University Computer Center Newsletter

University of Minnesota
Twin Cities

January 1984
Volume 18, Number 1

The University's Computing Future: Part I

In the future each University researcher, instructor, student, and administrator will have at hand an information system that provides the following functions in a uniform, easy to use way:

- Calendar management and time scheduling
- Word processing and document tools
- Budget accounting systems
- Program language processors and packages
- Knowledge based systems that address the user's field
- Gateway access to a local high speed (10 mega bits/second) network that provides: information retrieval (video and text) and data base text; video disk education (courses, packages, system use); graphics (three-dimensional and color) and animation processors (based on video tape recording)
- Gateway access to a medium speed (56,000 bits/second) switching network that provides: mail and telephone answering and interchange (both text-to-voice and voice-to-text); a supercomputer; the latest and best software packages; literature searches from national data banks; document, pamphlet, and book production centers.

This will not occur in the twinkling of an eye, but should be in place by 1990. The University of Minnesota is responding to the change from specific computers to an information based system by creating a new position: Assistant Vice President for Information Processing. The person who fills this position will assume responsibility for the academic computing centers (University Computer Services), the administrative computer center (Administrative Data Processing Department), and the telephone system (a new Department of Telecommunications).

The difficulties involved in installing this total information system by 1990 are twofold:

First: economics. Such a system will probably cost 100 to 180 million dollars for the 18,000 faculty and civil service staff and the 55,000 students at the University. In addition, hardware maintenance and system improvement will cost an additional 20 to 40 million dollars per year.

The second challenge is integration. Although most of the technology and software for such a system exists or has been announced, the problems of system integration are huge. It takes two or three years beyond actual production and delivery for new technology to be successfully integrated into a system.

Where does UCC fit into this future during the next two years? We will continue to deliver cost-effective computing, while we work on various aspects of the integrated future. During the next two years we will:

- Continue to deliver reliable CYBER and VAX service for instruction and research;
- Encourage the University's request for bids to install a telephone switching system that provides at least 56,000 bits/second for digital data transmission. Encourage the University to install coaxial cable in the same conduits to provide at least 10,000,000 bits/second local networking capability;
- Provide economical supercomputer access for University faculty and students to solve complex problems;
- Develop high access rate networks as part of the current system;
- Meet the demand for additional instructional labs and central system resources to solve more and more difficult course-related computatons;
- Move toward full laser printing for all output, to provide readability and compactness;
- Provide graphics and image enhancement with our DICOMED recorders;
- Provide CAD/CAM and solid modeling on the UCC-managed, Institute of Technology CYBER 825;
- Continue to improve our HELP-line consulting and to upgrade our on-line documentation;
- Provide guidance for the selection of reliable microcomputer hardware and software. Obtain group price reductions for individual software packages for data base, word processing, etc.;
- Use the Computer Store to provide complete access for our users to the latest documentation, hardware, and software required for their tasks;
- Lower the maintenance costs for information systems through volume pricing and effective use of our Engineering Services Group.

These represent our hopes and our plans for the future. In an upcoming issue of the *Newsletter*, I'll discuss "The Economics of Future University Computing."

(Lawrence A. Liddiard)

New CYBER 845 Installed

During the weekend of December 30-January 1, we installed a Control Data Corporation CYBER 845 as our CA system. It replaced the CYBER 730. In addition, the CB system (CYBER 825) was de-activated and both the CA and the CB file families now reside on the CA system. On January 1, we also removed ECS. These changes complete the plans we announced in the July and August *Newsletters*. MERITSS is not affected by these changes.

Here are the most important parts of the change:

- System CA (CYBER 730) replaced with a CYBER 845.
- System CB (CYBER 825) no longer available.
- File familes CA and CB are both on system CA; file family CA is the default family.
- All batch jobs (SUPIO, BATCHIO, EXPORT, SUBMIT, RBF) run by default on system CA.
- Larger field lengths are given for interactive access on system CA.
- All batch jobs will be validated for 375K maximum field length (the largest available on the CYBERs).
- ECS removed.
- UCC will transfer permanent files from CB family to CA family at your request.

Note: since the default family on system CA is family CA, users who need to use the CB family must specify family CB on their USER statement:

USER(usernumber,password,CB)

or in response to the interactive log-on prompt:

FAMILY: cb <cr>

Interactive system CA or CB users will also see a change in the UCC Network hailer message. It now looks like this:

UCC Network V1.0, Port 1HAB.
To connect to machine xx, type: C xx
xx is CA or ME
*****

If you previously selected machine CB (and family CB), type **c ca** at the asterisk, then specify family CB.

***c ca <cr>**

.
.
.

FAMILY: cb <cr>

In September, when we changed from the old CB (74) to the interim CB (825), we recommended that you double your time limit on your job card or SETTL statement. In going from either the 730 or the 825 to the new 845 we recommend cutting your time limits in half.

If you need more information about these changes, call our HELP-line, 376-5592, see the July and August *Newsletters*, or see WRITEUP(CHANGE).

CYBER Notes

SUPIO GOING AWAY

SUPIO, a UCC-written program from the early 1970s, has provided the University with user operated remote job entry (RJE) terminals. But the two terminals that SUPIO supports— UNIVAC 1004s and Control Data UT200s— have been or are being removed. We are replacing them with HASP workstations. Thus after many years of faithful service, SUPIO will retire.

Its replacement is RBF (Remote Batch Facility), a Control Data-supported product. RBF supports HASP multileaving workstations and emulators, and UT200 terminals and emulators. We are currently looking into supporting 2780/3780 terminals and emulators. RBF is described in the *Remote Batch Facility Version 1 Reference Manual* (CDC publication 60499600, revision K), and in WRITEUP(RBF).

2400 baud UT200	(612) 376-5864
4800 baud UT200	(612) 376-5959
2400 baud HASP	(612) 376-5880
4800 baud HASP	(612) 376-5842

Exhibit 1. RBF phone numbers.

RBF is currently operational and we encourage you to use it. SUPIO will be removed from operational use on March 17, the end of winter quarter. Current SUPIO users will be given new RBF user numbers to replace their SUPIO site codes. New users who want to use their own remote batch terminals should contact our accounting department (373-2521) for an RBF account number.

One very important note: Over the years, we have extended the UT200 protocol that SUPIO and the locally written UT200 terminal emulator used for communication. This included features such as upper- and lower-case case printing. RBF does not support any of these extended features; it strictly adheres to the original UT200 protocol. If you depend on these features you must convert your emulators to ignore them, or convert to a protocol that supports upper-and lower-case printing, such as HASP.

If you need assistance, call our HELP-line, 376-5592. The RBF phone numbers are listed in Exhibit 1.

CHARGE UNIFORMITY REVISITED

My old copy of *How To Lie With Statistics* reminds me that not all tables and graphs illustrate Truth to the eye of the beholder. Several people have mentioned that my article in the October *Newsletter* "Running on the CYBERs: Charge Uniformity Across Machines," left them confused. Especially confusing was the fact that negative percentages were good and positive were bad for SRU cost changes.

I place no value judgements on the terms negative and positive, and failed to realize that many others placed positive numbers (with connotations of "certain," "real," "effective," "confident") numbers on a higher plane than negative numbers (with connotations of "false," "suspect," "ineffective"). In addition, two numbers in Table 2 were interchanged. Table 1 corrects this error.

These same job sets were run on the CYBER 845; Table 2 shows the actual CP times in seconds for each job set to three significant decimal places. Only three places are required because identical runs of these job sets on empty systems produce total CP time variations of two to four percent.

The equation I used to transform Table 2 into Table 3 is:

Percentage SRU charge = 100 × (845 CP time × 1.6 billing multipler)/ (other CP time × billing multiplier).

JOB SET	825/174	825/730	835/74
5 FTN 5 (matrix, functions)	0%	+1%	+53%
2 FTN 5 (sort, graphics), 3 COMPASS	–28%	–27%	–28%
7 FTN 5 (compilations)	–31%	–29%	–42%

Table 1. SRU changes on 825 vs. other CYBERS.

MNEMONIC	(CA)	(ME)	(old CA)	(old CB)	(CB)
JOB SET/CYBER SYSTEM	**845**	**174**	**730**	**74**	**825**
Average Billing Multiplier	1.6	.615	.665	1.00	.53
5 FTN 5 (matrix, functions)	233	917	844	381	1070
2 FTN 5 (sort, graphics) 3 COMPASS	129	433	393	276	367
7 FTN 5 (compilations)	4.98	13.5	11.8	9.98	10.7

Table 2. Actual CP time in second for job sets on UCC CYBERS.

MNEMONIC	CA/ME	CA/old CA	CA/old CB	CA/CB
JOB SET/CYBER SYSTEM	**845/174**	**845/730**	**845/74**	**845/825**
5 FTN 5 (matrix, functions)	66%	66%	98%	66%
2 FTN 5 (sort, graphics), 3 COMPASS	78%	79%	75%	106%
7 FTN 5 (compilations)	96%	102%	80%	141%

Table 3. Percentage SRU charge on 845 (CA) vs. other UCC CYBERS.

Not subtracting one from this equation to get the change percentage results in a percentage charge that more accurately reflects user expectations: something that costs 66 percent of the previous value is a bargain, while something that costs 141 percent of it takes more out of your pocket.

Providing actual CP times for the job sets illustrates that percentage changes and charges must be tied to a base. Thus a compilation percentage of 141 percent on the 845 versus the 825 must take into account that compilation is only one percent of the total SRU charges for all the job sets.

These lower SRU charges on the 845 for FORTRAN execution and COMPASS assembly compared with either the CYBER 730 or the CYBER 825 makes the CYBER 845 an efficient and cost effective single CYBER system for research at the University.

(Lawrence L. Liddiard)

CRAY News

UNIVERSITY USERS DISCOUNT

We are pleased to announce that due to increased CRAY-1 use, we can now provide an automatic 50 percent discount to University faculty, staff, and graduate students. As of January 1, 1984, the new effective rate for these users is $ .275 per SBU. No further volume discount is applied. This discount does *not* have a negative impact on the grants program for fiscal year 1984 (July 1983 through June 1984); rather, grant dollars spent on the CRAY will go twice as far.

IMS Journal

SIR USERS GROUP MEETING

The SIR Users Group will meet at 3:30 p.m., Wednesday, January 18, in 128 Management/Economics on the west bank of the Minneapolis campus. This group provides an informal means of communication for users of the SIR (Scientific Information Retrieval) data base.

Each month the group focuses on a particular topic. This month we'll examine the use of pointers. All SIR users are encouraged to attend. For more information on the users group or to be put on the mailing list, contact UCC Client Services at 376-1761 (Monday through Friday, from 1 to 3 p.m.).

All Systems Bulletins

MINNESOTA JOINT COMPUTER CONFERENCE

The Minnesota Joint Computer Conference (MJCC) will be held February 29 and March 1, 1984 at the Radisson South Hotel in Bloomington, Minnesota.

The Conference theme is "Updata

84: Challenge for Excellence." Robert Waterman, co-author of *In Search of Excellence*, will give the keynote address. Conference sessions will focus on management, personal growth, technological and evolutionary strategies.

Following dinner on February 29, Dr. Brian Davis, Director of Product Development at Personnel Decisions Inc., will discuss "Avoiding High Talent Failures in Management."

The MJCC is sponsored by the Association for Computing Machinery (ACM), the Association for Systems Management (ASM), and the Data Processing Management Association (DPMA). The Conference runs concurrently with the Northwest Chapter DPMA Vendor Show.

Registration fees are: $195 members (ACM, ASM, DPMA), $210 non-members until February 6; $220 members, $235 non-members after February 6. Students may register for $45.

For more information about the MJCC or registration, call Mary Ann Henry at the MJCC General Information Center, (612) 544-7682.

Package Notes

LINEAR EQUATION SOLVER FOR ILL-SCALED SYSTEMS

I have written a FORTRAN 77 subroutine package that solves systems of linear equations. The package differs from other available software in that it performs well even if the coefficients and unknowns vary over orders of magnitude. Ordinary linear equation solvers often produce inaccurate results when used with such "ill-scaled" systems. The solution method used in the new package is a variant of Gaussian elimination followed by residual checks and iterative improvement in single precision.

The subroutine package is not quite as fast as corresponding LINPACK routines, but when compiled under FTN5, it is competitive in speed, and for ill-scaled systems it can be far more accurate. The package has been written in such a way that it also vectorizes nicely on the CRAY when compiled under CFT.

To acquire a copy of the package, enter the control statement:

ACQUIRE,LSOLVR/UN=FQF6284,PN=SHA.

You might want to list out the program to see what it encompasses. The subroutines and a short driver are included: the subroutines are documented with comments in the source code, and the driver enables you to use the subroutines interactively. For further information, call Eric P. Rudd, 373-2461.

Microcosm

NEW IMPROVED MICRO SOFTWARE

UCC's Microcomputer Systems Group is pleased to announce that new versions of COM for the Apple II and IBM-PC are available in the Computer Store, 20 Experimental Engineering. COM is a microcomputer to mainframe communications package that can be used to transfer files between microcomputers and the UCC mainframes. COM also allows a microcomputer to act as a terminal for communications with mainframe computers.

The new version of COM for the IBM-PC runs under both the PC-DOS 1.1 and PC-DOS 2.0 operating systems. This version (version 3.2) runs significantly faster than the previous version (version 3.1). The improved performance is particularly noticeable at 1200 baud. The old version lost or garbled characters under some circumstances. This problem has been solved in the new version.

The new version of COM for the Apple II runs under the Apple Pascal operating system. This version (version 3.2) supports the Apple Super Serial Card as well as the Apple Communications Card, the California Computers Systems 7710A serial interface card, and the D.C. Hayes Micromodem II. The previous version of COM for the Apple did not support the Super Serial Card.

In addition to new versions of COM for the Apple and IBM-PC, a new version of SIMTEK for the Apple II is available at the Computer Store. SIMTEK is a program that allows Apple IIs that run the Apple Pascal operating system to emulate a Tektronix 4010 series graphics terminal. SIMTEK is typically used to preview graphics output generated by packages like TELL-A-GRAF (which runs on our VAX 11-780).

The new version of SIMTEK (version 2.0) for the Apple supports the Apple Super Serial Card, the Apple Communications Card, the California Computer Systems 7710A serial interface card and the D.C. Hayes Micro-Modem II. The previous version of SIMTEK (version 1.0) did not support the Super Serial Card. In addition to support for more communications cards, the new version of SIMTEK also has a much improved user interface and documentation.

We provide free updates of UCC-produced software for one year from the date of purchase. To update your software bring your receipt and the original distribution disk to the Micro HELP-line (139 Shepherd Labs) during normal HELP-line hours: 10 a.m. to 12 noon and 2 to 4 p.m., Monday through Friday. Contact the Micro HELP-line, 376-4276, if you have questions about the new versions of COM or SIMTEK, or if you would like to see a demonstration of these programs.

(Mark McCahill)

U OF M MICRO USERS GROUP

The January meeting of the University Microcomputer Users Group will be Thursday, January 12, from 3:15 to 5 p.m. in 555 Diehl Hall on the Minneapolis east bank campus.

Consultant Saunders Miller will be the guest speaker. He will discuss "Evaluation and Selection of Word Processing Software for Microsystems." Mr. Miller has evaluated many word processing packages and has written an article that provides criteria for others to do so.

The meeting will begin with the speaker's address and will be followed by a discussion and a rap session. Everyone interested in microcomputers and word processing is welcome.

Computer Store

WINTERIZING YOUR FLOPPIES

Now that the long-awaited cold spell we affectionately refer to as winter has appeared, we want to remind all floppy owners to take special care of their disks.

Keep in mind the following hints to ensure their continued health and long life:

- Do not fold, bend, staple, or mutilate your disks.
- Do not touch the disk's surface area.
- Store the disks in a vertical position.
- Allow disks to warm up to room temperature if you've carried them outside.
- Never expose disks to any type of magnetic field.

The Computer Store sells two floppy storage systems: a durable polypropylene box with a pop-out easel that hold ten disks (two sizes are available, for either 5-1/4 inch or 8 inch disks); or, for those who need more storage, a clear plastic tub with a dust cover that holds up to 75 5-1/4 inch disks.

For a list of supplies and documentation available at the Store, and their prices, see WRITEUP(STORE=PRICE). You can pay for Store purchases with cash, check, type 11 journal vouchers (for departmental purchases), or charge them to your non-instructional UCC user number.

The Computer Store, located in 20 Experimental Engineering, is open from 9 a.m. to 4:30 p.m. Monday through Thursday, and from 9 a.m. to 3 p.m. Friday. Our phone number is 373-4877.

Non-Numeric Computing

JANUARY LECTURE

Our series of lectures on non-numeric computing continues winter quarter at 2:15 p.m., Thursday, January 12, in 40 Ford Hall. Wesley Jacobsen of the Department of East Asian Studies will speak on "Using Microcomputers to Teach Japanese."

Grants for Research

GRANTS PRIMER UPDATES

We have prepared updates for some of the material that appears in the UCC *Grants Primer*. If you would like copies of them, call Karen Johnson, 376-1491.

Winter Quarter Short Courses

INTRODUCTORY COURSES

Prices: U. student $10, U. staff $20, Non-University $30

010 Introduction to Computer Terms (Jerry Larson)
Jan 9-13 (MWF) 3:15-5 p.m.

020 A Taste of Computing (staff)
Jan 16-20 (M-F) 3:15-5 p.m.

050 NOS (CYBER operating system) (Tom Kovarik)
Jan 23-Feb 8 (MWF) 3:15-5 p.m.

080 Introduction to Microcomputers: CP/M (Mark McCahill)
Jan 30-Feb 3 (MWF) 3:15-5 p.m.

090 Introduction to Microcomputers: MS-DOS (Mark McCahill)
Feb 6-10 (MWF) 3:15-5 p.m.

130 XEDIT (Michael Dunham)
Feb 7-16 (TTh) 2:15-4 p.m.

150 Introduction to the CRAY-1 and COS (Tom Kovarik)
Jan 9-13 (MWF) 3:15-5 p.m.

040 Introduction to VAX/VMS (Carol Saylor & Jerry Stearns)
Jan 24-Feb 9 (TTh) 3:15-5 p.m.

ADVANCED COURSES

Prices: U. student $20-30, U. staff $30-50, Non-University $50-100

510 System 2000 Data Base Management (Cheryl Vollhaber)
Feb 13-Mar 2 (MWF) 3:15-5 p.m. $30-$40-$50

640 Beginning Pascal (Peter Oberg)
Feb 13-24 (MWF) 2:15-4 p.m. $25-$40-$60

530 SPSS (statistics package) (Bruce Center)
Feb 13-17 (MWF) 2:15-4 p.m. $20-$30-$55

570 TELL-A-GRAF Graphics (Carol Saylor)
Feb 21-Mar 1 (TTh) 3:15-5 p.m. $30-$45-$75

REGISTRATION: You can register at the UCC Computer Store, 20 Experimental Engineering (hours: 9 a.m. to 4:30 p.m. Monday through Thursday, 9 a.m. to 3 p.m. Friday). A self-service terminal for registration is located inside the store. We accept mail registrations for an additional $1 fee per class. The deadline for registration is store closing on the last working day *before* the class begins. You may pay course fees with cash, check, University journal voucher, or you can charge them to your non-instructional UCC user account.

REFUND POLICY: No refunds are made after the class begins. Refunds are made in the same form as the fee was paid, i.e., check, journal voucher, UCC account credit.

University Computing: Interim Management

The University administration is currently appointing a search committee for the new position of Assistant Vice President for Information Processing. University Computer Services (including UCC), Administrative Data Processing, and Telecommunications will all report to the individual selected for the position.

Since that person must have a role in selecting replacements for Dr. Frank Verbrugge, who has retired, and Dr. Peter Patton, who has left the University, Vice President Kenneth Keller has announced the following interim administrative arrangements for University Computer Services (UCS) and the University Computer Center (UCC): Lawrence Liddiard will serve as Acting Director of UCS and Michael Skow will serve as Acting Director of UCC.

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The Classifieds

FOR SALE

Printer noise cover: new Trace Sound Trap noise cover for any dot-matrix printer, with printer stand accessory. $125 journal voucher. 373-3137.

PHONE NUMBERS

Access:
- CYBER(CA)—10, 30 cps 376-5730
- —120 cps 376-5706
- MERITSS(ME)—10 cps 376-7710
- —30 cps 376-7730
- —120 cps 376-7120
- VAX/VMS(VA)—(autobaud) 376-9770

Budgets 373-2521
Computer-Aided Instruction 376-2975
Computer Hours (recorded message) 373-4927
Computer Store 373-4877
Consulting
- HELP-line 376-5592
  9 a.m.-5 p.m., Monday-Friday
- Business Data Products 376-1761
  1-3 p.m., Monday-Friday
- Statistics Packages 376-5062
  1-2 p.m., Monday-Friday
- Data Bases 376-1761
  1-3 p.m., Monday-Friday
- Microcomputers 376-4276
  10-12 a.m. and 2-4 p.m., Monday-Friday
- Non-Numeric Computing 376-2944
  1-3 p.m., Monday-Friday
- TELL-A-GRAF/DISSPLA 376-2663
  1-3 p.m. Tuesday, Thursday

Contract Programming 376-1764
Data Base Applications 376-1764
EDUNET Liaison 373-5780
Engineering Services 376-1023, 376-8153
Equipment Purchase/Information 376-8153
Experimental Engineering I/O 373-4596
Graphics Software 376-5592
HELP-line 376-5592
9 a.m.-5 p.m., Monday-Friday
HOURS-line (recorded message) 373-4927
Information, Experimental Engineering 373-4360
Information, Lauderdale 373-4912
Instructional Labs 376-2703
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Lauderdale Computer Room 373-4940
Lauderdale Services 373-4995
Lauderdale Services Manager 373-7538
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Newsletter Subscription 373-4912
Permanent File Restoration 376-5605
Professional Services Division (PSD) 376-1764
Project Assistance 376-1764
Reference Room 373-7744
Remote Batch (RJE) Services 376-2703
Short Courses 376-8806
Shuttle Bus Service 376-3068
System Status (recorded message) 373-4927
Tape Librarian: see Lauderdale Services
Text Processing Services 376-2943
User Accounts 373-4548

OPERATING HOURS

	CYBER CA	Low rate	CRAY (CR)	MERITSS (ME)	VAX (VA)
M-F	7 a.m. - 4 a.m.	8 p.m. - 4 a.m.	7 a.m. - midnight	7:45 a.m. - 1:30 a.m.	8 a.m. - 6 a.m.
Sat	4 a.m. - 5:15 p.m.	4 a.m. - 5:15 p.m.	7 a.m. - 5 p.m.	7:45 a.m. - 1:30 a.m.	24 hours
Sun	4 p.m. - 1 a.m.	4 p.m. - 1 a.m.	4 p.m. - midnight	4 p.m. - midnight	24 hours

PUBLIC LABS—TWIN CITIES CAMPUS

Location	Batch	Interactive	Micro
East Bank			
Arch 160		X	X
CentH		X	
ComH		X	
DiehlH 270, 207		X	
EltH 121, 125		X	
EltH N640	X		
FolH 14, 14a	X	X*	X
LindH 26	X	X	
MechE 308		X	
Physics 69		*	
SanfH		X	
TerrH		X	
VincH 4		X	
WaLib 204		X	
West Bank			
BlegH 25		*	
BlegH 90	X		
BlegH 140		X	
MdbH		X	
OMWL 2		X	
SocSci 167			X
St. Paul			
BaH		X	
ClaOff 125	X	X	

* Research cluster; access to Cyber 730 and VAX/VMS

X in interactive column indicates access to MERITSS

Contents

Michael M. Skow, Acting Director

The *UCC Newsletter* is published monthly by the University Computer Center. Deadline for articles is the 10th of the month preceding publication; deadline for short announcements is the 15th. The *Newsletter* is edited and coded for typesetting at the Computer Center, then typeset on a Linotron 202 and printed at the University of Minnesota's Printing and Graphics Arts Department.

Comments, suggestions, articles, and announcements should be directed to the editor, 227 Experimental Engineering, (612) 376-1491.

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