manual Version 6, the blue SPSS Version 7-9 Update, the CYBER SPSS Version 9 Update, and the CYBER SPSS Support Packet. WRITEUP,SPSS gives helpful hints for running SPSS at the University of Minnesota.

SPSS/ONLINE is an interactive editor designed to work directly with SPSS. It is documented in the *SPSS/ONLINE Manual* and as part of WRITEUP,SPSS.

Our Statistics HELP-Line now supports microcomputer packages.

SPSS^X is the updated version of SPSS, containing improved file handling and data manipulation capabilities, especially for alphabetic variables; it also contains several new statistical procedures. These include cluster analysis, multidimensional scaling, and contingency table analysis. The *SPSS^X User's Guide* is quite readable. Also useful are the *Introductory* and *Advanced Statistics Guides,* and a primer called *SPSS^X Basics.* WRITEUP,SPSSX provides online documentation. SPSS^X is available on CA, VX, and IBM compatible microcomputers. The microcomputer version is documented in *SPSS/PC+* and *SPSS/PC+ Advanced Statistics.*

SPSS^X/TABLES produces customized tables suitable for publication or presentation, during an SPSS^X job. It is documented in the *SPSS^X Tables Manual,* and in the *SPSS^X User's Guide* in an abbreviated form. SPSS^X/TABLES is available only on VX.

SAS has long been the mainstay of IBM statistical computing. It can handle anything from descriptive statistics and analysis of categorical data to nonlinear regression, etc. Documentation includes the *SAS User's Guide Basics Version 5,* the *SAS User's Guide Statistics Version 5,* and the *SAS Companion for the VMS Operating System.* Also useful is the *SAS Applications Guide* and the *SAS Introductory Guide.* SAS is available only on VX.

BMDP is a group of 40 separate programs linked by a common control language. It has excellent statistical documentation in the *BMDP85 Statistical Software Manual.* WRITEUP,BMDP explains how to use BMDP at the University of Minnesota.

MINITAB is an interactive general-purpose statistical system, for instructional use and for those with little previous experience with computers. This package is intended for small data sets. It is documented in the ACSS *MINITAB Reference Manual,* which is also available as WRITEUP,MINITAB. An excellent instructional guide, both for statistics and MINITAB use, is available in the *MINITAB Handbook, 2nd Edition.* MINITAB is available on both CA and VX, and is now supported on IBM-compatible microcomputers.

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S is an interactive statistical language for data analysis, primarily used for statistical instruction. Complete documentation is available in *S: An Interactive Environment for Data Analysis.* S is available only on UX.

SYSTAT is a very easy to use, easy to learn, though statistically limited, package for microcomputers. SYSTAT can handle only small data sets. The documentation, which is excellent, can be found in *SYSTAT: The System for Statistics.* SYSTAT is available only on PC-DOS machines and the Macintosh.

ANOVA and Regression

GLIM is an interactive program for the statistically sophisticated user. It analyzes a wide range of regression models, performs analysis of variance and covariance, contingency table analysis, and probit analysis. It is designed for the statistically sophisticated user. It is documented in *The GLIM System, Release 3.* GLIM is available on CA and VX.

MULTREG is an easy-to-use interactive package that performs several types of multiple linear regression. It is documented in the *MULTREG User's Manual.* MULTREG is available on CA and UX.

IVAN is an ANOVA package written by the Applied Statistics Department primarily for instructional use. It is documented in the *IVAN User's Manual.*

Time Series Analysis

SHAZAM performs econometric and time series analysis. Its manual can be obtained by typing WRITEUP,SHAZAM.

TSP is the classic econometric package. It can handle time series by ordinary and two-stage least squares; it also performs graphing, interpolation, and normalization. It is documented in the *TSP Reference Manual* and *TSP User's Guide.*

RATS analyzes and forecasts time series by ordinary least squares, weighted least squares, least squares with omitted observations, and two- and three-stage least squares. It is documented in the *RATS User's Manual.*

Factor and Cluster Analysis and Multidimensional Scaling

LISREL performs the analysis of linear structural equations using maximum likelihood, ordinary least squares, or generalized least squares. It is designed for the statistically sophisticated user, and is documented in the *LISREL VI User's Guide.*

EQS has very similar capabilities to LISREL. It uses a fairly simple and straightforward control language, and provides extensive syntax-error checking, designed for the statistically sophisticated user. EQS is documented in *Theory and Implementation of EQS, a Structural Equation Program.* EQS is available only on VX.

TRYSYS1 is a comprehensive cluster analysis package, an updated version of the BC TRY system. It can provide several types of multiple group factoring, oblique cluster structures, "key-cluster factoring" to select variables that are tightly collinear, and item analysis and scale construction based upon its clusters. Documentation is available in the *TRYSYS Reference Manual.*

CLUSTER is an older package that provides a number of subprograms for a wide variety of hierarchical and non-hierarchical cluster analyses. Documentation is obtained by typing WRITEUP,CLUSTER.

Multidimensional Scaling and Matrix Analysis

KYST-2A is a multidimensional scaling and unfolding program with some limited data management capabilities. Its manual is called *How to Use KYST-2.*

SINDSCL is a program that performs individual differences multidimensional scaling. See *How to Use SINDSCL* from Bell Labs.

MATTER is an interactive matrix manipulation program written by the Applied Statistics department. Designed originally as an instructional tool, it is very useful for matrix addition, subtraction, multiplication, inversion, and transposition. It is documented in the *MATTER User's Manual.*

Data Base Packages: Mainframe and Micro

Peter Oberg
BITNET: PJO@UMNACVX

ACSS provides the following mainframe data base packages for research and instructional computing. (The packages run on the machines indicated within parentheses.)

INGRES (VAX): A relational data base structure based on the mathematical concept of a relation, typically used in scientific and business applications. Data is represented in rows and columns called *domains.* Data structures, called *tables*, are manipulated through data manipulation language operations.

You access INGRES data bases through the QUEL natural language, the EQUEL programming language using Pascal, Fortran, COBOL, and C, or menu-driven facilities for the non-programmer.

Documentation includes a four-volume set of *INGRES Reference Manuals* and RTINGRES (an on-line menu facility).

SIR (CYBER, VAX): SIR (the Scientific Information Retrieval system) is a case-oriented, self-contained data base management system that is hierarchical and network-oriented. (A *hierarchy* is a data structure in which one record is said to own may other records in a top-down or tree-like structure.) It is often used in scientific and business applications.

SIR can easily exchange data with SPSS, BMDP, and SAS statistical packages. It also provides report writing and table-generating routines.

Documentation includes the *SIR User's Manual* and SIRHELP (an on-line help utility).

S2000 (CYBER CA): S2000 is a hierarchical data base management system primarily used in business applications. As a general-purpose system, it allows the user to define new data bases, store data, and then update values in these data bases. S2000 contains an easy query language designed to permit non-programmers to perform searches of their data.

Documentation includes the *S2000 Support Manual.*

For More Information

All of the documentation referred to in this article is available in the Computing Information Center, 128A Lind Hall.

If you would like help in choosing a data base package for your project, call the Data Base HELP-Line at 626-1887, Monday to Friday, 10:00 to 11:00 a.m., for more information.

Micro Data Bases

You can check out the following data base packages, which run on **IBM and compatibles**, at 125 Shepherd Labs:

DBases III Plus
Power Base RBase 5000
Reflex
PFS: Professional file
PFS: Report

You can check also out these **Macintosh** data bases:

Microsoft File
Factfinder
Filevision
FileMaker Plus
Double Helix
Omnis 3+
Reflex

The Micro Group provides consulting for these packages and teaches short courses on some of them. See our quarterly short course schedule for more information.

Text Processing Software and Services

Sharon Krmpotich
VX Mail: SAK

ACSS mainframe text processing services currently emphasize text formatting and printing options available on the VAX 8600 (the VX) and the ENCORE UNIX (the UX). Staff can answer questions and assist with problems, as well as respond to general inquiries about text processing. Call 625-1391 from 10 to noon Tuesday, Wednesday, and Thursday.

As described later in this article, our Microcomputer Systems and Workstation Group also supports text processing software for IBM compatibles and the Macintosh.

Scribe

The Scribe document formatting software, available only on the VX, is based on an extensive data base of document specifications and formatting controls. It provides such features as automatic hyphenation, footnoting, indexing, table layout, math expressions, bibliographies, and tables of contents.

We have also added some new fonts, including script characters, to Scribe's font data base for the Xerox 8700 laser printer. Scribe documentation and the free ACSS Brief *Xerox 8700 Fonts Available with Scribe* can be found in the ACSS Computing Information Center, 128A Lind Hall.

TeX

TeX, on the VX and UX, is the powerful formatting program developed by Donald Knuth, emphasizing typographic control and mathematical formatting. TeX documentation is available in the *TeXbook* (Addison-Wesley, 1986) by Donald Knuth, which is also available in the Computing Information Center. We also have a demonstration copy of *TeXtures* (TeX on the Apple Macintosh) available for interested users.

Scribe and TeX Printed Output

VAX users of Scribe and TeX will want to use the Xerox 8700 laser printer for output. The 8700 is a fast printer, capable of printing from a large number of discrete fonts within font families. Scribe and the 8700 have been used at the University for several years to produce theses and dissertations, manuals, reports, and camera-ready copy for publications.

The output device for TeX on the ENCORE (UX) is an Apple LaserWriter, a 300 dot/inch printer.

STYLE, DICTION, and EXPLAIN

Writers on our ENCORE UNIX system (the UX) can use a set of software tools to analyze and perhaps improve their writing. STYLE is a program that returns statistics on sentence length and type, word usage, and sentence openers for a document, and gives readability grades on four separate scales. DICTION looks for frequently misused phrases, and EXPLAIN is a thesaurus that suggests alternative phrases.

Documentation for these tools can be found in the ACSS manual *UNIX Text Processing,* reprinted from the Berkeley UNIX Reference Set and available for reference in the Computing Information Center. (You can also buy copies at the Electronics Desk in the Williamson Hall Book Center and at the Student Book Store at 310 15th Avenue S.E. in the Dinkytown Dome building.) You can type **`man style`** or **`man diction`** at the main UNIX prompt for on-line documentation for these programs (the DICTION entry includes help for EXPLAIN).

Kurzweil Scanning

We provide a Kurzweil 4000 document scanning service in 128B Lind Hall.

The Kurzweil can read both typewritten and typeset printed material and convert it into ASCII code for computer processing. Kurzweil scanning

is a much faster and more precise form of text entry than rekeyboarding. The Kurzweil is frequently used to create text files for editing and revision of existing documents, for storage of printed materials, and for literary or linguistic research and analysis.

Files scanned by the Kurzweil can be output onto a Zenith 150 (IBM PC-compatible) disk or a Macintosh disk. It is also possible to direct the output to a permanent file on a CYBER account, which can also be transferred to the VAX if so desired. You can use a $1000 research computing grant to pay for Kurzweil scanning.

Contact Carol Winther at 625-9525 between 10:00 a.m. and 12:00 noon, Monday through Friday, for further information and scheduling.

Text Processing for Micros

You can check out these text processing packages for **IBM and compatibles** at 125 Shepherd Labs:

PFS: Professional Write
Microsoft Word
Word Perfect
Word Star
Word Star Professional

Pagemaker (desktop publishing)

You can check out these packages for the **Macintosh** at 125 Shepherd Labs:

Microsoft Word
WriteNow
MacWrite

PageMaker (desktop publishing)
ReadySetGo (desktop publishing)

Our Microcomputer Systems and Workstation Group provides consulting and short courses on some of these packages. Call the Micro HELP-Line (626-4276) and see our quarterly short course schedule for more information.

Artificial Intelligence Services

Ron Zacharski
BITNET: RAZ@UMNACVX
UX or VX: raz

AI on VX and UX

ACSS provides a number of Artificial Intelligence (AI) languages that run on the VAX 8600 (the VX) and the ENCORE Multimax (the UX). These are available both for instructional and research use. (Research grants are available that offer one thousand dollars of computer services for fifty dollars.) The software includes:

VAX Common LISP: This implementation provides a very good environment for LISP programming. It includes an incremental compiler, a full-screen EMACS-type editor, and debugging aids (including break loop, debugger, stepper, and tracer).

Quintus Prolog: Available on the VX, this is considered one of the best implementations of Prolog and it has been reported that its speed of execution compares favorably with Pascal. It features an EMACS editor (Unipress version), a debugger, and an on-line help system and manual.

VAX OPS5: OPS5 is a rule-based language that is typically used to build expert systems. Its major strength is that it is a general purpose tool. It easier to design, debug, and maintain.

Manuals for the above languages are available for examination at the ACSS Computing Information Center in 128A Lind Hall. If you would like further information, please feel free to contact the Special Projects Group at the number below.

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AI on Microcomputers

Public domain versions of LISP (XLISP, and PC Franz Lisp) and Prolog are available for IBM-PC compatibles. XLISP is also available for the Macintosh. You can obtain copies from the Special Projects Group at no cost other than providing a blank formatted disk.

The University has a site license for TI Personal Consultant Plus, which is an expert system development tool for IBM-AT clones. For more information on this tool, contact the Microcomputer and Workstation Systems Group 124 Shepherd Lab 626-4276.

We also have a site license for Smalltalk-80 for the Macintosh. If you are interested in this language, contact the Special Projects Group at the number below.

We have worked with a number of commercial versions of LISP, Prolog and expert system shells for both IBM compatibles and the Macintosh, including TI PC Scheme, MacScheme, ExperCommon LISP, MacProlog, Turbo Prolog, AAIS Prolog, and Prolog II. If you would like to try one of these products, see a demonstration, or if you have any questions, please feel free to contact us.

TCSIGART

TCSIGART (Twin Cities Special Interest Group for Artificial Intelligence) holds monthly meetings, usually on campus, which feature lectures by people in academia or industry on a topic in AI. The lectures describe current research in AI or commercial products being developed. For information about TCSIGART's next meeting, call the Special Projects Group.

AI Consulting

The Special Projects Group provides general consulting on Artificial Intelligence. We also provide ongoing support thoughout a research project, starting at the design phase and continuing to the project's conclusion. Please call us if we can be of any assistance.

Contract Programming

For a fee we can write software tailored to your project. Contact a consultant at the address listed below to discuss this service.

Additional Information

An ACSS Brief, *Artificial Intelligence Services,* is available at the ACSS Computing Information Center, 128A Lind Hall. This Brief provides additional information on available languages and services. If you have any questions please feel free to contact us.

Special Projects Group
M141 Fraser Hall (office)
128A Lind Hall (campus mailing address)
(612) 625-8332

Math and Engineering Packages

Math and Engineering Software Tools

Michael J. Frisch
BITNET: mjfrisch@umnacvx

ACSS provides an extensive collection of software tools for mathematics and engineering computing. The packages and subprogram libraries described in this article run on our CYBER CA computer except as noted. As indicated by **(VX)**, some of the packages and DOUBLE PRECISION versions of most of the subprogram libraries are also available on the VAX VX computer. All packages and libraries on the CA and VX machines are well documented.

Packages

LINDO solves small to medium-size linear, quadratic, and integer programming problems interactively. The package is documented in the *LINDO User's Manual.* (VX)

MPOS, a multi-purpose optimization program, solves linear, quadratic, integer, and mixed integer programming problems. The documentation for MPOS is the *Multi-Purpose Optimization System User's Guide* or the 160-page on-line WRITEUP,MPOS.

LPKODE is an instructional package for linear, integer and mixed integer programming and the transportation problem, documented in WRITEUP,LPKODE.

MATLAB is a matrix instructional package based on software from the LINPACK and EISPACK projects. Documentation is in WRITEUP,MATLAB on the CA.

FORSIM is an ordinary and partial differential equations package, documented in the manual *FORSIM VI Simulation Package.*

REDUCE2 is an algebraic manipulation package for symbolic calculations. The on-line WRITEUP,REDUCE2 is the documentation.

DYNAMO runs continuous simulation models described by a set of ordinary differential equations. Documentation is in the *DYNAMO User's Manual.*

SAP4, a program for linear structural analysis, makes a static and dynamic analysis of linear structural systems. SAP4 is documented in the manual *SAP IV, A Structural Analysis Program.*

NONSAP, for nonlinear structural analysis, is designed for the efficient solution of nonlinear problems and can also be used for linear analysis. See the *NONSAP Manual.*

SPICE2 simulates the electrical performance of semiconductor electronic circuits. The *SPICE2 Manual* or the 75-page WRITEUP,SPICE2 documents the package. (On VX, the package is named SPICE.)

Register for our free short course on math and engineering software by calling 625-7397.

Libraries

CALGOPL is a special file containing the Association for Computing Machinery Collected Algorithms, published in *Transactions on Mathematical Software.* Documentation is in WRITEUP,CALGOPL and in the *Collected Algorithms* publication.

IMSL, the International Mathematics and Statistics Library, is the most comprehensive of our subprogram libraries, providing routines for many purposes. You can get help in ordering *IMSL Edition 9* manuals and updates and also use reserve copies in the ACSS Computing Information Center, 128A Lind Hall. The calling sequence for IMSL routines is given in WRITEUP,IMSL on the CYBER CA. (VX)

MINNLIB, the Minnesota Subprogram Library, contains subprograms for operations on matrices, vectors, and linear equations; integration and solution of differential equations, polynomials and special functions; interpolation and approximation; and statistical analysis. MINNLIB is documented in the on-line WRITEUP,MINNLIB.

LINPACK is a library of subprograms that analyze and solve various types of linear equations. LINPACK is documented in the on-line WRITEUP,LINPACK and the *LINPACK User's Guide.* (VX)

YSMPLIB, the Yale Sparse Matrix Library, solve sparse symmetric and non-symmetric systems of equations by direct methods. For copies of the YSMPLIB manuals, contact the ACSS Computing Information Center, 128A Lind Hall. (VX)

PCGPAK solves sparse non-symmetric systems of equations by iterative methods. Documentation is the *PCGPAK User's Guide* or use the command **`TYPE ACSS$WRITEUP:PCGPAK`**. (VX only)

SPARSPK solves sparse symmetric positive definite systems of equations and sparse least squares problems by direct methods. Documentation is in the *SPARSPAK: Waterloo Sparse Matrix Package User's Guide for SPARSPAK-A and SPARSPAK-B* and **`TYPE ACSS$WRITEUP:SPARSPK`**. (VX only)

EISPACK is an eigenvalue-eigenvector library. Documentation is available on-line in WRITEUP,EISPACK and in two books, *Matrix Eigensystem Routines: EISPACK Guide* and *Matrix Eigensystem Routines: EISPACK Guide Extension.* (VX).

EPISODE, LSODE, and **LSODI** are libraries to solve initial value problems for stiff or nonstiff systems of first-order

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ordinary differential equations. Their documentation is in the *EPISODE User's Manual*, WRITEUP,LSODE, and WRITEUP,LSODI. (VX)

QUADPAK is a library for numerical integration (quadrature) of single definite integrals. Documentation is in the book *QUADPACK: A Subroutine Package for Automatic Integration* and in WRITEUP,QUADPAK, or use the command **TYPE ACSS$WRITEUP_:[QUADPAK]INDEX**.

MIN5LIB is a library for solving problems in linear programming, unconstrained optimization, and linearly and nonlinearly constrained optimization. Documentation is in WRITEUP,MIN5LIB and the *MINOS 5.0 User's Guide*. (VX)

GRG2 is a comprehensive nonlinear programming library of subroutines to solve constrained nonlinear optimization problems. For copies of the *GRG2 User's Guide*, contact the ACSS Computing Information Center. (VX)

MINPACK is a library for solving problems that involve unconstrained minimization and nonlinear least squares. It is documented in WRITEUP,MINPACK and the *MINPACK User's Guide*. (VX)

BSPLINE uses B-splines (piece-wise polynomial functions) to solve various interpolation and approximation problems. *A Practical Guide to Splines*, on reserve in the ACSS Computing Information Center, describes the library. (VX)

BESPACK is a library of routines for Bessel and Airy functions. For copies of the BESPACK documentation, contact the ACSS Computing Information Center. (VX)

Documents

This software is described in greater detail in two ACSS manuals that can be ordered through the Electronics Desk in the Minnesota Book Center (Williamson Hall): the *Guide to Applications Packages: Mathematics and Engineering* and the *Guide to Subprogram Libraries*.

The *Guide to Applications Packages: Mathematics and Engineering* describes packages on our CYBER CA computer in these areas:

- mathematics: linear and nonlinear programming, ordinary and partial differential equations, and algebraic manipulation
- simulation: discrete and continuous simulation
- engineering: structural and electronic applications

The description of each package includes sample jobs for the CYBER, sample output, and information on acquiring documentation for the package.

When searching through the *Guide to Subprogram Libraries* for the subprograms you need on the CYBER CA or VAX VX machines, you should first refer to the back of the Guide in its "Keyword in Context Index." The *Guide* also gives details on how to access each library on the CYBERs. On the VX machine, the interactive command **HELP LIBS** gives details how to access libraries there.

You will find both these guides and documentation for the software described above on reserve in the ACSS Computing Information Center, 128A Lind Hall (625-7397). You can also obtain your own copies of the documentation from the software suppliers and in some cases (as indicated above) from us. In particular, the guides are available as the on-line WRITEUP,MATHPAC and WRITEUP,LIBNDEX on the CYBER CA.

For more information about these and other software packages for mathematics and engineering computing, call Mike Frisch, the Scientific Programs Librarian (625-5830).

Math and Engineering Software Short Course

A free short course on Math and Engineering Software is being offered Tuesday and Thursday, November 3 and 5, 3:15 to 5 pm. The course will cover use of packages and libraries: access, capabilities, examples and using the most common routines. The class is co-sponsored by the Minnesota Supercomputer Center and will also include details on their software offerings in these areas. Contact the ACSS Computing Information Center (625-7397) for registration details.

Consulting for Liberal Arts Research

Tom Rindflesch
BITNET: TCR@UMNACVX
UX: TCR

Our Special Projects Group offers consulting and software support services to liberal arts researchers using the computer. If you are analyzing a medieval manuscript, maintaining the data from an archaeological dig, or engaged in any research in the liberal arts, the consultants in this group can help you select the best computational tools for your project from the many resources which we provide and can assist you in using them. For more information, call the consultants listed below.

We also provide contract programming services. For a fee we can write software tailored to your project. Contact one of the consultants listed below to discuss this service.

Of particular interest to researchers in the liberal arts are the following text analysis programs:

GENCORD creates concordances and indexes and provides frequency distribution information for letters and words. See the on-line document WRITEUP,GENCORD on the CYBER CA for documentation. GENCORD is also available on the VAX VX.

TEXTAL allows you to specify patterns of words that you want to retrieve from a text. See WRITEUP,TEXTAL on the CYBER CA.

LTTRCNT counts letters in a text and tallies the frequency of occurrence of letters at the major positions in a word: initial, medial, and final. See the on-line document WRITEUP,TEXHELP=LTTRCNT.

WRDSTAT counts the words in a text and then calculates the total number of tokens and types, and the average length of the tokens and types. It also determines the number of words of each length occurring in the text. See the on-line document WRITEUP,TEXHELP=WRDSTAT.

For further information, contact:

Tom Rindflesch
Ron Zacharski
M141 Fraser Hall (office)
128A Lind Hall (campus mail)
(612)625-8332

If you are analyzing a medieval manuscript, maintaining data from an archaeological dig, or doing research in the liberal arts, our consultants can help you select the best computational tools.

NOS 2, NOS/VE, VMS, and UNIX Language Processors

Janet M. Eberhart and Jim Miner
BITNET: JME@UMNACVX and JFM@UMNACVX

The attached table shows the variety of programming-language processors available on our central systems.

During the last year, we added support for MODULA-2 on the UNIX system (UX) and for C on the VMS system (VX), and we removed PL/1 and COBOL version 4.7 from the NOS 2 system (CA). We expect to provide BASIC, Fortran-77, Pascal, and CYBIL on our new NOS/VE system (NV).

Our language processors are also described in the ACSS *Software* Brief, distributed free at our Computing Information Center, 128A Lind Hall.

Table 1: Language Processors on ACSS Central Systems

(as of September 11, 1987)

Language / Machine	Description of the language: Name	Version	Description (source)
Ada	General purpose, structured language.		
UX	adaed	1.4	educational ANSI Ada interpreter/translator (New York U)
VX	Ada		ANSI 1983 Standard Ada compiler (DEC)
APL	A Programming Language. Numerical + operator oriented language.		
CA	APL	2.1	APL interpreter (CDC + U of Massachusetts)
BASIC	Beginners All purpose Symbolic Instruction Code.		
CA	BASIC	3.5	BASIC compiler (CDC)
NV	BASIC/VE		BASIC compiler (CDC)
C	C Programming Language.		
UX	cc		C programming language (Encore)
VX	VAX C	2.3	C programming language (DEC)
C++	Extended C Programming Language.		
UX	CC		C++ programming Language (AT&T)
COBOL	COmmon Business-Oriented Language.		
CA	COBOL5	5.3	COBOL-74 compiler (CDC)
VX	VAX COBOL	3.4	COBOL-74 compiler (DEC)
Emulators	Assembly Language Simulators for another computer.		
CA	EMULATE	1.0	CDC 3200 computer (U of Minnesota)
CA	MIXBYTE	1.0	MIX decimal machine language simulator
CA	MACRO11	2.0	DEC PDP-11 emulator (U of Minnesota)
CA	MIXAL	2.0	Knuth MIX computer (U of Minnesota)
UX	iPSC	3.0	Intel Hypercube simulator
VX	ISPS		Instruction Set Processor Simulator

Language / Machine	Description of the language: Name	Version	Description (source)
Fortran IV	ANSI 1966 FORmula TRANslation language - numerical language.		
CA	MNF	5.4	MiNnesota Fortran compiler (Use not recommended)
CA	FTN	4.8	ForTraN compiler (CDC) (Use not recommended)
Fortran-77	ANSI 1977 FORmula TRANslation language - extended numerical.		
CA	M77	2.7	Minnesota Fortran-77 (U of Minnesota)
CA	FTN5	5.1	Fortran-77 compiler (CDC)
NV	FORTRAN/VE	1.4	Fortran-77 compiler (CDC)
UX	f77		Fortran-77 compiler (Encore)
VX	FORTRAN	4.6	Fortran-77 compiler (DEC)
GPSS	General Purpose Simulation System. Discrete event simulation.		
CA	GPSS	2.0	GPSS compiler (Northwestern U)
LISP	LISt Processing language - non-numerical, symbolic-expression.		
CA	ALISP	3.2	LISP interpreter (U of Mass. at Amherst)
CA	LISP	4.1	LISP interpreter (U of Texas)
UX	Franz Lisp	1.0	Franz Lisp (Encore)
VX	LISP	2.1	VAX Common Lisp (DEC)
MIMIC	MIMIC an analog computer - continuous-system simulation.		
CA	MIMIC	1.3	interpreter (CDC)
MODULA-2	Modula-2 Programming Language		
UX	mc		modula
OPS5	General Purpose Expert System Language.		
VX	OPS5	2.1	
Pascal	ISO 7185 Standard Pascal. General-purpose, structured language.		
CA	APASCAL	4.1	Full ASCII Pascal compiler (U of Minn)
CA	PASCAL	4.1	Pascal compiler (U of Minn)
NV	PASCAL/VE		Pascal compiler (CDC)
UX	pc		Pascal compiler (Encore)
VX	PASCAL	3.5	Pascal compiler (DEC)
Prolog	Logic programming language.		
UX	wup		Waterloo Prolog Environment (U of Waterloo)
VX	Prolog	1.5	Prolog compiler. (Quintus)
RPG-II	Report Program Generator II- business-oriented language.		
CA	RPGII	1.0	RPG-II translator (U of Minnesota + CDC)
SIL	System-Implementation Languages. Machine-dependent, medium level.		
CA	SYMPL	1.4	SYsteMs programming Language compiler (CDC)
NV	CYBIL/VE		Cybil compiler (CDC)
SIMSCRIPT	SIMulation tranSCRIPT language - discrete event simulation.		
CA	SIMII5	4.6	SIMSCRIPT II.5 compiler (CACI)
SMALLTALK	Object-oriented language		
UX	st		Little Smalltalk (U of Arizona)
SNOBOL4	StriNg Oriented and symBOLic LAnguage - non-numeric language.		
CA	SNOBOLC	3.3	SNOBOL4 interpreter (UC Berkeley + Minn.)
CA	SNOBOL	3.10	SNOBOL4 interpreter (U of Colorado)

ACSS Mainframe Graphics Packages

Michele Lewis

ACSS offers its users a broad spectrum of software packages for graphics applications. If you wish more information about the software listed in this article, you can call the ACSS HELP-Line to speak with our consultants about these packages. You can also read the documentation referred to in this article.

ACSS provides varying levels of support for its packages; therefore, the packages described in this article are separated into groups that reflect the level of support they receive. After each description, we include the mnemonic of the ACSS system on which the package is available: CA for the CYBER CA system, and VX for the VAX/VMS system.

Strong Support

ACSS highly recommends the software packages published by Precision Visuals, Inc. (PVI). The standard metafile that may be generated from these packages can be viewed from both CA and VX machines and processed by many ACSS graphics devices. For general-purpose applications, ACSS recommends DI-3000, GRAFMAKER, and PICSURE. These three packages have been designed to be used by users of different programming abilities and requirements. WRITEUP,DI3000 and WRITEUP,PVI on the CA and MOREHELP WRITEUPS GRAPHICS on the VX provide additional information on these packages.

CONTOUR SYSTEM: a library of Fortran subroutines that allow the user to generate two- and three-dimensional contour maps and mesh pictures from either gridded or randomly located data. Three-dimensional views may be created from any point in space, from above or below the surface. (VX)

DI-3000: a graphics software package based on the SIGGRAPH CORE standard. The package is a library of Fortran-callable routines in which graphics are supported in both batch and interactive environments. DI-3000 is device-independent and has many features including full three-dimensional viewing; graphic arts-quality text; dynamic color lookup tables; polygon fill and patterning; retained segments; visibility; highlighting; segment priority control; segment storage data structure save and restore; and full three-dimensional modeling interface. (CA, VX)

DI-TEXTPRO: a selection of publication-quality character fonts in two and three dimensions. These fonts may be accessed from any of the other PVI packages. Ten different typefaces are available, and the characters may be drawn as outlines or solid characters. (VX)

GRAFMAKER: a set of Fortran subroutines for generating line graphs, bar graphs, needle graphs, and pie charts. Features include options for drawing multiple charts in a single picture, shading between curves on a graph, exploding pie segments, arbitrary axis positioning, and multiple axes. In addition, GRAFMAKER includes GRAFEASY, a set of subroutine calls that simplify GRAFMAKER even further for quick and easy graphic presentation of data. (VX)

PICSURE: an interactive computer graphics software system for generating charts and graphs with a simple sequence of English-like commands. No programming knowledge is necessary. PICSURE can create line graphs, bar charts, pie charts, and text charts; in addition, multicharts can be created by combining two or more basic charts into a single composite chart. The package has an online tutorial and HELP facility for first-time users. (VX)

Intermediate Support

Products in this section, which were developed by Computer Associates–formerly Integrated Software Systems Corporation (ISSCO)–receive intermediate support from ACSS. The packages are maintained and updated; however, *ACSS recommends that **new** users*

consider the PVI packages described above for their graphics applications. Refer to WRITEUP,GRAFGEN and MOREHELP WRITEUPS GRAPHICS for additional information on the ISSCO packages.

DISSPLA: an industry-standard library of over 400 Fortran subroutines capable of two- and three-dimensional linear plots, pie and bar charts, three-dimensional surface meshes, cartographics (e.g., with over twenty maps of the world viewable with any of twenty projections), color and pattern capability, contouring, elaborate annotations, and more. (VX)

TELL-A-GRAF: a sophisticated, widely used interactive graphics program for producing publication-quality, two-dimensional linear plots, bar and pie charts, and signs. (VX)

Minimal Support

The following programs have minimal ACSS support and are not recommended to new users.

CALCOMP: a library of Fortran subroutines using PLOTPAC and MNCORE to plot calendar, linear, logarithmic, and polar axes; grids; smoothed and dashed lines; arrows; arcs; spirals; ellipses; equilateral polygons; shaded bars; annotations; and special characters. (CA)

CNTOUR: a Fortran subroutine that references PLOTPAC and MNCORE to produce contour plots with simple annotation. (CA)

MNCORE: ACSS's implementation of the CORE standard. This library of Fortran subroutines has the basic graphics subroutines for two- and three-dimensional, and full-color graphics composed of lines, text, and polygons. (CA)

PASPLOT: a library of Pascal subroutines for two-dimensional linear plots, with lines, special symbols, scaling, and windowing. (CA)

PLOTPAC: an elementary Fortran plotting package that provides higher-level routines and uses MNCORE routines to scale and draw two-dimensional plots with axes. (CA)

PLOT3D: a Fortran subroutine that creates perspective plots of three-dimensional surfaces with hidden lines removed. (CA)

PLTSCL: an easy-to-use Fortran subroutine used with PLOTPAC to generate scaled, two-dimensional linear plots. (CA)

PRNPLO: a Fortran subroutine, more sophisticated that SCLPLT, that is used for plotting grids, axes, titles, and lines on standard printers. (CA)

PRNTPLT: an easy Pascal subroutine that uses PASPLOT to plot simple two-dimensional linear plots for a printer. (CA)

SCLPLT: an easy Fortran subroutine for generating scaled two-dimensional linear plots for a printer. (CA)

SIGN: a program for plotting text and creating signs. (CA)

SURFACE II: a program with 62 commands for plotting contours, surface meshes, and posting (scatter) diagrams. (CA)

SYMAP: a program used to generate density plots of spatial data that are output on a printer. (CA)

TEKLIB: a library of Fortran routines for drawing text, graphs with annotation, and other elementary figures. This library is also known as the PLOT-10 system, and consists of the Terminal Control System (TCS), Advanced Graphing II (AG2), and the Character Generating System (CGS). (CA)

If you'd like more information about the software listed in this article, you can refer to the documentation referred to earlier or call the ACSS HELP-Line (626-5592) and speak with ACSS consultants. User's guides for all packages published by a vendor can be ordered directly from the vendor. The Computing Information Center in 128A Lind Hall will provide assistance with vendor orders and has copies of all documentation available for review.

ACSS System Configuration

Lawrence Liddiard

In this issue we are publishing the latest version of our configuration diagram which illustrates the present ACSS *central configuration,* mainframe computers with attached disk storage and communication devices. (Although not shown on this diagram, each ACSS central system also has 9-track, dual 1600 and 6250 density magnetic tape units for user files and disk storage backup.)

Note that each ACSS system provides research, instructional, and public service computing.

The **Key** in the upper right of the diagram explains the content of the four large rectangles representing four mainframe systems: the two CYBER systems, the VAX 8600, and the ENCORE Multimax system. Briefly, each system rectangle contains the following information:

At the bottom center, in bold type, is a two-letter **mnemonic ID**. These mnemonics — **NV**, **CA**, **VX**, and **UX** — are commonly used to refer to each system.

At the *top left*, in bold type, is a brief indication of the service provided by each system. At the *top right*, also in bold type, is the operating system name and numeric level. Reading the diagram from the left:

- NV, managed by ACSS for IT, emphasizes CAD/CAM (Computer-Aided Design and Manufacturing) NOS/VE service for University research and instructional use as a Control Data Engineering Center.
- CA, the second system, is a Control Data Corporation (CDC) CYBER running the NOS 2 operating system.
- VX, the third system, is a Digital Equipment Corporation (DEC) VAX running the VMS 4 operating system.
- UX, the fourth system, is an ENCORE Computer Corporation Multimax system with 6 processors running UMAX 4.2, a UNIX compatible system.

To the *left* in each system rectangle, beneath the service description, is the name and model number of the central system. Under the name and model number, the current number of central processors for the system is given. Also to the *left* for CYBER systems, beneath the current number of central processors, the number of **peripheral processing units** (PPUs) is given. PPUs are auxiliary computers on CYBERs that perform input/output and "bookkeeping" operations besides job control flow.

To the *right*, beneath the operating system name and numeric level, is a figure indicating the approximate total central processing speed of the entire system, measured in million instructions per second (**MIPS**). For multiple central processor systems we add a second line giving the processing speed in MIPS for a single processor. The *bottom* figure on the right gives the size of each system's central (or main) **memory** in millions of units — megacharacters or megabytes as appropriate for each system.

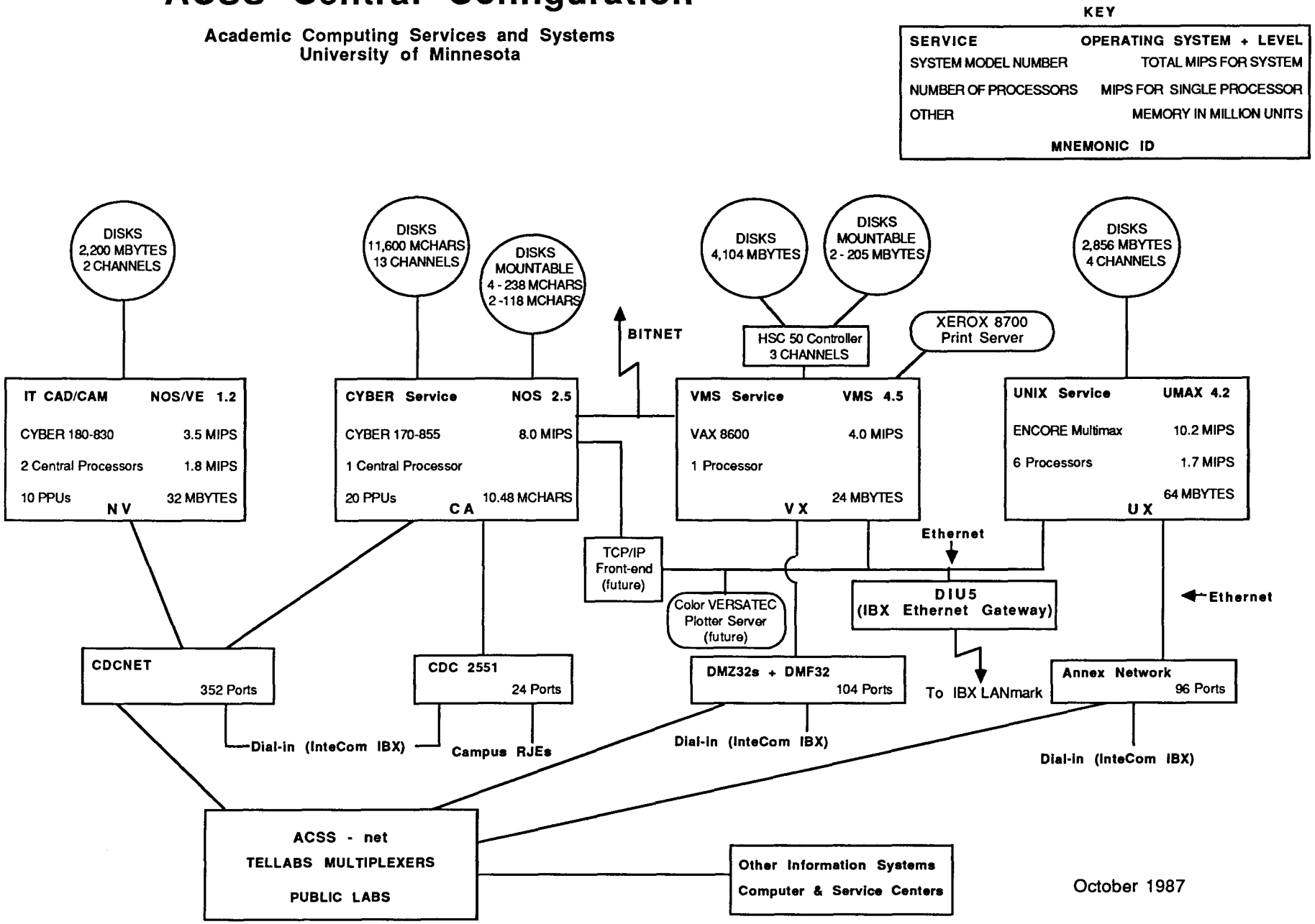
Other parts of the diagram represent devices attached to ACSS's central mainframes. The *circles* above the system rectangles represent disk storage and paths attached to each system. The disk capacity is given in megacharacters or megabytes as appropriate. The *rounded rectangles* describe input/output services for the entire complex.

The *smaller rectangles* under the system rectangles represent **communication devices** that enable central systems to interact with users. The maximum number, *max.n* , of simultaneous users for a communication device is given as **the number of Ports** in the rectangle to the right of the manufacturer's name for the device. Each of these communication devices is connected to the ACSS - net network of TELLABs multiplexers that interconnect all of ACSS's campus public labs and other Information System's computer centers. In addition, each communication device is connected to a separate dial-in rotary on the University's digital Intecom IBX phone system. Finally, the IBX LANmark Ethernet connection is shown for TCP/IP and DECNET high-speed protocols.

Other communication features in the diagram include the **TCP/IP** front-end service that interconnects **CA** (planned for the **future**), **VX**, and **UX**, and permits electronic mail and file transfer between systems. Connection to the national BITNET network is shown by the communication arrow extending from the CA and VX systems.

ACSS Central Configuration

Academic Computing Services and Systems
University of Minnesota



Xerox 8700 Printing Defaults Changed

Dave Bianchi
BITNET: YZE6108@UMNACCA

As announced in our last issue, on September 20 we changed some of the defaults on the Xerox 8700 laser printer at our Lauderdale facility.

All output printed on the 8700 is now printed in **duplex** mode (that is, it is printed on both sides of the page) on **three-hole punched paper**. The text is **shifted** one-quarter of an inch on the page to allow for the three-hole punch. As before, text is printed in "landscape" mode (across a horizontal page) instead of in "portrait" mode (on a vertical page, like this newsletter).

This new default will make output less cumbersome, because duplex printing reduces by half the number of pages a print job requires. The change also reduces the time required to get your output to you.

Printing In Other Formats

If you are sending a file to the 8700 and want to override these format defaults, you can do it by using the appropriate parameters on the printing command you use.

If you want to print in other formats on the CYBER CA, you need to use several parameters of the **PRINT** command. For example, use the following format of the **PRINT** command to get simplex output (printing on only one side of the page) without shifting or three-hole punching:

```
PRINT,filename,UJN=BC*100,S,NP,NS
```

If you want to print in another format on the VAX VX, you need to use several parameters of the **PRINT** command. For example, use the following format on the VX to get simplex output (printing on only one side of the page) without shifting or three-hole punching:

```
$ PRINT filename /FORMS=SIMPLEX /NAME=site.bin
```

Defaults on the Lind Hall laser printer or on the laser printer at the Diehl Hall Learning Resource Center have not changed.

For more information about this change, see the previous article in our September *Newsletter*.

The NV: NOS/VE System Now Available

Dave Bianchi
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The NV system, running NOS/VE, Control Data's virtual memory operating system, is now available to users. NOS/VE has a very large virtual memory that permits the development of large applications, unhampered by physical memory size.

The NOS/VE Operating System

NOS/VE is running on our CYBER 180-830 machine (formerly called the MD). The NV system has 32 megabytes of main memory, and there are approximately 1.5 gigabytes of disk space on NOS/VE. The system currently shares access to five 1600/6250 BPI tape drives with the NOS CA system.

NOS/VE supports a hierarchical file system, similar to that of the VAX/VMS file system. File names may be up to 31 characters in length and each file may have up to 999 *cycles* (which are similar to versions on VMS). NOS/VE supports both interactive and batch processing. There are commands that permit you to submit, monitor, and terminate batch jobs.

NOS/VE uses the ASCII character set. The NOS/VE command language, SCL, is an interpreted programming language that provides dynamic variable creation, strong typing, control structures for selection and looping, input and output, and recursion. SCL has a large list of functions to handle type conversion, string manipulation, and system attribute retrieval.

NOS/VE has a large virtual memory, permitting the development of applications unhampered by physical memory size.

Software

Programming languages available on the NV system are Fortran, Pascal, BASIC, and CYBIL. We also have several products from the ICEM CAD/CAM suite of programs. For program development, NOS/VE provides a full-screen editor similar to NOS FSE, source and object code management utilities, and an interactive debugger. The source code utility is integrated with full-screen text editing and automatic modification set generation. The object code management utility is used to maintain both object code and SCL procedure libraries.

Accounts

You can set up NOS/VE accounts with ACSS by calling our User Accounts office at 625-1511. Instructors can also open accounts for classroom use through their departmental liaison.

Logging On

To log on to the NV system, you simply type the code **NV** (and press RETURN) in response to the ACSS network prompt. The log-in message from the NV system will then be displayed, along with a prompt for user name.

If you are using a telephone and a modem to access NV, dial 626-1622. Then respond to the log-in message and prompt.

For More Information

ACSS has prepared several Briefs on the NV, covering topics such as logging in to NV, getting on-line help, and converting from NOS to NOS/VE. Briefs are free and are available in the ACSS Computing Information Center (CIC) in 128A Lind Hall. Also at the CIC are reference copies of the more useful NOS/VE manuals.

You can also get more information while logged into NOS/VE. NOS/VE offers the EXPLAIN on-line documentation facility, similar to that on NOS 2, except that has full-screen capability.

A Review of Recent Changes

Steven Brehe and Jerry Larson

ACSS made several changes over the summer; this article helps you catch up by summarizing changes that will affect many of our users.

Some subjects discussed here were reported on at greater length in issues of the *ACSS Newsletter* from June through September. These issues are available for reference in 128A Lind Hall or as an on-line document on the CYBER CA with the command WRITEUP,NLETTER. You can also call 626-1093 to receive copies of back issues.

Printed Output

On September 20 we changed some of the format defaults on the Xerox 8700 laser printer. See the related article elsewhere in this issue.

As of August 30, users of graphics software use the **PRINT** command to send files to the 8700 printer. See our September issue for more information.

The CYBERs

We upgraded the operating system on the CYBER CA to NOS 2.5.2-678 on June 14. See WRITEUP,NOS678 on the CA for more information.

On September 13, we converted the CYBER MD to the NOS/VE operating system. The MD is now called the NV. See our September issue for more information.

New software on the CYBER CA includes a new system command, **PRINTF**, that makes printing files easier (see the July issue).

Upgraded software on the CA includes the Yale Sparse Matrix Package (see the June issue).

We removed the Interactive Financial Planning System from the CA (September issue).

The VAX VX

On August 30, we upgraded the VMS operating system on the VAX VX to Version 4.5. See the August issue or the VX Writeup VMS45.LIS for further information.

A new utility, INSPECT, available on the VX, provides you with general information about a tape's structure and contents. See the August issue or the VX WRITEUP,INSPECT.

We now charge VX users for mounting magnetic tapes and removable disk packs. See the September issue for more information.

New software on the VAX VX includes the PCGPAK Sparse Matrix Library and the SPICE Circuit Analysis Package (see the June issue); the Interactive Financial Planning System (IFPS/Plus) package, the SPARSPK sparse matrix library, the QUADPAK numerical integration library (July).

Upgraded software on the VX includes the Yale Sparse Matrix Package (see the June issue) and the VAX LISP processor (September).

Public Labs

Terminals: About half of the 300 bits per second (bps), or (30 character per second [cps]) TTY43 printing terminals have been retired. New VDTs (Video Display Terminals) have replaced most of those TTYs and the printing capacity of the labs from which the TTYs have been removed has been maintained by replacing DEC II's (300 bps printing terminals) in those same labs with DEC III 1200 baud (120 cps) printing terminals or, in a couple of cases, by adding one or two DEC III's to a lab.

Microcomputers: A new public lab opened during spring quarter in 109 Nicholson Hall with a mix of Apple Macintosh and IBM hardware. Earlier in the last academic year ACSS

opened another lab in 130 Physics. This lab includes SUN and Apollo workstations as well as several Apple Macintosh microcomputers and 3 VT100 ACSS-net terminals. This lab should be air-conditioned by early in fall quarter.

Several Macintosh and IBM microcomputers in 14 Folwell Hall, 9 Walter Library, and 170 Anderson Hall have been hooked up to ACSS-net to facilitate micro-to-mainframe communications. We are now networking microcomputers together in some labs (e.g., 14 Folwell Hall and 9 Walter Library) to use shared printing resources and to provide access via the file server to some applications software.

Facilities for the Vision Impaired: Early in fall quarter, we will enhance access to microcomputers and ACSS-net for blind students and those with impaired vision by installing large print and audio output hardware/software on microcomputers connected to ACSS-net in 9 Walter Library and 170 Anderson Hall. In conjunction with these upgrades, the old braille terminal in 128 Lind Hall will be removed from service.

Buying Access Cards: You can buy microcomputer and laser printer access cards after Bursar Office hours from the lab attendants in 9 Walter Library (checks only—no cash, please) or from the West Bank Periodical Shop (48 Social Sciences Bldg.).

New Walter Library Lab Hours: Hours for the 9 Walter Library lab will be extended to midnight Sunday through Thursday nights at the start of fall quarter.

Other Campus Facilities

Printers: You can still route output from the CYBER CA to printers in 128B Lind Hall (a laser printer), 14 Folwell Hall, 121 Elliott Hall, 170 Anderson Hall (a laser printer), 140 Blegen Hall, B2 Wilson Library, and 125E Classroom Office Building.

Optical Scanner: A Kurzweil 400 optical scanner is available at the 128B Lind Hall I/O station. Contact Carol Winther at 625-9525 for more information regarding this service.

Punch Card Equipment: Campus keypunches and card readers were removed on June 30. ACSS's only card reader and keypunch are at the ACSS central site, the Lauderdale Computing Facility. See our June issue for more information.

Please contact Jerry Larson, ACSS Lab Manager, 14 Folwell Hall, 625-7850 with questions or concerns pertaining to public labs and other campus facilities. Current information regarding most lab facilities can also be obtained by referring to WRITEUP,LABS on the CYBER CA. See also the Information Systems *Computing Facilities Map*, available in 128A Lind Hall.

VX Writeups for General Users

Marisa Riviere
BITNET: MARISA@UMNACVX

Available on our VAX/VMS system, the VX, are several longer on-line documents called **Writeups**, which provide detailed information of general interest to VX users. This article briefly summarizes those Writeups, and tells you how to use them.

During the next year we will provide more Writeups on new topics. We welcome your suggestions. Please contact the HELP-Line or send me mail on VX if you would like to see a new writeup on a specific VMS topic.

Using Writeups

To see any of these on-line documents, type

```
$ type acss$writeup:writeupname
```

(Replace ***writeupname*** with the actual name of the Writeup.) To stop and start the display of the Writeup on your terminal use the No Scroll key. Or use control-S to stop the display and control-Q to restart it. Or you can use the text editor:

```
$ edit/read acss$writeup:writeupname
```

To obtain a printed copy use the **PRINT** command: Type

```
$ print acss$writeup:writeupname /name=site.bin
```

We recommend adding the **/characteristics=portrait** qualifier for printing:

```
$ print acss$writeup:writeupname /char=portrait /name=site.bin
```

To display a list of all the available Writeups on your terminal, type

```
$ dir acss$writeup:
```

Names of Current Writeups

Protection Covers file protection based on VMS groups and ACLs: how to change and check the protections of your root directory or all the files created during a session; and how to permit access to a file (and the file's "path") for a particular user or a group of users.

VMSTapes Presents answers to most of the problems that frequently arise when using tapes, from the handling of internal (VMS-standard) tapes to using tapes created on other systems or to be used on other systems. Includes advice on how to write programs to "crack" some non-standard tape formats.

Inspect Describes the use of the **Inspect** utility to analyze tape structures and obtain general information about a tape's contents and assists you in selecting the correct VMS utility for reading the tape.

VAXnotes Explains how to join in existing public electronic conferences, how to set up and moderate conferences open to all users or to predefined users groups, and how to utilize the package as a bulletin board.

Batch Explains how to submit batch jobs and how to maintain control of jobs after submission to "see" your job, watch its progress, stop it, keep logs, select when to run them, and how to breakpoint them. It also describes the different batch queues and gives suggestions on which queue to use for different type of jobs.

Symbols Shows how to create DCL symbols and how to manipulate them on procedure calls and and DCL operations.

Mail Covers the use of the VMS Mail utility, including hints on how to change your forwarding address, how to use mailing lists, and how to organize and maintain your mailbox.

Other On-Line Information

Morehelp This is not a Writeup but a VMS help library created and maintained at ACSS. The Morehelp library covers a variety of topics on local additions and changes to the system as well as additional information on general facilities and miscellaneous items. To read entries in Morehelp just type the **`Morehelp`** command or **`@Morehelp`** from within the VMS HELP utility. For more information about VX communications facilities, type **`Help @communications`**.

Subscribe to the *ACSS Newsletter* and the *Microcomputer Newsletter*

We're mailing this issue of the *ACSS Newsletter* to all University faculty. If you are not yet on our mailing list but would like to continue receiving this *free* monthly publication, write

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University of Minnesota
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You can also subscribe by calling 625-7397 or visiting our Computing Information Center, 128A Lind. For campus subscriptions, please provide your department's name and departmental office address, which Campus Mail requires.

Our Microcomputer and Workstation Systems Group publishes a free monthly *Microcomputer Newsletter*. You can subscribe to this newsletter through the address and phone number above.

Conventions

Throughout the *ACSS Newsletter*, and in a growing number of recent ACSS publications, we have adopted these conventions:

- Messages and prompts from the ACSS computers appear in `plain type, like this.`
- Words that the computer systems replace with a specific name, value, or other information appear in *`italic type, like this`*.
- Commands you type at your terminal keyboard appear in **`bold face type, like this`**.
- Words that must be replaced by a specific name, value, or command that you type in appear in ***`bold italic type, like this`***.
- Comments to interactive sessions and program files are enclosed in { curly braces, like this }.

Here's an example:

`save,`*`filename`*

is a command you type in. You type **`save`** and replace ***`filename`*** with the name of your file. The system may respond with the message

`filename` `ALREADY PERMANENT` { An example of a system message. }

where *`filename`* will be replaced by the name of the file you attempted to save.

- The symbol **<CR>** refers to the carriage return (or RETURN) key on the terminal. The **<CR>** serves as a terminator for commands you type at your terminal. In most cases we do not show **<CR>**; we assume you know to type it after every command.

Phones/Hours/Labs

ACSS PHONE NUMBERS

Administrative Office: 626-1600

HELP-Line 626-5592

Access:	
CYBER (CA)	626-1620
CYBER (NV)	626-1622
ENCORE (UX)	626-1681
VAX (VX)	626-1641
RJE (2400 baud)	626-1656
RJE (4800 baud)	626-1663
Accounts:	
CYBER, ENCORE, VAX	625-1511
Computer Hours (recorded message)	626-1819
Computing Information Center	625-7397
Contract Services	625-2303
East Bank I/O, 128B Lind Hall	625-5082
Engineering Services	627-4357
Equipment Maintenance/Repair	627-4357
Graphics Software	626-5592
Information, Lauderdale	626-1600
Lauderdale Computer Room	626-0550
Lauderdale Services	626-1838
Magnetic Tape Librarian	626-1838
Math and Statistics Packages	625-5830
Micro Information	626-4276
Newsletter Subscription	625-7397
Permanent File Restoration	626-0595
Project Assist	626-1090
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170 Anderson Hall	624-6526
90 Blegen Hall	624-1387
14 Folwell Hall	625-4896
306B Lind Hall	625-9032
130 Physics	625-6820
9 Walter Library	626-1899
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

PUBLIC LABS TWIN CITIES CAMPUS

Location	Batch	Interactive	Micro
East Bank			
ApH 204			X
Arch 148			X
CenH		X	
ComH		X	
DiehlH 207, 270		X	
EddyH Annex 54			X
EltH 121, 124	P	X	
FolH 14, 14a	P	X	X
FronH		X	
LindH 26		X	
LindH 128B	P	X	
LindH 306B			X
MechE 308		X	
MoosT 8-425			X
Nich 109			X
Phys 130		X	X
PioH		X	
SanH		X	
TerrH		X	
VinH 4		X	
VinH 203			X
WaLib 9		X	X
West Bank			
AndH 170	P		X
BlegH 90			X
BlegH 140	P	X	
MdbH		X	
OMWL 2	P	X	
St. Paul			
BaH		X	
CentLib B50			X
ClaOff 125E	P	X	
ClaOff B22			X
McNH 69			X

P means Printer only.
For more information see WRITEUP,LABS.

SYSTEM OPERATING HOURS

	CYBER (CA), ENCORE (UX), VAX (VX)	CYBER (NV)	Low Rate
M-F	7 am - 4 am	7 am - 1 am	8 pm - 4 am, 7 am - 8 am
Sat	4 am - 9 pm	7 am - 10 pm	all operating hours
Sun	6 pm - 4 am	6 pm - 1 am	all operating hours

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