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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
- **Graphics Lab**: (817) 565-3479
- **ISB/O Area**: (817) 565-3890
- **BAI/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 MUSIC/SP (ID-codes follow each name. All IDs are on BITNET node UNTMUSIC).

**BENCHMARKS** - Claudia Lynch (AS04)

**Information & ID-Codes; Disk Space Problems** - Marilyn Jett

**Statistical/Research Support** - George Morrow (AS01), Panu Sitti Wong (AC09), Phanit Laosiriart (AC44)

**Academic ADABAS/COM-PLETE** - Janis Burkham (AC55)

**CRISP & COMPUSSTAT Problems** - Panu Sitti Wong (AC09), Phanit Laosiriart (AC44)

**Student Programming Problems** - CSCI Dept., GAB Room 542A; 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 BAI/O Operators

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

Phone numbers for the Local Area Network (LAN) are:

- **300/1200 BAUD**: (817) 565-3300, (817) 565-3499
- **2400/9600 BAUD**: (817) 565-3461
- **2400/9600 BAUD**: D/FW METRO 429-6006, 429-9314

Area code 214 must be dialed before the METRO number.

The numbers that accommodate multiple baud rates have an autobaud feature that requires you 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 following CALL commands to connect with the computer of your choice.

**CALL 8040** connects with the NAS/8083 (supports line editing or PCWS). Operating environments available are:

- MUSIC/SP, VM/CMS

**CALL 3270** connects with the NAS/8083 through a 3270 protocol converter (supports full-screen editing). Operating environments are:

- MUSIC/SP, VM/CMS,
- ADABAS/COM-PLETE, PHOENIX

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

**CALL 780** connects with the Research VAX (Unix)

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

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

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**Communications Settings**

<table>
<thead>
<tr>
<th>LAN address</th>
<th>Data Bits</th>
<th>Parity</th>
<th>Stop Bits</th>
</tr>
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<tr>
<td>DEC. 3000</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>
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**HOURS FOR UNIVERSITY OF NORTH TEXAS COMPUTER ACCESS AREAS: SPRING 1989**

<table>
<thead>
<tr>
<th>Location</th>
<th>Days</th>
<th>Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing Center RJE</td>
<td>Sunday</td>
<td>Noon-Midnight</td>
</tr>
<tr>
<td></td>
<td>Monday</td>
<td>7 a.m.-Midnight</td>
</tr>
<tr>
<td></td>
<td>Tuesday-Saturday</td>
<td>7 a.m., Tues.-Midnight Sat. (Open 24 hours/day)</td>
</tr>
<tr>
<td>ISB 110 Terminal Area</td>
<td>Sunday</td>
<td>1 p.m.-Midnight</td>
</tr>
<tr>
<td></td>
<td>Monday-Thursday</td>
<td>7:30 a.m.-Midnight</td>
</tr>
<tr>
<td></td>
<td>Friday</td>
<td>7:30 a.m.-9 p.m.</td>
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<tr>
<td></td>
<td>Saturday</td>
<td>9 a.m.-9 p.m.</td>
</tr>
<tr>
<td>College of Business</td>
<td>Saturday, Sunday</td>
<td>Noon-11:45 p.m.</td>
</tr>
<tr>
<td></td>
<td>Monday-Thursday</td>
<td>8:15 a.m.-11:45 p.m.</td>
</tr>
<tr>
<td></td>
<td>Friday</td>
<td>8:15 a.m.-7:45 p.m.</td>
</tr>
<tr>
<td>GAB 550C</td>
<td>Sunday</td>
<td>2 p.m.-Midnight</td>
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<tr>
<td></td>
<td>Monday-Thursday</td>
<td>8 a.m.-Midnight</td>
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<tr>
<td></td>
<td>Friday</td>
<td>8 a.m.-5 p.m.</td>
</tr>
<tr>
<td></td>
<td>Saturday</td>
<td>2 p.m.-7 p.m.</td>
</tr>
<tr>
<td>Graphics Lab</td>
<td>Sunday</td>
<td>Noon-10 p.m.</td>
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<td>Friday</td>
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<tr>
<td></td>
<td>Saturday</td>
<td>Noon-5 p.m.</td>
</tr>
</tbody>
</table>

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

New VM Logo Should Simplify Things for CMS, MUSIC Users

A new VM Logo has been generated which should make life a little easier for people trying to get to CMS and MUSIC. The logo retains the same general appearance as the original one that was included as a part of VM Release 5.1, however, the instructions have been modified to reflect the specific operating system environment at UNT. When you "CALL 3270" from the LAN, you will now see the following screen. Simply follow the instructions above the USERID ==> line to get to the operating system of your choice.

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PC-SIG Library Available On-Line

The Computing Center acquired the IBM PC-SIG Library in 1986. This collection of public domain (free) and shareware (user donation-supported) software was distributed, upon request, by the Computing Center’s front office staff in ISB 119. Now, however, you can access the Hitachi Compact Disk Read Only Memory (CD-ROM) disk drive that contains the PC-SIG Library from the microcomputers in ISB 110 (See “Accessing The PC-SIG CD-ROM” on page 11 of this issue).

What is PC-SIG

The PC-SIG Library is distributed by the IBM-PC Special Interest Group. As mentioned above, it is a collection of two kinds of software:

1. Public Domain (free)

2. Shareware (user-donation-supported)

The public domain software may be copied and distributed at no cost to the user. The shareware is much like listener-supported radio. It represents an industry supported entirely by donations from users. Shareware programs may be copied as freely as public domain software with the exception that the user is requested to send a donation to the programmer if the program is found to be valuable.

Each shareware program in this library informs the user, either through on-screen messages or an included text file, that the program is a shareware product. All other software in this library should be considered public domain.

Each program in the PC-SIG library is offered on an "as is" basis. No guarantee is made about the quality of the software or its safety. Each user is expected to weigh the risks of using any software on his or her system. The UNT Computing Center assumes no responsibility for any damage caused by anything downloaded from the PC-SIG Library. This software is no more or less prone to flaws than any other public-domain software.

How Can I Determine Which Software I Want?

There are a couple of ways to find out about the software in the PC-SIG Library. One is to purchase the PC-SIG Library book (available in the University Store), and join the Special Interest Group (SIG) so that you can receive supplemental updates. These publications list and describe the software quite comprehensively. The other way is to go to ISB 110 and access the DOD (Directory of Disks) on the CD-ROM. This directory gives short descriptions of each software package.

If you have any questions about the PC-SIG Library or accessing the CD-ROM, contact the Help Desk at (817)565-4050, or stop by ISB 110.$

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Spring Break Hours for University of North Texas
Computer Access Areas: March 11 - 19, 1989

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
<th>Times</th>
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</thead>
</table>
| Computing Center RJE  | March 11, March 13 - March 18  
                        | March 12, March 19         | 8 a.m.-Midnight           
                        |                            | noon-Midnight              |
| ISB 110 Terminal Area | March 11                   | 9 a.m.-9 p.m.             |
                        | March 12, March 18 - March 19  
                        | March 13 - March 17        | 1 p.m.-Midnight           
|                        |                            | Noon - 8 p.m.             |
| College of Business   | March 18                   | 8:15 a.m.-7:45 p.m.       |
                        | March 19                   | Noon - 11:45 p.m.         |
| GAB 550C              | March 19                   | 2 p.m. - Midnight         |
| Graphics Lab          | March 13 - March 17        | 9 a.m.-5 p.m.             |
                        | March 19                   | Noon - 10:00 p.m.         |

Areas are CLOSED on dates not listed.
Dealing With The Information Explosion

By Janis Burkham, Academic Computing Services Database Consultant
(BITNET: AC55@UNTVM1)

The "Age of the Computer", the "Information Explosion" --- these are the times in which we live. While modern conveniences have freed many of us from the drudgeries of day-to-day existence, we continue to have increasing demands on our time. There are simply not enough hours in the day to absorb all the information that is available to us. The stresses this can cause have become commonly known as "information anxiety".

People in the computing field are especially susceptible to the ever-increasing demands on time. The field of computing is ever-changing and widening, demanding more knowledge and expertise on the part of those who use, oversee, or create computing systems in order to stay current on the latest advances in technology. Wise people are aware that good time management is essential in order to accomplish as many of their goals as possible.

In an effort to improve time management skills, Thirteen Leading Time Wasters are presented here to help pinpoint areas that are common mis-uses of time and some possible solutions to them.

1. Telephone Interruptions:
   - Inform business associates to contact you via electronic mail whenever possible.
   - Specify that you prefer to receive telephone calls between certain hours during the day.
   - Enlist the aid of personnel to screen your incoming calls.

2. Unscheduled Visitors
   - Inform visitors that you want to devote more time to their problem(s) than you have at the moment. Schedule a time convenient for both of you to meet to discuss the problem.
   - Suggest use of electronic mail, but be sure to respond within a reasonable amount of time.
   - Establish a span of time during the day when you devote yourself to uninterrupted work and inform associates of such.
   - Use an electronic scheduler such as WordPerfect Office to coordinate your usage of time.

3. Scheduled / Unscheduled meetings
   - Try to make an agenda for scheduled meetings and distribute it the day before the meeting to all concerned so that all will know what topics are to be discussed. Try to limit all meetings to an hour.
   - Consider sending electronic mail to all concerned parties listing topics covered and agreements reached in the meeting. This will confirm that all parties are clear as to the agreements that were made.

4. Unnecessary Crisis Situations
   - Establish procedures to be followed to prevent the occurrence of crises, if possible.
   - Distribute these procedures via electronic mail to all concerned parties.
   - If crisis is unavoidable and inherent to the nature of the work, build in a "cushion" into the daily plan to allow for such.
   - If possible, document crises that arise and steps that were taken to solve them. Use a word processing system to save time.
   - Establish clear procedures for common crisis situations and distribute it on electronic mail or make it available on a local area network.

5. Lack of Objectives
   - Set aside some quiet time to sit down and list your professional goals including goals to be reached solely to achieve performance of the job and goals to be achieved in personal professional enrichment.
   - At the end of each day, make a list of activities to be
accomplished the next day. Prioritize the list.

- Consider using Word Perfect Office Appointment Calendar with its automatic daily ToDo lists. Keep a separate word processing document for broader goals and update it often.

6. Cluttered Desk
- Try to handle each piece of mail once. Throw away as much as you can. SCAN IT AND TOSS IT.
- Use WordPerfect or a personal information manager like AskSam or Agenda to keep telephone messages or other memos that are usually written on small pieces of paper and may get lost. Whatever you choose, use a program that can stay resident in your computer’s memory so you will not have to leave your current program to access it. If it is not easier to manage your time and information with a computer, then you probably will not use one.
- Use WordPerfect to keep files on diskettes rather than hardcopy.

7. Involvement in Detail
- Establish priorities within job tasks as to what level of detail needs to be reached in order to accomplish the task.
- Do not allow yourself to drown in perfectionism when the return does not justify the time that will be spent.
- Use a dynamic outline processor like PC-Outline (available from PC-SIG) or WordPerfect in outline mode.

8. Attempting Too Much at Once
- Use good judgment in planning how much can

reasonably be accomplished in one work day. Everyone has a point at which the increase of quantity of work will ensure a decrease in the quality of work.

9. Indecision, Procrastination
- Learn to make a plan and stick to it except under extreme situations.

Lack of good time management and not planning ahead can cause one to continue to stay in "reactionary" mode. This, in turn, can cause one to feel compelled to work longer and longer hours thus cutting into the important time away from the job to escape the stresses and pressures—needed time that prevents burnout and helps to maintain a well-rounded, relaxed, happy, and more productive employee.

- Reward yourself by doing something you really like after you have accomplished a task that you were dreading.
- Doing your least favorite tasks first will magnify your gratification in your work.
- Make decisions as best you can in a reasonable amount of time, and go with it. The point of absolute certainty may never come.

10. Unclear Communication
- Learn to be as clear as possible when speaking or writing. There is nothing un-

professional about being perfectly clear when communicating with others. Avoid unnecessary words.

11. Inability to Say "NO"
- Resist the temptation to accept all requests that are made of you. This requires keeping in mind the goals you have set and the commitments that have already been made on your time.
- Be selective about new tasks you agree to accept. Be sure you are not "spreading yourself too thinly".

12. Lack of Timely Progress Reports
- It is important to keep track of what you have accomplished as well as what is still waiting to be accomplished. This record will allow you to evaluate your actual productivity against your planned objectives for a certain period of time. This, in turn, will help you to better plan your next set of goals and the time it will take you to accomplish them.
- Progress reports can be very useful in planning cyclical events. They are great sources of reference concerning project time lengths, tasks involved, number of people assigned to projects, etc.
- Progress reports help managers plan assignments, resources, and people. They can be easily transmitted to managers over computer networks or sent as files through shared computer systems.

13. Fatigue
- Lack of good time management and not planning ahead can cause one to continue to stay in "reactionary" mode. This, in turn, can cause one to feel compelled
to work longer and longer hours thus cutting into the important time away from the job to escape the stresses and pressures—needed time that prevents burnout and helps to maintain a well-rounded, relaxed, happy, and more productive employee.

Additional helpful hints to get the most from your time:

1. Keep a list of 5-minute tasks that you can do any time you are waiting or are between other tasks.
2. Learn to do two things at once. For example, organize an important letter while riding to work.
3. Get up a half-hour earlier.
4. "A place for everything and everything in its place". Keeping things straight and neat—or at least orderly will cut down on the time you spend looking for things.
5. Keep your calendar up-to-date.
6. Be wary of non-productive activities.
7. Plan ahead

For more information about products mentioned in this article, see below:

Agenda, AskSam - see PC Magazine, December 15, 1988. Vol. 7 #21

PC-Outline - Disk #480 of PC-SIG. Contact the Help Desk, 565-4050, for help in accessing the PC-SIG compact disk ROM.


THE BITNET CONNECTION

By Philip Baczewski, BITNET INFOREP (BITNET: AC12@UNITV1)

The BITNET Connection is a new feature of Benchmarks which will appear as a regular part of successive issues. In each issue, this column will present news and information on various aspects of the BITNET wide area network.

The Merge is on...

With a mandate from its member institutions well in hand, the BITNET Board of Trustees has announced plans to begin the merger of BITNET with CSNet, a network devoted to the facilitation of research and development in the field of computer science. The BITNET Board recently submitted the merger proposal to its members in the form of a yes/no referendum to decide the issue. From the 417 eligible members, 216 votes were cast. 195 votes were in favor of the merger and 21 were opposed. As a result, a Transition Team representing both networks will start to formulate bylaws, a policy manual, a long range business plan, and a short range transition plan.

In early 1988, it came to the attention of both the BITNET and CSNet Boards that there could be several benefits to the merger of the two networks. Issues motivating the examination of a possible merger included simplifying networking for end users, maintaining low-cost communications for all types of institutions and research users, providing wider connectivity among all fields of intellectual endeavor, and offering better services at the same or lower cost. In February of 1988, a study group was formed to review the merger possibility, and in June, the consulting firm of Gillespie, Folkner and Associates was hired to assist the study group.

The BITNET Board determined that the following benefits would be gained from the merger:

1. Reduced competition at the medium-function network level;
2. A strengthened voice for the BITNET/CSNet community when dealing with issues such as funding;
3. A wider financial base;
4. Greater possibility of technology transfer between universities and government/industry users;
5. The possibility of improved network management and services;
6. A better chance for the survival of a network which strongly serves small institutions and remains low cost to all institutions;
7. Wider connectivity of disciplines and new international connections.

The merger process of the two networks begins in 1990, with members paying dues and fees according to a merged network schedule. This may result in a lower cost for institutions which were previously members of both networks (UNT, for example). The current information contractors (EDUCOM for
BITNET and BBN for CSNet) will be maintained until December 31, 1990. All efforts will be made to maintain current levels of network services during the transition period.

It may be too early to divine all the actual benefits UNT can accrue from this merger, but a savings in membership dues is a probability. Improved network information services (information, documentation, software distribution, etc.) would also be a welcome benefit for all users. Until the merger wheels start rolling, though, we will just have to wait and watch for more information from the BITNET Board. As the commercial says, "we'll get back to you with more details..."§

For more information on the BITNET/CSNet merger see Volume 3, number 3 (February, 1989) of NetMonth, the BITNET electronic magazine. More information on BITNET, CSNet, and other wide area networks can be found in the Computing Center document, An Introduction to Wide Area Networks, which is available from the Computing Center Offices (ISBN 119, 565-2324).

LIST of the Month

Each month we will highlight one of the BITNET LISTSERV Special Interest Group (SIG) mailing lists. This month's list...

SAS-L@UGA

Coordinator: Harold Pritchett (HAROLD@UGA)
Peers: MARIST, UTORONTO, TCSVM, FINHUTC, VTVM2

SAS(r) Discuss any material related to SAS from SAS Institute, its add on products, or SUGI. To subscribe send the following message, or MAIL containing the following command as the first line of the mail to LISTSERV@UGA. SUBSCRIBE SAS-L Your Name. This list is distributed across 7 LISTSERVs, however the UGA LISTSERV will forward request to the server closest to your site. (r) SAS is a registered Trademark of SAS Institute, Cary NC.

If you subscribe to SAS-L@UGA, be prepared for a large volume of incoming mail. However, if you are involved in using any of the SAS products, this SIG list may provide you with valuable information.

Opossum Kingdom?

This message, from Jeffrey Kell, Director of Technical Services at the University of Tennessee at Chattanooga, was sent out over BITNET a while back...

The UTCVM-UTKVM1 link was almost shutdown last night by an unauthorized intruder. Although everything is fine now this was just too good not to share an amusing war story...

Over the last two weeks we have been annoyed by a mouse in the offices. No one could catch the little bugger, and he avoided all the traps that were set for him. Everyone was trying to be alert and spot the rascal, but finally he got a bit clumsy and fell from a shelf into a trash can. He was subsequently removed. But...

Last night around 11:30 PM our night operator spotted a rodent-like tail disappear behind a disk drive. Discarding it as "mouse paranoia" she went on
about her business. Several minutes later she again spotted the "tail" disappearing behind our datacomm racks. Her curiosity aroused, she went over to investigate. Surprise does not begin to describe her reaction as she found a real, live, honest-to-goodness Tennessee 'possum (that's "opossum" for you non-natives) about a foot long with another foot of tail. The very large nouse turned, grinned, and disappeared beneath the raised floor of the machine room.

Campus Security was called shortly after midnight to apprehend the intruder, but he evaded their best efforts and remained out of sight, leaving the sanity of our operator in question in the minds of the investigating officers. Our operator then proceeded to post a large warning note on the door for the day shift and retired for the night.

Finding the note this morning, we realized she *must* have been serious and we called physical plant. Five men arrived shortly thereafter with a work order to "fix a rodent problem" in the machine room. Several floor tiles were lifted when, lo and behold, the located the "rodent" who promptly cowered back and hissed. It was a toss up as to who scared the most.

Eventually he was diverted by several workers while another grabbed him from behind (with leather gloves) and the would-be datacomm bug was boxed and removed. The means of his invasion, a mangled screen covering a utility access tunnel, has been corrected. I have no idea as to the final disposition of the intruder other than some mumblings about Thanksgiving dinner and sweet potatoes [this was in November - ed.]. I did not risk dining in the cafeteria for lunch at any rate.

The episode reminded me of the bogus "Iowa Pig Farm Research Center" posting to LINKFAIL last year [see the October 1987 issue of Benchmarks, page 1, "Node News is Good News" - ed.], but this one was for REAL! Last week had the Internet Virus; but today was the Tennessee Possum.§

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**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 (AS04@UNTVM1) or write it down and drop it by the Computing Center. We will try to answer it in the next issue.

**Question:** I've been venturing into the world of VAX C and have come across something rather puzzling. I wrote a 5 line C program and the resulting executable file was 87 blocks (43K) long! Is this normal or am I not doing something right?

**Answer:** It is normal, but there is a way to make the executable much smaller. To minimize the size of the executable, use the following link command:

```
5 LINK filename,SYSS$INPUT/OPT
```

---

**SYSS$LIBRARY:VAXCTRL/SHARE**

**Question:** Why would anyone want to use batch files on the VAX?

**Answer:** As a matter of fact, there is an entire article devoted to this topic in the VAX section of this issue of *Benchmarks*. Basically, batch files are useful when you don't want to wait for your program to finish executing. For more information on VAX batch files, see "Using Batch Files on the VAX," on page 12.

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*Benchmarks* Reader/User feedback is encouraged. Send all letters, suggestions, etc to (AS04@UNTVM1) or to the *Benchmarks* Editor at:

University of North Texas
Computing Center
NT Station, Box 13495
Denton, Texas 76203

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§
LAN of the Free, Home of the Brave

By Kevin Mullet, Academic Computing Services Microcomputer Support Staff (BITNET: KEV@UNTVAX)

Although you can't eat, live in, or wear one, a Local Area Network could nonetheless significantly improve your professional and academic life. Properly installed and used LANs do for microcomputing what the microcomputer itself did for computing.

What's a LAN?

Strictly speaking, a Local Area Network is a group of computers in a single work area, such as an office or a lab, that have been connected together to provide easy access to common storage, printers, and each other. A group of computers in a lab, for instance, might all share a common disk drive on a LAN. Each student in that lab could use any of the software stored on that disk drive, thus eliminating the need for expensive hard disks on each computer in the lab. In another example, each computer in an office could be connected through a LAN to a high quality laser printer. Anyone using a computer on this LAN could print using that laser printer. It wouldn't matter if the laser printer was attached to a computer in the same room or one many hundreds of feet away.

Why use a LAN?

Why would someone want to use a LAN? Isn't a single-user microcomputer preferable, with all the power of the machine at the user's command? Aren't stand-alone micro-computers a great deal easier to use than those attached to a LAN? Isn't a LAN an open invitation for any hacker to peruse sensitive information on your personal computer? There isn't any definitive yes or no to these questions. It all depends on how well your LAN is installed and maintained.

Initially, the use of a LAN may seem to be a radical departure from the idea of freedom through distributed processing that started the microcomputer revolution in the first place. When viewed as a communications medium for device sharing rather than a way to build one big computer from lots of smaller ones, a LAN makes a great deal of sense.

Pros and Cons

Both the greatest strength and weakness of a stand-alone computer is its isolation. For many people, isolation means the reassurance of increased privacy of sensitive information. Isolation, however, is a double-edged sword. On a microcomputer, isolation also means, ultimately, that each user is an island. Although the user of one standalone microcomputer can exchange information with another by simply passing diskettes back and forth, it's typically easier for each user to have access to the same disk drive and access the same information, even at the same time, through a LAN.

As you probably suspect, there are distinct advantages and disadvantages to using a local area network.

Chief among the disadvantages of a local area network is the immediate expense of installation and the inconvenience of learning how to use it.

Regardless of the kind of LAN you implement, you may find yourself making a fairly substantial investment in not only software and hardware, but time as well for your initial installation.

On an Ethernet LAN using Novell software, for example, you would be required to make purchases for each user's computer you want to put on
the network, and for a central computer, called a file server to coordinate all the network activities. Each user's workstation would have to be equipped with an add-on Ethernet expansion card. The file server would be an IBM-AT or better (clones are okay) running a special LAN operating system called Netware. Add together the cost of the Ethernet cards, the file server, the Netware and the cable and connectors to hook them all together and you could easily spend $10,000 for a twelve workstation local area network.

Although a well installed LAN can be transparent and require the user to know nothing about networking to use it, the price for this degree of transparency is considerable time and patience on the part of the network manager. Often it is this particular cost that is most difficult to pay for when installing a new LAN. When a new microcomputer is added to a lab or workplace, any knowledgeable person can take a day to install new software on it and teach the users a thing or two about how to operate it. One of the unfortunate things in setting up a LAN is that departments often assume this is also true of local area networks. In order to be installed correctly, and most certainly to be integrated transparently into the workplace, a LAN requires someone to spend from half to three quarters of their time working exclusively on LAN installation and management.

With all these disadvantages, you might ask, "where are the advantages of using a LAN?" Although the advantages of using a LAN are simply stated, the ramifications of their use are far reaching. Most of the advantages of using a LAN can be summed up in a single buzzword: connectivity. On a LAN, each user is connected to every other user, they can all be connected to one or more common storage devices, they can all be connected to one or more common printers. With all this connectivity, the first thing a LAN does to your work is to make it easier. The second thing usually happens on a LAN is that new projects gradually move from being mundane workaday tasks to events with larger-than-life creativity feasible only on a LAN.

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**What We Did In ISB 110**

If you've been by the computer lab in ISB 110 lately, you may have noticed the addition of six IBM ATs and six Macintosh SEs to the available resources. Each of these new computers is attached to a cable that links it to an IBM-AT compatible computer that performs as the file server. All the Macintoshes came with their networking hardware built-in from the factory. Each of the ATs, however, had to have a special Ethernet option card installed. Once connected, all these computers act in concert as the new ACS (Academic Computing Services) local area network. This network, its software, printing and communications resources are all available to students and faculty as a general-purpose resource for everything from word processing and high-quality laser printed graphics to megabytes of free public domain software (See "PC-SIG Available On-line" on page 2 in this issue). More information about the ISB 110 lab will be printed in upcoming issues of Benchmarks, so keep reading!

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Here are some examples of what you can do on a LAN:

- **Printing**
  
  By far the most used feature of local area networks is printer sharing. Most computer users have a need for at least two different kinds of printout, draft and high quality. Occasionally, users will also need something more esoteric from their computer like printer output, color slides, wide worksheet-style printouts, etc. On a LAN, all these output devices could be attached to one or two computers and utilized by all workstations attached to the LAN. Typically, when printing is done on a network, the mechanics are very much like printing on a single workstation. The information meant for the local printer can be intercepted by your networking software and sent to a printer somewhere else.

  Aside from the sheer convenience of being able to send your output to any of a number of printers or other output devices on a network, network printing also affords a greater degree of variety and control over your printing. The LAN manager, or any other user with sufficient privilege, can setup predefined ways of printing or forms that would allow users to take maximum advantage of their output devices, even if the software they use doesn't.

- **Communication**
  
  Communication may be the second most used aspect of a LAN, but it's by far the most innovative. Electronic communication, in fact, will probably have an impact on our culture as great or greater than that of the computer itself.

  There are basically three different kinds of electronic communication available to the user of a local area network: interactive messages, e-mail, and remote login. All of these have now reached widespread use at NT, although their real potential has barely been tapped.

  Through interactive messages, a user can carry on a conversation (typed, actually) with someone else either on their own LAN or on a LAN connected somehow to theirs. The spectrum of interactive messaging software ranges from the
fairly limited kind that might come free with your LAN software to full-fledged Relay-type programs that allow users all over the world to speak to each other all at once with little significant drain of computing resources.

E-Mail is the most popular kind of electronic communication. E-mail users on a LAN have an electronic mailbox that they can check for mail with the e-mail software. With this same software, users can send mail to anyone else accessible through their LAN.

The greatest advantage of using e-mail is the ease with which one person can communicate with another. It is so easy, in fact, that when a workplace begins using e-mail there's usually a dramatic increase in the amount of communication between the workers. This increased communication is then translated into equally increased productivity, and that's what computing is all about.

The third type of communication afforded a user of a local area network is remote login. Although there are several programs to enable remote login of microcomputers, most remote login is done with mini and mainframe computers. On the NT campus, for instance, users of the VAX and UNIX systems used to be limited to using these systems at a speed of 9600 baud or less. As ethernet LANs spread throughout campus, though, more and more users are able to use these host microcomputers at speeds virtually indistinguishable from that of their PC.

In the not-too-distant future, in fact, users of Ethernet LANs on campus will have direct login access to thousands of computers across the world, right from their personal computers, by virtue of using a LAN attached to the world-wide Internet.

- Centralized Storage

At first, the idea of centralized storage may seem somewhat mundane, but the applications it makes possible are the kind of things that have previously been available only on a mini or mainframe computer. Users on a LAN can make information available to each other, or even access the same information at the same time.

Many local area networks incorporate the idea of a publicly accessible hard disk into their architecture. The exact method of sharing may vary from using a large hard disk in a specially designated machine called a file server, to making the hard disks of one or more users available through the network.

However it's done, though, the availability of large shared storage allows the cost of placing high performance PCs in the workcenter to go down dramatically. More of a machine's cost can now go toward a high quality display or more memory, rather than a high-capacity hard disk, since a network card and a floppy disk loaded with networking software is all a user would need to access all the storage available through the network.

Where to go from here?

As your experience with PCs probably indicates, a computer can be either easy or difficult to use. The amount of productivity and enjoyment you get out of a computer depends almost entirely on how well it's installed, what kind of software you choose, and the degree to which that software is appropriate for the task at hand. This is doubly true with local area networks. Using a professionally managed LAN can be much easier than using a well managed standalone PC. Also, theoretically, a well-tuned LAN can offer more computing promise to the user than a typical mainframe. However, the reverse can also be true. A poorly managed LAN can be even more difficult to use and less productive than an badly managed PC.

In summary, microcomputer local area networks can be either a curse or a blessing. With LANs, the potential exists to do things with computers that you have never dreamed of. The price for doing this, though, is to dedicate the time, resources and personnel to learning how to do so.

Although it's possible to dive in and learn-as-you-go with microcomputers, you would be well advised to learn about LANs before you take the plunge, unless you have someone at your side to help you through it. That's what we're here for at the Computing Center.

If you would like to learn more about microcomputer local area networks and all the ways you can use them professionally and academically you can call the Computing Center at (817) 565-2324. There is also an organization on campus of various LAN managers called the UNT Net Managers' Group. They meet at 11:00 a.m. on the first and third Fridays of every month in the School of Community Services computer lab in Oak Street Hall, Room 117. Please call Kevin Mullet (817) 565-2316 to make a reservation.
Accessing the PC-SIG CD-ROM

The PC-SIG CD-ROM is now accessible from ISB 110 (see related article on page 1 of this issue of Benchmarks). To get to the PC-SIG Library, type CD-ROM at the DOS prompt. The root directory of the CD-ROM appears as follows:

| Directory of J: |  
|----------------|---
| 1-100 <DIR>   | 8-26-87 1:26p
| 101-200 <DIR> | 8-26-87 1:52p
| 201-300 <DIR> | 8-26-87 2:35p
| 301-400 <DIR> | 8-26-87 3:46p
| 401-500 <DIR> | 8-26-87 4:49p
| 501-600 <DIR> | 8-26-87 5:58p
| 601-700 <DIR> | 8-26-87 6:55p
| 701-800 <DIR> | 8-26-87 12:34a
| 801-900 <DIR> | 8-26-87 1:05a
| DOD <DIR>     | 8-26-87 1:13a
| BBS <DIR>     | 8-26-87 1:14a

11 File(s) 111427584 bytes free

Each, numbered subdirectory, in turn resembles the following:

| Directory of J: |  
|----------------|---
| DISK301 <DIR> | 8-26-87 3:46p
| DISK302 <DIR> | 8-26-87 3:46p
| DISK303 <DIR> | 8-26-87 3:46p
| DISK304 <DIR> | 8-26-87 3:47p
| DISK305 <DIR> | 8-26-87 3:47p
| DISK306 <DIR> | 8-26-87 3:49p
| DISK307 <DIR> | 8-26-87 3:49p
| DISK308 <DIR> | 8-26-87 3:50p
| DISK309 <DIR> | 8-26-87 3:51p

You can use the CD command to move to the DOD directory, which is the Directory of Disks. The DOD has a number of files with the extension UPP. These list the contents of each DISKnnn directory in the PC-SIG library and give short descriptions of each software package. §

Micro-Tips

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.

TAKE CARE OF YOUR DISKETTES

Nothing is quite as disconcerting as losing data. Follow these rules to minimize the risk of damage to your floppy diskettes.

1. After the label is applied, do not write on it with a pencil or ballpoint pen and a heavy hand. Instead, use a felt tip.

   When you press down on the label with a ballpoint pen, it can crumple the plastic jacket against the surface, and the action of the spinning disk against the jacket can sand off the recording media.

   A pencil can smudge and graphite can come loose onto the surface of the disk. Graphite is a lubricant which should not come in contact with your disk drive.

2. Don't stack labels on top of each other because multiple labels can jam the disk drive.

3. Don't paper clip reports to the diskette because the pressure of the paper clip can deform the jacket.

4. Don't let the diskettes get excessively hot because it can cause the plastic disk to deform. Don't leave them in your car in the summertime.

5. Don't use your computer in the sun. The diskette can stretch while you are using the disk drive. Then, when you return to an air-conditioned office, the diskette may cool and be unreadable.

6. Remove any magnetic objects you have near the computer such as magnetic paper clip holders, fluorescent lamps, electric typewriters, or copiers.

7. Store diskettes in disk boxes to protect them from dust.

8. Always keep the diskettes in a sleeve when they are out of the disk drive.

9. Do not touch the shiny plastic disk. Fingerprints can indirectly cause the read/write heads on the disk drive to grind down.

10. Buy the highest quality diskettes you can afford. High quality diskettes have a reinforced hub ring to ensure proper media-to-head alignment and reduce wear in the disk drive. Shop for major brands. §
DECUS Support Reduced on the VAXcluster

By Billy Barron, VAX System Manager (BILLY@UNTVA)

The DECUS (Digital Equipment Corporation Users Group) software is public domain software for VAX/VMS systems. For years, most or all of the DECUS software has been available on-line to VAXcluster users. Now, due to a lack of free disk space, all of the DECUS software that is not frequently accessed is being removed from the VAX disk drives.

Support of the DECUS software from now on will be provided upon request. The listings of the available software are in the directory DECUS; (VAX000). If you find a piece of software that you need, you may send a request via MAIL to the OPERATOR account. One of the VAX operators will then copy the needed software from a backup tape to a disk for you. Please allow 2 working days for the request to be processed.

Using Batch Files on the VAXcluster

By Larry G. Michalewicz, Vax Operator (BITNET: LARRY@UNTVA)

What is the Purpose of Batch Files?

Batch files are especially useful if you don’t want to wait for your program to finish executing. The advantages of using batch files include not having to sit at the terminal waiting for the program to finish, and not risking being disconnected by the local area network. The disadvantages are that there are very limited interaction capabilities, and full-screen applications sometimes do not give expected results in batch mode.

Setting-up a Batch File

In order to execute a program in batch mode, you must have a .COM file which includes all the commands necessary to get your program started. Below is an example .COM file:

$ SHOW TIME
$ SET DEF [.PROGS]
$ DEFINE SYSSINPUT INPUT.DAT
$ RUN BIG_PROG
$ SHOW TIME

It should be noted that all output from the batch file will go to a file named the same thing as the batch file itself, except the the extension will be .LOG. The first command in the .COM file above shows the time that the batch file got underway. The next command sets default down into the PROGS subdirectory. SYSSINPUT is then re-defined to be INPUT.DAT. This command allows the input for BIG_PROG (assuming that it needs input) to come from the file INPUT.DAT. The next-to-the-last command runs the program, and the last command shows the ending time.

How to Submit a Batch File

If the commands in the example above were in a file named BATCH1.COM, you would simply type the following command to get your job started.
Our system does not support sending batch job output to a printer so the `NOPRINT` qualifier should always be used. The `NOTIFY` qualifier causes the system to broadcast a message to you when your job is complete. This is not absolutely necessary but is always recommended.

Making Your Batch Jobs More Versatile.

There are many other features available when submitting batch jobs. For example, if you wanted a job to execute after 5:30 p.m. on May 1st, and you want the output to go to a file named `out1.txt` instead of the default file, you would type the following command:

```$ submit/noprint/notify/log=out1.txt/after=01-may-1989:17:30/batch/batch.com```

Note that the time 5:30 p.m. is expressed in 24 hour format. If you want the job to execute today at 5:30 p.m. you simply use the command `after=17:30`. The `LOG` command causes the output to go to the file that you specify.

When a batch job is submitted it goes into a queue named `sysbath` and then it goes into either `ntvaxa/batch` or `ntvaxb/batch`. If for some reason you want your job to execute on a specific node you can use the `/queue` qualifier. For example to submit your job to be run on VAXB use the following command.

```$ submit/noprint/notify/queue=ntvaxb/batch/batch.com```

Additional help on batch jobs can be found by typing `HELP SUBMIT` while logged-on the VAX, or by sending mail to `OPERATOR`. §

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### VAX CLUSTER USAGE STATISTICS

#### February Top Ten Programs: Frequency of Runs

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th>Number of Runs</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. LOGINOUT</td>
<td>User login</td>
<td>88527</td>
<td>15.0</td>
</tr>
<tr>
<td>2. SET</td>
<td>VMS Utility</td>
<td>76277</td>
<td>12.9</td>
</tr>
<tr>
<td>3. DELETE</td>
<td>VMS Utility</td>
<td>51934</td>
<td>8.8</td>
</tr>
<tr>
<td>4. DIRECTORY</td>
<td>VMS Utility</td>
<td>45912</td>
<td>7.8</td>
</tr>
<tr>
<td>5. EDT</td>
<td>Editor</td>
<td>45798</td>
<td>7.8</td>
</tr>
<tr>
<td>6. TYPE</td>
<td>VMS Utility</td>
<td>35786</td>
<td>6.1</td>
</tr>
<tr>
<td>7. User Programs</td>
<td>Compiled Programs</td>
<td>25675</td>
<td>4.3</td>
</tr>
<tr>
<td>8. PASCAL</td>
<td>Pascal Compiler</td>
<td>25364</td>
<td>4.3</td>
</tr>
<tr>
<td>9. SHOW</td>
<td>VMS Utility</td>
<td>23069</td>
<td>3.9</td>
</tr>
<tr>
<td>10. SYSLOGIN</td>
<td>User Login</td>
<td>20557</td>
<td>3.5</td>
</tr>
</tbody>
</table>

**Total**

590321

#### February Top Ten Programs: CPU Time Used

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th>CPU Time</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. EDT</td>
<td>Editor</td>
<td>2:00:31:34.39</td>
<td>6.5</td>
</tr>
<tr>
<td>2. PASCAL</td>
<td>PASCAL compiler</td>
<td>1:05:14:33.59</td>
<td>3.9</td>
</tr>
<tr>
<td>3. ACC</td>
<td>VMS Accounting Utility</td>
<td>1:04:20:32.10</td>
<td>3.8</td>
</tr>
<tr>
<td>4. LISP</td>
<td>LISP interpreter</td>
<td>0:20:51:50.05</td>
<td>2.8</td>
</tr>
<tr>
<td>5. LOGINOUT</td>
<td>User login</td>
<td>0:14:42:59.55</td>
<td>2.0</td>
</tr>
<tr>
<td>6. BACKUP</td>
<td>VMS Utility</td>
<td>0:13:22:08.69</td>
<td>1.8</td>
</tr>
<tr>
<td>7. DISKEEPER</td>
<td>Disk Compression Utility</td>
<td>0:12:10:51.89</td>
<td>1.6</td>
</tr>
<tr>
<td>8. MAIL</td>
<td>VMS Mail</td>
<td>0:11:21:58.53</td>
<td>1.5</td>
</tr>
<tr>
<td>9. TPU</td>
<td>Editor</td>
<td>0:08:56:50.18</td>
<td>1.2</td>
</tr>
<tr>
<td>10. LINK</td>
<td>Linker</td>
<td>0:07:13:27.84</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**Total**

30:18:41:06.33

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Puzzled About What's Happening on the BBS?

- Sign-on by typing `CALL DEC` at the LAN prompt and then entering `BBS` as your Username at the VAX prompt.
- Enter into some of the current discussions about "New Age Music," the Dallas Cowboy's buyout, Programming in C, and more.
ADMINISTRATIVE INFORMATION SYSTEMS

ADMINISTRATIVE INFORMATION SYSTEMS NEWS

By Coy Hoggard, Manager of Administrative Information Systems

Registration

Registration impacts all teams within the AIS group in one way or another. We were pleased to have had a successful Spring '89 registration. The final enrollment as of the 12th class date (unaudited) was 23,621 students, an increase of approximately 10.6% over the same semester last year (Spring '88). Teleregistration (registration via touch-tone telephone) was used successfully for early registration for continuing students as well as to allow continuing students to change schedules (add-drop). Some problems encountered during pre-registration were corrected by GTE prior to the system's use for schedule change activities. Both UNT and GTE are continuing to work on improving the stability and functionality of the Teleregistration product.

Central Administrative Computer Workload

Due to the extremely heavy workload on the University's central administrative computer, representatives of key user areas and the staff of the Technical Support and Administrative Information Systems divisions of the Computing Center are investigating ways to extend the useful life of the existing central computer system. A "semi-conductor disk" (also called a "solid state disk") was installed by National Advanced Systems for use on a trial basis during the Spring '89 semester. The "solid state disk" is a device which is attached to one of the system's I/O (Input/Output) channels so that it appears to the operating system software as simply another disk device. It has the advantage of allowing disk I/O to take place at the full speed capacity of the I/O channel, without the seek and rotational delays associated with traditional disk drives. Certain high-activity data sets were then placed on the solid state disk. The process of evaluating procedural and system changes to improve the situation is an ongoing activity. Some such changes have already been implemented, including the use of Teleregistration. Other procedural changes, including extending the length of the registration period, will be in effect for the next registration period, and still other changes are currently being evaluated in an attempt to survive heavy registration periods and still provide at least minimal support for other critical University applications.

Voice Response Applications Team

In addition to providing support for Teleregistration, the Voice Response Applications Team has begun work on the second voice response application to be developed jointly with GTE. This application is a Financial Aid Voice Response System which will be known as "FAVORS-2000." The FAVOR-2000 system, when completed, will allow students to make inquiries regarding the status of their individual applications for Financial Aid via touch-tone telephone. Answers to primary and secondary queries will be provided by the system. The caller will have the option of asking to be transferred to someone in Financial Aid (a real live human being) if necessary. The Financial Aid Office receives 104,000 documented phone calls, and have an additional 100,000 documented "walk up" inquiries annually. We in Administrative Information Systems look forward to continuing to assist this critical and heavily loaded department meet their objectives of service to financial aid applicants and to the University.

Student Services Data Systems Team

Work continues on the project to implement the new "Z-Series FAM" Financial Aid Management software in the UNT environment. This software product will replace the older, "traditional" FAMS product which has been used for the past few years. Although the product is pur-
chased software (as opposed to having been developed in-house), a significant amount of effort is required to adapt the product to the UNT computing environment (COM-PLETE, ADABAS) and to provide necessary interfaces to other software used at UNT. It has been necessary to "borrow" programmers and analysts from several other applications teams in order to accomplish this task. Implementation of the newer Z-Series software is mandatory in order to continue to receive maintenance modifications from IA to support ever-changing federal regulations. The number of students who were actually paid awards increased from 3,200 in the '84-85 academic year to 6,500 in the current ('88-'89) academic year (103% increase in four years). Over the same period, the amount of time required for handling each application increased significantly, due to increasingly complex governmental regulations. The amount of money awarded in the '84-85 year was $7.5 million, while the amount awarded in the current year will approach $16 million. Approximately 13,000 applications for assistance will be handled (or at least begun) during the current academic year. The Financial Aid Office has been able to handle this tremendous increase in workload with a staff increase of only 1.5 FTE. This is not to say this has been easy for the Financial Aid Office. A significant increase in staff is desperately needed, but handling their workload with existing staff would have been totally impossible without increased use of computer-based information systems such as the FAMS software product.

Payroll/Personnel Data Systems Team

The "Payroll Detail" phase of the overall HRMIS (Human Resources Management Information System) for payroll personnel was completed in December, '88. UNT and TCOM faculty and staff received the first of the new paychecks which resulted from this system on January 2, 1989 (January payday). This phase included implementation of a "reimbursable payroll" concept whereby the institutions write paychecks locally and are reimbursed by the State Comptroller's Office. The new paychecks look different, the earnings statement contains more information, and each employee receives only one check, without regard to the number of sources of funds from which he/she is paid.

A key project for the Fiscal Data Systems Team is an enhancement to the Teleregistration System which will allow the student to inquire as to the cost of his/her current schedule and have that information "spoken" back.

Fiscal Data Systems Team

A key project for the Fiscal Data Systems Team is an enhancement to the Teleregistration System which will allow the student to inquire as to the cost of his/her current schedule and have that information "spoken" back. This will allow the student to make a more informed choice regarding payment options.

Staff changes

A number of staffing changes have occurred over the past couple of months, including the following:

Scott Norton has moved from the Student Records Data Systems Team to the General Data Systems Team, filling the vacant Programmer III position in that team. Scott will be working on Advancement / Alumni and other General Data Systems projects. The Student Records Data Systems Team has a vacancy for a Programmer I.

The Fiscal Data Systems Team has suffered (literally) from two recent resignations. Gary Verwers, who has been with the team since January of 1987, resigned to accept a position with EDS in Dallas. Jennifer Anderson, who as been with the team since January of 1988, resigned to accept a position with the Dallas County Community College District, her former employer prior to coming to work at UNT.

Maureen Drown has been hired in the Fiscal Data Systems Team to fill the vacancy left by Gary Verwers' resignation. Maureen began work on February 27, 1989. She received her BS degree in Computer Science from NT in 1982. Most recently Maureen has been working as Inventory Supervisor for Pillsbury, and prior to that was a Systems Engineer at CLR / Fast-Tax in Carrollton.

Fee L. Chang has been hired in the Fiscal Data Systems Team to fill the vacancy left by Jennifer Anderson's resignation. She began work on February 13. Fee received her Masters degree in Computer Science from NT in December, 1987. She has been employed in the UNT Computer Science Department as a Teaching Fellow.
Mainframe Performance Statistics

NAS/8083 Dual Processor Performance Statistics for February

<table>
<thead>
<tr>
<th>CPU</th>
<th>SYSTEM</th>
<th>Scheduled Operating Hours</th>
<th>Planned Maintenance Hours</th>
<th>Planned Production Hours</th>
<th>Unplanned Maintenance Hours</th>
<th>Production Hours Achieved</th>
<th>System Uptime</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACAD</td>
<td>VM/SP3</td>
<td>672</td>
<td>0.00</td>
<td>672.00</td>
<td>0.73</td>
<td>671.27</td>
<td>99.9%</td>
</tr>
<tr>
<td>ACAD</td>
<td>MUSIC/SP</td>
<td>672</td>
<td>28.03</td>
<td>643.97</td>
<td>1.91</td>
<td>642.06</td>
<td>98.7%</td>
</tr>
<tr>
<td>ACAD</td>
<td>MVS/JES2</td>
<td>672</td>
<td>0.00</td>
<td>672.00</td>
<td>2.13</td>
<td>669.87</td>
<td>99.7%</td>
</tr>
<tr>
<td>ACAD</td>
<td>COMPLETEA</td>
<td>672</td>
<td>0.00</td>
<td>672.00</td>
<td>5.06</td>
<td>666.94</td>
<td>99.2%</td>
</tr>
<tr>
<td>ADMN</td>
<td>MVS/JES2</td>
<td>672</td>
<td>0.00</td>
<td>672.00</td>
<td>1.27</td>
<td>670.73</td>
<td>99.8%</td>
</tr>
<tr>
<td>ADMN</td>
<td>COMPLETEA</td>
<td>260</td>
<td>0.00</td>
<td>260.00</td>
<td>0.00</td>
<td>260.00</td>
<td>100.0%</td>
</tr>
<tr>
<td>ADMN</td>
<td>ADABASA</td>
<td>672</td>
<td>24.70</td>
<td>647.30</td>
<td>1.32</td>
<td>645.98</td>
<td>99.8%</td>
</tr>
</tbody>
</table>

System Uptime = (Production Hours Achieved) / (Planned Production Hours)

Production Hours Achieved = (Planned Production) - (Unplanned Maintenance)

Scheduled Operating Hours = (Planned Maintenance) + (Planned Production)

MUSIC/SP Planned Maintenance Hours include 18.33 hours for system backup and 9.70 hours for VM/SP3 system backup.

ADABASA’s Planned Maintenance Hours include 24.70 hours for system backup.

The ACAD CPU achieved 100% uptime; the NAS/7360 DASD achieved 100% uptime; the NAS/7380 DASD achieved 100% uptime. The ADMN CPU achieved 100% uptime; the NAS/7360 DASD achieved 100% uptime; the NAS/7380 DASD achieved 100% uptime. One of the production systems was unavailable for scheduled operation. Lost productivity is calculated as the greatest amount of elapsed time that any NAS/7380 DASD achieved 100% uptime.

Lost productivity is calculated as the greatest amount of elapsed time that any NAS/7380 DASD achieved 100% uptime.

ACAD CPU:

Miscellaneous

1. Systems Development. 2.30 HOURS
2. COMPLETEA system maintenance. 2.78 HOURS

TOTAL: 5.08 HOURS

ADMN CPU:

CPU, Tape, and Disk Subsystems (NAS)

1. Reconfigure channels A and B to High Speed Block Mode. 1.32 HOURS

TOTAL: 1.32 HOURS
DISK BACKUP SCHEDULES

OS/MVS Backup Schedule
OS/MVS disk packs (academic and administrative) are backed up daily, Tuesday through Saturday, from 4-6:30 a.m., and Sunday from Midnight to 3 a.m.

VM/CMS
Backups of VM system disks and CMS mini-disks are performed every Wednesday morning at 3 a.m. CMS mini-disks are also backed up every other day sometime during the early hours of the morning. Users do not have to log-off during these backups.

MUSIC/SP Backup Hours
A message will be sent to all users signed on to MUSIC/SP approximately 10 minutes before backups are begun. It will be in the form "MUSIC SHUT DOWN AT xxxx AM SCHEDULED BACKUP **. To find out the backup hours while signed on to MUSIC/SP, enter HELP HOURS. The following backup schedule is currently in effect:

- Tuesday 3 a.m. (for about 3 hours)
- Weekly backup
- Wednesday 3 a.m. (for about 2 hours)
- Daily backup
- Thursday-Monday 4 a.m. (for about 1 hour)
- Daily backup

PHOENIX Backup Hours
PHOENIX is backed up weekly on Sunday night. The backup begins at midnight and lasts for approximately 30 minutes.

VAX Backup Schedule
Incremental backups of the VAXcluster are performed Monday through Thursday at 6 p.m. Users do not have to log-off, but any files that are open at the time of the backup will NOT be backed up.

Full backups of both systems are done every Friday beginning at 8 a.m. These generally will take all day to complete. Again, users do not have to log-off, but any files that are open will not be backed up.

A "Stand Alone" backup of the system disk is done once a month. This procedure makes a copy of the system disk that can be used to restore its contents if the disk is completely destroyed. The system will be shutdown for this. Watch the system logon message for specific times and dates.

NOTE: Requests for restoration of files should be made via MAIL to the username OPERATOR. Your file can only be restored if it existed before the last backup was done.

ACADemic (NAS) Program Hit Parade

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th>Number of Runs</th>
<th>Percent of Total</th>
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<tr>
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<td>Linkage Editor</td>
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<tr>
<td>PGM=*DD</td>
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<tr>
<td>IKFCBL00</td>
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<td>IEV90</td>
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<td>SPSSX</td>
<td>SPSSX</td>
<td>2543</td>
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<tr>
<td>SCRIPT</td>
<td>Waterloo Script</td>
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<td>2.4</td>
</tr>
</tbody>
</table>
The programs listed in this section were used the most frequently on the NAS CPU during the month of February, 1989.

Please Note that ACAD is the official designation of the part of the NAS/8083 CPU that is dedicated to faculty and student use. The portion of the computer reserved for University administrative purposes is termed ADMN.§

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