The Networking of North Texas

By Dave Molta, Director of Academic Computing (BITNET: MOLTA@UNTVAX)

The University of North Texas has long recognized the strategic importance of providing a state of the art data communications and networking infrastructure to the university community. Among the benefits of such a system are enhanced personal productivity, increased collaboration and cohesiveness, invigorated teaching and learning, and the provision of high quality student services. The development of sophisticated and highly functional communications systems is an ongoing focus of the university's Computing Center and requires a concerted effort of the central administration as well as academic departments and administrative offices. As the university celebrates its centennial year, the continued development of this system is among the most important information resource issues facing the institution. Our goal is to provide a computing environment that allows an individual to communicate, via a single network connection into their workstation, with departmental, university-wide, regional, national, and international information systems. It is our hope that this "networked campus" will greatly enhance the university's goal of achieving excellence in instruction, research, and service to the community.
**SERVICES AVAILABLE TO USERS OF THE UNT COMPUTING FACILITIES**

The UNT Computing Center is located in the Information Sciences Building (ISB), Room 119. Phone Numbers:
- **Computing Center:** (817) 565-2324
- **Help Desk:** (817) 565-4050
- **Micro Support:** (817) 565-2316, 565-2319
- **Graphics Lab:** (817) 565-3479
- **ISB 1/O Area:** (817) 565-3690
- **BA 1/O Area:** (817) 565-2350

All personnel listed below can be contacted either by calling the Computing Center or by sending them electronic mail on MUSICSP (ID-codes follow each name. All IDs are on BITNET node UNTMUSIC).

**Benchmarks - Claudia Lynch (ASC)**

**Information & ID-Codes; Disk Space Problems - Theresa Russell**

**Statistical/Research Support - George Morrow (ASC), Panu Sittiwong (AC09), Phamit Laosirirat (AC44)**

**Academic ADABAS/COM-PLETE - Cathy Hardy (AC55)**

**CRSP & COMPSTAT Problems - Panu Sittiwong (AC09), Phamit Laosirirat (AC44)**

**Student Programming Problems - CSCI Dept., GAB Room 550, BCIS Dept., BARoom 152**

**Problems with JCL, Passwords, or Operating Systems; or Communication/Terminal Problems - Help Desk**

**Data Entry; Test Scoring & Analysis - Betty Grise**

**Administrative Applications - Coy Hoggard**

**Printout Retrieval - ISB or BA 1/O Operators**

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**DIALING-UP UNT COMPUTERS OVER THE TELEPHONE**

Phone numbers for the Local Area Network (LAN) are:
- **300-2400 BAUD:** (817) 565-3300
- **300/1200 BAUD:** (817) 565-3499
- **300-9600 BAUD:** (817) 565-3461
- **300-9600 BAUD:** DF/METRO 429-6006, 429-9314

Area code 214 must dial 817 before the METRO #.

The numbers that accomodate multiple baud rates have an autobaud feature that requires you, once connection with the remote modem is made, to hit the RETURN key repeatedly so that the receiving modem can determine the appropriate baud rate. When you have established a communications link, the # prompt will appear on your screen and you can enter one of the following CALL commands to connect with the computer of your choice:

**CALL 8040** connects with the HIDS/8083 [supports line editing or PCWS]. Operating environments available are:
- MUSIC/SP.

**CALL 3270** connects with the HIDS/8083 through a 3270 protocol converter [supports full-screen editing]. Operating environments are: MUSIC/SP, VM/CMS, ADABAS/COM-PLETE

**CALL DEC** connects with the VAXcluster (VMS)

**CALL 780** connects with the Sequent (Unix)

**CALL 3000** connects with the Libraries HP-3000 (Bibliographic database)

**CALL 6800** connects with the NBI (Unix)

### Communications Settings

<table>
<thead>
<tr>
<th>LAN addresses</th>
<th>Data Bits</th>
<th>Parity</th>
<th>Stop Bits</th>
</tr>
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<tr>
<td>5000</td>
<td>8</td>
<td>N</td>
<td>1</td>
</tr>
<tr>
<td>8040, 3270, 780, 6800</td>
<td>7</td>
<td>E</td>
<td>1</td>
</tr>
</tbody>
</table>

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**HOURS FOR UNIVERSITY OF NORTH TEXAS COMPUTER ACCESS AREAS: Fall 1990**

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<thead>
<tr>
<th>Location</th>
<th>Days</th>
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<tr>
<td>Computing Center RJE</td>
<td>Sunday, Monday-Saturday</td>
<td>Noon-Midnight 7 a.m. Mon.-Midnight Sat. (Open 24 hours/day)</td>
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<tr>
<td>ISB 110 Terminal Area</td>
<td>Sunday, Monday-Thursday, Friday, Saturday</td>
<td>1 p.m. - Midnight</td>
</tr>
<tr>
<td>College of Business</td>
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</tr>
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<td>GAB 550C</td>
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</tr>
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<td>Graphics Lab</td>
<td>Sunday, Monday-Thursday, Friday, Saturday</td>
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</tr>
<tr>
<td>Willis Library</td>
<td>Sunday, Monday-Thursday, Friday, Saturday</td>
<td>1 p.m. - Midnight</td>
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</tbody>
</table>

*Hours may vary. Check MUSIC/VAX News and/or posted schedules for exceptions.*

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Our goal is to provide a computing environment that allows an individual to communicate, via a single network connection into their workstation, with departmental, university-wide, regional, national, and international information systems.

In the Beginning...

The development of networking at UNT closely parallels the evolution of computer systems and the trends towards distributed processing. During the 1960s and 1970s, most computing at UNT took place on a central mainframe system. The communications infrastructure needed to support such a system was initially quite minimal, since nearly all processing was batch oriented and no requirements for on-line terminal access existed. These needs began to change when, in 1974, the first video display terminals were added to the IBM 360/50 computer system. In 1976, a Hewlett Packard Model 2000 minicomputer was implemented, resulting in further needs for on-line terminal access. These terminal connections were initially provided via dedicated serial communications links. In 1980, a National Advanced Systems AS/5000 mainframe computer was purchased and the MUSIC operating system was acquired to provide interactive access for academic users. Still, communications capabilities were somewhat unsophisticated, consisting of hard-wired terminals running at 1200 bits per second and dial-up modems operating at 300 bits per second.

The Broadband

In 1982, the university embarked on a major upgrade of its computing and communications systems, including the installation of a campus wide broadband cable television system which was to serve as the backbone for campus data communications. Construction of the major portion of the broadband network was completed in 1983 and coincided with upgrades to the campus mainframes as well as the acquisition of three VAX 11/780 minicomputers for academic use. The broadband system, which currently consists of over 8 miles of truck cable and nearly 6,000 taps, carries a variety of data and video signals including asynchronous and synchronous traffic at speeds of up to 19,200 bits per second as well as high-speed traffic at a speed of 2 million bits per second.

Beyond the Broadband

While the broadband network proved to be a very reliable communications system, changes in computer technology led the university to reconsider the development of UNT's communications infrastructure. Participation in Novell's TTP led to even more rapid expansion of microcomputer networks on campus. At the same time, numerous academic departments and research groups began to acquire high-speed Unix computer systems which were, by their very
nature, networked devices. Since most networks were based on the IEEE 802.3 Ethernet network technology, it soon became apparent that in order to reap the full benefit of these systems, a high-speed backbone would need to be implemented.

Initially, the university considered using the broadband system as a conduit for an IEEE 802.3 10Base36 Ethernet system. This system, which would operate at a speed of 10 million bits per second, would have required the installation of high-speed radio frequency modems and bridges in each building that required a connection to the network. The cost was estimated to be approximately 8 to 10 thousand dollars per building. While the university was prepared to invest the necessary resources to provide this strategically important service, consideration was also given to alternative technologies. Specifically, significant attention was focused on fiber-optic communications technologies that would not only provide Ethernet connectivity at 10 million bits per second, but would also position the university to take advantage of ultra high-speed 100 million bit per second technologies that were just beginning to appear on the market. After careful consideration of the alternatives, a decision was made in late 1989 to install a fiber-optic communications system that would serve as a backbone communications system well into the 1990s and beyond.

A task force was designated and charged with the responsibility of developing a plan for a fiber-optic communications network. Among the design objectives for the new system were the criteria listed in the box above.

### Criteria for a Communications Network at UNT

1. The network should be "workstation-centric" and must compliment the computing needs of individual workstation users.
2. The network should be designed based on a peer-to-peer rather than master-slave relationship between workstations and multiuser host systems.
3. The network should be engineered in a manner that allows for dedicated connections between buildings on campus.
4. The network should be built using industry-standard software and hardware, wherever possible.
5. The network should be designed in a manner such that its overall reliability approaches that of the campus telephone system.
6. The network should be designed in a manner that assures flexibility with respect to future network hardware and software products.
7. The network should be designed as a platform for a campus-wide electronic mail system that is powerful, easy to use, and interfaceable to regional and national education and research networks.

Within each building, Ethernet networks were to be attached to the hub sites via fiber-optic transceivers from Cabletron Systems. While some buildings had existing thinwire Ethernet networks that would be attached to the backbone using Ethernet repeaters, the task force recommended the adoption of the IEEE 10BaseT Ethernet on unshielded twisted pair standard for all new installations. By September, 1990, two major buildings were equipped with 10BaseT Ethernet.
equipment from Cabletron Systems, and several more buildings were scheduled for installation during fall, 1990.

Phase I of the fiber-optic installation, which was scheduled to be completed by late September, 1990, includes the connection of 16 buildings serving the majority of computing-intensive departments on campus. All but one of the buildings are to be connected using the existing campus-wide conduit and steam tunnel system, resulting in significant cost savings. Including router ports, transceivers, cabling, and installation, the cost of the new backbone network was approximately $12,000 per building. Thus, for roughly 25% more per building than would have been the cost for broadband, we are able to install a fiber-based network that not only serves as an Ethernet backbone, but also provides for dedicated building-to-building Ethernets as well as a platform for future movement to FDDI technology.

It is expected that Phases 2 and 3 of this project will be completed by 1992, resulting in the connection of all major buildings to the campus backbone. By that time, we hope to be ready to implement FDDI connections between the hub sites as well as to certain select buildings that require very high-speed access. We also anticipate that increasing numbers of departmental users, perhaps as many as 2,000 by 1992, will be equipped with connections into this network.

Much work remains to be done in order to provide reliable and easy-to-use network services such as electronic mail, file transfer, and high-speed access to host computing systems. A pilot project is under way that links several departmental mail systems to each other, allowing for transparent exchange of messages, data files, and programs. A number of campus microcomputer labs have been imple-

If you had told me three months ago that I would be punching down telephone wiring blocks, making custom RJ45 telephone cables, and using a TDR and an oscilloscope to measure velocity of propagation of 25-pair telephone cable, I would have laughed in your face. "That's what the telecommunications people are for," I would have said after catching my breath. But during the month of August, I worked 60 and 70 hour weeks doing exactly that. As a network supervisor, I often forget that my job entails more than providing user support and managing network software.

Background

On August 6, 1990, the School of Community Service moved from Oak Street Hall into the newly-renovated Chilton Hall, along with the School of Human Resource Management, the Center for Instructional Services, the Media Library, and several other departments. Community Service, CIS, and the Media Library all had working networks to move into the new building, each with its own unique configuration; almost all of Community Service users were connecting through the campus broadband; CIS had both PC and Macintosh workstations; and the workstations in the Media Library were bridged off the LIBRARY server located in Willis Library. And each network in Chilton wanted to be interconnected within the building, in addition to adding Human Resources to the Community Service file server (SCS). This was simply not feasible with the previous hardware configuration that each network had.

The Plan

A little over a year ago, Computing Center and departmental representatives began deliberations on how to interconnect Chilton Hall. These representatives finally decided to wire the entire building for twisted-pair ethernet. This wiring scheme (the same as used for telecommunications) offered many benefits for networking: ease of installation (the building contractors would just run more "telephone wire" through the building), ease of use and maintenance (described below), and reliability. All parties agreed, the equipment was purchased, and installation began.

Continued on page 6.
From a workstation management point of view, I was pleased with what unshielded twisted-pair ethernet (UTP) had to offer. Unlike thin coax ethernet, UTP uses a star topology. Each workstation or file server in the network is connected individually to a central point (in our case a UTP “concentrator”), and that concentrator may in turn be connected to another concentrator, and so on. This is beneficial to network continuity. For example, if a user turns psycho and cuts the cable connecting his computer to the network, only his link to the network is severed. Unlike thin wire ethernet, the entire network would not go down.

Relocatability is also simplified with a star topology. In Chilton, each office has a data connection run from the office to a wiring closet. For those offices that have computers, this data line is patched into a concentrator. When people change offices (as happens often here), reconnecting them to the network is as simple as disconnecting the connection from their old office and connecting the new office to the concentrator. No network downtime; no hassle on the user’s part.

Trouble

So here comes the start of August; the building is complete, the basic network hardware has been installed; we should be able to move in, plug in to the network, and go. This is exactly what did not happen. Without going into the details of the difficulties we experienced, it was then, the second week of August, that I learned a little more about what my job as a network supervisor entails.

Once we realized that there was trouble somewhere within the building, a “Network SWAT Team” formed, consisting of Tom Newell (Telecommunications), Kevin Mullet and Mike Maner (Computing Center — Data Communications), Dave Molta (Academic Computing — Computing Center), Sue Pierce, Altaf Ali, and myself (Community Service), Jim Curry and Russell Smith (Micro Maintenance), and several representatives from Cabletron (the manufacturer of our network hardware). This team worked many long days and nights, including weekends, testing various portions of the network throughout the entire building. In trying to isolate the problem, we all became intimately familiar with UTP.

A Solution

Along the way, we discovered several problems. Jim Curry and Russell Smith encountered difficulties with the Cabletron interface cards and software drivers, for which Cabletron approved temporary fixes. We also found what we thought were inconsistencies with the new wiring in the building. Fortunately, the main obstacle was a particular brand of wire that was being used to make “cross-connects” in the wiring closets. Once this wire was replaced, the network came to life. We might have isolated this problem sooner had it not been for the ongoing construction in Chilton and for registration, which required Tom Newell and Mike Maner to spend a great deal of time at the Coliseum.

The same fixes implemented in Chilton have been put into effect in Matthews Hall, which has experienced the same difficulties that we experienced in Chilton.

Despite the initial difficulties we experienced in Chilton, the building network is now running smoothly. Both the users and the managers of the networks in Chilton have returned to a normal routine, virtually unaware of the new network wiring, except for the overall speed increase afforded by the use of twisted pair ethernet.
System Command Guide: A Handy Cross-Reference

Have you ever entered MS/DOS commands while you were working on MUSIC or MUSIC commands when you were on VAX/VMS? If so, then the table below is just for you. It originally appeared in the CCIT Newsletter, published by the University of Arizona/Tucson, but we found it in the State University of New York at Buffalo's Computing and Information Technology newsletter, Interface. We've added a column for MUSIC/SP and revised the other lists to reflect UNT's installation of these operating systems.

A Command Cross-Reference

<table>
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<tr>
<th>Description</th>
<th>VM/CMS</th>
<th>MUSIC/SP</th>
<th>VAX/VMS</th>
<th>Unix</th>
<th>MS/DOS</th>
</tr>
</thead>
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<tr>
<td>Set Search Path</td>
<td>link+access</td>
<td>N/A</td>
<td>define logical path</td>
<td>set path=</td>
<td>path</td>
</tr>
<tr>
<td>Set Terminal Type</td>
<td>terminal type</td>
<td>N/A</td>
<td>set term/inquire</td>
<td>setenv TERM</td>
<td>N/A</td>
</tr>
<tr>
<td>Set Terminal Chars</td>
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</tr>
<tr>
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<td>N/A</td>
<td>set password</td>
<td>passwd</td>
<td>setpass</td>
</tr>
<tr>
<td>Display date/time</td>
<td>query time</td>
<td>time</td>
<td>show time,time</td>
<td>date</td>
<td>time,date</td>
</tr>
<tr>
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<td>help</td>
<td>N/A</td>
<td>help</td>
<td>man</td>
<td>N/A</td>
</tr>
<tr>
<td>Online Tutorial</td>
<td>help/tasks</td>
<td>N/A</td>
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<td>learn</td>
<td>N/A</td>
</tr>
<tr>
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<td>w,who,finger</td>
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<td>type/page,more</td>
<td>cat</td>
<td>type</td>
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<td>browser</td>
<td>set protection</td>
<td>more</td>
<td>more</td>
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<td>Change File Protection</td>
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<td>copy</td>
<td>chmod</td>
<td>attrib</td>
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<tr>
<td>Copy Files</td>
<td>copyfile</td>
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<td>purge</td>
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<tr>
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<td>rename</td>
<td>mv</td>
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<tr>
<td>Rename Files</td>
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<td>prt</td>
<td>mv</td>
<td>rename</td>
</tr>
<tr>
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<td>search</td>
<td>lpr</td>
<td>print, print*</td>
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<td>sort</td>
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<td>N/A</td>
<td>N/A</td>
<td>pwd</td>
<td>cd</td>
</tr>
<tr>
<td>Make a Directory</td>
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<td>N/A</td>
<td>N/A</td>
<td>cd</td>
<td>cd</td>
</tr>
<tr>
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<td>N/A</td>
<td>N/A</td>
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<td>mkdir</td>
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<td>quota -v</td>
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<td>ps</td>
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<td>csh.sh</td>
<td>N/A</td>
</tr>
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<td>N/A</td>
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<td>command</td>
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<tr>
<td>Terminate a Program</td>
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<td>Submit Batch Job</td>
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<td>submit</td>
<td>N/A</td>
<td>debug</td>
</tr>
<tr>
<td>Receive a file</td>
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<td>rdrlist</td>
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<td>N/A</td>
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<td>N/A</td>
<td>set prompt=</td>
<td>set prompt=</td>
<td>prompt</td>
</tr>
</tbody>
</table>

*PCs attached to Novell networks only
This "Networking Bibliography," by Elliott Parker (EPLUFR@CMUVM) was posted to the September 21, 1990 issue of CCNEWS: An Electronic Forum for Campus Computing Newsletter Editors. We have taken the list, expanded it, and added documents available from the Computing Center at UNT. Some citations are incomplete, but should be sufficient to get a copy of the material.—ed.

- Accessing the SIMTEL20 Archives From BITNET. This is the essential guide to getting any of the thousands of programs and documentation from "Simtel20" for BITNET users. Send e-mail to LISTSERV@RPIECS and in the body, put GET PDGET HELP.


- "Internet BBSs." Benchmarks: The University of North Texas Computing Center Newsletter (October 1990, Vol.11, No. 7, pp. 11).

- "Networks Help" (UNT, 1990). A pieced together VMS help file on the existing networks. Available via anonymous FTP on vaxb.acs.unt.edu — the file name is NETWORKS.TXT. UNT VAX users can type HELP NETWORKS.


- Bowen, Charles and David Peyton. How to get the most out of CompuServe (4e, 1989).

- Bowers, K., et. al. Where To Start: a Bibliography of General Internetworking Information, (1990). (An excellent bibliography that includes standard printed material as well as online material and directions for subscribing to various regional network electronic newsletters. Send mail to SERVICE@NIC/DDN.MIL and in the subject line, put RFC 1175; also available via anonymous FTP from NIC.CERFNET (132.249.21.201) in directory confebnet/cerf_info. file whereto starvation.txt.)

*The Computer Phone Book: Directory Of Online Systems* (1986). Both are dated, but have nuggets of good information.


**Darwin Systems** is a list of IBM PC environment BBS’s updated monthly. It is available on many BBS’s around the country. On Simtel20 (WSMR-BIMTELARMY.MIL), it is found in /PD:MSDOS:BBSLISTS:USBBSXX.ZIP where XX is the number of the current version.

For example, send email to LISTSERV@NDSUVM1 and in the body type /PD:MSDOS:BBSLISTS:USBBSXX.ZIP. The server will send you the Aug 1990 listing (No. 755; check for the latest; how to check for the latest described in *Accessing the SIMTEL20 Archives From BITNET*). Besides NDSUVM1, LISTSERV@RPIECS will work.

Note this is a “ZIP” file. This means it is compressed and must be unzipped on your computer before it is readable using the PKUNZIP program. Check with the Computing Center (565-2324) if you have questions on this.

A “server” is a machine on the “other end” of your computer connection. It “serves up” particular files you ask for if you ask for them in the correct format. A server is strictly mechanical and there is no human to interpret what you really mean if it is different from the language the server requires. “Listserv” (without the final “e”) is a program that automates requests.


- Directory of Online Databases. (quarterly, Cuadra/elsevier) Expensive; check your local library.
- Dvorak, John C. and Nick Anis. *Dvorak’s Guide to PC Telecommunications* (1989). Good introduction to BBSs; comes with two disks of shareware; also includes coupons for specials on software and registration which will pay for the book.
- Gianone, Christine M. Using MS-Kermit: Connecting Your PC to the Electronic World (Digital Press, 1990). Essential if you use the Kermit communications program; an excellent example of good computer documentation.

GLOBAL is a document that has names and one-line descriptions of all discussion lists running as listserv on BITNET. Send e-mail to your nearest backbone listserv and in the body type GLOBAL. If you don’t know your nearest backbone site, try sending mail to LISTSERV@NDSUVM1 with LIST GLOBAL in the body. This file currently is about 2000 lines long.

- Glossbrenner, Alfred. *The Complete Handbook of Personal Computer Communications* (3e, 1989). A little dated, but excellent and almost a classic—if the virtual community is old enough to have classics.

**How to Look it Up Online** (1987).


Alfred Glossbrenner’s Master Guide to Free Software for IBMs and Compatible Computers (1988) This includes many special prices for joining various services.

Hedrick, Charles L. *Introduction to The Internet Protocols* (Rutgers, 1987). Available via anonymous FTP from CS.RUTGERS.EDU in the runet directory. The file is called TCPPRINTO.DOC (TCP-IP-INTRO.PS is the postscript version).

Howes, Byron C. *Internet Addressing*. (1986) (Send mail to LISTSERV@BROWNV, in body put GET INTERNET ADDRESNG HUMANIST.)


**Internet Resource Guide**, is a directory of information and research facilities available on The Internet. To get more information or subscribe, send an e-mail note to RESOURCE-GUIDE-REQUEST@NNSC.NSF.NET. This is also available via anonymous FTP on NNSC.NSF.NET.

Jones, Paul. What is The Internet, (1990) (Send mail to LISTSERV@BROWNV, in body put: GET INTERNET WHAT IS HUMANIST.)


Krol, G. *Hitchhiker’s Guide to The Internet* (University of Illinois, Urbana, 1989). (Send mail to SERVICE@NIC.DDN.MIL and in the subject line, type RFC 1118. Also available via anonymous FTP on the hosts NIC.DDN.MIL or SHCS.NET — filename: RFC1118.TXT) Somewhat technical, but a very good humorous introduction to the Internet.

LaQuey, Tracy. Users’ Directory of Computer Networks (1990 ed. is published by Digital Press. Parts of previous editions can be retrieved via FTP from emx.utexas.edu (128.83.1.33); the full 600+ pp. of the 1988 ed. can also be FTPed in six parts.)

**Making Connections**. Academic Computing Services document.


- Netnews. This is the independent guide to BITNET, edited by Christopher Condon. It is an electronic monthly magazine. To subscribe, send e-mail to LISTSERV@MARIST and in the body, type SUBSCRIBE NETMONTH Your_real-name, replacing Your_real-name by your name—not your userid or account name.

- Newirth, Erich. Short Guide to Networking and File Transmission. Very good explanation of file transfer, especially UUENCODE/UCODE. For a copy, send e-mail to LISTSERV@NDSUVMI (or RPIHEC) and in the body, type PPDGET PPDGET америка оказывает TRANSIG.STXT. This is an ASCII file, so you may have to tell your computer. On an IBM mainframe, you might have to translate just after TRANSIG.TXT, e.g., ">TRANSIG.TXT TRANSLATE.

- Spurgeon, Charles. Network Manager's Reading List: TCP/IP, UNIX, and Ethernet (1990). Send mail to NETINFO@EMX.UTEXAS.EDU and in the body, type SEND DOCS NETWORK-READING-LIST.TXT.
- Stanford Research Institute, List of Lists. This is the most complete list of discussion lists on Bitnet and the Internet. To get a copy, send mail to SERVICE@NIC.DDN.MIL and in the subject line put NETINFO INTEREST-GROUPS.TXT. This is a very large file and will be sent in several parts. Make sure your account has the space to receive it.
- This list is available on the Mailing-LISTS.DOC

- Updegrove, Daniel A. Electronic Mail and Networks: New Tools for Institutional Research and University Planning. (Send mail to LISTSERV@BITNIC; in body GET EMAILNET UPDEGRO.).

Talk About Student Government

This article originally appeared in the Open Channel newsletter (September 12, 1990) published by the Information Technology division of the University of Houston.

SGAnet, developed and put to use at Virginia Tech, is a global electronic mail network for student government organizations. SGAnet provides student governments with access to electronic mail discussions and a global directory of student governments.

With SGAnet, users can hook up with regional discussion groups (as in SGAnet-N for North America, -A for Asia and Australia, -E for Europe, and -S for South America).

Send an interactive message or mail to Listserv@VTVM1 to subscribe.
BBSs Available on the Internet

by Billy Barron, VAX/Unix Systems Manager (BILLY@VAXB.ACS.UNT.EDU)

Many BBS systems exist on the Internet and are accessible via TELNET. They vary greatly in functionality and amount of usage. Please keep in mind however that BBSs go up and down quite often so this list may quickly be obsolete. The TELNET command shown in this document must be executed on a system that is connected to the Internet (e.g. the VAXcluster here at UNT).

Quartz

Quartz is the largest and most successful of the Internet BBSs. It is run by Rutgers University and uses a BBS software package known as Citadel. Quartz has 100 different messaging areas on a wide variety of topics and also has a chat facility. To access it, do the following from the VAX/VMS system:

$ TELNET QUARTZ.RUTGERS.EDU
login: bbs
Terminal type [a la unix termcap]: vt100

Freenet

Freenet is a BBS for the City of Cleveland and is run by Case Western Reserve University. Freenet contains message bases and Internet mail among its services. To access Freenet, do the following:

$ TELNET FRENET-IN.A.CWRU.EDU

continued on page 15.

THE BITNET CONNECTION

By Philip Baczewski, BITNET INFORM (BITNET: AC120@UNTVM1)

This Column is a continuing feature of Benchmarks intended to present news and information on various aspects of the BITNET wide area network.

You May Already be a Winner...

I'm sure we've heard that one before. You know: the envelop with the famous guy's picture on it entices you to buy magazines lured by the promise of a one-in-five-hundred-thousand chance to win that ten million dollars. I invariably wind up with just the magazines and the bills for the subscriptions.

Whether or not we are enticed by millions, most of us maintain subscriptions to from one to many periodical publications. It might be a daily newspaper, a weekly news magazine, a monthly special-interest magazine, or a scholarly journal published quarterly. Just as the periodical publication is a primary mainstay of paper-based communication, it is also becoming more and more a part of the electronic realm.

The list of electronic magazines published and distributed via BITNET has grown from just a handful several years ago to around twenty today. Their number seems to grow by the month. What follows is a selected list of electronic magazines published on BITNET, together with a description of each and instructions on how to subscribe. The complete list can be found in the file, BITNET.SERVRES, which is publicly available on MUSIC, the VAX, and on CMS.

Athene

Athene is a free network "magazine" devoted to amateur fiction written by the members of the on-line community. Athene does not limit itself to any specific genre, but will publish quality short stories dealing with just about any interesting topic, including:

- science fiction
- fantasy
- religion
- mystery
- computers
- humor
- psychology
- sports
- politics
- business

To subscribe, mail a request to Jim McCabe, MCCA@MTUS5. Be sure to mention if you want it in ASCII or Postscript.

BioSphere Newsletter

BioSphere newsletter may be of interest for those of you concerned about the problems facing our environment. To get a subscription, send this command to LISTSERV@URVM: SUB BIOSPH-L your_full_name. Back issues of the magazine are available from the server UMNEWS@MAINE (on the MAGAZINE disk).
DISTED

The On-Line Journal of Distance Education and Communication Special Interest Group has two primary concerns: First, it is concerned with distance education as the organized method of reaching geographically disadvantaged learners. Second, the Journal is interested in projects concerned with overcoming cultural barriers through the use of electronic communication. To subscribe, send the this command to LISTSERV@UWAVM via mail or message: SUB DISTED your_full_name

International Intercultural Newsletter

XCULT-L is an international intercultural newsletter written by undergraduate and graduate students at Penn State University who are enrolled in Speech Communication 497B: Cross-cultural Communication. Each week, students write on a topic being discussed in class. Topics range from non-dominant cultures in the U.S. to corporate cultures to the use nonverbal communication in international communication. Participants who receive the newsletter are encouraged to join in the discussions or contribute their own topics and issues. You can subscribe to XCULT-L by sending the command SUB XCULT-L firstname lastname TO LISTSERV@PSUVM.

Mednews

Mednews is a weekly electronic newsletter. Regular columns consist of medical news summary from USA Today, Center For Disease Control MMWR, weekly AIDS Statistics from the CDC, plus other interesting medical news items. To subscribe, send the following command to LISTSERV@ASUACAD via mail or message: SUB MEDNEWS Your_Full_Name.

NetMonth

NetMonth is an on-line magazine featuring news, information, and opinion about BITNET. Inside each issue you will find features, columns, and regular departments covering a variety of network-related topics. The purpose of NetMonth is to inform the BITNET community while providing practical guidelines for getting the most out of the network. In order to subscribe, send the following command to LISTSERV @MARIST: SUB NETMONTH your_full_name.

Network Audio Bits

Network Audio Bits and Audio Software Review is an electronic audio magazine devoted primarily to Compact Disc and Vinyl LP Record reviews. Subscriptions are available by sending mail to MURPHY@MAINE. Back issues are available from UMNEWS@MAINE (EMAGS disk).

Postmodern Culture

Postmodern Culture is a peer-reviewed electronic journal
which provides an international and interdisciplinary forum for discussing contemporary literature, theory, and culture. It emphasizes open debate and intellectual engagement: readers may respond to essays and their comments will be made available to the authors and to other readers. Postmodern Culture does not promote any one definition of the term "postmodernism," nor does it advance any one framework for debate; on the contrary, it encourages critical and ideological diversity, solicits dissent, and invites the participation of those outside the usual boundaries of the discussion of postmodernism. For more information or a subscription, send mail to PMC@NCSUVM.

**The Public-Access Computer Systems Review**

An electronic journal, the Public-Access Computer Systems Review, has been established on the Public-Access Computer Systems Forum (PACS-L@UHUPVM). The PACS Review will cover all computer systems that libraries make available to their patrons, including CAI and ICAI programs, CD-ROM databases, expert systems, hypermedia systems, information delivery systems, local databases, on-line catalogs, remote end-user search systems, and other systems. To join the PACS Forum, send the following command to LISTSERV@UHUPVM: VIS mail or message: SUBSCRIBE PACS-L Your_full_name

**SCUP Newsletter**

SCUP is a newsletter for people interested in college and university planning. For a subscription send mail to SCUP@TUFTS.

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BBS' continued from page 12.

The first time you are on, log in as a visitor. Then apply for an account. You will later receive your account in the US mail.

**UNC**

The University of North Carolina has an Internet BBS. It has a message base, Usenet access, and Internet mail among its features. To access:

$ TELNET SAMBA.ACS.UNC.EDU
login: bbs

**The Mars Hotel**

The Mars Hotel is a BBS system at Mississippi State University. It has a nice user interface, message base, chat facility, mail, and file transfers. Unfortunately, response between UNT and the Mars Hotel typically is very slow. To use the Mars Hotel:

$ TELNET MARS.EE.MSSTATE.EDU
login: bbs

**Cseg BBS**

The CSEG BBS is run by the University of Arkansas. Its features include a message base, Internet Relay Chat (IRC), Usenet access, and Downloads. Be warned that network access from UNT to the University of Arkansas is very slow.

$ TELNET UAFCSEG.UARK.EDU
login: bbs

**Picayune**

Picayune is a BBS run by North Dakota State University. It has a message base and downloads available. Be warned that network access from UNT to NDSU is very slow.

$ TELNET STAR96.NODAK.EDU
Enter service class: 20

**Oulu Box**

The University of Oulu in Finland runs the Oulu Box BBS. It has a message base and file transfers. However, much of the material is in Finnish.

$ TELNET TOLSON.OUULU.FI
login: bbs
The Computing Center is offering the following short courses for the fall 1990 semester. Please pre-register to attend (a registration form can be found at the end of this issue). A maximum of 10 people will be admitted to each of the courses held in ISB 110. A maximum of 7 people will be admitted to each of the courses held in the Graphics Lab. A maximum of 8 people will be admitted to each of the courses held in ISB 123.

Please note: Faculty and students have first priority to register for these classes.

Mainframe Courses

1. Introduction to MUSIC/SP: Introductory sessions to MUSIC/SP will be held in Room 110 of the Science Library (ISB 110) on a bi-weekly basis. NO PRE-REGISTRATION IS REQUIRED FOR THESE COURSES. Consult the HELP DESK (565-4050) for a schedule of classes and/or to request a class on a specific day. All courses will be taught by Help Desk staff.

2. Introduction to IBM Job Control Language:
   A two-hour session to be held in the Academic Computing Conference Room (ISB 123):
   - Monday, October 15: 5:30-7:30 p.m. Instructor: Cathy Hardy

3. Introduction to SAS:
   Two separate three-hour sessions to be held in the Science Library (ISB 110):
   - Friday, October 5: 1:00-4:00 p.m. Instructor: Panu Sittiwong
   - Thursday, November 1: 2:00-5:00 p.m. Instructor: Panu Sittiwong

4. Introduction to SPSS-X:
   A two-hour session to be held in the Academic Computing Conference Room (ISB 123):

5. Introduction to CMS:
   Three two-hour sessions to be held in the Science Library (ISB 110). Additional courses may be scheduled through the HELP Desk, just as with the MUSIC/SP courses:
   - Tuesday, October 2: 3:00-5:00 p.m. Instructor: Philip Baczewski
   - Monday, October 8: 3:00-5:00 p.m. Instructor: Philip Baczewski
   - Monday, October 29: 5:30-7:30 p.m. Instructor: Cathy Hardy

6. Introduction to BITNET:
   A two-hour session to be held in the Academic Computing Conference Room (ISB 123):
   - Thursday, October 11: 3:00-5:00 p.m. Instructor: Philip Baczewski

Microcomputer Courses

1. Introduction to Microsoft Word:
   A two and 1/2 hour session to be held in the Graphics Lab (ISB 6):
   - Wednesday, October 17: 1:00-3:30 p.m. Instructor: Pro Systems Staff

2. Advanced Microsoft Word:
   A two and 1/2 hour sessions to be held in the Graphics Lab (ISB 6):
   - Friday, October 26: 1:00-3:30 p.m. Instructor: Pro Systems Staff

3. Introduction to Hypercard:
   A two and 1/2 hour session to be held in the Graphics Lab (ISB 6):
**General Information**

- Wednesday, October 3: 1:30-3:30 p.m. Instructor: Pro Systems Staff

4. **Introduction to WordPerfect 5.1:**
   - A three-hour session to be held in the Science Library (ISB 110):

5. **Introduction to Electronic Spread Sheets:**
   - A two-hour session to be held in the Science Library (ISB 110):
     - Tuesday, October 23: 3:00-5:00 p.m. Instructor: Staff

6. **Introduction to Procomm+:**
   - A one-hour session to be held in the Academic Computing Conference Room (ISB 123):
     - Monday, October 1: 1:00-2:00 p.m. Instructor: Staff

7. **Introduction to SAS PC:**
   - A three-hour session to be held in the Science Library (ISB 110):
     - Monday, October 22: 2:00-5:00 p.m. Instructor: Panu Sittiwong

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**BENCHMARKS FORUM**

BENCHMARKS FORUM is intended to serve as a vehicle for answering questions that may be of general interest to the user community. If you have a question, please send electronic mail to the BENCHMARKS editor (BITNET: AS04@UNTVM) or write it down and drop it by the Computing Center. We will try to answer it in the next issue.

**Question:** What is Anonymous FTP?

**Answer:** FTP stands for File Transfer Protocol. It is a system that works over the Internet to allow files to be shared. The military supports a massive MS-DOS database of information, data and programs, which are either shareware or public domain. Stanford University supports a similar system for the Macintosh. If you have Internet access (from the VAXcluster, for example), you can "FTP" to a site (such as WSMR.SIMTEL.ARMY.MIL), login as a user called "ANONYMOUS" — the password is "your local User-ID." You can then use commands to "GET" files. Thousands of files are available. WSMR.SIMTEL.ARMY.MIL is pretty busy, so you might try ARCHIVE.WUSTL.EDU — the files are kept on both systems.

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**Staff Activities**

- **Professional Activities:** Dave Molta, Director of Academic Computing Services, served as moderator for a seminar entitled Using TCP/IP for Interconnection at the NetWorld networking conference held at the Dallas Convention Center in September. In addition to the seminar, Molta presented a half-day tutorial, with David Boeshar of Syracuse University, entitled Networks in Higher Education. Molta was also chosen to be a member of the 1991 NetWorld Advisory Board.

- **New Employees:** We are happy to report that the following have come to work in the Computing Center since May:
  - Cheng (Grace) Chang — Part-Time, Help Desk
  - Federico Campos — Part-Time, Tape Librarian
  - Painal Bahram — Part-Time, Help Desk
  - Brian Divers — Part-Time, Microcomputer Support
  - Meng Long Wong — HRMIS Team
  - Cong Ong — Part-Time, I/O Consultant
  - Jana Crews — DB/CPST Team
  - Richard Baker — Part-Time, Graphies Lab
  - Arno Gouaux — Part-Time, VAX Operator
  - Tanya Anderson — Part-Time, Microcomputer Support
  - Mike Murdock — Voice Response Team
  - Michael Kelly — HRMIS Team
  - Betsy Mattucci — Data Entry Operator

- **Employee Departures:** Unfortunately, many of the above employees are here because of employee departures. The following people have left the Computing Center since May:
  - Smarom Komalavani — Help Desk
  - Kurt Grutzacher — Microcomputer Support
  - Teresa Reeves — Microcomputer Support
  - Jim Jones — Production Support Team

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**Benchmarks Reader/Feedback is encouraged. Send all letters, suggestions, etc, to AS04@UNTVM, FAX 817-565-4060 or to the BENCHMARKS Editor at:**

Academic Computing Services
University of North Texas
Computing Center
NT Station
Box 13485
Denton, Texas 76208
Connecting Microcomputers to Host Systems at UNT via Telephone

By Panu Sitiwong, Academic Computing Consultant

This is a revised version of an article, "Connecting Your Microcomputer to the Mainframe System at UNT Via Telephone," that appeared in the July/August 1989 issue of Benchmarks. An expanded version of this article exists as a handout called "Connecting PCs to Host Computers at UNT." It is available in the Computing Center main office (ISB 110).

One reason that you might buy a microcomputer is to use it as a smart terminal to connect to a host computer system at UNT (i.e. Vax, HDS 8083, or Unix host). By doing this, you can finish your projects from home. Using your microcomputer to connect to a UNT host is a good idea and is encouraged by the Computing Center. In order to take advantage of dialup facilities, it is necessary to understand some concepts of telecommunications. This article will present that information so you can connect your microcomputer to host systems at UNT.

Basic Requirements

Some specialized hardware and software is required before you can connect your microcomputer to a host. Since the connection will be done through the telephone system, you will need to equip your microcomputer with a modem. Currently, our system supports communication rates from 300 to 9600 baud. Therefore, you have wide range of choice concerning the modem you want to purchase. One consideration when purchasing a modem is whether or not a particular modem is compatible with a Hayes Smartmodem (a de facto standard for microcomputer modems). Caution has to be taken, however, since not all Hayes-compatible modems are 100% compatible. This may not be a serious problem depending upon your application.

If you buy an external modem, your microcomputer must be equipped with an Asynchronous Communication Interface (a serial port). Most microcomputers now on the market will have this port built in. If your microcomputer does not have this port, it is a good idea to buy a multifunction board which, in addition to providing a serial port, also provides a parallel printer port, memory expansion sockets, etc. Most asynchronous communication interfaces conform to a standard known as RS-232C and use a standard DB-25 plug for connection. An external modem, then, will connect to the serial port via a ribbon cable. Internal modems, on the other hand, have a serial port build in and do not require an additional serial port.

Software Requirements

In addition to the hardware requirements, you will need to acquire communications software. Currently, Academic Computing Services distributes three communication software packages—Procomm, PCWS, and MS-Kermit—to UNT faculty, staff and students free of charge. All three packages can be used with any IBM or IBM-compatible PC. Kermit is also available for Macintosh users. To obtain Procomm, PCWS, or MS-Kermit, you need to bring either a 5 1/4" 360k or 3 1/2" 720k diskette to the Computer lab located in room 110 of the Information Science Library. The diskette that will contain the software MUST be formatted and have no files on it. You will need one diskette for each software package. Kermit for the Macintosh can be obtained from room 110 in the Information Science Library. Again you will need to bring one 3 1/2" diskette.

Selecting the Appropriate Software

All the communications software available from Academic Computing Services are fully supported by the Academic Computing Staff and they can be used with all host systems at UNT. However, each package may be more suitable for one particular operating system and application.

- **Procomm:** Procomm can be used to communicate with all the host systems available at UNT. It is a package which provides a variety of functions which make it more user friendly. Some of those functions include automatic dialing, a dialing directory, and extensive support of script files. A disadvantage is its in-
ability to emulate a graphics terminal, which makes Procomm undesirable if you want to use SAS/GRAPH on VM/CMS or DISPLA on VAX/VMS.

- **MS-Kermit**: MS-Kermit can be used with all the host systems available at UNT via the dial-up lines. A major advantage of MS-Kermit is its ability to emulate a Tektronics 4010 Graphics terminal. This feature will allow you to look at the graphic output from either SAS/GRAPH or DISPLA on your terminal. Therefore, we recommend MS-Kermit if you plan to use these graphics applications at UNT. One disadvantage is that it does not support an extensive script language which may make it more difficult to customize your connection. To help ease this problem, Academic Computing Services distributes MS-Kermit along with appropriate script files for connecting to the HDS 8083 IBM-compatible mainframe and to the VAXcluster.

- **PCWS**: PCWS is a program which is designed specifically to be used with the MUSIC/SP operating system. Hence, it provides a variety of functions and commands which make it more user friendly in the MUSIC/SP environment. For example, file transfer to and from MUSIC/SP is done with a single MUSIC/SP command. Therefore, we recommend PCWS if you plan to connect to the MUSIC/SP operating system.

### Making Connections

Before you can connect to any of the host systems at UNT you need to configure the communications software as appropriate for particular host system you wish to use. The following table shows the essential parameters for each operating system based on the communication software.

#### Host Operating Systems at UNT

<table>
<thead>
<tr>
<th>Software</th>
<th>MUSIC via 8040</th>
<th>MUSIC, CMS via 3270</th>
<th>VAX HP-3000</th>
<th>NBI Sequent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procomm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Length</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>7^</td>
</tr>
<tr>
<td>Mwop Bits</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Parity</td>
<td>even</td>
<td>even</td>
<td>none</td>
<td>even^2</td>
</tr>
<tr>
<td>Flow Control</td>
<td>none</td>
<td>xon/xoff</td>
<td>xon/xoff</td>
<td>xon/xoff</td>
</tr>
<tr>
<td>Handshaking</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Kermit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td>even</td>
<td>even</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Flow Control</td>
<td>xon/xoff</td>
<td>xon/xoff</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Handshaking</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>PCWS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Length</td>
<td>8</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Stop Bits</td>
<td>1</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Parity</td>
<td>none</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

1^ Needs to be changed to 8 when uploading and downloading files to and from the host system.

2^ Needs to be changed to none when uploading and downloading files to and from the host system.

After the above parameters are set to the appropriate values, you will also need to set the baud rate to correspond to your modem speed. Now you are in position to make the connection to the system you want by dialing the appropriate number. All the dial-up numbers, both local Denton numbers and the Metro numbers are provided below.

**Local Denton Numbers:**
- 300/1200 BAUD (817) 565-3499
- 300/2400 BAUD (817) 565-3300^1
- 300/9600 BAUD (817) 565-3461^2

**DFW METRO Numbers:**
- 300-9600 BAUD 429-6006,
- 429-8931

Area code 214 must dial 817 before the METRO number.

When the telephone connection is established, you can connect to the Local Area Network (LAN). You will need to press the "Enter" key several times in order to have the modem on the LAN determine your modem speed. When the matching speed is established you will receive a # sign on your screen. You are then connected to the LAN at UNT. At this point, enter one of the following CALL commands to connect with the computer of your choice.

CALL 8040 connects with the HDS/8083 (supports line editing or PCWS). Only the MUSIC/SP Operating system is available.

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1^ These modems also support the mnp class 5 protocol.

2^ 9600 BAUD can be achieved only if you use a US Robotics 9600 BAUD Courier HST modem.
CALL 3270 connects with the HDS/8083 through a 3270 protocol converter (supports full-screen editing). Operating systems include MUSIC/SP, VM/CMS, COMPLETE.

CALL DEC connects with the VAX.

CALL 3000 connects with the Libraries' On-line Bibliographic data base.

CALL 780 connects with the Sequent (UNIX).

CALL 6800 connects with the NBI (UNIX).

After the session is established, you will follow the normal procedure to log-on to the system of your choice.

File Transfer Between Your PC and the Host System.

One advantage of using your PC to connect to the hosts at UNT is its ability to exchange files between the two. This means that you can develop your program using text processing on your PC and uploaded it to the host for execution. The following steps show how you can upload—take a copy of your file from the PC to the host—and download—take a copy of your file from host to your PC.

Information presented in this section will cover only MUSIC/SP, VM/CMS on the HDS-8083 and VMS on the VAXcluster. The SEQUENT and the NBI are administered by Computer Sciences Department. Hence, questions concerning file transfers on those systems should be directed to Computer Sciences Department.

- Uploading Files:3 The following tables show all the commands for uploading a file from your PC to the Host system. All the commands you entering are in lower-case italic while the system prompts are in BOLD UPPERCASE. Tables are organized by the type of software and the host system you are using.

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### PC to Host File Transfer — Uploading

<table>
<thead>
<tr>
<th>Host System</th>
<th>Procomm</th>
<th>MS-Kermit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSIC/SP</td>
<td>*GO&lt;br&gt;<code>kermit</code>&lt;br&gt;<code>KERMIT-MUSIC&gt;</code>&lt;br&gt;<code>receive</code>&lt;br&gt;<code>KERMIT-MUSIC&gt;</code>&lt;br&gt;Press the <code>&lt;PageUp&gt;</code> Key on the Key board and select KERMIT from the menu. Procomm will prompt you to enter the name of the file that you want to upload. Enter the file name and press <code>&lt;ENTER&gt;</code>. Procomm will show the File Transfer Status screen. After the file transfer is done, you will get back to the KERMIT-MUSIC&gt; Prompt. Type <code>exit</code> to return to MUSIC *GO mode.</td>
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PC to Host File Transfer — Uploading

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<td>KERMIT-32&gt; exit $</td>
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• Downloading Files: The tables on the following pages show all the commands for downloading a file from your PC to the Host system. All the commands you enter are in lower-case italic while the system prompts are in BOLD UPPERCASE. Tables are organized by the type of software and the host system you are using.

4Note that the MUSIC/SP command XTPC filename can be used if you are using PCWS.

Tables Continued on page 20 & 21

AppleSEED Project Fair Scheduled

AppleSEED (Society to Exchange Exciting Discoveries) is an association of academic and industrial users. A Project Fair Seminar for AppleSEED is being hosted by Apple Computer Inc. on October 23, 1990 at the Infomart, Dallas, Tx. The fair will consist of short presentations from over 15 guest speakers on various projects using Apple products. You will have the opportunity to visit with each presenter and learn more about their projects. To register, and for more information, contact Jennifer Hayes, Apple Computer, Inc., 12770 Merit Drive, Suite 1000, Dallas, Texas 75251 (214/770/4827-HAYES2). There is a $25 registration fee, payable at the door.

This column is intended to serve as a forum for sharing useful tips on making more productive use of microcomputers. If you have a tip that you feel may be of use to campus users, submit it to the Benchmarks editor for possible inclusion in a future issue.

Transferring Data Overseas

This is modified from an article, "Transferring Data Overseas" that appeared in the "Ask Dr. Micro" column of the September 1990 issue of the Berkeley Computing Bulletin (Volume 3, Number 9).

Question: I want to exchange data with a colleague overseas who also has a personal computer. Is there any alternative to mailing floppy disks back and forth?

Answer: It may very well be possible to exchange data more directly. You asked a short question. Unfortunately, I'll have to give you a long answer. Agreeing beforehand with your colleague on procedures can save everyone a great deal of aggravation.

Is your software compatible? The data or program files you send must be in a usable form for the destination...
machine. If you send data that is in a non-text or binary format, the person on the other end needs to have the program you are using (or a program that reads that specific file format) to view or print your data. A common mistake is to send spreadsheet files to someone who does not have the same spreadsheet program. If you do the same programs, check the version numbers and whether the versions produce compatible files.

Find a common data format. If you are not using the same software package, check to see if your programs will read a common data file format. For example, most PC spreadsheet programs can read Lotus 1-2-3 spreadsheet files, and most Macintosh word processing programs can read MacWrite document files. Also, nearly all applications have some way of writing an ASCII or plain text file. Using plain text files means that formatting of text, such as font changes, is lost. Formatting is probably not useful for raw data files, but might be crucial for a final review of a publication. Before shipping an ASCII database or spreadsheet file, ask the receiver if fields should be separated by tabs, commas, spaces, or some other specific character.

Electronic transfer. It is possible to exchange files directly with many parts of the world from the UNT campus. Although this can be done with modems and phone calls between machines, it is probably simpler and less expensive to use the campus network and its connection to other networks. The UNT campus is connected to networks that are linked to universities in many parts of the world. If you and your colleague are at sites connected to the BITNET or Internet networks, you can move your files quickly via electronic mail. More direct file transfer over the networks may be possible, but electronic mail is the most common way to get files to far-flung personal computers.

Both you and your remote colleague need electronic mail accounts. At UNT, the Wide Area Network (WAN)

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## PC to Host File Transfer — Downloading

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Press the <PageDown> Key on the Keyboard and select KERMIT from the menu. Procomm will show the File Transfer Status screen. After the file transfer is done, you will get back to the KERMIT-32> Prompt. Type exit to return to the VAX/VMS S prompt.

Press <X> while holding down the <ALT> Key on the Keyboard.

MS-KERMIT> receive

MS-Kermit will show the File Transfer Status screen. After the file transfer is done, you will get back to the KERMIT-32> Prompt. Type connect to return to VAX Kermit.

KERMIT-32> exit $

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Electronic mail software runs on campus host systems, rather than directly on your personal computer. You will both need ways to move files between your personal computers and the VAX/VMS, MUSIC, or CMS systems.

### Creating files for electronic mail.

Files must be in plain text form for electronic mail over BITNET or the Internet, or they may become garbled in transmission. Binary files also can be sent, but they need to be encoded first. There are limitations on the size of files that can be mailed through some mail connections. Break down large files into pieces smaller than 100 kilobytes (KB) before mailing.

If you are sending ASCII text files, put them into a reasonable form yourself. Mailing will be most reliable if you create files with hard returns and line lengths no longer than 80 characters.

Programs that encode binary files will do this automatically.

### Preparing binary files on your Macintosh for sending via electronic mail.

For the Macintosh, the BinHex format is commonly used to encode binary files in ASCII form for mailing. Freely distributable programs, such as Stuffit or BinHex 4.0, can be used to convert your files to this format. These same programs are used on the receiving end to convert the files back to usable form. Stuffit and BinHex 4.0 are available in the Computing Center Graphics Lab (ISB 6).

### Preparing binary files on your DOS PC for sending via electronic mail.

For MS-Dos and PC-Dos machines, there are freely distributable programs that use the "unencode" format to translate binary files to an ASCII form that can be sent via electronic mail. The same program, or sometimes a separate "udecode" program, is run on the destination PC to convert the files back to a usable form. XXENCEDE, which performs both of these functions, is available from the BBS on the VAXcluster in the IBM Utility area.

### Mailing the file.

In order to mail a file via BITNET or the Internet, you will need to move the file to your host account using a file transfer program such as Procomm, Kermit, or ftp. You can make additional changes to the format of plain text files on the mainframe, but don't change encoded files.

Encoded files consist only of printable characters, but contain no information that makes the recognizable to people. When you send encoded binary files, include a header that indicates exactly what is being sent, but clearly delineates the header from the file itself. A standard way to do this is to put lines such as the following before the file:

```
The following Microsoft Word 4.0 file was encoded in BinHex 4.0 format using Stuffit
```

Mailing files from CMS. To mail an encoded file from CMS it is preferable to use the MAIL command. (The SENDFILE command may alter the file in a way that will make it impossible to decode.) The command MAIL <dest file> (FILE <CMS filename>) will invoke the mail program and include the specified CMS file as the mail test. PFS will send the message. Type HELP MAIL for more information.

Mailing files from VAX/VMS. To mail a file from VMS, type MAIL and then, at the MAIL> prompt, type SEND and the file name.

Mailing files from MUSIC/SP. To mail an encoded file from MUSIC, type MAIL and proceed as you normally would to send a message, however put the name of the encoded file in the "input file" field. Continue sending your mail in the usual manner.

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Mailing files from UNIX. On UNIX, use the mail command to send your file. You can add comments and files to a message by using ~ or ~ commands within mail. For explanations of these commands, type ~? at the start of a line while entering your mail message.

Receiving files. On the receiving end, the file is delivered as electronic mail to the recipient’s electronic mail account. The headers should be deleted before an encoded file is downloaded to a personal computer from a mail account on a mainframe. The recipient then runs the corresponding decoding program in the personal computer.

Caveat. The most common encoding programs produce files that can be sent reliably over the Internet but may become garbled in some parts of BITNET. If you experience difficulty transferring files in this way, contact Academic Computing Services (565-2324).

This may sound complicated, but it allows for very fast and reliable transfer of files with formatting intact to many places in the world.

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**Computer Trojans and Viruses in the ’90s**

The following viruses have been reported on campus or have been circulating throughout the country in 1990, so be on the lookout... Virus detection, eradication, and protection software is available from a variety of sources, including the UNT BBS (on the VAXcluster), the ISB 110 Lab and the Graphics Lab. Practice safe computing. Make frequent backups, especially BEFORE you install new software (even if it is shrink-wrapped).

- **AIDS Information Virus** (DOS): purports to contain information about aids. If you see a diskette with a flyer describing it as “AIDS Information — an Introductory Diskette” and stating it is from PC Cyborg Corporation, don’t use it. When it is installed with the INSTALL program that comes with it, an invoice will print out. After that, the system will self-destruct whenever it is rebooted from the hard disk.

- **Disk Killer Virus** (DOS): infects the boot sectors of floppy diskettes and hard disks, corrupts data files, and ruins overlay files. Both Norton Utilities and McAfee Associates SCAN detect this virus. McAfee Associates also distribute a disinfecter for DOS computers called “MDISK” which effectively eradicates the Disk Killer.

- **Turkey Trojan** (VAX/VMS, UNIX/ULTRIX): was released onto the Internet during the first part of 1990. It is a command file that claims to draw a turkey if executed. However, once activated, it deletes all unprotected files.

- **SCAN.EXE (Version 65)** (DOS): is NOT a version of John McAfee’s PC Anti-virus. It is a destructive Trojan horse program. Do not run this!

- **Stonel Virus** (DOS): attacks the Partition Table on DOS microcomputers. It is detectable with the latest versions of SCANRES and CLEAN.

- **WDEF Virus** (MAC): comes in two flavors, “A” and “B.” It infects Macintosh microcomputers and can be detected with Gatekeeper and Gatekeeper Aid virus detection and eradication software.

- **ZUC (Zucchin) Virus** (MAC): is named after the Italian programmer who discovered it (Don Zucchin). It does not infect system or data files, only applications (whether running or not). About 90 seconds after an infected application is started, the cursor begins to behave erratically — moving diagonally across the screen, changing directions, and bouncing like a billiard ball when it touches the edge of the screen. The cursor stops moving when the mouse button is released. Except for this unusual cursor behavior, ZUC does no damage.

VirusDetective 4.0 detects ZUC and Disinfectant 1.7 locates and eradicates it. Vaccine is not effective against it, although Gatekeeper 1.11.1 is.

Some of the information in this article came from “Computer Viruses Reported During Winter-Spring 1990,” by Ivars Balkis (BITNET: IBALKITS@UCDAVIS). It was published in the Summer 1990 issue of Turn-Around Times, a University of California at Davis Computing Services publication.

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**Interview with Cliff Stoll to be Broadcast on PBS**

According to KERA/KDNT Dial Magazine, “The KGB, the Computer and Me,” an interview with Clifford Stoll, will be the subject of a NOVA broadcast on Channel 13 three times during October:

- Tuesday, October 2 at 8 p.m.
- Friday, October 5 at 2 p.m.
- Monday, October 8 at 11 p.m.

Computer Sales Held Monthly

By Kevin Mullet, Communications Consultant (BITNET:SNMS4@UNTVAAX)

Almost everyone has heard of the midnight computer sale held once a month in Dallas, but not very many people seem to know offhand where it is. I just found out about two such periodic events, so here's the info. I thought you all might be interested.

The 75 & Ross Ave Sale

Beginning at midnight, on the Friday before the 1st Saturday of each month, there's a outdoor sale by the overpass at 75 & Ross Ave. My source tells me it's best to get there at midnight with a flashlight. Other sources tell me that the midnight stuff is occasionally, well, slightly warm. This affair started out as a salvage sale for amateur radio enthusiasts, and gravitated toward computers. You may be able find both kinds of items there. The vendors range from a person who has one thing to unload... uh... sell to mom & pop electronic shops.

The Infomart Sale

Usually held on the 2nd Saturday of each month in the underground parking garage at Infomart, the vendors at this sale are companies rather than individuals. Sometimes it gets bumped to a different date. Call first to make sure. It usually lasts from about 9:00 a.m. to 1:00 or 2:00 p.m. As with the Ross Ave sale, best pickin's to those who arrive early.

Computer Terminology: Real World Definitions

Reprinted from the Clemson University Computing Center publication, DICT Update (January 1990).

- Advanced User: A person who has managed to remove a computer from its packing materials.
- Power User: A person who has mastered the brightness and contrast controls on any computer monitor.
- American-Made: Assembled in America from parts made abroad.
- Alpha Test Version: Too buggy to be released to the paying public.
- Beta Test Version: Still too buggy to be released.
- Release Version: Alternate pronunciation of “beta test version.”
- Sales Manager: Last week’s new sales associate.
- Consultant: A former sales associate who has mastered at least one-tenth of the dBase III Plus manual.
- Systems Integrator: A former consultant who understands the term AUTOEXEC.BAT.
- AUTOEXEC.BAT: A sturdy aluminum or wooden shaft used to coax AT hard disks into performing properly.
- Backup: The duplicate copy of crucial data that no one bothered to make; used only in an abstract sense.
- Clone: One of the many advanced-technology computers IBM is beginning to wish it had built.
- Convertible: Transformable from a second-rate computer to a first-rate doorstep or paperweight (Lexical note: replaces the term “junior.”).
- Copy Protection: A clever method of preventing incompetent pirates from stealing software and legitimate customers from using it.
- Database Manager: A program that allows users to manipulate data in every conceivable way except the absolutely essential way they conceive of the day after entering 20M of raw information.
- EMS: Emergency medical service; often summoned in cases of apoplexy induced by attempts to understand extended, expanded or enhanced memory specifications.
- Encryption: A powerful algorithmic encoding technique employed in the creation of computer manuals.
- FCC-Certified: Guaranteed not to interfere with radio or television reception until you add the cable that is required to make it work.
- Hard Disk: A device that allows users to delete vast quantities of data with simple mnemonic commands.
- Integrated Software: A single product that deftly performs hundreds of functions the user never needs and awkwardly performs the half-dozen he uses constantly.
- Laptop: Smaller and lighter than the average breadbox.

Continued on page 28.
VAX System News

Computer Sciences Department Unix Support

Any questions regarding the Computer Sciences Department Unix machines (Sequent and NBI) should be directed to the Computer Sciences Department new Technical Support telephone number. The number is 565-4498.

Research VAX Deinstalled, CS Node Names Change

The Research VAX was powered off permanently on Monday, September 24th and the Sequent was moved into the Research VAX room (550F) on Tuesday, September 25th. The node name DEPT.CSCI.UNT.EDU was switched from the Research VAX to the Sequent. The official node name of the Sequent, then, switched from SEQUENT.CSCI.UNT.EDU to PONDER.CSCI.UNT.EDU. The previous node names for both the Research VAX and the Sequent have been aliased for backwards compatibility. Also, Call 780 on the Sytek LAN now connects to the Sequent.

New FINDHOST Qualifier

FINDHOST now has a /DOMAIN qualifier which returns domain names for the Internet. See HELP FINDHOST/DOMAIN for more information.

HELP NETWORKS Expanded

The NETWORKS help topic has been expanded. Many new networks and countries are listed.

The Best of the BBS

Edited by Mark Thacker, VAX Programmer/Operator (Mark@UNTVAX)

September 1990

Welcome to the Best of the BBS column. This column highlights some of the more interesting and useful discussions on the UNT BBS. For those of you not familiar with the BBS, here is how to log into the UNT BBS:

- Sign-on by typing CALL DEC at the LAN prompt and then entering BBS as your Username at the VAX prompt.
- If you are already logged on to the VAXcluster, type BBS at the $ prompt.

The opinions expressed in this column do not necessarily reflect the views of Academic Computing Services or the Computing Center. Also, information in Best of the BBS has not been checked for accuracy.

BBS New Direction

From: Mark Thacker - VAX Operator/Programmer, "Best of the BBS" Compiler

Many of you may notice that month's column is longer than normal. In fact, "Best of the BBS" was not even in the last issue of Benchmarks. The truth is that since the BBS was restarted some time back, the posts have been of a more useful nature. Messages are cleaner, more concise, and more pertinent to the subject of the message boards.

I just wanted to thank everyone who uses the BBS for sticking through some rough times and supporting the new life of the BBS. I am sure that we will see the BBS continue in its new direction in the future with everyone’s continued support.

Kermit for Amiga

#165

Subject: Kermit protocol

This BBS apparently only supports kermit for a file-transfer protocol. I have never heard of it. Does anybody know of (or have, for that matter) a term prog for the Amiga that supports kermit? I would prefer something PD or shareware, but that might be wishful thinking. Any help in this department would be greatly appreciated.
#174  Reply to #165 29-AUG-1990
20:50:40.85
Subject: RE: Kermit protocol
Hi Mark, You can get C-kermit for the Amiga off of this bulletin board by doing an ascii download of the files ckiker.bo0 and ctkkoo.bas, ctkiker.bo0 is an encoded version of C-kermit for the Amiga. ctkkoo.bas is a basic program that will turn the ascii version into an executable. It would probably be easier to just get a disk with the programs on it. There are several nice public domain and shareware programs that include kermit.

#184  Reply to #171 30-AUG-1990
08:29:29.59
Subject: RE: Kermit protocol
You are right that Dr. Phillip Baczewski is the right person to talk to. Actually though, he is not in charge of Academic Computing Services. He is the Academic Mainframe User Support Manager and a heck of a nice guy too... :) The phone number to reach him is 565-2324.

Prodigy's Latest Denton Phone Number
#312  9-SEP-1990 02:32:32.12
Subject: Prodigy
Prodigy now has a number for Denton it is 565-0552, however you need the latest version 3.1 to hook up to it.

Anonymous FTP Into the BBS?
#12  12-JUL-1990 19:47:42.05
Subject: Can you ftp software for the bbs?
Hi, I was kind of curious about something. I have some software that I would upload but it takes so long to do under Kermit. Most of the stuff I got via ftp so it seems to me that you could just anonymous ftp it yourself into the appropriate directory instead of me uploading it to the bbs. I don't see why this would be a problem and it would save a great deal of time.

Just an idea
#13  Reply to #12  13-JUL-1990
09:57:01.27
Subject: RE: Can you ftp software for the bbs?
I do not allow anonymous uploading via FTP for several reasons. A big one is that the BBS has some data files it uses to tell you what is available for download (it is MUCH faster than reading the directory). When files get stuck out there, the BBS doesn't know about them.

If you have an account on VMS, the NBI, the Research VAX, or the Sequent, you could FTP the files in a subdirectory on one of those accounts, tell me what directory it is in, and then I could move it in the BBS. It would be useful though if you had a file with one or two line description of each file.

The Latest Archive Programs
#156  25-AUG-1990 03:11:21.68
Subject: arc/zips
here's a question that's bound to find out if there is any life out there at all...what are the happening archival programs? I've been using pkarc & pkxarc for a while. I haven't really looked into the newer archival programs as I've gotten used to using the programs listed above.

simply put(it's the only way i can)...what are the best archivers and why?
Hi Alan, pkzip is the one to use if you don’t mind sending in a registration fee. Pkzip compresses better than arc so bbs can store more files on their hard disks and users can fit more data files on their disks. pkzip is easy to use so even the appliance operator type of computer user can use it. The military mostly uses lharc because it compresses a hair better than pkzip and lharc is free. Unfortunately lharc is a lot slower compressing and decompressing the archive. I use lharc a lot myself but unfortunately the lharc on the research vax is not compatible with lharc for pce cees so it is not good for archiving files that I will using on pce cees.
I hope that I helped.

#160  Reply to #159  26-AUG-1990
13:10:45.15

Subject: RE: arc/zips
Hi again, I saw some statistics on the net and their findings were the opposite of the tests that I ran. The test showed pkzip compressing slightly better than lharc. Like I said before, I still like lharc because it compresses better than any other free compression programs. I guess that the compression varies with the data so your mileage may vary.

---

### Mainframe Performance Statistics

#### Operating Systems Performance Statistics for August

<table>
<thead>
<tr>
<th>CPU</th>
<th>SYSTEM</th>
<th>Planned Production Hours</th>
<th>Production Hours Achieved</th>
<th>System Uptime</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACAD</td>
<td>VM/XA2</td>
<td>718.00</td>
<td>716.99</td>
<td>99.9%</td>
</tr>
<tr>
<td>ACAD</td>
<td>VM/SP5</td>
<td>338.40</td>
<td>338.20</td>
<td>99.9%</td>
</tr>
<tr>
<td>ACAD</td>
<td>MUSIC/SP</td>
<td>686.22</td>
<td>675.42</td>
<td>98.4%</td>
</tr>
<tr>
<td>ACAD</td>
<td>MVSS/ES2</td>
<td>717.00</td>
<td>705.16</td>
<td>98.3%</td>
</tr>
<tr>
<td>ACAD</td>
<td>COMPLETEA</td>
<td>709.79</td>
<td>689.38</td>
<td>95.8%</td>
</tr>
<tr>
<td>ADMN</td>
<td>MVSS/ES2</td>
<td>744.00</td>
<td>739.86</td>
<td>99.4%</td>
</tr>
<tr>
<td>ADMN</td>
<td>COMPLETEA</td>
<td>341.00</td>
<td>339.42</td>
<td>99.5%</td>
</tr>
<tr>
<td>ADMN</td>
<td>ADARASA</td>
<td>722.34</td>
<td>717.50</td>
<td>99.3%</td>
</tr>
</tbody>
</table>

- The ACAD CPU achieved 100% uptime in August.
- The HDS/7360 DASD achieved 100% uptime in August.
- The HDS/7380 DASD achieved 100% uptime in August.
- The ADMN CPU achieved 100% uptime in August.
- The HDS/7380 DASD achieved 100% uptime in August.
- The HDS/7380 DASD achieved 100% uptime in August.
- The EMC Solid State Disk achieved 100% uptime in August.

---

### Key Causes Of Lost Productivity In August:

#### ACAD CPU

<table>
<thead>
<tr>
<th>Item</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems Software Development</td>
<td>32.45</td>
</tr>
<tr>
<td>Reconfiguring MVSSP and MUSIC operating systems to run in first level under VM/XA</td>
<td>27.65</td>
</tr>
<tr>
<td>Operator mistake in running MUSIC Daily Backup</td>
<td>1.67</td>
</tr>
</tbody>
</table>

**GRAND TOTAL** 61.77 HOURS

### Key Causes Of Lost Productivity In August: ADMN CPU

<table>
<thead>
<tr>
<th>Item</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple device read/write failures with HDS 7420 tape transport devices</td>
<td>5.28</td>
</tr>
</tbody>
</table>

**Miscellaneous**

<table>
<thead>
<tr>
<th>Item</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems Software Development</td>
<td>1.17</td>
</tr>
</tbody>
</table>

**GRAND TOTAL** 6.42 HOURS
## Disk Backup Schedules

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>BACKUP</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative MVS/SP</td>
<td>Daily</td>
<td>Monday - Friday around 7 p.m. (after COM-PLETE is shut down) &amp; on Saturday &amp;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sunday if COM-PLETE has been up that day.</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>Full pack dumps taken each Sunday morning.</td>
</tr>
<tr>
<td></td>
<td>Monthly</td>
<td>Full pack dumps taken on the first day of each month.</td>
</tr>
<tr>
<td>Academic MVS/SP</td>
<td>Daily</td>
<td>Monday - Sunday during the early hours of the morning.</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>Full pack dumps taken each Sunday.</td>
</tr>
<tr>
<td></td>
<td>Monthly</td>
<td>Full volume dumps taken on the first day of each month.</td>
</tr>
<tr>
<td>MUSIC/SP</td>
<td>Daily</td>
<td>Wednesday - Monday starting at 4 a.m. and lasting about 30 minutes.</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>Tuesday mornings at 3 a.m., these last about 2 hours.</td>
</tr>
<tr>
<td></td>
<td>Semester</td>
<td>Once a semester, a permanent backup is taken.</td>
</tr>
<tr>
<td>VM/XA</td>
<td>VM Weekly</td>
<td>Early every Wednesday morning.</td>
</tr>
<tr>
<td></td>
<td>CMS mini-disks</td>
<td>Daily backup performed every morning. Weekly backup every Wednesday starting at 3 a.m.</td>
</tr>
<tr>
<td>VAXcluster</td>
<td>Semester</td>
<td>Once a semester, a permanent backup is taken.</td>
</tr>
<tr>
<td></td>
<td>Daily</td>
<td>Incremental backups are Thursday at 6 p.m., Saturday &amp; Sunday at 5 p.m.</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>Full backups are performed every Friday beginning at 8 a.m. generally last all day. A &quot;stand alone&quot; backup is performed monthly. Dates and times are given in the system log-on message. Once a semester, a permanent backup is taken.</td>
</tr>
</tbody>
</table>

### ACADEmatic (HDS) Program Hit Parade

#### August Top Ten Programs: Frequency Of Runs

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th># of Runs</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SASLPA</td>
<td>SAS</td>
<td>3404</td>
<td>11.9</td>
</tr>
<tr>
<td>2. PGM=*.*DD</td>
<td>Compiled Program</td>
<td>3185</td>
<td>11.1</td>
</tr>
<tr>
<td>3. COMPLET4</td>
<td>Academic COM-PLETE</td>
<td>3120</td>
<td>10.9</td>
</tr>
<tr>
<td>4. IEWIL</td>
<td>Linkage Editor</td>
<td>3041</td>
<td>10.6</td>
</tr>
<tr>
<td>5. IDCAMS</td>
<td>VSAM Utility</td>
<td>2964</td>
<td>10.4</td>
</tr>
<tr>
<td>6. IBDGENER</td>
<td>IBM Utility</td>
<td>2042</td>
<td>7.1</td>
</tr>
<tr>
<td>7. IGYCRCTL</td>
<td>VS COBOL2 Compiler</td>
<td>1942</td>
<td>6.8</td>
</tr>
<tr>
<td>8. IKBREFT01</td>
<td>Password Change</td>
<td>1405</td>
<td>4.9</td>
</tr>
<tr>
<td>9. SPSSX</td>
<td>SPSS-X</td>
<td>943</td>
<td>3.3</td>
</tr>
<tr>
<td>10. IEFBR14</td>
<td>IBM Null Utility</td>
<td>678</td>
<td>2.4</td>
</tr>
</tbody>
</table>

#### August Top Ten Programs: CPU Seconds Used

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th>CPU Seconds</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SASLPA</td>
<td>SAS</td>
<td>130578</td>
<td>54.1</td>
</tr>
<tr>
<td>2. PGM=*.*DD</td>
<td>Compiled Program</td>
<td>29921</td>
<td>12.4</td>
</tr>
<tr>
<td>3. COMPLET4</td>
<td>Academic COM-PLETE</td>
<td>19130</td>
<td>7.9</td>
</tr>
<tr>
<td>4. SPSSX</td>
<td>SPSS-X</td>
<td>11448</td>
<td>4.7</td>
</tr>
<tr>
<td>5. SSS4001</td>
<td>Operations Automation</td>
<td>11089</td>
<td>4.6</td>
</tr>
<tr>
<td>6. IGYCRCTL</td>
<td>VS COBOL2 Compiler</td>
<td>4830</td>
<td>2.0</td>
</tr>
<tr>
<td>7. IBDNM01</td>
<td>VTAM Utility</td>
<td>4653</td>
<td>1.9</td>
</tr>
<tr>
<td>8. ADARUN</td>
<td>ADABAS Utility Module</td>
<td>3531</td>
<td>1.5</td>
</tr>
<tr>
<td>9. IDCAMS</td>
<td>VSAM Utility</td>
<td>2769</td>
<td>1.1</td>
</tr>
<tr>
<td>10. SPCHLCOB</td>
<td>COBOL2 Report Writer</td>
<td>2743</td>
<td>1.1</td>
</tr>
</tbody>
</table>

The programs listed in this section were used the most frequently on the HDS ACADEmatic CPU during August, 1990. Please Note that ACAD is the official designation of the HDS/8083 CPU that is dedicated to faculty and student use. The HDS/8083 CPU reserved for University administrative purposes is termed ADMN III.
Computer Terminology: Real World Definitions

Continued from page 23.

- **Multitasking**: A clever method of simultaneously slowing down the multitude of computer programs that insisted on running too fast.
- **Network**: An electronic means of allowing more than one person at a time to corrupt, trash or otherwise cause permanent damage to useful information.
- **Portable**: Smaller and lighter than the average refrigerator.
- **Support**: The mailing of advertising literature to customers who have returned a registration card.
- **Transportable**: Neither chained to a wall nor attached to an alarm system.
- **Printer**: An electromechanical paper shredding device.
- **Spreadsheet**: A program that gives the user quick and easy access to a wide variety of highly detailed reports based on highly inaccurate assumptions.
- **Thought Processor**: An electronic version of the intended outline procedure that thinking people instantly abandon upon graduation from high school.
- **Upgraded**: Didn't work the first time.
- **User Friendly**: Supplied with a full-color manual.
- **Vapor Ware**: Announced but unreleased products; has a way of never materializing.
- **Very User Friendly**: Supplied with a disk and audiotape so the user need not bother with the full-color manual.
- **Version 1.0**: Buggier than Maine in June; eats data.
- **Version 1.1**: Eats data only occasionally; upgrade is free, to avoid litigation by disgruntled users of Version 1.0.
- **Version 2.0**: The version originally planned as the first release, except for a couple of data-eating bugs that just won't seem to go away, no free upgrades or the company would go bankrupt.
- **Version 3.0**: The version in the works when the company goes bankrupt.
- **Video Text**: A moribund electronic service offering people the privilege of paying to read the weather on their television screens instead of having Willard Scott read it to them free while they brush their teeth.
- **Warranty**: Disclaimer.
- **Workstation**: A computer or terminal slaveishly linked to a mainframe that does not offer game programs.
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Please complete this form and return it AS SOON AS POSSIBLE if you wish to attend any of the short courses listed below. You may also register over the phone by calling (817) 565-2324. FACULTY AND STUDENTS HAVE FIRST PRIORITY TO REGISTER FOR THESE CLASSES.

NAME: ___________________________ FACULTY ___ STAFF ___ STUDENT ___

DEPT: ___________________________ UNDERGRADUATE ___ GRADUATE ___

PHONE: ___________________________ MAILING ADDRESS: ___________________________

SUPERVISOR SIGNATURE ___________________________________________

I wish to attend:

- **Introduction to IBM JCL (ISB 123):**
  - ____ Monday, October 15: 5:30-7:30 p.m.

- **Introduction to BITNET (ISB 123):**
  - ____ Thursday, October 11: 3:00-5:00 p.m.

- **Introduction to CMS (ISB 110):**
  - ____ Tuesday, October 2: 3:00-5:00 p.m.
  - ____ Monday, October 8: 3:00-5:00 p.m.
  - ____ Monday, October 29: 5:30-7:30 p.m.

- **Introduction to Procomm Plus (ISB 123):**
  - ____ Monday, October 1: 1:00-2:00 p.m.

- **Introduction to Microsoft Word (ISB 6):**
  - ____ Wednesday, October 17: 1:00-3:30 p.m.

- **Introduction to Electronic Spreadsheets (ISB 110):**
  - ____ Tuesday, October 23: 3:00-5:00 p.m.

- **Introduction to SPSS-X (ISB 123):**
  - ____ Thursday, October 4: 3:00-5:00 p.m.

- **Introduction to WordPerfect 5.1:**
  - ____ Friday, October 12: 1:00-4:00 p.m.

- **Introduction to SAS (ISB 110):**
  - ____ Friday, October 5: 1:00-4:00 p.m.
  - ____ Thursday, November 1: 2:00-5:00 p.m.

- **Introduction to Hypercard (ISB 6):**
  - ____ Wednesday, October 3: 1:00-3:30 p.m.

- **Introduction to SAS PC (ISB 110):**
  - ____ Monday, October 22: 2:00-5:00 p.m.

- **Advanced Microsoft Word (ISB 6):**
  - ____ Friday, October 26: 1:00-3:30 p.m.

I would like to see more classes offered: ______ on weekends: ______ at night.

Comments:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

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