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The Magazine of the North American
Data General Users Group

July 1986

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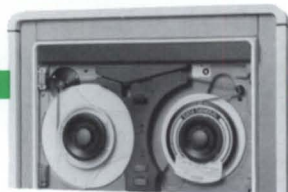
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DATA GENERAL SPECIALISTS

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The Magazine of the North American Data General Users Group

James McMonagle describes Worlco Data Systems' disastrous fire and dramatic recovery on page 9.



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Brief notes from the DG community

Focus, the Magazine of the North American Data General Users Group (ISSN 0883-8194) is published monthly by the North American Data General Users Group (NADGUG) in cooperation with Turnkey Publishing. Editorial and Business offices are located at 5332 Thunder Creek Road #105, Austin, TX 78759, phone 512/345-5316. NADGUG Headquarters are located at NADGUG, c/o Data General Corporation MS C-228, 4400 Computer Drive, Westborough, MA 01580.

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As of May 6, Satellite Software International became known as *WordPerfect Corporation*—a name change due primarily to the success of WordPerfect. In addition to impressive sales

Thesaurus has already begun, and it, along with *many other features*, will be available before the end of the year. (We're also working on a VAX version.)

The price of the next

The numbers are there

A new version of MathPlan which contains Lotus-like macros and a new template is now available. The update is available for only \$100. The price of the AOS version (\$1000) and the AOS/VS version (\$2000) remain the same.

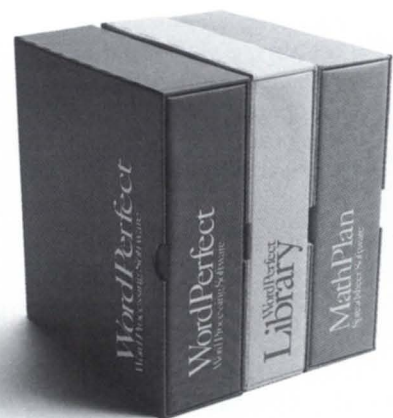
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CT REPORT WORDPERFECT REPORT

WordPerfect Corp. steps up development efforts.

increases for the DG versions, WordPerfect is now the best-selling word processing package for the IBM PC. We think the increases are directly related to our intensified development efforts.

We're not slowing down

The latest version, released in February for AOS and AOS/VS, has practically all of the features of the PC version. Tom Mallory, Director of Development for DG products, is particularly proud of the performance increases. Informal benchmarks demonstrate that 4.05 is as much as 40% faster than previous AOS and AOS/VS WordPerfect versions. 4.05 files are compatible with the PC 4.1 files.

We're not finished yet

Due to space limitations inherent in a 16-bit program, the software changes for the AOS version will be limited to fixes rather than new enhancements.

The new 32-bit version for AOS/VS, however, will soon catch up to the PC version. Work on the

release will be slightly higher than the current version. Potential customers should be happy to learn that the cost of 4.05 and the update to 4.1 will be less than the new price for 4.1. In this case, *it won't pay to wait.*

There's more on the way

A new product, *WordPerfect Library*, will be released in late summer for AOS/VS, featuring some attractive enhancements over its PC counterpart. The DG version of the library will include *electronic mail, calendaring and scheduling*, and a *shell* program to integrate these new programs with WordPerfect and MathPlan. The pricing will be very aggressive.

The e-mail and calendar programs are already installed at the U.S. Department of Justice as part of a \$30 million hardware and software contract won by Tisoft, a DG System Supplier. As you might expect, the new programs are written in assembler and use fewer resources than similar products from the hardware manufacturer.

Proposed changes to NADGUG's bylaws

What follows is an open letter to all NADGUG members from the president and vice president of the organization.

It has been three years since we amended NADGUG's bylaws at the general business meeting in Toronto. The officers are now proposing some minor changes to the bylaws in order to bring them more in line with the ways NADGUG's operations have evolved since the Toronto meeting. These proposed amendments are listed below, and are also contained in the proxy forms that have been sent to all voting members.

Proposed Amendment #1: That all gender references be deleted from the NADGUG bylaws (notably in Article IV, Section C, covering Executive Board members and their duties).

Proposed Amendment #2: That, since no real functional differences exist between Organizational and Installation membership classes, they should be combined into one Installation class, and all references to Organizational memberships should be deleted. Article III (Membership), Section A (Installation Membership), Paragraph 1 (Qualifications) should then read: "A company or organization which now uses, has, or which has on definite order . . ." and Section C (Organization Membership) would be deleted in its entirety.

Proposed Amendment #3: That Article IV, Section C, Paragraph 5a should be deleted in its entirety. This paragraph now states that the duties of the Data General Executive Secretary shall include being "the editor of any NADGUG-authorized publications."

Proposed Amendment #4: That Article IV, Section C, Paragraph 3c, which describes the duties of the Vice President, should be deleted in its entirety. This paragraph now states that the Vice President "will serve as a coordinator of special interest groups. . . ." This function is actually the duty of the RIG/SIG Chairperson.

The elected officers urge voting members to vote (either in person at the General Business Meeting at Conference 86, or by your proxy) in favor of the proposed amendments.

We look forward to seeing all of you in Orlando.

Rene Dominguez
NADGUG President

Calvin Durden
NADGUG Vice President

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LETTERS



Census Bureau wants to talk with mini users

The U.S. Bureau of the Census, prior to a major acquisition of minicomputers, is seeking discussions with large minicomputer users on their experiences in effectively managing their minicomputer resources. We are especially interested in users whose configuration consists of some or all of the components similar to the one we are preparing to implement. Our proposed configuration is as follows—

Hardware:

- Random access storage
- Local area network
- Asynchronous network
- Synchronous network
- Connection to PCs
- High-speed printers
- Digitizing terminals and tablets
- CRT terminals
- Minicomputer to minicomputer connection
- Connection to a mainframe (we have a Sperry but an equivalent will suffice) with hyperchannel

Software:

- Operating system that supports batch and interactive processing
- Job accounting and reporting
- Unix operating system and support library
- PC communications
- DBMS
- Language compilers (COBOL, Fortran, BASIC, Ada, and C)
- Statistical analysis software
- Text editor

Applications:

- User chargeback algorithm
- Collection, tabulation, reporting, and analysis of data
- Geographic support system
- Editing of large data files.

If you are interested in providing the Census Bureau with information on your achievements in minicomputer usage, call me at 301/763-4114.

*Gregory Nowakowski
Systems Support Division
Bureau of the Census
Washington, D. C.*



Praise from Penta

I enjoyed reading Ms. Sangster's April 1986 article, "Typecast" (page 12), which focused on our company, Penta, as a provider of publishing systems.

We are among the largest OEM customers of Data General. Since our original OEM contract, we have purchased in excess of \$60,000,000 from DG!

As pointed out in the article, until recently we only supplied composition systems, but our new publishing systems are beginning to give us visibility in the world of Data General users.

Of late, more and more CEO users are purchasing our packages to serve as the editorial and/or composition modes for their publishing activities. We offer a bi-directional CEO interface that permits a close coupling of CEO and our applications software. In most cases, original document creation is performed using CEO. Then our editorial software is used for the editorial process. These completed files are then typeset in pages using our composition package.

As you pointed out, Pi Sheng invented movable type 500 years prior to Gutenberg. You'd enjoy seeing his face even more as China has ordered a large MV-based Penta system for providing English-worded publications in China!

*Charles A. Lankford, President
Penta Systems International, Inc.
Baltimore, MD*

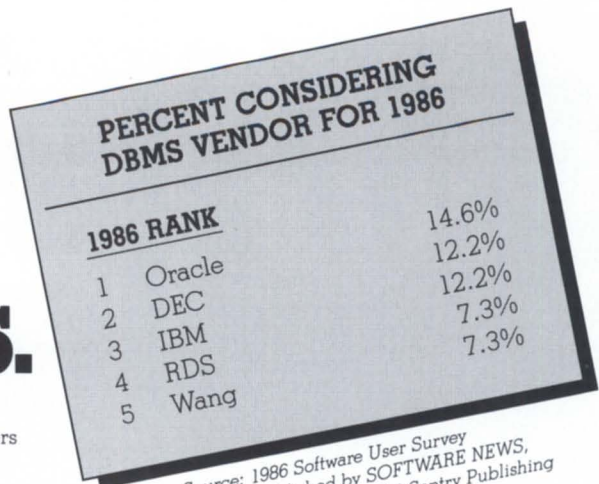
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Oracle Corporation ranks as the number one DBMS vendor for minicomputers, according to the 1986 *Software User Survey*. A lot of DG users won't be surprised. In 1979, Oracle introduced the very first *relational* DBMS and the first implementation of SQL.

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ORACLE is also the only DBMS that runs identically on mainframes and micros, as well as minis. ORACLE has thousands of installations on IBM mainframes, DEC, DG, HP and most other vendors' minis and micros, including the IBM PC. The three fundamental reasons why Oracle has become the number one DBMS solution: Compatibility, Portability and Connectability.



Source: 1986 Software User Survey published by SOFTWARE NEWS, Copyright ©1986 Sentry Publishing

COMPATIBILITY

The ORACLE® relational database management system is compatible with IBM's SQL/DS and DB2. SQL/DS and DB2 represent IBM's latest generation of database management technology for IBM's largest computers. ORACLE's capabilities and user interface — the SQL language — are identical to those of SQL/DS and DB2. Programs written for SQL/DS and DB2 will run unmodified on ORACLE.

PORTABILITY

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CT Hartford Jul 16	MN Minneapolis Jun 26, Jul 22	OR Portland Jul 24	
New Haven Aug 20	MO St. Louis Jun 11, Jul 30	PA Harrisburg Jul 8	
FL Jacksonville Aug 5	NE Omaha Jul 9	King of Prussia Jul 24	
Tampa Aug 6	NJ Cvt. Station Jun 5, Aug 7, 28	Philadelphia Jun 18	
GA Atlanta Jul 15	Iselin Jul 8, 22	Pittsburgh Jun 19, Aug 7	
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ID Boise Jul 31	New York City Jun 12, 25	RI Providence Jul 8	
IL Chicago Jun 12, Jul 8, Aug 14	Rochester Jun 19, Jul 10, Aug 13	TX Austin Jul 10, Aug 19	
IN Indianapolis Jun 17, Aug 19		Dallas Jun 11, Jul 22	
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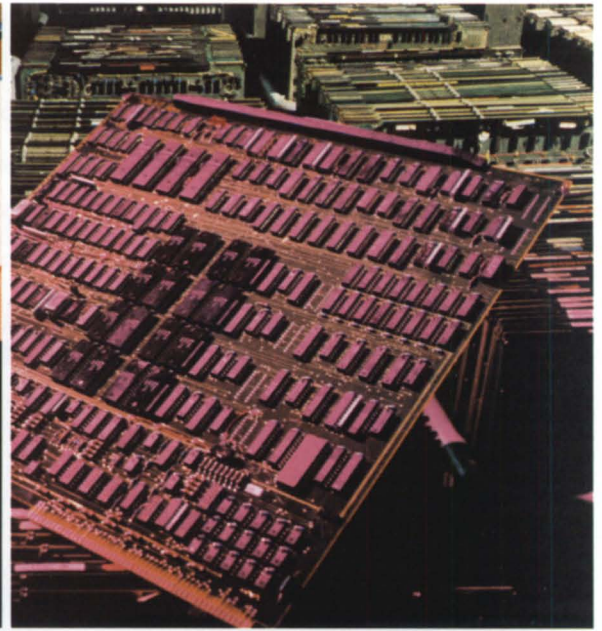
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Back on your feet

Lessons from the 1984 fire that destroyed a company's computer system

by James McMonagle
Special to Focus

New Year's Day morning 1984 started out calmly at Worlco Data Systems in Pennsylvania. Two programmers, taking advantage of the holiday's peace and quiet, were performing conversions for two service customers. They hoped to complete most of a data base load involved in transferring these customers to an on-line system running on Worlco's new DG MV/10000.

Then one of the programmers noticed the smell of smoke while returning from the restroom. He returned to the computer room, which housed a second MV/10000, a DG C/150, and two other computers, and told his partner that they needed to investigate the

odor's source. As they walked down the corridor toward the back of the building, they were startled by the sound of breaking glass at the back door. Moments later they were face to face with members of the local volunteer fire company whose station was a scant 75 yards away. A raging fire had started in a heater room and was engulfing the building. A woman in the apartment building next door had noticed the smoke and had called the fire department.

Two of the volunteers were Worlco employees. One had recognized the cars in the parking lot and realized where the two programmers would be working. He headed toward the computer room only to be met by the programmers at the rear door. Once the two employees were safely out of the building, the two employee firemen were able to remove some key tapes and other important materials before they could be affected by the heat, smoke, or water. This one step saved a lot of time and money during the recovery process.

Soon it became apparent that the fire had a huge head start; nine other alarms were

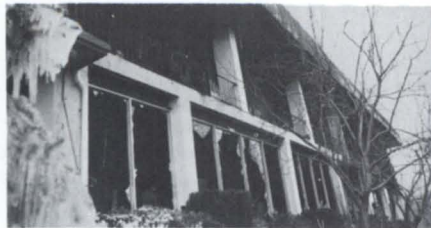
called. The building was soon completely ablaze, and it took most of the day to contain the fire. Ninety percent of the two-story, 35,000 square foot building was destroyed. Before the fire marshal declared the fire under control, a crowd had gathered. As the news of the fire spread, employees flocked to the site.

The district manager for Data General, alerted by one of his employees who was in the area, arrived to assess the damage. He suggested ways new hardware could be made available so Worlco could keep its customer commitments.

The president of a local company also arrived with an offer of help. The year before, his insurance company had purchased a turn-key home office administrative system from Worlco that ran on an MV/10000. He offered his machine for use during his second and third shifts to service our customers until we were able to process on our own equipment again.

By late afternoon, a command center was set up in a suite of rooms at a hotel nearby. Worlco's president and vice president quickly began to implement our disaster plan, which





no one had dreamed would ever be needed. The designated teams, led by the officers and senior managers, began their assigned tasks realizing that the company's survival depended on how well they performed over the next few weeks.

The plan we executed depended on the cooperation of our customers, suppliers, and especially employees. None of them let us down. In fact, some of the vitality apparent in our company today can be traced to bonds formed during that period. Since then, Worlco has made a dramatic recovery. The company's stock has gone from a low of \$.50 to \$3.00 per share.

The first few days after the fire are a blur in the minds of most Worlco employees. We all had assignments, but while we worked there was an unspoken question in the back of our minds—could the company come back from such a disaster?

The numb feeling most of us had the day of the fire left quickly—our priorities were clear, and we had lots to do. Our recovery plan channeled our efforts into five areas: facilities, equipment, customer service, fire reclamation, and insurance claim. Each team attacked their specific area, following one important but simple precept—keep everyone informed of the progress being made.

This paid dividends in two ways: first, it cut down on the rumors that would naturally surround a situation of this type. Initially, many employees were asked to stay home. When they called in each day, we gave them an accurate status report. Second, if a team ran into a problem, our daily recap sessions gave someone with a fresh viewpoint a chance to contribute.

Finding a new headquarters on short notice is a task for which one cannot prepare. By the end of the second day after the fire, every suitable (and not-so-suitable) building available in the area had been visited by an officer of the company.

A decision chart listing the pluses and minuses of the most likely candidates was distributed. Some of the pertinent factors taken into consideration were power availability, accessibility by car and public transportation, warehouse capacity, truck loading dock, and the amount of space for current and future needs. We felt compelled to find a facility that would allow our company to continue its growth. January 4, we signed a lease for a building that had been the regional marketing offices of a national computer manufacturer. We saved time and money when we moved because under-the-floor ducts and extra air-conditioning were already available.

Data General had a replacement computer ready to ship by January 3, and it arrived at our new headquarters 3 days later. During the weekend of January 7-8, a computer room with a raised floor and air-conditioning was installed. Within the next week the DG system was up and running, followed by several other computers.

Meanwhile, we moved our temporary command center from the hotel to nearby offices that housed our training and data entry divisions. Now that we had a permanent facility, we needed the bare essentials necessary to operate a business. A long-standing relationship with our local office supply company proved invaluable. While we were working out the interior design concept and deciding how to best use the available space, they started shipping loaner desks and chairs. Since two-thirds of the office was open space, a large "bullpen" of desks was created. A temporary phone system was installed.

January 2, our account reps started calling their customers with the news. They informed each customer of the steps being taken to continue service. If delays were anticipated, the customer was told what to expect. Arrangements to use a computer at Honeywell and to use the computers of several clients were finalized. In most cases, there

was only a small interruption in service. Utilizing the backup tapes stored off-site, we were able to satisfy all but one of our more than 70 service clients.

Even though all production systems were routinely rotated and stored off-site, we uncovered one weakness in the system. The development staff procedures called for off-site storage as they completed each part of a system. The two on-line systems under development were heavily involved. One was an insurance system written in COBOL for the MV/10000. The other was written on an Altos 68000 in C with a Unix operating system. At any point in time, our staff was working on many programs. The fire had the biggest impact on this phase of our business. Many of the programs that were being worked on were destroyed, with no off-site backups.

Some of the material pulled from the building by our employee firemen prevented the loss from being much worse. We were also fortunate in that one section of the building farthest from the fire's origin sustained only smoke and water damage. Once permission was received from the fire marshall, employees with protective gear removed a group of tapes from that section. We put these through a special cleaning process that enabled us to copy a surprisingly high percentage of them.

Obviously, the process of getting back into business was expensive. Even though we felt we had good insurance, we hired an experienced insurance adjuster to submit our claim. The filing process was quite involved and took a great deal of the accounting department's time. In retrospect it was time well spent since we ultimately received the full value of the claim.

As prepared as we were for an emergency, we are now doing some things differently as a result of the experience. Most importantly, all development work is backed up off-site on a regular schedule. Also, our

We are now doing some things differently as a result of the experience.

All development work is backed up off-site on a regular schedule.

Our operating policy now calls for clear desk tops at the end of every day

operating policy now calls for clear desk tops at the end of every day. This change came about when we realized that people who kept their work piled on their desks lost everything in the fire. Others who put their work papers and other important things away in a desk drawer or file cabinet only had to contend with smoke and water damage. Even desks that were charred on the outside afforded enough protection so that the papers inside were often only singed. Even after our experience, it is a constant battle to get some programmers to follow our new policy.

There is no substitute for proper insurance. An annual review of all policies with our agent

has always been standard. Because of this we had the correct software or media coverage. This reimbursed the cost of rewriting the development software that was lost. Some other insurance policies only cover the media replacement costs (the value of blank tapes or diskettes).

Our employees went through a stressful period but were able to maintain both their sense of mission—and their good humor. For example, as we went through the recovery process we entertained ourselves with suggestions for renaming the company, including Phoenix Systems or Firebird Data. As the company's current success indicates, good

people who are well prepared and are willing to work hard can bring about a dramatic recovery. Δ

James McMonagle is a vice president and chief financial officer of Worlco Data Systems, Inc., a company that provides data processing services and develops standardized computer application packages for the retail/wholesale distribution industry. He joined the company in November 1983 at the time of the company's initial public offering—just 6 weeks before the fire.

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Designer peripherals

How DG's designers put components in their place

Interview by Paul Merola
Special to Focus

In planning a product, there are two things to consider: the components that make the product function, and the customers who will use the product.

Product design is the development of the mechanical interface between the customer, or operator, and the product. That interface

service them, and they've got to be supported properly so they don't break loose.

The product design determines the floor plan of the components. It is the design of the casework. That's what the customers deal with. They don't deal directly with the mechanism or the boards. All the functionality is communicated to the operator through the packaging. What the operator sees are some keys or controls.

Many other people interface with the product besides the prime user and they too have to be considered. For instance, field engineering used to complain that designers didn't take repair and installation needs into consideration. We do now, but field engineering requirements shouldn't drive the design to the extent that it is difficult for the operator to use.

When does the product design of peripherals become an important enough issue for the developers to start involving the designers?

That's an ongoing question; there are different schools of thought. I could say "the sooner the better," but that's not always true. The best time for product design is when we have a rough idea of what the engineers are going to package.

We don't want to wait too long because the designer may want to say, "You need to make that smaller." Or from an engineering standpoint, we might say, "That's too expensive—you need to break it up into smaller pieces and make it less expensive." When there's a rough idea of what the components are, we can start creating the design.

How does the competition affect your design decisions for peripherals?

One of the first things we do is investigate what the competition is doing. I think we do a pretty good job of staying informed about their systems. For our own products, we're able to run all of our past and present products together with our software.

We've been a mainframe company for a long time, with mostly OEM customers. Now that we've entered the end-user market we



Randy Mazzei works with Jane Westbrook, industrial designer for DG's Austin facility, on a mockup of the Mojave (code name for the D555 integrated voice/data terminal).

Paul Merola of Data General's peripherals development and manufacturing facility in Austin, Texas recently interviewed Randy Mazzei to find out how DG designers develop new products. Mazzei, now the manager of design services for DG peripherals, also has mechanical design experience with Hewlett-Packard and Exxon.

What do you mean by product design and the customer interface?

boils down to some kind of casework or package that supports all the components in a way that becomes usable to the operator. In our minds, the operator is the most important part in the design process.

With the operator in mind, we have to position the components so the resulting product is easy to use. At the same time we have engineering requirements. We can't place components so that they overheat, for example. The customer must be able to

must be sensitive to those needs, also. There are certain styling and appearance trends to which we have to be sensitive. What was good five years ago is not good now.

As the technology changes, we've got to stay in touch with it—that's being sensitive to the customer interface. If our printer is making too much noise and it's difficult for the customer to load a ribbon, we'd better do something about it.

Once a year we go out to visit customers at 10 sites and ask them how they use the product. They are already committed to DG. We observe the work environment where our products are needed.

What professional training does a good designer need?

For the industrial designer or mechanical engineer, training at an accredited university will provide the basis for being a success. The industrial design course will provide an understanding of the design, marketing, and manufacturing processes. It teaches the ability to make models and communicate with sketches, and some understanding of product engineering and the quantitative sciences.

An industrial designer is taught to be creative—to take a lot of general concepts and information and synthesize them into meaningful forms.

Where do you get new ideas?

For every product we ask what the next logical step is. We try to stay ahead of the project team and predict what the next products will be. One of the methods we use is observing what the customers are seeking. In the case of CPUs, it's lower-cost products with greater speed. The driving force behind terminals has been to cost less but be more functional. The competition also tells us what we've got to do. It's price and performance.

Are there any important differences you have to consider when designing a peripheral for international distribution?

Agencies in various countries have their own safety regulations. In German, there are special symbols for certain letters that we don't have in our language. This changes the way the characters are displayed on the screen and the layout and the language of the keyboard. There are also different voltages that require different power supplies.

How do you determine which colors to use?

The industrial designers get involved in the color, style, and ergonomics. There are definite color trends and organizations that predict these trends. The CAUS, for example, is the Color Association of the United States. They predict color for the fashion industry,

realistic. Usually, new technologies require new product design. The technology has a lot to do with the style. What we like is for all our products at one given time to be part of the same style. We're looking for a consistent family, tied together so they are compatible stylistically.

There's a proprietary look to DG equipment. Although our product might be



Randy Mazzei, manager of design services for DG peripherals, Bill Morris, graphics design supervisor in Austin, and Mickey McGee, supervisor of Austin's reliability test area, check out the finished D555s.

which ends up influencing the color of interiors, carpets, wallpapers, and upholstery.

We are in the capital goods market, so we don't have consumer colors. In a consumer product, you might get away with a bolder use of color. Our products are not bought by individuals but by companies or corporations. A neutral color is safest.

How do you know when a style needs to be changed?

Of foremost importance is the designer's intuition. We'd all like to come up with a design that's timeless, but that's not very

compatible with some other products technologically, visually we want ours to be distinctive. When we see a competitor's design, we look at it and ask, "How can we make our design better than that?" Sometimes we see mistakes in these other designs and try to take advantage of that, but we also see things we like.

How important is color to peripheral design? What determines the choice of color?

The wrong color can ruin us—no one would buy our product. The color

communicates something. Certain colors have certain meanings. A pink shirt is quite acceptable; a pink computer isn't. Our products are our business tools. The color of a product has to lend itself to solving a problem. By that I mean you wouldn't want to put a product that's stark white in an area where it will become soiled quickly. The criterion is not one color; it's a group or palette of colors.

We test colors by asking customers what they think and we rely on the data we get from the Color Association.

What is "good" design, and how does peripheral design differ from the design of other products?

Good design results in a product that is a joy to use. You want to sit down, use it, and have it be responsive to you. The other side of the problem is to accomplish this at a reasonable cost.

Our design solutions have to lend themselves to production in large quantities. In peripherals, there aren't the profit margins that you have on a \$100,000 product. Every penny counts. We've got to be sure we're using the right materials, being clever with those materials, and not overdesigning.

As a product designer within a corporate environment, which design ideas are most challenging?

Coming up with a good design solution and seeing it end up on the market is the most challenging to me. We've got to be able to negotiate with different functions since everyone has something to say about the product. The designer is not the only contributor. We've got the engineer, the customer, the field engineer. When one of our mechanical engineers talks with an electrical engineer, he has to ask the right questions or he won't get the right information. Communicating within the corporation is more difficult than working on the outside. The designer, in our business, is forced to work at finding out what he or she needs to know. Δ

Paul Merola is the technical communications manager for Data General's facility in Austin, Texas. He can be reached at 512/385-9740. Copyright © Data General Corporation 1986. All rights reserved.

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Space! Gimme space!

If your users have an insatiable appetite for disk space, try this

by Jim Phillips
Special to Focus

The phone rang. As I reached over to answer it, I could already guess what the call was about. "Give me some more space!" the caller begged. "I'm in word processing and I can't save my file because I ran out of space and this letter has to be done *now!*"

"Have you deleted all of your old files?" I asked.

"No," said the caller, "and I don't have time to do it now. I have to have more space or this letter won't get out on time."

System managers the world over have at least one problem in common, no matter what system they're working on: how to get users to manage their allocated disk space and delete their old files or files they no longer need. It seems that everyone has an insatiable appetite for disk space. The more you give them the more they want. (Does this sound familiar?)

I used to have conversations like the one above a lot more often than I liked. Finally I sat down and came up with a set of macros that—believe it or not—solved the problem of users not managing their disk space.

Analyzing the problem, I discovered two important points:

- The users were not familiar enough with CLI to use the SPACE command—and even if they were, they weren't aware that it needed to be done all the time.

- Since they don't have to pay for storage, users reason that they shouldn't have to worry about it. No matter how many reports you send them, you are still going to have a lot of them ignoring your pleas

to delete their old files—until they actually run out of space.

My first attempt to solve the problem was to construct a special log-on macro for a few of my worst offenders. It displayed their disk space statistics every time they logged onto the system. That didn't work, because the users saw the numbers so often that they soon stopped paying attention. I figured I had to try something different—something that would do the work for them, but would also scare them just enough to take care of the second point—motivating them.

Listing 2 USER.SPACE.2.CLI

```
[!UGT, [!UDIVIDE,[!UMULTIPLY,%4%,100] %2%],80]
WR [!ASCII 235]*****
[!ascii 207 216]WARNING[!ascii 241 217],
*****[!ASCII 234]
WR You have exceeded 80[!ASCII 245] of your allocated
disk space[!ascii 256]You should delete some
files before you run out of space[!ASCII 256]
[!udivide,[!umult,%4%,100] %2%][!ASCII 245]
of your disk space has been used[!ascii 256]
WR/L=:UUD:USER.LOG:USER.SPACE.LOG [!TIME] [!DATE]
[!USER]'s space utilization was
[!UDIV,[!UMULT,%4%,100] %2%][!ascii 245 256]

wr
wr
[!ELSE]
[!END]
del/2=ign [!dir]:user.space.input
```

What I came up with is a simple macro that is executed every time the user logs onto the system. It takes the space statistics of the user's initial working directory, calculates what percentage of their allocated space they have used, and compares the result to 80 percent. If it is greater than 80 percent, a warning message is displayed to their console to tell them of the problems that can occur if they continue without deleting some files.

The macro (see Listing 1) checks to see if the user is signed on at a console; if so, the space command is issued. Next, another macro called USER.SPACE.2 (see Listing 2) is invoked.

Listing 1: USER.SPACE.CLI

```
[!EQ,[!LOGON],CONSOLE]
push
dir/i
DEL/2=IGN [!dir]:USER.SPACE.INPUT
SP/L=[!dir]:USER.SPACE.INPUT
USER.SPACE.2 [[!dir]:USER.SPACE.INPUT]
pop
[!ELSE]
[!END]
```

Listing 3 File containing a list of violators

```
07:58:45 01-MAY-86 User 1's space utilization was 81%
10:58:09 01-MAY-86 User 2's space utilization was 81%
11:14:24 01-MAY-86 User 3's space utilization was 81%
12:42:36 01-MAY-86 User 4's space utilization was 81%
13:35:02 01-MAY-86 User 5's space utilization was 81%
16:47:08 01-MAY-86 User 6's space utilization was 81%
07:44:38 02-MAY-86 User 7's space utilization was 82%
13:26:59 02-MAY-86 User 8's space utilization was 82%
09:02:19 05-MAY-86 User 9's space utilization was 83%
```


Experience has shown that you should set the users' directory space as low as you can, and then use these macros to monitor their space

This second macro reads the USER.SPACE.INPUT file, calculates the percentage of space used, and compares it to the 80 percent limit set in the macro. This limit can obviously be changed to fit the situation. If the calculated usage is greater than 80 percent, the following message is displayed:

*****WARNING!*****

You have exceeded 80% of your allocated disk space. You should delete some files before you run out of space or your programs may run out of space. 85% of your disk space has been used.

*****WARNING!*****

The results are written to a file called USER.SPACE.LOG. When the macro is finished, the USER.SPACE.INPUT file is deleted. (This approach works well as long as the CPD directory size does not exceed the AOS/VS limit for the pseudomacros !multiply and !divide of 65,535 blocks.)

In the more than two years I have been using these macros, I have had to increase only one user's disk space—and I have more than 100 users, some of whom have only 2,000 blocks! I originally intended for these macros to warn users when they were running out of disk space, so they could delete old files before proceeding any further on the computer, and keep from having their programs or word processing bomb out. The macros serve this limited purpose very well.

The unexpected bonus was a simple way of helping users manage their disk space. I didn't intend for them to stop asking for more disk space, but they did. What usually happens now is that users receive a warning about their space, and take the time right then to clean up their directories. I seldom even hear about it. However, I do keep track of who has been given a warning, because the macro writes out to a file who the user was and what percentage of their disk space was used. I have included a sample listing of this file (see listing 3). If certain users violate the 80 percent limit too frequently, I will visit with them about their disk space requirements.

I had tried sending out listings, putting out system messages—even begging users to manage their disk space, but nothing worked very well. Of course there are complicated archiving programs, but who has the money to buy them and the time to maintain them? Besides, most of what gets archived is on backups or should have been deleted in the first place.

What *did* work was to give users immediate feedback about their disk space when they first signed on *in a way they could understand*. In other words, "85% of your disk space has been used" meant a heck of a lot more to them than "4250 CUR 750 REM 5000 MAX"! Since they knew what the situation was the moment they signed on to the system, they could begin deleting files before starting on a project.

Practical experience has shown that you should set the users' directory space as low as you can, and then use these macros to monitor their space. If they frequently exceed the 80 percent limit, give them more space. Chances are that you will be the one wanting to give them

more space, rather than them asking for it.

I know this won't solve all of the problems of managing disk space on the entire system. This system of macros only manages the users' directories—which may be a small part of the total disk storage. I'd like to hear from you if you add refinements to my approach, and I'd also like to learn about other approaches to the problem of managing disk space. Δ

Jim Phillips is the computer sciences manager for the Southeastern Region, Cities Service Oil and Gas Corporation. He also serves as president of the Mississippi Data General Users Group. Send comments or questions to him at P.O. Box 12026, Jackson, MS 39211; 601/961-5594.

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OASIS events at NADGUG continue a tradition of excellence

by Charlene Kirian
Contributing Editor

Comprehensive Electronic Office (CEO) users and managers can look forward to several special sessions at this year's NADGUG's conference in Orlando.

CEO workshop

A special CEO workshop is scheduled for Monday, August 11, from 9am-5pm. The session is a follow-up to the workshop held last spring in Indianapolis. The Orlando workshop is sponsored by OASIS (Office Automation Special Interest Subcommittee—a NADGUG special interest group), and supported by Data General through its participation in the coordination of registration and collection of fees.

Attendance at the workshop costs \$25. This fee does not include lunch, but refreshments will be furnished during breaks.

The workshop will consist of four sessions:

- The multiprocessor environment (minis, PCs, etc.)—how to turn the control nightmares around;
- Testing and implementing new revisions for CEO—response and performance issues;
- Encountering resistance and winning over computerphobics;
- Now that the user is trained, what next?

The format of last spring's workshop was the presentation of panelists' brief case histories of their particular installations, followed by open discussion from attendees concerning problems, solutions, and ideas from their own installations. Future plans include expansion of this workshop into 2 to 3 days.

CEO roundtable

OASIS will again be hosting a CEO roundtable at this year's conference. The roundtable consists of key DG CEO software

development managers who answer pre-submitted questions by users. Last year many questions were submitted prior to the sessions. Questionnaire cards will be available at the conference for participants to submit questions prior to the roundtable. Early submissions enable panelists to research the questions so they can give better answers. The panelists also plan to field questions from the audience.

OASIS meeting

OASIS' annual meeting will be held during the conference on Tuesday afternoon. We will be discussing future plans for workshops and our direction for the future. We now have approximately 125 members and are the fastest growing SIG within NADGUG. **Δ**

Charlene A. Kirian is OA training specialist for the Online Computer Library Center, Inc., 6565 Frantz Road, Dublin, OH 43017; 614/764-6435. She also serves as president of NADGUG's OASIS Office Automation Special Interest Subcommittee.



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Cutting out the dead wood

The U.S. Forest Service is one of the largest users of DG's CEO

by Andrea Beebe
Focus Staff

MVs love trees.

And, according to a chief computer specialist in the Department of Agriculture, the U.S. Forest employees love their MVs.

The affair dates back to 1983, when the Forest Service enlisted 650 DG MV/ family machines to run DG's office automation software. The computers, with 10,000 video display terminals, serve 35,000 employees.

The DG machines are used primarily for office functions with features such as word processing, electronic mail, and spreadsheet and decision support packages.

"I have trouble convincing people that we don't have a mainframe somewhere—some IBM system somewhere," says Mike Travis, a computer specialist who evaluates hardware and software for the Forest Service.

Forest Service employees are in the process of connecting their machines through Telenet. "It's worked out very well. We're scattered across six time zones—Puerto Rico to Hawaii and also Alaska," Travis says.

By automating and standardizing the Forest Service offices, employees can save the government time and money. The headquarters office in Washington and nine regional offices use MV/10000s; approximately 80 forest supervisory offices use

MV/8000s; small, rural district offices use MV/4000s, with an occasional MV/8000. Most of the computers are managed by part-time personnel.

Users have access to BASIC, which Travis says allows employees to provide their own solutions to particular problems.

His department is working on a systematic way to share those solutions.

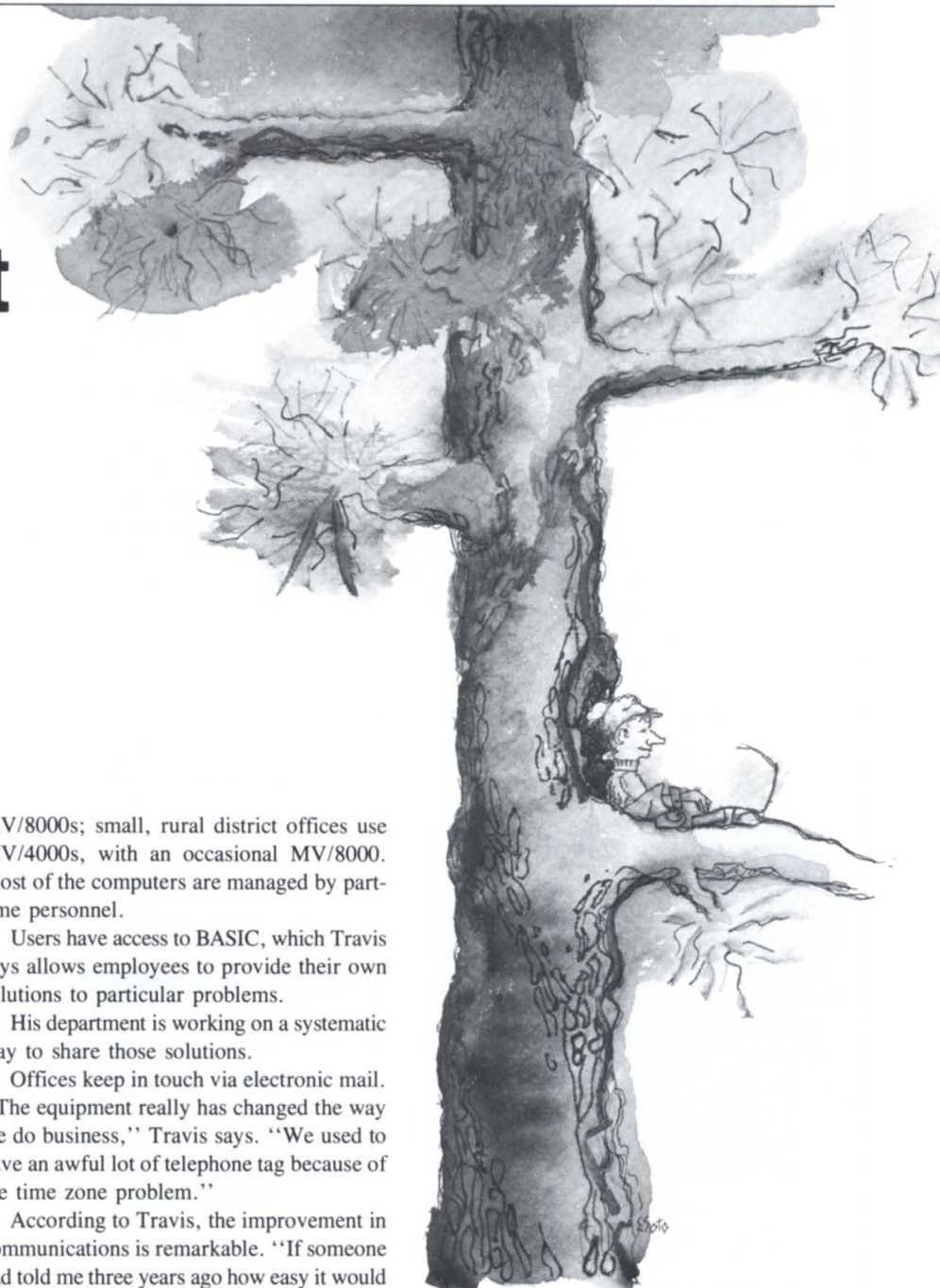
Offices keep in touch via electronic mail. "The equipment really has changed the way we do business," Travis says. "We used to have an awful lot of telephone tag because of the time zone problem."

According to Travis, the improvement in communications is remarkable. "If someone had told me three years ago how easy it would be to use electronic mail, I wouldn't have believed them," he says. The Forest Service's problems with the time difference have been eliminated, he reports.

The MVs are used primarily for office functions with features such as word processing, electronic mail, spreadsheet and decision support packages.

When the Forest Service first became interested in automation, Travis helped develop the specifications for the system. Six companies offered bids; DG was selected after an evaluation of cost and technology.

"DG has been really cooperative," Travis says. "Where we've had questions and problems, they've been willing to work with



People in the organization who won't use the computers are looked on as slightly odd and cut off from what's going on, because what's going on is electronic mail

us, unlike some other computer companies ... who made it fairly clear that we could take their product the way it was or forget about it." Travis says representatives from the Forest Service and Data General meet regularly to discuss problems and new packages.

Forest Service employees have adapted well to automation. "On the whole, we've had very good luck getting people to use (the computers). But, as you can expect, there was some resistance when we first started doing this," Travis says.

Before the Forest Service purchased its systems, its 800 offices had no systematic computer system. Those offices with computers had various systems and packages, which presented a problem when employees visiting other offices had to learn a new system to be able to do their work.

"It's worked out very nicely," Travis says. "Our employees move around a lot from one office to another, and now when they go to another office they know how to sit down and use the terminals."

The video terminals are D410s and D461s. The Forest Service has found no use for special executive terminals, such as the Dasher 555, which have a scaled-down keyboard—primarily for executives who use secretaries instead of using the keyboard themselves. Says Travis: "We decided that that kind of thing was stupid—sort of like designing cars for people who don't want to learn how to drive—and so we set right out, starting from the very top of the organization, to create a culture in which people would have terminals and would use them.

"People in the organization who won't (use the computers) are looked on as slightly odd and cut off from what's going on, because what's going on is electronic mail," notes Travis.

While the computers have helped the offices, Travis is already planning improvements for the next contract. "We haven't had much of a problem with micro integration, because we don't have a lot of micros. That's something that may change," he says. "I don't have any objections to people having information processing power with micros, but we're concerned with what (micros) do to information management. They make everybody a custodian of information, and the question is, 'how many different versions of information do you want to have?' Do you really want them scattered on MS/DOS diskettes lying around in people's desk

drawers?"

Travis says another problem the system faces lies in transferring information between micros—"Right now, it's an enormous pain in the neck." The Forest Service is using terminal emulator and file transfer software and, according to Travis, using those packages is not as easy as the sellers claim.

The Forest Service is currently in the third year of its 8-year contract. When the contract expires, they plan to reevaluate the available systems before recontracting. "It'll sort of depend on what's happened in technology and where we're going in the organization," Travis says, "but we're hoping to see more distributive intelligence." Δ

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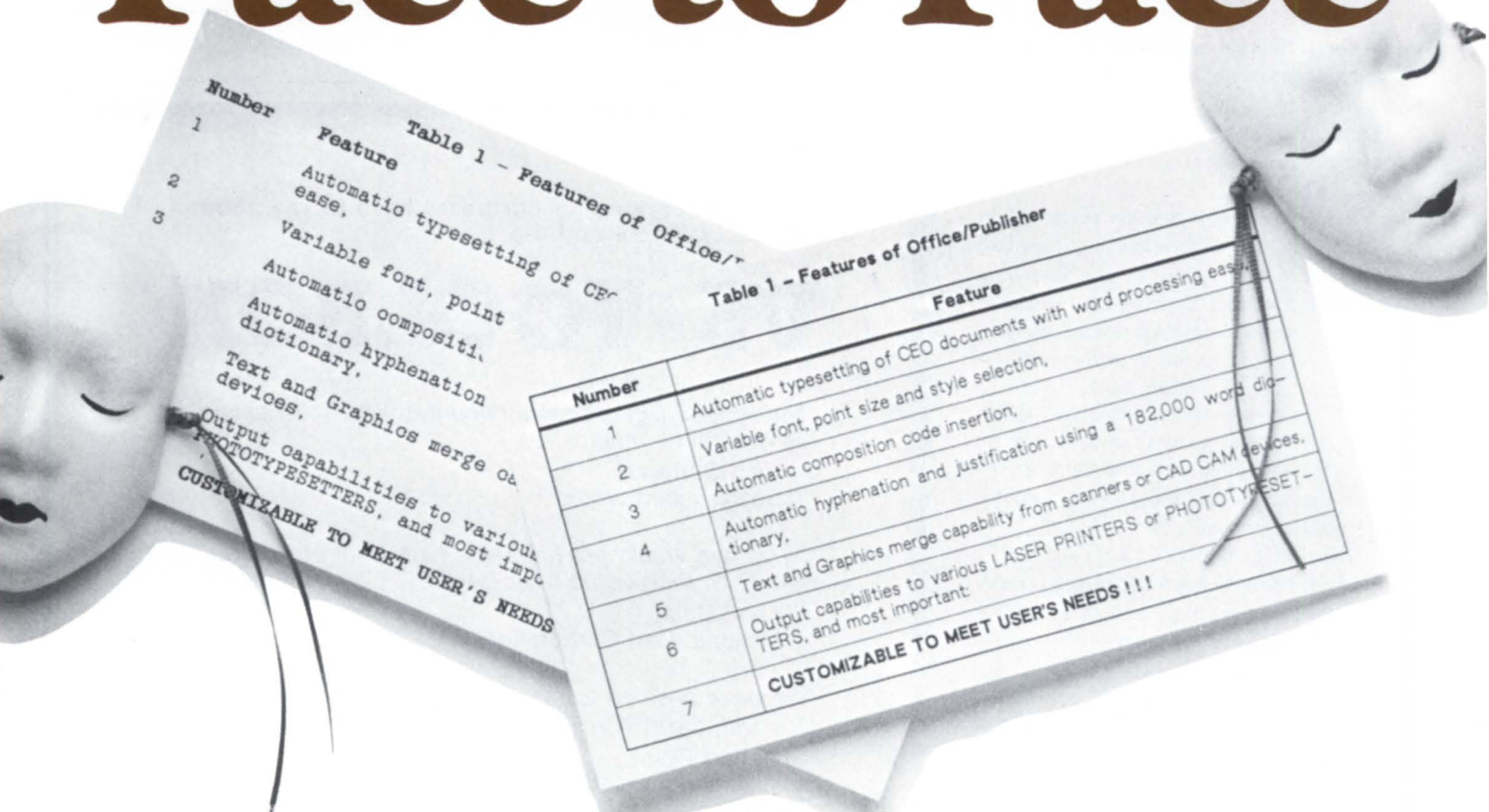
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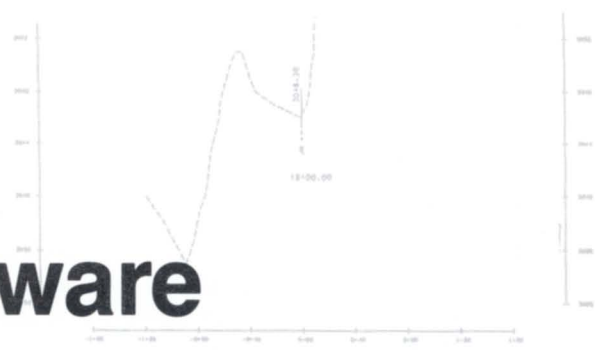
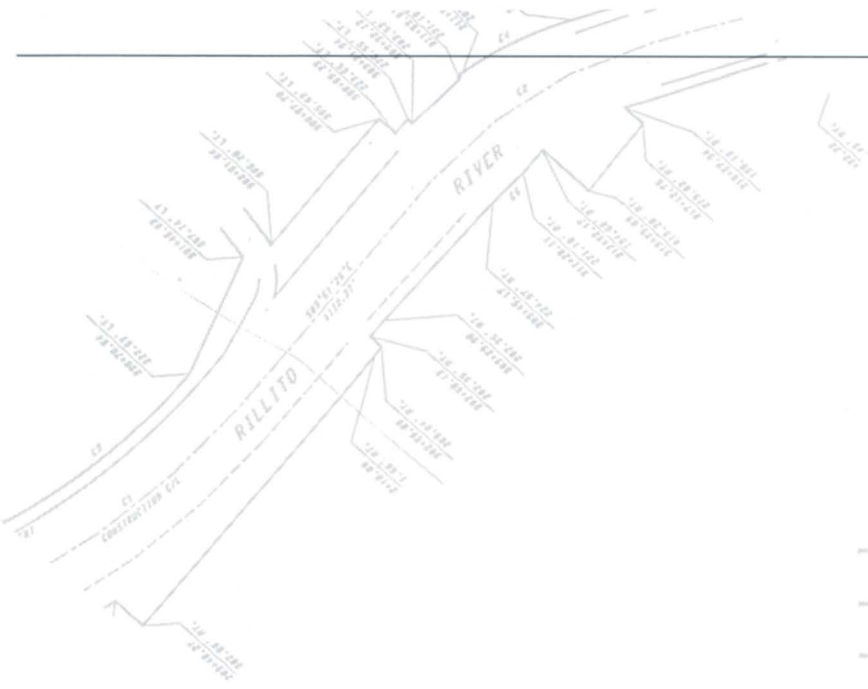


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Earth-moving software

Making life easier for civil engineers

by John J. Sweeney
Special to Focus

Editor's Note: Everyone has heard of software that dramatically increases productivity, but how about software that can help move mountains? John Sweeney reviews three important civil engineering packages.

The Department of Transportation and Flood Control is responsible for roads and drainage ways of Pima County in Tucson, Arizona. They recently bought a fully integrated coordinate geometry and computer-aided design and drafting software package called COGO/CADD, which has been in use for a year. Purchased from SysComp Corporation, COGO/CADD is used in the various stages of infrastructure design and development. The packages, modular in design, are running under AOS/VS on an MV/8000II. Applications are on the market for the whole array of engineering disciplines; Arizona's Department of TFC uses three of them for its

civil engineering needs.

EASICOGO is a coordinate geometry package that handles survey data collected from the field. With the data, engineers can use COGO to locate other points and define the plan or aerial view of a road, bridge, or other structure. A complete set of commands is available for point, line, and figure manipulation. The figure commands are very powerful, allowing the user to define a set of points as a single entity. For example, once the center of a road has been located and defined as a figure, the right and left sides of the road can be defined as parallel figures that match the center of the road exactly but are offset some distance to the left and right. Any symmetrical structure can be easily defined using the figure commands.

EASICOGO also has file maintenance commands that permit the creating and updating of text output files or files displayed on a graphics terminal/plotter. As a debugging aid, the text output files contain copies of the error messages displayed on the terminal when incorrect commands are issued.

The software may be used interactively, and it has an on-line help utility that is identical to the hardcopy manual. The package is most efficient in batch mode, which stores the

commands in a text file. Using batch mode is similar to programming in a highly specialized language.

Engineers found this command syntax difficult at first. All COGO calculations were previously done by HP pocket calculators running an in-house version of COGO. But once engineers became familiar with **EASICOGO**, they appreciated the extensive set of commands.

The package may be run using double precision constants. It can also be operated in two or three dimensions. An additional version of the program is available that runs under MS-DOS.

EASINET is a computer-aided design and drafting package. 32,000 layers are available for designing and drafting objects. These layers translate to colors. But, since few plotters have thousands of pens, the layers have a more important function. If the software is used correctly, drawings can be broken down into their component subdrawings. For example, a house could be drawn with the masonry in layer 5, electrical wiring in 6, plumbing in 20 through 25, roofing in 99, etc. When only a part of the drawing is needed to be reviewed or modified, that part can easily be separated and plotted.

EASINET has a very powerful symbol utility. (Symbols are descriptions of objects that have been saved in a very portable form.) To prevent different engineers and draftspeople from duplicating work, the complete drawing is in a single file. When a useful or repeatable symbol is created, it can be shared. Many times symbols need to be modified.

Sharing symbols reduces the amount of modification of the drawings. For example, suppose a civil engineer finds that all north

arrows must be changed from a highly stylized symbol to a simple arrow pointing north. Normally this would call for the complete redrafting of all the drawings. If symbols were used correctly, however, only the north arrow symbol would be modified and all north arrows in all the drawings would be changed automatically.

EASINET also supports an array of plotters, graphic terminals, and digitizers. The support for interfacing these devices is excel-

lent. Any of several fonts of text may be added to drawings. Entire text files may also be introduced into the CADD system. When exact lengths and positions are not required, engineers can do their sketches in the program's freehand mode. The precise mode is used to create final and exact drawings. Commands may also be stored in text files to form macros that can be executed from within the CADD system.

Utilities for editing the data base can actually define the lines and points that make up the drawings. Additional programs can also be written to directly interface with the EASINET system.

EARTH is the earthwork package—a handy tool for calculating the amount of earth that must be moved to create a specified road or drainage. The package operates on a text file containing data on the project's cross-sections, plus data describing the finished structure. Volumes of cut (earth to be removed) and fill (earth to be replaced) are calculated. This information is essential in calculating a project's cost—no one moves dirt around for free!

EARTH also provides files for graphics displays. It can also generate lengthy text reports.

These packages and other SysComp software can be integrated. Graphic files created by one program may be used by other modules. Δ

John Sweeney is an engineering technician for the Pima County Department of Transportation and Flood Control District. He may be reached at 1313 S. Mission Road, Tucson, AZ 85719; 602/882-2604 or may also be reached by modem at 602/882-7724. SysCom Corporation is located at 2042 Broadway, Santa Monica, CA 90404; 213/829-9707.

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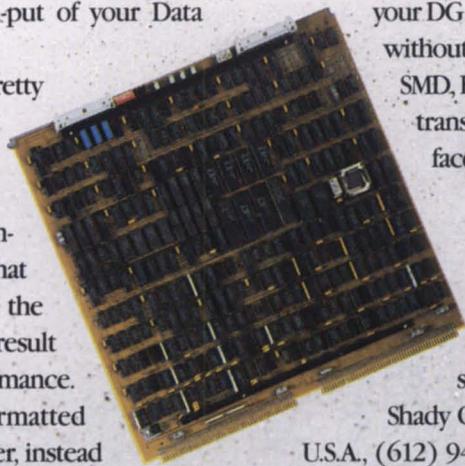
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ZETA 

The Link To Tomorrow.

Tackling bad blocks

Regular—and careful—use of DFMTTR will protect against file data loss

by Brian Johnson
Contributing Editor

:BAD_DISK_BLOCKS

A couple of months ago a user called to ask whether I was aware of a subtle change in DFMTTR. He claimed that in older versions, when DFMTTR found a new bad block that was allocated (i.e., part of a file), it attempted to copy the data from the bad block to the bad block remap area on a best-effort basis. The caller suspected that this was no longer the case on recent revs of AOS/VS DFMTTR (and maybe AOS DFMTTR, too—I haven't been able to check). He contacted DG about it, but whoever he talked to claimed that DFMTTR had never attempted to copy the data to the bad block remap area.

Since my recollection of how DFMTTR works agreed with the caller's, it occurred to me that a little research was in order.

I checked the documentation, and found that it does a good job of describing how, when, and why to use DFMTTR, but supplies little in the way of explaining the consequences of finding new, allocated bad blocks during a partial (read-only) surface analysis (new, unallocated bad blocks require no special attention). It also doesn't define what constitutes a "bad block." Since I don't have access to the DFMTTR sources, I can't swear to it, but I suspect that even soft errors with a retry count of 1 are counted as new bad blocks, even if the data was correctable using the ECC algorithm.

Thinking back on it, most of what I know about DFMTTR was figured out by trial and error, alternating between DFMTTR and FED to figure out exactly what had happened after DFMTTR was run.

Because DFMTTR can damage your files if it finds new, allocated bad blocks, it

occurred to me that a column on the subject of disk errors was in order.

:HARDWARE_FORMAT

You probably already know that disks are composed of cylinders, tracks (surfaces), and sectors. What you may not realize is that disks also have data recorded in what are called "inter-sector gaps." These are the spaces between sectors: they contain the address of the upcoming sector so the controller (or disk micro-code) knows when the starting sector for the requested transfer is about to pass under the read/write heads. The information in these inter-sector gaps is recorded by a diagnostic program called a disk formatter (e.g., ZDKP FMTR).

Running this formatter is the kiss of death for any existing data recorded on the disk. Typically, this formatter only needs to be run the day that the disk is first fired up (at DG), if something (perhaps a head swap or head realignment) has raised the possibility that one or more disk heads no longer fly over the same path they used to, or if you get the dreaded "Disk Address Error." The latter message indicates that the controller is unable to read the info in the inter-sector gap.

In theory, it is impossible for the disk controller to overwrite this inter-sector gap when not in "format mode." In normal mode the erase and write circuits are disabled while the head is traversing the gap. However, Murphy's Law occasionally overrides the theory—giving you a situation most FEs call "crap in the gap." It's very, very unusual, but it does happen.

Crap in the gap can be caused by a noisy disk cable, very dirty power, or circuits in the disk becoming senile. When it happens you just reformat the disk with the diagnostic, run a (full) DFMTTR, and start dusting off your most recent backup tapes.

When the diagnostic has finished rewriting the inter-sector gaps, the disk is formatted. The diagnostic then exits format mode and starts reading and writing various patterns that are supposed to locate any surface defects (scratches, voids in the oxide coating, or areas of marginal magnetic persistence). If it finds

any, it re-enters format mode and rewrites the inter-sector gap, adding a flag that will signal the controller that the block is bad—before it even attempts to write on it the first time.

The diagnostic can also do a "quickie" format, skipping the surface analysis. I usually do a quickie. Some Field Engineers insist on running hours and hours worth of surface analysis before running DFMTTR. I'll go along with that during initial installation, but for subsequent formats I figure that the maximum number of DFMTTR patterns is enough. If your engineer insists on running the full complement of patterns in the diagnostic, do it, but also run the full set of DFMTTR patterns.

:SOFTWARE_FORMAT_FULL

The next step is to use DFMTTR and the "Full" option to prepare the disk for use by AOS{/VS}. This involves another cycle of writing patterns on the disk, reading them back, and comparing them to the original pattern.

This procedure is supposed to detect any remaining bad blocks. Any error on reading back the block causes it to be added to the list of bad blocks. In addition, any sectors that the formatter flagged as bad in the inter-sector gap are automatically considered bad without any read/compare test.

If a block reads OK, but fails the comparison to the pattern, it indicates that the disk error checking logic may be faulty. However, the current version of the DFMTTR documentation doesn't show a special message to differentiate this type of error from an error detected by the disk controller logic. This is unfortunate, since it would warn you that a visit from Field Service is called for.

At the conclusion of DFMTTR the list of bad blocks detected is written in the "invisible" area of the disk. The invisible area is the first eight sectors of the pack. It contains, among other things, the bad block info block in sector 2. (Aside: this explains why the logical block and physical block numbers that FIXUP lists when using verbosity 3 always differ by 10 octal.) The bad block info block contains a count of the number of bad blocks, the location and size of the bad block remap

A soft disk error is an error that the disk logic detects during a read, but which can be corrected by applying the ECC algorithm to supply the missing bits

area, and a list of the bad blocks in sorted order.

When a drive is initialized (by booting it or using the INITIALIZE command), AOS{/VS} reads the bad block table into memory. Each disk access on that drive is checked against the bad block list and diverted to the bad block remap area as necessary.

:SOFTWARE_FORMAT:PARTIAL

Contrary to popular belief, areas of disk surface that once were good do not normally become bad. The only thing that can turn a good area into a bad area is physical destruction of the disk surface. This can happen directly, as a result of vibration which causes the head to contact the surface, or indirectly as a result of a foreign object (dirt or pieces of disk surface that have flaked off) coming between the head and the surface.

When a block was originally scored as good, but it later starts getting soft or hard errors, chances are good that it was always bad. The patterns used by the formatter diagnostic and DFMTR were just incapable of detecting it. It's fairly common for marginal surface areas to show up only after "real" data is recorded.

If new errors constantly crop up on your disk, you should get Field Service to take a look at it. This behavior is not normal.

Because DFMTR does not know what data to expect during a read-only analysis, it can't do pattern matching to check for errors in the disk error detection logic. Instead, it does the next best thing: it reads each block twice and compares the data. Again, there is no special message to indicate a compare failure as opposed to a simple read failure.

A difference between a full and a partial format is worth noting here: after a read-only surface analysis you are given the option of whether or not the new bad blocks are to be recorded in the bad block info block (the UPDATE BAD BLOCK TABLE question). If you haven't taken a backup recently, you might want to answer N at this point so you can bring your system back up long enough to try to get a backup before rerunning DFMTR and answering Y.

At this point, a hardcopy console is worth its weight in gold. I do my backup on the master console with a /V so I can note where the soft disk error messages occur amid the /V output. This gives me a rough idea of which files might contain the bad block(s). Unfortunately, both DUMP and DUMP_II buffer their output, so it may only be possible to identify a small group of four or five files as being suspect. However, it usually narrows it down to a specific directory. This is the only way I know to find out which part of the file structure is implicated.

:SOFT_VS_HARD

A soft disk error is an error that the disk logic detects during a read, but which can be corrected by applying the ECC algorithm to supply the missing bits. If the ECC algorithm indicates that the error is uncorrectable (usually because the number of bits misread is too long), then AOS{/VS} tries to read the block again and repeats the process. If the ECC succeeds, then AOS{/VS} emits a message on the master console and returns the data to the requestor in a normal fashion (no notification).

If, even after 15 tries, the data still cannot be corrected then the error counts as hard, and an error is returned to whoever requested the I/O.

Severe errors, such as crap in the gap, are scored as hard on the first try.

Infrequent soft errors with a retry count of 1 or 2 cause a barely measurable overhead and are not a cause for alarm. Hard errors require immediate attention.

:HISTORY

In the past (sorry, but I don't know which rev the "past" ended with), when DFMTR detected a new, allocated bad block it attempted to read it several times (up to about 15, I think). If any of the reads succeeded, it copied the data to the bad block remap area. This means that soft errors could be handled gracefully without loss of file data. However, no indication was given of whether or not the salvage attempt was successful, so the potential for file loss was still there, but less likely.

Current revisions of DFMTR appear to unconditionally zero the block in the bad block remap area without attempting to salvage the data. This means that any new, allocated bad block detected by DFMTR causes data loss, *even if the error was soft.*

If the block was part of a directory file (e.g., :UTIL), then whatever files were described by that block are lost.

If the block was a random index block for a file, then all the data elements pointed to by that index block are lost.

If the block was part of a file data element, then the information in the file which occupied that block is lost.

If the block happened to be part of an INFOS file directory, data volume, or differential file, then the INFOS file will be corrupted and will fail IVERIFY the next time you run it.

This makes the handling of new, allocated bad blocks a situation requiring very serious attention.

:A_SOLUTION

There are two ways out of this dilemma. You could avoid running DFMTR, learn to ignore soft errors from the disk, and hope they don't become hard errors. Or you could get in the habit of running DFMTR (partial) once a month immediately after an archive backup. Obviously, I recommend the latter.

If any new, allocated bad blocks are discovered, then you should answer Y to UPDATE THE BAD BLOCK TABLE, rerun DFMTR using FULL with no surface analysis (this will use the old bad block table), and then reload the disk from the archive backup.

This is a severe approach, but any other strategy has the distinct possibility of file data loss. Δ

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SUNDAY, AUGUST 10

9 am - 5 pm	NADGUG Executive Board Meeting (Open to all Officers, Standing Committee and RIG/SIG Chairpeople)
4 pm - 8 pm	Educational Services Seminars On-site Registration

MONDAY, AUGUST 11

7:45-8:45 am	Educational Services Seminars Registration CEO Workshop Registration
8 am - 10 am	Informal Guest Hospitality Suite
9 am - Noon	Educational Services Seminars/Morning (Requires separate fees and registration) CEO Workshop, Parts I and II (Requires separate fees and registration)
Noon - 1 pm	Lunch break
1 - 6:30 pm	Conference Registration Desk Open (Pick up your materials if pre-registered, or complete on-site registration.)
1 - 4 pm	Educational Services Seminars/Afternoon CEO Workshop, Parts III and IV (Runs til approximately 4:30 or 5pm)
5:30-6:30 pm	New Member/Conference Orientation (Stop by, particularly if you're new to NADGUG. Meet the Officers and Support Staff.)
6:30 pm - 8 pm	Welcome Reception (Ticket required.)

TUESDAY, AUGUST 12

7:30 am - 9 am	Speakers' Orientation Breakfast (For those giving presentations on Tuesday only.)
8 am - 5 pm	Conference Registration Exhibits & Exhibit Area Cafe Open Audiotape Sales Open Guest Hospitality Room Open
9 am to 10 am	SPECIAL GENERAL SESSION Speaker to be announced
10-10:15	Short break
10:15	Guest Program: Special Orientation
10:15	1. ICOBOL, Gerry Manning, Creative Synergy 2. Decoder Rings & Bit Buckets: A Painless Introduction to Encryption Tom Gutnick, Data General
to	3. A Computer Graphics Course Thomas C. McMillan, Radford University
11:00	4. INFOS Application Development Paul J. Rogers, Cybertek Software 5. MAP & TOP - The Standards Come of Age Brian Schimpf, Data General
11-11:15	Short break
11:15	1. Applications of BBASIC: Now and Future George Henne, MICOM Computer Systems 2. Superuser Tracking System for AOS/VS Sharon Lindley, Rockwell International R. A. McKosky, Boeing
to	3. System Security: Three Can Keep a Secret Michael E. Marotta, Michigan State Univ.
Noon	4. Distributed Resource Sharing with AOS/DVS Ronald Lloyd, Data General 5. Computer Integrated Mfg Applications David Allen, Data General
Noon to 1:30	Lunch break for Attendees Lunch Meeting for RIG/SIG Chairpeople
1:30	1. Spreadsheets & Decision Support Carl Nelson, Access Technology
to	2. Hooking up Terminals Brian Johnson, BJ Inc. 3. User Friendly FIFO Queues for Intertask Communication Karen M. Lewis, SCIPAR Inc.

2:15	4. 4GL Application Development Marc Praly, Cognos Inc. 5. TEO/Electronics: Third Gregg D. Sutherland, D
------	--

2:15-2:30	Short break
-----------	-------------

2:30	1. Field Engineering: Upd Jim Foxworthy, Data G
to	2. D460 Data Scope Diagn Robert A. McKosky/Mic
3:15	3. DEC to DG FORTRAN, Orval F. Hart, Jr, Los Al 4. Communications Roun Kirk Honold, Chair

	Formal session
--	----------------

3:30	1. FOCUS Magazine: Meet Greg Farman, Chair
to	2. CEO SIG Annual Meetin Charlene Kirian, Chair

4:30	3. Educators' SIG Organiza Skip Pomeroy, Chair 4. BBASIG SIG Annual Me Mark Strickland, Chair
------	--

4:30	1. AOS & AOS/VS SIG Anr David Novy, Chair
------	--

to	2. Petrochemical SIG Orga
----	---------------------------

5:30	3. Federal SIG Organizatio 4. IRDOS SIG Annual Me Dennis Doyle, Chair
------	---

WEDNESDAY, AUGUST 13

7:30 am - 9 am	Speakers' Orientation Break (For those giving presentati
----------------	---

8 am - 5 pm	Conference Registration De Exhibits & Exhibit Area Caf Audiotape Sales Open Guest Hospitality Room Op
-------------	--

9 am	GENERAL SESSION NADGUG Annual Business Chair: Rene Dominguez, NA
to	(Election of Officers and oth
10 am	(Special Giveaway Drawings

10 - 10:30	Complimentary Coffee Break
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10:30 to 11:30	GENERAL SESSION Address to the Users Group J. David Lyons, Vice Preside Business Group Marketing
----------------	---

11:30 - 1	Lunch break
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1:00	1. AOS & AOS/VS Roundta David Novy, 3M (Chair)
------	---

to	2. Micro to Mainframe Arch Ken Whitaker, Data Gene
----	---

1:45	3. Database Trends & New Larry Ellison, Oracle
------	---

1:45 - 2	4. Creating a Controlled En System Architecture Michael J. Gaskey, Incep
----------	--

1:45 - 2	5. Group Technology: Bring Michael Medaglia, Org fo
----------	--

2:00	Short Break
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2:00	1. AOS & AOS/VS Roundta 2. DG Discs: Past, Present & John McDaniel/Lou Lem
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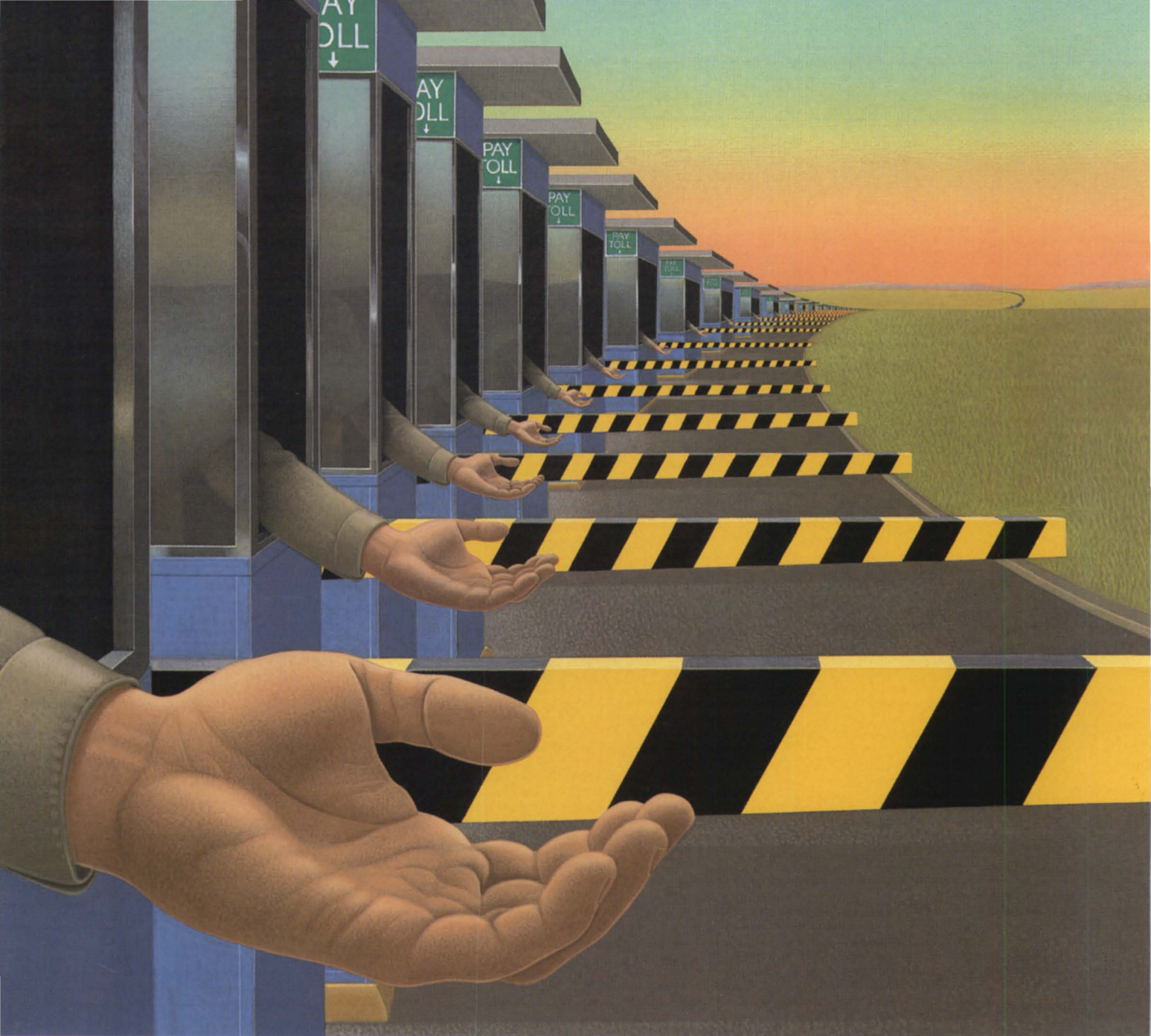
to	3. Making Your Projects Su John Jones, Data Genera
----	---

2:45	4. Developing Applications William M. Schott, Detro
------	--

	5. Artificial Intelligence & E Barry Allison, New Braun
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Preliminary Agenda

ent Guidelines rated eration Electronics Design Automation General	2:45 - 3:15	Complimentary Coffee Break
on the Customer Support Center al ics Mink, Boeing ersion of a Real-time System os Natl Lab ole	3:15 to 4:00	<ol style="list-style-type: none"> 1. CEO Roundtable Charlene Kirian, OCLC (Chair) 2. RDOS Roundtable Dennis Doyle, Pretty Neat (Chair) 3. 32-Bit Exec: New Functionality Douglas A. Wood, Data General 4. MVDG: High-Performance MUMPS Architecture Keith Orner, InterSystems 5. Cardiac Function Modeling on the MV/8000 Willard L. Graves, Johns Hopkins Univ
nd. See Exhibits or SIG Meetings Editors	4:00 - 4:15	Short break
nal Meeting ng	4:15 to 5:00	<ol style="list-style-type: none"> 1. CEO Roundtable (Continued) 2. RDOS Roundtable (Continued) 3. AOS/VS & Multi-Processors: When Two is Better than Two John Gilgis, Data General 4. Data Dictionary: DG's Common DP Solution Karen Finch, Data General 5. Software Development for Standalone Systems Charles K. Cole, Georgia Tech Research
I Meeting ation Meeting Meeting g	5:00 - 6:30	No events scheduled
st Wednesday) Open Open	6:30 pm to 10:00 pm	Cocktail Reception and Banquet Childrens Carnival Evening & Dinner (Tickets required for either event)
eting GUG President business)	THURSDAY, AUGUST 14	
	7:30 am - 9 am	Speakers' Orientation Breakfast (For those giving presentations Thursday)
	8 am - 10 am - 1 pm	Conference Registration Desk Open Audiotape Sales Open Exhibits & Exhibit Area Cafe Open Guest Hospitality Room Open
	9:00 to	<ol style="list-style-type: none"> 1. Elements of a Good Disaster Plan Joseph Cannata, Data General 2. WordPerfect Office Library Bret Harris/Merlin Carpenter, SSI 3. DG/SQL Database: Design for Performance Deborah Huber, Data General
	9:45	<ol style="list-style-type: none"> 4. Office Publishing: An Extension to OA John Paroda, Intercon 5. Engineering Workstations: Design for 80's Christopher M. Saleh, Data General
	9:45 - 10:15	Complimentary Coffee Break
	10:15 to	<ol style="list-style-type: none"> 1. AOS/VS System Managers' Panel David Novy/Brian Johnson (Chairs) 2. INFO Overview: CEO & INFOS II Interfaces Linda Jarvis, Henco Software 3. Advanced Negotiation System: Westinghouse Field Sales Office Implementation Nancy S. Wolk, Westinghouse Electric
cture: the Emerging Standard hнологies onment and nc. g Manufacturing Operations On-Line Industrial Research	11:00	<ol style="list-style-type: none"> 4. Standards for Successful Sofware Development William Topoly, Webber Gage/Starrett Tool 5. UNIX Distributed File System: DG/UX FNS Jeffrey S. Kimmel, Data General
(Continued) ature Data General ssful	11:00 - 11:15	Short break
h Powerhouse dison ert Systems A Case Study s Utilities	11:15 to Noon	<ol style="list-style-type: none"> 1. AOS/VS System Managers' Panel (Continued) 2. UNIX: Past, Present & Future Catherine E. Braun, Data General 3. Getting Your Act Together: Improving Quality & Productivity through Software Configuration management Patricia W. Daggett, Data General 4. Mini-Micro Integration for MV Series Bob Garber/Donald Eitzbach, Virtual Microsystems 5. Applications for Optical Disk Subsystems Wayne Whitman/Gary Becker, Zetaco Inc.
	Conference Ends—Exhibit Area, Audiotope Sales Open Til 1pm	



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CLImax

Tricks that add much-appreciated functionality to application programs

by John A. Grant
Special to Focus

Editor's Note: John Grant, who works for the Geological Survey of Canada, has written several hundred application programs for processing airborne and borehole radiometric data. The "trick" routines he shares in this article are used throughout his programs to provide easy access to special AOS{/VS} functions. He promises to demonstrate more tricks in future articles. The language of solution is FORTRAN 77 (and some assembler), but the ideas and techniques should be portable to other languages.

Few things are more satisfying to me than being able to instantly start up a CLI process from within a program like SED or CEO. OK, so I'm easily satisfied—but the next time you become "Son of SED," think about the elegance of it. Despite its elegance, starting a CLI process is fairly easy to implement in your favorite programming language. Just dig out the FORTRAN 77 (F77) Environment manual (93-288) and copy the version it presents on page 3-15ff. Later in this column I'll tell you how to fix/improve it.

Listing 1: subroutine GET PROGRAM NAME(name)

```

include      "qsym.f77.in"
character*(*) name           !returned name
integer*4    ac0,ac1,ac2,ier
integer      loc_null,loc_last_colon,l_name,i
character*256 pathname       !needs at least 256
integer*4    isys            !f77 function

c>>>begin
c-->get pathname, i.e. ":UDD:GRANT:XXX.DIR:APPLES.PR<0>")
  ac0=-1           !get pathname of self
  ac1=0            !reserved
  ac2=byteaddr(pathname)
  ier=isys(?gprnm,ac0,ac1,ac2)

c-->find endpoints of filename
  loc_null=index(pathname,"<0>")      !null terminator

c...find location of last colon (in front of filename)
  do i=1,loc_null
    if(pathname(i:i).eq.":") loc_last_colon=i
  end do

c-->extract program name, excluding null terminator
  l_name=(loc_null-1) - (loc_last_colon+1) + 1
  name(1:l_name)=pathname(loc_last_colon+1:loc_null-1)

c-->if .PR' is present, replace with 3 spaces
  if(name(l_name-2:l_name).eq.".PR") then
    name(l_name-2:l_name)="  "
  end if

c-->pad with spaces
  do i=l_name+1,len(name)
    name(i:i)=" "
  end do

  return
end

```

How do you use this routine in your application programs? Professional developers using screenedit ?READs with function keys can put "CLI" function keys in their products. However, application programmers and end users usually have access only to standard high-level language I/O statements—which don't necessarily support function keys very well. All too often the complexity of making direct system calls (for example, with F77's ISYS function) is more than the average programmer wishes to attempt. What follows is a collection of four routines for your toolbox. They can enhance your programming environment by making it easy to implement the "CLI" routine. I'll provide a few ideas to get you started, but I'm sure you can come up with more applications.

The routines are GET_PROGRAM_NAME, CLI_PROGRAM, YES, and HANG. GET_PROGRAM_NAME gets the name of the current program; it's used by CLI_PROGRAM to build a "Son of XXXX)" string and then call the "CLI" routine. YES makes it easy to add "yes/no" queries to your programs (by "hiding" the I/O statements and checking for invalid responses). In addition, YES uses CLI_PROGRAM to access the CLI. HANG replaces the F77 PAUSE statement; it can also call CLI_PROGRAM.

If you examine GET_PROGRAM_NAME (see Listing 1), you will notice that I have used ?GPRNM instead of the ungainly ISYS_GPRNM. After I used the F77BUILD_SYM utility to create the QSYM.F77.IN parameter file from <SYSID

*You can even write an application
program so that a ^C^A sequence at any
point in the program will start up a
CLI process*

PARU>.32.LS, I ran a SPEED or SED macro on it to replace all of the occurrences of "ISYS_" with "?", a valid character in DG's F77 (implicit integer). Who cares if it's nonstandard—so are the system calls! When you use these "?" parameters from

ment manual. As you may have discovered, that version of "CLI" only activates a CLI process in noninteractive mode. After executing your commands, the CLI process terminates, returning you to your program. To force the CLI process to "stay up" until you

noninteractively like the version in the F77 manual, you can always skip the prefix command and add ";BYE" to the end of the string:

```
CALL CLI("qprint my__file ;bye/!=@null")
```

Note that my version of the F77 "CLI" routine does not have argument 2 ("RESULT_CODE"). It isn't needed and just clutters the calling sequence. I list the error inside the "CLI" routine with the F77 ERRCODE routine, and just return as if nothing had happened. Errors are rare and will be something like "not enough sons" or "attempt to block resident process". If you really want to allow starting up a CLI from a resident process, then you can put ?CTYPE in front of the ?PROC to make the process pre-emptible or swappable, and then restore resident status after the ?PROC.

Finally, I put it all together in YES (see Listing 3). Note that I used F77 channel 10/11 preconnects, which use "LIST", rather than the tedious and unnecessary "FORTRAN" carriage control. The "\$" format item suppresses the "cr/nl" so that the cursor remains at the end of the prompt. If you use "*" or 5/6 or PRINT for I/O, the two I/O statements may be different.

A nice feature of this routine is that it will not return until an explicit "yes" or "no" response is entered. If "cli" is entered, a CLI process is started, but when it terminates, the query is repeated. An end-of-file (^D, ier=-1) is quietly ignored. A read error (i.e., "line too long") will not crash the routine either; "YES" will simply repeat the query. It is bullet-proof. If you wish, you can tailor the valid responses and cosmetics to suit your application; perhaps use single character I/O, so that you just have to touch the "Y" key to return a .TRUE. value, or allow "Y" for "yes" and treat anything else as "no".

I coded this version to require explicit "yes" or "no" answers terminated with "cr/nl". Entering only "cr/nl" will not generate a default response of "no". This forces users to think about what they are doing, thus avoiding the problem of quickly entering a "cr/nl" and then saying "No wait, I meant yes! Oh well, ^C^B and start over!" You can also run into query/response syn-

Listing 2: subroutine CLI PROGRAM !no arguments!

```
character*32  program_name
integer       length

c>>>begin
c-->get name of current program (without '.PR' extension)
call GET_PROGRAM_NAME(program_name)

c-->append ')' to end of name or truncate if too long
length=index(program_name," ") - 1 !length of name
if(length.gt.17) then
  length=17 !truncate, no ')'
else
  if(length.lt.17) then
    length=length+1
    program_name(length:length)="<<251>"
  end if
end if

c-->call CLI with this initial command (note: only 1 arg)
call CLI("prefix Son of " // program_name)

return
end
```

QSYM.F77.IN, your code will bear a very close resemblance to assembler, and will be more readable as well. By the way, as the folks at DG are quick to point out, you should always code using symbolic offsets rather than hard-coded numbers.

CLI_PROGRAM (see Listing 2) can now look up the name of the current program and start up an interactive CLI process with the appropriate "Son of " prefix. Since the CLI prefix can only be 24 characters long, using "Son of " leaves only 17 characters for the program name. If there is room, "(" is appended just to make it look nice. Note that you cannot just code "(" because the CLI won't like it; "<251>" is the F77 equivalent of "[!asc,251]".

Here's where you have to modify the "CLI" routine supplied in the F77 environ-

ment manual. As you may have discovered, that version of "CLI" only activates a CLI process in noninteractive mode. After executing your commands, the CLI process terminates, returning you to your program. To force the CLI process to "stay up" until you

terminate it (with BYE or ^D^D), you must set the ?GFEX and ?GFXB bits in offset ?IUFL of the IPC header. The use of these bits is not very well documented, but you can find some information in "PARU.32.SR."

In the F77 "CLI" routine, add the following statement somewhere before the ISYS function is called:

```
ISEND_HEADER(1)=ISYS_GFEX
+ ISYS_GFXB
```

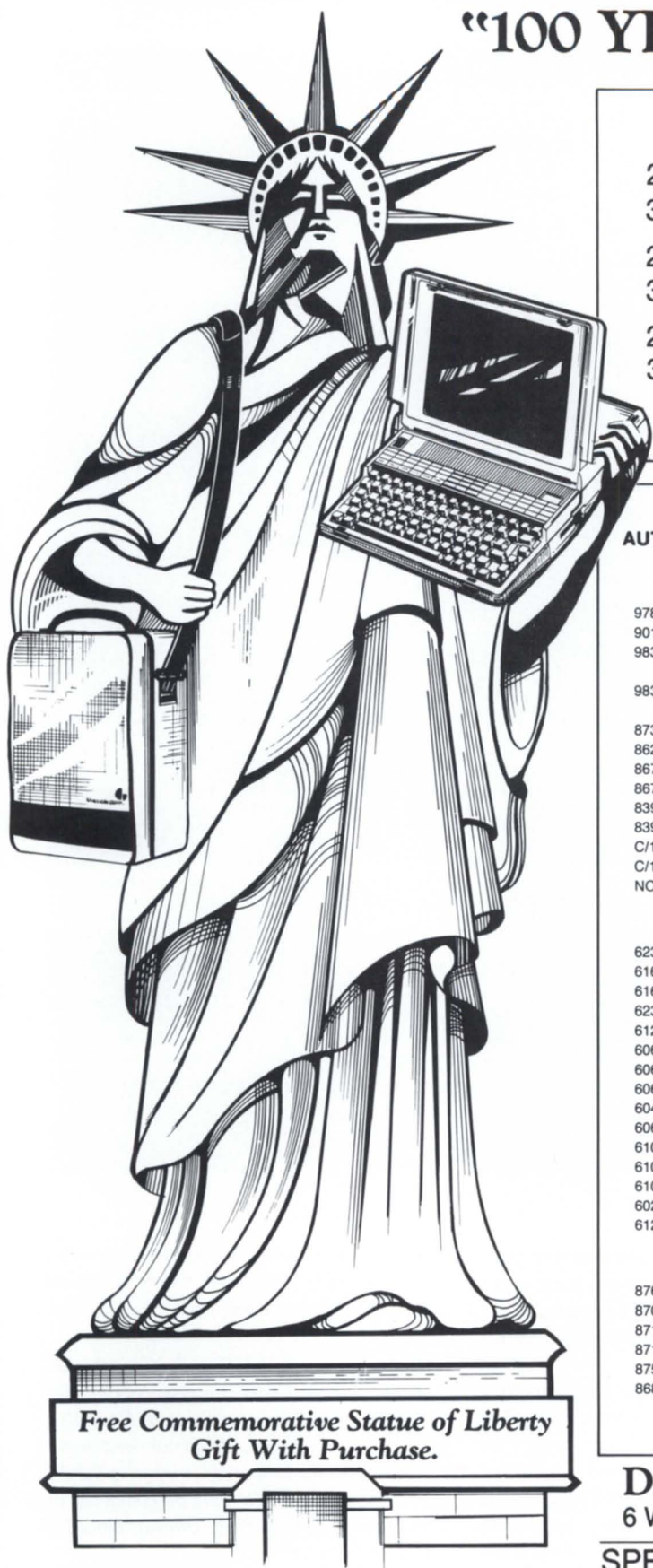
If you modify QSYM.F77.IN as I have described, then use:

```
ISEND_HEADER(?IUFL)=?GFEX
+ ?GFXB
```

Now you can call the "CLI" function as follows:

```
CALL CLI("prefix Son of a Gun[!asc,251];
time:date")
```


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chronization problems when users try to anticipate the program by entering several responses ahead of the prompts.

Here's the elegant part. Whenever your application program requires a "yes/no" type of query, use the "YES" function, as in the following examples:

- logical hardcopy, YES
- hardcopy = YES("Do you want a listing ? ")
- if(.not.YES("File missing: shall I continue?")) STOP
- if(YES("<24> Are these values OK <25> <16>? <17> ")) return

Remember that the "YES" function also understands "cli", in addition to "yes/no", so any time a "yes/no" query appears in your application program, you can also enter "cli"; a CLI process (with the appropriate "Son of XXXX" prefix) will be started up. You don't have to code a different "Son of XXXX" string in each program, because CLI_PROGRAM will insert the program name for you.

Many interactive programs also use the FORTRAN "PAUSE" statement to freeze the program and resume when "cr/nl" is entered. This gives the user a chance to read the information on the screen before it clears or scrolls up. The "PAUSE" statement is fine, but if you replace it with a call to my HANG routine (see Listing 4), you will have even more places in your program from which to access the CLI.

As before, intercepting the "ier" error code and ignoring it makes this routine immune to I/O errors.

Also, don't forget to allow "cli" as a valid response when prompted to enter a filename or other item of character information:

```
logical cli_entered
cli_entered = .true.
do while(cli_entered)
  write(10,*) "Enter the name of a file to
  process"
  read(11,fmt="(a)") filename
  if(filename.eq.'cli'.or.filename.eq.'CLI')
    then
      call CLI_PROGRAM
    else
      cli_entered = .false.
  end if
end if
```

Listing 3: logical function YES(question)

```
character*(*) question
character*3 answer
logical indeterminate
integer ier

c>>>begin
  indeterminate=.true.
  do while(indeterminate)

    write(10,fmt="(a,$)") question

    ier=-1 !eof
    do while(ier.eq.-1)
      read(11,fmt="(a)",iostat=ier) answer
    end do

    if(answer.eq."CLI".or.answer.eq."cli") then
      call CLI_PROGRAM
    else if(answer.eq."YES".or.answer.eq.'yes') then
      YES=.true.
      indeterminate=.false.
    else if(answer.eq."NO".or.answer.eq."no") then
      YES=.false.
      indeterminate=.false.
    else
      write(10,*)"Please answer the question YES/NO!"
      write(10,*)" or enter CLI"
    end if
  end do

  return
end
```

Listing 4: subroutine HANG

```
character*3 item
integer ier

c>>>begin
  write(10,*) "press 'nl' to continue"
  read(11,fmt="(a)",iostat=ier) item
  if(item.eq."CLI".or.item.eq."cli") call CLI_PROGRAM
  return
end
```

You can even write an application program so that a ^C^A sequence at any point in the program will start up a CLI process instead of just at the "yes/no" query. More on that in a future article.

Put these routines in your library toolbox (you do keep your software tools in an LFE-created .LB file, don't you?), encourage your programmers to use them, and soon all of your application programs will have a common user interface for "yes/no" queries and PAUSEs, with CLI access allowed from many points within the programs. If you don't agree

that the resulting code is appealing to the eye and bewitching to the mind, return the unused portion for your money back. Δ

Geological Survey of Canada Contribution 16786. John A. Grant is a geophysicist with the Geological Survey of Canada. He is also the "system manager, chief cook, and bottle washer" for the Resource Geophysics Subdivision's MV/4000. He may be contacted at 601 Booth St, Room 591, Ottawa, Ontario, K1A 0E8; 613/996-2325.

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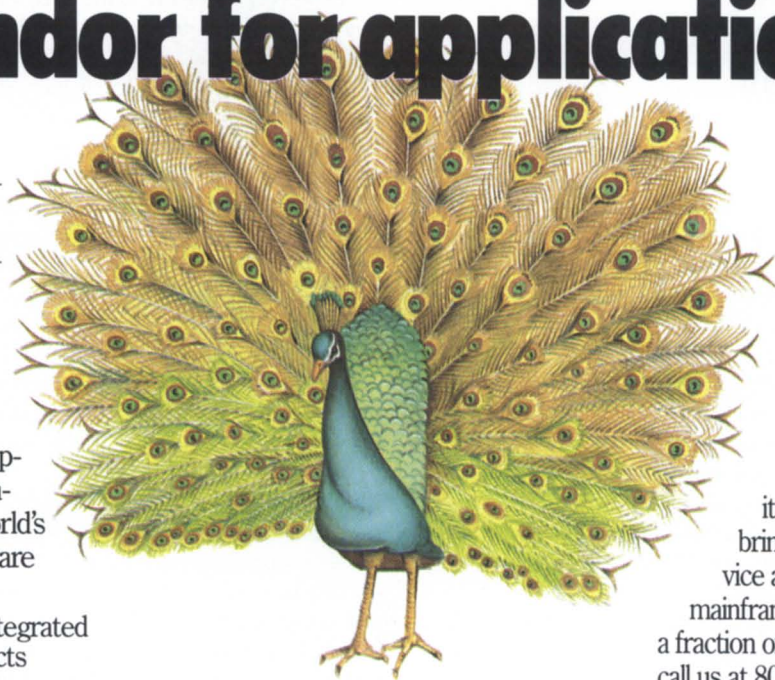
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Cures for fears

Even paranoids have real enemies when it comes to backups

by Tim Boyer
Contributing Editor

Being professionals, we are all aware of the fact that computers are not thinking machines—they're just hunks of iron and silicon that happen to be very good at performing certain calculations very quickly. Why is it, then, that nobody has ever been able to explain the following occurrences to my satisfaction?

- The disk drive will invariably fail 10 minutes after the field engineer has completed preventative maintenance and left the building.
- When the drive does fail, bad blocks will be deposited in the locations where they will do the most harm. I have yet to see a bad block in a .PD or .DD. They always fall into the middle of a 10 MB .XD.
- The above will always occur on the last day of the month, when processing is heaviest—and you can't start the next month's transactions until you've cleared out this month's.
- Everyone within a 200-mile radius of your system will have their drives fail at the same time. The FE is going to be tied up until next Wednesday.
- Yesterday, you had to go home early, and decided to skip the backup. After all, the drive has been running perfectly for six months, so what could one day hurt?

If this sounds familiar, welcome to the ranks of the paranoid. My professionalism notwithstanding, I have a deep-seated and justifiable fear that these machines are out to get us. Only unflinching vigilance will prevent a line of people from gathering outside the door to scream (in three-part harmony), "When will the computer be up?"

This month, I'd like to describe the backup procedure that lets me sleep at night.

Some of our solutions are hardware-oriented. We've got two 147 MB drives. One is used only for history files, which use up more than 100,000 blocks. The files are used often enough that I could justify another drive for them instead of keeping them on tape, yet they're not necessary for daily operations. Thus, when my first drive went out to lunch about a week ago, I swapped cables, loaded up the backup tape, and kept running.

We also have a spare printer or two. If you have any PCs with printers, be sure that the printer interface is the same as that on your Data General system. When our printer went down a few months ago, we simply unplugged the cable, plugged it into the back of our Epson, and kept going.

Finally, with terminals as inexpensive as they are today, it makes a lot of sense to have a spare around. If you have one of the aforementioned PCs, buy a terminal emulation program, even if you never expect to use it. In an emergency, it could be a lifesaver. And get the cable made while you're at it—the last time we had a terminal go down, we had the PC, a great terminal emulator—and no way of hooking it up!

However, all of the extra hardware in the world won't help if you don't do your backups. Here's what we do—and remember, I told you I was paranoid.

First, you need a good, reliable, full disk backup program. Good luck finding one. If you can, use COPY and verify the tape afterward—COPY actually reads the disk, unlike BURST. If you don't have (or can't use) COPY, then use BURST—and cross your fingers. Don't bother with BURST's verify, unless you happen to have a flakey tape drive—it just makes sure that the tape is readable.

When that is done, we run a small ICOBOL program to do some file verifications—make sure that the total quantity committed in the inventory file matches the number ordered in the order line item file, check the accounts receivable open items against each customer's balance, and so on. In the past, it was necessary to bring up the run-time system and run this program, and then bring it down again. With rev. 1.30, however, the program may be run from the CLI: ICX/C CLEANUP

This runs the program and returns to the CLI.

I've noticed a reverse correlation between the amount of work needed to do a backup and the frequency of said backup. On our micros, backing up a 10 MB disk takes 25 floppies and a few hours of time—and is done as infrequently as possible. Therefore, I designed the backup for our DG system so the whole process can be run from one macro (except for the full disk backup). All our operator has to do is type NIGHTSTART; the rest is done automatically.

After the CLEANUP program returns control to the CLI, the macro performs a dump of all files updated that day. In order to prevent operator intervention, the macro puts that day's date into the DUMP command line, like this:

```
DELETE TODAYSDATE
ENDLOG DELETE LOG.CM
LOG
MESSAGE %DATE% '/A'
ENDLOG
RENAME LOG.CM TODAYSDATE
INIT MT0
DUMP/A/L MT0:0 *.* @TODAYSDATE@
RELEASE MT0
```

In addition to the incremental backup, I also put different files on MT0:1. For instance, on Mondays I back up all of the .CO files, on Tuesdays all of the .FD, .WS, .SL, and .DS copy files, and so on. Once again, I try to eliminate intervention—but how is the system going to know which day it is, and which files to back up? With an ICOBOL program, of course!

I create a sequential file called DAILYFILE with an FD like this:

```
01 DAILY-BATCH-RECORD.
03 FILL-1 PIC X(3).
03 DAILY-DAY PIC X(9).
```

The working storage for my date routine is as follows:

```
77 WS-DAYS PIC 9(6).
77 WEEK-DAY PIC 9(1).
01 SYSTEM-DATE.
```


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```
03 SYSTEM-YEAR      PIC 9(2).
03 SYSTEM-MONTH    PIC 9(2).
03 SYSTEM-DAY      PIC 9(2).
```

01 DAYS-IN-MONTH-TABLE.

```
03 DAYS-IN-MONTH.
  05 FILLER PIC X(3) VALUE "000".
  05 FILLER PIC X(3) VALUE "031".
  05 FILLER PIC X(3) VALUE "060".
  05 FILLER PIC X(3) VALUE "090".
  05 FILLER PIC X(3) VALUE "120".
  05 FILLER PIC X(3) VALUE "151".
  05 FILLER PIC X(3) VALUE "181".
  05 FILLER PIC X(3) VALUE "212".
  05 FILLER PIC X(3) VALUE "243".
  05 FILLER PIC X(3) VALUE "273".
  05 FILLER PIC X(3) VALUE "304".
  05 FILLER PIC X(3) VALUE "334".
03 MONTH-DAYS REDEFINES DAYS-IN-MONTH
OCCURS 12 TIMES INDEXED BY
DAYS-IN-MONTH-INDEX PIC 9(3).
```

01 WEEK-DAY-TABLE.

```
03 DAYS-TABLE.
  05 FILLER PIC X(9) VALUE "SUNDAY".
  05 FILLER PIC X(9) VALUE "MONDAY".
```

```
05 FILLER PIC X(9) VALUE "TUESDAY".
05 FILLER PIC X(9) VALUE "WEDNESDAY".
05 FILLER PIC X(9) VALUE "THURSDAY".
05 FILLER PIC X(9) VALUE "FRIDAY".
05 FILLER PIC X(9) VALUE "SATURDAY".
03 WEEK-DAYS REDEFINES DAYS-TABLE
OCCURS 7 TIMES PIC X(9).
```

```
Then, to figure out what day it is:
ACCEPT SYSTEM-DATE FROM DATE.
MULTIPLY SYSTEM-YEAR BY 36
  GIVING WS-DAYS.
SET DAYS-IN-MONTH-INDEX TO SYSTEM-MONTH.
ADD SYSTEM-DAY,
  MONTH-DAYS(DAYS-IN-MONTH-INDEX)
  TO WS-DAYS.
DIVIDE WS-DAYS BY 7 GIVING WS-DAYS
  REMAINDER WEEK-DAY.
ADD 1 TO WEEK-DAY.
```

```
To insert the day of the week into the batch file:
MOVE SPACES TO DAILY-BATCH-RECORD.
MOVE "DO " TO FILL-1.
MOVE WEEK-DAYS(WEEK-DAY) TO DAILY-DAY.
WRITE DAILY-BATCH-RECORD.
```

In my backup macro, I have DO DAILYFILE. DAILYFILE then contains the day of the week. Next I create a file named MONDAY with the batch commands I want executed on Monday, and so on. Since we don't work weekends, the FRIDAY macro contains commands to ISAMVERIFY everything—and the computer runs until 6:00 Sunday morning. That way—since I keep both the DUMP and COPY tapes on file for a whole week without reusing them—I'm certain that I've got at least one tape that's valid.

Next comes a step we no longer use. Up until a week ago, I would COLLAPSE the files updated today. Not any more!

If COLLAPSE worked, it would be a very handy utility. It is supposed to be able to compact the index structure to a desired density. Thus, for files that are seldom updated, a 99 percent packing would make for very fast READ NEXTs, while a file packed at 50 percent would get updated very quickly. For the uninitiated, however, COLLAPSE has a long history of destroying files. I first tried it in rev 3-point-something, but when it ate all of my alternate keys, I declined to do that again.

For some strange reason, each revision of COLLAPSE has had problems, until the latest one—or so I thought. I've been running 1.30 for almost a year now, collapsing files daily. I thought that we had a clean release.

Last Monday, I walked into the office to see a pile of paper two feet high. Normally, COLLAPSE gives you statistics on what it has done to the number of blocks taken up by the keys. It looks something like this:

```
ALTERNATE KEY 4
BEFORE: 1234
AFTER: 999
```

This example tells you that COLLAPSE has freed up 235 blocks of disk space. On that fateful Monday, however, my printouts looked like this:

(continued on page 59)

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From a land down under

32-bit Business BASIC makes a promising debut

by George Henne
Contributing Editor

The phone connection was crackly, and the voice on the other end had an unfamiliar accent. "I have a product you might be interested in," it crackled. "It's a 32-bit Business BASIC."

It was a good guess on his part. I had to know more.

The speaker was Murray H. Haszard of B32 Software in Auckland, New Zealand. His description of the product made it sound fabulous, but it's a bit hard to believe claims about a product that comes from 17 time zones away. (New Zealand is across the date line, so it's already Tuesday there while it's still Monday here!) I asked him to send me some information, and forgot about it.

A week or so later a tape and a letter arrived. Now I had to believe that the product at least existed. It remained to be seen whether it could live up to Haszard's claims.

Let me digress for minute. Business BASIC was originally written for 16-bit RDOS machines. When AOS came along, TAC (the company that originally developed the language) converted their product to run under the new operating system. AOS/VS, which was created for the MV/ series of computers, was designed so it could run software written for 16-bit AOS with a minimum of change. The result is that AOS/VS BBASIC is still a 16-bit product.

Although there have been rumors of a 32-bit Business BASIC being developed at Data General, I haven't seen any evidence that DG is in fact doing anything with the idea. At a NADGUG conference a couple years ago, a spokesman said it was coming, but later admitted to being mistaken.

I think the main reason nobody has

produced a 32-bit Business BASIC is that it would mean three versions of BBASIC to support: RDOS, AOS, and AOS/VS. The AOS/VS version would be radically different from either of the other two. Also, the benefits would be uncertain. While some operations are faster in 32-bit code, not all are; most of the benefits of 32-bit products come from their larger addressability, not because 32-bit instructions are any quicker than 16-bit ones.

In spite of all this, here was a 32-bit BBASIC on my desk. What else was there to do but read the release note, load it on the system, and try it?

What struck me first was the level of compatibility. I've seen interesting variations on the BBASIC theme before: BBASIC under UNIX, BBASIC for MS-DOS, etc. Each time, a reading of the documentation revealed that extensive changes and conversions would be needed before existing programs could run on the new product. BBASIC is full of little complications and traps that make it extremely hard to emulate.

B32 claims nothing less than 100 percent compatibility. You should be able to LIST any program to a file under your current rev, and ENTER it into B32. There are a couple of differences, but no real problems. For example, there is no INFOS interface, and RENUMBER is a program instead of command. There are a few others, but they are really very minor.

There is also a long list of enhancements to BBASIC, some of which are long overdue and quite exciting. Inevitably, some of the enhancements would make programs that use them impossible to run under regular BBASIC. Here they are:

Increased speed. All arithmetic operations are three times faster. String operations are twice as fast. With a couple of new modes for opening files (14 and 15), disk I/O operations are faster. Overall, the claim is that it will double throughput, but this would depend greatly on your application. All calculations

are done in quad precision, which should eliminate the need to use MUL.SL and DIV.SL.

Increased user memory. What a feeling! I brought B32 up and typed SIZE. I had well over 500,000 bytes of program space. I found this tough to grasp, so I typed DIM A\$(400000). It worked just fine. In fact, the statement A\$=FILL\$(32) only took about a second!

What this would do to program design is hard to imagine at first. We've always been careful about program size, carefully designing our systems to make optimal use of a 26K area. But now we could do sorts in core instead of on disk . . . or design big table-driven programs. The new problem will be running out of statements. Even this has been taken care of, though—statement numbers can now go up to 32,767.

I/O channels. We've all had to suffer under the restriction of only 16 channels. Wild workarounds such as logical files and C1 arrays make life much tougher for all. Wouldn't it be nice if file numbers up to 64 were allowed? They are now. (What about channel 16? Simple. It's permanently reserved for terminal I/O. Just don't use it for files.)

Variables. Now up to 255 characters long! A couple of new variations are also available: arrays can have more than two dimensions, e.g., DIM TBL(1,2,3,4). String arrays are also available—a very useful feature. For example, the statement DIM X\$(100,512) will define 101 elements, each having a maximum length of 512 bytes. You treat each element of the array as a separate string. This makes string tables and in-core sorts much easier.

BLOCK READ/WRITE. Up to 2048 bytes are allowed to the common area.

MIN, MAX, AND, OR. These commands will now take any number of arguments, e.g., X=MAX(3,1,4,5,9).

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BASIC BUSINESS

Debugging aids. There is now a trace facility (finally!) that shows all GOTOS, GOSUBs, SWAPs, and CHAINs. Escaping a SWAPed program will not revert to the original program SWAPed from. Comments can be put on the same line as a statement. All variables are automatically initialized (set to zero). New commands such as \$STATUS (an improved "PD"), \$DISPLAY string (shows string with ASCII values), and \$LIST_UNDEFINED_LINES (exactly what it says it is) are also added.

There are a whole bunch of other goodies. Suffice it to say I was pretty impressed with the list. But what I really wanted to know—was it as compatible as claimed? And would it actually work?

The answer to both questions at this point is "almost." Compatibility is very good, especially the tough parts. The index file structures are absolutely unchanged, and both 512- and 2048-byte indexes are supported. The LOCKing mechanism is also the same; in fact, the same Release 4 RLS2 program can be used. B32 and regular BBASIC can run at the same time on the same system using the same files.

What about all the STMA, C, and E calls? Except for STMA 20 (user program library, which is pretty redundant on AOS/VS), B32 can do all of them. STMBs do not exist, except for STMB 16, but there are some nice new statements that more than replace them.

In actually running the software for a couple of hours, I found a few more incompatibilities. Since these were not documented, they must be bugs. PRINT USING with a T0,L10 string (to format a value into a string) didn't quite work right, and then it messed up the interpreter itself. There were also problems with the order in which variables must be declared before use. I ran into a bunch of other minor problems. One thing I missed was the automatic labeling of GOTOS and GOSUBs from the REM statement they target.

How was the conversion to 32-bit done? As far as I can tell, the interpreter itself seems to be written in Fortran 77, which is then compiled into 32-bit code. It must have been a lot of work.

Overall, I feel the product (if it gets working) will greatly expand the capabilities of Business BASIC, putting it far beyond any other language available on DG machines. One thing it will do is sell a lot more memory boards for DG. Programs can be at least 50

percent larger than under the current revision, even before you change them to take advantage of the practically unlimited space. The days of 16 users on a 2 MB MV/4000 will quickly pass.

Will it get working? I think it has a good chance. A lot of brilliant work has already gone into it, and it seems well thought out. The bugs I encountered during my testing should be relatively easy to fix in comparison to the work already done. I'll continue to follow up, and will keep you posted in this column on the product's progress.

One final note: in true Kiwi fashion, the familiar HELLO program you sign on to is now called GIDDAY!

The first users of MV/2000 DCs have their machines now, and are busy moving BBASIC programs to them for testing. From a performance viewpoint, they seem to run just as fast as the MV/4000 DC. That's pretty good—there had been a lot of concern that DG would do something to artificially cripple the machine like the Desktop. One site that converted from a Desktop to the MV/2000 DC claims to be "ecstatic."

The bad news is still the media incompatibility. The cartridge tapes on the 2000 DC still can't be read by any other machine. There are also reliability problems with the cartridges—with only a single READ/WRITE head in the units, there is no READ after WRITE checking. Most people are using XODIAC to move software onto the machines.

Finally, an update from my last column on runaway PID numbers in the new releases AOS/VS. We had the problem on our site, as did our local DG office. However, it's a good deal less widespread than originally thought.

To accommodate the new larger PID numbers, a change was made in the Process Termination message. Some DG products were not in sync, so the message wasn't getting through. The lesson here is to pay careful attention to what DG says about what release of AOS/VS is needed for a particular product such as BBASIC or CEO. Δ

As vice president of MICOM Computer Systems, George Henne has worked with many Business BASIC users during the past 7 years. Send questions or comments to him at 575 Madison Avenue, Suite 1006, New York, NY 10022; 416/445-4823.

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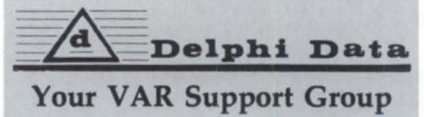
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• Inventory Control	X	X	
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• Purchasing	X		
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• Client Writeup (CPA)	X	X	

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Rev 7 update

Flexible scheduling tops the list of changes to AOS/VS

by Tim Maness
Contributing Editor

This month I'm going to share some of the highlights from the AOS/VS rev 7 class I attended in March. Revision 7 is being shipped on the MV/2000 and probably the MV/20000; according to DG it should be released generally for all the other machines very soon. Of course, this has been the status of rev 7 for several months, so I don't think anybody really knows when it will be readily available. When it does arrive, you probably won't notice any more than the usual number of fixes unless you run more than 256 PIDs and are using some of the new hardware. I've picked some of the more notable changes to highlight here.

Scheduling

One of the important new developments in rev 7 is its ability to control the process-scheduling algorithms. This means you will be able to modify the standard scheduling, and this could improve throughput—if you know your system well and don't have much extra processor time available. If you have three percent or more idle time, DG says that this new "class scheduling" capability probably won't help your system's performance. But if you have a busy machine and processes that are not getting enough time, then altering the scheduling may be for you.

Class scheduling is accomplished with several new system calls that allow you to define logical processors that can be assigned to the actual job processor (i.e., the CPU) at different times of the day. For example, you could have a daytime processor, a night shift processor, and a weekend processor.

A logical processor specifies the amount of processor time that will be allocated to specific classes of processes. The classes are defined by a matrix of user and process localities. For example, you could define a group of special users (like the company CEO) who as a class would be allocated a lot of CPU time. Processes in this class would be those with a user locality of one and any program locality. This is essentially one row of the

matrix.

Another class could be defined as those processes with user locality 2 and program locality 2—allowing, for example, salespeople doing order entry an extra share of CPU time. There can be up to 16 of these classes.

Users are assigned a default locality that can be changed using PREDITOR, and they can be given the privilege of using CLI commands to change their locality. Programs are assigned localities using SPRED (the Selective Preamble Editor).

The logical processor divides the available CPU time among the various classes that are allowed to run. For example, a logical processor for a daytime environment might allocate CPU time among three classes: DEFAULT (40 percent), SPECIAL (40 percent), and BATCH (20 percent). The night shift logical processor could have these same classes, but assign the CPU time differently to favor the batch jobs at night: DEFAULT (10 percent), SPECIAL (30 percent), and BATCH (60 percent). The specified percentages of CPU time are guaranteed to the different classes. This is the big difference between the new class scheduling and standard scheduling.

When there are high priority jobs waiting, standard scheduling would give them all of the available CPU time, and lower priority jobs wouldn't get any. This makes it difficult to give preference to one compute-bound job over another, because the higher priority job will get all the time. It also makes it hard to run lower priority jobs in a heavily loaded interactive environment where most of the CPU time is being used by the interactive (higher priority) jobs. The lower priority jobs will essentially sit all day without any time at all.

Using class scheduling gives you much more control over the specific types of processes that can run, and allows different mixes during different parts of the day. And if you want to have certain jobs run during the day, but just a little, you can give the appropriate class a small amount of processor time and it will get at least that much. Within a class, the priorities work the same way as in earlier revs, so you don't want to assign processes that need time to a class with other processes of a higher priority that will

always be ready.

There is a default class supplied with AOS/VS, and class scheduling is turned off by default. However, if you have special jobs or people, experimenting with class scheduling may help you tune your system. I'm interested in talking to someone with an MV/20000 to see how this works with the new dual processors. Class scheduling ought to allow a great deal of control over the allocation of jobs on the different processors.

Data General has developed a utility called CLASP (the CLASS Assignment and Scheduling Package) for defining the classes and logical processors and for assigning job processors to logical processors. CLASP provides an interface to the new system calls that define logical processors and assign user and program localities. The only irritating thing about the rev 7 class was that DG wanted to charge \$300 for this software after getting \$770 for the class. It would have been more satisfying psychologically to have paid a little more for the class, and then be pleasantly surprised to get the software free. The interface could certainly be improved upon easily.

Large PID numbers

We are being eased into this change. In rev 6 there were changes that allowed the larger PID numbers to display. In this release there is support for 1,024 PIDs, and in some future rev there will be support for up to 32K PIDs.

If your system is generated to allow only 256 concurrent processes, then the changes to support the larger PID numbers will not affect you in any way. This takes care of most of us with regular old MV/ systems. For the folks with the large new machines, things are a little more complicated.

The difficult thing about allowing the larger PID numbers is that there are 41 system calls that use them, but only one byte was left in the packet for the PID number. In order to allow old software to run, these "smallpid" programs are still supported. To support the larger PID numbers, rev 7 supports two other program PID-size types besides the "smallpid." These are "hybrid" and "anypid" programs. These programs become process PID-size types "A," "B," and "C," respectively.

Class scheduling lets you define a group of special users (like the company CEO) who as a class would be allocated a lot of CPU time

The three types differ with respect to the allowable range of PID numbers to which the process can be assigned, and the types of processes that can be created and communicated with. For example, a hybrid program must be started with a PID less than 256, but can start processes with higher number PIDs. An anypid program can get a low PID number if the creating process is an A, but will get a large PID if the creating process is a B or C.

It appears that this will be somewhat difficult to administer, but it will allow old smallpid programs to be used in the new environment until a migration is made to the large pid programs.

File locking

For those of us without new hardware, this is probably the most significant addition to rev

7, because it provides a capability that should have been in rev 1 of AOS/VS. This feature, when used in conjunction with the "protected shared open," will allow multiple processes to access and update files consistently. By defining the meaning of the locked elements, this locking mechanism provides processes with the capability to lock objects in general.

Prior to rev 7, this capability was generally implemented by having a global server that used IPC messages to communicate between processes and keep the world consistent. While this technique could provide all the functionality required, it was not very fast.

The new ?FLOCK and ?FUNLOCK system calls should provide the simpler to use, faster mechanism I've been looking for. On the MV/2000 a lock/unlock pair takes about 5.5 milliseconds elapsed time and 1.12 milliseconds of CPU time. (A single program

doing 100,000 lock/unlock requests took 551 seconds elapsed time.) Compare this with 21 milliseconds elapsed for a lock/unlock pair using the old implementation. As expected, things get slower when more processes are running. Two processes each issuing 100,000 lock/unlock requests against the same file bring the elapsed time to 10.2 milliseconds; four processes slow it down to 16.1 milliseconds. These are impressive times, especially considering that the two process time using the old technique is 48.6 milliseconds—which caused me to not even try it with four processes.

Disk mirroring

Rev 7 includes support for mirrored disks. This means that a controller can run two disks, doing writes to both of them, and doing reads from the first one that's available. This

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MV/SYSTEMS

provides some protection in the event of hardware failure. Implementing this type of redundancy is easy, because there are no program level changes. There is new capability in the formatter to format mirrored disks, because they must be identical. If one of the pair has a bad block, the other must have that same block in the bad block table. The mirrored disks are referenced as one (the syntax is DPJx!DPJy) in commands to initialize and release the disks. There is a new MIRROR command that is used to synchronize the disks and to break the synchronization or force resynchronization.

System manager privilege

This is a new privilege that can give users other than OP the ability to use EXEC commands. There is unfortunately no direct way in CLI to turn on the privilege (like SUPERU ON for the superuser privilege), but an interesting side effect of the JPINIT command is to turn on the privilege. JPINIT is the command used to initialize the second processor on an MV/20000—and even if you don't have an MV/20000, the system manager privilege is left turned on when the command aborts with ERROR: NOT A MULTI*PROCESSOR SYSTEM.

SYSBOOT

For most of us, the most visible change in rev 7 will be the menu that comes up when booting the system. For the MV/2000, everything is implemented using menus, but because the operating system load menu and the technical maintenance menu are in SYSBOOT, I suspect everyone else will get it, too. The menu just lists the choices that are possible at this point, including starting the default system, displaying the name of the default system, running fixup or diagnostics, etc. It's a small but nice touch.

This column may be premature, since no one knows when we will be seeing rev 7 on anything but the new hardware. But just in case we do see a release "next month," we'll be ready. I hope it's available before the NADGUG conference in August, because it could contribute to a lot of interesting discussions at the AOS/VS roundtable. Δ

Tim Maness is president of DMS Systems, Inc., a software development firm specializing in data base management. He can be reached at 740 E. 3900 South, Salt Lake City, UT 84107; 801/268-6671.

Good news

An improved version of a macro that sends bulletins as users log on

by Jim Siegman
Contributing Editor

During the [!READ] discussions in October and February, I introduced two macros that managed a news bulletin feature. A number of system managers have found them a useful addition to their system standard logon macro. However, there were a few misprints in the macros as they originally appeared, which made them a bit confusing to some readers. The letters column in the following months also carried *extensive* discussion about related security concerns. I would like to present a recap here, as well as a copy of the revised macros.

The two macros are CHECK__NEWS.CLI (see Listing 1) and EDIT.NEWS.CLI (Listing 2). The check__news macro would be executed in the standard initial IPC command file when a user logs on. It will check the last version of news that the user has read and see if there is a more current version available. If so, it will announce that there is new news. Either way, it will ask the user if he or she wishes to read the news file. If so, it will enter page mode to type the text of the current news, and then update the latest news version number read by that user.

Listing 1: CHECK_NEWS.CLI

```
comment check_news.cli - 5/9/86 - Siegman

comment - set environment but skip the whole thing if batch
[!equal,[!logon],BATCH]
push; prompt pop
dir :udd:[!user]

comment - see what rev of news he checked last
[!equal,[!file =last_news_check],]
  write/1==last_news_check 0
[!end]
var2 0
var2 [!last_news_check]

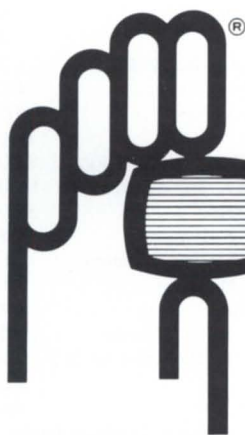
comment - now compare against the current rev of news
var3 0
var3 [!macros:news_rev]

comment - If no news in current version, skip it.
[!ueq,[!size :macros:news_text_[!var3]],0]
  comment No news is good news?
[!else]

[!une,[!var2],[!var3]]
write
write ***THERE IS NEW NEWS IN THE NEWS BULLETIN ***
[!end]

comment - now see if they want to read it
string N
comment - when rev 7 of AOS/VS becomes available, use !READ/S
string [!read Do you want to read the news?,]
[!equal,[!string],Y]
  push; prompt pop
  char/on/pm
  type :macros:news_text_[!var3]
  char/off/pm
  delete/2=ignore =last_news_check
  wr/1==last_news_check [!var3]
  pop
[!end]

[!end] ; comment - this one is for the empty news file.
pop
[!end] ; comment - this one is for the !LOGON=BATCH check.
```



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EDIT.NEWS.CLI would be used by the system manager (or anybody with the authority of superuser) to update the news. CHECK_NEWS.CLI relies on the contents of the :MACROS:NEWS_REV file to give it the correct news release number, and then expects to find the text of the news in :MACROS:NEWS_TEXT_XXX. Thus EDIT.NEWS.CLI will simply set up a new text file with the next release number, copy the old contents into it, and run SED on the new file. When you exit SED after updating the news, it then updates the latest news release number.

These macros are designed to be located in the :MACROS directory, but that is easily changed if so desired. Also, these macros do not remove old copies of the news files. You may wish to add a third macro called PURGE.NEWS.CLI. It would read as follows:

```
SUPERUSER ON
DIR :MACROS
DELETE NEWS__TEXT_+ \NEWS__TEXT_[=NEWS__REV]
```

The original versions of these two macros (presented in the October and February issues) used the actual path name of the news text file instead of the revision number of the news. I made this change so that it would be much more obvious to anyone who might be inspecting the macros. Using the pathname worked fine, but it was not obvious from the CHECK_NEWS.CLI macro exactly what was going on. Δ

Listing 2: EDIT.NEWS.CLI

```
comment edit.news.cli - 5/9/86 - Siegman

comment - set environment
push ; prompt pop
dir :macros

comment - get current rev and set next rev
var0 0
var0 [news_rev]
var1 [!uadd,[!var0],1]

comment - set up current news as default new news
delete/2=ignore news_text_[!var1]
create/type=txt news_text_[!var1]
copy/a news_text_[!var1] news_text_[!var0]

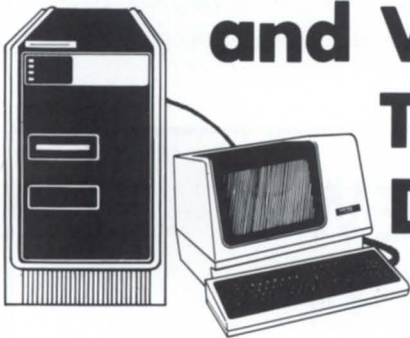
comment - edit the news
x sed news_text_[!var1]

comment - update news rev and the link
delete/2=error news_rev
write/l=news_rev [!var1]

comment - reset environment
pop
```

Jim Siegman is chairman of the NADGUG publications committee, and treasurer of the Chicago Area Data General Users Group. Send comments or questions to him at 548 Walnut, Elmhurst, IL 60126-1848.

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Data General's educational services department is giving NADGUG members yet another reason to register early for Conference 86—they will be giving away the winner's choice of either the CEO or AOS/VS Starter Kit, a package of four computer-based training programs directly related to CEO or AOS/VS user training.

This prize, as well as two Data General/One computer systems, will be awarded at the annual business meeting at the conference. To be eligible for these drawings, attendees must have their conference registration and full fees in by the July 25 deadline. Employees of Data General, *Focus Magazine*, the elected officers of NADGUG, and exhibitors who are not attending conference sessions are not eligible for this drawing. Full details will appear in the conference program.

Convenience cafe in exhibit area

For the convenience of attendees and exhibitors, NADGUG has made special arrangements to have a cafe located in the Conference 86 exhibit hall. The cafe will be open during exhibit and conference hours to let attendees grab a quick cup of coffee, a snack, or light lunch—all at special prices.

The cafe will give attendees more time to visit the exhibits, and help them avoid the crowds at the hotel coffee shop. It'll also save them some money.

Big lineup of exhibitors

The exhibit area is the place for NADGUG members to check out the latest products from Data General and other vendors. Since the conference program is especially full this year, the exhibit area will be open before and

after regular conference sessions to give attendees more time to get that valuable hands-on experience with new products.

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New DG-compatible peripherals, memory

Minneapolis—Zetaco, Inc., a manufacturer of Data General-compatible peripheral interfaces, recently introduced a variety of new DG-compatible products.

According to the company, the LRS-10 Optical Disk Subsystem is the first optical-plus-magnetic disk subsystem designed specifically for DG minicomputer systems. It is designed for applications that require large amounts of data to be stored without change, but which also need a readable/writable disk for data manipulation before archiving. The subsystem includes an optical disk, a magnetic disk, and Zetaco's Argus-emulating (DG/6236) controller. Prices vary according to the configuration/capacity requirements and range from \$20,000 to \$30,000.

ARZ-1 Disk Controller is an intelligent disk controller that emulates DG's Argus/6236/6239; it also has performance enhancements. Model ARZ-1 interfaces DG's Eclipse/MV series minicomputers to SMD,

HSMD, and SMDE disk drives. It acts as a coprocessor, off-loading the disk data commands normally done by the CPU. This frees the CPU to do other tasks.

Zetaco's new MV/4000 and MV/10000 Memory Expansion boards are available in 2 MB, 4 MB, and 8 MB capacities. They are available 30 days ARO. Model MZ-412 (2 MB capacity) is priced, single quantity, at \$4,995; MZ-414 (4 MB) at \$6,775; and MZ-418 (8 MB) at \$10,975.

Zetaco has introduced fully integrated, DG-compatible mag disk and tape subsystems. Prices vary, according to configuration and capacity required, from 300 MB at \$12,900 to 3 gigabytes at \$36,000.

The company's DPS-Dual Processor Switch allows two Data General CPUs to share one tape drive and one line printer. DPS-1 supports Pertec-interfaced tape drives and line printers with the Data Products or Centronics interface. Available 30 days ARO. Single quantity pricing is \$1,895.

STA-1 Tape Drive Interface Adaptor allows connection of an STC-interfaced drive to a Pertec-interfaced tape controller.



Minicomputer users can interface up to four 200 ips GCR STC drives on one system, with no loss of performance, according to Zetaco. Model STA-1 is packaged in a rack-mount enclosure, with front panel status/indicator lights. It is available 30 days ARO. Single quantity pricing is \$1,895.

The products offer Data General emulation and require no patching of the operating system. The company extends a 2-year warranty and 30-day delivery. OEM volume discounts are available on most products.

Zetaco, Inc., 6850 Shady Oak Road, Eden Prairie, MN, 55344; 612/941-9580, Telex 290975. European headquarters: 9 High St., Tring, Hertfordshire HP 23 5AH, England, (44) 44282-7011, Telex 851-827557. Δ

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Open Access system for the DG/One

San Diego, CA—Software Products International announces Open Access for the Data General/One in a 3 1/2-inch format. According to the company, Open Access is an integrated system of six modules that are also designed to stand on their own.

The modules consist of:

- Relational data base, including a complete report writer;
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- Telecommunications—access to Dow Jones, CompuServe, etc.; sending and receiving of data files.

The package, available in 10 languages other than English, has enjoyed a large volume of sales in Europe. It is priced at \$395; the modules are not available for sale separately.

Open Access II, with improvements to all modules, will be available on the DG/One next January.

Software Products International, 10240 Sorrento Valley Road, San Diego, CA 92121; 619/450-1526, Telex 499-0919. Δ

Box-level serial MAP interface unit for factories

Seattle—Industrial Networking Inc. (INI) recently introduced a general-purpose Manufacturing Automation Protocol (MAP) interface that enables virtually any MAP host system or factory automation device to attach to INI's MAP/One local area network (LAN) system.

According to INI, the MIU-40 MAP Interface Unit is the industry's first box-level MAP interface constructed specifically for the factory environment.

The product's 55 degree Celsius temperature specification and rack- and panel-mounting capabilities make it appropriate for

use in harsh industrial environments.

The MIU-40 interface includes a controller board, a 10 MB per second token-bus modem board, and the INI custom dual gate-array chip set. Data is passed from the host system to the MIU-40 at 56 kilobits per second using the High Level Data Link Control (HDLC)

serial communication protocol. It implements the entire seven-layer MAP 2.1 specification.

Software interfaces are provided into the MIU-40 architecture at the application layer using the CASE (Common Application Service Elements) sublayer, and at the data link layer with layers three through seven resident

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on the host system.

INI offers a MAP Appendix 3 solution for customers who already have an investment in host-resident protocol software, although a company spokesman says most customers will prefer to interface at the CASE layer to take advantage of upper-layer MAP software.

The standalone unit is priced at \$5,100 and

is available 90 days ARO.

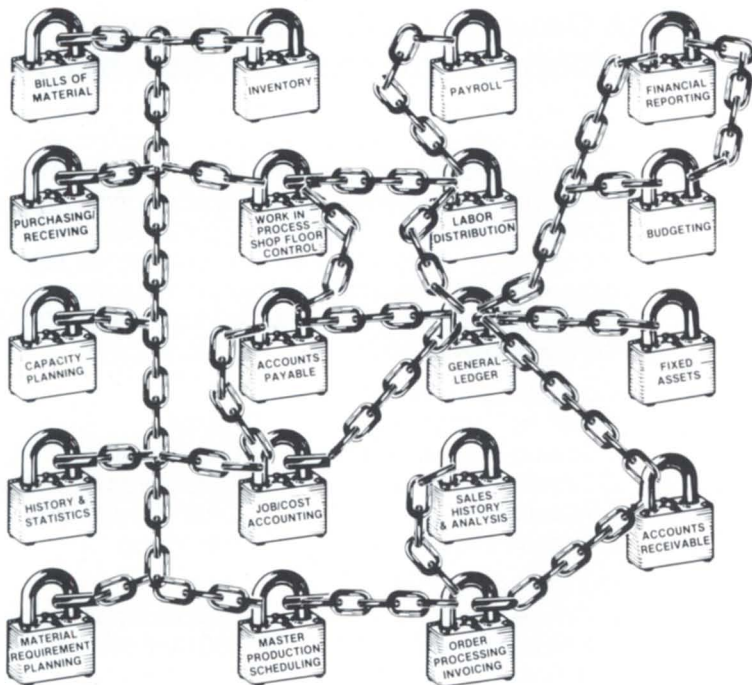
Simultaneous with its introduction of MIU-40 MAP interface, INI announced that its MAP/One LAN system has successfully completed Manufacturing Automation Protocol 2.1 conformance testing. The testing was conducted by Industrial Technology Institute of Ann Arbor, Michigan, a private testing

organization sanctioned by the MAP Users' Group.



Industrial Networking, Inc., 3900 Freedom Circle, Santa Clara, CA 95052-8030; 408/496-0969. Δ

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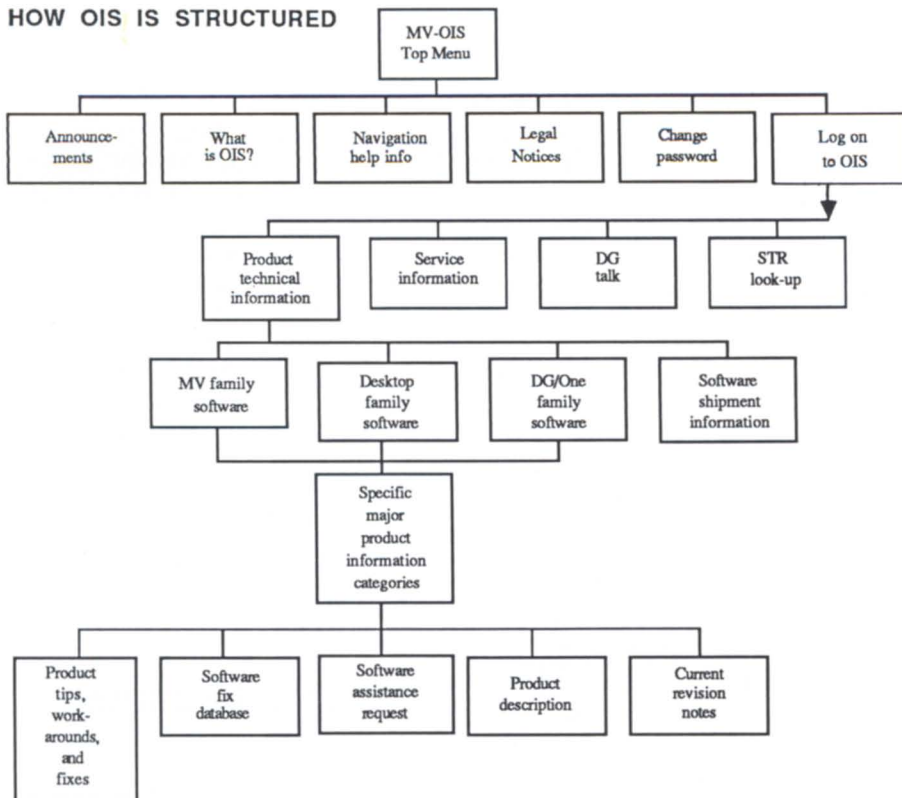
DG offers videotex support



Milford, MA—Data General service now offers instant on-site support service and information for all users and authorized dealers of 16- and 32-bit computers within the United States and Canada. The company's On Line Information Service (OIS) offers 24-hour access to more than 10 services, including user "doorways" to Data General and independent vendor software support services.

Served by the CompuServe network, OIS's features include low-cost local dial-up telephone numbers (Tymenet, Telenet, and others), which access a simple menu that lists more than 10 support functions. Functions include Software Trouble Report status directory and data base (updated on a weekly basis), and 32-bit Product Technical Information (software workarounds, known

HOW OIS IS STRUCTURED



problems/solutions, and patches to solve specific problems).

OIS also offers 12 independent software and hardware vendor "forums." Users can access technical data, listings of existing manuals, service contracts, updated bulletins, and down-line loading files on software products.

OIS users may also submit specific questions about their system. Questions are answered within two working days. DG also provides regularly updated information on service, product announcements, training, and applications to users of OIS, in addition to a software catalogue listing.

OIS pricing is based on an hourly fee schedule, according to the following categories: general information, \$40; support information, \$55 (STR status directory, work-arounds/patches); and maintenance information, \$70 (down-line software loading).

Orders and information requests for OIS may be placed by calling 1-800/325-3065 (or in Massachusetts, call 1-800/952-4300). Δ

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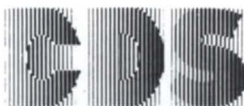
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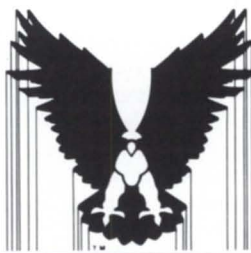


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Editorial & composition software for MV/2000

Baltimore—The recent introduction of DG's MV/2000 DC and local area network

software has allowed Penta Systems International to reduce the price of its composition and editorial systems and to extend its PentaModulus product line.

PentaModulus systems can stand alone, serve as a node in a Local Area Network (LAN) with Xerox's Ethernet, or be linked by Data General's Xodiac telecommunications

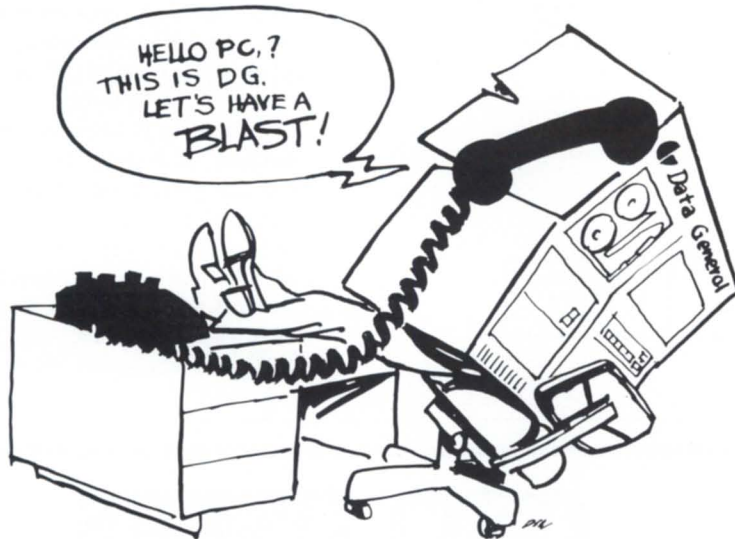
software.

According to Penta President Charles Lankford, "The MV/2000 DC provides an entry-level system with modular growth assured. Users can start small and later add additional terminals or nodes to the network. They also have the option of adding other MVs in the PentaModulus product line."

PentaModulus products range from the MV/2000 DC to the MV/10000, which can support up to 125 terminals.

The addition of the MV/2000 gives Penta's current users new options for modular growth. They can add a standalone MV system, network MVs together, or link an MV to their 16-bit Penta systems.

Penta Systems International, 309 E. Federal St., Baltimore, MD 21202; 301/244-0050. Δ



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Incepts becomes DG ISV

Westboro, MA—Data General announced that Incepts, Inc., a supplier of products and services to the life insurance industry, has joined DG's Independent Software Vendor (ISV) program. Under the agreement, DG and Incepts will work together to market Incepts' InTime for New Products, a software package designed for the introduction and administration of life insurance products. The new software operates on Eclipse MV/ family superminicomputers and IBM mainframes.

InTime is designed to help companies take immediate advantage of new product opportunities as they arise, to provide cost-effective administration of products once they are sold, and to take advantage of a company's corporate information resource in the marketplace, according to Incepts sources. It can be implemented without converting a company's present business or forfeiting its investment in existing systems.

Incepts describes the software as an event-driven, on-line, real-time data base system that segregates all of the logic for a particular event from that for other events. InTime's architecture is not based on any specific product. Its processing is based on insurance fundamentals rather than on classes of products. Therefore, it supports a wide variety of new products with little or no modification.

According to Incepts, InTime is a complete system, including new business as well as all administrative and service functions for the life of a policy. Δ

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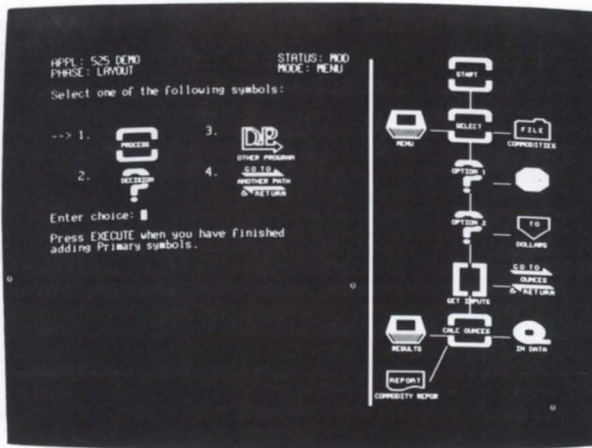
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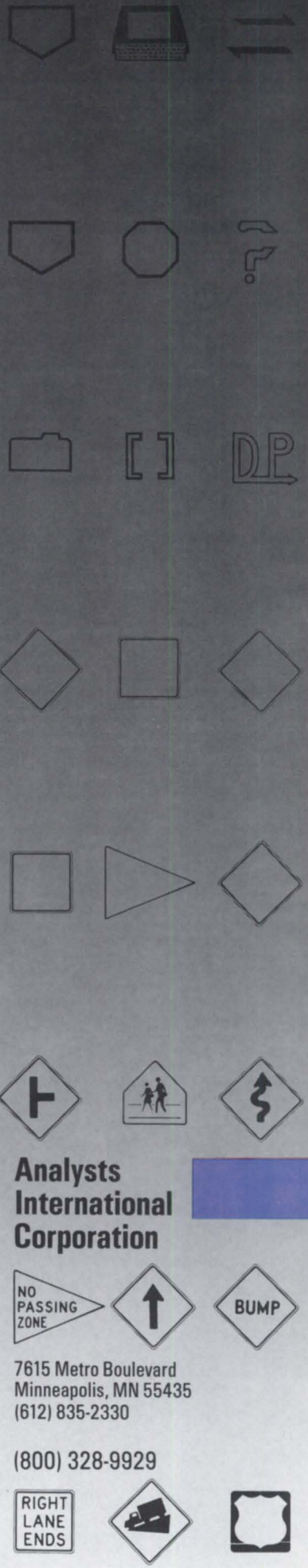
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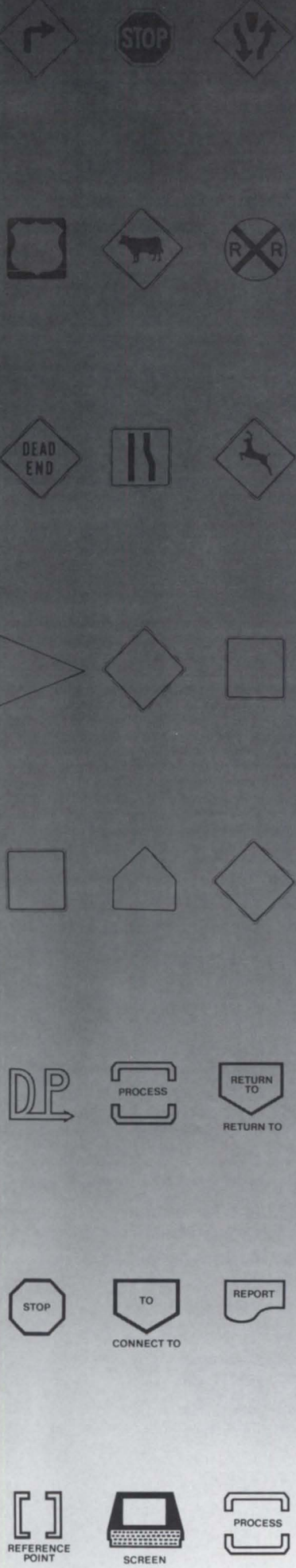
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ALTERNATE KEY 3274
BEFORE: 1
AFTER: -16359
ALTERNATE KEY 3275
BEFORE: 1
AFTER: 12321

and so on—for 5,965 alternate keys—for each of 82 files. Obviously, COLLAPSE had taken our files on a tour of hyperspace.

When I finally got in to abort the run, the log file took up 32 MB of disk space!

I still don't know what happened. Fortunately, no harm was done. None of the files were affected, and the doctor assured me that it was just a mild heart attack. Suffice it to say that COLLAPSE is no longer on my disk.

The last part of our backup procedure is probably the most important. I ISAMVERIFY any file updated that day. Unfortunately, this

crucial procedure—verifying your files—is the hardest to automate (you can't just use a BUILD file and then type ISAMVERIFY @UPDATES@). It is possible, though, and well worth the effort. See my column from last January ("Macro mania," page 36) for the details, or if you haven't kept a copy (shame on you!), send me a note on the NADGUG bulletin board (415/924-3652). The ISAMVERIFY gives me reasonable assurance that no matter how much REORGing, COL-LAPSEing and DUMPing I've done, my file structures are still safe.

Well, there you have it: a night at Tim Boyer's computer center. Overkill? Probably. Paranoid? Most assuredly. But it lets me sleep at night—even during thunderstorms. Δ

Tim Boyer is EDP manager at Denman Rubber Mfg. Co. and president of the Northern Ohio Data General User's Association. He may be reached at P.O. Box 951, Warren, OH 44482; 216/898-2711, or on the NADGUG bulletin board at 415/924-3652.

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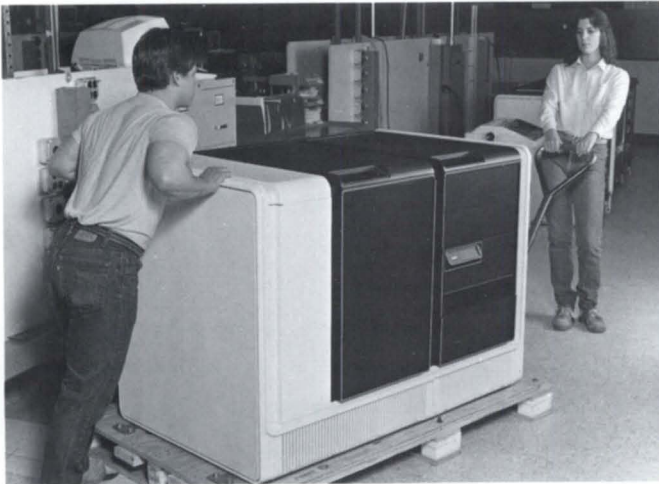
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Data General learned several lessons from its experience with the DG/One model 1:

- The market for portable computers isn't nearly as large as market researchers had predicted.
- Even if a product uses the best available technology, buyers won't necessarily forgive an obvious deficiency (e.g., a hard-to-read screen).
- Most buyers see portability as a nice extra, but it's not so important that they will pay a premium for it.
- Most DG/One buyers are looking for an extension of their existing DG system, rather than a standalone PC.

According to a source at DG, both the DG/One and its marketing have changed as a result of these lessons. The recently announced model 2 features either an electro-luminescent screen or an improved liquid



Kim Masterman and Kris Vokes prepare an MV/20000 for shipment

crystal display with twice the contrast of the model 1. There's also an optional 10 MB hard disk—and just as important, a lower pricing structure. (DG waited until after IBM announced its laptop before introducing the model 2, so it could announce the new version with a competitive price.)

The DG/One model 2 will be sold through three channels: the DG salesforce, DG/Direct Marketing, and value-added resellers. At least for the time being, Data General is moving out of the retail market and concentrating on the channels it knows best. However, some of the higher volume retail outlets will be allowed to assume VAR status, and a company spokeswoman says she expects DG to return to the retail market after the current "unsettled period."

"Address" and "panic" may have taken on new meaning for a colleague of Jim Phillips recently. Phillips, who chairs MISSUG, the Mississippi Users Group, says his colleague's MV/20000 was lost in transit for two weeks. It seems a confused trucker was looking all over Missouri for the city of Jackson, MS.

Now that some big customers are taking delivery and beginning to evaluate their new MV/ series machines, there will probably be a quickening of new orders.

E.F. Hutton & Company is evaluating an MV/20000 Model 1 at its corporate offices. Bernard A. Weinstein, the company's first vice president for communications and programming: "We already have 250 MV/ systems throughout the firm and are studying the added power and performance of the

MV/20000 and where it will make the most difference." Hutton operates a network that links more than 400 branch offices to support more than 10,000 users. There are more than 1,000 CEO users at Hutton headquarters alone.

Meanwhile, McDonnell Douglas Manufacturing Information Systems Company is moving to incorporate MV/20000s and MV/2000 DCs into the company's Uni-graphics II turnkey CAD/CAM systems. One source expects the MV/2000 DC to support up to seven engineers, while the MV/20000 could power as many as 40 users. "On the low end, the MV/2000 DC offers very competitive price/performance. And on the high end, the MV/20000 can be used not only for CAD/CAM requirements, but as a high-

performance compute engine," said Phil Kreter, the company's vice president of operations.

In business since 1695, The Bank of Scotland was recently honored for installing the five-thousandth license for CEO. In honor of the occasion, DG's vice president for European operations, Charles Boesenberg, presented the bank's joint general manager, T. Bennie, with a plaque and a DG/One model 2. DG also gave the bank six more DG/Ones to donate to the educational institution of its choice. The DG announcement noted that there are more than 150,000 CEO users worldwide, and that the product accounts for 21.3 percent of the installed base of OA systems in the United States.

If you've been waiting for the definitive version of Kermit to arrive, you won't need to wait much longer. John Grant, a geophysicist with the Geological Survey of Canada, hopes to have his Fortran 77 opus finished this month. Kermit was originally designed at Columbia University as a universal communications protocol, but Grant says the two versions that have been available for DG machines were not very complete. When he's finished, he'll send a copy to Columbia for public domain distribution. His version will have nice finishing touches like function keys; it is written for AOS/VS, but could be broken up and overlaid for AOS, he says.

Once again, Regional Interest Groups have been active:

- In Chicago on May 13, JFM Systems treated about 25 members of CADGUG to pizza and a demonstration of DG's new MV/2000 and DG/One model 2. JFM is said to be one of the largest distributors of the DG/One.
- The Mississippi Data General Users Group met at the Dixie National Life Building in Jackson, MS on June 5 to share favorite macros and discuss QBATCHing jobs. In future months they will see demonstrations of spreadsheet and word processing products.
- The Inland Empire Data General Users Group met May 29 at the Spokane, WA Railway Credit Union for a demonstration of new DG products, including the DG/One model 2. They also had a Dasher CRT emulator from Perfect Terminal on hand for a demonstration.

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