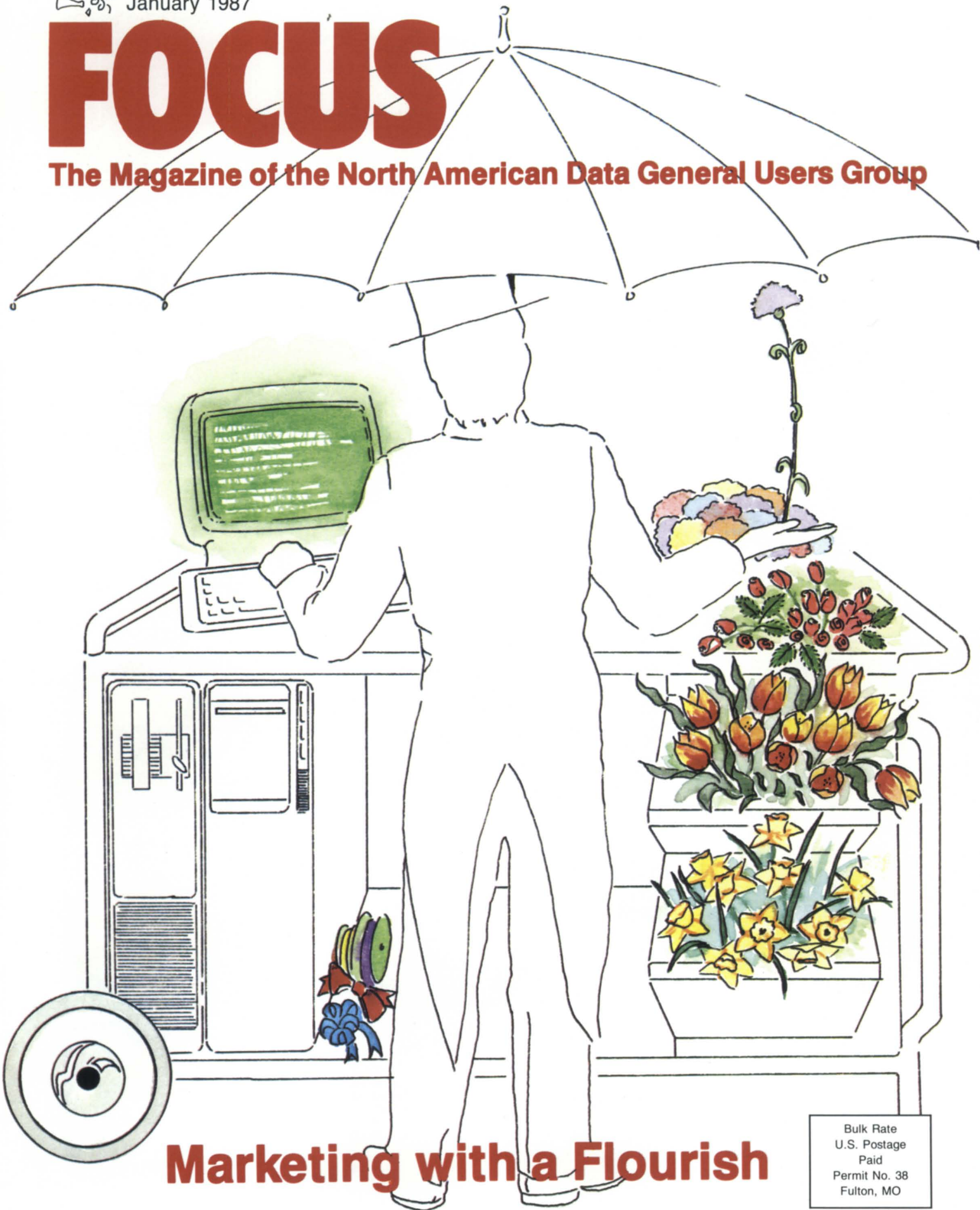


January 1987

FOCUS

The Magazine of the North American Data General Users Group



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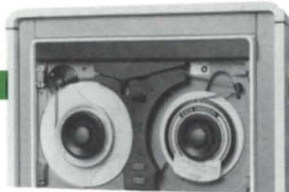
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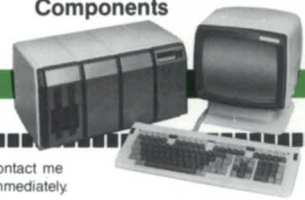
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Cover illustration by Elizabeth Soto

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The waiting is over. WordPerfect Corporation's recently released Library program is hard at work delivering phone messages, letters, memos, and files to Data General AOS/VS computers all

password can contain up to 78 characters.

Right on time

The calendar has an

PS.

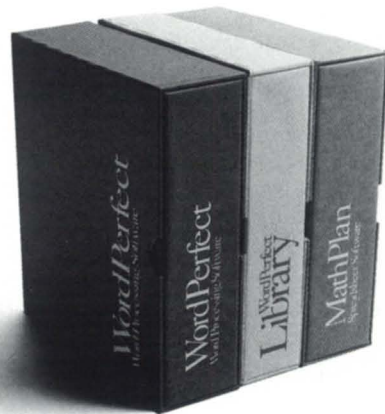
The price is just \$2,000 on the 2000, \$4,000 on the 4000 (and the MV/6000, MV/7800, and MV/8000), \$5000 on the 10000, and \$6,500 on the 20000. DG System Suppliers can receive the latest AOS/VS demonstration versions of WordPerfect, MathPlan, and WordPerfect Library for \$90. Evaluation copies are available to end

users for the same price. All orders are shipped within 3-4 working days.

For more information, call or write WordPerfect Corporation, or see your DG System Supplier.

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A large department of the U.S. Government became the first official WordPerfect Library installation. Their system, which uses 14 MV/10000s and 10 MV/4000DCs, supports more than 600 users. In a test of the new system, a phone message was sent from one coast to the other in less than 30 seconds, including notification. In less than eight minutes, a message was delivered to all 600 users in four states and six locations.

Confidential services

WordPerfect Library includes a Password Encryption feature which lets you create a password to encode any mail document or file. The encryption is practically impossible to break, since the

attractive screen and supports to-do lists as well as daily appointments and memos. The alarm feature will notify you in advance of an appointment. And calendar entries can be converted to merge format for use with WordPerfect.

A complete package

The entire WordPerfect Library, including Mail, Calendar, Scheduler, Phone Messages, and shell, are linked together into one program. The program requires only one PID for the mail server, one for the network server, and one for each user. DG's INFOS is *not* required.

With the shell, you can quickly move from one WordPerfect Corporation program to another, and with the shell clipboard, you can easily pass information between programs. The sources and explanations necessary for any software developer to support the shell and clipboard are included with the package at no extra charge.

WATCH YOUR MAILBOX

Important information is on the way

If you're a member of a NADGUG RIG or SIG, there's a very important questionnaire coming soon to a mailbox near you. You won't win a house or a car or a million dollars, but I hope you'll watch for it anyway.

When Publishers' Clearing House wants to get a bigger response to their mailings, they design flashy sweepstakes and hire a famous sideman to make the pitch. NADGUG isn't in the same league—and of course I'm not Ed McMahon—but then we're doing something more important than selling magazines.

That's not to say that *Focus* isn't important. You know for yourself that as NADGUG's official magazine, *Focus* is the often the best place to look for the ideas and technical information you need to meet new challenges. But NADGUG does a lot more than publish a magazine.

Which brings me back to the questionnaire. Each year, your user group officers make a special trip to Westboro to meet with the top managers of Data General Corporation. It's not just a public relations junket. We spend the better part of two days discussing how users' needs are changing, and listing in as much detail as possible what DG needs to do better to serve its customers.

We know that management is paying attention, because we've seen the results. We also know that they pay much more attention when we can give them specifics backed up by numbers. That's what makes this questionnaire so important. We're sending it to RIGs and SIGs to get direct input from members about the kinds of problems they face. Armed with this information, we can have an impact on how Data General spends its support and development dollars. The benefit will be mutual.

Another important NADGUG activity is our annual conference, which gets better each year. As the group has grown, we've learned that hosting a major conference and show takes a lot of planning. In fact, the NADGUG Executive Board will be meeting March 19-20 to discuss plans for conferences through 1990, among other things.

Conference 86, held last August in Orlando, was our most successful to date. With more than 800 members attending, there were more technical presentations and more

exhibitors on hand than ever before. Besides, it was a lot of fun, as anyone who played water volleyball into the small hours of the night will attest. We think that Conference 87 can be even better.

It's not too soon to start doing a little planning yourself. Start reminding your boss how much you learned last year (or how much you could have learned if you had gone). And put it on your calendar: Conference 87, October 19-22 at the Tropicana Hotel in Las Vegas. Expect more information to reach your mailbox later this month.

Speaking of mailboxes, have you tried the new NADGUG electronic bulletin board? If the statistics at hand are representative, only about 20 percent of NADGUG members are making use of this resource. That makes it too well-kept a secret.

Actually, there are *two* NADGUG bulletin boards. The original, which is offered through the courtesy of Rational Data Systems, continues to offer a lively mixture of information, commentary, and gossip. The new board is co-sponsored with DG's On-line Information Service, so it offers easy access to early warnings, patches, and other information from Data General, as well as a good way to keep in touch with other members. The NADGUG Executive Board decided last spring that both boards can provide valuable services to DG users, and we encourage our members to use both.

The value of both these bulletin boards will increase dramatically as more of us use them regularly. It's not difficult, and it's certainly not expensive in comparison to the value of the information you can find there. I hope to see your name there soon. Δ

Calvin Durden
NADGUG President

Errata and clarifications

On page 26 of the December issue, the tag at the article's end had an error in McNicol's address: it's "M2J 2G4," not "M2J 2GA."

Brad Friedlander called to clarify a point in his December article (page 28, "Join us!"). On page 29, under the subhead "Leave a message," option one is listed as "I. an individual's name." This option isn't a valid one; Friedlander recommends never using it because your message won't actually get to the individual.

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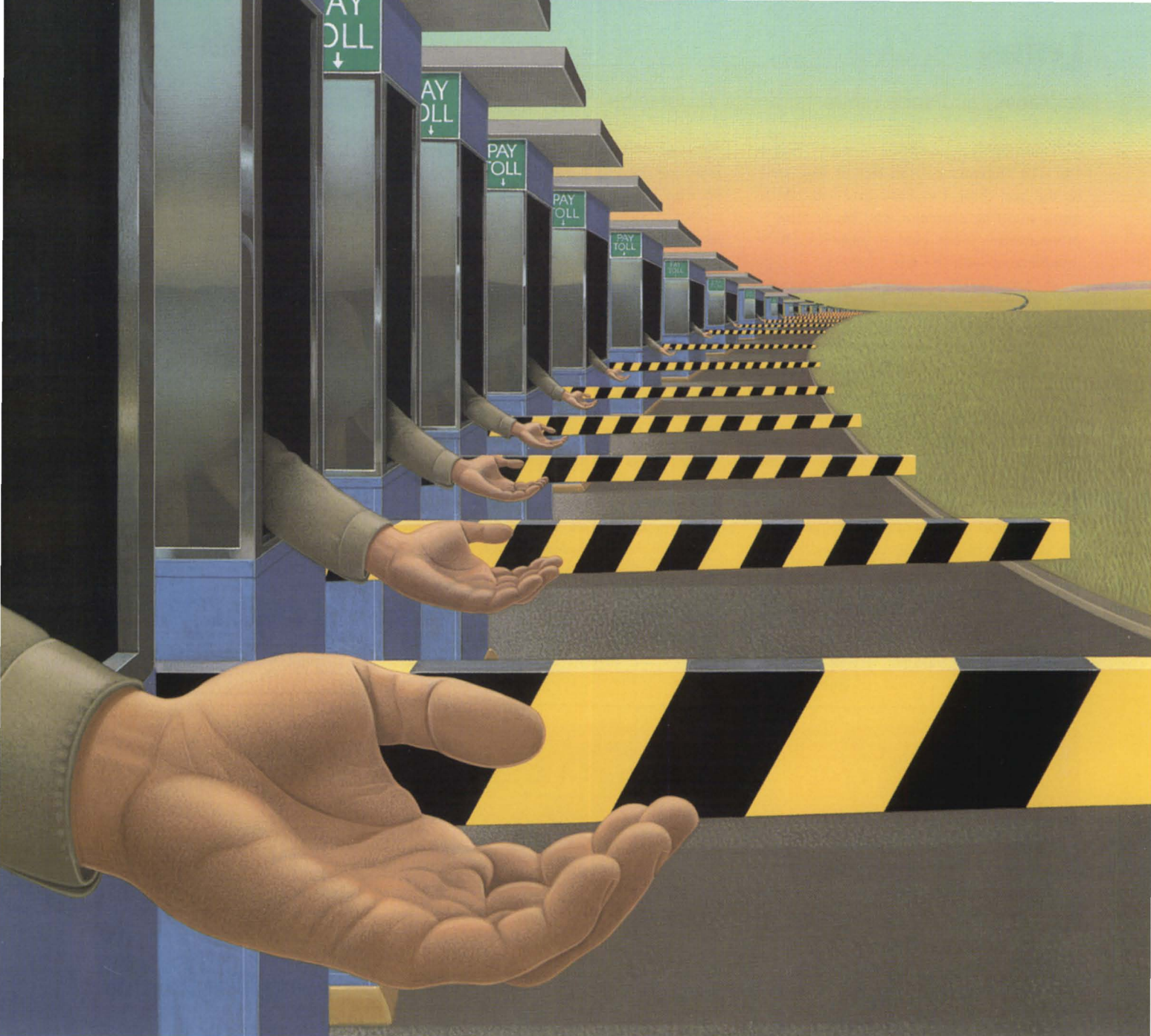
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Applause, audience requests, and a suggestion

I thoroughly enjoyed this month's "Focus On: The Humanities." In fact, it may well be the best thing I've read in *Focus*. As a music and English major who has become a programmer, I am glad to hear of DG's involvement with the arts.

Daniel Simpson
General Instrument Corp.
Hunt Valley, MD

We're always grateful to readers who take the time to give us a compliment, a suggestion, or criticism. There wasn't room to print the long, rather scathing letter a different reader sent regarding the same articles. Can we have a third opinion?

How about reviews of software packages for statistics (e.g., SAS), word processing (e.g., WordPerfect), and other non-DG packages that are popular?

Rodger R. Getz
Ag. Meteorologist
National Weather Service
Auburn, AL

We're planning a special feature on statistics packages for next November, but don't as yet have anything scheduled on word processing packages. What other areas would readers like to see us investigate? Please let us know if there are particular packages you would like to review.

With regard to your feedback of questions and comments via letter or postcard, why not suggest that questions and comments be sent to the *Focus* editor on the RDS bulletin board?

Dr. Richard T. Kouzes
Research Physicist
Princeton University Department of Physics
Princeton, NJ

Excellent suggestion. In recent months, the magazine has included "Quick Connect" cards to make it easier for readers to drop us a line. Readers can also leave messages for Focus Magazine on either of NADGUG's electronic bulletin boards. (The telephone numbers are listed in the next column on this page.)

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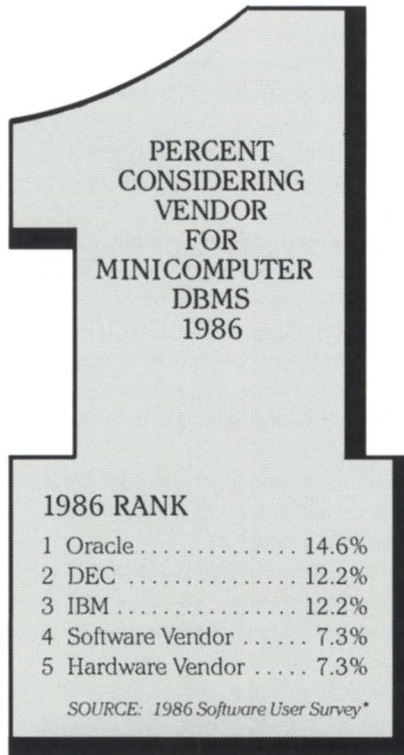
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Hamilton (Ontario)	Feb 17, Mar 17
London (Ontario)	Feb 24, Mar 24
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Ottawa	Jan 8, Feb 5, Mar 5
Quebec	Jan 14
Regina (Saskatchewan)	Feb 17
Saskatoon (Saskatchewan)	Feb 26
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GOING PORTABLE

DG and the portable computer

by Dan Littman
Special to Focus

Easy access from the field to the home office was always a traveling salesman's dream, and in the last two years portable computers have made that dream come true. Data General's DG/One, for example, serves as a remote MV or desktop terminal, as well as a powerful micro in its own right.

But when DG introduced its portable in September 1984, the 11-pound, phonebook-sized machine didn't make quite the splash DG had hoped for.

The reasons why not reveal a lot about portables.

As one DG executive said, DG's objective was to capture 20 percent of the market, and the company was satisfied with the 18 percent it achieved. "However," writes Robert C. Miller, DG's senior vice president/business group, "market volume fell short of industry expectations."

In other words, the DG/One attracted buyers who were primed to buy laptops, making it the third largest seller in the fledgling market. But, along with all the high-end portables, it failed to create a market for itself in the way personal computers have done in the last five years. Rather than selling millions of units through a retail network, DG has scaled back its marketing to include only its own sales centers.

The dream of a huge market for portables failed to materialize for two principal reasons. First, portable designers have always faced a dilemma. Either they design an ordinary CRT screen like most computer monitors', which creates an electricity-hungry, AC-dependent "luggable" (for example, the Compaq or Kaypro), or they design a liquid crystal display (LCD) screen, which is small and light and runs nicely off batteries, but is slow as well as hard to read under less than perfect lighting.

All portables, including the DG/One, must strike that difficult balance between screen quality and portability. The new DG/One Model II, introduced in May, employs new technology that avoids seriously compromising either, and is likely to become an industry standard.

The second reason portables haven't replaced micros in the public eye is less technical. While they may soon become as essential in some lines of work as a car or a telephone, their relatively high cost compared to standalone micros or terminals will rule out their penetration in areas where portability is not critical.

Users who are likely to find portables valuable—and soon, essential—include:

- insurance companies
- other businesses with a staff that either buys or sells on the road, including real estate agents, wholesalers, and buyers for large retailers
- managers of remote installations such as oil and gas wells or pipelines, mines, large factories, and perhaps highly mechanized farms
- geologists, botanists, archaeologists, and other scientists who work in the field
- inspectors for government agencies and private companies
- anybody who spends a lot of working time on airplanes
- anybody who travels to conduct business in less developed countries
- military officers in the field.

Because of the insurance industry's complex price schedules, the sales reps' need for access to the office mainframe, and the tradition of visiting clients at their homes or offices, DG and several software vendors have tried to target the big insurance companies. Recently, however, a deal with Richmond-based Life of Virginia for 2,000 DG/Ones fell through.

Thanks to DG's decision to make the DG/One IBM-compatible—an optional 5 1/4-inch drive and PC-connecting software are available, and it is possible to work directly from an IBM drive—a great deal of MS-DOS software is available for the DG/One. Software includes BLAST, dBase II, Lotus 1-2-

3, Multiplan, Microsoft Word, WordStar, and WordPerfect, as well as a wide variety of programming packages, and CEO Connection, a DG product that allows the DG/One to operate as a CEO terminal.

Medbar Enterprises, of Woodside, New York, has chosen the DG/One as the centerpiece of what it calls the "portable office."

Medbar president Joel Barnehama says his company chose the DG/One because, "at the time it was announced, it was the best machine in the country."

Medbar offers several kinds of enhanced screens for the DG/One—effectively nullifying the biggest objection to DG's portable. It rounds out the "portable office" with several peripherals, including a power adapter that plugs into a car cigarette lighter, a less expensive external modem, plus an 8-pound, printer-sized FAX machine that can scan a document and send it—with signatures, company logo, or artwork—anywhere there's another FAX machine to receive it.

Medbar's vice president for marketing, Keith Gronsbell, demonstrated the FAX by sending and receiving facsimile documents from a car telephone at the August NADGUG convention, and at 35,000 feet on the flight home from Orlando.

"We can let salesmen print a document, send it by FAX to their home office, and get



it signed and sent back," Barneham says.

Proprietary software rounds out the Medbar Portable Office. "We're developing a piece of software for the DG/One . . . that will have appointment scheduling, data base management, communications . . ." Barneham says. The package will be installed on a ROM chip so that it can run without disk drives, and users will be able to access it without interrupting whatever programs they're in. ROM chip software will also cut demand on the battery, Gronsbell says.

Medbar has also developed a solar-powered DG/One, but Barneham admitted that it doesn't seem to be very profitable because it looks like the solar-powered DG/One will be less compact than expected. "It's not heavy but it's too big: it folds in half to be two feet by one foot. We do have the ability to solar-power a fixed site where there is no electricity, like an oil rig or a remote site for a geological survey."

Axonix Corporation of Salt Lake City also offers enhanced screens for the DG/One. Its modifications of DG/Ones were started almost as an afterthought. "We are primarily a printer manufacturer," says John Makoff, director of sales. Axonix began retrofitting LCD screens of all makes with electroluminescent (EL) backlighting. "We do IBM, Kaypro 2000, Radio Shack, as well as other instruments with LCD screens," he says. Axonix takes individual orders and subcontracts for OEMs. "We really got into it to sell the printers. Our total volume is about 300 a month, something like that, (including) probably 80 DG/Ones, but we're set up to do a lot more than that."

The basic principle behind EL backlighting, according to an article by David Cox (Axonix vice president for marketing), is the phosphorescent "sandwich" cell installed behind the LCD. "The electroluminescent lamp is a capacitor, two conducting surfaces with a dielectric between them. In this case, the dielectric consists of an insulator which is 'doped' with a luminescent pigment. As the 'capacitor' is charged, the attendant electrostatic field causes the dispersed pigment to emit light at its characteristic frequency or 'color'," Cox writes.

In addition to the hundreds of software companies that offer their products in MS-DOS 3 1/2-inch versions, several companies have developed software specifically with the DG/One and other portables in mind.

All portables, including the DG/One, must strike that difficult balance between screen quality and portability

New Jersey-based Profile Development Corporation, a Medbar subsidiary, publishes software designed to help personnel recruiters evaluate applicants and to help managers assess and compare the productivity or improvement of their employees. Before a company sets parameters for applicants, PDC's software guides executives to evaluate the company itself and what PDC refers to as the "company culture." An extra module provides personality and psychological testing.

This package has an obvious place in the office, but with a DG/One, it would be especially useful for headhunters recruiting graduating students on college campuses.

Application Programming Associates (APA) of Syracuse, New York, consults with clients about their hardware and software needs and writes custom software.

They write software for any IBM-compatible laptop, but strongly recommend the DG/One to clients. "The DG/One Model II with a 10 MB hard disk is the only game in town," says Chuck Gronsbell, APA's president (and cousin to Medbar's Keith Gronsbell).

"We are a custom software and support facility, and we work on micro-based (systems). We do everything from Local Area Networks (LANs) to standalone micro-based systems," Gronsbell says. "We are providing a total field-based system . . . and we

interface the portable with office machines . . . So a salesman on the road can go from a data base to a graphic presentation, then back to a printout of whatever the proposal is."

APA was founded two years ago by a consortium of CPAs, and recently began approaching insurance companies. "The general agent in a given city has a LAN on their Desktop, and the individual agent carries a portable. We're writing it all in Ashton-Tate's dBase III. The programs are compiled in individual end files so the individual doesn't need to have a copy of dBase III. . . but when an agent is proficient enough, the file structures are there."

Brad Friedlander is employed by Arthur D. Little, a \$150 million-per-year management consulting firm whose client base is made up predominantly of Fortune 500 companies.

Friedlander uses his DG/One mostly to run Lotus 1-2-3 and to write. He had a Tandy TRS 80 Model 100 until two years ago, when DG's director of North American sales Frank Keaney presented him with a DG/One in honor of his contributions to NADGUG. (Before going to Arthur D. Little, Friedlander worked for six years in system software development at DG. He continues to play an active role in NADGUG, and now serves on the advisory board for *Focus Magazine*).

Friedlander used the DG/One to write an analytic queuing theory model that he uses with his clients—"for capacity planning and performance analysis . . . to find all the bottlenecks in a client's company." He likes the DG/One because, "I can do all of this while flying, and I spend a lot time in the air. The portable's advantage is that you don't have to plug it in . . . and it fits right in my briefcase, unlike the Zenith (which is shaped more like a lunch pail)."

At Ballard Research in British Columbia, data processing supervisor Jamie Henderson uses a DG/One to run WordPerfect and MathPlan, and then transfers files to the company's MV/2000, which runs the same software.

Henderson says the portable is mostly used

for contracts. "The only person who has used it remotely took it to the Middle East, modified the contract right on the spot, and printed it out on a portable printer."

Interestingly, Ballard Research's primary concern may lead to an improvement in portable computers. "We're in battery technology, development of lithium-sulfur dioxide batteries. You'll hear more about them in the future," Henderson says. "It is a rechargeable technology to replace nickel-cadmium for C-size or D-size batteries, and also battery packs for radios."

"We don't actually sell (batteries)—we sell the knowledge, the expertise on how to build them."

Portable computers are likely to remain an odd subset of the computer industry.

As screen and battery technology continues to improve, they will continue to penetrate

where they serve a real function. The October 1986 issue of *Office Systems* reports a study by Frost & Sullivan, a New York computer-watching firm, that suggests portables will grow from a 1985 base of 1.3 million units by 9.3 percent a year through 1990; they predict briefcase-size portables will grow by double that amount.

As APA's Chuck Gronsbell says, "I think we're only beginning to see them." As evidence, he says, "You can't ignore (IBM's recent entry into the portable market) . . . Look at the investment IBM has made in the Atlanta factory . . . and their move to 3 1/2-inch drives, and plans for a new line (to be announced) in January . . ."

Gronsbell is quick to criticize the IBM PC Convertible as being an incomplete machine. The same holds for Michael Goulde, a market analyst with the Yankee Group, a Boston-based market research and consulting firm in

computers and communications.

Goulde says the IBM PC Convertible will never gain a big lead, in spite of its label. "Not with what they have out today, the way they've packaged it, with all you have to add on to fully configure it . . ."

With or without IBM, Goulde is less enthusiastic than Gronsbell about the future of portables. "The technology in those machines will always be behind (PCs and desktops), or prices for equivalent functionality will always be higher."

As a result, Goulde believes, "Applications (for portables) will remain targeted to very specific (users) . . . They won't become a briefcase accessory." Instead, OEMs like Medbar will continue to turn out highly specialized products. Δ

Dan Littman is a free-lance writer.

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FROM FLYSHEET TO DAYSEND

Marketing management information system comes of age at Crown Central Petroleum

by Dennis Berman
Special to Focus

“This stuff isn’t data—it’s ancient history!”

On an auspicious day in September of 1983, the above statement—made by a daring group of marketing managers—gave birth to a new era of marketing management information systems (MMIS) at Crown Central Petroleum Corporation in Baltimore.

The “stuff” they were referring to was the company’s daily and month-to-date sales volume figures. Their grievance was that this data took about one week, over 40 clerks, and a heck of a lot of postage to get all the way from the field to their corporate headquarters. By that time, the data couldn’t do much more than back up (or refute) their volume projections and the management decisions they had already made. It also served as a thorny reminder of cash flow and security deficiencies.

The marketing managers had other concerns with the information they were (or were not) receiving. They knew that in order to make it in the fiercely competitive petrochemical arena, Crown had to have more comprehensive and accessible data than the other guys. What follows is an account of how they accomplished these goals—and how their marketing and information systems staff joined forces with comprehensive Data General systems and OEM designing in order to make MMIS work for the company, now and in the future.

Crown Central Petroleum Corporation (CCPC) is an independent producer, refiner, and marketer of petroleum products. This Fortune 300 company has five district offices

along the East Coast of the United States. These offices coordinate Crown’s 11 wholesale bulk petroleum terminals, which provide gasoline to more than 200 retail multi-pump service stations. Crown also sells gasoline through the 500 convenience stores in its Fast Fare and Zippy Mart chains, which were acquired in 1983. The gasoline and other refined products sold throughout the marketing system are supplied by Crown’s own 100,000 barrel-a-day refinery in Pasadena, Texas. Two other operations, Exploration & Production and Supply & Transportation, are

also located in Texas.

Six years ago, Crown obtained its marketing data via a highly manual, distributed processing network. Every day, each service station filled out a collection of reports that were affectionately dubbed the “flysheet.” The stations then mailed their completed forms to their respective district offices. Here, a group of clerks keyed them into a Raytheon (now Telex) “Mark” minicomputer. Each district would then transmit the data (using dial-up modems) to the corporate system

(IBM 4341) for accumulation, processing, and feeding the rest of the company’s accounting systems. This would produce some local reports that would find their way back to the districts.

As mentioned earlier, this process took about one week from beginning to end. The system was written (in assembler) almost entirely by one of Crown’s own resident Whiz Kids. For many years, he and I, along with just a few other brave souls, provided the only support for this marketing data collection system.

Even though, for its time, it was quite an adequate system, Crown’s “leading edge” ambitions would not let us rest on our laurels. By late 1983, marketing had hired a group of ambitious consultants to revamp the aging “flysheet” system.

Personally, I’d never been much of an advocate of “going outside” for systems help. I believed our MIS staff was one of the best in the area. However, at that time, our department had a huge request backlog, and marketing wanted a new system in place “by yesterday.”



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FOCUS ON: COMMERCE

*When TRACS recommended
that we use DG equipment for the
new retail project, my first thought was,
"Aren't they the guys who make
dishwashers?"*

Enter, stage left, TRACS, Inc.—a Data General OEM out of Tulsa, Oklahoma. They were given less than four months to work with us on customizing, testing, installing, implementing, and documenting a new retail marketing information system. The project goals were quite simple. Collect as much service station operational detail in the shortest period of time, and provide it to as many people as quickly as possible. No sweat!

The vehicle for this collection was a double-sided form called the "Crown Daily Report" or CDR (not as catchy as "flysheet"—but at least everyone could spell it). The service station managers filled out one each day. It contained a summary of their gasoline sales, deliveries, and losses, as well as merchandise, payroll, competition surveys, bank deposits, credit card sales, and more. A group of six headquarters-based data entry encoders (the system's real unsung heroes) would call each station at a predetermined time. In two to six minutes, each station would read its CDR to the encoder. The encoder would enter it into a series of on-line validating program screens (written in COBOL) that matched the format of the CDR.

After the last station was called, the encoder transactions were passed through a series of update and reporting programs called "Daysend." This also produced the transmissions to the corporate IBM systems.

The marketing department was looking for someone to devote all of his/her waking (and sleeping) hours to supervise this new MMIS department. Being a confirmed bits-and-bytes guy, I was a little leery of transferring from the MIS department to the marketing department. However, I heard that this person they were looking for was to receive a much-coveted window seat facing the infamous Baltimore Inner Harbor. Given that I was the only unmarried candidate, I figured it was my duty to "volunteer" for this new position. One week later, I was spending my nights sketching the blueprints for our new MMIS computer room.

When TRACS initially recommended
that we use Data General equipment for the
new retail project, my first thought was,

"Aren't they the guys who make dishwashers?" To top it off, my OEMs informed me we were going to use some newfangled 32-bit processing technology, as well as a new mass storage technique. I admit that I was a "Big Blue Bigot" at the time, but reading Tracy Kidder's *The Soul Of A New Machine* helped put me at ease. I was ready for the challenge.

Our preliminary Data General order included a few dozen D460 CRTs, a half-dozen 150 CPS workstation printers, and a pair of MV/4000 CPUs. Each of these processors were configured with the following: 4 MB of main memory, two IAC-8s, two IAC-16s, one 1200 lpm band printer with stacker, one TP2 hardcopy system console, and a battery backup unit (that really worked). They were loaded up with AOS/VS, COBOL, Present, Trendview, Sort/Merge, RJE80, and DG/Gate.

The remote districts were connected to Baltimore by a network of leased lines and dial-up lines running through Infotron data communications equipment. One of the CPUs was used for retail processing. The "extra" CPU was first used as a "peace-of-mind" contingency processor. Each night after the "Daysend" closeout ran on the main CPU, all the results were copied over to the backup CPU using (gasp) . . . tape. In the event of a main system "disaster," we could activate a series of "A/B" switches and have everyone up and running on the contingency CPU in no time.

I am very pleased (and proud) to report that we never had to use our contingency plan, thanks to the quality of DG's products. Having an extra CPU around was a short-lived luxury, however—after two years of unselfishly allowing me to sleep at night, my spare CPU was earmarked for another marketing project. I'll tell you more about that in a minute. The new equipment arrived a little before Christmas, 1983. Shortly after New Year's (yes, 1984), we were taking in production data using the new MMIS setup.

I already explained how the new marketing retail data was collected from the service stations by the data entry encoders. But what makes the MMIS concept so special is how that information was put to use.

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The amount of data we collected each day made the new rev 7 *Generating And Running AOS/VS* guide look like a pocket-reference card. To keep this avalanche of data under control, we immediately adopted three basic MMIS philosophies; 1) run a "paperless" shop, 2) use the KISS (Keep It Simple Stupid) method, and 3) promote management-by-exception techniques ("if it ain't broke, don't fix it").

MMIS used less than eight boxes of computer paper a month. We did this by keeping as much data on-line as possible. The disks stored a rolling 13-month month-to-date history for each station and marketing area. Up to 90 days of actual daily detail were also available at the touch of the good ol' NEW-LINE key. We rarely had to print anything, and seldom were asked to reload historical information from our monthly archival tapes.

We kept the system as simple as we could make it. I didn't like anyone to use words like "utilize" and "interface" around the end-users. These users—ranging from clerks to vice presidents, never saw a CLI prompt. Rather, they were guided through a variety of file maintenance and management inquiry functions via a series of CLI and COBOL menus.

Each morning, management received a summary of pre-defined operation exceptions from the data collected the day before. This included items such as large cash overages/shortages, robberies, and missing CDR reports, to name a few. The regional managers would pass along any worthy exception items to the district managers, who would then hand them over to the appropriate sales representative, who would then communicate them to the station manager, who would in turn go home that night and biff his or her cat.

We still kept most of the data available at the very detail-oriented level for the end-user who found a need for it. We taught Present (DG's ad hoc "user-friendly" reporting package) to as many people as we could. It helped fill the gaps between the canned functions we provided them. We were even able to use Present as a prototyping tool for the users. Some of them were even able to produce their new system specifications and report layout requests for MIS and our OEMs without picking up a coding pad.

This past year was one of extensive

growth. MMIS software and hardware had proven itself well—and it was time to move onward and upwards. The "spare" retail CPU I mentioned earlier was turned into the new TPMAS (Terminal Product Movement and Accounting System) processor. TRACS and MIS wrote this system in much the same fashion as its cousin, the retail system. The TPMAS function was to follow the product receipts and disbursements from our bulk petroleum terminals.

At this writing, we are also tying it in with our rack automation equipment. To help make the best of our expanding computer resources, we purchased DG's System Performance Monitor package. We also bought a few system audits from their very amiable and capable Atlanta special services group. As expected, we added some more main memory and disks to both the retail and the new wholesale CPUs.

A few months ago we beefed up our data communications network to handle the extra remote user load. This was accomplished by adding a series of Codex modems and muxes that were all tied together by their OEMed network management system running on none-other-than . . . a DG MV/2000! I had to laugh when I found the Crown "IBMs" tried to hide this little dynamo underneath a desk behind the Big Blue 4381 corporate processor. They're coming around now, though.

So as not to slight any members of the Eclipse family, we have just adopted a brand new DG MV/20000. Loaded with two "giga-

boxes" of on-line storage, five MIPS processing speed, and 24 MB of main memory, this monster will handle Crown's new service station acquisitions. It will also provide the breeding grounds for our future projects such as point-of-sale and expanded office automation. We added a XODIAC network with an Ethernet backbone to connect all the MVs together. We also upgraded all of our tape drives to 6250 bpi, and added some new disk mirroring and dual porting and logging facilities.

In a streak of recent bad fortune (our beloved Baltimore Orioles clinched their division's last place, someone had the nerve to build a skyscraper that's blocking my view of the harbor, I'm getting "file inconsistency" errors again, and Vanna White won't return my calls), it's nice to know that some things can be depended upon. The Data General software, hardware, and people are, in my mind, the best bang-for-the-buck and holler-for-the-dollar the industry has to offer (and I've used almost every other major computing system). My NADGUG dues are all paid up. My back issues of *Focus* are safely archived. And most importantly, marketing management information systems is here to stay at Crown Central Petroleum Corporation. Δ

Dennis J. Berman is data processing facilities supervisor for Crown Central Petroleum Corporation. He can be contacted at 1 North Charles St., Baltimore, MD 21202;301/539-7400.



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How Huck Finn Clothes put an end to seat-of-the-pants management

by Keith Rasmussen
Special to Focus

When Huck Finn Clothes, Inc., a retailer based in Lathem, New York, installed its computer system in 1981, it got what it wanted: an end to seat-of-the-pants merchandising, growth without adding another layer of management, facts and figures to fortify its buyers, control over inventory, and the ability to enter new markets.

The firm, which trades to the public as Peter Harris Clothes, has now expanded to more than 10 stores, and recently opened a store stocking large sized women's clothing.

The computer system at Huck Finn is called the System for Total Operating Retail Efficiency (STORE), from STS Systems, Inc., of Windsor, Connecticut. STORE is a turnkey system that uses Data General equipment to produce an integrated set of reports and data for accounting, inventory, purchasing, and sales.

Huck Finn president Peter Elitzer recalls, "When we first got the system, we went from a 100 percent manual operation to one that was 100 percent computerized. STS was selected after very careful research. I'd had some exposure to computers in my college days, and I knew enough to know I didn't

know very much."

The retailer hired outside consultants to evaluate the systems on the market. The consultants recommended STS because the company had the best complete solution that was already working at the time.

"Other people talked about things that sounded marvelous, but hadn't really been done yet, and I knew enough about the problems of programming that I didn't want to be anybody's guinea pig," Elitzer said.

"We decided to live with the system for six months to see if we wanted any changes or modifications. We found that after six months we had every report we could imagine and then some. We stayed with what we had."

Reports help keep Elitzer, who also functions as merchandising manager of the company, on top of what's happening with the



products he's selling. "It's the end of seat-of-the-pants merchandising," he said. For example, "There's nothing more frustrating for a retailer than to walk around at markdown time, and see a style which you know is sold out in one store, sitting in another store for markdown," he said.

Before the system was installed, the company had no way to track this information except on-site inspection. Not anymore. "Not a day goes by when I don't look at some sort of style card information, either an exception report or an exhaustive report of all the styles, spotting the big winners and the big losers," he said.

Merchandise can then be transferred between retail stores based on how the items are selling. "That has enabled us to save a considerable amount of money in markdowns," he said.

Before the system was installed, the company had no way to track information except on-site inspections

In fact, the system has enabled the company to better evaluate whole departments. "We used to have departments that we thought were making money, but they really weren't. Since we can now look at trends within a store by classification, the operations people have the ability to know whether the position of merchandise in the store has made a difference or not," Elitzer said.

When one store, for example, experienced an enormous drop in sales of women's fashion denim, the retailer was able to spot the problem immediately. It turned out that those clothes had been moved to a part of the store that was more aesthetically appealing than where they had been previously, but far less effective in terms of sales.

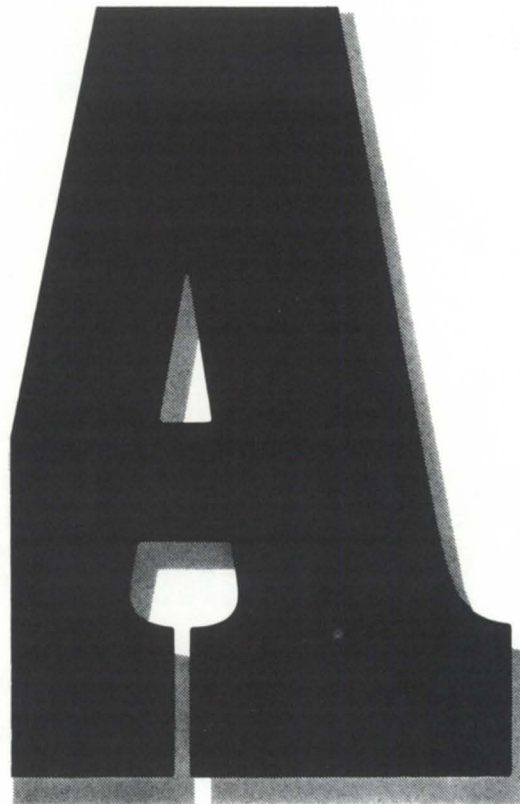
The system has also permitted Peter Harris buyers to better evaluate specials offered them by manufacturers. According to Elitzer, "Too frequently when a manufacturer offers you a deal on some merchandise, you assume that if everything from that category of goods has been selling, it's OK to buy. The system allows us to be much smarter. We can call up a style number on our terminal screen and see that it was selling really well when it first

came in but it isn't doing so well now.

"We can see that the item has peaked. Or we can see that the item is selling fast, but only in two colors. The other four colors are no good. You can ask the manufacturer what the assortment is. When you find out it's all

the other colors that weren't selling, you know that a deal that looked great isn't so great."

Better control over inventory is another plus to the STORE system. Before using the STS system, the company had difficulty determining what had been purchased against what



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was actually in inventory.

"We were perpetually overbought," Elitzer said. "My figures were always one month out-of-date, because I just couldn't get the information in fast enough. Now I can have it daily if I want it."

With the manual system, receipts were tallied and sales and markdowns were deducted. What was left was what was open to buy. But the company was never sure which orders were already out, and how many had been received at any given time. With the computer system, information is captured both at the point of sale and at the warehouse.

"As soon as a single style or color has been received, it is deducted out of what is still on order. So you know that if the inventory is at \$100,000 dollars and you have \$100,000 on order, you're going to have a \$200,000 inventory very rapidly."



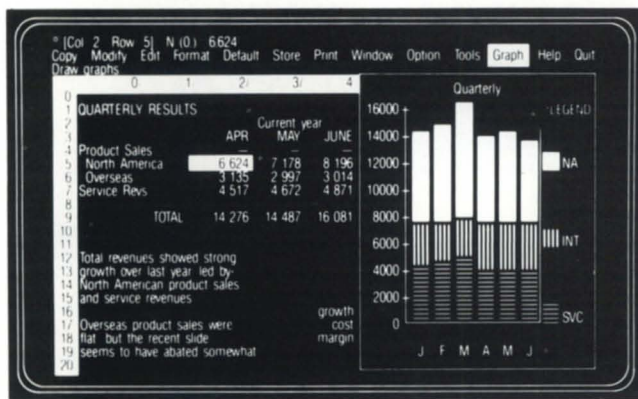
Sales information is relayed back to the main computer nightly through an automatic polling procedure in which the computer "calls" each point-of-sale machine, receives the data for the day, and cross-checks it for accuracy. After any discrepancies are resolved, Elitzer can then send the data to be incorporated in the various applications.

Elitzer examines a sales analysis report on open-to-buy each Monday morning and then looks at an inventory report to see where the

company stands. Then he directs his buyers accordingly. He can tell them not to write any more orders for particular merchandise because the rate of sale in the category has slowed, or he can ask them to buy a particular category because the company doesn't have enough merchandise on order to sustain the current rate of sale. Buyers can investigate a particular "hot" classification to determine what is generating the unit sales in that category and go after those items aggressively.

Faster feedback keeps important fourth quarter sales momentum going, he said. "The feedback is enormously helpful during the last quarter of the year, in which we generate a huge amount of sales on just a few styles. I would say that even though we carry some 5,000 different styles in a store at a time, only 100 of those styles generate as much as 60

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percent of the sales volume during that time.

"Those items are turning fast, maybe at the rate of once every two or four weeks, while everything else in the store is turning at once every twenty weeks. We can make a tremendous impact on our sales volume and rate of return if we keep going back after the winners."

Elitzer attributes the firm's rapid growth in the last four years to the economies of a computer system. While the merchandise mix for each store is tailored slightly from location to location, as a chain operation, 80 percent to 90 percent of all merchandise is the same in each store, Elitzer said.

"Since we are buying the same categories and putting them in multiple stores, we can have a very lean central office staff," he said. At the same time, the business can expand.

"If we added 10 more stores, the workload would not increase by 10-fold, but probably only about 2-fold. It means a bit more hanging, a little bit more ticketing, but no additional computer entry time, no additional buying time."

The company has recently expanded into the women's large size market, with its first prototype store. The outlet, a freestanding store physically adjacent to the firm's regular outlet, is doing well. The company plans to expand that operation. It's operationally far more economical to have a large number of units, Elitzer stated.

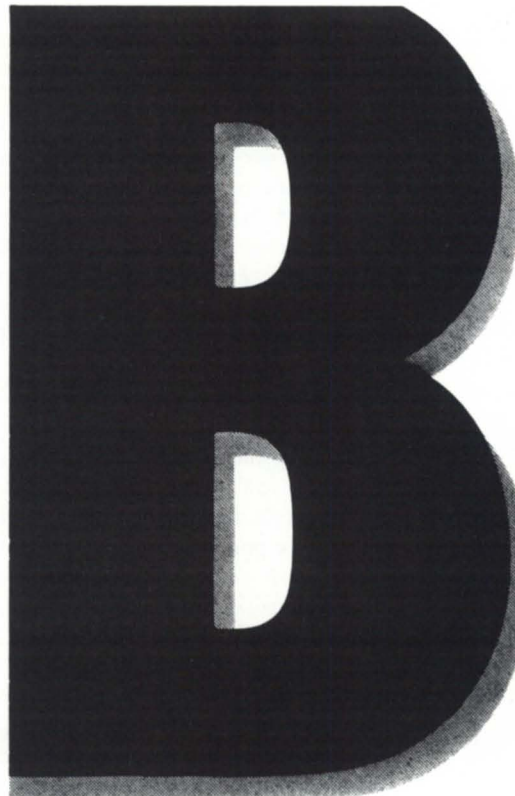
The warehouse functions are also automated. Once merchandise comes in the door, a receiving memo is printed out by the computer printer at the warehouse telling how much was ordered. The company then writes in the sizes and colors of what was actually received. That information is entered into the computer. When the buyer actually places the order, he uses an automatic distribution program to direct the computer where the merchandise should be placed.

That information is automatically printed on a pick-pack label at the time the merchandise is received. The items are boxed accord-

Keith Rasmussen is director of marketing at STS Systems. He can be reached at 9577 Cote de Liesse, Dorval, Quebec, Canada, H9P 1A3; 514/631-7291 or Telex 05822888.

ingly and readied for transfer to the appropriate store. The computer also prints out a manifest (which acts as the transfer document

from the warehouse distribution center to the stores), as well as tickets that will be put on the merchandise when it arrives. Δ



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MISSION POSSIBLE

DG's VAR program targets resellers in promising vertical markets

by Karen S. Lewis
Special to Focus

We've heard it before: the only way to thrive in a maturing computer industry is to be market-driven. But what happens when someone else has a piece of your market snugly in their pocket? Specifically, how do you treat those third-party distributors sitting squarely and profitably in the midst of the business you want?

If you're wise, you treat them well. According to Frank Gallo, Data General's director of Value-Added Reseller (VAR) development, and John McGlone, director of VAR recruitment, that's just what the distribution division intends to do.

During a recent interview, Gallo said that with DG's increased focus on vertical market solutions, "We need to coordinate the things VARs are doing with what Data General is doing. We want to focus our VAR recruitment on those who are doing business in the vertical market industries we have targeted."

According to McGlone, DG's move to become a market-driven organization is causing the company to divide its resources among the three divisions of its market—product, marketplace, and channel of distribution. That, according to McGlone, is the theory behind the recent reorganization at Data General.

"Our piece in the distribution division is the channel piece," McGlone said. "We no longer have a (retail) dealer channel, but VARs and distributors remain."

"Everyone who isn't an end-user is called an OEM (Original Equipment Manufacturer)," McGlone said. "We're

changing our emphasis to VARs, whether they're software VARs, hardware VARs, or a combination of the two. Their generic needs are the same, although their technical needs are different."

By DG's definition, a VAR is a technically competent organization that buys Data General's hardware, adds its own software or hardware or both, then sells end-users the resulting integrated system in a package that includes comprehensive service and support. A distributor does essentially the same thing, except that its customers are smaller VARs rather than end-users.

"Our mission is to make the business grow through the VAR and distributor channels," McGlone said. Data General is devoting an entire division to VARs and distributors as an investment in the future. "We've been told to build all the programs necessary to grow that business. It's a very important piece of our business, not just for now, but for the future growth plans of Data General," McGlone said.

DG has always had VARs. According to McGlone, "That's how Data General originally grew its business. It's only in the last few years that Data General has focused on large end-users, the Fortune 500 accounts. But now VARs will have equal billing with Fortune 500 end-users within DG."

The distribution division's mission consists of two parts—increasing business through DG's current VAR base and recruiting new VARs.

Regarding the first, McGlone stated, "We need to take a look at the current customer base and say, 'What is it that we have to do, what programs do we have to put in place, to help those customers increase their business?' Because that's what it's going to take to increase our business through these VARs.

"We can't be so self-indulgent as to say it's just our business," he said. "We have to acknowledge it's the VARs' business, and it's also our business, and that's how the growth happens. It happens in a synergistic way. We're all pulling for the same business."

As for how DG will accomplish this

growth, McGlone said, "We're now in the process of gathering information. We have people on the streets with the VARs, talking with them, understanding what their business is, and asking what they feel they need. We're still in the process of analyzing the data. But there are some areas we clearly need to address, areas where the VARs need help."

As a direct means of gathering information, Data General is instituting area reseller councils, Gallo said. "They will give us an opportunity to sit down with key resellers and talk about what their needs are from both a product standpoint and from a business standpoint.

"And we're going to act as the conduit back to DG Corporate to make sure that their needs get attention and action. It will also put us in a closer working relationship with them, so we have a better understanding and more timely information about what their business climate is like."

Emphasizing the significant strengths of the VARs currently working with DG, McGlone said, "We find that the VARs we now have know and service their customers very well. They understand the vertical application they're selling into, and they're very technically competent on the hardware."

But they do need help. "Where there seem to be weaknesses are in merchandising what they sell; getting the greatest level of productivity out of their sales forces; knowing how and when to add more salespeople and branch offices; and interacting with our own sales organization."

To answer these needs, DG is putting together programs on a consulting basis, to teach VARs some of these skills and provide them with some necessary tools. "We can do it because of our size and because of the resources we have, and we can do it more quickly and less expensively than they could," McGlone said.

The annual system supplier conference is one way Gallo and McGlone see of getting some of this information into VAR hands. "The theme for the 1986 conference was 'Working Together,'" Gallo said. "A good share of the things we did at the conference



were done at the request of the resellers. We offered informational and educational sessions designed to help them run their business." For example, the September conference in Atlanta featured workshops in how to use public relations, how to put together a business plan, and how to get venture capital. Educational sessions included VAR-conducted seminars on 4GL and advanced programming.

As for getting new VARs on board, McGlone said, "There's a finite number of VARs available in the minicomputer VAR marketplace. We want to go after those who are established, who we know have good solutions and a good reputation for supporting their customers, and who are financially capable of growing their business. Our major concern in that area is to make it easy for them to port their software to our operating system or to port it to Unix if they're concerned about the proprietary operating system."

To help the VARs realize these goals, DG plans to open a conversion assistance center which, according to McGlone, will have "languages run on both Unix and our own operating system."

VARs are how DG originally grew its business.

It's only in the last few years that DG has focused on large end-users, the Fortune 500 accounts

McGlone said, "For example, if they're programming in the DEC language DIBOL, they don't want to have to train their people to program in another language. We want to make sure we have the ability for DIBOL to run either on our operating system or on Unix. Then we provide the resources to port their application software over to our operating system.

"We want to make it easy for them. They have an investment in that application software, and they don't want to make another investment just to have it run on DG hardware. That's where the Conversion Assistance Center and those tools come into play," McGlone said.

How does all this differ from what Data General has been doing over the past several years? According to McGlone, Data General previously concentrated on the products—

small, medium, and large systems. Then they adopted a strategy that targeted specific markets. "But the company took another look and

(continued on page 30)

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MV/7800 DC targets departmental users, small businesses

Westboro—The newest addition to DG's line of 32-bit minicomputers is the MV/7800 DC, which packages the MV/7800 CPU in a quiet, under-the-desk unit for departmental and small business users. At just 25 inches high by 21 inches deep and 13 inches wide, the MV/7800 DC uses standard AC power and has no special ventilation requirements. Accommodating up to 35 active office automation users, the cost-per-seat of the new system is said to be 10 percent lower than comparable systems from competitors such as Digital Equipment or Wang.

The MV/7800 DC supports a maximum of 48 asynchronous connections, and up to 14 MB of memory. Four general-purpose I/O slots can accommodate a wide range of communications and network controllers. The MV/7800 DC supports a variety of peripherals, including up to 320 MB of integral disk storage, 354 MB and 592 MB Winchester disk subsystems, 25 MB reel-to-reel tape drives, and 15 MB cartridge tape drives.

The technical compute performance of the MV/7800 DC supports a variety of peripherals, including up to 320 MB of integral MB per second.

The MV/7800 DC will be marketed both as a standalone system for small businesses, and as a node for larger networks when used with Xodiac, DG's X.25-compliant protocol, or with the IEEE 802.3/Ethernet standard for local area networks.

The base configuration of the MV/7800 DC includes the MV/7800 system board with 2 MB of memory, a multifunction I/O controller (MIOC) board, 737 KB diskette drive, 70 MB disk drive, and AOS/VS license, at a price of \$28,400. The first customer shipments are expected before February. Δ



CIM agreements, workstation enhancements debut at Autofact '86

Detroit—Announcing several strategic alliances and new products at the auto industry's leading trade show, Data General representatives said in mid-November that they had completed the heart of the company's strategy for computer-integrated manufacturing.

"CIM incorporates an extensive range of operations," said J. David Lyons, DG's vice president for group marketing. "For that reason, Data General has long been alert to the vast potential scope of CIM and has therefore moved to form alliances with companies expert in applications, integration, and communications."

The centerpiece of the announcement was a marketing agreement with General Electric's turbine business group, winner of the 1984 LEAD Award from the Computer and Automated Systems Association of the Society of Manufacturing Engineers. The award goes to the company that demonstrates an outstanding implementation of a computer integrated manufacturing system.

Under the agreement, DG will market the

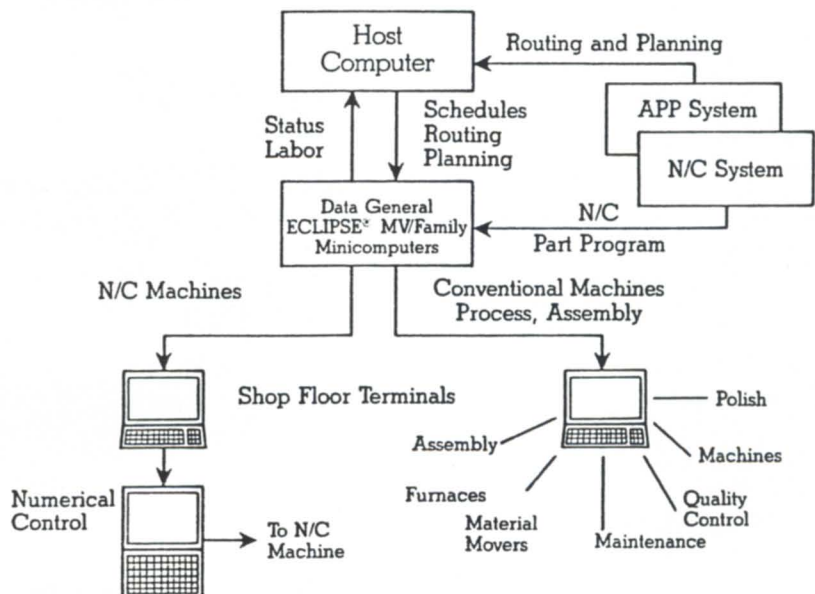
GE turbine business group's factory management system (FMS) software as DG/FMS, and General Electric will provide marketing support through plant tours, trade shows, joint sales calls, and training classes. General Electric Consulting Services Corporation will offer software support, systems analysis and design, and customized applications and interfaces.

FMS is an integrated set of software modules including shop floor control, maintenance management, distributed numerical control, and factory communications. FMS runs on eight of DG's MV/ series machines at the turbine business group's Schenectady, New York, facility, where it is credited with earning a return on investment of 35 percent. It is also being implemented at the company's manufacturing facility in Greenville, South Carolina.

Other vendors who offer related products shared the spotlight at DG's announcement:

- DG will provide sales and marketing support for factory-hardened terminals manufactured by Comark Corporation. The terminals interface to DG systems, and comply with National Engineering Manufacturers Association standards. Currently installed at GE's Schenectady steam turbine plant, the Comark terminals feature 19-inch RGB monitors, sealed enclosures, and optional touch

SYSTEM ARCHITECTURE FOR DG/FMS



screens.

- DG will offer sales and marketing support to Logan Associates for their LOCAM computer-aided process planning (CAPP) software, which has been integrated with FMS at the Schenectady plant. CAPP can automate decision making to help manufacturing engineers create and maintain process plans.

- DG and Seiko Instruments USA will jointly market the Seiko CH-5300 series as a color hardcopy output device for DG's engineering workstations. Producing A- or B-size copies in as little as 45 seconds, the CH-5300 provides a low-cost method of producing high-resolution screen dumps without burdening the host computer. Offering 4,912 colors, the CH-5300's internal processing and proprietary frame buffering capabilities enable it to perform dithering techniques, scaling, rotation, aspect ratio changes, and printing density adjustments.

Data General also announced enhancements to its DS/7500 engineering workstations, a new graphics controller coprocessor for the Dasher/286, and a 15-inch color monitor.

The DS/7500 can now be ordered with a 1280 x 1024 x 8 high-resolution graphics display for either 15-inch or 19-inch color monitors. The new 15-inch monitor requires less space, and reduces the entry-level cost. A medium-resolution version of the 15-inch monitor is also available. Prices for configured DS/7500 workstations range from \$23,000 to \$45,000.

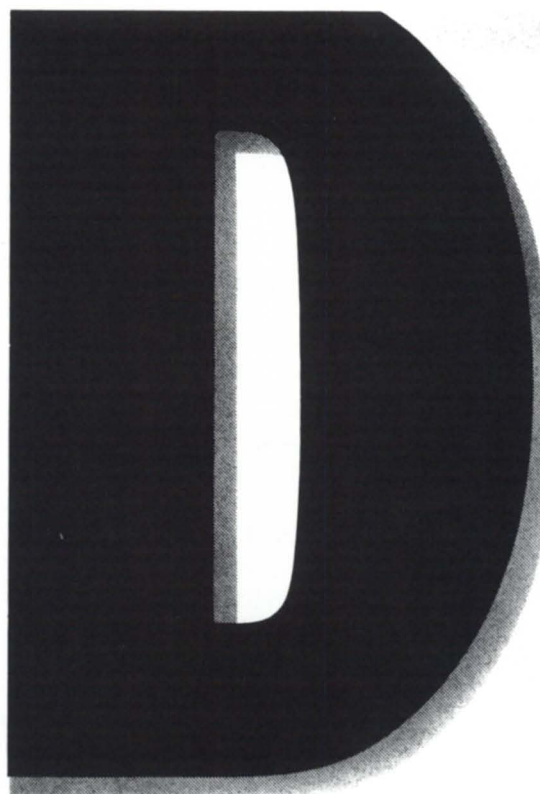
The Dasher/286, a PC/AT-compatible workstation announced last August, can now be matched with the GDC/286, a high-resolution graphics co-processor suitable for engineering and graphics applications. The GDC/286 controller features 1024 x 800 resolution, and can display 256 colors simultaneously from a palette of 4,096. It performs at 25,000 vectors per second and offers a 60 Hz non-interlaced display for flicker-free viewing.

The GDC/286 controller is compatible with the professional graphics adapter (PGA), and supports the entire set of professional graphics language (PGL) commands. In addition to standard graphics commands for two- and three-dimensional drawing, the PGL includes commands for complex design applications such as rotating figures, generating patterns and filled areas, manipulating the color palette tables, and executing commands in stored lists.

DG now offers an enhanced graphics adapter (EGA) with 256 KB of memory for the Dasher/286. The EGA can support IBM standard 640 x 350 color/mono text and color graphics for commercial and technical applications.

The price of the GDC/286 subsystem is

\$6,295; it can be combined with a Dasher/286 configured with 640 KB of memory, 1.2 MB diskette drive, two serial ports, one parallel port, 80287 floating point unit, keyboard, and MS-DOS 3.1 for a total price of \$9,840. A 20 MB disk drive is available for an additional \$700. Δ



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GO STRAIGHT TO THE SORTS

Benchmarks show big differences for different sort techniques

One of the classic problems in computing is finding faster ways to sort information. One whole volume of Knuth's *Art of Computer Programming* is devoted solely to that topic. The advent of high-speed disks has made the problem less pressing, but as we shall see in this month's column, there is still considerable variation in the sorting speed of different methods.

I recently compared the results for seven of the sorting techniques available to Business BASIC users. A file of 10,000 records, each 80 bytes in length, was sorted by each technique. Both elapsed time and CPU time were measured. The tests were run on an MV/4000 with 2 megabytes of memory and a 354 megabyte disk. Figure 1 summarizes the results for each of the techniques.

Three BBASIC sorts

1. **FILESORT**, under Business BASIC: This routine is a program in \$SYSLIB that you SWAP to when doing a sort. You set parameters (such as the channel number of the file to be sorted, the record length, and a list of offsets in the record that will be used to construct the sort key), and BLOCK WRITE it. FILESORT is pretty easy to use and convenient—but slow. It took 1,470 seconds to sort—about 25 minutes. It also used 733.3 CPU seconds.

2. **QFILESORT**, under Business BASIC: QFILESORT is a faster version of FILESORT. You can use it when you have only a single field you want to sort on. Elapsed time was 807 seconds and CPU time was 505.8 seconds. Note that the improvement in overall execution time is not quite matched by similar improvement in CPU time. This would be significant if the system were trying to do this sort during the day when the system was busy.

3. **KADD**, under Business BASIC: This

Figure 1: Sort times for BBASIC, B32, and SORT/MERGE

		Elapsed	CPU
1.	BBASIC FILESORT	1470	733.3
2.	QFILESORT	807	505.8
3.	KADD	384	174.4
4.	B32 FILESORT	1192	411.5
5.	QFILESORT	658	319.0
6.	FILESORT.B32	317	158.1
7.	QFILESORT.B32	222	55.0
8.	SORT/MERGE	88	26.0

All times are in seconds. Sort was of 10,000 records. All tests performed on MAXON's MV/4000.

is the most common technique. You write a program that inserts keys for each record, and then copies the data records to a new file using the newly created index file. Total elapsed time was 384 seconds, matched by 174.4 CPU seconds. Is it a surprise that just using KADDs is faster than FILESORT or QFILESORT? Not really. What did you think those other programs did, anyhow? The speed of the KADD method was increased by another factor—the index file was already created with a large element size.

In practice, this method is faster yet. You probably wouldn't bother to copy the records over to another file, but rather would just use the index file thereafter to get the records in order. In that case, all you would do would be create the indexes, which took only 266 seconds.

Four B32 sorts

4. **FILESORT**, under B32: What difference would it make to use the 32-bit version of Business BASIC? Running the same FILESORT program as above, elapsed time was 1,192 seconds, with CPU time of 411.5. This is a 23 percent improvement in elapsed, and a whopping 78 percent improvement in the amount of CPU time used. The lower overhead of 32-bit code probably has something to do with this. The lower CPU time figure would also mean less of a load on the system while it was running.

Those of you who were expecting even

more of a speed improvement from B32 should remember that KADD was one of the operations that was hard to make go much faster: only about 10 percent improvement in the KADD statement itself was obtained. The improvement that does appear is due to substantial improvement in other statements also executed by the program.

5. **QFILESORT**, under B32: This shows a similar amount of improvement over regular Business BASIC to what we saw for FILESORT. Elapsed time was 658 seconds, with 319.0 seconds of CPU time being used.

6. **FILESORT.B32**, under B32: The regular sort utilities supplied by DG are programs written in BBASIC that use index files to sort. Would it be possible to write a faster sort by adding a special routine to BBASIC? The B32 people tried. It came in with a time of 317 seconds for elapsed and 158.1 seconds for CPU time used.

It's a straight plug-in: no changes are needed for the calling sequence. For this, you get something that runs 4.6 times faster: elapsed time of just over 5 minutes instead of almost 25 for standard Business BASIC.

7. **QFILESORT.B32** under B32: If they could write a replacement for FILESORT, why not for QFILESORT as well? It had an elapsed time of 222 seconds, and used just 55 seconds of CPU time. While this is merely 3.6 times faster in total run time, regular Business BASIC used 9.2 times as much CPU time to get the job done. Clearly, if you need

to do a sort during the day, it's the way to go.

Another alternative

8. AOS/VS SORT/MERGE: So far, we've only dealt with ways of doing these sorts from within Business BASIC. One of the nice things about BBASIC, though, is its ability to easily invoke routines other than in Business BASIC. Most of the rest of the world uses Data General's Sort/Merge product to do this kind of sorting, so we gave it a try as well.

It did quite well indeed, with an elapsed time of 88 seconds and a CPU usage of just 26 seconds. However, if you want to use it, you'll have to get a separate license for it from Data General. This will cost a bit of extra money, and that, coupled with the extra trouble you'll go through to use it, may not be worth it.

*If we know a certain
type of data
needs to be sorted in a
certain manner
on a regular basis,
we'll keep an
index file around for
it, sorted that way
all the time*

Conclusions: Which sort should you use? If performance is a consideration, stay away from FILESORT and QFILESORT under regular Business BASIC. While convenient to use, you pay a big price. By recoding so your application creates an index file, you'll get a great deal of speed improvement.

If recoding is too much bother, you should have a look at B32. You won't have to change any of your code, and you'll get speed increases in the same range.

If you're really desperate, Sort/Merge is the fastest. But I think in most cases, the above solutions are easier and almost as effective.

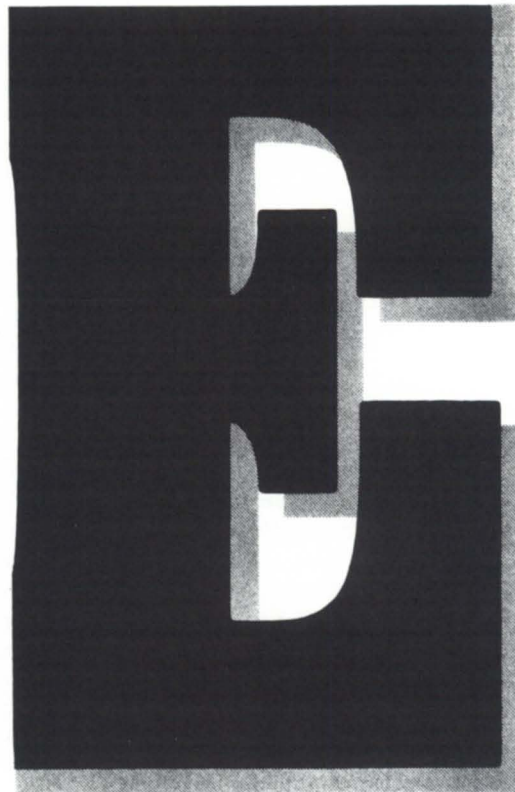
What do we do? We sidestep the whole issue, and try to avoid having to do the sort at all if we can help it. If we know a certain type of data needs to be sorted in a certain manner on a regular basis, we'll arrange to keep an index file around for it, sorted that way all the time. As already seen, using

KADDs is not that bad a way to sort, and maintaining the index is very little load on the system if it's done gradually, whenever the data file itself is altered.

Concerns of a different sort

While on the topic of performance, there is some concern about how fast the new MV/7800 is. A lot of the information that went out at the press announcement gave the

(continued on page 30)



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NOT YOUR FAULT

Understanding VS memory management can make programs run more efficiently

Since this is my first column of the new year, I'd like to devote it to a topic most of us spend a lot of time complaining and worrying about: memory management. If you're a system manager, understanding the AOS/VS memory management scheme can help you evaluate the memory usage on your systems. If you're a programmer, it might help you improve the efficiency of your programs.

The "VS" of AOS/VS stands for virtual storage—a term that refers to the fact that the logical address space for the processes running on the system may exceed the physical memory of the machine. This means that the system has to manage both the subset of a process's logical address space that is currently in memory (the "working set") and the remainder of the logical address space that is kept on the disk (the "virtual address space").

When discussing memory, the unit we use is the "page"—2048 bytes. AOS/VS uses demand paging, which means that pages are

added to the working set only when they are referenced. When a reference is made to a page that isn't in the working set, a "page fault" occurs and the system must make the referenced page available.

The referenced page may already be in physical memory, either on the system's LRU (least recently used) list, or in the address space of another process. Finding a page that is already in memory is a "logical page fault"—as opposed to a "physical page fault." The latter occurs when the page isn't in memory, but must be read from the disk.

If there is a physical page fault and the system has no free pages of memory, it must steal them from an active process. It is at this point, after the system cannot satisfy all requests for memory pages, that there is "memory contention." The algorithm that deals with memory contention is called PFF (for page fault frequency). PFF looks for pages that could be taken away with little harm; it looks first at processes that are blocked, then at low-priority processes, and then at high-priority processes.

When PFF examines a process, all pages that can be removed from the working set are removed, regardless of the number of pages necessary for the fault. The theory is that as long as you are going to go to the trouble of looking for unreferenced pages, you may as well get all of them. Any pages that don't need to be moved onto the disk remain in memory on the system's LRU list.

The effect of this algorithm is that the working set of a process doesn't shrink unless there is memory contention, but when contention occurs, the PFF algorithm will remove all the unreferenced pages.

PED, the process environment display utility, can show you the number of physical and logical page faults for active processes. (See my column from the November 1985 issue, page 35, for how to use PED.) If you watch a process as it is started, you'll see that the number of physical page faults grows until the process has all the pages it needs. If the working set size is equal to the number of physical page faults, there has been no memory contention. Any time you have many processes with physical page faults that exceed the working set size, memory contention is a problem.

For individual programs, the logical address space can be found by using the debugger and pressing ESC K. This gives the beginning and ending addresses for the process. If the program has a logical address space larger than the physical address space, physical page faults will always occur.

What can be done to improve paging? Two fairly straightforward approaches are to use pre-paging and the program load option.

If you have a program with large, unshared arrays that are referenced sequentially, pre-paging can dramatically speed up execution time. It does this by having clusters of pages added to the working set all at once, rather than waiting for the paging algorithm to add them one at a time. In other words, when a page fault occurs, the working set will increase not just by the page referenced, but by the entire cluster of related pages. You can specify pre-paging by using the SPRED utility to edit the preamble of your program file. Unfortunately, this only works with unshared memory, but it can make a big difference.

Figure 1: Packet definition for ?SWST and ?KWST

	0	15	16	31
?WABH	-----			
	BUFFER STARTING ADDRESS			
?WBLH	-----			
	BUFFER LENGTH			
?WOPT	-----			
	OPTIONS			

Figure 2: Contents of the buffer

Word	1	2,3	4,5	6,7	8,9	10,11	12-19

	TERMINATION FLAGS						

	TOTAL NUMBER OF PAGE FAULTS						

	NUMBER OF LOGICAL PAGE FAULTS						

	TOTAL CPU TIME DURING TRACE (MILLISECONDS)						

	NUMBER OF PAGES REMOVED BY PAGING ALGORITHM						

	NUMBER OF PAGES STOLEN BY OTHER PROCESSES						

	RESERVE 8. WORDS						

Figure 3: Working set trace program outline

```

C ALLOCATE SPACE FOR THE BUFFER
C ASK THE USER WHICH PID THEY'RE INTERESTED IN
C START THE WORKING SET TRACE
  CALL SWST (IPID,IBUF,16384,0,ICC)
C DELAY FOR THE LENGTH OF TIME YOU WANT TO
C MONITOR THE PROCESS
C KILL THE WORKING SET TRACE
  CALL KWST (IPID,IBUF,16384,0,ICC)
C EITHER WRITE THE BUFFER TO A FILE FOR
C ANOTHER PROGRAM TO PROCESS OR PRINT THE
C RESULTS HERE.
    
```

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Before you can use the pre-paging option, your system manager must set the pre-paging parameter during the VSGEN dialog. The pre-paging parameter specifies the maximum number of pages that you can add to the working set for each page fault. If the system manager has set the parameter to 0 or 1, then pre-paging is turned off system-wide. So if using SPRED made no difference, check how your system was generated.

SPRED also makes available the "program load option," which allows you to specify that all or part of the unshared address space in your program will be loaded into physical memory when the program executes. This is useful when the program is small, or runs briefly, or references a large unshared area. Since the pages are loaded into memory initially, you save the time incurred by multiple, sequential page faults.

Like the pre-paging option, the program load option won't work unless it was enabled when your system was generated. Your system manager can enable it by indicating the number of pages a process can have at initial load time.

There are some "under-documented" system calls that allow the working set of an active process to be traced. These calls are ?SWST (start working set trace) and ?KWST (kill working set trace). Using a trace on a process can help identify which parts of a program are being moved into the working set. This information can help you develop more localized code, as well as telling you whether or not any of the options available with SPRED will be useful.

Neither of these calls are discussed in the System Call Dictionary (volume 2 of the AOS/VS Programmer's Manual), but both are in SYSID.32.SR, and ?SWST is mentioned in PARU.32.SR.

The packet definition for ?SWST (and I assume ?KWST) is shown in Figure 1.

There are two options available: ?WINF=1 to monitor only pages coming in, and ?WOTF=2 to monitor only pages going out. The packet length is 5.

Since there is no documentation on how the accumulators need to be set up, I assumed that because these system calls are analogous to ?WHIST, which is used to histogram a

process, the setup should be the same. It worked fine.

The first 19 words (16-bit words) of the buffer are used as shown in Figure 2.

The termination flags can be 1 (target termination), 2 (caller termination), 3 (no room in buffer), 4 (?KWST called to terminate), or 5 (invalid buffer).

Following these 19 words are as many 6 byte entries as the total number of page faults. The first 4 bytes of each entry tell the address of the page that faulted in or got removed from the working set. I don't know what the next 2 bytes refer to.

An outline of a program using these system calls would look like Figure 3. Note the program must run resident, or ?SWST will return error 66—"Caller not privileged for this action."

In using this program to trace the working set of a process, I initially had 303 page faults in a one-minute period. After using SPRED to allow pre-paging when a page fault occurs, this number decreased to 72, and the program ran in less time.

Happy New Year!

Δ

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(from page 21)

realized we're still missing a piece—the channel of distribution.

“The reality is that dealing through a direct sales force is expensive, yet we still need to do a certain level of that to control our business. But it's a lot less expensive to go through VARs and distributors,” McGlone said.

A key concern, according to McGlone, is to understand the unique capabilities and strengths of each channel, then to control their efforts to avoid conflict. “We're not doing ourselves or our VARs and distributors any favors if everybody's going after the same piece of business,” he added. “So in putting together our programs, we want to make sure that we've minimized the risk of conflict.”

When McGlone speaks of conflict, he's talking about competition between the sales forces of DG, VARs, or distributors. He's also talking about too many VARs or distributors in the same vertical or geographic markets. “There's so much business;” McGlone said, “there's no reason there should be conflict.”

The advantages Data General will reap from a well-planned, competently administered VAR and distributor program are obvious: increased sales, relief for the DG sales force (allowing them to concentrate on other business), and a wider range of application software available on the Data General product line. But what about the VARs and distributors? What's in it for them?

According to McGlone, there are three reasons a VAR or distributor would want to do business with Data General. First, “They'll have complete upward mobility within the Data General product line. They can move DG/Ones or Desktops, but they can also sell MV/20000s if that's their market. I don't think anyone else does that,” he said.

Thanks to the company's product integration and proprietary operating system, “The same software application will run on our systems in 1986 that ran on them in 1977.” Furthermore, McGlone added, “We have the mechanism to flow channel product requirements into product marketing, and we interact with them on a regular basis. So when they

consider all the product requirements for the company, they're also including those needed by the third-party distribution channels.”

A second reason for becoming a DG VAR or distributor is that there is no dealer channel to compete with. For example, McGlone said, “Apple and IBM have finally come to understand that if a company is too greedy and over-saturates a market, it hurts everyone's margins.” Noting that those companies are now closing dealers, he added, they haven't made the same mistake with their VARs.

Finally, with the other controls McGlone has mentioned in place, there will be vertical and geographic market protection. “We have to put rules in place and enforce them to protect everyone,” McGlone said. “The enforcement has to occur for the integrity of the channels.” Δ

Karen Lewis was the editor of Focus in 1983 and 1984. She now operates a business communications consulting firm, Karen Lewis & Associates, 12 Goldthwaite Road, Worcester, MA 01605; 617/853-2272.

BBASIC BUSINESS

(from page 25)

impression that the machine would run 50 percent faster than the MV/4000 it effectively replaces, and about 20 percent slower than an MV/8000.

The early users, especially those who used Business BASIC, could find no such improvement. One user who upgraded from an MV/4000 is quite concerned. He's sure the MV/7800 is slower. Another reports that after five or six active users are on, response time hits a wall.

I had a tough time getting anyone within Data General to comment on this. I heard varying reports that they had stopped shipments due to microcode problems, or that all 16-bit products were affected, including ICOBOL and Fortran.

The closest I got to an official comment from Data General was that no one was actually supposed to expect the MV/7800 to outperform the MV/4000. It was meant more

as a replacement than an upgrade. The 50 percent performance improvement figure DG provided was meant to apply to office automation (i.e., CEO users); they say 50 percent more CEO users can be put on the system.

If this is the case, I would have expected it to be called the MV/4200, not the MV/7800. Some of the people who have actually run it claim that calling it the MV/3800 might be more accurate, and some wonder if the MV/2000 is really a faster machine. Since the announcement included prices for upgrading an MV/4000, I think it's reasonable to expect a performance improvement.

As this article goes to press, the situation still isn't resolved. Extensive benchmarks are being run at a few different sites, and there's a new version of the microcode. I'll keep you posted as I hear more. We're more than a little interested ourselves—we have several on order.

Another reason for being interested is that DG has just announced a MV/7800 DC model, which sounds like it will be a replacement for the MV/4000 DC. The preliminary data I have claims it can support up to 35 users.

On the other hand, it's comforting to know that BBASIC users with MV/20000s are very happy with the machine. It's no more trouble to get up and running than its smaller cousins. While nobody has loaded enough work onto one to drive it to its knees yet, every indication is that the machine lives up to its billing. Δ

George Henne, a contributing editor to Focus, has worked with Business BASIC users for nearly a decade. He is the vice president of Maxon Computer Systems, and can be reached at 575 Madison Avenue, suite 1006, New York, NY 10022; 416/445-4823.

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DISK PERFORMANCE PRIMER

Cutting through mythology and misconceptions that can drain system performance. Part I

This month and next I'm going to talk about disk performance and its effect on overall system performance. Unfortunately, this will require a little bit of mathematics, so go dust off your abacus, Curta Calculator, slide rule, or pocket calculator.

:BACK_TO_BASICS

Before we start the analysis, let's take a look at how disks work at the hardware level. A disk subsystem consists of one or more disk units and a controller (typically, a circuit board that plugs into the computer) that can "control" some number of disk units (typically two to four). Some older model disks also had an "adapter" connected between the controller and the disk units. This took care of disks with addressing logic that was so complex or bulky it couldn't all be squeezed onto the controller.

The purpose of the controller is to tell the relatively dumb disk units what to do: seek, read, or write. In the case of a seek, the controller tells the unit where to go and then waits until the unit gets there. Once the heads are positioned to the right cylinder, the controller tells the disk to read or write. During the actual read/write, the controller takes care of the mechanics of transferring the data to/from the disk unit and memory as the heads pass over the appropriate data sectors.

Early in the history of disks, the designers of controllers noticed that the disk units spent most of their time seeking. Since the act of seeking required no assistance from the controller once the destination cylinder had been specified, it occurred to the designers that they could speed things up a bit if the controller could manage multiple disk units seeking at the same time. DG's controllers can do this, and DG's operating systems support this capability. It's called "overlapped seeks," and has

a considerable effect on disk subsystem performance.

:UP_CLOSE

Let's take a close look at what happens at the level of the controller (hardware) and the AOS{/VS} disk driver (software). Whenever AOS{/VS} decides to do a disk I/O, it checks the controller to see if it's idle. If it isn't, then AOS{/VS} queues up the request to the list of other requests waiting for the same controller. If the controller is idle, then AOS{/VS} schedules the driver.

Whenever the driver wakes up, it looks at the list of waiting requests to see if it can do anything. If a disk unit is idle, then it takes the first request for that unit and initiates the seek on the unit. This involves contacting the unit and passing it the desired cylinder along with the command to seek. This takes only about a millisecond, even though the seek itself will take tens of milliseconds to complete. The controller is then free to try to match up any other idle units with waiting requests.

When a unit is done seeking, it tries to notify the controller. If the controller is busy (for example, starting a seek on some other unit), then the unit that finished the seek will patiently wait until the controller becomes idle. Eventually the controller sees that the seek was complete and issues a new command to the unit to read or write X sectors of data starting at sector number Y on surface Z. Since the controller will have to cooperate in the read or write by transferring the data between the unit and memory, it remains connected to the unit until the read or write is complete. The time can be divided into two parts: rotational delay and transfer time.

Rotational delay is the time it takes for sector Y to come around to the disk head position. During this time no data is transferred. How long this takes is a function of the disk unit rotation speed. On the average it will take half a rotation.

Transfer time is the time it takes for the sectors containing the data to pass under the disk head and have the data transferred to/from main memory. This is simply a func-

tion of the number of sectors being read or written, the total number of cylinders on the surface, and the disk rotational speed.

:REAL_TIMING

Using a millisecond stopwatch and the specs for a 147 MB disk, let's take a look at some actual timings for a 147 MB disk with an average seek of 30 ms, a rotational latency of 8.3 ms, and 35 sectors per track. You can look up the numbers for your disk in the hardware manuals that came with your system.

0.000—Controller commands the unit to start the seek.

0.001—Unit acknowledges the command.

0.031—Unit advises seek is complete, controller commands the unit to read four sectors on surface 2 starting at sector no. 12, rotational delay starts.

0.040—End of rotational delay, data transfer starts.

0.042—End of data transfer.

The controller was occupied from 0.000 to 0.001 and from 0.031 to 0.042, or a total of 12 ms out of the 42 ms required for the entire access—about 29 percent of the time.

:SPECSMANSHIP

As you can see from the discussion above, the speed of an average disk access is primarily a function of the average seek time and rotational speed. I always get a kick out of users who judge disks by their transfer rate. The transfer rate is a function of two things: rotational speed and sectors/track. The faster the disk spins or the more sectors you cram on a track, the higher the rate that the data bytes are transferred. In the example above, doubling the transfer rate would have resulted in a transfer time of 1 ms instead of 2 ms, or an average access time of 41 ms instead of 42 ms.

Transfer rates are only significant in special cases where seek time is nil, like sequential processing of a single file. For the normal on-line, multi-user situation where each new request is at a random place on the unit, the effect of transfer rate is negligible when compared to the effect of other things like the average seek.

:ENTENDEZ_EN_QUEUE

In addition to the time it takes to do a disk access, we also have to take into account the time we spent waiting in line for access to the controller and/or the unit. Luckily for us, some French mathematicians spent a lot of time studying random events a few hundred years back. Besides raising hell at the casinos, they also managed to determine the behavior of systems that involved queuing up to get access to shared services.

The way they defined the problem was to specify that the "server" took a random time to perform the service, but that it had a mean service time of m seconds per customer. Customers demanding service were assumed to arrive randomly, typically with a Poisson distribution. After a customer is served, he or she is assumed to "leave the system" (i.e., not come back). This pretty much describes the disk situation on a system with several interactive users accessing files on the same disk unit.

The solution to a bunch of messy equations

gives the result that the average number of people waiting in line, N , is described by

$$N = p / (100 - p)$$

where p is the percentage of customers who arrive to find someone else already being served.

The total time required to get served is the sum of the time spent waiting in line plus the time spent getting served. The time spent waiting in line is the time it takes for the people waiting in line ahead of you to get served, or N times m . The time for you to get served is m , so the total time is $N + 1$ times m .

In any situation involving randomness, we also have to worry about the best and worst case situation. Clearly the best case is if nobody is in line when we arrive. A good indication of the worst case is found by determining the standard deviation of N . It turns out that the standard deviation is described by

$$\text{Std Dev} = p / (1 - p)^2$$

Enough equations already—let's take a look at real numbers as shown in Figure 1.

Figure 1: The worst case

p	N	Std Dev
0 %	0	0
10 %	0.11	0.12
20 %	0.25	0.31
30 %	0.43	0.61
40 %	0.67	1.1
50 %	1.0	2.0
60 %	1.5	3.8
70 %	2.0	7.8
80 %	4.0	20.
90 %	9.0	90.
99 %	99.	9900.

AOS{VS} measures both p and N for us on a continual basis. AOS/VS users can use DISCO to see them. AOS users have to depend on third-party monitoring utilities like SYSMON and MONICLE, or they have to write their own DISCO using the ?DVSTT system call.

Note that AOS/VS DISCO erroneously calls p "percent of busy." It is actually the percentage of requests that had to wait for service (i.e., just what we need). I prefer the

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term "Unit Wait." DISCO shows N as "Avg queue."

:BAD_NEWS

From queuing theory two things are

apparent: you can't use a shared resource at anywhere close to its full capability without spending most of your time waiting in line, and if you care about how consistent your access to the resource is, then you have to

lower your expectations even more.

So, what's a good number for average Unit Wait? The answer is somewhat subjective, but I prefer about 30 percent. At 30 percent, the average number of people in line ahead of my request varies between 0 and about 1 with an average of about 0.4. In plain language that means that average request will take about 40 percent longer than if I were the only process accessing the unit, and the worst case will be about twice as long.

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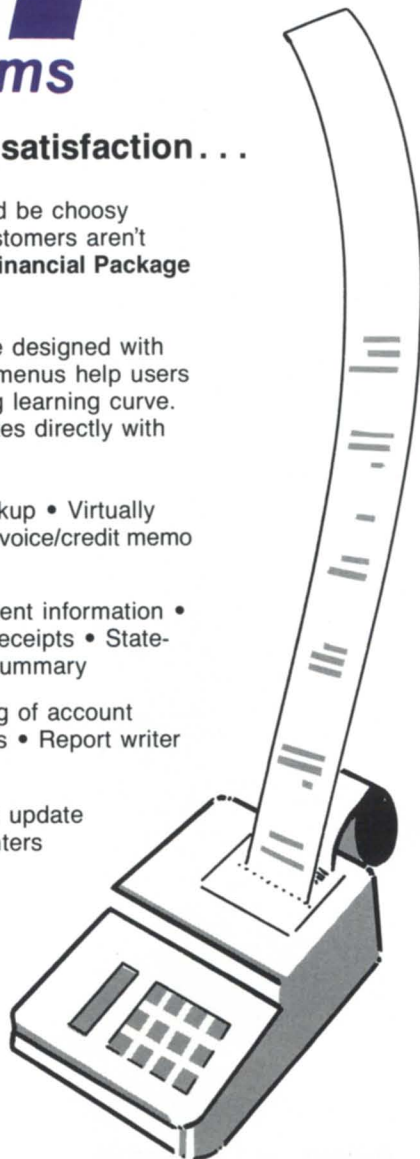
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One thing still bothers me, however. I suspect that keeping the average queue length lower on a system disk unit is probably more important than keeping it low on a user disk unit. When the system has to wait for its disk I/O, everybody suffers. When a user has to wait for I/O, then only that user and the other users on the same unit suffer. Taking this into account, my preferred targets are more like 25 percent Unit Wait for system disks and 35 percent for user disks. Lower is linearly better, higher is exponentially worse.

:SORRY

This topic turned out to be much more involved than I had anticipated. Please stay tuned for next month's column for the conclusion. Δ

Copyright © 1986 by B.J. Inc. All rights reserved. B.J. is the president of B.J. Inc., a San Francisco-based consultancy specializing in system auditing, system management, and performance analysis. He is also a contributing editor to Focus Magazine. He can be reached at 109 Minna St., Suite 215, San Francisco, CA 94105; 415/550-1444, Telex 296544.

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IT'S UP TO YOU

Some responsibilities belong entirely to the CEO user

Most of my articles have been geared toward CEO managers, but I'd like to address my topic this month to *all* users (yes, that even includes presidents!). There are certain responsibilities all users must assume when given an account. These things are controlled by the account owner, not by any other staff member.

Check your electronic mail inbox daily.

The electronic mail facility is one of the greatest tools of CEO. However, in order for it to be effective, users must check their messages regularly and keep them up-to-date. It's also important to periodically weed out old messages. When accessing the inbox, you'll notice a significantly better response time when there are fewer messages in the inbox.

In rev 2.2+ of CEO, Data General has increased the size of the inbox to 2,048 messages. I think this fixes something that wasn't broken, and will even create new problems because the new maximum is unmanageable. Even when the limit was only 100, I had users who abused the inbox and *never* filed or deleted messages. What will happen with storage space on the system with the limit at over 2,000?

Change your password often. Even with the best security, passwords seem to slip out eventually. It's best to change your password frequently, to minimize the chances of familiarity breeding a security breach. When changing your password, don't make it easy to figure out. For example, names of husbands, boyfriends, wives, girlfriends, or children can be easily identified. Choose a password that means something *only to you*. Be sure no one is standing over your shoulder when you change it! If you're not sure how to change it, ask your CEO manager.

Print your daily calendar. If you keep your entire calendar on the system, it's a good idea to print a copy of the calendar a day in advance. What happens to your schedule if the system is down? You won't know where you're supposed to be or what time you're supposed to be there!

Print a weekly inventory (with pathnames). The inventory is a big help if you need to restore a document that has been deleted. It also allows you to review your entire cabinet and spot documents, folders, and drawers that can be deleted.

Delete unnecessary documents. All of us have files that aren't needed any more—clean them out! I've often created test or temporary documents when experimenting with a new feature or trying to solve a problem. If I didn't clean them out just as often, they'd be taking up a lot of valuable space on the disk—and slowing down many of my routine activities.

Keep your equipment clean. You need to dust and clean your terminal equipment frequently. If this service isn't available, do it yourself. Keep coffee or soft drinks away from your keyboard. Once these liquids spill and seep down into the cracks, your keyboard will probably not function well—keys will stick and repeat on your screen. And of course *never* put any liquid where it could spill into the terminal itself.

Practice preventive maintenance. Printers and terminals need to be kept healthy. If periodic checks are made of this equipment, you could eliminate breakdowns. Check with your CEO manager or user manuals for information about preventive maintenance.

Check the CEO Public cabinet for new information. If your Public cabinet is used for company announcements, training schedules, job postings, etc., users need to check it frequently to keep informed.

Attend CEO courses to keep current on new features and changes. Most installations have an in-house training schedule that will keep users up-to-date on enhancements to the

system. It is your responsibility to attend these courses. A trainer can only offer the course, but you must take the responsibility to attend.

Log off the system before leaving. When temporarily away from your office, be sure to log off your account. This is important for security reasons. If you leave your terminal logged on, anyone could walk up and work in your account. When going home for the day, log off. Backups are usually done overnight—unless you're logged off, your files may not be backed up properly.

Turn off all equipment when leaving. When leaving your work area for an extended period of time (i.e., going home for the day), be sure to turn off your terminal or workstation. Surges in power can sometimes damage equipment. If leaving for only a short time, turn down the brightness on your terminal so you don't burn a pattern into the screen.

Back up important files. With the archive facility, documents can be stored for a reasonable time period. This not only serves as a backup for important files, but also helps clean out your daily files. If using a personal computer, it is the user's responsibility to make backups of any files that may be on floppy or hard drives.

Report any problems with your account or CEO functions to the help desk. If you encounter a bug or something unusual with the system, be sure to report these to your CEO manager. The CEO manager has access to several other help resources and may be able to resolve any problems you may have. Since problems aren't normal, they shouldn't be ignored—they can usually be fixed, but only if you report them.

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

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Good afternoon, John. How was your weekend? . . . How are you this morning, Dave? Don't forget your weekly project review meeting this afternoon. . . . Oh no, not you again, Sam. Give me a break! . . .

OK, before I start, let's see how many of you were paying attention to the example in my November column on switches. If you noticed that the sample error message didn't match the /OBLOC switch on page 52, then you win a copy of the GET__SWITCHES subroutine. The correct switch name for the example should have been /ODEN (it requires a character argument). Now I promise I'll stop talking about switches.

Since I've been so serious in the last three articles on switches, I thought we'd have some fun this month and talk about ways to give your system some personality. Would you like your CLI to carry on a dialogue (monologue?) similar to the examples above? Are you tired of being addressed as [!USERNAME] by your macros? Wouldn't it be nice if your computer had some respect and called you "Sir"? Or maybe even just "Joe." Please bear with me on this—even if you aren't the frivolous type, you might still find these "personality" tools useful.

The "time" of day is simple; just [!EXPLODE] the [!TIME]:
comment—pseudo-macro \$DAYTIME.CLI
[!ULT,%1%%2%,12]morning[!ELSE]
[!ULT,%1%%2%,18]afternoon[!ELSE]evening[!END][!END]&

The argument to \$DAYTIME.CLI must be [!EXPLODE,[!TIME]]. For example, you can use it in your LOGON.CLI macro to adjust the characteristics for the hardcopy terminal (yuk!) that you use in the evening when you log on from home:

```
[!equal,[!$DAYTIME,[!explode,[!time]],evening]
CHAR/HARDCOPY
[!end]
```

You can also put friendly messages in your LOGON.CLI macro: write Good [\$DAYTIME,[!exp,[!time]]] how's it going, eh?

The day of the week takes a little more thought. In the July issue of *Focus*, Tim Boyer presented some "day-of-week" COBOL applications. In the October issue, Jim Siegman talked about Zeller's Congruence algorithm and presented some CLI macros written by Lynn Lively. However, the ?FDAY system call returns all of the informa-

tion required to determine the day of the week; it's easily coded and doesn't require any fancy algorithms.

By the way, I have nothing but respect for Mr. Lively; anyone who has the perseverance to write such complex CLI macros to do arithmetic is truly a force to be reckoned with. I have a different philosophy, however: the CLI was designed as an interface to the operating system and the primary commands are COPY, RENAME, TYPE, QPRINT, XEQ, etc. If you want anything else, then write a program—it's faster and easier to write a program to do something complex rather than work with the limitations of the CLI arithmetic pseudo-macros, especially when the resulting complex macro takes several minutes to run. A good example is the day-of-week feature.

Here's how I implemented a pseudo-macro for the day of the week: my UP macro executes program SET__DATE to create the initial pseudo-macro file \$DAY.CLI containing the name of the current day. The UP macro then QSUBMITs macro CHANGE__NAME__OF__DAY.CLI for execution at midnight on that day. When that macro executes, it increments the day name (mod 7) and re-submits itself for the next midnight; it's self-perpetuating. I leave it as an exercise for the reader (I've always wanted to say that) to come up with a similar macro (CHANGE__NAME__OF__MONTH.CLI) to change the \$MONTH.CLI pseudo-macro.

My UP macro looks like Figure 1.

Figure 1: The UP macro

```
PUSH; PROMPT POP; SUPERUSER ON

PROC/DEF/BLOCK/IOC/STRING/DIR=:MACROS SET_DATE
ACL :MACROS:$(DAY MONTH).CLI +,RE

comment - [!string] now contains 'dd-mmm-yy'
WRITE Next backup reminder at 15:00 on [!STRING]

QSUBMIT/QOUT=@NULL/AFTER=[!STRING]:15 BACKUP_REMINDER.CLI
POP
```

If you've followed the trend of many installations, you keep your "utilities" separate from the Data General utilities in a directory called "MACROS" or something similar. SET__DATE is PROCed up with /DIR=:MACROS so it will create the files in that directory.

The BACKUP__REMINDER.CLI macro springs into action every Friday afternoon at 3 o'clock and blasts a message across all consoles reminding users that it might be a good time to do a backup before the weekend. It then re-QSUBMITs itself for the following Friday (/AFTER=+168). Each time the system is brought up, the SET__DATE program gets the date for the next Friday and QSUBMITs the initial BACKUP__REMINDER.CLI macro. The date for the QSUBMIT command is returned by program SET__DATE in [!STRING] (don't POP until you QSUBMIT!). From then on, it's self-perpetuating.

This type of user backup system may seem strange, but it works quite nicely for our small installation. We run an "open shop" that



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AOS{VS} TRICKS

allows all users access to the tape drives (i.e., no Operator). This means that I can pass the responsibility of backing up user files on to each user. Each person has their own backup tape and uses a BACKUP.CLI macro that dumps only their own files on the tape. Each user can choose the time and frequency of their backup and they only have themselves to blame if they forget and we crash. In addition, I (as system manager) do system and UDD:# backups as often as I can. I don't advertise the UDD backup because sooner or later someone would get lazy and rely on me to back up their files.

Figure 2 lists the SET_DATE program, which uses ?FDAY to get the day of the week and create the initial pseudo-macro \$DAY.CLI.

Figure 2: SET_DATE and CHANGE_NAME_OF_DAY

```

program SET_DATE
include      "qsym.f77.in"

character*9  tb_day(7), tb_month(12)
integer      tb_dpm(12)
data tb_month/ "January", "February", "March", "April",
#             "May", "June", "July", "August", "September",
#             "October", "November", "December" /
data tb_day/  "Monday", "Tuesday", "Wednesday", "Thursday",
#             "Friday", "Saturday", "Sunday" /

data tb_dpm/  31,28,31,30,31,30,31,31,30,31,30,31/

integer      year, month, day, day_of_week
integer      isys, ac0, ac1, ac2, ier
integer      br_day, br_month, br_year, n_day
character*9  br_date      Tdd-mmm-yy

c>>>begin
c-->get current date (y,m,d)
ier=isys(?fday,day,month,year)
call errcode(ier)
if(mod(year,4).eq.0) tb_dpm(2)=29      !feb, leap year

c-->get number of day of week (1=monday, 7=sunday)
ac0=day
ac1=month
ac2=year
ier=isys(?fday,ac0,ac1,ac2)
if(ier.ne.0) call errcode(ier)
day_of_week=mod(ac0,7)
if(day_of_week.eq.0) day_of_week=7      !make sunday 7

c-->create pseudo-macro for current day
open(1,file="$DAY.CLI",status="fresh",recfm="dynamic",
#   access="sequential",form="unformatted")
write(1) tb_day(day_of_week)      !no 'newline'
close(1)

c-->create pseudo-macro for current month
open(1,file="$MONTH.CLI",status="fresh",recfm="dynamic",
#   access="sequential",form="unformatted")
write(1) tb_month(month)      !no 'newline'
close(1)

c-->get date of nearest friday (day=5)
n_day=5-day_of_week      !# days until friday
if(n_day.le.0) n_day=n_day+7      !next week

c...date for backup reminder
br_year= year
br_month=month
br_day= day + n_day

c...adjust date?
if(br_day.gt.tb_dpm(br_month)) then
  r_day=br_day-tb_dpm(br_month)
  br_month=br_month+1      !next month
  if(br_month.gt.12) then
    br_month=1
    br_year=br_year+1      !next year
  end if
end if

```



```

c...return date of next backup reminder as string for XEQ/S
write(br_date,fmt="(12.2,'-',a,'-',12.2)")
# br_day,tb_month(br_month)(1:3),br_year

ac0=0                               !no error code
ac1=byteaddr(br_date)
ac2=7rfcf + len(br_date)           !length of string
fer=1sys(?return,ac0,ac1,ac2)      !terminate program,
                                   ! not STOP!

end

-----
comment - macro CHANGE_NAME_OF_DAY.CLI

push; prompt pop; superuser on
comment - find it and go there
directory [!directory,[!pathname,$day.cli]]
string [= $DAY.CLI]
permanence = $DAY.CLI off
delete = $DAY.CLI

write/!=$DAY.CLI &
[!equal,[!string],Monday]Tuesday[!else]&
[!equal,[!string],Tuesday]Wednesday[!else]&
[!equal,[!string],Wednesday]Thursday[!else]&
[!equal,[!string],Thursday]Friday[!else]&
[!equal,[!string],Friday]Saturday[!else]&
[!equal,[!string],Saturday]Sunday[!else]&
[!equal,[!string],Sunday]Monday[!end]&
[!end][!end][!end][!end][!end][!end][!asciif,46]

ac1 = $DAY.CLI +,re

directory [!directory/p]
comment - wait for date to click over before resubmit
pause 30
qsubmit/qpr=0/qout=@null/after=[!date]:23:59:55 &
CHANGE_NAME_OF_DAY.CLI
pop
    
```

Once you have a pseudo-macro \$DAY.CLI, you can create a DAY.CLI command that contains "WRITE Today is [\$DAY] all day."

This system has been in use for several years now on our (old) AOS and (new) AOS/VS systems, and it works flawlessly. I now consider \$DAY.CLI to be as intrinsic to the CLI as [!DATE] and [!TIME].

Is \$DAY.CLI useful? Sure! If you key some of your activities or procedures to certain days of the week, then you can write macros with conditional paths, depending on the current state of \$DAY.CLI:

If you have a meeting every Friday morning, then you can set up your LOGON macro to remind you about it when you log on:

```

[!equal,[ $DAY],friday]
[!equal,[ $DAYTIME,[!explode,[!time]]],morning]
write Don't forget your meeting this morning!
[!end]
[!end]
    
```

Perhaps you have a different program to be run on each day of the week. You can create links to these programs:

```

create/link program__de__jour.monday inventory.pr
create/link program__de__jour.tuesday payroll.pr
    
```

and then it's only necessary to say:

```

xeq program__de__jour.[ $DAY]
    
```

or put it in a macro to shield users from [\$DAY].

Instead of using [!USERNAME] in your WRITE statements, you can use [\$FIRSTNAME] instead:

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AOS{/VS} TRICKS

```
comment—pseudo-macro $FIRSTNAME.CLI
[!equal,[!path,first__name.[!username]],][!username]&
[!else][first__name.[!username]][!end]&
```

This requires that you create a file called FIRST__NAME.[!USER] for each user (i.e., FIRST__NAME.GRANT, FIRST__NAME.SMITH, etc.) that contains their given name (i.e., "John" or "turkey"). Put an "&" at the end of the line or use SPEED and suppress the "newline". You don't have to create one of these files for every user; if \$FIRSTNAME.CLI can't find the file, it simply returns [!USERNAME].

You can combine all of these pseudo-macros to make tables of messages, which are keyed to a random number or the day of the week and which are invoked by a generic macro. Here's one version of HELLO.CLI:

```
comment—macro HELLO.CLI
hello__table [$DAY]
```

where HELLO__TABLE.CLI contains the program listed in Fig. 3. If you prefer random messages, then make HELLO.CLI invoke HELLO__TABLE with a random number instead of the day of the week:

```
hello__table [!umod,[$SECONDS,[!expl,[!time]]],10]
```

where \$SECONDS converts the current [!TIME] to seconds:

```
comment—pseudo-macro $SECONDS.CLI
[!uadd,[!umul,%1%%2%,3600],
[!uadd,[!umul,%4%%5%,60],%7%%8]]
```

HELLO__TABLE.CLI now looks like Figure 4. The argument to HELLO__TABLE in this example will be [0,9] because I've used 10 in the [!UMOD] operator.

You may have noticed that any attempt to replace a CLI command with a similar macro (i.e., QPRINT.CLI or BYE.CLI) doesn't work (unless you invoke it with [QPRINT] or [BYE]). That's because key-

Figure 3: HELLO__TABLE.CLI

```
[!equal,%1%,monday]
write Hi [%FIRST_NAME] how was your weekend?
[!else]
[!equal,%1%,Tuesday]
write Submissions for Wednesday's bull session are
due today!
[!else]
[!end]
[!end]
```

Figure 4: Random HELLO__TABLE.CLI

```
[!equal,%1%,0]
write Hi [%FIRST_NAME] how are you today?
[!else]
[!equal,%1%,1]
write Oh no not you again!
[!else]
[!end]
[!end]
```




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If you have a meeting every Friday morning, then you can set up your LOGON macro to remind you about it when you log on

board input is first compared to an internal table of commands in the CLI program, and if it doesn't match anything then the CLI starts looking for macros. However, if you EDIT your CLI.PR program with FED (DEDIT), you can change the command name to something else (G, J, K, N, Y, Z are unused or you can even use "~") and write a macro to replace the command you have "erased."

This nifty little trick may get you in more trouble than you can imagine if you don't do it right (don't forget that SED, VSGEN, and other Data General products use the CLI program and they assume BYE will work correctly!). If you create problems for yourself, don't expect Data General support (or me) to bail you out. Now get this straight—don't touch the CLI.PR program supplied with AOS{/VS}—make a COPY of CLI.PR and CLI.OL (call it MYCLI.PR and MYCLI.OL)! You can then use PREDITOR to set up MYCLI.PR as the initial program instead of CLI.PR.

I changed BYE to BZE in the command table and then created a BYE.CLI macro (and a link entry BY.CLI) which eventually executes the new command "BZE":

```
comment—macro BYE.CLI
GOODBYE.CLI
BZE%0% %1-%
```

GOODBYE.CLI is a generic macro like HELLO.CLI above, which emits a random "bye" message. Note that it is very important to use %0/% and %1-% on the BZE command so that *everything* will be passed to the CLI command from the BYE.CLI macro. I've used PREDITOR to set everyone's profile (except OP's) to execute this "private" version of the CLI program. Of course, spoilsports can always just log off with ^D^D or ^C^B.

By the way, there's an entirely undocumented CLI command; those of you who have played ADVENTURE should have no trouble in discovering it.

In closing, "Goodbye [\$FIRSTNAME] . . . I've enjoyed modulating with you on this fine [\$DAY] [\$DAYTIME]". Δ

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TIME TO REORGANIZE

REORG is too useful a utility to confine to ICOBOL

REORG is the utility that most ICOBOL users use for fixing their ISAM files. If you're not using it regularly, you should. Running REORG on an ISAM file will physically delete all of those logically deleted records, rearrange the .NX into the proper order, and speed up your access time—especially if you're doing a lot of READ NEXTs.

However, like most ICOBOL utilities—DO, COPY, CRTEDIT, and so on—REORG is too universally useful to be confined to

ICOBOL. Sure, it was designed to clean up the ISAM structure, but whoever wrote it put in a lot of goodies that anyone can use. Not only can REORG handle ISAM, but it can also convert to and from sequential, line sequential, relative, and IBM labeled and non-labeled tapes.

One of my main justifications for getting a tape drive was that the Rubber Manufacturer's Association reports we were doing by hand each month could be run off onto tape automatically, saving hours and hours of work. The association requires an unlabeled, EBCDIC tape blocked 80. No problem—I just accumulated tire shipments in a file, and at the end of the month typed in

REORG/A RMASTATFIL/I MT0/T/U/E
80/O 20/B 1:1/M

and the required tape was produced.

Everyone was grateful, including the RMA—it turned out that we were the only company still turning in reports on paper! As an aside—and perhaps a bit of insight into the bureaucratic mind—REORG wasn't really necessary. The RMA was using Hewlett-Packard computers, which means that they had to take our EBCDIC tapes and run them through a program to turn them back into ASCII. But I couldn't just send them an ASCII tape—that would be against the rules!

A few years back, one of our biggest priorities was to put our price list out by computer. At first, it looked like a simple task—after all, the information was in the file, and it was just a matter of getting it printed

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Figure 1: Sequential file layout

```

01 SEQUENTIAL-RECORD.
   03 SEQUENTIAL-TIRE-DESCRIPTION PIC X(28).
   03 FILLER PIC X(5).
   03 SEQUENTIAL-TIRE-NUMBER PIC X(12).
   03 FILLER PIC X(5).
   03 SEQUENTIAL-TIRE-PRICE PIC ZZ9.99.
   03 FILLER PIC X(6).
   03 SEQUENTIAL-EXCISE-TAX PIC ZZ9.99.
   03 FILLER PIC X(5).
   03 SEQUENTIAL-TIRE-WEIGHT PIC ZZ9.
   03 FILLER PIC X(4).
    
```

Figure 2: Customer file

```

01 CUSTOMER-RECORD.
   03 CUSTOMER-KEY.
       05 CUSTOMER-NUMBER PIC X(6).
   03 CUSTOMER-ALTERNATE-KEY-1.
       05 CUSTOMER-NAME PIC X(30).
   03 CUSTOMER-ADDRESS.
       05 CUSTOMER-STREET-1 PIC X(30).
       05 CUSTOMER-STREET-2 PIC X(30).
       05 CUSTOMER-CITY PIC X(15).
       05 CUSTOMER-STATE PIC X(2).
       05 CUSTOMER-ZIP-CODE PIC X(5).
    
```

out in the right format. However, there was a big problem—the people in sales wanted the information sorted by tire size before it was printed out.

That seems like it ought to be simple—just make the size an alternate key. Unfortunately, things don't work that way in the tire industry.

Let me give you a quick lesson on tire nomenclature. Every few years the industry decides to completely revamp their tire size designations. If the tire you have on your car is a P165R-13, 10 years ago it would have

been called an A78-13, and 10 years before that a 600-15.

Unfortunately, as a specialty tire maker, we're still producing all three. So what is the computer going to sort on? Truck tire sizes are even worse. A 36 x 14.50-15 is smaller than a 15/36-15, but bigger than an R78-15. Obviously, the ASCII collating sequence won't work.

I thought about using a word processor, but then any changes would have to be updated twice—once in the item file, and once on the price sheet. And we make a *lot* of

different sizes. Finally, I hit on a winning combination—word processing and REORG.

I set the price sheet up on the word processor in exactly the order that sales wanted it. Then, when we want to print price lists, I REORG the file into a sequential file, like so:

REORG/A PRICES.LS/L PRICELIST/S 80/O

This yields a sequential file with records that look like Figure 1.

I can now read each line of the price sheet, move the item number to my ISAM key, and read my ISAM inventory file. From the item

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file, I get the current pricing and weight information, move it to the sequential file, and rewrite the sequential file. At the end of the file, I have a sequential file with all of the updated information in it. Then, to get it back to a printable file:

```
REORG/A PRICELIST/S PRICES.LS/L 80/I
```

Then all I have to do is PRINT PRICES.LS.

Using this method, the only time I have to look at the price list is when we add a new size—maybe once a week. I never have to worry about the price list not agreeing with the item file, and the sales department can have the price list in any strange order their hearts might desire.

We also use REORG to get information from the Eclipse over to our micros. Occasionally, sales wants to see graphs of our sales for, let's say, the last five years. I keep each month's sales in a file called OEMONTHFIL. To get the information over to the PC, we bring up some appropriate terminal program on the IBM, hook it up to line 6, and enter:

```
REORG/A OEMONTHFIL/I QTY:6/L
```

When the file has been transferred, we bring up Lotus, import the information, and print out all kinds of nice-looking graphs.

The main use of REORG around here, however, is spur of the moment reports—you know, the kind that are clogging half your disk with names like TEMP7.CO and QUICK5.CO. You don't want to get rid of them because someone may want the same report again in a couple of years—but by then you'll have forgotten what you called it, and you'll have to write it again anyway. Well, don't bother writing a report program—use REORG.

For instance, someone wants a report of customers sorted by zip code. The normal approach would be to write an ICOBOL program that reads the customer file, writes the records into a temporary file, reads the temporary file, and prints it. The same thing can be accomplished with two REORG command lines.

Figure 2 shows an example of the beginning of our customer file. The first command line would tell REORG to write a new file using the zip code as an alternate key.

```
REORG/A CUSTFILE/I CUSTOUT/I 1:6/K  
114:5/A
```

Once that's been done, you can write an ICOBOL program to read the file and print it out in your desired format—or, you can use another REORG command line:

```
REORG/A CUSTOUT/I $LPT/L 1/S
```

This will give you a printout using the first alternate key of the file. Of course, if you had more than one alternate key, or wanted the file using other criteria, you could specify up to four alternate keys on the first REORG line, and then print the reports by specifying another alternate key each time (2/S, 3/S, etc.).

While this will give you a report that will be undeniably correct, it won't be very pretty. Each line will be a single group of characters consisting of all of the information in the record in exactly the same order as the original record. To make the report readable, you have to use some of the other features of REORG.

The local /F switch will reorganize the

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fields any way you like. We wanted our zip code report to show the customer number, zip code, and name—in that order. So, our modified REORG line looks like this:

```
REORG/A CUSTOUT/I $LPT/L 1/S 1:6/F
114:5/F 7:30/F
```

This tells REORG to print the file, using the alternate key—but print the field starting at position 1 in the file and running for 6 characters first, position 114 for 5 characters second, and position 7 for 30 characters third.

Okay, the file is sorted in the order that we want it, the fields are printing in the order that we want—but we're still printing one solid block of 41 characters. Still not readable. So, our next step is to use the local /P switch to insert some editing characters.

The format for insertion is "<character>:<number of insertions>"/P. So, to insert four periods after the previous field, I put in ".:4"/P. Our completed command line would look like this:

```
REORG/A CUSTOUT/I $LPT/L 1/S 1:6/F
":.4"/P 114:5/F ".:6"/P 7:30/F
```

which gives a printout looking something like this:

```
12345 . . . . 44443 ABC
TIRE CO., INC.
12376 . . . . .44444 MNO
TIRE SALES
98765 . . . . .44445 XYZ
SALES CO.
```

To get a little fancier, send the REORG output to a file instead of the printer, e.g.,

```
REORG/A CUSTOUT/I CUSTPRINT/L . . .
```

Then, using an editor, put titles and headers in every 66 lines or so. Of course, if you want to get a lot fancier, omit the second REORG line and write an ICOBOL program to print the file out formatted to your heart's desire. You'll still have saved the trouble of writing a program to get the records sorted in the correct sequence.

There are some things that REORG doesn't handle well. Computational fields cause problems when printing a file, because

REORG will see a value of 65 in a COMP field as an ASCII "A", and that is what will be printed. If you need to print a file that has COMP fields, the first step from above will work just fine. The second step will print garbage.

Also, the REORG documentation states that the /P switch will insert "any ASCII character except CR, NL, or form feed." There is at least one exception to the rule that will hang the system—try putting a quote in there!

Despite these minor irritations, REORG remains a very powerful tool. Use it for one-time reports, or get fancy with it—it will be worth your time to learn it well. **Δ**

Tim Boyer is EDP manager at Denman Rubber Manufacturing Company, president of the Northern Ohio Data General Users Association, and a contributing editor for Focus Magazine. 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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DISPLAY!

A slick trick for copying tapes with variable length records

Yesterday was a day of discovery for me. I had a couple of tapes to copy, and since last night was our monthly CADGUG meeting, I made arrangements with the host to use his system (he has two tape drives, so the copies go faster). Making backup copies of the first tape was no problem—I just used the copy command with buffer sizes and specified the densities I needed for several copies, some in 800 and some in 1600. In case you've never done this, the command I used was:

```
COPY/IMTR=32768/OMTR=32768/ODEN
```

```
= <density> @MTB<1 0>:(0 1 2)
```

substituting 800 or 1600 for <density> as needed.

However, the second tapes presented a problem, because the records within the tape file were not all the same length. Here's the wonderful discovery—a little known option of the DISPLAY utility can achieve this. To replicate a tape on unit @MTB0 to unit @MTB1, you can use the command:

```
X DISPLAY/NOLIST/ALL @MTB0  
@MTB1
```

The /NOLIST suppresses the reams of dump output, and /ALL tells it to scan all files on the tape. In the past, tapes with files that contained variable length records presented a major problem. Now the problem has become trivial if I can get to a system with more than one tape unit. (Note: I haven't

asked, but I assume this also works on DTOS tapes.)

Oops!

The Demon of CHAOS has struck again, this time by generating several errors in the DOW.CLI and related macro listings (Discoveries column, October 1986). Rick Heckman of McDonnell Douglas has sent his corrections to me:

- In DOW.INSTALL.CLI
Lines 4 and 5—Change “.DAT” to “.NUM.DAT”
Line 9—Move “SUN” to the end of the list
- In DOW.CLI
Line 8—The WR/L=YR.NUM.TM—Add [!String] as argument 1
Line 36—Reads “PLUS [!DA.NUM.TM]”—Remove the “!”

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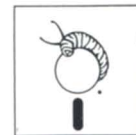
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- In MULT.CLI
Line 6—Change “udiv” to “umul” (Egad! How’d we miss this!)
- In GET.STR.3.CLI
Line 20—Change “%0/L%” to “%0/L=%”

Thanks to Rick for those corrections. In the future I’ll be more careful.

Now that we have the CLI version straight, there is an assembler version of this written by Steve Elliot of Sealy, Inc. (the mattress people) that he’ll make available to anyone who would like it. It includes two macros and assembler code. One macro is called by your UP macro to proc this as a son of pid 2. The other macro is used by the down macro to terminate the process.

The program will get the system date and write the day of the week to a text file, very much like DOW.CLI does. It then does a ?TASK and specifies a start time of two seconds after midnight. The only modifications needed for a different site would be the pathname of the file for the day of week text.

If you’re interested in obtaining this program, contact Steve at 312/930-7461. He’ll be glad to dump it to your tape with a nominal charge to cover return postage.

The next question is from Bob Patrick of Stop ‘N’ Go Foods: “Does a printed primer exist for a new MIS director who has a limited data processing background?”

The closest thing I know of is the section of the “How to Generate and Run Your AOS/VS System” manual that discusses the different aspects of system management. There’s a chapter devoted to security issues and another to other topics. You also might check the computer science shelves at a college bookstore to see if there are any data processing management books. Do any of you users out there have a favorite book on the subject to recommend?

The last card this month is from Jerry Rappard. “Since I joined NADGUG I haven’t read any reports or articles on DG/SNA, DG/SDLC, or DG/RJE. I have one MV/

20000, one MV/10000, and three MV/2000-DCs. Most of our work is CEO, except on the MV/10000 we run the above products. We print 30,000,000+ RJE lines. Lots of 3278 work also. How come no articles? Am I the only one using this software? It seems like it.”

No, you’re not the only person using this software, but there are relatively few people who do. The Focus editorial advisory board included these topics in the “we gotta cover it” category, but as of yet, it’s been difficult to find someone to write about it. The editors are working on one article and hope to have it for the February or March issue. If anyone can help us track down users with information to share, let us know. Δ

Jim Siegman is a contributing editor to Focus, chairman of the NADGUG publications committee, and treasurer of the Chicago Area Data General Users Group. Send comments or questions to him c/o of Focus Magazine, 5332 Thunder Creek Road, Suite 105, Austin, TX 78759-4022.

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REVIEW:

DBR simplifies dump and load operations

by Rick Heckman
Special to Focus

For the past year, I've been using DBR, a disk backup and recovery system from DMS Systems, Inc. (1111 Brickyard Road, Salt Lake City, UT 84106; 801/484-3333). It is 100 percent compatible with DUMP/LOAD and DUMP_II/LOAD_II formats. Using DBR, we've eliminated labeled tape dumps on all of our backups (which at last count were

151 per week). If additional reels are needed, the program will prompt for a new volume and keep track of which files are on which volume. We've also found it to be 30 to 50 percent faster than DUMP_II.

As part of its dump routine, DBR creates an index file that is a complete record of each file dumped, the tape volume on which the file resides, as well as the tape block and starting byte of the file. This capability makes the recovery of a single file much faster and simpler than the comparable procedures using DUMP_II (even using the /SPECIFIC switch, which isn't well documented).

Using DBR removes the disastrous consequences of a hard-tape error in the middle of a dump. As everyone knows, this problem forces you to restart DUMP or LOAD, even if the error occurred in the last reel. With the DBR program, this condition isn't fatal, but can be skipped over without any loss of data. This feature has saved us many hours of frustration.

Our site has had DBR for almost a year

now; we're very pleased with the results. In talking with the vice president of DMS Systems, I have discovered the company to be very open to any suggestions for enhancements. A new release that clears up a few minor problems in their first versions will probably be out by the time you read this. As I understand it, a manual rewrite is also being shipped with the new revision, which should make the product even easier to use. Δ

Rick Heckman is the system manager for several DG systems at the Cypress, California, offices of McDonnell Douglas Manufacturing Information Systems Company, Inc. He can be contacted at 714/952-5945.

Creative Synergy updates ICOBOL report writer

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Circle 10 on reader service card

tion announces the release of Creativity 2.0, an updated version of its ICOBOL report writer and information retrieval software package.

This revision of Creativity features an interface to WordPerfect Corporation's WordPerfect mail merge. Other functional enhancements include a batch processor that allows Creativity report programs, or any ICOBOL job, to be scheduled for deferred execution. According to the company, this enables the user to more effectively manage system resources. Date processing capabilities are available in this release as well.

Improvements have also been made to make use by nonprogrammers easier. Among them are expanded <HELP>, <LIST>, and <CHANGE> features. Auto data base navigation built into this revision, if utilized, allows the user to extract data from several ICOBOL files without knowing the file relationships or keys. Primary to secondary file navigation is said to be transparent to the user.

Creativity will operate on all DG systems

running ICOBOL, and is priced according to hardware size and operating system. It is offered on a 30-day evaluation plan to qualified prospects. Distributor inquiries are invited.

Creative Synergy Corp., 2839 Paces Ferry Road, Suite 320, Atlanta, GA 30339; 404/438-0033. Δ

Cartridge streamer stores 630 megabytes

Duarte, CA—MegaTape Corp. has begun deliveries of a 630 megabyte (formatted) capacity 1/2-inch cartridge streamer for use with Data General Eclipse and MV/ systems. The MT-750 tape drive is equipped with a 128 KB cache and advanced error correction; it operates using the backup utilities available with the standard operating system.

It uses one-cartridge-per-disk backup, 24-track serpentine format, and GCR encoding.

The bit density of data written on tape has been increased to 16,000 bpi, but the transfer rate has been held constant at 240 KB per second. The time required to back up 630 megabytes is usually less than one hour.

The MT-750 is available in either a full-wide version (a standard 19-inch rack mount unit requiring 8¾ inches of rack space) or a half-wide configuration (designed as a companion to a 9-inch Winchester, so that both mount in 10½ inches of rack space).

It is equipped for operation at either 60 or 120 ips using MDC-750 cartridges only. One alternative version provides for operation at 120 ips using MDC-750 cartridges and at 180 ips using MDC-500 cartridges. A second alternative version provides for operation at 60 ips using MDC-750 cartridges and at 90 ips using MDC-500 cartridges. Inserting a cartridge selects the appropriate speed-density pair.

The MT-750's standard interface is pin-compatible with 9-track, start-stop drives. Daisy-chaining of multiple MT-750 drives or

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a combination of MegaTape drives and standard 9-track drives on a single controller is permitted.

It is priced at \$12,000 in single unit quantities. Subsystems consisting of the MT-750 drive, 10 MDC-750 data cartridges, a tape coupler, cleaning kit, and FCC cables are priced at \$15,000.

MegaTape Corporation, 1041 Hamilton Road, P.O. Box 317, Duarte, CA 91010-0317; 818/357-9921. Δ

AOS/VS performance monitor gets enhancements

San Francisco—:SYSMGR is adding a file system analysis utility called :PERFFSA to its :PERFMGR performance monitoring package for DG systems running under AOS/VS. The new utility reports all open files with their use count, and identifies files and

directories that would work better with element or hash frame sizes other than the default values. According to :SYSMGR, use of :PERFFSA can reduce disk space requirements for a typical system by 10 percent, with no degradation of system performance.

:PERFMGR includes a logging function for capturing performance data, a utility to plot log file data, a screen-oriented utility for monitoring system resource usage in real-time, and a tutorial on AOS/VS performance analysis. Log files from :PERFMGR can be used as input to packages such as Present or Trendview for presentation purposes.

:PERFMGR runs on any AOS/VS from rev 3 to rev 7. According to :SYSMGR, it puts few demands on the system, requiring only a few memory pages and less than one percent of the CPU cycles. No potentially dangerous process privileges are required to use any of the utilities.

The initial license fee, which includes a year of support, is \$399 regardless of CPU type. Subsequent licenses cost \$199 each.

Existing :PERFMGR licensees are receiving the new utility as part of a normal SSS update.

:SYSMGR, a division of B.J. Inc., 109 Minna Street, suite 215, San Francisco, CA 94105; 415/550-1454; telex 296544. Δ

DS20 subsystem available for DG computers

Placentia, CA—Intelligent Computer Integration (ICI) Inc., has introduced a 40 MB MOS memory disk subsystem emulator for the complete line of Data General Nova, Eclipse, and MV/ series computers. This new unit is said to be 100 percent software transparent to all DG operating systems that support DG models 4234 and 6045 disk systems.

The Model DS20 subsystem consists of a single 15-inch square controller board and a 5-1/4 x 19-inch rack mount, or optional tower-mount, chassis. With an equivalent disk access time of 1.2 microseconds, the DS20

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is several thousand times faster than its electro-mechanical equivalent, according to ICI.

At about \$1,500 per megabyte, the DS20 can be utilized as a 40 MB high-speed swapper in applications that require quick access to a large data base. Applications include seismic data collection, DBMS, and fast access to records for hospitals, attorneys, merchandisers, stockbrokers, or others needing information quickly.

Intelligent Computer Integration, Inc., 1901 Petra Lane, Placentia, CA 92670; 714/579-7575. Δ

Zetaco introduces serial/parallel line printer controller

Minneapolis, MN—Zetaco, Inc., has announced a new controller that supports either a parallel or serial-interfaced line printer on Data General minicomputers.

The 15-inch square board, named LPC-3, is an upgraded version of Zetaco's DMA line

printer controller. Its new features include an RS-232 serial interface, which enables it to support a wide variety of printers and graphics plotters.

The parallel interface on the LPC-3 will support band, impact, dot matrix, drum, and laser printers from a variety of manufacturers.

Model LPC-3 also accommodates the printing of forms that require vertical and horizontal tab controls. The unit supports the Data Products vertical tabbing features (VFU), or provides on-board, DG-compatible VFU for use with Centronics, Printronix, and printers that don't have a VFU feature—all under standard DG operating systems. Horizontal format control capabilities are provided for up to 256 columns.

The LPC-3 can make special accommodations for particular situations. For instance, when carriage return and/or line feed codes are integral in the printer, the operating system, or the text editor in use, these codes may be masked by the LPC-3.

The LPC-3 is available 30 days ARO, at \$1,200 for single quantities. The controller

is plug-and-play compatible with Data General's Nova Eclipse or MV/ series processors, under unmodified RDOS, AOS, and AOS/VS operating systems.

Zetaco, Inc., 6850 Shady Oak Road, Eden Prairie, MN 55344; 612/941-9480 or Telex 290975. Δ

D200/210 emulator for PC/XT/ATs and clones

Sault Ste. Marie, ONT—Algoma University's new Dasher terminal emulator allows an IBM PC or clone to run on a DG system as a D210/211 terminal. Apart from a standard serial port, no additional hardware is required to run off a DG RS-232 port. The University is also offering a board that allows the PC to be connected to a 20 ma current loop system. The Algoma emulator is being used in-house, as well as in Sault Ste. Marie's city hall.

The university has incorporated several

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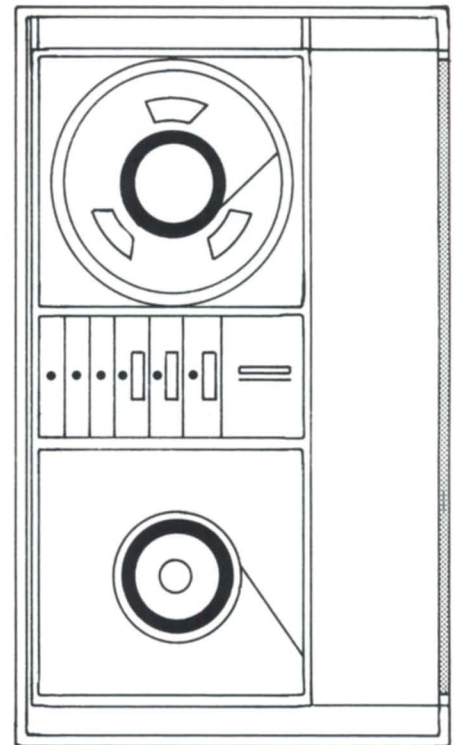
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features that make use of the capabilities of the PC. At the push of a key, the current screen can be saved to the PC's disk. With special software on the DG end, entire text files may be saved to disk or sent to the DG host. (The DG software is not part of the emulator, but is being offered for the cost of shipping to purchasers of the emulator.)

By combining the ALT key with a letter, single keystrokes can be used to generate entire commands in CLI, CEO, or any application. This feature is user programmable, and the user can redefine an ALT key while in the middle of an application. The use of the ALT key with a function key provides the use of all 20 of the function keys on DG terminals.

All D210 slave printer functions are supported: The Algoma emulator also allows printouts of the entire screen regardless of the cursor position.

The University is developing software on the DG end that will allow the transfer of any type of PC or DG file between the machines.

The transfer software uses an error-checking protocol suitable for both local and modem use. This software is expected to be ready soon, and will be offered for the price of shipping and handling to previous customers.

The University offers customer support. User's suggestions may be incorporated into future revisions of the software.

*Algoma University Computer Services,
1520 Queen St. E., Sault Ste. Marie, ONT
PGA 264; 705/949-2301.* Δ

SCIP announces memory add-in for DG CPUs

Beverly Hills, CA—SCIP is now shipping their MS140, an add-in memory board for DG's Nova 4, Nova 4X, and Eclipse S/140 minicomputers. The MS140 provides either 512 KB or 1 MB of 4-way interleaved memory on a single board. It is said to have complete hardware and software compatibility

with its DG counterparts.

The memory board is available with either of two ERCC options. One offers full support of the DG ERCC option board. The other offers a transparent on-board ERCC circuit, including a LED display indicating the location of suspect RAM chips.

SCIP's MS140 memory comes with a one-year warranty and a technical manual. The 512 KB model MS140-05 is priced at \$2,700; the 1 MB model MS140-10 is priced at \$3,600. Discounts are available for cash, OEM, and quantity purchases. Service organizations will receive an eleventh no-cost unit.

*System Controllers & Interface Products,
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90212; 213/282-8700.* Δ

Coastal introduces ALECS police management system

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tems (CCS) has released its Advanced Law Enforcement Computer System (ALECS), designed to manage information processed by police departments. Featured among ALECS' 20 different modules is its On-Line Booking and Arrest Processing program, which allows an officer to process an arrest in approximately 30 minutes, instead of the two to six hours it would take to do manually.

By integrating data collection with a built-in word processor and automatic spelling checker, ALECS completes and prints many of the forms required by the courts and public prosecutors. ALECS also features a report generator with file searching and investigative capabilities, an automated blotter, tour scheduling and daily roll call preparation, a master name index, and electronic mail.

ALECS is presently installed in the village of Lynbrook, New York, and is soon to be installed in the village of Rockville Centre. It runs on Data General and Digital Equipment Corporation computers.

Coastal Computer Systems, Inc., 62 West

Park Ave., Long Beach, NY 11561-3516; 516/432-7096. Δ

VS COBOL Workbench offers comprehensive compiler

Palo Alto, CA—Micro Focus has announced a new version of VS COBOL Workbench, a comprehensive COBOL environment for micro, mini, or mainframe computers. The VS COBOL Workbench version 1.3 is priced at \$4,000.

The new version contains the following enhancements: the ability to handle larger programs, records and data items; support for many features of Data General Interactive COBOL; support for RM/COBOL using the Micro Focus Upgrade III preprocessor; support for Microsoft COBOL and IBM COBOL for the IBM PC; enhanced screen

handling capabilities for PC applications; high performance at both compile time and runtime.

VS COBOL Workbench is an integrated development environment for COBOL programmers. It is compatible with IBM OS/VS COBOL and VS COBOL II, ANSI 74 COBOL (GSA High-Level Zero Errors), and many elements of the new ANSI 85 Standard COBOL. It contains Edit (a full screen editor for COBOL programmers), Animate (a visual debugging and maintenance facility), Forms (a screen painter), and other tools for creating and packaging COBOL programs.

Enhancements for mainframe compatibility include support for downloading signed numeric display data, detection of data exceptions with the Animate facility, simulation of mainframe behavior for subscript-out-of-range, and support of READY TRACE and RESET TRACE mainframe syntax.

Micro Focus Inc., 2465 East Bayshore Road, Suite 400, Palo Alto, CA 94303; 415/856-4161. Δ

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SIGNificant people

by Paul M. Duck
RIG/SIG Committee Chair

Any new organization needs dedicated people—those who will be leaders and “go the extra mile.” This month NADGUG would like to recognize Nancy Bettencourt, who works for Data General in the technical systems division of the petroleum and chemical marketing group in Englewood, Colorado.

Nancy played a crucial role in starting the Petro-Chemical SIG. After meeting Nancy at the August NADGUG Conference, I could easily see why this new special interest group was getting off to such a successful start. The assistance Nancy provided was invaluable, and the time and effort she put into this project deserves special attention. Please join the NADGUG staff and me in applauding Nancy Bettencourt.

If you are a RIG or SIG officer and would like to recognize someone special, I would enjoy hearing from you. Also, if you are interested in taking a leadership role in your local Data General community, or if you would like more information about regional or special interest groups, please contact me at 216/892-3070, or Barbara Hoogasian, the NADGUG coordinator, at 617/870-7830. Δ

Mid-Plains users tour Sarpy County installation

Papillion, NE—When county officials in Sarpy County, Nebraska, officially accepted their new MV/20000 system on November 20, it was a perfect opportunity for the Mid-Plains Users Group to share in the fun.

Reporters from local newspapers and television stations were on hand during the afternoon as DP Manager Al Devitt presented the new machine to county officials. The officials posed for pictures, then helped lead a tour that demonstrated how the MV/20000 is streamlining operations in virtually all aspects of county government.

Many of the county officials and employ-

ees stayed late to help with a special evening tour of the Sarpy County facility for the MPUG members. Devitt said he was pleased at how the users in the various county departments had taken responsibility for learning and managing their own applications. His staff concentrates on providing service, managing the system, and enhancing the applications as requested by the departmental users.

The new MV/20000 is an upgrade to a C/350 system that had been used mainly for administrative functions. County Treasurer Kathleen Ingram explained that the old system took as long as five minutes to register a motor vehicle, and that staff morale was getting low because of long lines of impatient citizens. The same operation now takes a few seconds.

District Court Clerk Charlene Marchan said the new system has made it possible for her department to process a rapidly growing case load with only small increases in staffing. She said even the county judges have terminals available in the courtrooms soon.

In addition to the administrative functions—written mainly in Business BASIC and Interactive COBOL by in-house programmers—Sarpy County is installing a criminal justice information system and related applications for the sheriff's department.

The MV/20000 has 8 MB of memory, 2.3 gigabytes of disk storage, a 1600/6250 bpi tape drive, and two system printers. More than 60 terminals and 16 printers are housed in departmental offices. Plans are under way for extending the system into the new county jail, and to establish satellite offices in other cities in Sarpy County. Δ

Conference 87 set for Las Vegas

With roughly 800 attendees, the annual conference in Orlando last August was NADGUG's most successful to date. NADGUG's new officers and committee chairs are already working to make next year's conference even better.

Conference 87 will take place October 19-22 at the Tropicana Hotel in Las Vegas. Look

for more information in the first Conference 87 mailing later this month.

■

The Tropicana in Las Vegas will also host the two-day Winter Executive Board Meeting on March 19-20. The Executive Board consists of NADGUG officers, standing committee chairpersons, and recognized RIG/SIG chairpersons. Δ

RIG/SIG members get “see for yourself” offer

Current members are aware of the benefits of belonging to NADGUG, but many users participate in regional and special interest groups without belonging to the North American organization. In an effort to get the news about NADGUG benefits to prospective members, RIG/SIG Committee Chair Paul Duck and NADGUG President Calvin Durden recently extended a “see for yourself” offer to RIGs and SIGs.

Recognized RIGs and SIGs can take advantage of this offer by sending a list of their members to the NADGUG coordinator, Barbara Hoogasian, in care of Data General Corporation, 4400 Computer Drive, Mail Stop C-228, Westboro, MA 01580. The NADGUG staff will check each name against the NADGUG member data base; if a person isn't already a member, he or she will receive a free six-month introductory membership. At the end of six months, they will have the option of renewing at normal rates, or terminating their trial membership.

Membership growth is one of the key goals for NADGUG this year. With more than 2,000 members, the group has been able to sponsor successful conferences, publish a respected independent monthly magazine, maintain a membership data base and publish a member directory, support RIGs and SIGs, and implement two on-line bulletin board systems. Strength in numbers will allow the group to provide better, more accurate feedback to Data General, more programs and services to members, and greater support for RIGs and SIGs. Δ

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MEMBER ANNOUNCEMENTS

Calling all FEDs: newly formed NADGUG Federal Special Interest Group (FEDSIG) open for membership, seeking U.S. Government and contractor employees who work with Data General computers. Organization's intent is to review new DG products applicable to federal marketplace, disseminate information about public domain software, and keep abreast of changing government procurement policies. Will be geared to real-time oriented contingent as well as business/office professionals. Annual dues of \$25 include monthly newsletter (the FEDRAG), membership directory, and coffee cup with FEDSIG logo. Send inquiries to FEDSIG membership, c/o Fred Rea, Interfacers, 4400 East-West Hwy., Suite 30, Bethesda, MD 20814.

MEMBER ADS

Member notices are a great way to reach the DG user community concerning new interest groups, seminars, problems, or any other non-commercial subject. Catch readers' attention while their feet are up!

These member-to-member notices are a free service to anyone who joins NADGUG.

If you or your organization would like to communicate with NADGUG members through Focus Magazine, contact Sharon Park, sales manager, at 512/345-5316.

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Some of the first MV/7800s delivered to user sites are not performing as well as hoped, several sources report. George Henne writes in his column this month (page 24) that users who upgraded to an MV/7800 expecting performance in line with an MV/8000 may be disappointed. Another user suggests that the fault is not with the machine, but in the way people use benchmark data as an index of performance. The MIPS rating rewards the MV/7800 for its speedy floating point calculations, but the machine's performance on applications that use integer arithmetic won't be as impressive. DG is reported to be working on the microcode to speed it up.

Ralph Jordan, long a mainstay of DG's development group at Research Triangle Park, left Data General in mid-November to form his own company. Jordan said the parting was friendly, and that he plans to put his experience to work in the small business arena—which he defined as systems with from 2 to 2,000 terminals.

DG is adopting sales policies that it says include new discount schedules and better terms for both VARs and end-users. The new discount schedules are based entirely on dollar volume, rather than point values for different products. DG is also dropping its bill-back policy on unearned discounts, and will allow customers to submit orders at the previous (lower) price for up to 15 days after the effective date of a price increase. According to DG, the revised policies will help recruit new VAR and end-user business. "While Digital Equipment Corporation recently announced that it would give the same 17 percent discount to VARs as it does to end-users, Data General continues to offer even more competitive discounts across the board," said J. David Lyons, vice president for business group marketing.

Concept Automation, Inc. publishes a bi-monthly customer newsletter that often contains useful tidbits gleaned from their in-house use of products for DG systems. Some examples:

- It reports that rev 1.10 of CEOwrite fixes about 119 bugs. Ten of the offenders are listed, along with nine of the enhancements

in the new rev.

- It says that in a simulation of eight word processing operators keying in excess of 80 words per minute without interruptions, an MV/2000 was able to keep up until one of the simulated users initiates an extra system load, such as disk I/O, overlay processing, or user log-on. The CAI newsletter gives the MV/2000 high marks, except for workstation I/O and disk speed.

It wasn't final at press time, but Ed Egan was pretty sure that by the second week of December he would be the majority owner of Diplomat Systems Corporation. Egan, who has been Diplomat's CEO for some time, had made financial arrangements to buy control of a "blind pool" that in turn would buy Diplomat from its parent company. As soon as the deal goes through, Egan hopes to turn over the paperwork required by the Securities and Exchange Commission to his accountants, and start paying attention again to Diplomat's business: marketing components and configured systems as one of Data General's authorized distributors.

Mannington Resilient Floors has agreed to help Worlco Data Systems market their Floorcon Plus retail computer system to Mannington's Gallery of Floors retailers. With eight years of experience installing computer systems for the floor covering industry, Worlco also supplies services and systems for the distribution, direct marketing, and publishing industries. The company reported a net profit of \$103,000—about 4 cents a share—on revenues of \$2.7 million for the quarter ended last September.

Pansophic Systems is continuing to buy companies whose products are familiar to the DG community. The latest acquisition is SPSS, a major developer of statistical and graphics software. Pansophic's revenues for the last quarter were up 24 percent, to \$24.3 million; net income was up 10 percent, to \$3.6 million, or 42 cents a share.

Ungermann-Bass is certifying a set of communications packages for use with PCs on the company's Net/One local area network. The packages, which are sold and supported

by third-party companies, allow the PCs to access applications on DG and other mini-computers connected to the network. Products certified so far include Persoft's SmartTerm emulator for DG and DEC terminals.

Dataproducts' repair, remanufacture, and resale business group has a 216-page subassembly repair catalog that lists 5,000 part numbers for the company's printer components. The catalog lists parts by manufacturer and model number, and includes a cross reference table to identify OEM model numbers. Call 818/887-8409 for information.

NADGUG's West Coast bulletin board (415/924-3652, operated by Rational Data Systems) recently featured a lot of discussion about using PCs and terminal emulation software to access CEO. Something to watch out for: when it's released, rev 3.00 of CEO won't support terminals that don't send terminal ID information when queried by the software (models 6053 and earlier). Michael Meissner writes, "Any D2XX terminal emulators you are using (should) send out a valid ID string before you install 3.00 of CEO. To check whether your terminal emulator sends out an ID, do the following from the CLI:

```
write [ascii 236]C
```

If four characters appear on your screen, your terminal emulator sends out an ID string. Do a CTRL-U to clear input."

Another recent bulletin board topic was heuristic scheduling and system tuning. Leryl Cash had this to say: "Study up on what the wizard (BJ, who else) has to say about it in *Focus* during the past year or so. We've followed his suggestions, and everything works out fine."

A tantalizing invitation arrived shortly before our press deadline: "Data General Corporation invites you to the announcement of a new family of computer systems." The date of the announcement is December 9, so the details of the announcement will have to wait for next month's issue. What is this "new family"? Those who knew wouldn't say, and those who didn't know could only speculate. Stay tuned.

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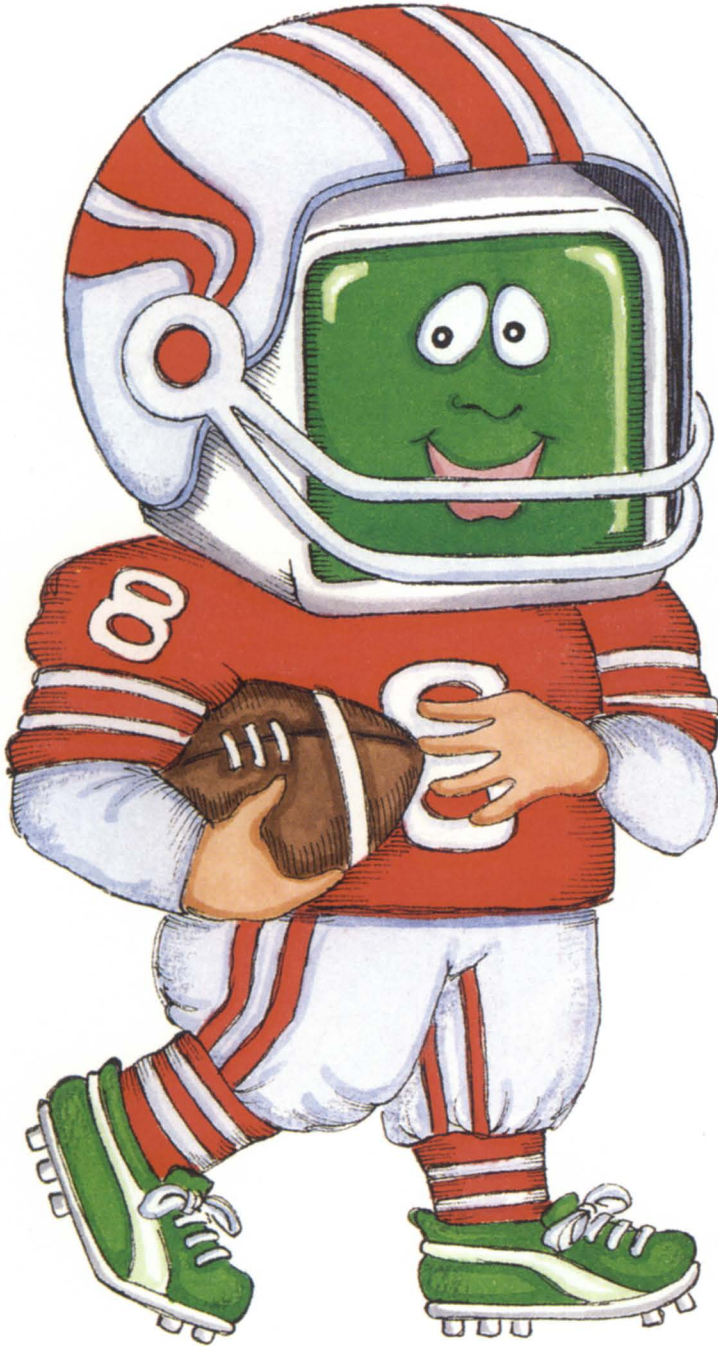
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