

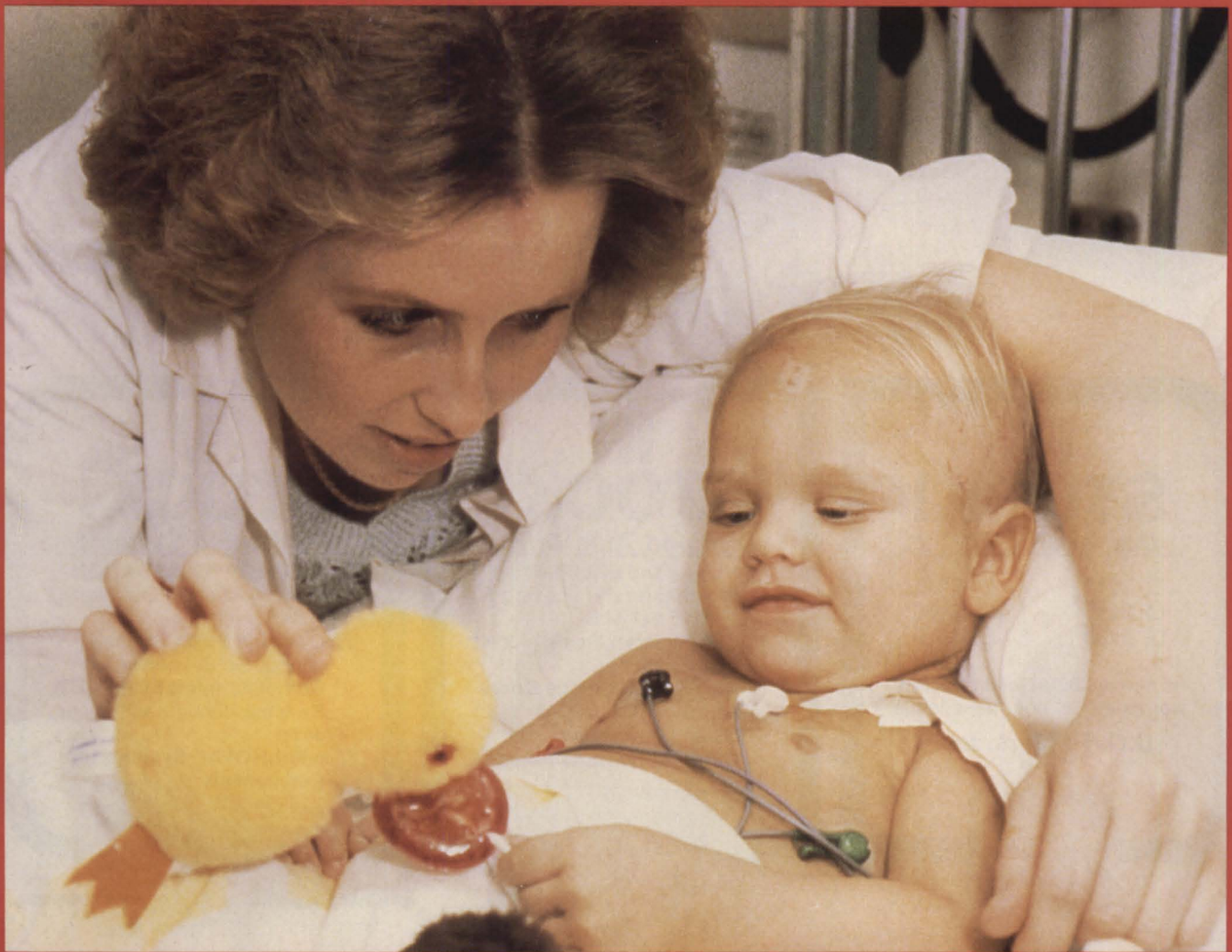
FOCUS

The Magazine of the **North American
Data General Users Group**

June 1986

Conference 86
Primer

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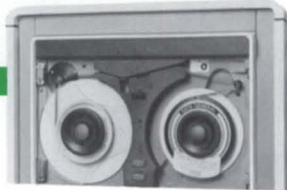
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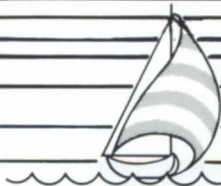
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Cover photo: A young patient at St. Jude Children's Research Hospital in Memphis, which treats children suffering from catastrophic illness.



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Upgrading the organization

by Rene Dominguez
NADGUG President

Editor's note: In an interview that appeared on page 32 of the May issue of Focus, Rene Dominguez reflected on the progress NADGUG had made during the first half of his presidency. Last month two more pieces of the foundation for NADGUG's future growth were set in place. Rene explains the practical impact of these changes for members, as well as their implications for the organization:

During the last month, NADGUG members should have received two important mailings: the Member Profile Form, and the Conference 86 Registration Packet. These two mailings reflect many of the changes we have been working on this past year to make the organization run more efficiently, and to make it ever more useful to you, the members.

The information you returned in your Member Profile is now being entered into the data base. When data entry is completed, we will be able to get a much better picture of the makeup and needs of our members.

We also saw the need to clarify the classes of membership and the benefits accruing to each class. We are essentially combining organization and installation classes, since there are no longer any real differences between the two. The new installation class will still carry voting rights (one vote), and will be held in one person's name (with transfer privileges). It will entitle that person to one subscription to *Focus*, one member discount at the conference, one copy of the annual roster, and participation in periodic surveys, panels, or councils.

Larger companies or organizations that have different departments or sites may choose to have more than one installation membership; if one vote is sufficient, they may choose to have one installation membership and several additional individual memberships. The fee for installations will remain at \$100 for the year beginning September, 1986. All current organization or installation members will automatically be "transferred"

into this classification.

The individual member classification, currently at \$20 per year, will be raised to \$30 per year beginning September, 1986 for all new members or renewals. This class of membership carries no voting privilege, but does entitle the holder to one subscription to *Focus*, one member discount at the conference, one copy of the annual roster, and participation in periodic surveys, panels, or councils.

Persons outside North America can elect to become either installation or individual class members at current rates, with the addition of a \$50 fee to cover postage (including air mail postage for *Focus*). This is effective immediately for all new members, and will be reflected in any renewals beginning in September, 1986.

All members will receive the annual roster, now being compiled under the direction of John Brudz, chairman of the Planning Committee. John plans to preview the roster at Conference 86.

I would like to stress the importance of attending the annual conference. This year's program (see "Conference 86 Primer" on page 40) covers a wealth of material for data processing and engineering managers, systems analysts, and programmers alike. The conference is your chance each year to make those contacts with other users and Data General people—contacts that can prove valuable throughout the year. There are many presentations on recently announced Data General products and services—and an extensive exhibit area so you can see everything first hand.

Don't forget that the Orlando area offers terrific opportunities to combine the conference with a family vacation.

I believe we're now in a better position than ever to realize NADGUG's potential: to provide an ongoing forum that leaves each of us better equipped to manage our own growth as professionals, and the growth of our respective organizations. Δ

—R.D.

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LETTERS



More April advice

I was impressed by George Henne's worthwhile suggestions for improving BBASIC (in the April issue, page 22). I must admit that most of them had never occurred to me. However, I think George missed one obvious possibility for a leap forward.

A COMPILE pass needs to be added before a new or revised program can be executed. This really wouldn't need to do anything, since the program is already in executable form, but it would provide the following benefits:

- Enhance security, requiring the user to know that COMPILE must be run before executing. (Failure to do so could result in an undecipherable error, such as "Insufficient memory to execute program," to avoid giving any accurate indication of what's wrong.)

- Provide a basis for explaining to management why a problem that looks minor at first glance, such as page overflow on a report, would actually take at least half an hour to fix. Time to COMPILE could be a fixed time period, say 5 minutes, plus 1 second per line.

- Make BBASIC look more like a high-level language. It might even help to remove the BBASIC command line editor and syntax checker, put syntax checking in the COMPILE pass, and let the user enter code using a state-of-the-art text editor like EDIT or SPEED.

- Give the programmer some time to get up and get a cup of coffee and a cigarette while debugging a program.

I agree with George that we must keep up with current industry trends if BBASIC is to survive. We should keep in mind all the careful planning and research that attended the inception and development of BBASIC, serving as a model for later industry standards such as MS-DOS.

*Wendell C. Putney
Information Systems Manager
Southern Optical Company
Greensboro, NC*

Kudos to Customer Support Center

I've noticed comments in recent editions of *Focus* concerning problems users have had in obtaining assistance from the Customer Support Center (CSC). I'd like to redress the balance a little by relating a recent experience I had with CSC.

I had a problem where a user couldn't access his own inbox, nor, when using the INDEX key, could he display folders in drawers, documents in folders, and so forth. When I contacted CSC, I didn't get a CEO person at once, but I didn't expect to. However, they did call back within an hour. As it happened, things here suddenly began to get very busy and I had to end the call before resolving the problem. The CSC person made several attempts to contact me afterwards to follow up on the call.

When we eventually got in touch a couple of days later, we tried copying across an empty inbox file, but this didn't help. It was very obvious a specialist was needed. Very soon after I was contacted by someone who had an intimate knowledge of CEO. We determined that the cause was that the language profile file contained spurious controls. I created a new user ID and transferred drawers over by adding the new user ID as an owner and removing the old. I then deleted the old ID.

The staff members were helpful, patient, and courteous at all times. They were very aware of problems people were having in getting access to CSC and did all they could to reduce the frustration. In my experience, they do a good job under difficult circumstances.

*Hugh H. Lovell
Operations, MIS dept.
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No politics, please

It was with great disgust and disappointment that I read Mort Kahl's "Opinion" column in the February issue of *Focus* ("The truth shall make you free," page 8). It appears that Americans just can't leave any subject alone without injecting it with their own peculiar brand of patriotism or jingoism. Mr. Kahl should keep his moral, ethical, and political opinions to himself or direct them to the Voice of America. Mr. Farman, as editor, it is your job to keep such garbage out of this magazine and ensure that it focuses on more computer-related issues.

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politics, apple pie, freedom, truth, democracy, communism, foreign policy, religion, Star Wars, apartheid, or The American Way. It should not be a platform for anyone to present his or her personal political ideology. On the contrary, this magazine should be a forum for discussion of DG software and hardware.

The article in question started off rather innocuously with a reasonable discussion of the influence of computers on modern society, but then degenerated into a tirade against communism and dictatorships. Mr. Kahl then went on to discuss the nature of dictatorships and present his own personal plan for starting a revolution in the country of your choice. He also found it very easy to criticize Soviet involvement in Afghanistan, conveniently ignoring the meddlesome antics of the United States and the CIA in many other world hotspots.



If you want to be a "revolutionary" and carry the American flag while you are "remaking the world" with your PC, then go ahead, but don't drag NADGUG or *Focus* into it with you!

I even have mixed feelings about writing this letter, since it may occupy valuable space in *Focus* that would be better filled with articles about Data General computers.

John A. Grant
System Manager
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The Governor's aide

DG/One provides help in high places

by Hank Hogan
Special to Focus

John Sununu looks like the stereotypical state governor. He sports a coat and tie and glasses. He's clean shaven and has a look that Shakespeare's Caesar would have approved of. He talks like a typical governor, apologizing for being late, making polite conversation, cracking a joke or two. He's also business-like, getting to the point quickly. Like a typical governor, he's a busy man, rushing from meeting to interview to meeting. His time is booked weeks in advance.

But John Sununu, the republican governor of New Hampshire, isn't the typical state governor. Born in Havana in 1939, he obtained a Ph.D. in mechanical engineering from M.I.T. in 1966. Before being elected governor in 1982, he was a professor of mechanical engineering at Tufts University in Medford, Massachusetts. He also was an engineering consultant for federal agencies and large corporations. His clients included NASA, Owens-Corning, Xerox, Raytheon, Polaroid, and Westinghouse.

From his background, it's clear that Sununu is no stranger to computers and technology. It seems logical that he'd apply this knowledge to state government. So it's not too surprising that he has a portable computer and uses it in his day-to-day work. The only question is which portable does he use. The answer? A Data General/One.

As his chauffeured sedan tools around Concord, he sits in the back seat with the DG/One in his lap. The DG/One also accompanies him home to his wife and children. He's even been known to occasionally finger the computer's keyboard while in bed. As he notes, "I really treat my portable almost as a way of taking [work] home and doing it. I use it as an extension of my office PC."

Most of Sununu's work, at home or at the office, involves New Hampshire's \$1 billion budget. Last July, the state's \$5 million Integrated Financial System (IFS) went into operation, running on an IBM mainframe. Part of the new system is a data base that records all daily transactions of state government. But the system is more than a ledger of such things as purchase orders, contracts, or personnel changes. According to the Governor, "The system collates all this so that we are able to snapshot our accounts on a dynamic basis, take a look at each account, and determine exactly what is happening on a real-time basis."

The information displayed doesn't show up as row after row and column after column of numbers. "What we have is a whole host

of different screens," says Sununu, "that are used with different categories of accounts and different levels of accounts that display the financial information in a preformatted form." This makes the data easier to understand. "It's all labeled. It shows up on my screen in one color with the numbers in another."

Virtually every agency ties into the financial system's mainframe with at least one IBM PC. Sununu has one in his office. The larger agencies have anywhere from one to a dozen, all hardwired into the mainframe. Analysis of data from the IFS is done on desktop computers. "In our office we quite often will download a lot of the financial data and then use Lotus 1-2-3 for analysis and projection," Sununu says.



"Most of what I do is either spreadsheet work or sometimes educational statistics,"
John Sununu,
Governor of New Hampshire,
on the use of his DG/One

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"The DG/One is completely PC-compatible so I can create a disk on my IBM PC that is compatible with the Data General," he notes. The disks generated on the PC are read into the DG/One through an external 5 1/4-inch disk drive in his office. The data is then transferred to a 3 1/2-inch disk compatible with the DG's internal drives. "Then I have something I can carry around," Sununu explains.

In a tribute to New Hampshire frugality, Sununu acquired his DG/One inexpensively. "Data General has one facility and is putting two new ones in New Hampshire, and they were kind enough to lend it to the office." With a laugh he continues, "They're a great New Hampshire firm and it's a great product. It's a good package. I like it."

The only drawback, according to Sununu, is the screen, but he adds, "Once you get used to it, it's not really a problem. It's actually not a bad machine. I'm really impressed with its computing power." One feature of the DG/One the Governor has no opinion on is the modem. That's because he's never used it.

The portable performs other chores besides financial analysis. It came with a word processing package, says Sununu, "and I use that occasionally to write some notes and rough drafts. But most of what I do is either spreadsheet work or sometimes we've had educational statistics. I'll just write a little BASIC program and then operate on the data base."



The Governor is just about the only person in his office with a portable computer, and he doesn't see that changing: "It's not by policy, it's just a reality that most people work in their office and that's it." He notes, "I use the portable primarily as a convenience because I'm on the road so much."

Staying abreast of the state's financial condition, even while on the road, is vital. New Hampshire is the only state in the nation with neither income nor sales tax. The people of New Hampshire like it that way. Candidates for the governor's office have traditionally been asked to "take the pledge" not to back such broad based taxes. The last


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In our office we quite often will download a lot of the financial data

New Hampshire governor, Hugh Gallen, refused to take the pledge, and Sununu defeated him in an upset in 1982.

When Governor Sununu entered office, he inherited a \$41 million deficit. A recession,

federal cutbacks, and optimistic revenue estimates combined to create the deficit. He didn't call for either an income or sales tax. Instead, strict financial discipline was imposed, and computers were used to help enforce it. Partly

as a result, the state now enjoys a record \$47.8 million surplus, and Sununu's popularity rating is at an all-time high of 56 percent.

The IFS was put into place last July 1, the beginning of New Hampshire's fiscal year, in an attempt to provide more timely information about the state's fiscal health. This is especially important when economic conditions are deteriorating, as they were in 1982. "In the past," Sununu notes, "it wasn't unreasonable to not really know the fiscal condition of the state until 90 to 180 days after the fact."

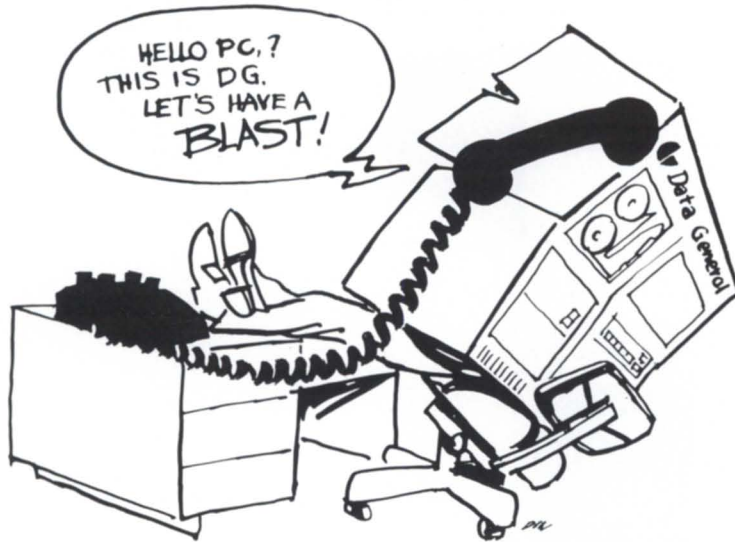
Today, that lag time has been cut dramatically. In the works are pro forma monthly closings of the state's books to gauge budgetary performance. It may be possible to do even better than that. According to Sununu, "We can probably get quite close, within a week. In essence, if we were pressed, we could probably identify where we are within a percent or so on an even shorter basis."

In commenting on the impact of the IFS, Sununu says, "I think that the availability of the data on a current basis is the most important thing. This has allowed us to get a much better feeling for what's happening in government. In that sense, in providing up-to-date, timely financial information, it really is a great tool for making effective decisions in dealing with financial issues."

Given the example set by Governor Sununu, how long will it be before politicians start campaigning for office on the basis of their computer know-how? Can we look forward to the day when there is some kind of computer competency test that any aspirant to high office must pass?

Asked about the trends he might be setting for other state or national governments, Sununu replies, "In terms of integrating their financial data, I think that is a trend or will be a trend. In terms of governors, per se, being as much involved in the details, I doubt it. I think that's just a bad habit I have." Δ

Hank Hogan is a free-lance writer based in Austin, Texas who specializes in technical communications.



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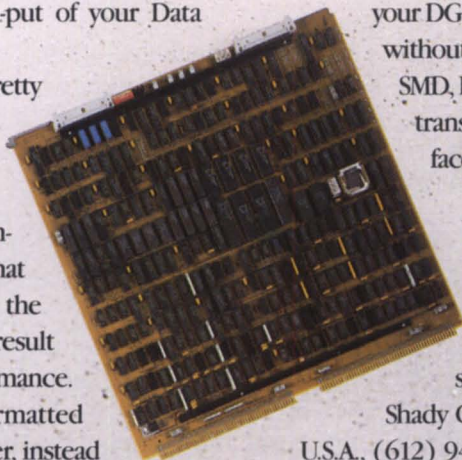
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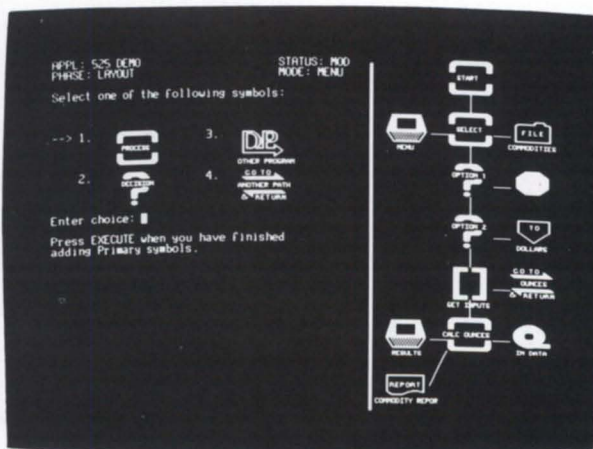


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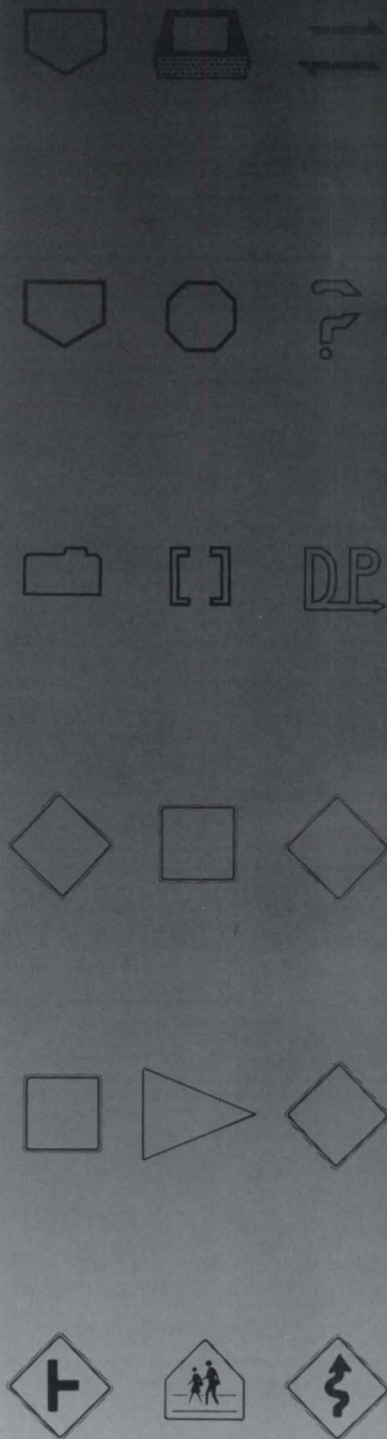
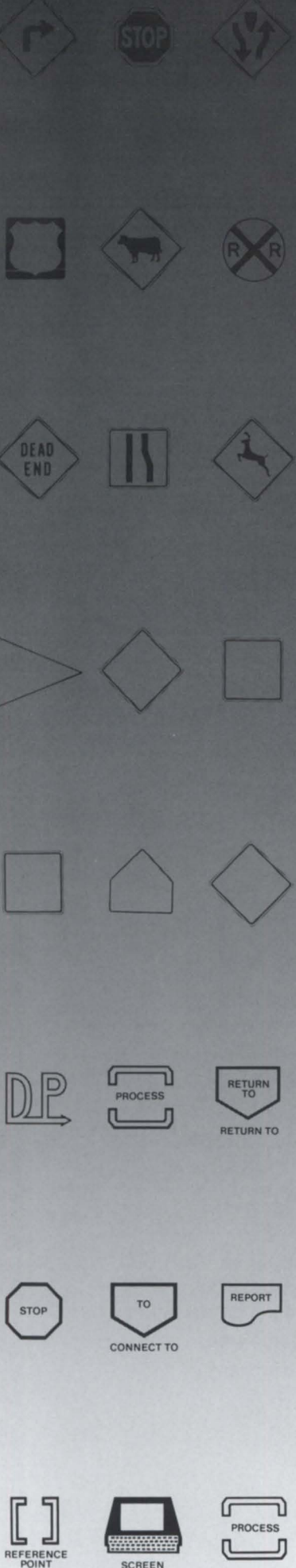
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Computer-Aided Helping

by Jeanne Sangster
Focus Staff

"These days, it seems, just about everyone is taking an interest in advanced technology."

So begins a recent *Wall Street Journal* article chronicling how computers are being used by various unsavory characters, including car thieves, bookies, prostitute rings, and especially narcotics traffickers.

Obviously, computers are only as noble as the people who use them. This month *Focus* investigated a number of ways Data General systems are being used in noble ways, reaching out in hospitals, nonprofit organizations, fund-raising, and social agencies. We gathered technical facts, focusing on diagnostic tools, data base management, and problems specific to this vital area, but also examined the human side.

Bytes for boys

Tony Caniglia is DP manager for Father Flanigan's Boys' Home in Boys Town, Nebraska. Boys Town started in 1917 with the purpose of providing food, clothing, shelter, education, and spiritual and medical care to homeless, neglected, abused, and handicapped boys. The program expanded to include girls in 1979. More than 8,600 children annually are cared for and treated by Boys Town. The family home program provides long term family-based care to about 550 residents. Alumni of Boys Town include state senators, professional football players, doctors, and lawyers.

DG computers have been used for 7 years to administer fund-raising and direct mail. According to Caniglia, the organization makes several appeals per year to donors throughout the country, keeping track of these individuals and acknowledging all responses. They also do prospecting to increase the number of donors. They do quite a bit of computer letter writing, and have received very few complaints about the type of materials sent (one fear users have had about computer mailings was that they would be seen as impersonal). All of their software was written in house.

Caniglia's department recently upgraded

from an M600 to an MV/10000. He describes the conversion as "great—very little problems. Other than some assembler programs, it was a straightforward transition. I'd recommend that transition to anybody." So far, all computer training has been done on-the-job.

The main problem unique to fundraising and direct mail is handling large data bases, Caniglia states— "We've more or less worked around it, but it's still difficult." One of their data bases is 1.4 million names. Data bases this large can be handled relatively well by random access, but not sequentially. The department's solutions have come through a combination of file processing and INFOS. Most of their file purges have been done by outside services, although they plan to bring the function in house within a year. "Packaging is the problem—there's plenty of software out there, but it's written in IBM assembler so we're more or less reinventing the wheel," he says.

Caniglia believes that Reaganomics hasn't hurt Boys Town economically; people have continued to be very generous.

Computer-Aided Healing

DG equipment is in use for another group of needy children—those with serious illnesses.

Jeffrey Budd, Ph.D., is senior scientist of the pulmonary division of the pediatrics department at the University of Minnesota Hospital, where the primary disease treated is cystic fibrosis. The two most important uses of the DG S/140 are to store all patient data and to analyze pulmonary function tests. For one test, the computer performs the analog-to-digital conversion and all the calculations, then prints out a report with the results. A second test uses a gas analyzer to measure the volume of gas in a patient's lungs, how well their lungs mix the gas, and other vital func-

tions. Budd developed the software after the hospital found that CLINFO (a medical data base package) wasn't sufficient to handle their data. He reports no specific problems with the DG system—"it's worked out quite well."

Since cystic fibrosis is a long term disease, the data kept on each child is extensive. The division has 350 patients who come four times a year for outpatient visits. Currently, 10 to 12 are inpatients. The division also receives referrals from the oncology department for pediatric pulmonary tests.

Dennis R. Givens is system manager of biostatistics for St. Jude Children's Research Hospital in Memphis, Tennessee. The primary purpose of his department is clinical research and scientific computing.

The hospital chose DG equipment partly because Givens had had previous experience with a DG S/120 while a university student. They also considered DEC and HP, but were

A computerized notification system informs victims of court dates and case dispositions



Children come from all over the world for treatment at St. Jude Children's Research Hospital, an early leader in treating cancer patients on an outpatient basis.

it has no more than 20 inpatients at a time. There's a large outpatient population—children are referred by physicians from all over the world. Although cancer is their primary focus, other catastrophic diseases are treated as well.

Computer-Assisted Assistance

Saleem A. Samiia is systems support specialist for the Victim Services Agency (VSA) in New York, a nonprofit organization that began in 1975 with the purpose of providing services to victims of crime who were appealing in the criminal court system. Services include providing transportation back and forth from court if victims are indigent or recently out of the hospital and unable to travel by bus or subway. For victims who are employed, they provide an alert system that lets the victim go to work on a court day; if needed in court, they will be called at work, thereby missing only a part of the day. Previously, many victims were unable or unwilling to appear in court for fear of losing their jobs; this service allows them to miss a minimum of work. Counseling is provided, too.

also coordinates a restitution system that was instituted for defendants who are able to pay for damages to a victim's property; the defendant receives an ACD (action contemplating dismissal) provided the reimbursement is made.

Since 1975, the agency has expanded to provide special units for abused spouses, abused children, and relatives of homicide victims.

VSA writes and maintains the computer programs for the Brooklyn, Bronx, and Queens District Attorneys' offices, which provide case tracking and statistics from criminal court through the Supreme Court. Each office employs over 100 people, and all computing is performed on DG equipment—a C/330 and an MV/6000 (maintained in Cambridge), and their own in-house MV/4000. A computerized notification system informs victims of court dates and case dispositions. The computer also handles police notifications—personnel can consult an online schedule so as to know which days an officer can appear in court and schedule court cases accordingly. Police officers are also on an alert system that

swayed to DG by two factors: DG lived up to its promise of delivering "the most for the buck" (which Givens states is just as true now as it was then), and secondly, the DG sales representative really went out of his way to help them figure out what they needed—"The DG sales rep did the best job for us in helping us configure."

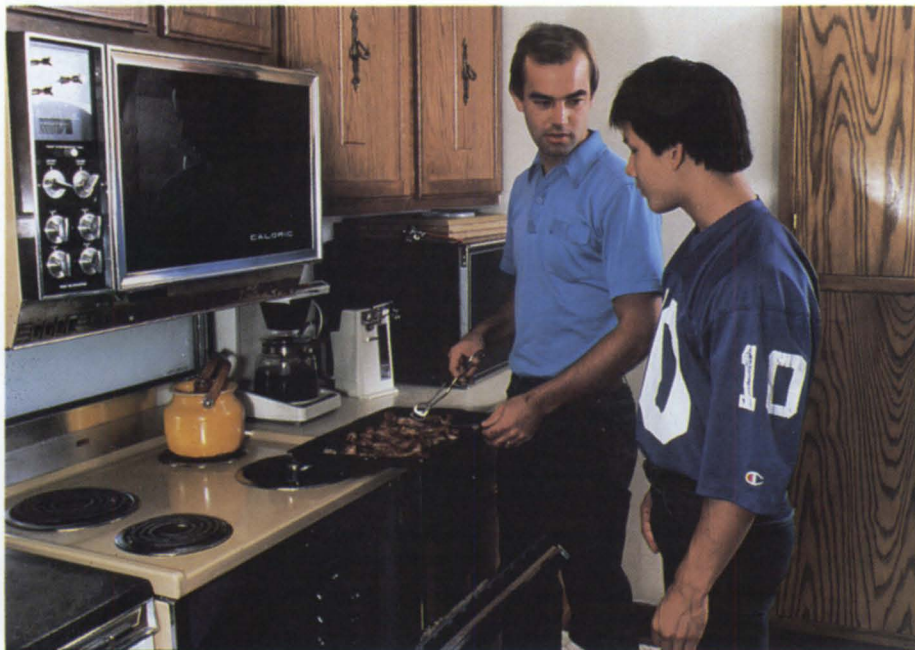
Initially, they purchased an S/130. They upgraded to an MV/8000 in 1982 because the S/130 was overloaded, its 16-bit size caused limitations in program size, and most third-party statistical packages were written for 32-bit systems. Givens has decided that the upgrade was probably the easiest he'll ever see—by a stroke of luck the upgrade coincided with a move to larger offices. The systems manager at the time was able to get the MV/8000 up and running in the new building before they shut down the S/130. "We just rolled the drives out from the old building and the DG field engineer came out and helped us set up. We were down one weekend; Monday morning we were back up. I'm afraid I'll have to pay for that later on," Givens says, laughing.

They currently use SAS, SPSS, and BMDP (the latter is a biomedical program produced at UCLA). Most of their statistical work is done with SAS software. They also have SIR DBMS (Scientific Information Retrieval). They did a lot of their own programming before the upgrade, but what little programming they do now is highly specialized and written in Fortran 77.

St. Jude Hospital was an early leader in treating cancer patients on an outpatient basis;

A cystic fibrosis pediatric patient at the University of Minnesota Hospital performing a tidal volume breathing test. In the background the S/140 is doing its job.





The home campus program of Father Flanigan's Boys' Home is a residential and educational care facility on the Boys Town campus.

reduces the amount of time lost waiting on court appearances.

Samiia describes VSA's system as the "most advanced case-tracking system in the United States, second-to-none. It has greatly aided the District Attorneys' offices." The software was originally created by Meditech, but VSA has added their own systems depart-

ment, so all programming is done in house. Anyone interested in adapting the software for their own use is invited to contact the agency.

They have an intermachine link that goes between the C/330 and the MV/4000 to allow the three units to access information in the data base of any of the other boroughs. They perform nightly backups to avoid loss of crucial

data in the event of system crashes.

Fast aid to Live Aid

What has Data General Corporation done directly in the area of reaching out? Donation of an MV/10000 helped accountants for the Live Aid benefit concert last summer, allowing quick collection of the \$70 million dollars of pledges. As a direct result of the use of the MV and Mephisto (a fourth generation language from Interactive Computer Systems of London), the money collected during the concert was charged to credit card accounts and sent to Ethiopian relief organizations in a matter of days rather than weeks. If the process had been done manually the estimated time would have taken well over a year, according to *Computerworld*, and Live Aid would have lost approximately \$350,000 in interest.

The next time you hear someone wailing about the evils of computers or the perils of high tech, tell them to contact Boys Town or St. Jude, or any number of agencies across the world where valuable, even lifesaving, tasks are being performed daily by computer users.

△



The art and science of fund-raising

What do you think of when the word "fund-raising" is mentioned? Jerry Lewis telethons, huge grimy frosted cakes stuffed with dimes, Girl Scout cookies, car washes, garage sales? Fund-raising is all of the above, and it's also fast becoming *big* business. For many nonprofit organizations, quality of fund-raising activities equals their ability to survive.

Interactive Management Systems Corporation (IMS) provides turnkey systems to four types of nonprofit organizations: HMOs, IMOs (individual membership organizations), company-type membership organizations (for example, Chambers of Commerce), and foun-

dations (those that pass out money and fund-raising foundations that raise money).

According to Dave Van Ness, vice president in charge of sales and marketing, IMS has been a DG OEM since 1974, and last year was the largest DG dealer in the country. In 1976 they wrote a data base management system to run on Novas because at that time no DBMS was available that would run on a minicomputer. Some of their earliest customers were nonprofit organizations, and they branched from DBMS to membership applications. They currently have 40 installations in nonprofit organizations.

(continued on page 18)

The advent of the Desktop brought major change for IMS because of the type of system and customer they deal with—it made computing available in offices that previously used service bureaus for fund-raising. Service bureaus were (and are) very expensive; bringing the functions in house with a turn-key system allowed for financial savings, cleaner mailing lists, cleaner and less costly operations, and other benefits.

In the last 4 years, with the change in the economic climate around the country, it's become more and more important to many organizations to raise money. For example, one foundation that IMS services used to receive 100 requests for money annually; last year they had 2,000 requests.

"Everybody's looking for money, and the dollars aren't available from the government the way they used to be," says Van Ness—"What this has done is to require the fund-raising organizations to be more efficient, to make sure that their dollars are well spent."

The change has also forced organizations to justify their existence to the big foundations that used to just write checks. Now foundations are looking harder, because communities are expecting those foundations to exhibit some social consciousness, and support the most deserving organizations. For example, the Denver Symphony has to demonstrate that they have grass roots, general audience interest in maintaining their status in the community, or the foundations won't give them money anymore. If the symphony doesn't have the little people who are willing to send in \$5, the foundation says, "We don't believe that the community in general is really benefiting from the dollars we're giving you, and so we're not going to give you them."

It has become necessary for many organizations to solicit from a much broader base of prospects than they used to. They're all competing for the same dollar.



*Danny Thomas
founded the St.
Jude Children's
Research Hospital
in 1962.*

"All of these things necessitate computing power, and those are the niches we fill," says Van Ness, "we've got all sorts of levels of sophistication and giving involved with different organizations" (from a weekly religious mailing that solicits 50 cents a week from children, to the Denver Symphony whose average gift is \$100, for example).

"From our standpoint, it's an area of software that's just beginning to be apparent. Most software houses have spent the last 5 years trying to get doctors and lawyers and people who have big numbers. There are a lot of little niches, like fund-raising, that have to a certain extent been ignored," Van Ness says.

For example, IMS has been installing systems in chambers of commerce since 1978. There are only three software packages in the country for this market, yet there's no other single place in a community that gets more

exposure to the business leaders, the decision-makers, than the chamber of commerce.

Van Ness reports no complaints that the computer detracts from the personal quality of fund-raising or membership applications; he believes that it's not much of a question anymore, although it used to be a major concern. With new laser technology and letter-quality printers it is possible to maintain a high degree of personalization. IMS has also put hooks in their software that kick out the person that needs a special letter.

IMS' nonprofit clients do have a major complaint—high turnover of staff. The retraining that results causes difficulties, and often new employees aren't aware of their system's capabilities.

The IMS staff just returned from the National Society of Fund-raising Executives Meeting, with about 2,000 attendees. Definitely not just small business anymore.Δ

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Overrated overload

IAC overload is probably not to blame for slow response and jerky echoing

by Brian Johnson
Contributing Editor

:FREE__ADVICE

Several times during the past year, attendees at my system performance seminar (*DG Educational Services course number SM516*, "System Performance: A Practical Perspective") have raised the issue of "IAC overload" as a problem on AOS{VS} systems.

According to what they had heard, low-speed lines should be distributed among the available IACs, instead of being grouped together, and lower speed lines should be connected to the lowest line numbers within a given IAC. Another version of this advice says to put the "high priority" lines on the lowest line numbers within a given IAC.

I've always had a lot of respect for CPU-assisted DG multiplexors, especially the IAC/ISC ones, so it kind of bothered me to see them get a bad rap. I decided to do a little research into the problem.

:PUSH

Before we delve any deeper into the problem, what exactly is an intelligent asynchronous controller and how does it work?

Well, an IAC is nothing more than an asynchronous multiplexor that's been given a little goose. The goose comes in the form of a CPU and some memory that coexist with the mux hardware.

A mux is a device that appears to the host computer as a single I/O device, but which "handles" multiple serial lines. The actual assembly of input characters from the incoming serial stream and the conversion of output characters to an outgoing serial stream is

handled by hardware. (However, DG once built a mux where even the character assembly and disassembly was handled in software—the legendary 4026.) Every character mux DG has produced so far has included hardware double buffering of both input and output. This allows the software which services the mux a full character of time—enough to service the interrupt without slowing down the output or missing an input character.

In the old days (4060s and ALMs), the host was interrupted each time an incoming character arrived or whenever an outgoing character had been sent. Needless to say, this imposed considerable overhead on the poor operating system. Since interrupt service routines are the highest priority (compared to users and to system call processing), heavy mux I/O caused a considerable slowdown in user processing. Assuming that the operating system required a half millisecond to completely service the interrupt, then two 9600 baud lines would completely saturate the host CPU!

Back in the mid-seventies DG made its initial attempt to off-load this processing by adding a "data control unit" to the system. The DCU was a CPU with a small amount of memory and a limited I/O bus; it was used as a "front-end" processor to handle I/O to and from ALMs. Early ads touted the DCU as being capable of 70,000 cps (73 9600 baud lines). Although this was a theoretical possibility, the more complicated line management logic required by AOS meant the actual throughput was closer to 30,000 cps (32 9600 baud lines).

In order to communicate more easily with the host, part of the DCU's address space was made a window into the host's memory. This allowed the DCU to access data bases and buffers in the host, thus avoiding the overhead of copying data back and forth between host memory and local DCU memory. The DCU could even execute code in the host memory without the host having to intervene. Requests by the DCU to access locations in the "host memory window" of its address space were intercepted by the DCU memory hardware and converted into data channel

(DCH) accesses to the host memory.

For more complicated communication, both the host and the DCU were provided with a cross-interrupt facility so they could tap each other on the shoulder when necessary.

This design allowed a lot of the processing associated with terminal I/O to be off-loaded to the DCU's CPU. By eliminating host interrupt processing (at some presumably small expense in increased DCH activity), the DCU freed the host for more useful (i.e., user) work.

:TECHNOLOGY__UDPATE

Technology has changed a bit since the DCU was designed. CPUs and memory chips now cost peanuts and occupy much less space.

DCU-assisted ALM systems required a separate I/O chassis, with power supply, to hold the ALM boards connected to the DCU. Since the chassis and power supplies cost big bucks, they raised the per-line hardware cost substantially.

The current solution is to drop a CPU and some memory on each individual mux board, thereby eliminating the need for a separate chassis, and providing a net boost in CPU power available per mux line.

:SOFTWARE

The following is a *greatly* simplified version of some very complicated logic in AOS{VS}, PMGR, and the IAC.

When AOS{VS} is booted, the PMGR causes the IACs to up-load their software routines from host memory into their own local memory.

When AOS{VS} wants to send some characters to a mux line, it stores the characters in a buffer and interrupts the IAC to notify it that there is some work to be done. The IAC then starts sending the buffered characters to the designated mux line one character at a time. When it is done, the IAC interrupts the host, which then refills the buffer and/or notifies the user that the I/O is complete.

When input characters arrive, the IAC stores them in a host buffer and decides whether or not they need echoing. If the input request is complete (by count or by delimiter),

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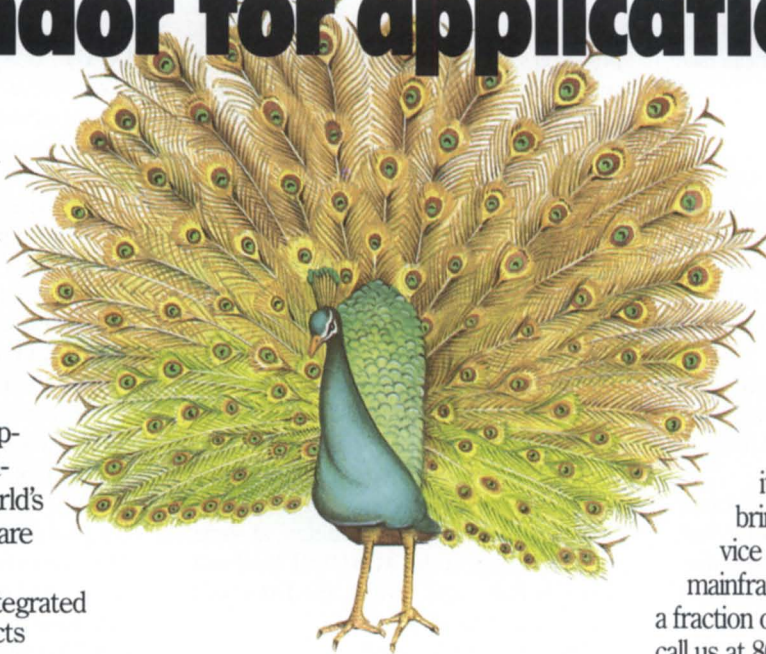
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If your machine has especially heavy DCH traffic, then the IAC might have to wait a while to get access to the buffers and data bases in main memory

then the IAC interrupts the host so it can take appropriate action.

:SCREEN_IO

AOS{/VS} supports two types of sophisticated screen I/O for use with DG tubes: screen edit and edit read. Screen edit reads have to do with things like ^A, ^B, ^E, ^F, ^H, ^K, ^X, and ^Y. CLI, SED, and COBOL are examples of software that uses screen edit reads.

Edit read is a very sophisticated (and undocumented) mechanism for doing very fancy screen I/O. CEO uses edit read (but you already figured that out, right?)

Both of these screen I/O techniques cause the IAC to do more work per character than simpler types of I/O. "Work" means that they consume more CPU and do more DCH accesses to the host memory; it also means lower aggregate throughput.

:POP

Now that you have an idea how IACs work, let's look at the original problem again. Bear in mind that the following comments are pretty much equally applicable to AOS systems running with DCU-assisted ALMs. Although in theory a DCU should overload sooner than an IAC (it has more lines per CPU), in fact the single global PMGR (as opposed to AOS/VS' local and global PMGRs) limits the chance of overloading the DCU.

If our IACs are "overloaded," what visible effects would we expect to see?

The first effect would probably be a decrease in the rate of output to the devices connected to the IAC. A second effect would probably be "spongy" echoing of characters during line reads (i.e., reads where echoing is done by the IAC, not by the originating process). A third effect would be missed input characters (the IAC couldn't service the first input interrupt before a second key was struck).

:OUTPUT

If an IAC16 has all 16 lines running at 9600 baud, then the aggregate throughput is

14,400 cps, or 0.69 ms per character. If we assume that the input lines are either humans typing or XON/XOF sequences generated by slow scrolling tubes and slow printers, then we can safely ignore that part of the load for now.

My measurements indicate that an IAC is capable of about 30,000 cps when doing "normal" output (e.g., TYPEing files), and about 15,000 cps when doing screen edit output (e.g., writing COBOL screens); a source inside DG told me that edit read output can do about 5,000 cps. Note that these numbers depend heavily on the average length of the output request. Small requests (less than about 32 bytes at a time) will cause lower throughput than large requests. In addition, at some point the ability of the AOS{/VS} local and global PMGR logic to feed the IACs will become the limiting factor.

What does it all mean?

Well, first it means that the worst thing that can happen is that aggregate IAC output may fall as low as 3200 baud if all 16 lines are doing edit read output. In real terms this means each outgoing character could be delayed 0.3 ms. This is hardly devastating.

Would you notice the slowdown? Yes, but it probably wouldn't last more than a few seconds, because few applications (including CEO) involve sustained output to all screens on an IAC at the same time.

If you're getting response times in excess of 1 second, is "IAC overload" the cause? Hardly. It's far more likely that the cause is the inability of the process generating the output to get control of the host CPU to refill the output buffer.

The best remedy for this problem is to fix your process priority structure (I recommend putting everybody at 2 SWAPPABLE). Then try using VSGEN to crank up the output buffer size for the affected lines. Increased output buffer sizes can improve response time because they allow more time for the process generating the output to get scheduled. They can also decrease the amount of unnecessary scheduling required by AOS{/VS}. (You make fewer trips to the well because you're using a bigger bucket.)

:INPUT

As we've already seen, a busy IAC imposes submillisecond delays on output. It seems reasonable to assume that the same holds true for input—especially if we assume that the PMGR software designers gave priority to input processing, as opposed to output processing (or, at worst, equal priority). Well, they did.

So why is it that you sometimes hold down the REPEAT key and a letter key and the echoing is jerky? Several things are coming into play here. Of course one factor is the submillisecond response times I described above, but there is also the problem of overall DCH activity.

If your machine has especially heavy DCH traffic (and whose doesn't?) from disks, line printers, and other IAC/ISCs, then the IAC might have to wait a while to get access to the buffers and data bases in main memory. On extremely busy machines with IACs located at the end of the bus (which is where they should be!), this can conceivably cause delays on the order of hundreds of milliseconds. This is the real cause of the jerky echoing you sometimes see.

Is there a chance incoming characters will be missed? If the input is from keyboards, the answer is no. A typist would have to be typing at the rate of a millisecond or less per keystroke. Is there a chance of missing a character when the input is from another computer? My experience with products like BLAST and various terminal emulators is that if it's happening, it sure isn't happening very often. I get very low retry rates even on busy IACs.

On a given IAC board, the lowest numbered lines are serviced before the higher numbered lines. This means that if all lines are running full tilt, then the higher numbered lines will slow down first. It also means there is more of a chance of missing an input interrupt on the high line numbers. But how much slower and how much of a chance? Not much. We're talking about delays due to line number in the range of fractions of a millisecond. Not enough to miss an incoming character and certainly small enough that the difference on

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Runaways are the single most common cause of poor echoing on all of the systems I've been called in to troubleshoot

output is probably imperceptible to the human eye.

Are we talking about seconds or tens of seconds here? No. If you're getting response times in that range, the cause is the same as for output: process scheduling latencies. In this case, changing the input buffer size specified at VSGEN time has nothing to offer. It is only useful for avoiding DATA OVERRUN ERRORS on lines connected to fast data inputters (i.e., nonhumans). If a human gets this error, you can postpone the inevitable by cranking up the input buffer size, but the real problem is the inability of the associated process to wake up often enough to process the input.

:MORE_LIKELY

If you're getting delays when echoing characters on a relatively idle system, there are two common problems you should check out: runaway lines and heavy data channel traffic.

A runaway line is a 20 mA line that has nothing connected to it or is connected to a device that is turned off. Or it could be an EIA line that has nothing connected or has a long cable with no device at the other end.

Runaway lines are the primary reason I recommend against using the ENABLE/ALL command with EXEC. However, even if the line is not enabled, it can still cause problems for the IAC. A line that is sysgen'd but not enabled is never really turned off. Try this experiment: disable a line and then type ^C on the tube attached to it. It echoes '^C'. On EIA lines with long dead-end cables, noise from adjacent appliances or fixtures can cause garbage input, which the IAC attempts to echo. The cable acts like a transformer and reflects the echoed character back, repeating the cycle.

Assuming the runaway is at 9600 baud, a single runaway can produce 1,920 useless IAC interrupts per second. Only a few runaway lines can consume a significant fraction of the IAC's attention.

The best solution is to plug unused EIA ports with shorting plugs (pin 2 to pin 3 mini-

num). For 20 mA lines, contact your field service representative. They require active termination using a small circuit (another good reason why 20 mA lines should be discontinued in favor of RS-232 or RS-422). Rumor has it that DG SEs have a program called IAC.PR which can detect runaway lines. Contact your local SEs for assistance or drop me a business size self-addressed stamped envelope marked "runaway" and I'll send you the listing of a program which also finds them.

Runaways are the single most common cause of poor echoing on all of the systems I've been called in to troubleshoot.

:PRINTERS

If you want to minimize I/O peaks on IACs, the best way I've found is to slow down the speed of any serial printers you have. The average serial printer is heavily buffered and rarely capable of sustained throughput of more than 1200 or 2400 baud (yes, Virginia, that includes laser printers). Rather than feeding the printers their next buffer load with short bursts of potentially disruptive 9600 baud data, why not run them more or less constantly at a less disruptive rate? Will this make a substantial difference in the response time of tubes sharing the same IAC? No—it will just eliminate the occasional short pause on your screen when the printer wakes up and demands to be fed. However, it will cut down on the rate of garbage characters on printers with long cables, or allow you to use an even longer cable without a line driver.

:FEEDBACK

If any of you have a case where IAC overload or the order of the lines on your IAC was demonstrated to be a significant contributor to a response time problem, send me the details and I'll publish them.

However, be aware that the only user so far who claimed to have benefited from an IAC reorg was found to have also changed the output buffer sizes at the same time. When the buffer size change was undone the problem returned (a good reason to implement only one piece of advice at a time).

:ANECDOTE

I was visiting a new client for the first time a while back when I noticed that the screens on their MV/8000 were rocketing. It turns out they have all their consoles configured at 19,200 baud—both the application and the developer tubes. I asked them if they weren't afraid of the Dreaded IAC Overload Problem. They said, "What IAC overload problem?" Amen.

:NET_NET

There are cases where IAC load is an issue in response time problems, but they are relatively rare. Process level response time is a far more common problem.

It's rarely worth the effort to distribute low-speed lines across IACs, arrange lines according to priority, or change IAC input buffer sizes. It is worth the trouble to crank up IAC output buffer sizes for lines where humans get way ahead of the process associated with the line, but this is more of a cosmetic fix than a real solution. Cranking up either input or output buffers for hardware-buffered devices like serial printers is rarely necessary.

:ERRATA

In the April issue I mentioned that configuring lines for dial-out/dial-in required some strange characteristics. I wrote the March and April columns in January in anticipation of being on the road a lot. At the time, I was running AOS/VS 5.xx and have since upgraded to 6.04 which has a new characteristic, /CALLOUT, which solves the problem. Sorry for the confusion. Δ

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Closing the book

[!READ] revisited one last time, and other findings

by Jim Siegman
Contributing Editor

Let's pay one last visit to [!READ]—a subject that has created a steady stream of commentary since last October—and then put it away. I am still receiving a variety of innovative suggestions for protecting the system from wily users who might try to use [!READ] to break out of a startup macro. The only "sure-fire" method to date was the one published in the March issue of *Focus*, page 6. However, several people have been able to break even that technique by using ^C^A at the proper moment.

Well, it was fun while it lasted, but DG has plugged the hole. I just got back from the rev 7 AOS/V5 seminar, and have confirmation that DG did add an option, [!READ/S], that truncates the input line at a semicolon. Unless some ingenious person can find a way to get past this, it looks like we can now build secure macros that use [!READ/S] to get their input.

I can tell I'm going to get some letters about another issue that I raised inadvertently last month. In my column on printer macros in the May issue, I told how to create a file with an <ESC> sequence in it by using the COPY from @INPUT. I have frequently used this technique in the past to get certain control characters into disk files, but neglected to say that the <ESC> will be echoed on your screen as a dollar sign ("\$\$") if you have the normal settings of /EB0 and /EB1 characteristics. The COPY technique will work quite nicely with certain control characters, but ^W, ^X, ^Y, ^Z, and <ESC> are among those that don't echo properly. In the article I did say you might have to use FED to edit the VFU files, since the COPY technique can't handle certain characters such as ^D.

Now for a few more tidbits . . .

I've been wondering about the wisdom of packaging the MV/2000 with only a 22 MB cartridge tape. A full system with 240 MB disk would take a long time—and a lot of tapes—for a backup. However, many users I've talked to don't seem to think this is a

problem. They say the XODIAC link was designed to allow all backups to be performed by a host system over Ethernet, thus eliminating the need for high-speed, high-capacity off-line media.

Here's an item for the wish list: add code to the SYSINFO command so it would also show the microcode level.

Whatever happened to QMODIFY? In Boston last August I asked what the status was on an STR I submitted some time ago requesting a new CLI command called QMODIFY. It would allow you to change such things as the number of copies, start/end pages, forms, qpriority, etc. without having to QCANCEL and QPRINT the file. I was told the code was already being developed, and that we should see it soon, possibly by rev 7. There's no mention of it in the preliminary rev 7 release notes, however. Will it be in rev 8?

Another thing I learned recently was that you can't have more than 256 requests in all queues (this is true for AOS/V5 through rev 5.xx, and I think it also applies to AOS

through rev 6.xx or 7.xx). I assume this is because the queue entry table in memory has a 1-byte pointer to a disk block in :QUEUE:Q that contains the complete 256-word queue entry. There is also a bit map in the UDA on :QUEUE:Q, but with 128 words available, it seems that the theoretical limit on that would be 2048 queue entries.

I just discovered that the Desktop Model 30 I'm using at the moment doesn't have the DISPLAY.PR utility. It also doesn't have DEDIT or FED. Is that standard for pre-gen AOS on Desktops? I don't know why they're not there, but I sure miss them for editing VFU files. It looks like I might have to use sort/merge—which is on the disk. Δ

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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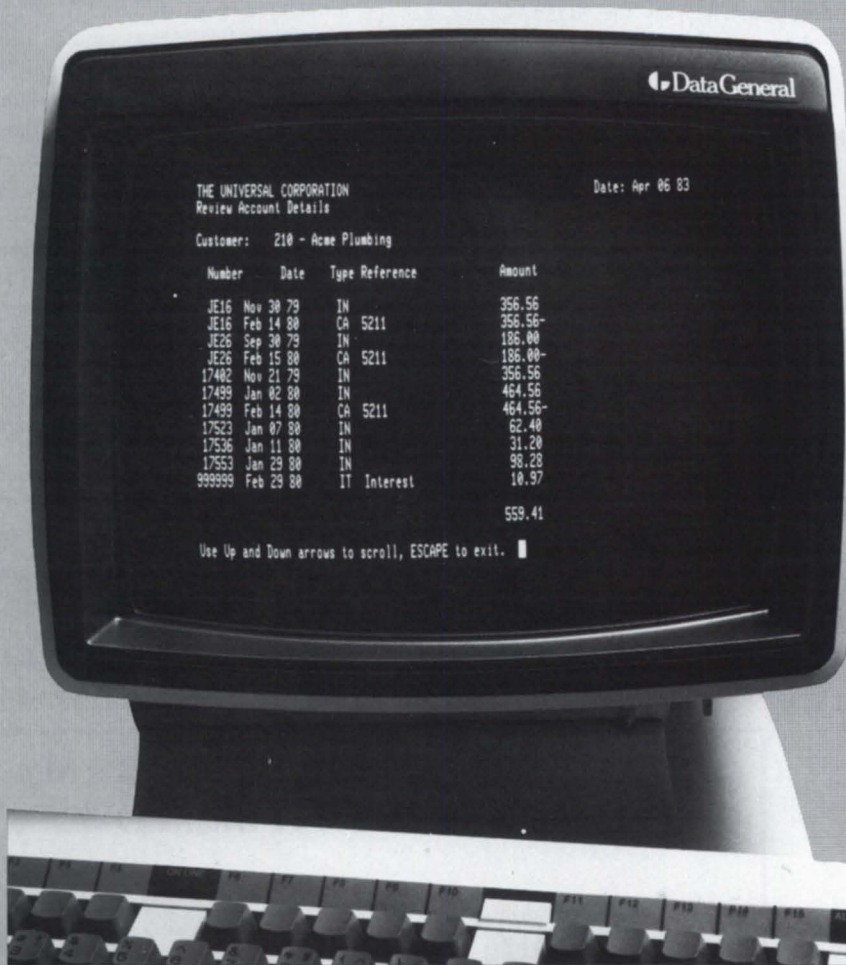
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Worth the wait

Benchmarking the MV/2000 wasn't easy, but the results are impressive

by Tim Maness
Contributing Editor

The MV/2000s have arrived. These are the 32-bit machines that DG announced to fill the gap between the Desktop and the MV/4000DC. Now that I've actually had the chance to work with one, I can confirm that it is small, unbelievably quiet, and it really does boot just by turning it on.

Installation

The first thing I noticed about the machine was that the box for the documentation was much larger than the box for the machine. I have never seen so much documentation for an MV machine. What I've looked at so far seems very well done and very thorough. Unfortunately it didn't help me with the problems we encountered. But more on that later.

The system is intended to come up by itself without a system manager's attention, so it has its own clock to set the system time and date. Therefore, the first step to installing the MV/2000 was to place two AA batteries in their slot in back of the machine. Next we discovered that the system console has to be plugged into slot 6 instead of slot 1. After that, we had no problems getting the machine up.

The interesting thing about the MV/2000 is that it comes out of the box with its standard software already loaded. That's good from the standpoint of simplicity, except there isn't a really easy way to get any other software onto the machine. It comes with a "cheap" tape drive (cheap because the tiny 22 MB cartridges only cost about \$50!), but not many people have the right kind of software distribution tapes for this drive yet. The machine can be ordered with a floppy drive, but not many larger MV/ machines are equipped to make floppies.

The logical answer is to get DG/Gate or some other file transfer program onto the machine, and then use it to transfer the files you want. Of course, the catch is that you first

have to get the file transfer program loaded. At some point this will all become simpler as the smaller tape cartridges become more common. However, in the short term we had to come up with a short term solution, which involved writing an assembly language program to transfer files over a console line. The first file we transferred was the file transfer program, and then it was clear sailing—almost.

In the process of trying to get the assembly language file transfer program working, we needed to change the characteristics of a console. Using the SMI (System Manager Interface—the simplified user interface that comes with the machine) you can do things like this by going through the menus and restarting the machine. I just wanted to be the master console and have the system act more like the normal AOS/VS system I'm used to. In an attempt to do this I looked at the definition of the default system to see what the up macro was named, assuming that if the start macro wasn't there, then things would stop at PID 2 as usual. So I renamed UP_EXEC.CLI and tried to reboot the system.

That was the start of a very interesting week.

The first hint that something was wrong came when we powered the system back up. AOS/VS came up, but no consoles were enabled and there was still no master console. No problem, I thought, we'll boot another system from disk. After powering the machine up again and using :SYSGEN:SYS.PR for the system name, the machine panicked. "OK," I thought, "No problem. We'll restore the system from tape." But it panicked again as soon as I tried.

Now my palms started to sweat. After all, this wasn't even my machine, and the owner was uneasily peering over my shoulder. We tried several things, but finally had to give it up for the night.

The next morning when we called 1-800-DG-HELPS, they explained that they couldn't help because there was no contract number on the machine yet. This didn't seem unusual to me since it was still under warranty. After numerous calls between the local office and Atlanta we were finally able to talk to someone in software.

The problem, we were told, was AOS/VS 7.02; if we could find a 7.00 tape, we could

retrieve the file we needed. However, no one knew where a 7.00 tape could be found.

After about 5 days of this we arranged to take our disk with the missing file to a site where there were other MV/2000s, add our disk to one of their machines, INIT it in and rename the file. No luck—the disk never would INIT. We were able to use their system to make a good systape, however. While doing this we discovered that SYSTAPE.CLI was putting the wrong files on the tape, which probably contributed to not being able to restore files from a 7.02 tape. Finally, with good tape in one hand and disk drive in the other, we went back home and picked up where we had left off the week before.

Atlanta is still investigating the problem, and maintains that it is impossible to get files off a 7.02 systape. The lesson in all of this is not to have any problems that require recovering system files from tape. This problem is supposed to be fixed in rev 7.03.

The System Manager Interface

SMI is very nice for people who aren't used to running an AOS/VS system. It provides menus for everything, and you can perform any system function by choosing the correct menu item and answering the questions. There is on-line help at every point and more manuals than anyone would ever want to read. DG has gone to a lot of trouble to make operating this machine as simple as possible.

While the system is coming up, at any point where there is a choice, the operator has 45 seconds to make a response. Otherwise the sequence continues, using a default choice until the system is up. Even FIXUP will run automatically when necessary.

Benchmarks

The fun part of getting new hardware is running all the benchmarks. Like anybody else, I have a few favorites. In the tables listed below, the following systems were used for the tests: MV/2000DC with 2 MB memory, 70 MB disk; MV/4000 with FP, 2 MB memory, 384 MB disk; MV/6000 without FP, 6 MB memory, 602 MB disk; MV/8000 with FP, 6 MB memory, 602 MB disk; MicroVax II, 2 MB memory, 70 MB disk.

The first benchmark is a CPU benchmark that tests floating point operations. The following is the Fortran 77 source code.

Table 1 (all times in seconds)

| | With DSQRT | No DSQRT | Integer Only |
|-------------|---------------|-------------|-----------------|
| MV/8000 | 7.04 | 1.65 | .640 |
| MV/6000 | 22.37 | 7.75 | .640 |
| MV/4000 | 15.66 | 5.17 | .782 |
| MV/2000 | 12.93 | 3.22 | 1.060 |
| MicroVax II | 8.92 | 3.56 | 2.340 |

```

IMPLICIT REAL*8 (A-H,O-Z)
CALL RUNT (-1,IELAPSED1,ICPU1,
  IO1,ICC)
DO 10 I = 1,100000
A = I
B = A * A
C = B + 2.0
D = C / 2.0
E = D-1.0
F = DSQRT (E)
10 CONTINUE
CALL RUNT (-1,IELAPSED,ICPU,IO,ICC)
IELAPSED = IELAPSED - IELAPSED1
ICPU = ICPU - ICPU1
WRITE (*,*) "ELAPSED TIME: ",
  IELAPSED
WRITE (*,*) "CPU TIME: ",ICPU
END
  
```

I ran this program and two variations. The first variation was without the DSQRT statement. This is probably the most time-consuming statement in the program; taking it out leaves just the basic floating point operations. The second variation involved getting rid of all the floating point operations and doing essentially the same type of computations using only integer arithmetic. The results

of these three runs are in Table 1.

The second benchmark uses two programs to test I/O. The first program creates a 4,992-block file. It is run twice: the first time takes care of allocating the file, so the second time it runs it gives the time required just for writing the data. The second program in the benchmark does the reading. Both programs use a 32 KB buffer. Table 2 outlines the results of two sets of runs for this benchmark. The first runs were made using an element size of 32 for the file; the second set used an element size of 4. In each case, the first number is the number of bytes transferred per second, while the number in parentheses is the elapsed time in seconds for each test.


The third benchmark is one I found in SIGPLAN Notices, Volume 20, November, 1985 in an article by Michael Wolfe and Tom Macke. The program fills a large array in best case order, and then in worst case order. This type of program tests the speed of paging.

```

Best case order:
SUBROUTINE S1 (A,N)
INTEGER A(500,500), N
DO 100 I = 1,N
  DO 100 J = I+1,N
    DO 100 K = 1,N
      L = A (K,I)
      M = A (K,J)
      A(K,J) = L+M
100 CONTINUE
END
Worst case order:
SUBROUTINE NS1 (A,N)
INTEGER A(500,500), N
DO 100 I = 1,N
  DO 100 J = I+1,N
    DO 100 K = 1,N
      L = A (I,K)
      M = A (J,K)
      A(J,K) = L+M
100 CONTINUE
END
  
```

Each subroutine was called with a different N and the timing was done around the calls. The elapsed and CPU times in Table 3 show that sometimes the MV/2000 is faster than the MV/4000. However, both are quite similar.

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An interesting aside: comparing Wolfe and Macke's results with mine shows that the MV/2000 and MV/4000 are faster than a VAX 11/750 and slightly slower than an 11/780.

Now, what have we learned? The MV/2000 behaves almost the same as an MV/4000—and if you don't have too many users and don't use exclusively I/O-bound programs (the MV/2000 doesn't use BMC devices), it's a bargain. I think I'm going to be very pleased with the one we ordered (if

we ever get it). At a price in the low \$20K range, it has nearly the power of the higher priced MV/4000. The SMI interface will make it possible to place it in environments where an operator is not available. Based on these benchmarks, it is also apparent that waiting for the MV/2000 was better than rushing out to buy a MicroVax II.

By the time this article is in print, many of the problems we experienced with the machine should be solved, but if anyone does need the file transfer program we wrote, just

call or write. It's only about four pages of code. I would like to thank Dr. Tim Bishop at the University of Utah for letting me break in his new machine for him. 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.

Table 2

| Transfer rate (elapsed time): element size 32 | | | |
|---|--------------|--------------|-------------|
| | First Write | Second Write | Read |
| MV/8000 | 116,177 (22) | 511,180 (5) | 511,180 (5) |
| MV/4000 | 319,488 (8) | 638,976 (4) | 638,976 (4) |
| MV/2000 | 159,744 (16) | 365,129 (7) | 365,129 (7) |

| Transfer rate (elapsed time): element size 4 | | | |
|--|-------------|--------------|--------------|
| | First Write | Second Write | Read |
| MV/8000 | 38,725 (66) | 134,521 (19) | 134,521 (19) |
| MV/4000 | 67,621 (38) | 121,709 (21) | 121,709 (21) |
| MV/2000 | 28,718 (89) | 98,304 (26) | 98,304 (26) |

Table 3

| Elapsed/CPU times for best case access | | | | |
|--|-------|---------|---------|-----------|
| | N=50 | N=100 | N=150 | N=200 |
| MV/8000 | 1/5.4 | 7/4.34 | 19/14.9 | 41/35.2 |
| MV/4000 | 2/.96 | 9/7.44 | 27/24.9 | 63/59.1 |
| MV/2000 | 2/1.1 | 10/8.53 | 32/28.6 | 73/67.6 |
| MicroVax II | 2/1.9 | 15/15.3 | 52/51.6 | 125/122.5 |

| Elapsed/CPU times for worst case access | | | | |
|---|-------|---------|----------|-----------|
| | N=50 | N=100 | N=150 | N=200 |
| MV/8000 | 2/.71 | 9/5.8 | 26/21.2 | 62/55.4 |
| MV/4000 | 2/1.4 | 14/12.0 | 44/41.7 | 106/99.2 |
| MV/2000 | 2/1.4 | 13/11.1 | 41/37.6 | 96/89.3 |
| MicroVax II | 4/2.1 | 36/16.4 | 129/55.9 | 146/132.4 |

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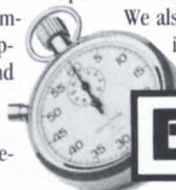


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Inspect the best

ICOBOL's INSPECT is limited, but could replace a lot of IFs

by Tim Boyer
Contributing Editor

Sitting near the top of my wish list for ICOBOL—right under multiground RDOS—is a new INSPECT verb.

The only reason I like BASIC is its string handling capabilities (I'm talking about regular BASIC here—Business BASIC has a lot more going for it, so no nasty letters, please!) If only INSPECT had some of the capabilities of the INSTR function, I could write something like

```
INSPECT CUSTOMER-NAME TALLYING
  TALLY FOR CHARACTERS AFTER
  INITIAL "THE ".
```

That would let me make our alphabetical customer list really alphabetical, which would save our users the frustration of having to look for THE AAA COMPANY after TAAAA, INC.

Ah, well. Back to reality. Although INSPECT is limited, I don't think it is used nearly as much as it could be. Changing some of your IF statements to INSPECTS could make your code neater, easier to modify—and much faster.

Everyone has some situation in which only a certain set of answers is acceptable. Normally, it's coded like this:

```
GET-ANSWER.
DISPLAY ANSWER-SCREEN, ACCEPT
ANSWER-SCREEN.
IF ANSWER NOT = "1" AND
ANSWER NOT = "4" AND
ANSWER NOT = "A" AND
ANSWER NOT = "C" AND
ANSWER NOT = "L" AND
ANSWER NOT = "Z"
DISPLAY INVALID-ANSWER-SCREEN,
GO TO GET-ANSWER.
```

Now, while this is perfectly acceptable code, it can be made much easier. The working storage entries required are:

```
77 TALLY PIC 9(2).
77 VALID-ANSWER PIC X(6) VALUE
  "14ACLZ".
```

Then the code looks like this:

```
GET-ANSWER.
DISPLAY ANSWER-SCREEN, ACCEPT
ANSWER-SCREEN.
MOVE ZERO TO TALLY.
INSPECT VALID-ANSWER TALLYING
  TALLY FOR ALL ANSWER.
IF TALLY = ZERO
DISPLAY INVALID-ANSWER-SCREEN,
GO TO GET-ANSWER.
```

This generates much more efficient code. As an added bonus, when the time comes to add another valid response (and you *always* have to add another response—usually when you're too busy to do it right), the only code that needs to be changed is the VALID-ANSWER entry in working storage. As more valid responses are added, the advantages of the INSPECT method over the first method become greater.

Now you know you have a valid answer. Next you probably want to branch to different points depending on which response you received. Once again, there are two methods of accomplishing this. Most people use one that looks something like this:

```
IF ANSWER = "1"
GO TO 1-PARA,
  ELSE IF ANSWER = "4"
GO TO 4-PARA,
  ELSE IF ANSWER = "A"
GO TO A-PARA . . .
```

Once again, this method works just fine—but it's easy to get the same results in half the time, while using one-seventh the memory, by using INSPECT and the GOTO . . . DEPENDING verb. Using the same working storage data, the procedure looks like this:

```
INSPECT VALID-ANSWER TALLYING
  TALLY FOR CHARACTERS BEFORE
  INITIAL ANSWER.
ADD 1 TO TALLY.
GO TO 1-PARA,
  4-PARA,
  A-PARA,
  C-PARA,
  L-PARA,
  Z-PARA
  DEPENDING ON TALLY.
```

In actual use, I combine the two. After ADD 1 TO TALLY, I state

```
IF TALLY > 7 GOTO GET-ANSWER.
The GOTO . . . DEPENDING construct is much more efficient than the IF . . . ELSE, and should be used whenever possible.
```

This is a very useful technique for menus, especially if you only want certain persons to have access to certain programs. I've written

a very simple security system for our system. It requires everyone to log in with a name and password, and then follows them around during the day, recording in a log file all of the programs they use. Included in their record is a list of the programs they are allowed to access from MAIN MENU. I used the INSPECT technique outlined above to make sure that if they tried to enter an unauthorized program, the machine would flash a nasty message. This worked fine—until I put that tenth choice on the main menu screen. Since INSPECT can only handle single digits, I was out of luck—unless I could work around it.

I know I promised no math this month, but I don't really consider addition and subtraction math. Here's what I did.

In the list of menus that the employee can access, instead of using numbers, I used letters—e.g., "A" for menu #1, "B" for menu #2, and so on. A typical person's access list looks something like "BCDHI". Using this method, I can have up to 190 possible access codes per person.

You probably don't want to put those alphabetic characters up on the screen, however. Most people are used to entering a number at a menu prompt, and seeing something like "A. ACCOUNTS RECEIVABLE" or "[. PAYROLL" would throw them for a loop. So, I just put the numbered menus up as usual, accept a numeric code—and do a little fudging. My working-storage section looks like this:

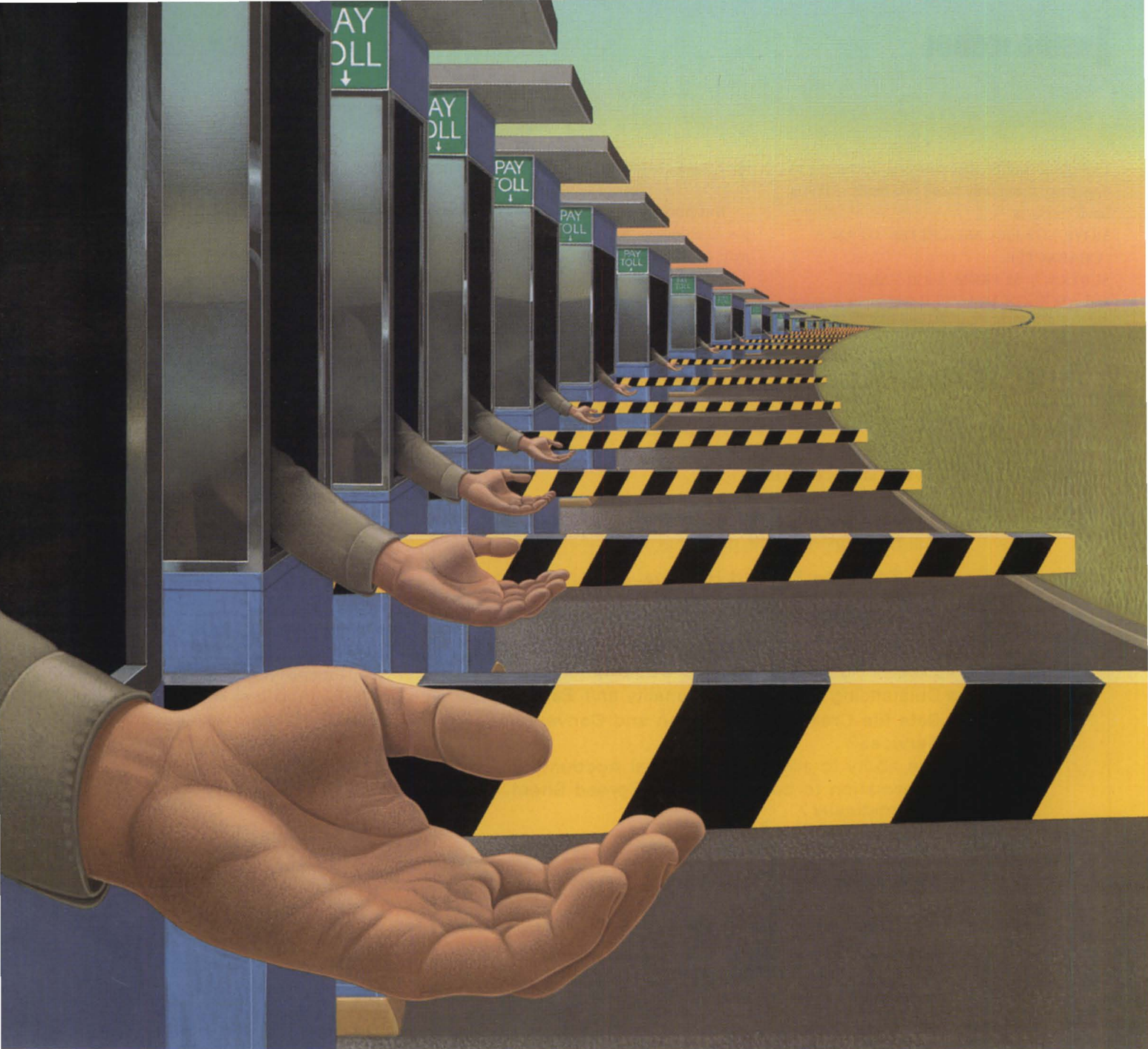
```
77 TALLY PIC 9(2).
01 ASCII-VALUE PIC 9(2) COMP.
01 ASCII-CHARACTER REDEFINES ASCII-
  VALUE PIC X(1).
```

The employee's access codes are in a field called VALID-MENUS, and I accept a selection called MENU-SELECTION. Then:

```
MOVE MENU-SELECTION TO
  ASCII-VALUE.
ADD 64 TO ASCII-VALUE.
INSPECT VALID-MENUS TALLYING
  TALLY FOR ALL ASCII-CHARACTER.
IF TALLY = ZERO
DISPLAY "YOU SHOULD BE ASHAMED
  OF YOURSELF!",
STOP RUN.
```

If the person types in 11, adding 64 to 11 gives 75, and ASCII-CHARACTER will be "K". It's then a simple matter to check if he or she is allowed into that particular menu.

As an aside, that redefined computational field can be used for all sorts of conversions.



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I've got a routine that converts lowercase to uppercase using only those two fields. All you have to do is
MOVE LOWER-CASE-LETTER TO ASCII-CHARACTER.
SUBTRACT 32 FROM ASCII-VALUE.
 and ASCII-CHARACTER will emerge as an

uppercase character.

But back to INSPECT. The next example is industry-specific, but who knows—it may spark the creative juices in someone. In the tire industry, we stamp the ply ratings on a tire by using a letter code. If you've ever

looked at your tires, you may have noticed they are marked "Load Range B" (which is four-ply) or "Load Range C" (which is six-ply). While the tires are marked that way for the consumer, we never use the letter designation within the plant—we use the actual number. My problem was how to translate from the alpha designation to the numeric.

In a passenger tire plant, an IF statement would probably have sufficed. But here, some of the tires we make are 32-ply rated. INSPECT to the rescue! I set up working storage like this:

```
77 ALPHA-RATING PIC X(27) VALUE
   "'?ABCDEFGH . . . etc'".
77 NUMERIC-RATING PIC 9(2).
77 TALLY PIC 9(2).
```

```
Then, I just
INSPECT ALPHA-RATING TALLYING
TALLY FOR CHARACTERS BEFORE
INITIAL PLY-RATING.
MULTIPLY 2 BY TALLY GIVING
NUMERIC-RATING.
```

It beats the heck out of 26 IF statements! Pull out your code and take a good hard look at those IF statements. Chances are good that a lot of them can be replaced by INSPECTS. Your system—and your users—will thank you!

Life Imitates Art Dept. A few months ago, I wrote about the UNDELETE program, and how it could save you from disaster (or a lot of hard work—same difference). Last month, my disk decided to go out on me after I had run invoices. Needless to say, two of my biggest files—one topping 10 Mb—were trashed.

Since I'm cautious to the point of paranoia about backups, I had no trouble getting the two files back to the point they were at the day before. I'm glad to say that the UNDELETE program has now been fully field tested with live data—and works perfectly. I UNDELETED my order header and line item files, reran the posting routines (with a few appropriate program changes), and came out of it smelling like a rose. 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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Why Business BASIC?

Assessing the strengths and weaknesses behind BBASIC's popularity

by George Henne
Contributing Editor

Part of my company's business is selling our own line of integrated accounting packages. Potential customers occasionally ask why we chose to write them in Business BASIC instead of something like COBOL or PL/1. It's a fair question.

You could ask the same question in a more general way: why did a recent poll of *Data Base Monthly* readers find that Business BASIC is the single most widely used language?

Getting good, objective information about Business BASIC from Data General hasn't always been easy. For many years, it seemed DG cared mostly about COBOL. Finding anybody who knew anything about BBASIC was rare until recently, and it seemed like very little money was spent on development or marketing the product. Yet BBASIC continued to sell extremely well—well enough that it now receives support much more in keeping with its stature.

Historically, BBASIC has always been heavily used by the OEM community. It was originally developed by TAC, an Atlanta-based company that has since been sold. Since TAC was an OEM, their product evolved to meet the needs of business programming. Many of the strengths and weaknesses of the language stem from those roots. This month I want to look at those strengths and weaknesses in the context of some of the common questions that pop up regarding Business BASIC.

Since Business BASIC isn't compiled, won't it be slow? A few years ago, there was so much pressure to develop a compiled

BBASIC that two separate projects were initiated—one by Data General, the other by TAC. The Data General project worked by translating Business BASIC to Fortran, then using the Fortran compiler. It was never really completed.

The TAC project was actually finished. They also used a novel approach: the compiler itself was actually written in Business BASIC. To give it pretty good speed, the developers fed their BBASIC compiler to itself! (That was also its graduation exercise.)

I went down to Atlanta for a few days to test the TAC compiler. In extreme computational programs, there was as much as a nine- or ten-fold improvement. However, in a typical update the difference was down to two- or three-fold. In a full on-line environment of typical business applications, there was only a 10 percent improvement.

Why did the compiler fail to improve speed? In a typical BBASIC application, there just isn't much computation being done. A few lines of code are executed, then something happens that causes an operating system call, such as a read or write to the disk, input or output to the CRT, writing to the printer, etc. Each system call causes hundreds or thousands of lines of assembler code to execute. Thus, much more time is spent executing system calls than Business BASIC code. Optimizing the Business BASIC code by itself is not going to result in huge changes. The changes in rev 4 of BBASIC recognized this. For example, POSITION FILE used to cause one system call, while READ or WRITE FILE caused another. These were combined to a single call in rev 4.

Other changes did speed up Business BASIC. While it is not a compiler, neither is BBASIC an interpreter in the usual sense. As you enter a line of code, it is translated into an internal format using Reverse Polish Notation. These symbols are arranged in order for quick execution at runtime. When you do a LIST command, they are translated back into readable format.

The combined effects of these changes resulted in a product much faster than the

compilers had been. It is interesting to note that in the COBOL world, ICOBOL (which uses a similar internal format) runs faster in most applications than fully compiled 32-bit COBOL does.

Compared to COBOL, however, Business BASIC uses much less memory per user. The memory saved is put to very good use by AOS/VS for additional buffers, etc. On the same size machines, BBASIC will have a tremendous advantage because of the extra memory it will have available.

For those who want still more speed, there are persistent rumors of a 32-bit Business BASIC under development.

Incidentally, the TAC compiler died when TAC was bought out by DCA for its IBM PC "IRMA" board business. It was never modified to make use of the syntax changes of the latest releases. Just as well—it probably wouldn't have made much difference anyway.

How long does it take to develop applications using Business BASIC? This is where BBASIC really shines. Syntax errors are checked in each line of code as soon as NEWLINE is hit. A program can be stopped at any point, code or variables can be examined or changed, and then execution can be continued. At no point is a compile ever needed. Small sections of code can easily be tested, even while being written.

Programmers I know who are competent in both BBASIC and VS COBOL say that an equivalent application can be done three to five times faster in Business BASIC. It's pretty tough to justify spending three to five times as much to develop exactly the same piece of software.

How maintainable is the code? The answer to this one is both better and (maybe) worse. It's better because of the ability in BBASIC to change code on the fly. This means much better analysis of a problem: all variables can be examined, etc. Since no recompile is needed, the user is up and running again as quickly as possible.

A practical downside I've seen, however,

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Programmers who are competent in both BBASIC and VS COBOL say that an equivalent application can be done three to five times faster in Business BASIC

is the result of the overwhelming functionality of the language. Where in COBOL there is often only one way to do something, there may be three or more in BBASIC. The language also puts the responsibility for good program structure completely in the hands of the programmers. If they don't show proper discipline, the code will be a mess. I've always felt a good programmer working in any language will make a better program than a lousy programmer working in a perfect language. If you're using good programmers, the system will be quite reliable and maintainable.

How powerful is Business BASIC? In my life, I've programmed everything. While I admit I have an unreasonable prejudice for SNOBOL-IV, BBASIC is still my language of choice for developing business applications. One of the reasons is that the language is rich in the kind of features that simplify coding.

For example, BBASIC has a bunch of built-in functions for string handling. In many other languages I'd have to write a lot of my own subroutines to reproduce them. I can do any RDOS or AOS/VS system call directly within my program, which allows me to shield end users from the operating system's complexities in a user friendly fashion. The file I/O commands allow me to design all sorts of data bases, and I don't have to change the specs to suit my file management system.

My neighbor programs BASIC on his TIMEX. Can he write me an order entry system in Business BASIC? How standard is BBASIC? BASIC was first developed at Dartmouth for engineering students to use in their dorms on teletypes. As such, it lacked provisions for terminal handling, file management, and strings. Despite these shortcomings, it was the first interactive language to gain wide acceptance.

While the basic statements (sorry about that) are the same for all versions of BASIC, the manufacturers each added their own ideas about how the missing stuff should look. Therefore, there is a learning curve to go

through each time you start using someone else's BASIC. Also, code will not easily move from one manufacturer's BASIC to another.

Data General Business BASIC is about the most powerful available, and you can expect programmers coming from almost any other BASIC to be a bit overwhelmed at first. Once they master it, however, they may not want to go back.

On other matters, we have been using AOS/VS 6.03 for a while now at a few sites. While we tend to distrust releases of AOS/VS that are less than a year old, 6.03 works fine for everything we've tried so far. One irritant we've found is that it doesn't reuse PID numbers as before; the numbers keep on getting larger.

Having these large PID numbers is not a problem in itself. However, a page file gets created in :PAGE for each PID. These files can easily be half a megabyte each. If you are up to PID 70 or higher, you could be chewing up 35 megabytes of storage in :PAGE. This painful condition can be relieved by bringing your system down and up more frequently: those files are then deleted and the PID numbers start small again.

People at Data General are aware of the situation, but at this point they haven't offered a solution. We may see it in a future update.

As a BBASIC user, you may have to worry about this if you have set up files that are organized by PID number, with each having its own record. Since the PID numbers get bigger (over 100 is a real possibility now), you may have to modify some software. Data General is currently modifying its software to have up to five digit PID numbers. Be prepared! 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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OASIS in Indianapolis

CEO users share ideas, techniques, information at OASIS workshop

by Charlene Kirian
Contributing Editor

One day wasn't enough for the 54 people who came to Indianapolis last April 4. They came—from Canada, Michigan, Pennsylvania, Ohio, Indiana, Illinois, New Jersey, Massachusetts, Iowa, Virginia, Connecticut, Nebraska, and New York—for a workshop on CEO. Their enthusiasm was impressive as they shared ideas, materials, and concerns. When it was all over, their evaluations told the story—next time allow 2 to 4 days.

Several of the Data General employees who attended said they were pleased to be included—and that this session had taught them more about procedures for installing and managing CEO systems than most of the on-site visits they had made to users.

The workshop consisted of four sessions, each with two discussion leaders. The leaders gave a brief history of their own installation, and then opened the floor for discussion from the audience. There was a lot to talk about. I'll try to share some of the topics the participants discussed.

CEO Connection. One user reported that CEO Connection was using 30 to 40 percent of the CPU during file transfers. This was a major concern to some of us that are ready to begin using this package. But another user's installation had been using the package without noticing any significant effects on performance. It's something to watch out for, though.

Other users described problems they had encountered switching terminal types from a D460 to a D410. When doing this they consistently locked the system. One of the DG staff members at the workshop was going to check into this and report back with an explanation and a solution for the problem.

Printer control. One user told how his site had developed a macro to control printers. It uses EXEC, but allows access by users. He knows this is a large hole in security, but until DG changes how CEO manages printers, he

didn't know any other way for a user to change forms type.

Another user suggested a printer naming convention that takes into account the type of printer, its physical location, and the queue it serves. An example would be "L4E12," where the "L" stands for laser printer, the "4E" designates fourth floor East, and the "12" is the queue number.

Skip Richards of DG software development also shared the command to screen dump from a D410 or D460 terminal:
CMD-ONLINE CMD-ESC FB000
LOCAL PRINT CMD-ONLINE
ERASE PAGE

User education. Some sites are requiring their users to "debug" before they report a problem with CEO. Instead of just calling a help desk and reporting that a problem occurred, they have to report the exact keystrokes and circumstances that led up to the problem. Since the Atlanta Customer Support Center requires this sort of information, and really can't determine the cause of a problem until we users furnish them with as much information as possible, this seemed like a reasonable requirement. However, some of the attendees thought that having users do the debugging presented political problems.

One user reported that to keep files cleaned, his company runs a SPACE report every week, and then they notify those users who are approaching the limit on their allocated space and need to delete some files. Exceptions are made when no deletions are possible.

Another interesting management concept was the "Declaration of Responsibilities" form that one of the attendees shared with the group. Every CEO user is required to sign this declaration before they can log on. It is an agreement to use the system only as directed, to sign off when the terminal is not in use, to maintain the security of their account by keeping it private and changing their password frequently, and to notify the CEO manager when their duties change. CEO users at that site are also given a "cute" packet that illustrates user responsibilities in a humorous way while pointing out the areas of concern.

The attendees spent a fair amount of time discussing the training classes offered at their installations. For the most part the classes were similar in content, but differed in the ways the material is presented. Most sites do

not have the resources to do mass training with overhead projection of actual terminal screens; many utilize overhead transparencies instead. Most attendees agreed that interactive training—with trainees sitting at terminals—was very difficult to manage because of the lack of control. Most of them also felt that managers are the most difficult to train because they tend to jump ahead and not listen to the trainer. (No offense to the managers reading this column—we know it couldn't be you!)

Everyone agreed that follow-up training—after users had some time to try the different features—was very important.

Office manager functions. There was quite a bit of discussion concerning superuser privileges. Four of the attendees who were CEO managers did not have superuser privileges, which made it difficult to do their job because they couldn't even get into their own CEO_FILES directory. Almost everyone agreed that until the CEO manager is able to handle the CEO manager accounts through CEO, superuser privileges were essential.

Attendees also discussed the problem of getting the technical operations section to respond more quickly when CEO users refer problems to them. Communication among the departments has to be improved to work out these types of internal concerns.

Revisions to CEO. Skip Richards from DG gave a very detailed explanation of the changes and enhancements that are included in the upcoming rev 2.20 of CEO:

Performance enhancements—signed off April 2, 1986

- 32-bit word processor and calendar
- Fast inbox survey
- Reduced formatter and word processor I/O

Efficiency enhancements

- Larger surveys
- Profile, alias, and mailing list management without survey restrictions
- User applications from interrupt
- Delete drawer and folder without first emptying the contents

Functional enhancements

- Voice mail supported
- Document archiving
- Integration Tool Kit and integrated user applications—a separate product
- Large PID support with rev 7.0 of AOS/V5
- ANSI terminal support—no more hardcopy

support

Hardware enhancement

- NEC 7715
- Wide-track Qume
- D411, D461, D555 terminals
- DS/7000 engineering workstations

Changes

- Edit summary from inbox, filing, and short message
- View all URGENT messages only
- Better handling of paragraphs on importing
- Report generated when adding words to site dictionary
- View mailing list owners
- Week/month-at-a-glance enhancements—display
- Ability to READ a filed message into a document
- Numerous new languages supported
- Verification of cancel/exit from short message

- Footnotes stay on same page
- Forward message display is cleaner
- Original message is returned with reply
- Insert space accommodates word wrap in message
- Ability to INDEX format rulers when copying rulers
- Reverse video on spelling check, find, and block actions
- Replace documents when creating
- Printer name no longer on print layouts
- CEO manager can control priority for for-matter
- Decision Base removed from main menu—placed on utilities
- Ability to lock exported document—so others that share the document can't work on it while you have it exported
- Word processor terminates after 30 minutes if not accessed
- Spreadsheets accommodate 250 characters.

Another CEO Workshop

If you missed the April workshop, don't worry. There are plans underway for another to be held prior to the 1986 NADGUG conference in Orlando, Florida on August 11, from 8:30am to 5:00pm. The cost is a mere \$25 per person, and all CEO users are invited to attend. Registration for the workshop will be handled through the NADGUG conference registration process. Watch for more information—we don't want you to miss this one. 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 serves as president of NADGUG's OASIS Office Automation Special Interest Subcommittee.

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Conference 86 primer

Everything you need to know to get the most from NADGUG's annual conference

by the NADGUG staff

By now, all NADGUG members should be receiving the Conference '86 Registration Packet. If you are not yet a member, or are not already on the Conference 86 mailing list, you can get a registration packet through your RIG or SIG chairperson, from any Data General branch sales office or educational services center, or by calling the NADGUG staff at 617/870-7721.

Please note that the advanced registration deadline is July 25. If your registration is received in Westboro after that date, you will be subject to a late fee of \$75, and you will not be eligible for special prize drawings at the annual business meeting on Wednesday, August 13.

Special Events

Executive Board Meeting

Sunday, August 10, 9am—5pm. Open to elected officers, standing committee chairpeople, and RIG/SIG chairpeople. New RIGs and SIGs can petition for recognition at this meeting.

Educational Services Seminars

Once again, you can combine conference activities with special seminars given by Data General's educational services staff. Two sessions are offered on Monday, August 11 (morning and afternoon), with seven seminars to choose from in each session. Tuition costs are \$195 for any one seminar; there is a special rate of \$325 if you take both a morning and an afternoon session.

The seminars scheduled for Monday morning are as follows:

- Shared Libraries
- Graphics Programming on Data General Workstations
- PC Networking in the Data General Environment
- CEO User/Agent Interface

- AOS/VS Performance Update
- Decision Connection
- Multitasking with AOS/VS C

Monday afternoon seminars are as follows:

- High-Level Language Techniques for Assembly Language Programmers
- Introduction to AOS/DVS
- Present and Future of Computer-Based Training
- DG/SQL Performance and Design
- AOS/VS Performance Update
- Implementation of AOS/VS rev 7 Features
- The Unix Shells

New! Special CEO Workshop

New this year is an all-day CEO Workshop on Monday, August 11. This special workshop is offered by the Office Automation Special Interest Subcommittee (OASIS). It is intended primarily for CEO and office system managers, but is open to others who may be considering installing CEO in their organizations. Tuition for the workshop is \$25.

The CEO workshop will cover four main areas:

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

Orientation for New Members and First-Time Attendees

Also new this year—in response to many requests—is an informal orientation for new members and first-time conference attendees. Monday, August 11, from 5:30 to 6:30, you can meet the elected officers, the NADGUG staff, and *Focus* editors. We'll try to answer any questions about NADGUG, RIGs and SIGs, *Focus*, and get you off on the right foot at the conference. From here, you'll go into the annual welcome reception.

Special Working Lunch for RIG/SIG Chairpeople

On Tuesday, August 12, we'll be hosting a special working lunch for the chairpeople

of RIGs and SIGs, including those from start-up groups. We'll be sending out a special mailing to all the chairpeople and organizers that gives details on all related conference activities. NADGUG officers and staff will be at this lunch, as well as the new RIG/SIG Chairperson (Joyce Carter, who has held this position for 2 years, is moving on to new responsibilities within NADGUG). Make sure your group is represented!

Conference Sessions

Five at once, but audiotapes are available—and cheaper!

It's going to be even more difficult this year to choose which sessions you want to attend—five sessions will be running simultaneously. The review committee has tried to structure the sessions to best suit the varied interests of attendees, but there'll always be some tough choices. For those people who can only be in one place at one time, we are striving to make available better quality audiotapes of the sessions at a lower price than before (only four dollars per tape, with additional discounts for quantity orders). Tapes will be available for sale all during the conference, and by mail afterwards.

Special Meetings for SIGs and *Focus*

We've set aside some time after the regular sessions for SIG (Special Interest Group) annual or organizational meetings, as well as a special meeting with *Focus* editors for anyone interested in contributing to the magazine. If your existing group isn't listed, or you want to start a new group that's not listed, please call the staff at 617/870-7721.

The following groups have already scheduled their annual meetings:

- OASIS (Office Automation)—Tuesday, 3:30-4:30pm, chaired by Charlene Kirian.
- AOS-AOS/VS—Tuesday, 4:30-5:30pm, chaired by David Novy.
- BBASIC—Tuesday, 3:30-4:30pm, chaired by Mark Strickland.
- IRDOS—Tuesday, 4:30-5pm, chaired by Dennis Doyle.
- COMMSIG—brief business meeting will be included as part of the Communications Roundtable, Tuesday, 2:30-3:15pm, chaired by Kirk Honold.

In addition, members with interests in

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other areas have expressed interest in forming several new SIGs. If you have an interest in any of the following areas, be sure to attend, or contact the person listed:

- Educators—Tuesday, 3:30-4:30pm, chaired by Skip Pomeroy of Roger Williams College, Bristol, RI (phone 401/253-1040, ext. 2170). Open to anyone involved in using computers in academic environments.
- Federal Government—Tuesday, 4:30-5:30pm. Open to anyone working for or with U.S. Government installations. Chairperson to be announced.
- Petro/chemical—Tuesday, 4:30-5:30. Open to anyone working in or for the petro/chemical industries. Chairperson to be announced.

Meet Focus Editors

If you have ideas for *Focus* and want to share them with the editorial staff, this is your chance. Tuesday, 3:30-4:30pm.

Don't Miss the Exhibit Area!

Data General will be showing all new products and services, and nearly 30 other companies have expressed interest in exhibiting. Spending some time in the exhibit area is an important part of attending the conference. We're opening the exhibit area before

the conference sessions begin each day, and keeping it open after sessions end.

For Your Guests and Families— Orlando Has More!

If you're thinking of combining the conference with a family vacation, we've got just the thing for you. The Orlando area probably has more major family attractions than anywhere in the United States.

Kennedy Space Center Tour

This all-day guided tour provides round-trip transportation and admission to the Kennedy Space Center. One of the highlights of this tour is watching the presentation "The Dream is Alive" on the 5½ story-high special IMAX screen. Tour prices are \$20 for adults, and \$18 for children from 3-11 years old. An optional box lunch is available for \$9 per person.

Disney's Magic Kingdom & Epcot Center

We have not scheduled any formal tours of the Magic Kingdom and Epcot Center because you and your families will probably want to make use of special several-day passes so you can really spend some time in each of these areas. Transportation to and from these

areas is complimentary for guests staying at the official conference hotel, the Buena Vista Palace. Buena Vista guests also get special discounts on Disney passes. Current prices are: adults—\$23 1-day, \$57 3-day, and \$66 4-day passes; children (3-11 years)—\$19 1-day, \$47 3-day, and \$54 4-day passes.

Sea World & Other Area Attractions

No formal guided tours are arranged for these attractions; you may want to schedule some time before or after the conference to visit them with your families. We will also try to match up, via the guest hospitality suite, families who wish to attend while you are in conference sessions. We'll have information available including schedules, directions, means of transportation, etc. Most of these attractions take the better part of a day to see: Sea World—\$16.50 per adult, \$13.50 per child (3-11 years); Circus World—\$14.50 adult, \$12.00 child (5-11 years); Cypress Gardens—\$13.50 adult, \$9.00 child (3-11 years)

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Δ

Care and feeding of a RIG

A challenge that stretches the imagination

by Joyce Carter
Special to Focus

Like raising a child, a Regional Interest Group is a joy, an education, and a thoroughly worthwhile experience. Like raising a child, a RIG is also a lot of hard work—a challenge that stretches your imagination to the limit.

That introduction should scare away all but the strong hearted—but real DP professionals seem to like a good challenge. Actually, a good RIG has only a few key ingredients. The

first and most important is a core of people who care enough to take a few extra steps to make the group a success. (If their goal for the RIG is merely to have it survive, they might as well forget it.)

Assuming that you have good people to work with, some of the other ingredients for a good RIG are:

- Friendliness
- Continuity
- Preplanning
- Regular meetings
- Cooperation
- New blood
- Publications
- Membership
- Programs
- Officers/jobs.

I put friendliness at the top of the list for a good reason. I've found that the data processing community in general is a little lax

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with introductions, and this often leaves newcomers ill at ease. After all, everybody likes to feel a part of things. If you want people to attend your meetings and keep coming back, you should extend yourself to make them feel welcome, important, and wanted.

There are many ways to do this. Personally, I like name tags. I have trouble remembering my own name at times, and I don't like to embarrass myself or someone else by addressing them incorrectly—or not communicating at all because I can't call them by name.

Now that we have name tags on everyone, we need some friendly people (this could be a committee, or the officers, or—if you're lucky—everyone) to greet these people by name and introduce them to others they may not know. Another "member-friendly" method that helps people get to know one another is to have each person stand and tell about themselves: who they are, where they work, what they do, etc. This is a good tool, but sometimes the size of the group or the length of the program makes it impractical.

Another thing to emphasize here is that each group is unique. Many factors contribute to their uniqueness: geographical location, individual personalities, the goals of members, the amount of time and energy they can devote to the group, and what they expect to get from it.

Each group will custom design themselves—or by default, limit themselves—because of these unique factors.

For instance, the group has to decide where, when and how often to meet. If your members must drive 50 to 100 miles in order to meet, a weekly luncheon meeting probably will not work.

If your group combines people with backgrounds in RDOS, AOS/VS, Novas, MV/10000s, BASIC, CEO, high-tech, and data entry, you will not keep your group active if every program is a technical dissertation on the inner rings of AOS/VS.

Another item to consider is the backing the members get from their companies. Will the employers pay for dues or meals? Would they consider the meetings important enough to allow time off to attend? With corporate back-

ing you will have more resources available for your group.

Programs must be selected to appeal to the needs and the level of expertise of the members of the group. It is true that there are not very many programs that will appeal to everyone, but by offering a variety—or if the situations are appropriate, more than one program for a meeting—you will keep the interest and the attendance of your members. Try not to be disheartened when you hear that the programs are not technical enough from one member and that they are too technical from another.

Every now and then it's probably a good idea to provide programs that everyone can use. For instance, "Back-up: how and why" is a topic that appeals to almost everyone. Data General's presentations on service offerings, new software and hardware releases, performance monitoring, etc. are almost always good and timely. On occasion you can throw in a program on stress management, personal communications, ergonomics, or interviewing techniques. Disaster planning is

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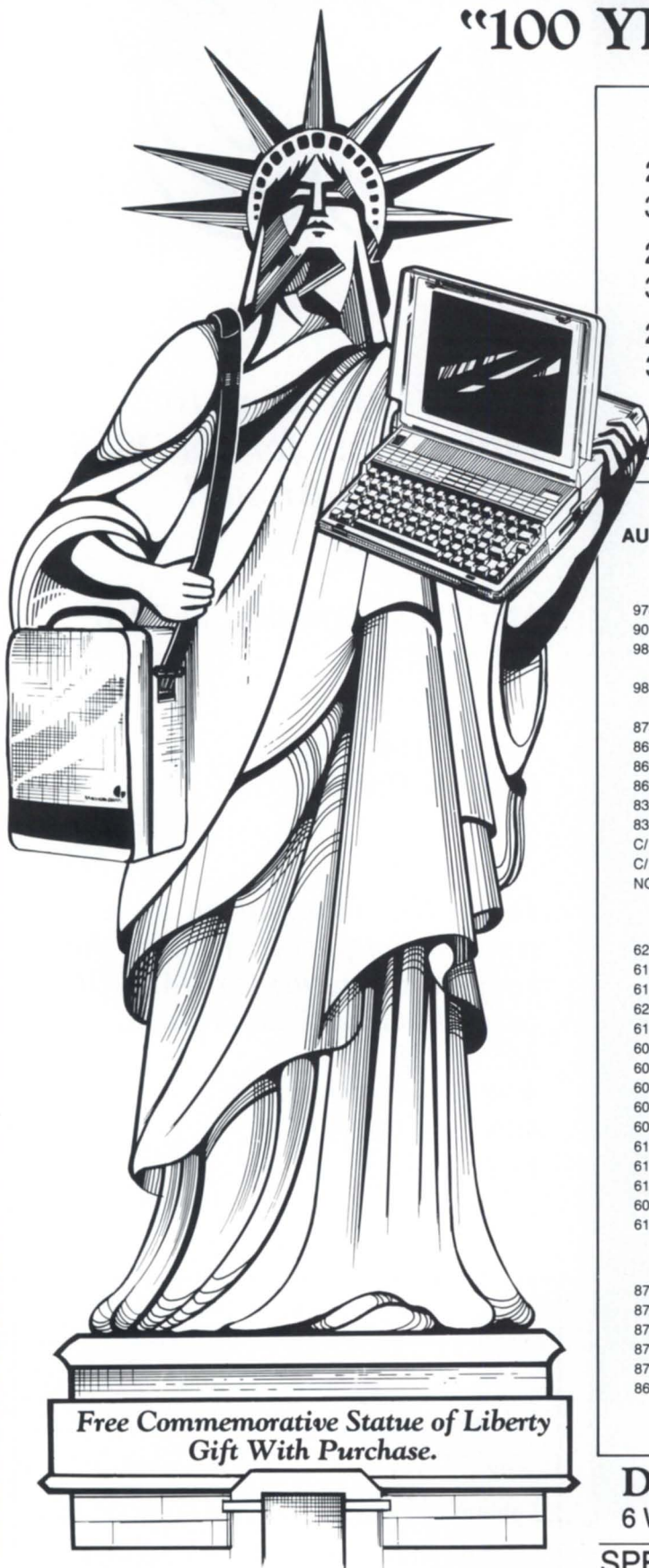
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another good topic with broad appeal.

Try varying the format of your programs: mix speakers with slide presentations, panels, roundtable discussions, videotapes or films, tours of facilities, users sharing information about their own systems, and hands-on demos.

There is no limit to what can be done. Unfortunately there seems to be a limit to your own imagination, contacts, time, and energy. This is one reason why, if at all possible, you should establish a program committee: it means more ideas and discussion can go into selecting programs for your meetings.

It is important for your officers or committees to meet and finalize plans well before the meeting date. Each person should know what they are to do and when it is to be done. Each task should be assigned or assumed by a specific party—with their knowledge, understanding, and agreement. This pre-planning will help the meetings flow better, insure a successful program, spawn creative ideas, and set deadlines and time tables. This planning must be done before a meeting announcement can be printed and mailed.

Another suggestion for helping things flow and boosting attendance is to get as many people as possible involved in planning your meetings. Try assigning several small tasks to several people, or rotating some of the responsibilities from one meeting to the next. For example, assign the January meeting (well in advance) to a group of six or eight people. Give them the duties of planning and executing the program and publishing the newsletter. Or perhaps assign a different person to do each of the following: greet, handle name tags, collect money for the meal, handle reservations, be responsible to secure the meeting room, handle literature, handouts, and telephone reminders, print labels, write and duplicate the meeting announcement, stuff envelopes and mail, etc. This approach makes more people feel involved in things, and it spreads the burden around so there is less burnout or shirking of duties.

Your RIG can become the active, involved group you want if you learn to use these few ingredients. Set your dates, and get people committed to doing their part, then remind them of this commitment—and have a good meeting. As my mother always promised, it ain't easy, but it *is* worthwhile. Δ

Joyce Carter serves as chairwoman of NADGUG's RIG/SIG committee. For more information, contact her at 15024 Brookside Circle, Omaha, NE 68144; 402/559-7253.

LEDGUG reports on its third annual meeting

Law enforcement representatives from 18 agencies in 11 states participated in the third annual Law Enforcement Data General User Group Meeting and Training Seminar, held April 14-16 at Richardson, Texas. In addition

to a law enforcement software application roundtable, the meeting featured eight technical sessions led by Gerry Manning (Creative Synergy Corporation), Tom Cooper and Wiley Johnson (Data General Corporation),

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Tom Marshall (Applied Micro Technology, Inc.), Barry Epstein (Current Technology, Inc.), and Evert Sherwood (Prosignit, Inc.).

During the business meeting, user concerns were compiled to be forwarded to NADGUG so they could be included in discussions between Data General personnel and NADGUG's officers. Calvin Durden, NADGUG vice president, was present to explain how the national organization operates.

Newly elected LEDGUG officers for the coming year are:

- President—Nancy Smith, Black Hawk County CJIS, Waterloo, Iowa
- Vice President—Joe Hanna, Richardson Police Department, Richardson, Texas
- Secretary—Ailene Pelkey, Richardson Police Department, Richardson, Texas
- Treasurer—Major James Wallace, Mississippi Bureau of Narcotics, Jackson, Mississippi
- Director-at-Large—William Hobgood, Richmond Police Department, Richmond, Virginia.

Next year's meeting—the group's

fourth—will be held in April, 1987 in Jackson, Mississippi. The Mississippi Bureau of Narcotics will be the host agency. Δ

RIGs staying active

Southeastern New England

Brian Johnson, of BJ, Inc., gave a presentation on April 1 to 40 members of SENEUG, the Southeastern New England Users Group. The subject of BJ's talk was performance myths.

SENEUG's next meeting—a combined annual meeting, seminar, and summer kickoff—is scheduled for early June on Cape Cod. For more information, contact Frank Perry, Rhode Island Department of Transportation, 338 State Office Building, Providence, RI 02903; 401/227-2558.

Houston Area

Marty Robbins of Data General gave an explanation of the changes in rev 7 of AOS/VS to members of HADGUG, the Houston Area Data General Users Group, at the group's April meeting. There was a ques-

tion and answer session following the presentation.

HADGUG usually meets at the Jungman Branch Library, 5830 Westheimer in Houston. For more information, contact Lee Jones, Gulf Coast Systems, 730 North Post Oak Road, Suite 304, Houston, TX 77024; 713/681-2308.

San Francisco Area

BADGUG, the Bay Area Data General Users Group, has been meeting the second Wednesday of the month for several months, with 25 to 50 attendees. Recent speakers have included Brian Johnson, Charlie Crane, and Doug Kaye. Graham Liggett of the local Data General office is credited with providing support and encouragement to get the group on a sound footing.

Newly elected BADGUG officers are Don Pierce, president, Linda Stadler, vice president, Rick Desiderato, treasurer, and Ben Weiss, secretary. For more information, contact Ben Weiss, Virtual Microsystems, 2150 Shattuck Ave., Suite 300, Berkeley, CA 94704; 415/841-9594. Δ

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Flurry of activity for new RIGs and SIGs

The NADGUG staff reports that an unusually large number of regional and special interest groups have started in recent months. The following list includes contact information for each of the new RIGs and SIGs that has contacted NADGUG for start-up assistance. Since these groups depend on participation by DG users in their region or area of specialization, please use this list to get in touch and lend your support.

Regional Interest Groups:

St. Louis, Missouri

Ronald Cohen
St. Louis County Police Dept.
7900 Forsythe
Clayton, MO 63105
314/889-2822

Minneapolis, Minnesota

Jim Blass
Analysts International Corp.
7615 Metro Blvd.
Minneapolis, MN 55435
612/835-2330

Metropolitan New York

(New York City and northern New Jersey)
Stephen Kern
Werner & Pfeleiderer
663 East Crescent Ave.
Ramsey, NJ 07446
201/327-6300

Kansas City Area

Tom Duell
EAGLE Software, Inc.
PO Box 26
Salina, KS 67401
913/823-7257

Oregon Area

Dick Ayres
Oregon State University
College of Veterinary Medicine
Magruder Hall

Corvallis, OR 97331
503/754-3034

Wisconsin Area

Dave Arnold
GE Medical Systems
N.B. 920 16800 Ryerson Road
New Berlin, WI 53151
414/785-5267

Tulsa, Oklahoma

Cheryl Brenner
The Williams Company
1 Williams Center
Tulsa, OK 74102
918/588-2432

Boise, Idaho

Roger Bradshaw
Forest Service
3905 Vista Avenue
Boise, Idaho 3705
208/334-9458

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CLI macro course from DG

Westboro, MA—Data General's educational services department will be regularly offering "CLI Macros" (S161), a new course that teaches how to write CLI macros for AOS and AOS/VS system users. This 2-day course will teach CLI users to create CLI macros and to interpret the sophisticated macros that come with many products.

The course assumes that attendees have a working knowledge of CLI commands, directory structure, and process structure, and the ability to write simple macros that reference dummy arguments and pseudo-macros. In addition, students should be familiar with a Data General Text Editor. Completion of DG's class titled "AOS and AOS/VS User" (S209) will satisfy these prerequisites.

The class is designed for CLI users, programmers, system managers, and computer operators who wish to implement

sophisticated systems of CLI macros for use in system management, user-assistance and menu-driven applications. It combines classroom lecture with lab exercises. It will be conducted regularly at DG's seven customer education centers, located in Atlanta, Boston (Westboro), Chicago, Los Angeles, San Francisco, Toronto, and Washington D.C.

Specific course topics include dummy arguments, pseudo-macros, interactive macros, conditional pseudo-macros, switch dummy arguments, recursive macros, macros that call other macros, macro error messages, TRACE command, arithmetic pseudo-macros, file handling through macros, and macromenus.

Students will receive a collection of macros containing over 80 macros submitted by DG system managers, computer operators, programmers, and CLI users.

Tuition is \$700 per student. An equivalent course titled "CLI Macro Programming: CBT" is available in computer-based training format for AOS/VS, AOS/WS, and AOS systems.

For additional information or to enroll, call central registration and information at 617/366-2900. △

Distributor discount program for accounting software

Auburn, AL—CS Labs announces a distributor discount program for its multiuser accounting software, The Accounting Classics. The program features distributor discounts of 50 percent, no volume requirements, and private labeling arrangements.

CS Labs describes The Accounting Classics as serious accounting software with the portability of RM/COBOL. The series provides clear audit trails, standard procedures, and enforceable accounting controls. It consists of five modules—G/L, A/R, A/P, payroll, and order entry/inventory. The modules interface with each other and have security

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and help systems. The order entry/inventory module also offers an optional electronic cash drawer and provides serial number tracking for accessing critical data on larger, more expensive stock items.

Several people may work simultaneously within the same system. Files for multiple companies may also be processed.

Distributor Kits are an additional option. These provide discounts greater than 50 percent, and give dealers and distributors options for purchasing the software in source code form. One Developer Kit includes both object and source code and CS Labs' application development system, C/SCRIPT II.

Prices for Distributor and Developer Kits, as well as The Accounting Classics system, are system dependent.

According to the company, the only requirement for the distributor program is that potential dealers and distributors purchase, at a 50 percent discount, a copy of the product they wish to market so they can become familiar with it and sell it effectively.

Lee Ann Wagner, CS Labs, P.O. Drawer 2871, Auburn, AL 36830; 800/626-0381 (outside Alabama) 205/821-1133 (in Alabama and outside the continental U.S.) Δ

Agreement adds graphics, decision support to MV

Westboro, MA—Data General has announced that graphics and decision support software from Pansophic Systems, Inc. is now available through Data General's Independent Software Vendor (ISV) program. Pansophic's D_Pict graphics and Ingot decision support software programs run on DG's 32-bit Eclipse MV/ family systems under the AOS/VS operating system.

The D_Pict graphics product line includes a range of integrated software products designed for business and scientific applications. Ingot is a system for business analysis and modeling, integrating statistical analysis, PERT (Program Evaluation and Review Technique) project management, and financial simulation. Ingot uses D_Pict graphics capabilities for its output.

Users can use DG's CEO software for office automation along with both Pansophic products. Δ

Enhancements announced for VS Toolbox

Salina, KS—Eagle Software has added enhancements to the Terminator and the Rebuilder, two of the twelve utilities in VS Toolbox.

The Terminator allows a system manager to limit the use of specific consoles to specific users, limit execution of certain programs to certain hours of the day, or simply terminate inactive processes, helping to free system resources and improve system security. By applying a set of rules defined by the system manager, the Terminator decides which of a system's processes should and should not be allowed to continue. Each rule is defined by a user name template, process name template, program name template, minimum amount of CPU time, and time of day during which the rule applies. When a process is found that matches a rule, possible action includes ignoring the process, warning the process with a user-defined message, or terminating the process.

The Rebuilder will now optimize the root node sizes of subindexes in an INFOS index. On certain INFOS index files with large numbers of subindexes (CEO indexes, for example), reductions in space requirement from 70 to 90 percent have been realized, according to Eagle. By default, the root node of a subindex takes up 2042 bytes. If a subindex contains only a few keys, as much as 95 percent of this space remains unused. By fitting more keys on fewer INFOS pages, keyed and sequential access times are also improved.

Companies that have already licensed the VS Toolbox will receive these enhancements at no additional charge.

Eagle Software, Inc., P.O. Box 16, Salina, KS 67402-0016; 913/823-7257. Δ

SNA Suspend Manager software

Data General's systems division today announced SNA Suspend Manager, a software package developed to allow users to suspend and re-enter up to three 3278 sessions, DG's OA software, CEO, and user-integrated applications.

The software allows users to switch from an SNA/3278 session, local MV-based applications, and/or CEO and back again simply by touching a function key.

The package has five major components: the applications management file, the system generation process, the online monitor, the suspend program, and the functionality of SNA/3270 that includes a suspendable 3278 program.

The applications management file is used to configure the system so that operations can be streamlined to specific application requirements. Users identify the function keys and the pathnames of the processes they will invoke, the system menus and resources that will be required, menu headers, line items, and descriptions. When all the information in the file is defined, it is read by the system generation component of the SNA Suspend Manager.

An online monitor manages system menus, and the passing of console control from one program resource to another according to the menu selection chosen by the user.

The package allows terminals to suspend CEO, then go to a 3278 session that is already logged on, then return to the CEO process without having to reinitialize CEO.

Users can integrate their own MV/ based applications into the SNA Suspend Manager environment or use the systems divisions' services for help in integrating their applications.

For terminal users who require the ability to maintain multiple 3278 terminal emulator sessions with various host resources simultaneously, SNA Suspend Manager provides up to three 3278 sessions. Users can return to any one of the suspended sessions at the point of interruption or to the updated screen if host communications occur on that session in the interim. This functionality not only eliminates the delay associated with repeated host log-ons, but also provides users with access to multiple 3278 sessions.

The package includes AOS/VS SNA/3270 functionality, plus enhancements to 3278 emulation that allow suspension and continuation of the emulation in the SNA Suspend Manager environment.

The software is fully supported by Systems Division, under the AOS/VS operating system, for products ranging from the DS family through the MV/ 20000.

Pricing is \$4,000 for an initial license on the MV/20000 or DS/7x00 systems, and \$8,000 per initial license for the MV/20000. Δ

Disaster recovery hot site for AOS and AOS/VS users

Englewood, CO—Data Assurance Corporation (DAC) recently announced a DG-equipped disaster recovery hot site. The new center, located near Denver, features an MV/10000 and an S140 for AOS/VS and AOS users. Subscribers can dial up their compatible computer via installed WATS lines and continue on-line operations in the event of a major disaster.

The president of DAC describes a "major disaster" as any outage that renders vital on-line processing operations inoperable for an unacceptable period of time. A study conducted by the University of Minnesota MIS Research Center states that when a disaster strikes a computer-dependent company, essential functions will cease within an average of 4.8 days following a data center failure,



and less than 7 percent of companies experiencing such disasters are in business a few years later.

DAC maintains an equipment pool of telephone modems and multiplexers plus other interface devices, to allow terminals to access their computers from anywhere in the U.S.

Subscribers must have off-site storage of vital files, and can begin dialing up DAC computers as soon as their operator reaches the DAC hot site and does a file restore.

Data Assurance Corporation, 6551 S. Revere Pkwy., Suite 130, Englewood, CO 80111; 303/792-5544. △



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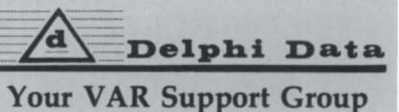
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DG's Support Plus Service offers enhancements

Milford, MA—Support Plus Service from DG offers major enhancements to the company's previous software support SPSA (Software Product Service Agreement) package. It supports more than 200 of DG's software products. All current DG SPSA customers will receive it automatically.

The new service's enhancements include weekend software support telephone assistance for key DG 32-bit software; standard on-site assistance (optional under SPSA); and customer access to a new On-Line Information Service (OIS) implemented through the Compuserve Network.

The weekend software support will be available from 8am to 5pm for 32-bit software including AOS/VS, CEO, XODIAC, and DG/SNA. The same hours are in effect weekdays. Customers phone the DG Customer

Support Center (CSC) for software problem diagnosis, resolution, and/or workarounds. CSC reps submit Software Trouble Reports (STRs) for corporate problem resolution or to report a request for a software enhancement.

If software problems cannot be resolved through telephone assistance, on-site assistance is available from a software service rep, at no additional cost, on weekdays from 8am to 5pm.

Customers receive 1 hour per month (per individual Support Plus agreement, regardless of number of systems covered) of DG's new videotex service, implemented on the Compuserve Network, which provides around-the-clock current menu-driven information on DG software and hardware products. Use of the information service beyond 1 hour per month is billed on an hourly basis.

Customers receive software and documentation updates, a monthly technical newsletter, and microcode updates (for Eclipse MV/family and DS/7000 series customers). Δ

Revision to Data Network Arranger

Thornwood, NY—Exact Systems and Programming Corporation has announced a major revision of its DNA-4 Database and Fourth Generation Development System. Revision 2.00 of DNA-4 (Data Network Arranger) runs on DG systems under AOS/VS, AOS, and RDOS.

New features of rev 2 include:

- Subroutines designed to reduce redundant coding.
- Data base logging and roll forward capability, which reduces backup time by at least 66 percent, according to the company.
- Increased environment integration.
- Increased logic control.
- A new communications interface.

Jack Oswald, vice president, Exact Systems and Programming Corp., P.O. Box 115, Thornwood, NY 10594; 914/273-8100. Δ




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| DG 8687 S-140 256KB ERCC | 1,600 |
| DG 8656 ECL 256KB | 800 |
| DG 8687 NOVA 4 256KB | 1600 |
| DG 8343 NOVA 3 32KB | 150 |
| NOVA 3 256KB | 1,450 |

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| 6161 147MB S/S | 10,495 |
| CDC 9762 80MB Drive | 1,095 |
| CDC 9766 300MB Drive (Round Cable) | 3,500 |
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| CDC 9771 825MB Drive (new) | 9,500 |
| CDC 9775 600MB Drive | 4,750 |

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| Fujitsu 2284 169MB Drive (Complete) | 2,200 |
| DG SMD Interface for 6160/6161 | 1,950 |
| SPEC 20 Disk/Tape Interface | 1,500 |
| ZETACO 295C Disk Controller | 1,800 |

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| 6026 800/1600 BPI Tape S/S | 6,495 |
| 6125 1600 BPI Streaming Tape S/S | 2,495 |
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There's still lots of time to register for the drawing, but why dawdle? Data General is providing a pair of DG/Ones as prizes for a drawing to be held at Conference 86. If you're planning on attending anyway, why not register by July 25 so you can qualify for the drawing? You'll also save \$75 on conference fees by registering early. In case you haven't yet decided whether to attend the NADGUG conference, turn to page 40 and see what you'll miss if you don't come.

The Spring Comdex show—held at the end of April in Atlanta—was pretty tame by most accounts. As usual, however, it brought out the computer press corps. Having all those thirsty writers so near DG's Customer Support Center in Norcross, Georgia, it was a natural for the public relations staff to try for a little extra coverage. The pitch? "Braves/Mets night" at the Atlanta Stadium Club—free cocktails, hors d'oeuvres, and a baseball game for members of the fourth estate, hosted by Data General field engineering. The catch? All they had to do was listen to a presentation on OIS, the On-line Information Service. Incidentally, the invitation included a complimentary baseball.

As evidenced by the collection of postage stamps on the letters pages this month, *Focus* is getting a lot of mail from users outside North America. Most of the letters are requests for subscriptions, but we also get some pleas for help. An example—the following letter, which arrived too late for our letters page:

"I am the software support manager of Biltek Ltd., the representative of Data General in Turkey. Our company is . . . owned by a university foundation. Most of our users are the university academic staff and students. In order to help them more I search for application and utility programs. If there is [a] possibility to obtain such software, would you please inform me how to obtain them."

If you can help, contact Ibrahim Pamuk, Biltek Ltd. Com., Farabi Sokak 8, Ankara, Turkey; phone 90-41-269017, Telex 42747.

DG has established an office automation development lab in Madrid. The opening of the office on April 18 coincided with DG's entrance into P.E.I.N. (Plan Electronico Informativo Nacional), a government organi-

zation charged with encouraging the use of computer technology in Spain.

Several CEO networks are installed in various ministries of the Spanish government, including the Office of the President. There are more than 800 CEO users in Spain—more than a 20 percent share of the Spanish OA market, according to Chuck Boesenberg, vice president and general manager of European operations.

The new OA lab will work to integrate commercial and technical application software with CEO, and to develop OA software for eventual export to countries with similar language and cultural environments. Responsibility for the lab rests with Teofilo Del Pozo, country manager of Data General Spain since 1981.

Zetaco, the Eden Prairie, Minnesota manufacturer of DG-compatible memory and controller boards, will expand its offerings with a series of new products to be announced at the National Computer Conference in June. At the top of the list is an optical disk subsystem that combines a high-capacity optical disk drive with an Argus-compatible controller and a conventional magnetic disk drive. Zetaco will also offer disk subsystems in capacities from 300 MB to 3 gigabytes.

Interscience Computer Services, Inc. recently announced it has acquired Nordisk Systems. Interscience has more than 10 years' experience as a supplier of tape and disk systems for large scale computers, while Nordisk had specialized in supplying subsystems for mini-and superminicomputers. "Now we offer a full range of disk and tape subsystems combining the expertise of our two companies," says Frank LaChapelle, Interscience president.

PC/VS, developed by Rational Data Systems, Inc. to link MV/ family machines and IBM PCs, will be distributed in the United Kingdom and western Europe by Advanced Business Technology, Ltd. According to Rational Data Systems, PC/VS uses Ethernet technology to provide virtual disks, remote printing, file transfers, CEO mail notification, and D200 emulation for PCs linked to an MV/ server. RDS President Doug Kaye says Advanced Business Technology has been a successful distributor of his company's

Mirage product. "We're thrilled to have them represent our newest product," he adds.

Data General has signed a contract with Commercial Systems Laboratories, Inc. to distribute and support CScript II plus ISAM and CScript II plus DBAM. CS Labs' marketing director Mike Norton says his company will continue to do development work on the products, and Data General will act as a nonexclusive distributor. Norton is pleased with the arrangement, because it will provide much broader feedback about desirable changes to the products in future revisions—as well as "3,000 additional sales reps."

Bill Marrin was recently named to a new post as vice president of customer relations for Penta Systems International, Inc. Marrin, who has been with Penta for 6 years, previously served as vice president of sales. According to Charles A. Lankford, Penta's president, Marrin will deal with broader, long term issues such as customer satisfaction, system expansion, and application options. Penta is a DG system supplier specializing in typesetting, text processing, and editorial systems.

Keith Gronsbell is now a principal owner of MIC Technology. Gronsbell, who has been active in the formation of the Greater New York Data General OEM Council, says that as chief financial officer, he will emphasize competitive pricing and full service. He anticipates that MIC will become a \$5 million company this year.

When the envelopes were opened for the 15th annual ICP software awards, Cognos Corporation was one of the big winners. The company's Powerhouse development language took four awards, including a \$50 million sales-to-date award. The other Cognos awards went to Eugene W. Gerard, Robert W. Perry, and Bob Kaminski, each of whom sold more than \$1 million worth of Cognos products during 1985.

DG's special systems group is distributing a 26-page catalog that features 43 "standard special" products. These range from specialty processors and peripherals to switches, terminals, communications products, and performance enhancements.

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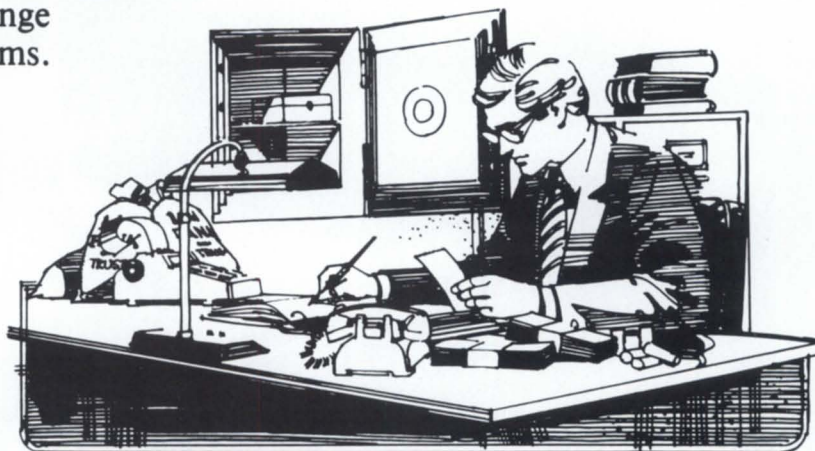
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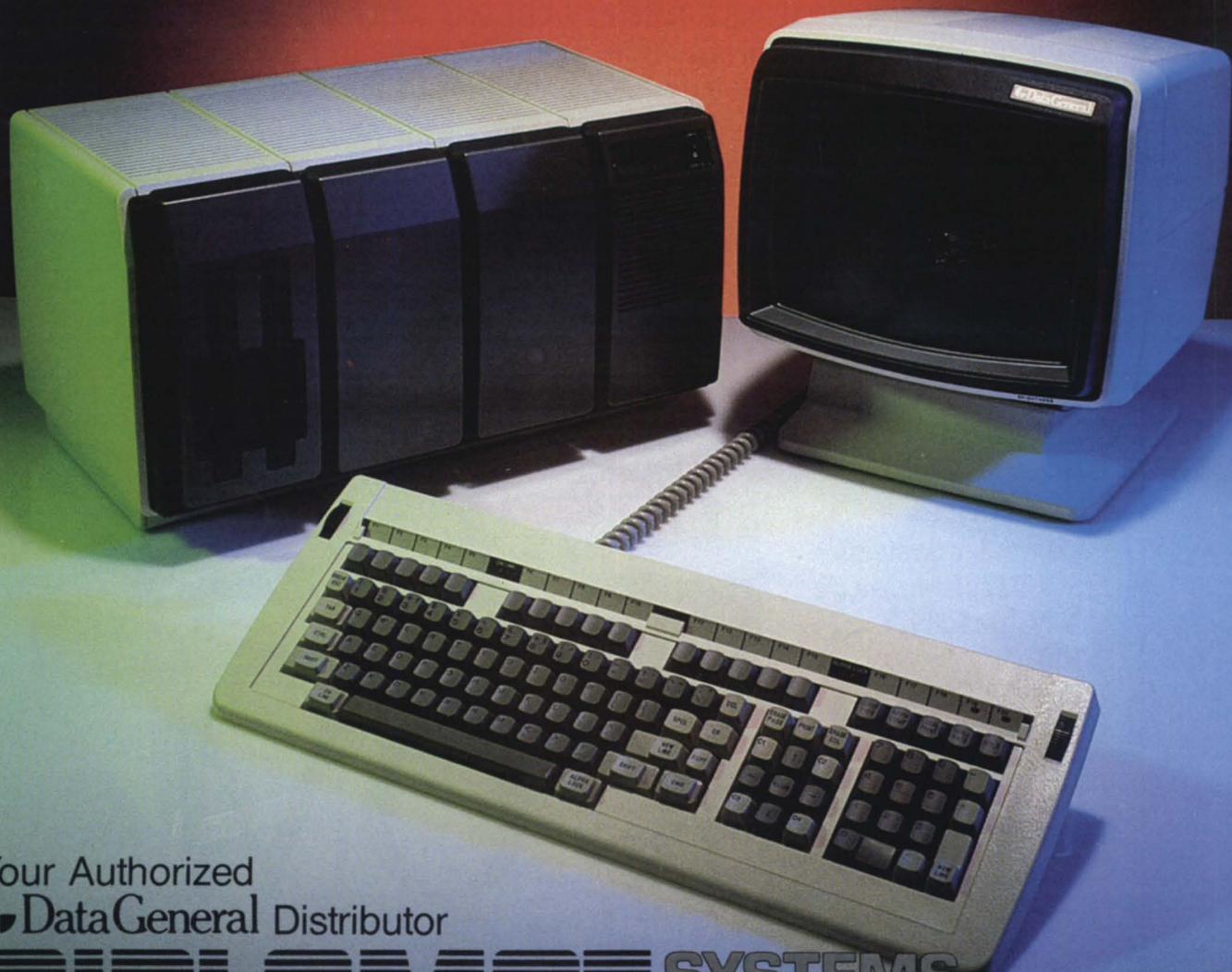
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