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Computing at Lehigh

Lehigh University

LUCC Computing at Lehigh

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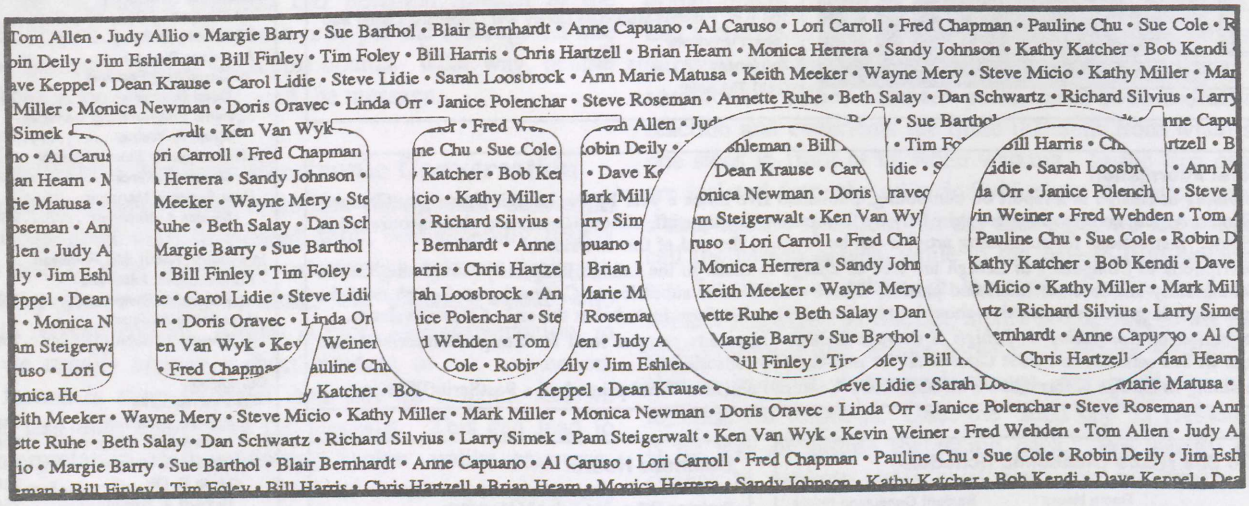

PostScript Graphics

Contents

From the Director

William R. Harris (WRH0@LEHIGH)

Electronic Mail Etiquette

Most of us at Lehigh have been using electronic mail, often referred to as e-mail, for over a year. The exceptions to this are probably the freshman class and faculty and staff who are recent converts to this means of communication. There are now over 6,000 people registered to use the Network Server. I would guess that most have found e-mail to be a time saver and that the Network Server has lessened the frustration of trying to communicate via the telephone. I would also guess that e-mail has caused some additional frustration. I would like to make some observations about e-mail that may help to enhance communication.

Ethics

This, I feel, should go without saying, but here goes. E-mail should not be used for harassment, impersonation of others, coercion, or financial gain. Most of us say, "of

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Lehigh University Computing Center Hardware
CDC CYBER 180 Model 850 (32 MBytes Memory, NOS/VE V1.3.1 & NOS V2.6.1)
IBM 4381 Model 11 (16 MBytes Memory, VSE/SP V2.1.5)—Administrative
IBM 4381 Model 13 (24 MBytes Memory, VM/SP HPO V1.5.0, MUSIC/SP V1.2)—Network Server
VAX 8530 (32 MBytes Memory, VMS V4.7)
VAX 8300 (28 MBytes Memory, VMS V4.7) -LUCC/ME CAD Lab

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General Information

Computing at Lehigh is a report on computing, published five times a year by the Lehigh University Computing Center. Article contributions are primarily by Computing Center staff, although users are also encouraged to contribute. Instructions for submitting articles can be found at the end of this newsletter.

Subscriptions to *Computing at Lehigh* are free of charge to those in the Lehigh University Computing Center user community and to other interested parties. Those who wish to subscribe to *Computing at Lehigh* or make changes regarding their subscription should return the mailing list form included at the end of this newsletter.

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Public Site Hours (Academic Schedule)

	Room Hours	Student Consulting Hours
Central Site Users' Area, 180 Fairchild-Martindale		
Sun	12:00 noon – 12:00 midn	12:00 noon – 12:00 midn
Mon–Thu	6:30 am – 12:00 midn	8:00 am – 12:00 midn
Fri	6:30 am – 10:00 pm	8:00 am – 5:00 pm
Sat	9:00 am – 8:00 pm	10:00 am – 8:00 pm
Central Site Microlab, 292 Fairchild-Martindale		
Sun	12:00 noon – 12:00 midn	no consulting
Mon–Thu	6:30 am – 12:00 midn	no consulting
Fri	6:30 am – 10:00 pm	no consulting
Sat	9:00 am – 8:00 pm	no consulting
Central Site Special Equipment Room, 182 Fairchild-Martindale		
Sun	12:00 noon – 12:00 midn	12:00 noon – 12:00 midn
Mon–Thu	8:00 am – 12:00 midn	9:00 am – 12:00 midn
Fri	8:00 am – 5:00 pm	9:00 am – 5:00 pm
Sat	10:00 am – 8:00 pm	10:00 am – 8:00 pm
Drown, Room 208		
Mon–Thu	8:00 am – 10:00 pm	no consulting
Fri	8:00 am – 6:00 pm	no consulting
Sat	8:00 am – 1:00 pm	no consulting
Fritz Lab Annex, Room A3		
Mon–Fri	8:00 am – 10:00 pm	no consulting
Grace, Room 28		
Sun	24 hours	2:00 pm – 12:00 midn
Mon–Thu	24 hours	1:00 pm – 12:00 midn
Fri–Sat	24 hours	1:00 pm – 5:00 pm
Libraries: Fairchild-Martindale, Linderman, & Media Center		
Sun	12:00 noon – 12:00 midn	no consulting
Mon–Sat	8:00 am – 12:00 midn	no consulting
Maginnes, Room 491		
Mon–Fri	8:00 am – 10:00 pm	no consulting
Sat	9:00 am – 1:00 pm	no consulting
Mountaintop Campus, B103 Building A		
Mon–Thu	6:30 am – 10:30 pm	1:00 pm – 4:00 pm
Fri	6:30 am – 5:30 pm	1:00 pm – 4:00 pm
Mountaintop Campus, D109, D117 Building A		
Mon–Thu	6:30 am – 10:30 pm	no consulting
Fri	6:30 am – 5:30 pm	no consulting
Packard, Room 502		
Mon–Thu	8:00 am – 10:00 pm	10:00 am – 10:00 pm
Fri	8:00 am – 5:00 pm	1:00 pm – 5:00 pm
Sat	8:00 am – 1:00 pm	no consulting
Whitaker, Room 257		
Mon–Thu	8:00 am – 8:00 pm	10:00 am – 12:00 noon 1:00 pm – 3:00 pm
Fri	8:00 am – 5:00 pm	10:00 am – 12:00 noon 1:00 pm – 3:00 pm

Business Hours

Business Office, 394 Fairchild-Martindale
Mon–Fri 8:15 am – 12:00 noon
1:00 pm – 4:45 pm

User Services, 185/194/196 Fairchild-Martindale
Mon–Fri 8:00 am – 12:00 noon
1:00 pm – 5:00 pm

Microcomputer Store, 524 Brodhead Ave.
Mon–Fri 9:00 am – 5:00 pm

Operations, 171 Fairchild-Martindale
Mon–Fri 8:00 am – 11:30 am
1:00 pm – 4:30 pm

Operator Support/Machine Room, 179 Fairchild-Martindale
Sun 2:00 pm – 10:00 pm
Mon–Thu 8:00 am – 12:00 midn
Fri 8:00 am – 10:00 pm
Sat 9:00 am – 5:00 pm

Special Forms Processing Hours

Liquid Ink Plots
Tue,Fri 8:00 am – until done

Talaris Printer
Daily 11:00 am – 1:00 pm (Except Sun)
6:00 pm – 8:00 pm (Except Sat)

Computing Center Directory

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Judith K. Allio 758-3993

Systems Status, Technical Information
On-duty Consultant
..... 758-4141

General User Information
Data Processing Assistant
Ann Marie Matusa 758-3990
Accounts Coordinator
Doris A. Oravec 758-3992

Information About Tapes and Supplies
Data Processing Tape Librarian
Monica M. Herrera 758-4140

Consulting Policy

Consultants are provided to assist users in the use of Lehigh University's computer resources. Consultants are not authorized to interpret course assignments, write code, or debug program logic.

When in need of a consultation, users are requested to contact the LUCC student consultants (present at several of the public sites and at ext. 84141), who are hired to augment the full-time staff consultants.

Computer	On-Campus Phone (300-19.2K Baud)	Off-Campus Phone (300/1200 Baud)	Network Node Name	Network
Network Server	(NS) Ext. 46000	974-6000	LEHIGH	BITNET
CYBER 850	(CDC) Ext. 46800	974-6800	LEHICDC1	BITNET
VAX 8530	(VAX) Ext. 46400	974-6400	VAX1.CC.Lehigh.EDU	Internet

Director, from front cover

course!". But, we have had several cases of this during the past year; therefore, I risk saying the obvious.

Junk Mail

One person's crusade is generally someone else's junk mail. The speed and convenience of e-mail makes the high volume distribution of mail very easy. One of the frequent complaints LUCC gets comes under this category. It is suggested that when planning to distribute mail to a list, consider the recipient's reaction and potential interest in the topic. Maybe a better approach is to put the message on one of the Network Server's bulletin boards. That way, people with a genuine interest will read the message.

Electronic Mail or Electronic Conversation

E-mail is, in many ways, more like conversation than mail. When we send mail in printed form, we generally take a great deal of time composing our correspondence, typing it, checking grammar and spelling, and thinking about who should receive copies. E-mail is more like conversation, in that we usually convey a short message or ask a question. The format is more informal than that for a letter, and we spend less time composing the message. This can lead to misinterpretation of the message; further, unlike conversation, we lack the instant feedback of facial expressions and body language.

Some things that may help to make e-mail more personal and friendly are:

- Always begin your mail with a greeting in which the recipient's name appears. "Dear John" seems too formal for e-mail, but "Hi, John" or simply "John" makes the message more personal.
- Ending the message with your name also helps. If you have not set up the system to automatically include your name, address and telephone number, you should. This is important when you are communicating with someone who may not recognize you by your computer user ID.
- Entering a descriptive subject line helps recipients when they look at their list of new memos or old, unprocessed memos.
- Be careful about being terse, using capital letters, and punctuation. The "tone" of the memo can become very "loud" if you are not careful.

Flaming Memos

Even though e-mail is more like conversation than paper mail, it is important to note that it takes place at an "impersonal" computer or terminal. The speed and convenience of e-mail makes it easy to respond to someone before we have had a chance to calm down. Being seated at the computer or terminal is a lot like being behind the steering wheel of an automobile. When someone pulls ahead of us in traffic, our reaction and comments are quite different from when someone steps in front of us when walking. In the first case, we are isolated from the other individual; in the latter case, it is a face-to-face situation. In the first case, we are tempted to call the person names, while in the face-to-face situation we say "excuse me" (although the tone of voice may convey another message). A flaming memo is one sent in the passion of the moment and, unlike paper mail, before we have had a chance to cool down and change our mind, or at least rephrase our response. Once the "send key" is pressed, there is no way of getting the memo back. We usually have a chance to retrieve paper mail from our out basket if we change our minds.

Security

Security is a factor that should be considered when using e-mail. When a message is "for the record", paper mail is often used in lieu of, or in addition to, verbal communication. E-mail is being used for that purpose as well. E-mail can be stored, printed, and - most importantly - more easily duplicated and forwarded than paper mail can be. Again, because of the speed and ease of duplication, there is the potential for a very fast, geometric explosion of copies. This may not be your desired result.♦

Mainframe Computing

NOS/VE Migration Update

Sandra L. Johnson (LUSLJ@LEHICDC1)

Remember, the NOS operating system will be removed from the CYBER 850 at 6:30 am on August 23, 1989. Users who still need assistance with migrating to NOS/VE should contact User Services at extension 83990. Note that this article includes information about migration workshops. Also, a new LUCC document entitled *A Guide to NOS/VE Commands for NOS Users* is available at User Services as well as at the Central Site Consultants' Desk.

IBM 3820 Laser Now NOS/VE Default Printer

As of January 18, 1989, the default printer for all NOS/VE print commands is the IBM 3820 laser (printing in landscape

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mode, one page per side, doublesided). To route output elsewhere, use the QUEUE parameter on the PRINT command (for example, type:

```
PRINT filename QUEUE=VE
```

to print a file on the Central Site CDC 580 line printer).

Batch job output that was previously sent to the line printer will also be routed to the IBM laser printer. To send batch output to the line printer, include the command:

```
CHANGE_JOB_ATTRIBUTE output_destination_usage=dual_state
```

in the batch job.

Two Versions of Emacs under NOS/VE

There are now two versions of Emacs under NOS/VE, MicroEMACS and MicroGNU (MG). To use MicroEMACS, enter the command **UEMACS** at the NOS/VE prompt. The command **EMACS** (or **MG**) invokes the MicroGNU version of Emacs. A MicroGNU tutorial can be accessed by typing:

```
MG .LIB.MG_TUTORIAL
```

at the NOS/VE prompt. Users should note that MicroGNU is the version of Emacs that LUCC is supporting under NOS/VE and should therefore be the Emacs of choice.

NOTE: EDIT_FILE (EDIF) is by far the most efficient editor under NOS/VE. Keep this in mind when working with large files.

NOS to NOS/VE Migration Workshops Scheduled

Two NOS to NOS/VE migration workshops have been scheduled for the Spring semester. Each workshop covers:

- the moving of files to NOS/VE
- elementary use of EDIT_FILE
- the conversion of FORTRAN programs to run under NOS/VE (including the conversion of FORTRAN 4 to FORTRAN 5)
- the conversion of UPDATE PL's to Source_Code_Utility format, if this topic is needed

Workshops consist of a brief lecture followed by a hands-on session in which users can start their migration. Individuals will be available to answer questions and assist with problems as they arise.

Participants will be expected to have a copy of the *NOS/VE User's Guide* (available at the University Bookstore) and, *at a minimum*, to have logged into the NOS/VE system.

To register for either of these workshops, either type **IN CCREG** at the Network Server's main menu, or complete the registration request form attached to printed copies of LUCC's seminar schedule. Sessions will be held in room 257, Whitaker Lab, and are scheduled for the following dates and times:

Thursday, February 2	10:10 am till noon
Wednesday, March 1	4:10 pm till 6:00 pm

NOS/VE Q and A

Question: How can one find out what parameters are available for a NOS/VE command.

Answer: The DISPLAY_COMMAND_INFORMATION (DISCI) command was designed for just this purpose. Type **DISCI** followed by any NOS/VE command to get a list of the command's parameters. Output from the DISCI command contains such information as:

- parameter names and their valid abbreviations
- the type of information to be specified with each parameter, such as a file (name), an integer value (within the specified range), or a string of characters (enclosed in single quotes)
- the default values of those parameters which have defaults; otherwise, whether the parameter is optional or required

DISCI output will always include a "status" variable, which is used primarily within SCL procedures.

The following section of this article includes examples of output from the DISCI command.

SPSS^X Access Method Improved

SPSS^X and related products may now be accessed without first issuing an "SPSS_X ON" or "SPSSX ON" command in the session. The most useful command parameters, as displayed by the DISPLAY_COMMAND_INFORMATION (DISCI) command, are listed below.

Command: SPSSX

input, i	: file = $INPUT
output, o	: file = $OUTPUT
errors, e	: file = $ERRORS
workspace, w	: integer 1000..2147483 = 1000

```
e.g., SPSSX I=GEOJOB O=GEOJOB_OUTPUT
W=3000
```

Command: SPSSX_HELP (SPSH)

subject, s	: string = $optional
list, l	: file = $LIST

Command: SPSSX_GENERATE_USERCODE_MODULE (SPSGUM)

[This facility allows users to add their own procedures, or incorporate existing programs, into SPSS^X.]

module, m	: name 1..8 = $required
binary, b	: file = $required
new_library, nl	: file = $required

Recently Installed/Updated Software

NASTRAN Updated

NASTRAN, used for solving engineering problems by the finite element method, has been upgraded to version 6.5C. More than thirty enhancements have been added. The most significant of these are the addition of a Lanczos eigensolution method for large models and a composite beam element.

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Documentation is available at the Central Site Users' Area and (on one-day reserve) at the Fairchild-Martindale Library. The access method for NASTRAN is unchanged; type:

```
?NASTRAN
```

at the NOS/VE prompt to be prompted for parameters.

SIR Beta Version 2.2 Revision 17 Available

A pre-release version of the SIR Database Management System, along with its associated products, is now available for use under NOS/VE. The SIR package consists of four separate parts:

SIR_DBMS - A database management system complete with an easy to learn command language. To use SIR_DBMS, type **SIR_DBMS**, followed by a SIR parameter list (enclosed in single quotes), at the NOS/VE prompt. For example, the command:

```
SIR_DBMS '/IA/DB="GUMBY"/PW=MISTER'
```

will initiate an interactive SIR session using the 'GUMBY' database (assuming, of course, that the correct password has been supplied).

SIR_SQL - An interactive, relational query system that facilitates easy retrieval of information from any SIR-created database. To use SIR_SQL, type **SIR_SQL** at the NOS/VE prompt. The name and password of the database to be accessed will then be requested.

SIR_FORMS - An interactive, full-screen system for creating, retrieving and modifying data in any SIR-created database. To initiate a session with SIR_FORMS, type **SIR_FORMS** followed by a SIR_FORMS parameter list (enclosed in single quotes).

SIR_HOST - A set of FORTRAN subroutines which allow SIR users to access their databases through their own programs. To use SIR_HOST, type:

```
USE SIR_HOST
```

prior to executing the program containing calls to SIR_HOST routines.

Documentation for the complete SIR system is available in the LUCC library; a copy will soon be available at the Central Site Users' Area.

SPICE Available

SPICE, a general purpose circuit simulation program, has been installed under NOS/VE. To run SPICE, type:

```
SPICE inputfilename outputfilename
```

at the NOS/VE prompt. SPICE documentation, entitled *SPICE Version 2G.6 User's Guide*, is available at the Central Site Users' Area and (on one-day reserve) at the Fairchild-Martindale Library.

NAG and ODEPACK FORTRAN Subroutine Libraries Available

NAG Mark 12, a collection of mathematical and statistical subroutines, and ODEPACK, FORTRAN subroutines for numerical solution, are now available under NOS/VE. To use one of these libraries, type:

```
USE libraryname
```

(where *libraryname* is either NAG or ODEPACK). Documentation for the NAG subroutines, entitled *NAG FORTRAN Mini Manual Mark 12* and *NAG FORTRAN Library Manual Mark 12* (a 7-volume set), is available at the Central Site Users' Area; a copy will soon be available at the Fairchild-Martindale Library. Documentation and example programs for ODEPACK are available for reading and/or copying in the NOS/VE subdirectory :NVE.LIB.EXAMPLES.ODEPACK. Type:

```
DISPLAY_CATALOG :NVE.LIB.EXAMPLES.ODEPACK
```

to see a list of the example and documentation files.♦

NOS/VE to be Upgraded

In the very near future, the NOS/VE operating system on the CYBER 850 will be upgraded to the latest release, 1.4.1. Some users will be affected by the upgrade, although the changes should be minor. Provided below is a synopsis of the enhancements and incompatibilities in this release, extracted from the original 168-page *User Impact Bulletin* provided by Control Data. Only the items relevant to LUCC users have been listed below.

Users have access to the entire *User Impact Bulletin*, both as an on-line manual and as a printed manual. To read the *User Impact Bulletin* on-line, enter the following NOS/VE command:

```
HELP MANUAL=UIB
```

A printed copy of the *User Impact Bulletin* is available for reference at the Central Site Users' Area. To print a personal copy of the *User Impact Bulletin*, enter the following NOS/VE command:

```
PRINT $SYSTEM.L716.DOCUMENTATION.USER_IMPACT_BULLETIN
```

The exact date of the 1.4.1 upgrade will be announced in system bulletins, which may be read using the BULLETIN command. Those having any questions regarding this upgrade should contact Steve Lidie at extension 83982 (LUSOL@LEHICDC1).

Incompatibilities in NOS/VE 1.4.1

The major changes to NOS/VE for release 1.4.1 deal with the System Command Language, SCL. SCL will fully support REAL variables and other "elemental types" like TYPE and FILE, as well as "structured types" like LIST and RECORD. SCL variables of type STRING, previously limited to a maximum of 256 characters, will have a limit of 65,535 characters. NOS/VE's help facilities will be further enhanced, with "help modules" that are used by SCL's

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parameter prompting mechanism to provide detailed help on command parameters. Overall performance of SCL procedures will be increased when they are added or replaced in an object library because they will be compiled before being placed on the library, with complete parsing of the procedure header and lexical analysis of the procedure body.

One of the incompatibilities that will be introduced stems from the fact that a NOS/VE or user command can be set up so that its parameters must be given in the KEYWORD=VALUE form, rather than positionally. For example, in the current version of NOS/VE, the following command is legal:

```
REQUEST_MAGNETIC_TAPE $LOCAL.TAPE 'extvsn'
```

This assigns the magnetic tape having VSN "extvsn" to the file $LOCAL.TAPE. In NOS/VE 1.4.1, the external VSN parameter cannot be given positionally and must be given by name, as follows:

```
REQUEST_MAGNETIC_TAPE $LOCAL.TAPE EXTERNAL_VSN='extvsn'
```

The following commands are affected by this new SCL 'by name' feature:

ATTACH_FILE

CHANGE_FILE_ATTRIBUTES

CHANGE_TAPE_LABEL_ATTRIBUTES

REQUEST_MAGNETIC_TAPE

SET_FILE_ATTRIBUTES

Further, the STATUS parameter for all NOS/VE and user commands must be given by name. Since the STATUS parameter is used mainly in SCL procedures, most users will not be affected by this change.

Any user-written SCL procedures will most likely run in NOS/VE 1.4.1 without modification, but be aware that there is a new procedure header format. The new TRANSLATE parameter of FORMAT_SCL_PROC (FORSP) can be used to automatically convert procedures to the new format.

Finally, the commands below have new parameters. If they are used with parameters specified positionally rather than by name, errors may be received.

JOB

PRINT_FILE

SUBMIT_JOB

New Features in NOS/VE 1.4.1

AFTERBURN_OBJECT_TEXT (AFTOT) is a command which expands FORTRAN modules and Common Math Library modules in-line in FORTRAN binaries to improve execution performance. Several optimizations have been made to improve the quality of the expanded code. AFTOT will also handle COBOL and CYBIL object files.

The Common Math Library is a set of mathematical procedures used by C, FORTRAN, and Pascal. The following Common Math Library routines will exhibit improved accuracy and performance:

ACOS	ALOG	ALOG10	ASIN	ATAN
COS	EXP	SIN	SQRT	TAN

Enhancements to the NOS/VE DEBUG utility will include a new Watch Window, so that the user can monitor the value of specified variables during program execution. The SET_FUNCTION_KEY command will allow the user to assign any of the full screen DEBUG functions or any string of line mode commands to any function key defined for the current terminal, as does the EDIT_FILE command of the same name. Full screen help in DEBUG will be context sensitive by cursor position and have second-level help. Numerous improvements in the processing of the full screen output window will result in speedy display of large amounts of output and a reduced number of "context switches" from full screen to line mode.

DESKTOP/VE provides a seamless user interface for Macintosh users; it permits workstation users to manipulate NOS/VE files and applications using icons and a mouse. Users will be able to rearrange those icons on the desktop. There will be five new Edit commands: Read File, Save Selection, Shift Left, Shift Right and Show Clipboard. There will be three new File and Mail commands: Page Setup, Print Selection and Print. Finally, the emulator and communications protocol X.PC will have performance improvements. A single copy of DESKTOP/VE is available for use on the Macintosh in the Special Equipment Room. Additional copies can be purchased from CDC.

The full screen catalog and file management utility, EDIT_CATALOG, will allow users to mark a range of catalogs and files to be deleted or printed. The new function key EXIT will Quit from EDIT_CATALOG but remain in the catalog last Viewed, simulating the VAX/VMS SWING command. (QUIT sets the working catalog to the one established prior to invoking EDIT_CATALOG.)

The EDIT_FILE utility will have a new "repeat previous command" capability.

FORTRAN will support variable names up to 31 characters in length. Although use of this feature is non-ANSI and is not recommended, it can make the job of transporting VMS FORTRAN programs to NOS/VE easier. The compiler also generates in-line code for many Common Math Library routines when OPTIMIZATION_LEVEL=HIGH.

NOS/VE will be enhanced to read and write unlabelled and non-standard labelled EBCDIC tapes without assistance from the FILE_MIGRATION_UTILITY.

Mail/VE is an electronic mail utility used to read, write and transfer letters between mailboxes. Version 2.0, based on the X.400 Standard for Message Handling Systems, will be released with NOS/VE 1.4.1. This mailer is a successor product to the existing utility, and will connect NOS/VE to the Internet. More information on this subject will be provided when Mail/VE is finally connected.

The on-line manuals are undergoing a conversion from standard EXPLAIN/HELP format to the new TOPICS for-

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mat. For this release, only the main SCL manual has been converted. A system bulletin on using manuals in TOPICS format will be posted when the SCL manual becomes available.

Pascal will allow for separate compilation units and will handle INCLUDE files. ***Warning - all Pascal programs must be recompiled in NOS/VE 1.4.1!***

NOS/VE page fault code has been improved to detect sequential page faults, and to read multiple pages from disk instead of one memory page per disk read. Because of NOS/VE's unified memory management and I/O systems, large virtual memory programs with good "locality of reference" or programs that do lots of sequential input/output may improve in performance.

CDCNET Enhancements

The Control Data Distributed Communications Network (CDCNET) represents the family of hardware and software products offered to connect user terminals, workstations, and host systems into a data processing network. With release 1.4.1 of NOS/VE, extensive CDCNET enhancements are included in the areas of printer support, terminal support, networking and connectivity, and network management.

CDCNET will support Network File Server (NFS), which is a UDP/TCP-based system that provides UNIX-based workstations transparent access to files on NOS/VE disks, for file sharing or file backup.

TCP/IP enhancements will include an Internet Protocol Access Methods (IPAM) toolbox for writing custom TCP/IP-based applications, the Internet demon INETD to process incoming connect requests, and TCP/IP over HDLC and point-to-point X.25 trunks. Additional enhancements include DOD's Simple Mail Transfer Protocol (SMTP) for routing mailgrams between NOS/VE and other Internet hosts (used by Mail/VE 2.0), and subnetting.

CDCNET will support VT100 terminals in "hot-key" mode. This means that VT100 users will not have to press the Return key after every function key.♦

New HPGL Plotting Service

It is now possible to upload HPGL (Hewlett-Packard Graphics Language) plot files to the CYBER 850 and plot them on the Central Site Hewlett-Packard 7586B plotter. Many microcomputer-based applications, such as AutoCAD and Quattro, are capable of producing HPGL files.

After creating the HPGL plot file (preferably for a HP-7586B plotter), upload it to NOS/VE using CYBER Kermit or FTP. In either case, make sure that the transfer type is *binary* since these files contain ASCII control codes.

If the HPGL plot file was produced by AutoCAD, simply use the PLOT_FILE (PLOF or PLOT) command specifying PLOTTER=HPGL and the appropriate paper, paper size, and pen type. Note that scaling and margin adjustments may have to be performed in AutoCAD *before* uploading the file so that it is centered properly.

Since Quattro makes no provisions for scaling/margin adjustments, the NOS/VE command SCALE_QUATTRO_HPGL (SCAQH) must first be used to align and scale the plot. Then, use PLOT_FILE (PLOF or PLOT) specifying PLOTTER=HPGL and the appropriate paper, paper size and pen type. For example:

```
SCALE_QUATTRO_HPGL uploaded_file scaled_file
PLOT_FILE scaled_file PLOTTER=HPGL PEN=POROUS
```

or, in abbreviated form:

```
SCAQH uploaded_file scaled_file
PLOF scaled_file PL=HPGL PE=P
```

where *uploaded_file* is the name of the Quattro file which was uploaded from the microcomputer and *scaled_file* is the name of the file containing the scaled plot. Note: In Quattro, select the HP-7475 plotter for best results.

HPGL plotting from the VAX is currently being developed and will be announced in a system bulletin upon completion.♦

RIM to be Removed from the CYBER in August

The BCS RIM Relational Information Management System will not be available under the NOS/VE operating system, and will therefore be unusable as soon as NOS is removed (August 23, 1989).

While there are no plans to provide a direct replacement for the RIM package, users should note that the SIR Database Management System is available under NOS/VE.

Users of Boeing RIM who would like help choosing an alternative are encouraged to call Frederick W. Chapman at extension 83218 for assistance.♦

TEX Available on the VAX

Richard A. Silvius (RASB@LEHIGH)

TEX, which is a typesetting system, is now available on the VAX. TEX works in conjunction with LATEX, which is also available on the VAX, to form a document preparation system similar to Scribe. TEX is very useful for documents which contain many mathematical symbols. It maintains exact control over the placement of characters on the printed page.

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Input to TEX is a file having the extension ".TEX", created using GNU Emacs or another editor. This file is comprised of text and TEX control sequences which correctly format the text. For documentation on TEX, refer to *The TEXbook* (written by Donald E. Knuth), available at the Central Site Users' Area and the Fairchild-Martindale Library.

To use TEX on the VAX, type **USE TEX** at the VAX/VMS prompt - at which time four commands will be displayed on the screen. These commands and their functions are listed below:

- **TEX filename** - Create a device-independent (.DVI) file from the TEX (.TEX) file. **Note:** TEX operates in a manner similar to Scribe. If **TEX** is entered without a file name, an asterisk "*" prompt will be presented. To end a TEX session, type **\end** at the "*" prompt. If an error is encountered when processing the file, a question mark "?" prompt will be presented. Then, enter **x** to exit TEX.
- **DVILPS filename** - Create a PostScript (.DVI-ALW) file from the .DVI file.
- **DVILPS -o#:# filename** - Create a PostScript (.DVI-ALW) file which contains selected pages from the .DVI file.
- **PRINT filename.DVI-ALW /QUEUE=POST** - Print the resultant file on the PrintServer 40 laser printer.

In addition to the normal Roman typeface, TEX is capable of changing to slanted Roman typeface, italic Roman typeface, bold Roman typeface, and typewriter-like typeface.

TEX is also useful for placing accents and special characters within English or non-English words or names, such as in the following examples:

résumé, coördinator, pâtés,

ögretmen, mañana, français,

Øystein Ore, academiæ

TEX has a rich library of mathematical symbols which are divided into the following groups: lowercase Greek letters, uppercase Greek letters, miscellaneous symbols, "large" operators, binary operators, relational operators, negated relational operators, arrows, openings, and closings. Two modes, text and display, are available for mathematical expressions. The TEX math text mode expressions

```
{$e^{-x^2}$}
{$\Psi\sim p^\alpha M+1$}
```

will produce the following:

e^{-x^2}

$\Psi\sim\rho^{\alpha}M+1$

The following examples are produced with TEX in math display mode:

$$\frac{x+y^2}{k+1}$$

$$x+y^{\frac{2}{k+1}}$$

$$\frac{\frac{a}{b}}{2} \quad \text{or} \quad \frac{a/b}{2}$$

$$\int_{-\infty}^{+\infty} \quad \text{or} \quad \int_{-\infty}^{+\infty}$$

$$\pi(n) = \sum_{m=2}^{n} \left\lfloor \left(\sum_{k=1}^{m-1} \lfloor (m/k)/\lceil m/k \rceil \rfloor \right)^{-1} \right\rfloor .$$

Directly accessible are 22 basic delimiters, in 5 sizes each as shown below.

$$\left(a+\left(b+\left(c+\left(d+(e+f)-g\right)-h\right)-j\right)-k\right)$$

LATEX adds to TEX a collection of commands which simplify typesetting, letting the user concentrate on the content of the text rather than on formatting commands. LATEX provides for various structures including figures and tables (numbered and captioned), the bibliography, the table of contents, the list of figures and list of tables, the title page and abstract, the index and glossary, boxes, and the picture environment. A document style must be declared at the beginning of the manuscript file, as in the following example:

```
\documentstyle {report}
```

The standard styles are: article, report, book, and letter. The entire text of the document must be contained within the document environment using the

```
\begin{document}
```

and

```
\end{document}
```

commands.

To use LATEX on the VAX, enter **LATEX filename** at the VAX/VMS prompt (instead of **TEX filename**). Use the other commands listed previously to create a PostScript file and then print either selected pages or the entire document.

For documentation on LATEX, refer to the user's guide/reference manual *LATEX A Document Preparation System* (written by Leslie Lamport), available for reference at the Central Site Users' Area and (on one-day reserve) at the Fairchild-Martindale Library.♦

DRAW - Plotting Routine Available

Christopher F. Sullivan (CFS0@LEHIGH)

Note: Chris Sullivan is a graduate student in the Chemical Engineering Department.

DRAW is an easy to use FORTRAN-77 callable subroutine which produces publication quality, scientific style graphs in Cartesian coordinates. DRAW can be called by FORTRAN on the CYBER under NOS/VE as well as by FORTRAN on the VAX under VMS.

DRAW will plot any number of sets of x-y pairs in three formats: straight lines between invisible points, data points only, or points with connecting straight lines. If several plots are to be made on the same graph, the separate plots need not all have the same number of data points (as they do with QIKPLT). This is particularly convenient when plotting just a few experimental data points against some theoretical equation. The user can plot the experimental data points with the second option above, and generate a smooth curve from the equation by using a large quantity of points with the first option.

DRAW performs all scaling of the axes automatically. The axis divisions are selected so as to be pleasing in appearance. Every other axis tic-mark is labelled with a numerical value. Labels on each axis and the graph itself can be strings of up to 40 characters, which DRAW automatically centers.

DRAW is easy to use because it produces a graph from only a single call in which just the data to be plotted and the labels for the axes and graph title are passed. However, if desired, the graph produced by DRAW can be easily customized by additional calls to the CalComp plotting routines.

DRAW has been in use for several years by graduate students in EPI, PMC, and Chemical Engineering. Graphs produced by DRAW have been published in several AIChE publications as well as in *Powder Tech.*

DRAW is available under NOS/VE and VMS; it can be accessed by simply calling DRAW from one's main program.

DRAW is fully documented. The complete documentation for DRAW can be copied from the VAX file [UCFSULL.DRAW]DOC.PS or printed from NOS/VE with the command:

```
PRINT .LIB.EXAMPLES.DRAW.DRAW_DOC_PC Q=POST
```

The documentation, entitled *DRAW - A Plotting Routine for Publication Quality Graphs*, is also available at the Central Site Users' Area.♦

LUCC Documentation Update

The following two new LUCC documents and a revised technical bulletin are now available and may be obtained at User Services, 194 Fairchild-Martindale, as well as at the Central Site Consultants' Desk.

- *Magnetic Tape User's Guide* - A guide for using magnetic tapes on both the CYBER 850 and the VAX 8530.
- *A Guide to NOS/VE Commands for NOS Users* - A guide containing frequently used NOS commands along with the equivalent NOS/VE commands.
- Technical Bulletin #16 *Guidelines for Preparing a Thesis/Dissertation using Scribe on the VAX* - A guide for using Scribe to prepare a Lehigh University thesis or dissertation.♦

Micro Computing

Using Bitstream Fontware with WordPerfect v5.0

William D. Finley (WDF0@LEHIGH)

Background

Bitstream Inc., a producer of softfont files for various software packages, has entered into an agreement with the WordPerfect Corporation to supply a subset of its fonts (free of charge) to registered owners of WordPerfect 5.0. Bitstream Fontware can be used to produce fonts compatible with Hewlett-Packard LaserJet +, 500, and Series II printers as well as various PostScript PDL (Page Description Language) printers. There are three Roman typefaces (Swiss - similar to Helvetica, Dutch - similar to Times Roman, and Charter - Bitstream's own typeface) available in this free package; each can be produced in various sizes (measured in points). The Swiss and Dutch typefaces can also be produced in various sizes in italic, bold, and bold italic. Campus WordPerfect customers can obtain the Bitstream Fontware by calling the WordPerfect Corporation at (800) 222-9409, or by contacting Sandy Edmiston at extension 84753. (In the latter case, there will be a charge of $3.90 to cover the cost of the six-disk set.)

Preliminaries and Installation Hints

In order to utilize the Bitstream Fontware, one must be using a WordPerfect 5.0 maintenance release dated July 11, 1988 or later. Throughout the rest of this article, it will be assumed that the target printing device is an HP LaserJet Series II and that the WordPerfect system has been installed on a hard drive in directory WP50. Before the actual instal-

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lation of the Bitstream Fontware, the WordPerfect printer file WPRINT1.ALL (which is found on WP Printer Disk #1 and contains the device information for the HP LaserJet printers), must be present in the WP50 directory. To determine if the WPRINT1.ALL file is present, issue the command **DIR *.ALL** while in the WP50 directory. If necessary, use the DOS COPY command to copy this file from the WP Printer Disk #1 to the hard drive. Also, before continuing, a backup copy of all the Bitstream Fontware disks should be made using the DOS DISKCOPY command. It is also recommended that a FONTS subdirectory of the WP50 directory be created to hold all of the downloadable font files produced by Fontware. This will make font organization an easier task. Finally, since the Fontware program and peripheral files require about 900K of disk space, be sure that at least this much free space is available on the hard drive.

The Bitstream Fontware Kit consists of six disks; three disks contain the installation programs (and will be referred to as FW Disks #1, #2, and #3) and three disks contain the typefaces (and will be referred to as FW Disks Charter, Swiss, and Dutch). To start the installation of Bitstream Fontware, place FW Disk #1 in drive A and enter the command: **A:FONTWARE**. The bottom part of the installation screens usually contain the actions that can be taken at that point in time and the keystrokes necessary to invoke the desired actions. The installation process is relatively user friendly. The user will be prompted for various directory names after the Set Up Fontware option is chosen from the main menu. For the WordPerfect Directory, **C:\WP50** should be entered; and for the Printer Font Directory, **C:\WP50\FONTS** should be entered. Choose the HP LaserJet Series II when prompted for the Printing Device Model, and either HP Roman 8 or ASCII when prompted for the Character Set. By choosing HP Roman 8, a character set with more characters will be produced when you actually make the softfont files but the softfont files will also be somewhat larger. This may be a consideration (that will be discussed later) concerning the downloading of these files.

Once the Main Control Panel is properly configured, return to the main menu and choose the Add Fontware Typefaces option. When prompted, insert the FW Disk Swiss into drive A and press the F10 key. When prompted, repeat this process for the FW Charter and the FW Dutch disks - to copy all three typefaces onto your hard drive.

Making the Softfont Files

From the main menu, choose the Make Fonts option to generate the menu containing the available typefaces. Use the cursor to highlight the typeface to create, press the Return key, and then type the desired point size for that font. Repeat for each type and size that you want to create. To start with, choose the Swiss Roman, Swiss Bold, Swiss Italic, and the Swiss Bold Italic - all in the 10 point size. If you desire headline-sized letters, choose the ASCII character set option on the Control Panel and choose Bitstream Charter Roman in 72 point size on the Make Fonts menu. When this menu is completed, press F10; the approximate time to make these fonts will be calculated and displayed. You will then be asked if you want the fonts created; reply Y for yes. Note: The time displayed is usually much longer than that needed, but will depend on your computer. While the softfont files are being produced, the WPRINT1.ALL file will be modified to reflect that these fonts can be made available within a document created by WordPerfect.

Selecting Bitstream Fonts within WordPerfect

After the font files are produced, you must invoke WordPerfect and indicate how these various Bitstream fonts can be stored by the printer and accessed by a document during the printing process. Start WordPerfect, display the Print menu (Shift-F7), choose S for the Select Printer option, install the HP LaserJet Series II at this point if it was not already listed as the default printer, and then choose 3 for the Edit option. (Note: View the settings on the Edit menu carefully to make sure they match your present configuration.) At the Edit menu, choose 5 for the Fonts and Cartridges option and then use the cursor to highlight the Soft Font option and press the Return key; it will take a few minutes for this request to be processed. Any softfonts produced by the Bitstream Fontware will appear on the Cartridges and Fonts menu and have "(FW)" preceding the font name. Use the PgDn key to page through this menu.

A decision must be made as to whether the softfonts will be marked as "Present when a print job begins"(*), "Loaded during a print job "(+), or both (*+ for "swappable" fonts). This decision will depend on several issues: the amount of memory contained in the printer, whether all fonts are necessary for every print job, and whether the time required to download fonts is critical. Any softfont that is marked as "Present when print job begins" will be automatically downloaded to the printer when the Initialize option (7) is chosen on the Print menu. This downloading process would have to be repeated whenever the printer had been turned off. Any softfont that is marked as "Loaded during print job" will be downloaded on an as-needed basis during the print job, and will be removed when the print job is completed. Any softfont that is marked as both "Present when print job begins" and "Loaded during print job" will be downloaded during a printer initialization, but can be swapped out of the printer's memory temporarily if another downloadable font is required by the print job. A softfont that is swapped out of memory will be restored to the printer's memory when the current print job is completed. Once the softfonts are marked, press F7 twice to exit the Cartridges and Fonts menu and return to the Print Settings menu. The Base Font option (6) can now be set to be one of the Bitstream fonts produced.

Using the Bitstream Fonts in a WP document

Choosing various fonts in a multiple font document is easy if a basic WordPerfect rule is remembered: an option is in

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effect from the position in the document where it is invoked to the end of the document, unless it is altered by another option. The base font for the document can be changed at any point in the document, but the new font will take effect only from the point it is invoked. Changing the base font is accomplished by invoking the Ctrl-F8 option, choosing option 4 from the font menu, using the cursor keys to highlight the desired new base font, and then pressing the Return key. Once a new base font is chosen, bold, italic, and bold italic will all be printed in that base font when selected as highlighting features in the document. Hence, it is usually best when creating fonts of a specific size in either the Swiss or Dutch typefaces to create fonts under all categories of that typeface. A final note of warning when using multiple fonts in a document: line draw does not seem to work properly with any proportional font (such as the Swiss fonts produced by the Bitstream package).♦

New NetDial Released

A new version of NetDial, version 4.4, was released on January 10th. This new version is required to use the Libraries' on-line catalog system, ASA, effective that same date. Included in this new version of NetDial are some minor bug fixes.

NetDial 4.4 is available for downloading from the Network Server, under INFO topic **COMM**. NetDial 4.4 disks are available for copying at the Central Site Circulation Window, the Fairchild-Martindale and Linderman libraries, the Media Center, and the Educational Technology Center. NetDial 4.4 can also be copied from the file server at all LANned LUCC microcomputer sites. Copying and installation instructions are available at all public sites.♦

Network Operation

LUCC INFO Offerings

Doris A. Oravec (DAO1@LEHIGH)

The Computing Center provides many informative topics and several request forms on-line, through the Network Server's Information & Services (INFO) facility. This service is advantageous to both users of the Computing Center and the Computing Center itself, as it alleviates the need for users to come to the Computing Center for this information and these forms. It also reveals to users existing information and available services, and allows the Computing Center to update the information in a timely fashion.

How LUCC INFO Topics Can Help Users

- If a user needs to review an article from a previous issue of *Computing at Lehigh*, he or she may be able to find it under the topic **C@L**. **C@L** contains past issues, from August 1987 to the present. To subscribe to *Computing at Lehigh*, or to change or delete an existing subscription, a user can use the on-line request form **CCMAILLIST**.
- **DUEDATE** is very useful for planning one's work at a public site. It contains assignment due dates for large courses in which microcomputers or the Computing Center's mainframes must be used.
- **CCNEWS** is maintained to keep users aware of items such as new or upgraded software, bug reports, etc. It is very useful for making such announcements "between" issues of *Computing at Lehigh*.
- To promote user input to its planning process, the Computing Center has implemented topic **CCPLAN**. **CCPLAN** is a draft of the "LUCC Strategic Plan for Computing".
- If a user accidentally deletes a file on an LUCC mainframe, he or she may find the topic **CYBRELD**, **VAXRELD**, or **NSRELD** useful. These topics are on-line forms for requesting a reload of a deleted file, or a previous version of a file, from a backup dump (performed by LUCC) of the CYBER 850 (NOS and NOS/VE), VAX 8530, and Network Server file systems, respectively.
- Users can help shape their computing environment by passing suggestions on to the Computing Center. Suggestions for enhancements to existing software or for installation of new software can be submitted by using **SOFTCOM**, which is the Center's Software Comment Form; problems with software can also be reported using this form. Suggestions for procedural changes or complaints about existing services can be submitted by using **NONSOFTCOM**, which is the Center's Non-Software Comment Form.
- **CCSEMS** is the Computing Center's seminar schedule, and **CCREG** is the seminar registration form. Use of **CCREG** makes registration quick and easy. (All seminars offered by the Computing Center require advance registration.)
- A user planning to use a specific microcomputer lab may want to check **SITEHOURS** first. **SITEHOURS** lists all of the public computing sites, along with when they are open, when they are staffed with a consultant, and when they are reserved. **CCHOURS** is the Computing Center's Central Site schedule containing operating, consulting, and building hours; operating hours are those during which there is

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operator support in the mainframe machine room (to perform such tasks as mounting magnetic tapes and running the high speed printers). Both schedules are issued on a monthly basis. **CCYEAR** is the yearly operating schedule; it lists the days and times when operator support is provided for the CYBER 850, VAX 8530, and Network Server (IBM 4381).

- Topic **DOCUMENT** consists of a list of available LUCC and vendor publications, and where they can be found.
- **MICRO** provides a comprehensive list of LUCC-supplied microcomputer software, arranged by category. The list includes the total number of copies available at each public computing location, and the type of license LUCC has for the product. **NEWSOFT** lists recent microcomputer and mainframe software acquisitions.
- **SITES** may be helpful to those who want to reserve a room for a presentation in which a computer must be used. It contains a list of public, computer-equipped facilities and includes such information as whether the facility can be reserved, with whom it must be reserved, and the number of micros and seats available.
- A user needing basic information on such topics as the use of the Network Server from off-campus, or the use of SPSS^X or Kermit, may find it under **TECHBULL**. **TECHBULL** contains over 15 technical bulletins, which are short guides written by the Computing Center staff.
- **VE** presents topics related to the CYBER's NOS/VE operating system, such as migration tips and up-to-date lists of available software. This INFO topic should grow in popularity as the removal date for the NOS operating system approaches.

An INFO topic can be accessed either by entering the topic name at *any* INFO menu or by entering **IN topicname** at the LUNA main menu. Users are encouraged to send suggestions for additional Computing Center INFO topics to Network Server user ID LUCC.♦

Status of the Lehigh University Backbone Network

Mark Miller (LUMM@VAX1.CC.Lehigh.EDU)

Lehigh's Backbone network is now operational between four buildings on the Lehigh campus: Fairchild-Martindale, Packard Lab, Fritz Lab, and Mohler (see Figure 1). A backbone network is a separate, high-speed network which links other networks. The above buildings are connected using a 10 megabit/second token ring over fiber-optic cable.

The protocols supported by the Backbone network are the Transmission Control Protocol/Internet Protocol (TCP/IP) and Digital Equipment Corporation's proprietary protocol, DECnet. TCP/IP is the most widely supported protocol for connecting dissimilar computers, and will therefore be used for most Backbone network connections. DECnet is available for easier communication between campus VAXes and MicroVAXes.

Available to all hosts on a network connected to the Backbone is access to the Internet, through PREPnet (Pennsylvania Research and Economic Partnership Network) and PSCnet (Pittsburgh Supercomputing Center Network). The Internet is the huge collection of interconnected TCP/IP-based networks which includes ARPAnet, NSFNET, NYSERnet, SURAnet, and others. Internet connectivity has improved remarkably in the last several months. Both PREPnet and PSCnet are connected to the Internet at two places: the John von Neumann Supercomputing Center (JVNC) and the Pittsburgh Supercomputing Center (PSC).

Lehigh's PREPnet connection uses a very high-speed T1 phone line (1.5 megabit/second), giving very good response time and fast transfer rates to/from many Internet hosts. These connections are made through LUCC's Ethernet, but since that Ethernet is connected to the Backbone, transparent access is available to any host on a network connected to the Backbone.

A router located in each building routes and filters traffic between all connected networks. The router will keep all traffic on an Ethernet local to that Ethernet unless it is destined for a computer on another connected network. In the latter case, the first router will send the data over the Backbone network to the router attached to the destination network. That router will forward the data to the destination computer. If the data's destination is an external network connected to the Internet, the first router will send it to either the PREPnet or PSCnet router which will forward it through those networks toward its destination. Routers constantly pass updated routing information between each other using the Backbone network. They also provide an inter-network filtering capability, which prevents one network - which may have a device improperly broadcasting information - from polluting the Backbone and connected networks with bad packets; i.e., the routers will not forward the erroneous data.

Currently connected to the Backbone router in Fairchild-Martindale are the two Ethernet networks located in the Computing Center. One of these is in LUCC's Computer Room, and the other is in LUCC staff offices (see Figure 2). The staff Ethernet consists of microcomputers and workstations (such as a Sun 3/60 and an IBM RT). On the Computer Room Ethernet are the VAX 8530, the CYBER 180/850, the IBM 4381 (Network Server), and a Sun 3/50 workstation. Also on the Computer Room Ethernet are the routers which connect Lehigh to external TCP/IP networks (Internet).

The Packard Lab router connects the Mechanical Engineering (ME) Ethernet and the Computer Science and Electrical Engineering (CSEE) Ethernet. The ME Ethernet connects a VAX 8300, several MicroVAXes, and HP workstations. The

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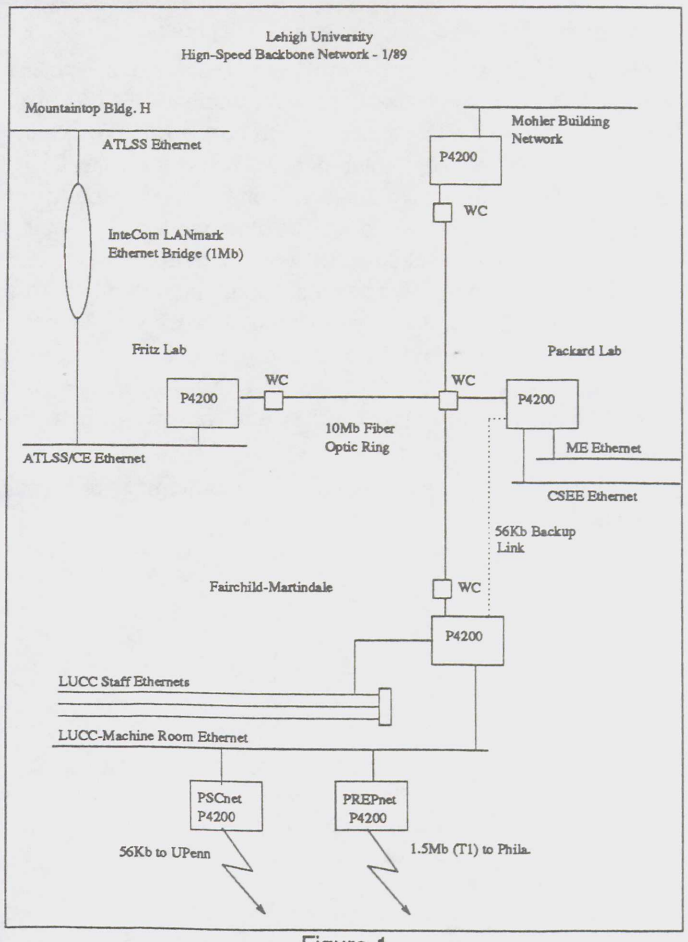

Figure 1

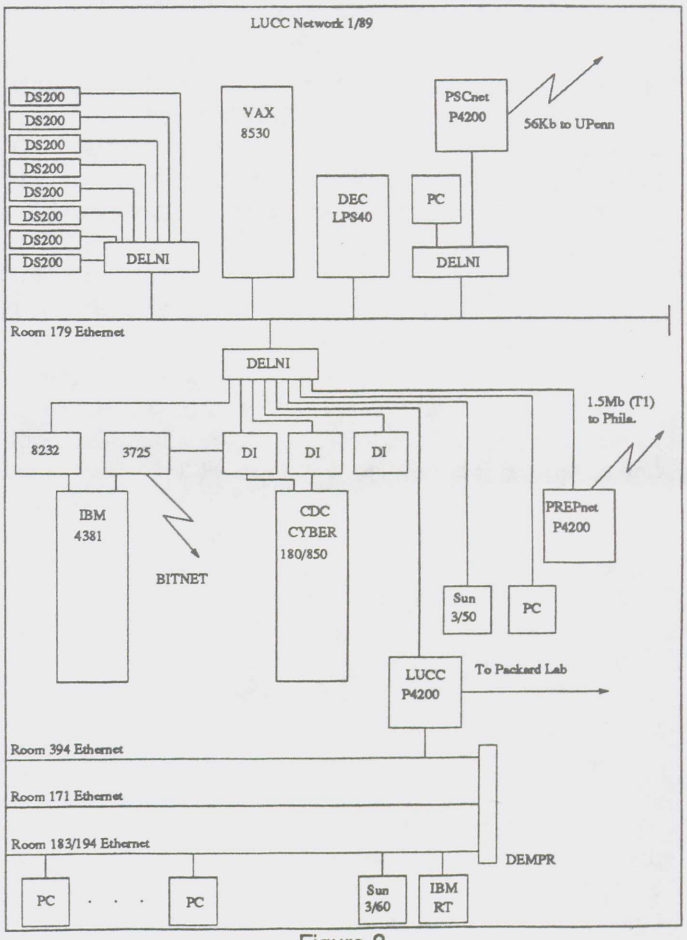

Figure 2

Legend for Network Diagrams

3725 - IBM Communication Controller
8232 - IBM Lan Channel Station (Ethernet)
BITNET - Because It's Time Network; 9.6Kb connections to Temple University, Franklin and Marshall, and Lafayette
CDC CYBER 180/850 - CDC1.CC.Lehigh.EDU, 128.180.2.6 (NOS/VE); CDC1N.CC.Lehigh.EDU, 128.180.2.7 (NOS); LEHICDC1 (BITNET)
DEC LPS40 - DEC PrintServer 40 PostScript printer
DELNI - DEC Ethernet 8 port transceiver multiplexor
DEMPR - DEC 8 port thinwire Ethernet repeater
DI - CDC Device Interface, 80 asynch ports, 2 synch ports, and TCP/IP
DS200 - DEC terminal server, 8 asynch ports each
IBM 4381 - IBM1.CC.Lehigh.EDU, 128.180.2.1; LEHIGH (BITNET); LEHIIBM1 (BITNET)
IBM RT - Benji.CC.Lehigh.EDU, 128.180.3.35
P4200 - Proteon P4200 IP Router
PREPnet - Pennsylvania Research Economic Partnership Network; 1.5Mb (T1) line to Bell of PA office in Philadelphia
PSCnet - Pittsburgh Supercomputing Center Network; 56Kb line to University of Pennsylvania
Room 183/194, Room 394, Room 171 Ethernets - staff Ethernet networks with various equipment running TCP/IP and Novell Netware
Sun 3/50 - Rover.CC.Lehigh.EDU, 128.180.2.9
Sun 3/60 - Spot.CC.Lehigh.EDU, 128.180.3.34
VAX 8530 - VAX1.CC.Lehigh.EDU, 128.180.2.5
WC - Wire Center

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CSEE Ethernet connects two AT&T 3B15's, several Sun and other UNIX-based workstations, and microcomputers.

Connected to the router in Fritz Lab is the ATLSS and Civil Engineering (CE) Ethernet. On this Ethernet are the Data General MV10000, several MicroVAXes, and microcomputers. Shortly, the CE network will be extended to include the ATLSS Ethernet in Mountaintop Building H, using the 1 megabit/second LANmark Ethernet connectivity of the InteCom switch.

Connected to the router in the Mohler Building is the MSE/IE fiber-optic network. On this network are numerous microcomputers and Sun workstations.

Many services are available over the Backbone. These include the common TCP/IP services such as remote login be-

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tween machines (TELNET) and high speed file transfer (FTP), as well as disk sharing protocols (NFS). Also available is electronic mail service (SMTP) between all connected machines on campus and any node on the Internet and BITNET. BITNET access is provided by a mail gateway running on the IBM 4381 (Network Server) located on LUCC's Ethernet. The IBM is both an Internet node and a BITNET node, and will transfer mail between the two networks. This gateway allows BITNET access to any computer on campus connected to the Backbone network.

LUCC is currently offering remote print and plot service to any connected network. At the present time, workstations on the CSEE Ethernet in Packard Lab are using the DEC PrintServer 40 PostScript printer and the IBM 3820 laser printer transparently, as if the workstations were directly connected to those printers. This is done via the same mechanism used to share the printers between LUCC machines, as described in the "Resource Sharing Using TCP/IP" article of the November 1988 issue of *Computing at Lehigh.*

Lehigh University has acquired the domain name Lehigh.EDU and the Class B network number 128.180. Any department wishing to connect its network to the Backbone network should register a sub-domain name with the Computing Center and receive a subnet number. Any department which is currently setting up a TCP/IP network and planning to connect to the Backbone network should register with LUCC and receive its departmental subnet number now. This way, the machines on the departmental network will not have to be reconfigured when the connection is actually made. It will also make it possible for LUCC to include the departmental network connection in the long range network plans.

To register a department domain or sub-domain, or to get more information on connecting to the Backbone network, send electronic mail to MM08@LEHIGH.BITNET or LUMM@VAX1.CC.Lehigh.EDU .♦

Using FTP

Daniel A. Schwartz (DAS1@LEHIGH)

What is FTP?

FTP is a program for transferring files between machines that are connected to the Internet (a collection of over 10,000 networked computers). FTP file transfers between local hosts (computers on-campus) can obtain transfer rates of over 100 kilobytes/second, but 5-20 kilobytes/second will be more common. As compared to a 1200 baud (120 characters/second) modem connection, or even a 9600 baud (about 1 kilobytes/second) modem line, this is a 5-fold to 1,000-fold increase in speed. For very large files, it is still faster to copy the files onto a magnetic tape, physically move the tape to the other system, and then copy the files from the tape. While FTP transfers with remote hosts (off-campus computers) can be nearly as fast as those with local hosts, they can also be much slower because of such factors as the distance between host computers (in the Internet topology) and the Internet load at that particular time. Often, transfer speed improves when it is an off-peak time for the remote computer (e.g., computers at California's Stanford University have less of a "load" on them before noon EST (9am PST)).

How Does One Use FTP?

First, one must log in to an account on one mainframe and then use FTP to connect to the other host. After the connection is made, the LOGIN command can be issued at the FTP prompt. [Note: Some FTP's will automatically prompt for a user name and password.] In the following example, FTP is used from a logged in VAX account to access a CYBER-NOS/VE account. (The "$" directly below is the VAX system prompt.)

```
$ FTP CDC1.CC.LEHIGH.EDU
```

FTP responds with

```
%FTP-I-ATTEMPTING, Attempting to connect to
      host CDC1.CC.LEHIGH.EDU
220 CDC1_CC_LEHIGH_EDU Server FTP {Version
      1.0.0} ready.
FTP>
```

at which point the command to log in to the CYBER account can be entered, as in the following example:

```
FTP> login ludas
```

FTP then prompts for the password of the CYBER account. Note that the password does not appear on the screen when it is entered.

```
331 User name received, need password.
Password:
230 User LUDAS   logged in.
```

Once connected to NOS/VE, files can be transferred between systems. A directory command displays files in the NOS/VE account.

```
FTP> dir

200 TYPE command okay.
200 PORT command successful.
150 Opening data connection for List
      (128.180.2.5,50102) ( 1709 bytes).
samples              96,870 bytes in 12 files
date_of_last_bull         0 bytes
hpgla                   622 bytes
hpglb                15,666 bytes
prolog                  996 bytes
scu_editor_prolog       114 bytes
                    .
                    .
226 Transfer complete.
%FTP-I-DATA_RATE, Transferred 1127 bytes in
    00:00:07.17 = 157 bytes/Second
```

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As an example, suppose one wants to copy the files HPGLA and HPGLB from the CYBER. These files contain HPGL data, which can be considered "binary"; to instruct the FTP program not to do any translation of the data during the transfer, issue the command **SET TYPE IMAGE**. (This is the appropriate FTP command on the VAX; many other versions of FTP use a command such as "set binary" or "set binary on".) The default, non-binary mode is called ASCII. The command **SET TYPE ASCII** would restore the FTP mode to ASCII.

```
FTP> set type image
```

```
200 TYPE command okay.
```

To copy the first file from the CYBER, issue the following command:

```
FTP> get hpgla
```

FTP will respond with the following:

```
200 PORT command successful.
150 Opening data connection for HPGLA
      (128.180.2.5,50103) ( 622 bytes).
226 Transfer complete.
    %FTP-I-DATA_RATE, Transferred 622 bytes in
                  00:00:01.41 = 441 bytes/Second
```

The command **SET HASH ON** (which is equivalent to the command "hash on" on many other systems) will cause a hash mark (#) to be displayed as each packet is transferred. This is very useful when transferring a large file (such as HPGLB) or transferring over a large distance, since the hash marks indicate that the transfer is still taking place.

```
FTP> set hash on
```

causes FTP to respond with

```
%FTP-I-HASH_SET, Hash display ON
```

at which point the command to copy the second file can be issued.

```
FTP> get hpglb
```

```
200 PORT command successful.
150 Opening data connection for HPGLB
      (128.180.2.5,50104) ( 15666 bytes).
      ###############
226 Transfer complete.
   %FTP-I-DATA_RATE, Transferred 15666 bytes in
                00:00:01.84 = 8514 bytes/Second
```

To turn off hashing, issue the command

```
FTP> set hash off
```

to which FTP will respond with

```
%FTP-I-HASH_SET, Hash display OFF
```

CD, the FTP command to change the current working directory, works similarly to the MS-DOS command of the same name. **CD ..** would change to the previous level of directory, while **CD SAMPLES** would change to the subdirectory SAMPLES.

```
FTP> cd samples
```

```
250 CWD command okay: current directory is
    "SAMPLES".
```

```
FTP> dir
```

```
200 TYPE command okay.
200 PORT command successful.
150 Opening data connection for List
    (128.180.2.5,55249) ( 901 bytes).
class_attributes              15,528 bytes
command_list                  33,351 bytes
      .
      .
      .
226 Transfer complete.
    %FTP-I-DATA_RATE, Transferred 504 bytes in
                00:00:01.21 = 416 bytes/Second
```

```
FTP> get command_list
```

Note the high transfer rate below. Eleven kilobytes/second is roughly equivalent to a baud rate of 110,000.

```
200 PORT command successful.
150 Opening data connection for COMMAND_LIST
      (128.180.2.5,55252) ( 33351 bytes).
226 Transfer complete.
   %FTP-I-DATA_RATE, Transferred 25671 bytes in
                00:00:02.31 = 11112 bytes/Second
```

Issue the FTP command **QUIT** to close the connection (and log off the CYBER), exit FTP, and return to the VAX system prompt.

```
FTP> quit
```

```
221 Goodbye.
$
```

Some other commands found in most implementations of FTP are:

PWD	Displays the current directory.
MGET	Multiple GET. Allows wild card GET's.
PUT	Sends a file. Opposite of GET.
MPUT	Multiple PUT.
INTERACTIVE	Toggles interactive prompting for each MGET or MPUT file.

One "feature" of VAX/VMS is that it will convert to uppercase any command line entries which are not enclosed in double quotes. Thus, any name (such as a user name, file name or directory name) which must be lowercase (as is common on UNIX systems) must be enclosed within double quotes. So, if a user attempts to log in to a machine that is case sensitive (such as one running UNIX), an invalid user name message will be received if he or she attempts to log in to a lowercase user name without placing that name in double quotes. For example, **LOGIN "anonymous"** would be needed to log in as the user *anonymous*.

What is an Anonymous Login?

Anonymous is a special user name, set up to allow users to get public files from a machine without having to know a secret password. LUCC has set up an Anonymous FTP ac-

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count (having the password GUEST) on the VAX, so that anyone can get a copy of some useful files that are stored there. One such file, HOSTS.LEH, consists of the list of Lehigh machines that are now connected to the Internet. Another file, HOSTS.TXT, is a list of some (about 5 to 10%) other hosts connected to the Internet. Below are some popular machines which allow anonymous FTP and contain directories of useful programs; the password is GUEST is each case.

topaz.rutgers.edu	Recipes; other items
uunet.uu.net	USENET archives
cunixc.cc.columbia.edu	Kermit, GNU

Listed below are the Internet addresses of local (Lehigh) machines, as well as the machines' local nicknames.

Computing Center
IBM1.CC.Lehigh.EDU, IBM1
VAX1.CC.Lehigh.EDU, VAX1 (VAX 8530)
CDCNET.CC.Lehigh.EDU
CDC1.CC.Lehigh.EDU, CDC1 (CYBER 850 - NOS/VE)
CDC1N.CC.Lehigh.EDU, CDC1N (CYBER 850 - NOS)
Rover.CC.Lehigh.EDU, Rover

Mechanical Engineering
KGLEAR.ME.Lehigh.EDU, KGLEAR
CAESAR.ME.Lehigh.EDU, CAESAR
Laurel.ME.Lehigh.EDU, LAUREL
Hardy.ME.Lehigh.EDU, HARDY

Computer Science and Electrical Engineering
SNOWY.CSEE.Lehigh.EDU, SNOWY
GRUMPY.CSEE.Lehigh.EDU, GRUMPY
HAPPY.CSEE.Lehigh.EDU, HAPPY
SNEEZY.CSEE.Lehigh.EDU, SNEEZY
DOPEY.CSEE.Lehigh.EDU, DOPEY
SLEEPY.CSEE.Lehigh.EDU, SLEEPY
SCARECROW.CSEE.Lehigh.EDU, SCARECROW
LION.CSEE.Lehigh.EDU, LION
TOTO.CSEE.Lehigh.EDU, TOTO
MUNCH1.CSEE.Lehigh.EDU, MUNCH1
MUNCH2.CSEE.Lehigh.EDU, MUNCH2
TINMAN.CSEE.Lehigh.EDU, TINMAN

ATLSS
ATMU.ATLSS.Lehigh.EDU, ATMU
ATGPX.ATLSS.Lehigh.EDU, ATGPX
ATPC1.ATLSS.Lehigh.EDU, ATPC1
ATPC2.ATLSS.Lehigh.EDU, ATPC2
ATPC3.ATLSS.Lehigh.EDU, ATPC3

Civil Engineering
MV10000.CE.Lehigh.EDU, MV10000
DS4200.CE.Lehigh.EDU, DS4200
ARCHQ.ATLSS.Lehigh.EDU, ARCHQ

(This list is [ANONYMOUS]HOSTS.LEH and was taken directly from the VAX on 12/15/88.)♦

Using TELNET

Daniel A. Schwartz (DAS1@LEHIGH)

What is TELNET?

TELNET is a program which allows users to log in to remote computers (usually connected via Internet) from local computers. The off-campus TELNET and FTP services at Lehigh were both initially funded by the National Science Foundation (NSF) to provide supercomputer access to the University. Initially, Lehigh was linked into the Internet via PSCnet (a regional network of NSFNET); however, due to many recent changes, as well as the creation of PREPnet, Lehigh now has faster and more reliable access to the Internet.

How Does One Use TELNET?

First, one must log in to a computer connected to Internet, such as LUCC's VAX 8530. In the following example, TELNET will be used to connect to LUCC's CYBER. However, as with FTP, connections may be established as easily with any computer (nationwide) connected to Internet. To start, one should enter the TELNET command, whose format is **TELNET hostname.domain**. For LUCC's CYBER-NOS/VE, the hostname is "CDC1" and the domain is "CC.LEHIGH.EDU". Thus, the command to connect to the CYBER is as follows (where $ is the VAX prompt, and / is the NOS/VE prompt):

```
$ TELNET CDC1.CC.LEHIGH.EDU
```

TELNET would respond with

```
%TELNET-I-TRYING,
Trying to connect to CDC1.CC.LEHIGH.EDU
%TELNET-S-OPEN,
Connection Opened to CDC1.cc.lehigh.EDU
```

after which time the normal NOS/VE prompt for a user name and password would appear, as follows:

```
Enter validation for service access.
User:
Password:
Family:
Welcome to the NOS/VE Software System.
Copyright Control Data 1983, 1988.
CYBER 850 Class SN316.   LU 850 NOS/VE 700
1988-12-21.   14:28:45.
Enter HELP_ME for help!
/
```

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After entering a valid user name and password, one would be logged into NOS/VE where one could then enter NOS/VE commands. [**Note:** Most versions of TELNET provide no terminal emulation, so full screen applications cannot be used with them.] To log out of NOS/VE, enter

```
/LOGOUT
```

after which TELNET will respond with

```
%TELNET-S-CLOSED,
Connection closed to CDC1.cc.lehigh.EDU
-TELNET-S-RETURNING,
Returning to VAX1.CC.Lehigh.Edu
$
```

Notice that when the TELNET connection is closed, control is returned to the machine from which the connection was established.

[**Note:** When using TELNET or FTP, one may be billed for usage on both machines as appropriate. For answers to any questions concerning these charges, contact User Services at extension 83990.]♦

General Interest

Consultant's Corner

Q and A

Question: When exiting WordPerfect 5.0, the cursor disappears from the screen. This seems to affect other software packages that I run after leaving WordPerfect. How can this problem be fixed?

Answer: Your release of WordPerfect 5.0 is probably dated October 7, 1988 or later. Packages released by the WordPerfect Corporation on or after October 7th have this bug. You can determine the date of your release either by issuing the DOS command **DIR *.EXE** from the directory containing your WP files, or by using the F3 (HELP) key from within WordPerfect. To fix this annoying bug, it is probably easiest to place the following command in your AUTOEXEC.BAT file:

```
SET WP = /F1
```

Note: WordPerfect can be used to edit the AUTOEXEC.BAT file, but remember to use the TEXT IN/OUT feature for retrieving and saving this file; *don't* save the AUTOEXEC.BAT file in WordPerfect format (i.e., don't save this file when exiting WordPerfect).

Question: I had been using Bitstream Fontware with WordPerfect 5.0 for the past few months. After I recently received a new release of WP and installed it on my hard drive, I could no longer select from within my documents any of the fonts that I produced a few months ago (with Bitstream). The softfont files are still in my downloadable font subdirectory. What has happened?

Answer: When you installed the new release of WordPerfect, one of the files that you copied onto your hard drive was a new version of WPRINT#.ALL (where # is a digit from 1 to 14); that WP file is for information about your printing device. If you also deleted the .PRS file for your printer during the new installation, then the problem would occur when you next selected your printer. When Bitstream Fontware produced those downloadable font files, it placed information concerning their availability in the WPRINT#.ALL file. At this point in time, you have two options. You can restore the previous WPRINT#.ALL file and your printer .PRS file from a backup made previous to your new installation of WordPerfect. Those two files will work with the release of the WordPerfect system files you recently installed. Alternatively, you must recreate (using the Bitstream Fontware package) all of the fonts that you need for your documents.

Question: How do I send Internet and BITNET mail from LUCC's VAX 8530?

Answer: Use the VAX's MAIL program just as you normally would, but specify your **TO:** address using the in% (Internet) qualifier. For example, to send mail to user *fred* on the Internet node B.PSC.EDU, you would specify the TO: address as follows:

```
in%"fred@B.PSC.EDU"
```

The double quotes (") are necessary because the @ (at sign) is normally an illegal character in VMS addresses.

To send mail to a BITNET node, use MAIL as above but append .BITNET to the end of the BITNET node name. For example, to send to user LUCC on the BITNET node LEHIGH, you would specify the TO: address as follows:

```
in%"LUCC@LEHIGH.BITNET"
```

Question: What is my Internet mailing address on LUCC's VAX 8530?

Answer: Since LUCC's VAX 8530 is connected to the Internet, your mailing address on that computer is your user

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name followed by @VAX1.CC.Lehigh.EDU. For example, if your user name on LUCC's VAX 8530 is UJDOE, your Internet address is: UJDOE@VAX1.CC.Lehigh.EDU

Question: When queuing files from the VAX to one of the printers, can I specify a range of pages to be printed? Oftentimes, there is no reason to print the entire file.

Answer: When queuing a PostScript file or an ASCII file to the PrintServer 40, the parameter PAGE_LIMIT can be added to the PRINT command to specify a range of pages to be printed. Some examples follow.

```
PRINT/QUEUE=POST TESTFILE.PS /PARAMETER="PAGE_LIMIT=(3,12)"
```

will cause the third through the twelfth pages of the PostScript file TESTFILE.PS to be printed. Note that those may not necessarily be the pages *numbered* 3 through 12.

```
PRINT/QUEUE=TEXT PROG1.FOR /PARAMETER="PAGE_LIMIT=7"
```

will cause the first through the seventh page of the ASCII file PROG1.FOR to be printed on the PrintServer 40.

```
PRINT/QUEUE=POST DOC3.PS /PARAMETER="PAGE_LIMIT=(5, )"
```

will cause the fifth through the last pages of the PostScript file DOC3.PS to be printed.

When queuing files to the line printer (which is the default printer, used when no QUEUE parameter is specified - or when /QUEUE=SYS$PRINT is specified), the /PAGES parameter can be added to specify a range of pages to be printed. Some examples follow.

```
PRINT NEWPROG.PAS /PAGES=(3,5)
```

will cause the third through the fifth pages of the ASCII file NEWPROG.PAS to be printed on the line printer.

```
PRINT NEWPROG.PAS /PAGES=(5,5)
```

will cause only the fifth page of the file NEWPROG.PAS to be printed on the line printer.

At present, there is no way to specify a range of pages when queuing a file to the IBM 3820 laser printer. For files formatted specifically for the Talaris laser printer - i.e., Scribe .TAL files - one must first run the VAX's LPAGE utility which will produce a file which one would subsequently submit to queue TALARIS (using the PRINT command). LPAGE will prompt for: the name of the file from which to extract pages (i.e., the Scribe output file), the name of a file to which to write the extracted pages, and the pages to extract. Specifying **2, 10-15, 48-** would instruct LPAGE to extract a copy of the second page, the tenth through the fifteenth pages, and the forty-eighth page through the last page. It is the LPAGE output file which would subsequently be submitted to the TALARIS queue using the PRINT command.

Question: Is there a way to remove a job from a VAX print queue before the job has been printed?

Answer: Yes. When a job is submitted to a print queue, it is automatically assigned an entry number by the system. To remove a job from the queue to which it was submitted, use the ENTRY parameter of VMS's DELETE command, as in the following example:

```
$ PRINT/QUEUE=TALARIS DOC2.TAL
Job DOC2 (queue TALARIS, entry 1341) pending
$ DELETE/ENTRY=1341 TALARIS
```

To determine the entry numbers of your print jobs, use the VMS command SHOW QUEUE. ♦

CCAC Highlights

The Computing Center Advisory Committee (CCAC) charter has been amended to require that CCAC meeting "highlights" be reported here, and that the full minutes be available on the Network Server. To access the minutes on the Network Server, type **IN CCAC** *at the LUNA main menu.*

Computing Center Advisory Committee Minutes: October 21, 1988

Members Present: D. Bader, T. Foley, J. Hall, W. Harris, C. Kraihanzel, R. Lawrence, C. Lidie, J.G. Lutz, M. Newman, R. O'Connor, W. Schiesser, K. Weiner, J. Williams.

It was reported that the CYBER disk drive was installed, that the disk drives for the Network Server were delivered and would be installed soon, and that new disk drives for the VAX were due to be delivered.

The CCAC was informed of the joint effort between LUCC and the Psychology Department to provide optical mark reader service. The machine will be used for test creation and grading in that department during the Fall semester, after which time the feasibility of extending the service to the rest of the campus will be considered.

The Network Server survey results were mentioned, after which a great deal of discussion about some of the attributes with which users were least satisfied took place. It was pointed out that users were most dissatisfied with response time.

After a discussion of new LUCC positions within the budget requests for next year, the CCAC endorsed the request for a new Software Librarian position. The Committee felt it would be difficult to recommend an Administrative Systems Programmer due to a lack of direct impact on user-related services.

A question as to whether any consideration was being given to require students to own a microcomputer was raised. It was pointed out that this question was raised three to four years ago, and that there then appeared to be strong feelings among the administration that there would be no such re-

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quirement. It was noted that many students are providing their own computers anyway.♦

Staff Changes

Lisa Sittler was recently promoted to Assistant Manager of the Microcomputer Store. Congratulations, Lisa!

Al Caruso joined the Microcomputer Store as a User Consultant for Sales. He received his B.S. in Electrical Engineering from Lehigh last June. Al's activities include the Institute of Electrical and Electronic Engineers, the Kappa Alpha Society, the Squash Club, the Ski Club, and other sports. Welcome, Al!♦

Computing at Lehigh Contribution Information

Computing at Lehigh encourages contributions for articles and *Consultant's Corner*.

We prefer that contributions either be submitted electronically via the Network Server to user BRBO, or be provided on a MS-DOS formatted 5.25 inch or 3.5 inch floppy disk. Contributions sent via the Network Server must be in ASCII format (i.e., be plain text). Acceptable MS-DOS document formats are:

- ASCII (not word-processed)
- EXP
- Freestyle
- WordStar
- WordPerfect

Printed copy is welcomed, but please also accompany the printed copy with the text in one of the above formats (especially for articles and other long contributions). All mailed contributions (whether on diskette or printed) should be sent to the following address:

Editor, *Computing at Lehigh*
194 Fairchild-Martindale #8b
Computing Center
Lehigh University
Bethlehem, PA 18015

Articles by users are included at the Computing Center's discretion. The Computing Center reserves the right to edit all contributions.

Article submissions should be completed by the 1st of even-numbered months. Be sure to include your name, mailing address, and phone number.

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