February 1990

FOCUS

The Magazine of the North American Data General Users Group

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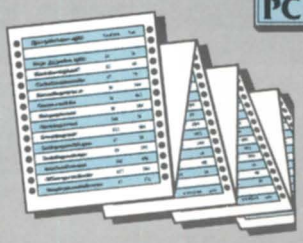

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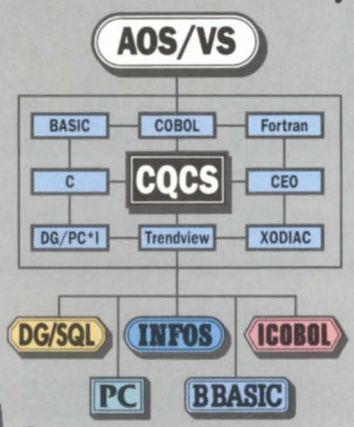

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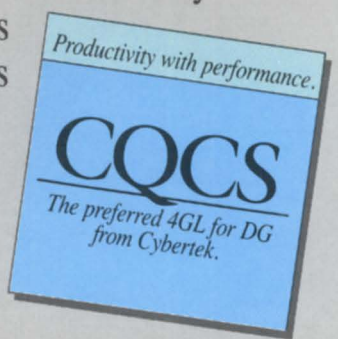

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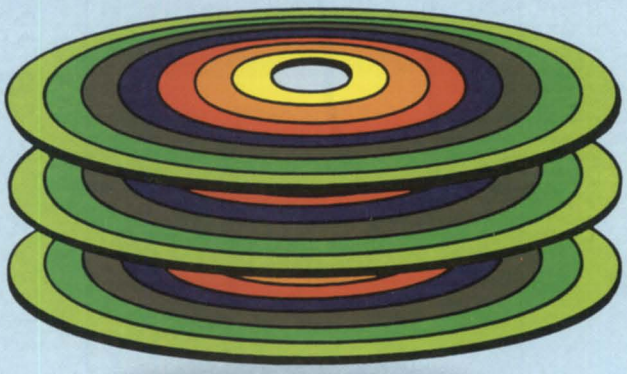

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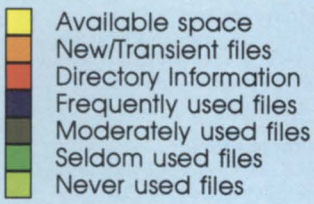

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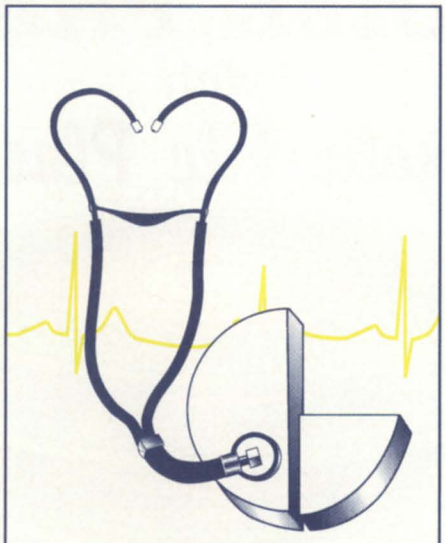

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Searching for a perfect match
Like compatible donors, DG's open systems approach and the healthcare industry's need to control costs through distributed processing are near perfect matches
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Cover illustration by Casey Hunter

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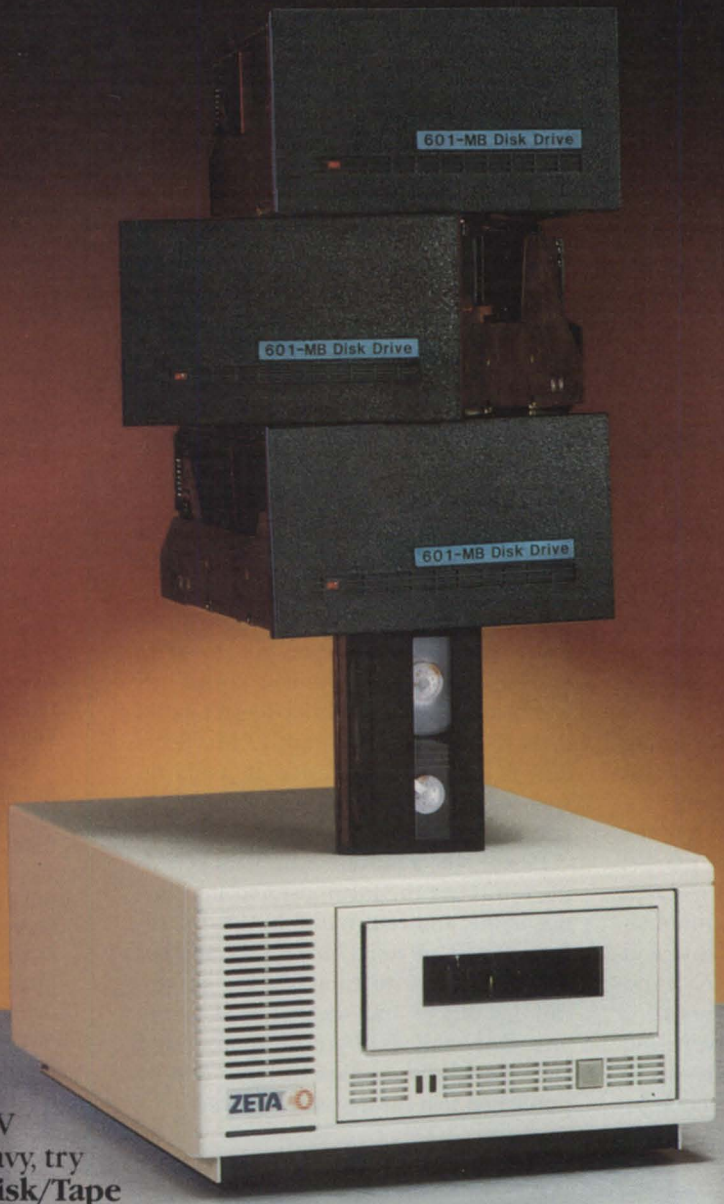
Back-Up Support For 2 GB



If the burden of backing up disks on your Data General MV system seems too heavy, try Zetaco's new **SKM Disk/Tape Subsystem** for fast, convenient back-up support of all your disk data. The 8*mm* helical scan tape streams at 246 *KB/sec,** to back up high performance SKM disks, in about half the time needed by other disk/tape combinations. And, no changing reels – each SKM tape cassette holds over 2 gigabytes! Call us today for details and discover a new balance in disk/tape performance. Zetaco, Inc., 6850 Shady Oak Road, Eden Prairie, Minnesota 55344 U.S.A. 612/941-9480, California Office: 714/582-1026, U.K. Office: (44) 442-891-500.

*In lab tests on an MV/7800, SKM tape sustained streaming performance at 246 *KB/sec* data transfer rate, backing up a 100-MB sequential file from SKM high-performance disks in just 7.5 minutes.

ZETA

The Network Storage Company

Circle 71 on reader service card.

What Unix does for the MV

When Data General announced the line of Unix-based Aviion workstations last year, some people wondered if this signaled the death of Data General's MV family of computers. Happily, that seems not to be the case.

Each month, we receive press releases announcing new products and solutions for Data General equipment. While many of them are for use either on the MV family or the Aviion family, we've noticed that a number of new products can be used on both. A good example is EDI management software from Metro-Mark (see Products and Services, page 64), which is now available on DG AOS/VS and Unix operating systems. For the past two years, this particular package of business applications has only been available on IBM mainframes.

Metro-Mark's main reason for porting its product was "to provide an important and timely solution for the established MV family customer base and to join the flourishing open systems Unix market with Aviion," according to Vice President Alfred Lozito. It seems that the combination of a large, established user base and a respected Unix platform are too good for some software companies to resist.

Even Data General's new advertising campaign—promoting the Aviion—has a positive effect on MV users in general by increasing Data General's name recognition.

It appears that the Aviion presence is not only adding new members to the DG community, it is also bringing new options to existing MV users.

■

A special note to NADGUG members: In the time that I have been with *Focus*, I have seen remarkable changes at Data General. More and more, Data General appears to be an organization that really listens to its customers. I like this trend.

This month, NADGUG members have another opportunity to let their opinions be known to Data General. *Focus* magazine, in cooperation with Data General, is polling NADGUG members for their feelings about DG quality on everything from hardware to billing to software documentation.

The survey is the brainchild of Jack Reardon of Data General Corporate Quality Assurance. He saw the number of responses that we received last summer to a survey on repair and maintenance, and thought *Focus* a good vehicle for finding out what users of DG equipment think of Data General quality. Mr. Reardon developed some questions that get down to specifics, like: does equipment work when you receive it? if something doesn't work, does DG replace it promptly? Mr. Reardon is sincerely interested in your responses, especially, he says, in areas where you think DG rates poorly.

Please take a minute from your schedule to fill out the form inserted into this magazine, and return it to NADGUG offices. If you are not a NADGUG member and would like to complete the survey, call our offices and we will send one to you. Our analysis of your responses and Data General's reaction to them will be published in a future issue of *Focus*.

■

On page 53, we bring you a review of Data Bank Associates' file compression and archiving program. Next month, *Focus* will feature a review of a file compression and archiving program from :SYSMGR. Meanwhile, if you wish to read about the brushfire war that recently erupted between supporters of these two rival products, dial up the NADGUG bulletin board, 415/499-7628. Δ

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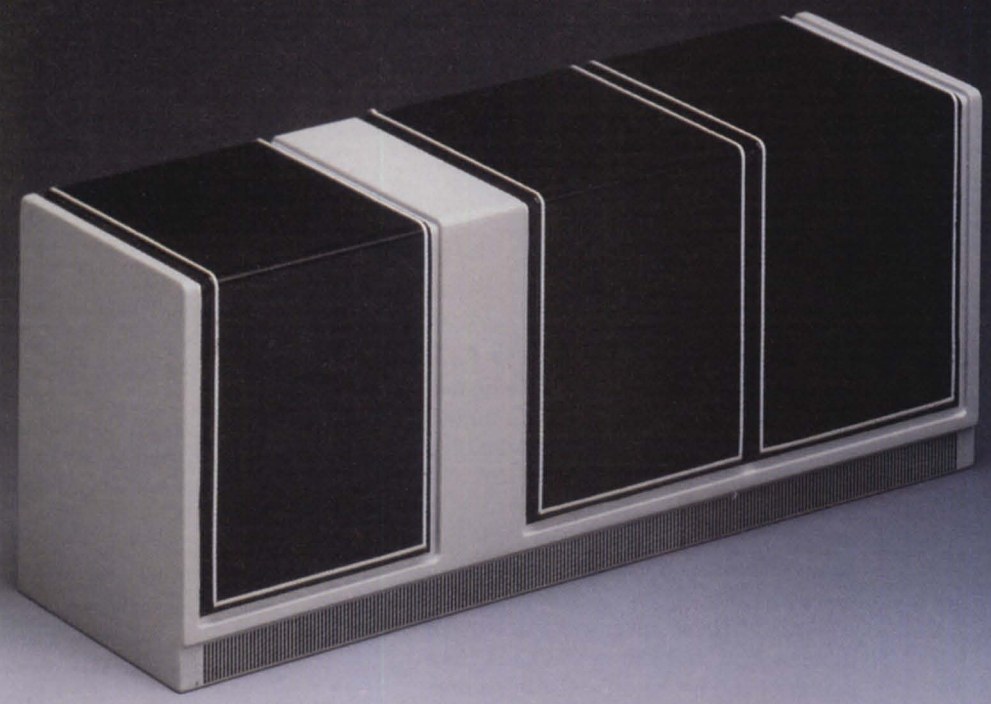

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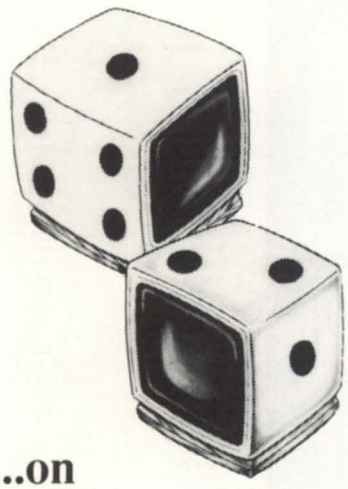

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CEO 3.11/3.12

I noticed in the December '89 *Focus* "Bits and bytes from the bulletin board" section a question from Jeff Campbell about CEO 3.11. While I have called Jeff to answer any questions that he had considering the title given this excerpt, I thought it worthwhile to better explain to all *Focus* readers the situation with CEO revision 3.11.

Actually, there never existed a major filing system problem in CEO 3.11. As a matter of course, before releasing a revision of CEO we distribute copies to various internal sites for the purpose of alpha testing the product. Shortly after sending the 3.11 tape to manufacturing for customer distribution, we did discover an obscure sequence of keystrokes that if followed precisely would result in that user's record in the CEO_INDEX being overwritten. Two patches (3.11_CEO_CP_PATCH_40 and 3.11_CEO_FSA_PATCH_43) were immediately created to rectify the problem with the affected CEO_INDEX.

While it was unlikely that someone else would enter the necessary keystrokes in the requisite order to reproduce this same scenario, we don't mess around when it comes to the index. An immediate stop shipment order was sent to manufacturing.

The only reason that CEO 3.12 was created is because the manufacturing process precluded us from resubmitting the tape with the above patches applied with the same revision number. So we made a tape with the 3.11 software with the two patches applied and called it CEO 3.12.

The *Reader's Digest* version is this: There exists no problem with the filing system in CEO revision 3.12. Any advanced sites who had the pre-released 3.11 version should apply patch 3.11_CEO_FSA_PATCH_43 to the CEO_FSA.PR program.

I hope this clears any confusion with CEO 3.11/3.12. If not, you can call me directly at Data General corporate. Thank you.

Bob Primmer, Manager
Product Assurance Engineering
/Office Automation
Data General Corporation
Westboro

More survival tips

I enjoyed your Round Up article "Staying Alive" (Nov.'89). I found it very informative. The idea of having a representative from DG inform our group on new installations sounds like a good idea. Many of the other ideas we have already employed. I also noticed LA EDGE has a cocktail hour sponsored by a vendor, which seems like a good idea.

We've talked about incentives, like door prizes. Three things come to mind:

1. One share of DG stock.

2. Computer hardware board or a disc platter, old or outdated.

3. Things that were available at the annual conference (e.g., carrying bag or NADGUG T-shirt).

Thank you for your time, and keep up the good work in *Focus*.

Kerwin Stenzel
President, MADGUG
(Minnesota Area
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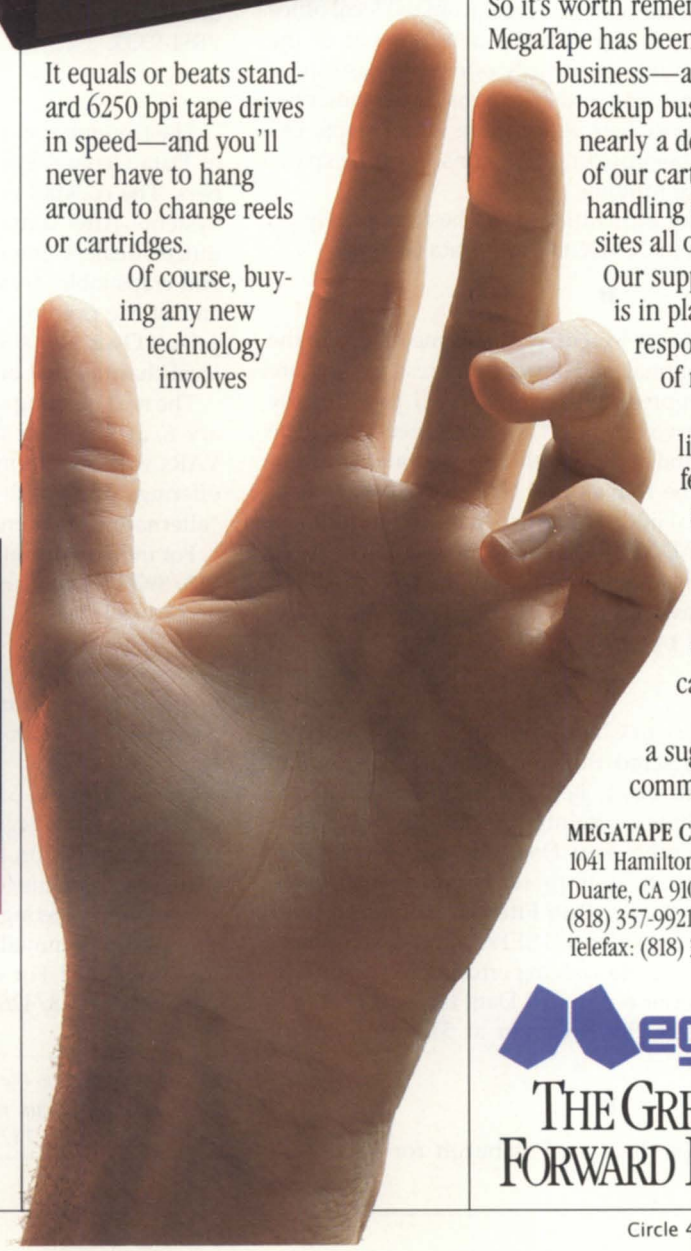

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Use it or lose it

Local Data General offices have resources for helping user groups

Historically, the most successful regional interest groups are those that have the support and participation of a local DG office. If your group is not getting the support from Data General that you would like, ask for it! Data General has a specific policy to help local user groups. It is up to you to see that your group takes advantage of the offer.

In the initial start-up phase, an individual from the local office is authorized to work with users in the development of the group. The DG office should temporarily offer data base space for the group's start-up records, and offer a mailing to potential members from its customer lists. After these initial steps, DG will assist when needed by providing programs, meeting space, and even help with initial funding.

If your group is having difficulties, don't hesitate to rely on the support offered both by NADGUG and Data General.

■

NADGUG's annual Spring **Executive Board** meeting is in the planning stages. All regional and special interest groups are encouraged to send a representative. NADGUG pays for the cost of a hotel room and two lunches. This year's meeting will be held in Seattle, Washington at the Seattle Sheraton and Convention Center, the site for the **17th annual NADGUG conference**.

Each regional or special interest group is required to submit a status report to the NADGUG Executive Board. Each group leader should have received a report form in the mail to fill out and send back. If you have not received one, please contact the RIG/SIG Coordinator at 1-800/877-4787.

■

I've heard that February in Chicago is only for tried and true northerners! If you can stand the cold, a trip to the system performance roundtable being held on February 21 at the Schaumberg Embassy Suites certainly promises to heat things up. The **CADGUG** (Chicago Area Data General User Group) sponsored discussion boasts an impressive list of panel members: **Brian Johnson** of BJ, Inc., **Ron Fitch** of Human Insights Group, and members of Data General SEPAC and development teams hashing out their favorite system performance issues. The event begins with dinner at 6 p.m. All Data General users are invited to attend. Contact **Jim Siegman** at 312/673-1700 for details.

■

A special meeting was held in Pittsburgh for **PADGUG** members to discuss what all the new Data General products really mean for their future as DG customers. The presentation given by DG titled "Strategy for the 1990s" answered many questions about the future of MV-based products and the new Aviion. The Pittsburgh Area Data General Users Group holds its monthly meetings at the Data General office on Fleet Street. For details about the next meeting, contact **Ronald Rabatin** at 412/864-9333.

■

The December meeting of **LA EDGE** (Los Angeles End-Users of Data General Equipment) was attended by about 90 members. The cocktail hour preceding dinner was hosted by NPA Systems. After dinner, Data General employees and other volunteer dealers entertained members with blackjack. Roulette and craps tables were also available in "Casino L'Edge." At the end of the evening, players "cashed in" their tickets for door prizes. Over $1,000 was raised during the evening to aid three local charities that help the homeless.

The next meeting of LA EDGE will be held on Tuesday, February 6, at 7 p.m. at the Brookside Country Club in Pasadena. VARs will present information about their respective software offerings. The March meeting is being planned around the theme "alternative maintenance."

For more information about LA EDGE, contact **Mark Speer** at 818/897-7777 or **Carolyn Naber** at 818/793-2141.

■

Utica, New York was the site of the **Central New York Data General Users Group**'s January 10 meeting. This meeting focused on DG's Unix strategy and what it means for AOS/VS users.

At the group's March meeting in Syracuse, members will cover ways to integrate PCs and MVs through networking or terminal emulation, and discuss the various hardware and software requirements/options.

The May meeting will be held in Albany. This will be the group's third annual AOS/VS roundtable, and promises to be a hit once again! For details, contact the group's president **Bob Albanese** at 518/426-2600. Δ

Cathlene Gentry is the RIG/SIG coordinator for NADGUG. She may be reached at ***Focus*** *magazine, 4807 Spicewood Springs Rd., Suite 3150, Austin, TX. 78759; 1-800/877-4787, (1-800/USR-GRUP).*

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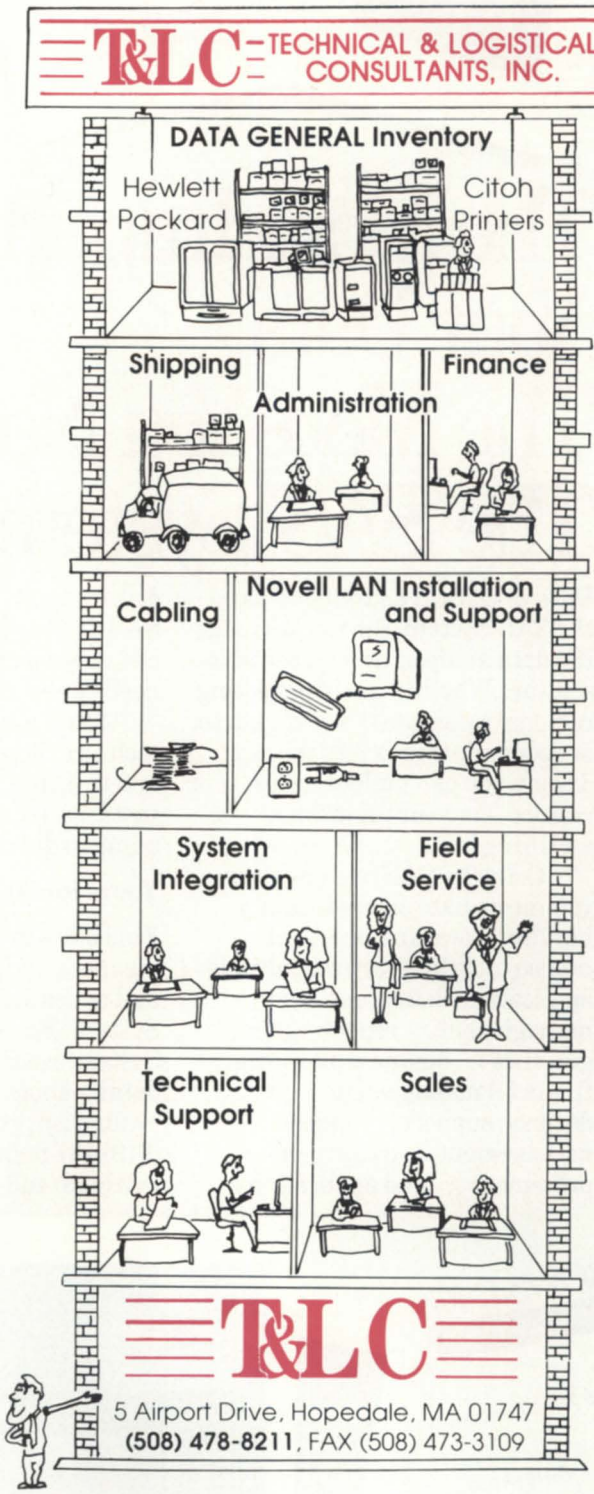

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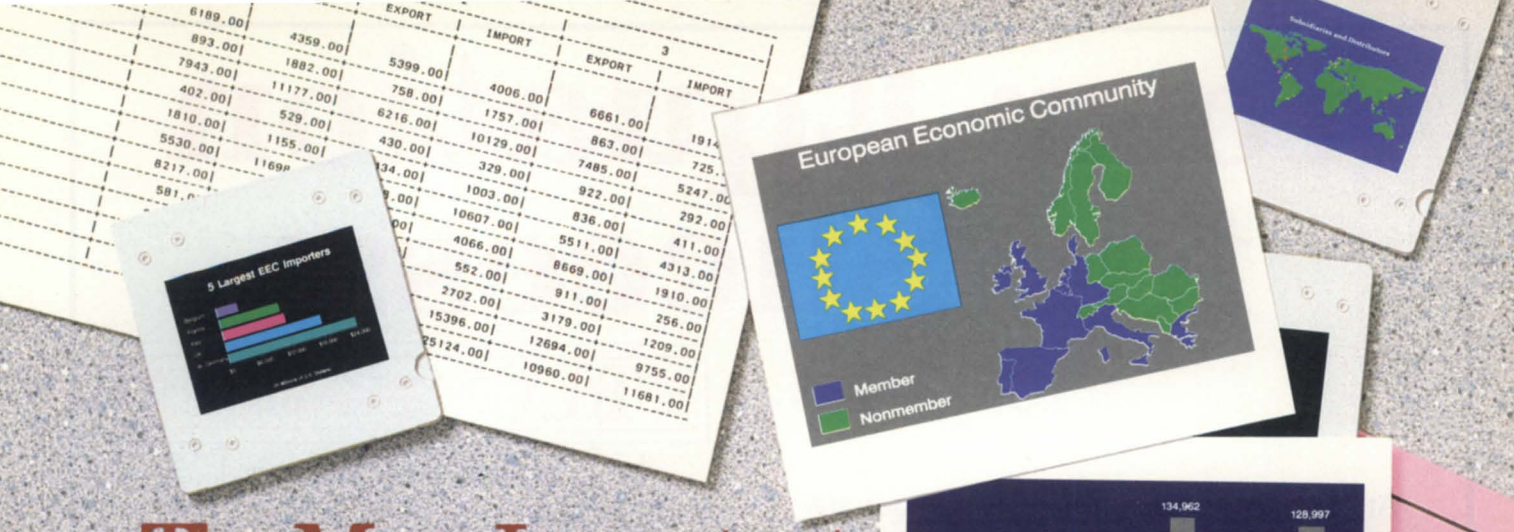

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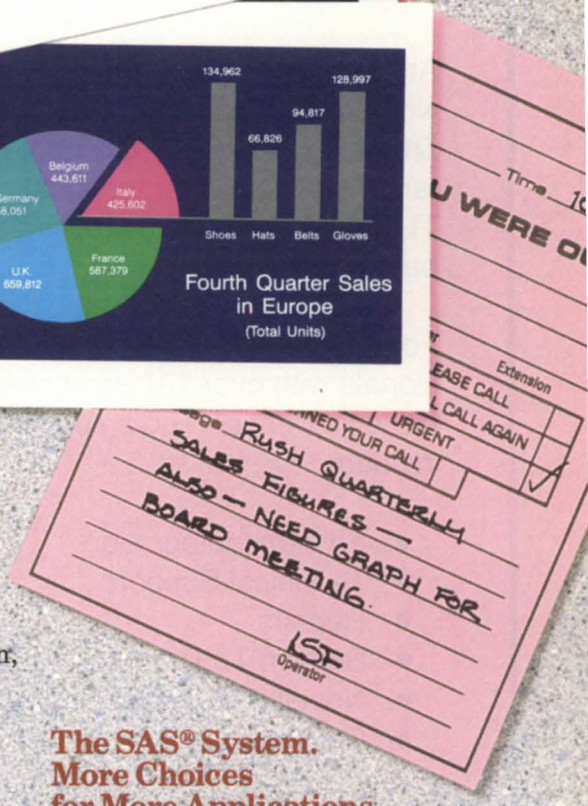

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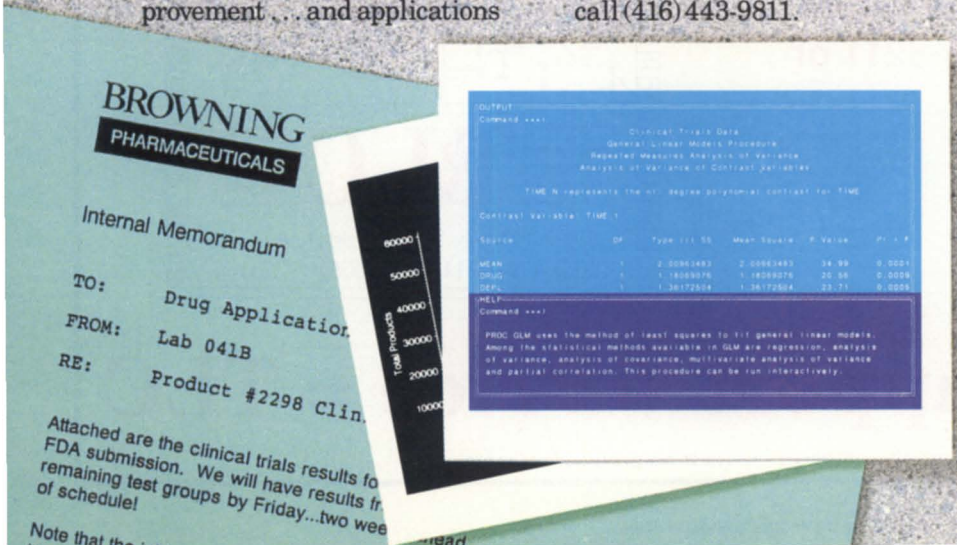


United for the Nineties

SYNOPSIS

Big changes in store for the 1990 conference. Convergence of three groups will increase attendance, provide interaction between DG sales people, VARs, and users.

by Jan Grossman
Special to Focus

When the NADGUG Conference 89 came to a close, did conference organizers just sit back and rest on their laurels, basking in warm praise for engineering yet another successful gathering of DG users from all over the world? Not hardly. Exhibitors were still tearing down their booths in New Orleans when NADGUG and Data General officials began talking about ways to make the next conference even better.

A seed planted at the NADGUG conference swiftly grew into a plan that will bring together NADGUG members, Data General salespeople, and DG VARs at a superconference in Seattle next October. Along with the NADGUG conference will be the annual sales kick-off of Data General's North American Sales Division, and the annual meeting of the DG VAR Council. This action will double the number of potential attendees.

The NADGUG conference starts after the other two meetings are underway, although some events will happen concurrently. Attendees are urged to arrive by Monday, October 22, so that they may attend a welcome reception sponsored by Data General for all three groups. This will be a great opportunity to interface with DG salespeople and VARs. DG Vars and salespeople are also invited to attend the opening ceremonies for the NADGUG conference and exhibits. The NADGUG conference will continue through October 25.

Responding to you

The Conference Committee is continuously looking at ways to make the NADGUG conference a rewarding experience for each attendee. In a post-conference survey conducted by Data General, 88 percent of Conference 89 attendees said that their objectives in attending the conference were met. These objectives included interfacing with other Data General users, gaining insight into new products and/or changes in existing products, learning about DG's product and marketing directions, and making business contacts. Half the attendees said that favorable experiences with past conferences influenced their decision to go to New Orleans.

Roundtables continue to be the most popular sessions, while attendees asked for more technical sessions that provide practical tips that they can take back and use at work. Some people remarked that there were so many good sessions, that they were either not able to attend them all, or they did not have time to visit the exhibit floor.

In planning sessions for the Seattle conference, the Conference Committee is giving careful consideration to these issues, in particular to improving scheduling so that there is ample time to visit the exhibits.

There was also concern raised about the number of attendees. Finals counts show that there were 1,130 attendees at the New Orleans conference, down slightly from the 1,152 recorded at the 1988 conference in Philadelphia. However, because the Philadelphia conference was held in a hotel with a smaller exhibit area, and the New Orleans conference was held in a convention center that was cavernous in comparison, it *appeared* that attendance was dramatically lower.

Are you ready for Seattle?

There are some very important dates for you to remember regarding the 1990 conference, which will be held at the Seattle Sheraton and Convention Center. If you have information or knowledge to share with other users of Data General equipment, you may wish to present a technical, management, or end-user session. The deadline to submit a speaker application is Friday, February 23.

Exhibitors who wish to demonstrate their products in front of this large gathering of DG users must submit exhibitor applications by Friday, March 23.

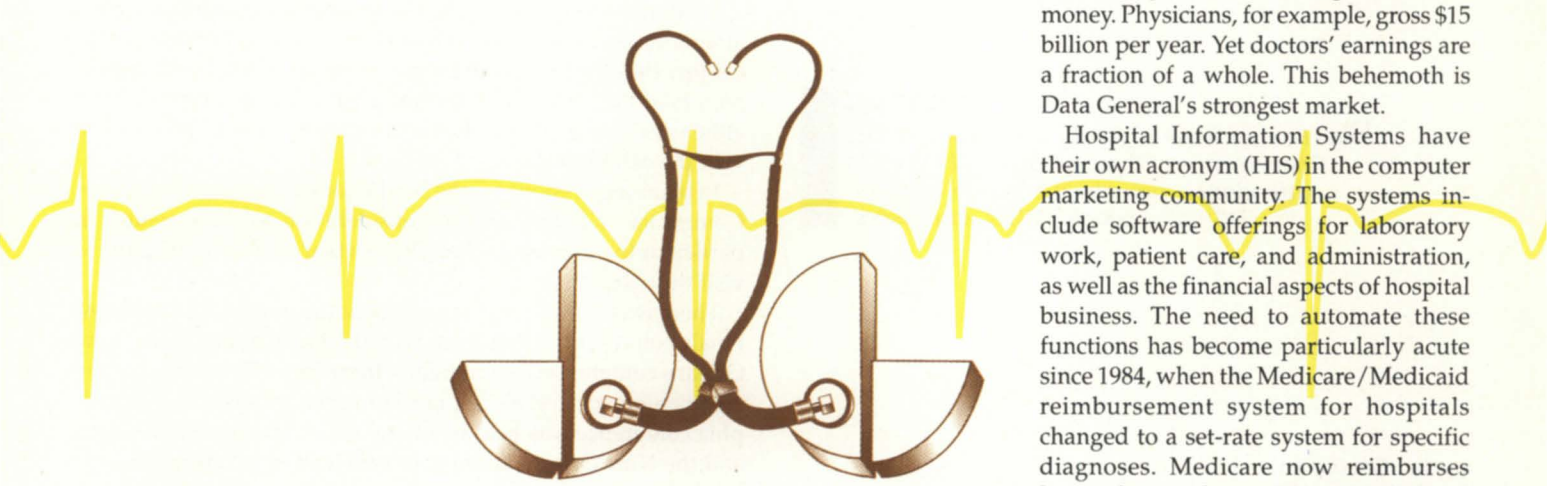
NADGUG members will automatically receive registration kits in the mail later this year. Non-members may contact NADGUG offices for information on membership and the conference. (You do not have to be a member to attend.)

Speaker and exhibitor applications, or other information about the conference, may be obtained by calling 1-800/877-4787 (512/345-5316 outside U.S.). Δ

Jan Grossman is Information Services Manager for H.A. Holden, Inc. of Minneapolis, and chairperson of the NADGUG Conference Committee.

Searching for a perfect match

by Seemee Ali
Focus staff



SYNOPSIS

Like compatible donors, DG's open systems approach and the healthcare industry's need to control costs through distributed processing are near perfect matches. Success of the Aviion is at the heart of DG's strategy.

The sprawling healthcare industry includes enormous numbers of clerks, technicians, and administrative support staff, and generates amazing amounts of money. Physicians, for example, gross $15 billion per year. Yet doctors' earnings are a fraction of a whole. This behemoth is Data General's strongest market.

Hospital Information Systems have their own acronym (HIS) in the computer marketing community. The systems include software offerings for laboratory work, patient care, and administration, as well as the financial aspects of hospital business. The need to automate these functions has become particularly acute since 1984, when the Medicare/Medicaid reimbursement system for hospitals changed to a set-rate system for specific diagnoses. Medicare now reimburses hospitals according to Diagnostic Related Groups (DRGs), which specify a price for any given procedure, rather than simply paying for the total duration of a patient's visit. As a result, cost-containment, often monitored by complex computer networks, has become a vital concern to more and more healthcare professionals.

Behind the scenes

"We have to be more efficient," says Ron Biandi, a vice president of information systems at Empire Health Services in Spokane. The Washington hospital recently bought four Aviion servers, and attributes the purchase to an increased cost consciousness. "Before the big DRG change in Medicare reimbursement, whatever cost you put into a system you would get reimbursed from Medicare," he explained, "I think that [change] is taking a lot of hospitals away from a large mainframe environment to distributed processing; you just can't afford to keep upgrading large machines to another large

machine."

This view fits neatly into DG's picture of the healthcare market. "I think that almost all hospitals are having a difficult time balancing the cost control issues they've faced against maintenance of quality health care," says Del Richmond, DG's healthcare industry manager. Data General answers these concerns, he says, "by packaging some of the leading applications software in the market with a price/performance leading hardware platform."

Multi-vendor connectivity is another essential to cost-containment, and Richmond credits part of DG's success in healthcare to this factor, too. "We've always been the leader in IBM connectivity and industry-standard communications," he boasts.

Premium on price-performance

Wendy Kempton, an assistant director of marketing at Professional Healthcare Systems, Inc. (PHS), agrees that the new financial constraints on hospitals have brought with them a different approach to business. She says the healthcare industry has been "dragging their feet for a long time in accepting new technology that would organize them better, that would quantify what they're doing, and that would qualify their actions."

A former nurse, she senses the difficulty of imposing automation upon an overworked, labor-intensive organization. "The nurse that's running off to give care to a patient isn't going to want to screw around to try to get information into a computer," Kempton says.

The problem with the new Medicare reimbursement system, she explains, is that money for capital expenditures is dwindling. "Yes, hospitals would benefit from new technology . . . but any sort of new technology is really having to show price-performance value." Kempton's company markets patient accounting software that maximizes the amount of money hospitals can bill to Medicare. Yet despite the "optimizing DRG" programs available in software packages, extra costs are still often left uncompensated.

Humana Inc., a one million member, 83-hospital organization, recently installed a point-of-care system, with terminals at patients' bedsides based on four DG MV/10000s and one MV/20000, justifying the move on cost-benefit consid-

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erations. Its survey of hospital applications and hardware in 1984 coincided with the federal revamping of Medicare billing, Humana's single largest source of income.

The new system, from Health Data Sciences Corp. in San Bernadino, California, works much like the point-of-sale terminals in the retail industry, with information such as lab results conveniently accessible to doctors and nurses. Headed by a physician, Health Data's mission is to "provide an electronic replacement for paper records and support documents," according to founder Dr. Ralph Korpman.

Nursing a sick industry

DG's value added resellers, who provide the corporation with roughly 95 percent of its healthcare revenue, agree for the most part, with DG's assessment of the market.

Meditech, a DG VAR that leads the healthcare industry in software sales, sings the praises of Data General's reputation in the healthcare industry and lauds the price-performance of DG machines. Vice President of Sales and Marketing Ed Pisinski says "We come into the typical deal, and we are about $1 million less expensive than other vendors." Pisinski attributes this to Meditech's streamlined management of software design, but he's also quick to credit the "bang per buck," of Data General hardware.

Bill Stranges, of Cain Associates, a VAR who is now developing a healthcare equipment maintenance system, concurs. While he laments DG's lack of name recognition among users (who he concedes are "not sophisticated enough to recognize all the names out there"), Stranges combats big-name competition with Data General's cost-effectiveness. "You walk into a client's site," Stranges says, "and you not only propose an affordable system, but you cover all the bases."

The RISC-factor

Both DG's Richmond and Meditech's Pisinski see the Aviion as the ultimate healthcare solution.

Richmond says "If you look at our recruiting strategy for new VARs, it's really based on a matrix of high growth market segments and Aviion platform availability. And the vendors that we have, have platforms that will run on the Aviion in the near future."

Data General is currently courting VARs who cater to certain niches within the healthcare field, such as health maintenance organizations (HMOs) and preferred provider organizations (PPOs). "I can't mention any names at this point, but there are probably a dozen or so vendors in the HMO market that have any kind of reasonable market share, and some of them would be relatively quick and easy to convert," says Richmond.

Pisinski reinforces the DG point of view, calling the machine "the great competitive advantage" of his company. Meditech uses its own MIIS/Magic operating system, which contains roughly 35 instructions and has provided the base for all Meditech software since 1980, long before the RISC technology on Aviion was introduced.

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Still, Pisinsky's non-stop praise of the Aviion rings with evangelical fervor: "Clients [who are] not aware of the Aviion, or RISC technology, will soon come to believe that it holds great promise to be the future hardware platform for virtually all software vendors. RISC technology offers such great bang per buck. It's so powerful, so inexpensive. Everybody's going to have to be on the RISC platform . . . . A hospital does not want to buy obsolescence; they want to buy state of the art products. They look at the Aviion as being the new generation of computer systems."

By comparison, Cain Associates' Stranges seems skeptical. "Data General has taken the right step," he explains, "but without the software to run on the machine, there will be no machine." Stranges, currently in the throes of forming a healthcare special interest group under the NADGUG umbrella, cannot port his own product to the Aviion until the Cybertek development language he uses is made available under Unix.

The success of the Aviion appears critical to meeting Data General's goal of double digit growth in the healthcare market, and staying firm in its current number three position behind IBM and Digital Equipment Corporation (DEC). Beyond this particular uncertainty, however, DG seems to have the healthcare part of its house in order. Its VAR program is comprehensive: A group of 50 Data General sales representatives, who call themselves "the MASH team," support healthcare remarketers exclusively.

One of these DG reps spent two years nursing a recent sale of four Eclipse MV /7800 systems to a hospital in his hometown of Temple, Texas, winning a bid over DEC on exactly the same software system.

DG provides sales reps with general demographics on the hospital industry and on-line access to the American Hospital Association's data base. In addition, the company turns out at industry trade shows, spends money on healthcare-specific advertising, and wages a propaganda campaign on healthcare oriented computer consultants. Del Richmond adds that "We also do a significant amount of image-building activity, in terms of developing success stories on our existing VARs."

Stranges attests "Data General is willing to provide you with whatever you want personally to conduct your business with them as a VAR. They'll provide you with as much assistance as you want on a lead. They'll attend visits to customer sites—first, second, third, as many times as you want . . . to show that there is a close relationship between the manufacturer and your company."

Meditech's Pisinski says that he relies on Data General's self-promotion in the healthcare industry to make his company's marketing tasks easier. Asked whether Data General enjoys enough name recognition in its strongest market, Pisinski pauses and exclaims, "Well nothing is *ever* enough! Do they have a good name in hospitals? Yes . . . it's quite an attribute that they're number three, and they're just slightly behind Digital." Δ

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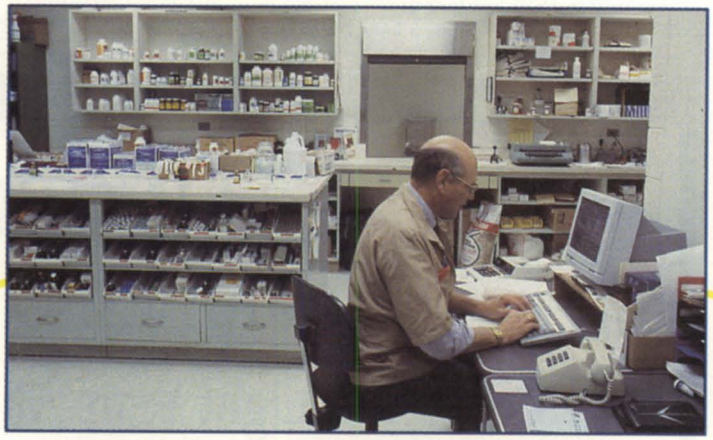

Pharmacist Stu Forney enters charges into the billing system at CSU Veterinary Teaching Hospital. (Photo by Al Kilminster)

by Cathy Kipp
Special to Focus

SYNOPSIS

A Colorado veterinary teaching hospital automates its services using an MV/10000, AOS/VS, and linked data bases.

Colorado State University's Veterinary Teaching Hospital (VTH) is similar in many respects to a human hospital. A tour of the VTH would provide you with several surprises—a critical care unit, a CAT scanner, and a linear accelerator are just a few of the items you might not expect to find.

In fact, humans may be the only animal VTH doesn't treat. We are equipped to perform surgery and other medical procedures on animals from frogs to elephants, in sizes ranging from less than a pound to several hundred pounds. With one of the largest veterinary hospital case loads, the VTH sees about 20,000 animals per year, including visits by our ambulatory service, which makes house calls on large animals, such as horses and cows.

The heart of our hospital computerization effort lies in the billing and medical records systems, both used hospital-wide. Several office automation users in the building use Data General equipment primarily for electronic mail and word processing capabilities (Wordperfect Library and Wordperfect).

Our main hospital computer is a Data General MV/10000 running under AOS/VS, though we also have an MV/8000 primarily for software development. A combination of CLI macros and Wordperfect Library menus keeps the CLI system hidden from users.

All of the software for our billing and medical records systems was written by staff programmers, since human-oriented medical software does not fit our needs closely enough. In human medicine, for example, species and breeds of patients are always human; there is no need to determine whether a given patient is a parakeet or a llama. Human patients are *always* male or female, and, with some exceptions, always remain so. In veterinary medicine, seven sex categories are used, and the sex of an animal can change as many as four times!

Not much veterinary specific software is available. Some commercial software has been written for smaller veterinary practices, but most of it is targeted for use on personal computers. There just isn't much of a market for high volume veterinary hospital packages. Only 30 veterinary teaching hospitals exist in the U.S. and Canada, and VTH has one of the largest case loads among them. A couple of years ago, a company designing a system for veterinary teaching hospitals offered a complete system, including new software (written in MUMPS) and new DEC hardware, but the price came close to a million dollars—more than we wanted to spend.

Our oldest system is billing, written in PL/1. It is primarily a file system with a single adjacent data base. The medical records system (a relational data base system) was rewritten last spring to incorporate several recent requests. We have an additional set of data bases that contain information from the billing system files to facilitate information retrieval.

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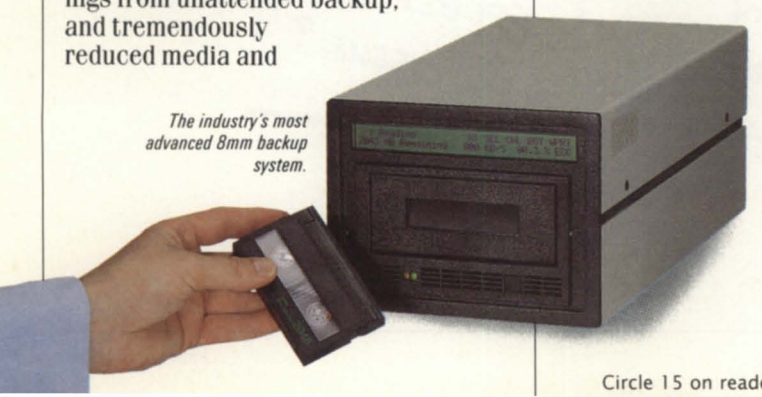

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Programs that link billing and medical records together are written in PL/1 for complex functions, and in CQCS for some simple, but useful applications. Infos II stores our data bases, giving us the advantage of accessible data from PL/1, CQCS, and Sort/Merge. Between these, it is possible to do just about anything our hardware limitations (memory, MIPS, and disk space) will allow.

The medical records system contains on-line data from different systems for all the animals that have visited the VTH since 1972—over 130,000 animals and about 270,000 hospital visits. The system we created in May, 1987, using CQCS and a relational data base system, was the first system that didn't require "computer people" to do retrievals.

We had great success training our medical records staff to perform their own data base retrievals using the query system. Now, when a clinician wants to do a search, the medical records department takes the request and figures out what to ask the computer, based on information the clinician codes according to the Standard Nomenclature of Veterinary Diseases and Operations (SNVDO) system. We made attempts to train other users, but none have been this successful. Few clinicians seem interested in performing retrievals, and those who are interested don't use the system enough. Total clinician requests have averaged about 10 to 15 retrievals per month over the past year.

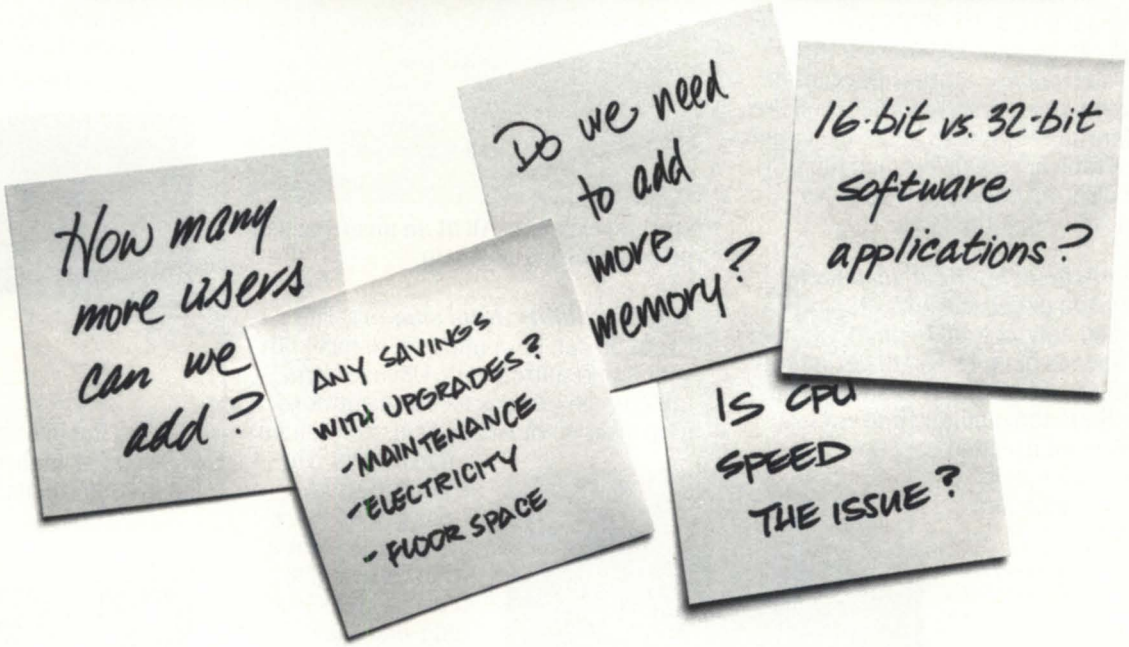
Retrievals run during the day, at the same time other people use the computer. Normally, users run at priority two; retrieval system users at priority three. Users running long retrievals (primarily those involving many external data base accesses) are asked to batch them to run in the evening. This means that everyone gets reasonable service for whatever they are trying to accomplish.

The current billing system originally came to life in 1983. It has been modified and enhanced since then, but we plan to rewrite it as a relational data base system incorporating more comprehensive accounting capabilities and closer links with medical records to avoid data duplication. The system creates an invoice that contains all information pertaining to an animal's visit, and allows different hospital departments to add charges or comments.

The invoices serve as the basis for daily, weekly, monthly, and yearly reports. Billing system information is used to initialize relevant information in the medical records data bases as well as the billing file data bases mentioned earlier. Only a few years ago, the computer staff would groan when we received a request for several years of billing system information; it involved loading hundreds of files onto the computer from tape, writing macros, and sometimes programs to process the files. With luck, the results were ready in a week. Now, most requests are handled easily by the retrieval system and results are often available within an hour or, sometimes, even minutes.

An embossed card machine is connected to the Data General, and prints out cards (a lot like credit cards) that fol-

IN THE DARK v



low animals around the hospital. The cards quickly imprint owner and animal information on paperwork related to services rendered. An animal retains a unique patient number throughout its life for all hospital visits. Given this number, you can find out almost anything about the animal.

The new revision of the medical records system allows hospital users to perform speedy searches by owner name—by entering the name (or partial name, or patient number), the animal records for the owner most closely matching that name are retrieved in under a second. It is fairly simple to look through the owners alphabetically until an exact match is found. These types of searches cause no degradation of system performance.

Another feature resulting from linkage of the medical records and billing is the creation of two special reports, the patient history report and the clinician's monthly statement. The patient history lists on-line information chronologically from all data bases for all of an animal's visits to the hospital. It is a convenient summary listing of a patient's medical history without having to flip through several pages of a paper medical record. Clinicians' statements are printed monthly, and contain all information about an animal and its owner seen by a clinician over the previous month. Visits may also be listed for animals on which the medical record was completed the previous month. (Lab results may take several months to receive and necropsies often take six months!) Owner names, addresses, and phone numbers as well as animal information are then available for the clinicians' reference.

Vaccination reminder cards are also made possible by the linked systems. These are mailed to owners when their animals are due for rabies, distemper, or leukemia vaccinations. Being largely a referral facility, VTH only mails cards to owners who weren't referred to the hospital by outside veterinarians and to those who live nearby.

Our computer wish list for the future includes bar code scanning throughout the hospital, paperless medical records that use imaging technology to store records on optical disks, and direct interface between the lab machines and the DG for entering medical records. Some clinicians would also like to have terminals in examination rooms to view patient information and to enter information directly onto the computer.

Our users now have many times the access to information they had just two years ago. Two years from now . . . who knows? Δ

Cathy Kipp is a systems analyst for the Colorado State University Veterinary Teaching Hospital in Fort Collins, Colorado, where she has worked for nearly four years. She is also the editor of the Colorado Data General Users Group newsletter. She may be reached by mail at Veterinary Teaching Hospital, Computer Services, Colorado State University, Fort Collins, CO 80525, or by phone at 303/491-1294.

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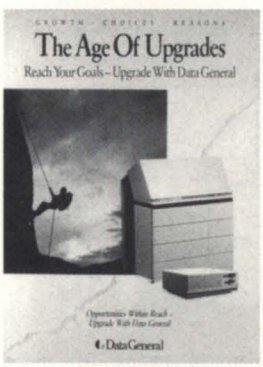

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Healthcare tonic

SYNOPSIS

Hospital chain uses remote hook-ups and on-line inquiries to improve efficiency.

by Jennifer Woodhall
Special to Focus
and
Seemee Ali
Focus staff

Paracelsus Healthcare Corporation is a 20-hospital, 1700-bed system with facilities in California and several southeastern states. Its two MV/20000 hosts in Pasadena, California handle administrative functions via remote phone links for the entire system, which includes hospitals from Florida and Mississippi to the LA metroplex. Each hospital operates independently, using the centralized Pasadena data bases.

Two years ago, Professional Healthcare Systems, Inc. (PHS) of Los Angeles provided the computerized solution that brought the Paracelsus data processing operation in-house. High costs and the inflexibility associated with using an outside service bureau precipitated the healthcare corporation's conversion to in-house processing.

The PHS patient accounts software used by Paracelsus runs on DG's AOS/VS system, and uses Cybertek's CQCS fourth generation language. PHS vice president for custom software, Randy Cole, credits the 4GL for much of Paracelsus' newfound ad hoc reporting ability. "The user can go directly to the data base without detouring through the index," he explains. "Consequently, processing time for simple programs is much shorter." PHS also uses CQCS to streamline its own development process.

Paracelcus' MIS Manager Paul Cahill estimates that the healthcare corporation saves 50 percent of its service bureau costs each month. "Instead of waiting for the service bureau to produce reports, we can respond to our users as the need arises," he says. "What's more, now we can run things on our own schedule. We have complete control of our own data bases."

A serious drawback of the old service bureau approach was batch report generation—a slow, often cumbersome process. "We couldn't get reports available to us as we needed them," Cahill remembers, "so we couldn't go into just one. We would have to schedule that report, and it would have to come out at a certain time of the week or month." On-line inquiries into patient accounts, admissions, and discharges were impossible with the batch processing method.

Flexible hospital census reports are a frequently used option for Paracelsus. "We can produce them any way we want," says Cahill. "Alphabetically by patient, by attending doctor or nursing station—even by the patient's religion." In the accounts receivable area, his staff can generate summary, intermediate, and extract reports that yield data for the billing department. "Say we want a list of all patients belonging to a particular HMO who are 90 days past due on their payments," Cahill theorizes. "We're no longer at the mercy of a particular program's flexibility to give us that information."

Paracelsus' Pasadena office manages the "day-end" runs that generate reports for each day's hospital activity—admissions, discharges, charges, and payments that are entered into Infos data bases. The reports print out at each individual hospital.

"If they miss a report, they can always come back and request it to be re-printed from their own menus on the screen," Cahill explained.

The remote administration has been relatively smooth, according to the MIS manager. "The disadvantages of having [the host system] in-house at each hospital would be that they would have to staff up for third shift—the graveyard shift—to do their own 'day-end,' and they would also be responsible for their own backups and system integrity." But, Cahill asserts, "we take all that away from them by having it in a centralized environment." The remote system also affords a degree of flexibility, Cahill says. "We could always move the system out to a region, or to a large hospital, if we wanted to, and still maintain the Xodiac network."

Cahill foresees improving the current system through expansion. Given a wish, he says he would put smaller MVs at each hospital site and allow the hospitals to work on subsets of the data bases in a local environment, and update them overnight. In addition, he says, with more MVs he could expand the corporation's CEO network, which currently is limited to communications from the various hospitals to the data processing center. Inter-hospital communication cannot take place under the current system, Cahill says, because "it would be too taxing on the hardware we have."

Cahill anticipates that at Paracelsus, reporting revenues and tracking HMOs and PPOs will be the next administrative functions to benefit from PHS's enhanced report writing capabilities. "Healthcare is a fast-changing industry," he observes. "We have to respond very quickly to a volatile regulatory environment." Δ

Jennifer Woodhall is a freelance writer living in Boulder, Colorado.

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Deciphering bar codes

SYNOPSIS

Standards for symbology and the mechanics of bar coding are explained in the first of a two-part article.

by Mike Leathers
Special to Focus

Bar coding is part of an industry dedicated to the automatic identification of almost anything imaginable. Other tools of identification include optical character recognition (OCR), machine vision, radio frequency identification tags, magnetic stripe, voice data, page readers, and hard copy graphic scanners.

Bar codes on box cars and beyond

I remember seeing large bar codes painted on railroad cars at both ends of each car. Identification of railroad cars is extremely important in the switching yards, where the cars are put together to make the freight trains that people see in various parts of the country. Knowing the exact placement of each car within the switching yard is essential for the yard workers to get the right car to the right track at the right time, and link it with other cars going to the same place. It's very similar to the use of bar codes in the typical warehouse today.

Since the early 1980s, bar codes have received a lot of attention. In the beginning, they represented numbers assigned by the user to identify product codes or part numbers within the confines of a manufacturer's business. When finished goods with the bar codes left on them were delivered to distribution warehouses, distribution centers began using them. As more manufacturers started using bar codes, it became apparent that some standardization was necessary to prevent code conflicts, and industries formed organizations responsible for defining and implementing these standards.

Symbology and code structure

Symbology is the language of bar coding. As each industry derived a symbology that worked for it, hundreds of implemented symbologies emerged. Standardization of the coding process eventually limited the number of bar codes in use; a new symbology is now rarely introduced.

Among the common symbologies are: UPC/EAN, used by the grocery industry and most retail applications; CODE 39 (or 3 of 9) used by healthcare and general industries; interleaved 2 of 5 (or I 2/5), used for distribution; CODABAR, used by blood banks; and LOGMARS, which is used by the military. Of these, only CODE 39 can be used to represent alphanumeric data, and its flexibility has made it increasingly popular among newer organizations. A new symbology that carries alpha data is called CODE 128, with high density that allows for small labels containing large amounts of information.

After selecting a desired symbology, the next task in standardization became defining the structure of information in the bar code. Every manufactured product must be uniquely identified, especially when mixed with products from other manufacturers at the retail level. As a result, some industry organizations have specified different labels be applied to each product—one for manufacturer identification, one for the part number, and another for the serial or lot number.

This is typically done by preceding the label information with a letter or number that identifies the type of label. An example is the letter "M" to identify this as a manufacturer's number, the letter "I" indicating an item label, a "Q" showing case quantity, and an "L" telling the lot number. Sometimes, these leading letters are not shown in the humanly readable part of the label so there are programming considerations too; these will be discussed later.

If you are a manufacturer wanting to implement bar codes, your industry trade organization may be able to tell you what

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standards are already established. If none have been established, an investigation of standards established by the distribution channels of your product, all the way down to the retail level, may be necessary. Ideally, the product code you apply to your product or package will be used by the entire distribution chain from your shipping dock to the retail invoice generated for the end user.

Components of bar code equipment

Like most computer products, bar codes involve input and output. Relative to the computer system, the output device is the bar code printer and the input device is the bar code reader.

Purchasing your own bar code printer is not always necessary to get started in bar coding. Study the application you are implementing. If you manufacture products that must be labeled, but don't want bar codes included in the manufacturing process, you will probably find it more cost-effective to let a third party print the labels. In this case, all you have to do is apply the printed labels.

If you are a retailer, and your goal is to increase speed and accuracy through the check-out area, you may need to see how many products come from the manufacturer with labels pre-attached. If a high percentage of your volume movers have pre-attached bar codes, you may not need a bar code printer. Manual entry of product codes that are not bar coded will probably suffice. On the other hand, if a low percentage of the items you sell have bar codes, you'll need a printer to achieve your implementation goal.

Be realistic in your evaluation—adding a bar code printer to your system can increase implementation costs far beyond the price of the equipment. Considerations when choosing a printer include the number of labels needed, time available for label production, methods of label application, and the environment the labels will be subjected to after they are applied. Answering these questions will usually define the speed and/or number of printers needed for the application, as well as whether the printer will need to be built into an automatic applicator, and the type of label material needed.

The bar code reader is an easier decision in most cases, but no less critical. A reader is made of two components: the scanner and the decoder. The scanner acts as the eye of a bar code system, with the decoder acting as the brain. A scanner looks at the bar code optically, and eletronically presents it to the decoder. The decoder identifies the symbology with autodiscrimination, decodes the information, determines whether the label was read forward or backward, translates it into ASCII characters, and outputs the characters.

Different scanners exist to satisfy a variety of applications and budgets. Popular models include wands (sometimes referred to as light pens or pencils), handheld laser guns, and fixed-mount lasers. When choosing a scanner for your application, consider what types and sizes of labels are going to be scanned, where you will be when scanning the label (at the checkout counter or on a forklift?), and the label's relative position vertically and

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/or horizontally. Answers here help define whether a less expensive wand device can be used, or if a laser is necessary, whether it needs to be of the standard-, long-, or very long-range model, and whether a fixed-mount laser can be used to save labor costs.

Decoders are usually adaptable to different scanning devices, but mixing vendors calls for some caution. Be certain the decoder and scanner can work together before making your investment. The decoder attaches to the computer itself, so special attention is required to be sure of compatibility here, too.

How to connect to the computer

Since our company is a Data General VAR, our systems integration experience centers on DG computers and terminals. Within the Data General family we have worked with MS-DOS PCs, including the DG/One, ICOS and RDOS systems, AOS, and all AOS/VS. Interactive Cobol and AOS Cobol are the primary languages used in our implementation of bar code applications.

As a word of encouragement—we have only had to use assembly language on one application, and that was a small routine to handle some special characteristics of an older model bar code printer one of our clients got a "deal" on. Watch out for deals in this industry; its technology is changing so rapidly, used equipment may be obsolete.

Keep in mind that a bar code reader is comprised of a scanner and decoder. Because the decoder attaches to the computer, it is most important in this discussion. The scanner type is not an issue when attaching to the computer. Within the last few months, laser guns and other scanner devices with built-in decoders have gained popularity because they reduce the amount of equipment needed. These products can legitimately be called laser-readers, and will proliferate in the coming year.

Readers connect to the computer in a variety of ways, depending upon the implementation. A few of the popular methods include RS-232 serial ports, keyboard wedges, serial wedges, radio frequency communication, portable intelligent terminals, and multiplexors.

RS-232 serial ports

With RS-232 serial ports, the reader cables directly to the computer's serial port. On an MV system, this would be an RS-232 IAC line, LAC line, etc., which translates into a @CON line to the AOS/VS operating system. In most cases, the @CON line would not be enabled as a console, but would instead be opened by the application program as an input/output file.

An exception would be programmed CLI macros that perform a variety of tasks that require the operator to be restricted from seeing the results of the tasks, and give you complete control of what tasks get performed. Under these conditions, it is conceivable that you would have the console enabled and have bar codes available for an operator to scan. You would print bar code labels using usernames and passwords, perform each of the CLI com-

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mand macros, and scan the BYE command to log off. Since the CREATE/I can be used to create and input data to a file, you could also use an enabled console line attached to a reader to collect data that requires no verification. In this case, you need only write a program that processes the data file.

Keyboard wedges

Keyboard wedges, as implied by their name, wedge the reader between the keyboard and the monitor. They are generally not available for Data General terminals, however. The cable from the terminal keyboard plugs into the reader, and another cable plugs into the keyboard connector on the terminal. The wedges offer an easy connection of the reader—they are essentially transparent to the application software as well as the operating system, and are popular for this reason.

Along these lines, Data General offers its model 5230, a version of the D/216 terminal with a built-in decoder, and an optional wand or laser gun. The advantage to this terminal is that it's very easy to connect, it's transparent to software, *and* it eliminates cables and power converters that might otherwise be necessary. Since the 5230 is a D/216 in all other respects, there are no compatibility hassles.

Veteran Data General users who remember how many times DG has changed keyboard connectors can relate to the problems keyboard wedge manufacturers would have if they tried to keep up with them all. While Data General is now one of the better vendors about giving careful consideration to changing these things, the most popular keyboard wedges are compatible with IBM PC keyboard connectors. Take note that the keyboard Data General uses on some of its PC clones is a variation of IBM's round PC connector; it has a few more pins that prevent it from being used with PC-compatible keyboard wedge readers. If anyone knows of an adaptor for a Data General keyboard on an IBM PC clone, please contact me.

Serial wedges

Serial wedges are almost as easy to connect as keyboard wedges, and most serial wedge manufacturers are even putting the correct gender of connectors on the devices! The serial wedge fits between the computer and the terminal. A connector attaches it to the computer data cable, and a cable connects to the terminal. The interface is usually RS-232, but some manufacturers offer an RS-422 version as well.

Connectors vary a great deal. Since manufacturers are called upon to supply increasingly smaller devices, they have become creative in the use of tiny connectors. This means that instead of a compatible 25 pin D connector, you may find a 9 pin D, or an 8 or 6 or 4 pin modular phone connector. If you are not an experienced cable maker, be sure the manufacturer or vendor supplies cables that work (meaning they have been tested) on the Data General computer you are using.

> **Intelligent terminals can off-load your host computer in some applications, but with respect to Data General systems, we have found that "dumb is better."**

We find that as the number of pins decreases from 25, manufacturers make certain assumptions about signals provided by the terminal to the computer. In a couple of readers we tested, these assumptions are invalid with respect to Data General machines, and we could not use the readers. The best advice here is that if you are using a serial wedge, make the vendor demonstrate that it works on your computer before you commit, even if you have to pay for a site visit and cable manufacturing. In some instances, even cable changes are not the solution to interface problems.

Another consideration with the serial wedge is its intelligence level. In the case of Data General systems, the "dumber" the serial wedge, the better off you will be. We have tested some wedge readers with special buffering and fancy features that depend upon the absence of special characters and character sequences sent from the computer host. Because of this, the first time a control-S came down the line embedded in a cursor command sequence headed for the Data General CRT, the reader locked up, thinking it had just received an X-OFF flow control character. All the fancy buffering in the world could not overcome that one fatal character.

Once the serial wedge is in place and working properly, however, it presents a transparent situation to the application and operating system software, making implementation very easy.

RF communication

Radio frequency (RF) communication gives the scanning device mobility. Connection to the computer is achieved by attaching a base-station receiver with the decoder built into the serial port on the computer. The base station receives a signal transmitted from the RF terminal that may have just scanned a bar code label. The RF terminal connects to the standard variety of scanners, as well as its own keyboard.

Conceptually, it is like any other terminal, interfacing with the computer in the same manner; the major difference is that it has a wireless connection. RF terminals can be intelligent or dumb—dumb being much like a simple CRT. Intelligent terminals have a built-in computer that stores instructions or programs in its memory, and collects data that it uploads at predetermined intervals.

Intelligent terminals can be downloaded with instructions to a warehouse picker about location, quantity, and types of products to pick. Dumb terminals can perform the same applications, but instead of one download with several instructions, the computer sends one instruction at a time. Intelligent terminals can off-load your host computer in some applications, but with respect to Data General systems, we have found that "dumb is better."

Most modern base stations are designed to work with multiple RF terminals simultaneously—lower cost base stations handle up to eight, while more expensive

units go up to 256. When designing your system, remember that the decoder from the base station is connected to only one @CON line on the computer, so the program that is processing information on that line must be aware of which RF terminal it is speaking with, and what procedure that device is currently performing. These devices operate on frequencies licensed by the FCC, which will grant licenses for multiple frequencies per site. To keep the application simple, you may consider multiple base stations, each with its own @CON line being processed by an application program dedicated to a single function.

Indirect

The indirect method through a multiplexor can take in a wide range of equipment. So far, the connections discussed each take a serial port from the host computer; the fact that they may or may not wedge in line with a CRT does not matter—they still have to be attached to their own @CON lines. If your application calls for more than one data collection device, and the information each device collects can be processed by an application program that can decipher which device is doing what, (or if the data being collected can be mixed on a record-by-record basis) you can use concentrators and save serial ports.

An example of this can be seen on a job shop floor where the data being collected is labor time spent in a manufacturing process. Several data collection devices could attach to a concentrator connected to the computer at just one @CON line. This would work fine with the application program, because it wouldn't need to know which station collected the data, and because the data collected is the same kind of data no matter where it came from. By same kind of data, I mean that each device collects the employee number, work order number, operation performed, and the number of pieces through the operation. To the application program, it appears the data is being keyed by one person at one CRT when, in fact, you might have 50 stations reporting data.

Portables

Portable intelligent terminals can be connected in almost all of the above ways. The main use of these terminals is to collect data without being tied down by a wire. The intelligence of the terminal allows a program in its own computer to process data collected and perform specified verification procedures.

An example would be the collection of inventory data for a cycle count. Using a portable reader, the list of product codes can simply be downloaded, rather than going through the cumbersome process of printing out a report that then becomes the entry document for another program. As the operator scans a product code label, the program in the portable terminal checks its memory to make sure that it is indeed one of the products to be counted. It can also show the next product to count. If the book quantity can be downloaded with the product code, the program can do a quick range check on the quantity counted, comparing it with the book quantity and notifying the operator to check the count if it is off by a predetermined margin.

This extra verification can catch errors in the unit of measure; for example, we counted 100 bolts in a box and input that count to the portable unit. The unit found that we are to have a quantity of only one box on hand, and sent a message to the operator to check the count again. If we had downloaded the unit of measure, the program in the portable could display that as well. This saves time in the reconciliation of errors.

In this scenario, the operator is scanning the product code and keying a count quantity into the keypad present on most portable readers. When all products have been counted, the operator places the portable reader into a communication dock that is connected as a serial wedge to a @CON line. The cycle count processing program sends control characters to the portable reader instructing it to upload its data. There is no need for keying by a CRT operator. The information ends up in the computer with as much automation as possible, saving time and reducing errors.

In next month's article I will discuss equipment costs and the role of the system integrator. Δ

Mike Leathers is president of Snowbird Systems, a DG VAR specializing in system integration for inventory control. He may be reached at 12015 Park 35 Circle, Suite 117, Austin, TX 78753; 512/835-0143.

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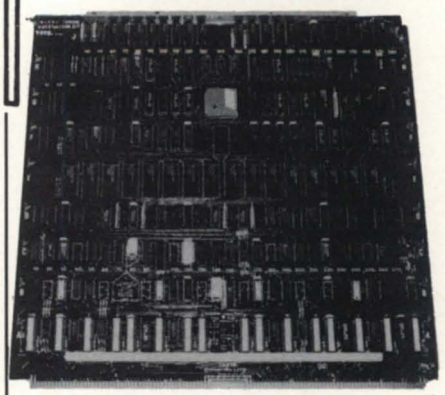

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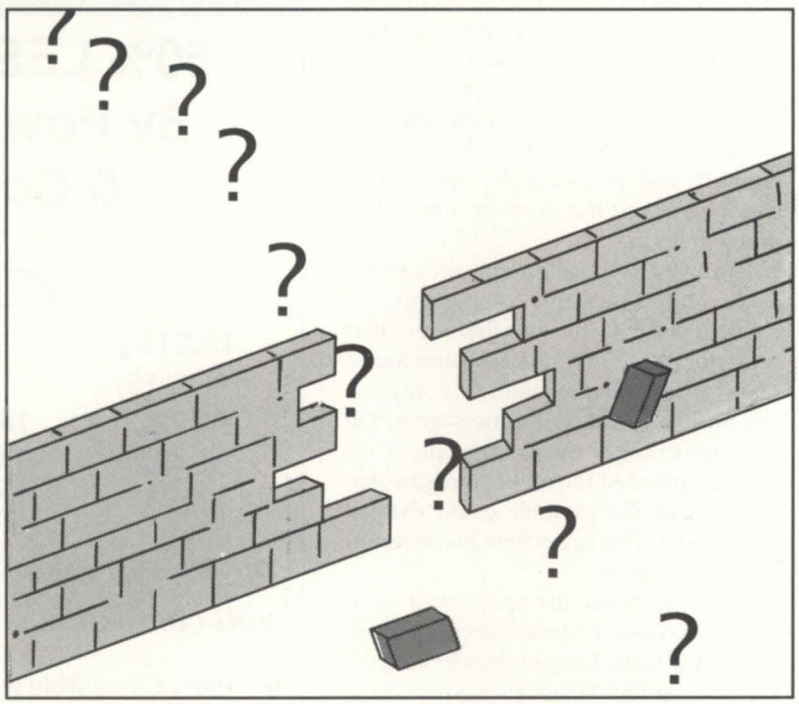

SYNOPSIS

Shared memory pages effectively bypass a data roadblock set up in AOS/VS.

After I reviewed the text of a previous article, I noticed another button on my wall. The button says "No, I have not lost my mind, it is backed up on tape somewhere." This led to a train of thought (presumably mine) that ended with the idea of what to write for this month's column.

Under normal circumstances, the pages of memory that a program uses are protected from the ravages of other programs. (This is, after all, one of the tenets of multiuser systems.) The security of your data is protected by the hardware of your MV, under control of AOS/VS.

Memory is divided into pages, and a collection of these pages is known as a "working set." If a specific page is not part of a working set, and AOS/VS's page table indicates that the page belongs to someone else, the hardware will refuse to let a program access (read or write) the data.

However, sometimes the need arises to be able to access data that is in another process' working set. (I have written in the past about ways to send data from one process to another, but these methods—IPCs and pipes—might be too slow for the volume of data or frequency with which two or more processes need to share information.)

The way to get around the roadblock built in to AOS/VS is to use a feature known as "shared memory pages." Using this feature requires understanding of the system calls ?GSHPT, ?SSHPT, ?SOPEN, ?SCLOSE, ?FLUSH, ?SPAGE, and ?RPAGE. Other methods of shared memory use may also involve the ?OPEN, ?PMTPF, ?SOPPF, ?ESFF, ?VALAD, and ?VALIDATE system calls.

Knowing about shared pages ?GSHPT

The ?GSHPT (get shared partition size) system call is simple to understand and to use. This system call finds two important pieces of information regarding the process' shared partition. There are no inputs to this call, and the two returned values are: in AC0, the page number of the first shared page, and in AC1, the total number of shared pages. Both of these values are specific to the calling process, and to the ring within which the call is made. The number of the first page is used in some of the calls that will be examined shortly. The number of pages available is used to determine if more pages need to be allocated.

Getting shared memory space ?SSHPT

If the number of shared pages available is not enough to satisfy the program, then the ?SSHPT (set the shared partition size) system call is used. There are no output parameters to the system call, and the two input parameters are very similar to the information returned by ?GSHPT. The key to using this call is to use the page number that is returned by

?GSHPT. If you want to change the size of the shared memory partition, then the number of pages should be different from that obtained with ?GSHPT. (Using the same value is a valueless exercise in making a call to the operating system.)

Shared memory going twice . . .

Setting the shared memory partition size with ?SSHPT is one of the three ways of obtaining shared memory space. As explained above, using ?SSHPT, ?SOPEN, and ?SPAGE is one method. (More on the last two calls later.) The second method is to read the appropriate manual on the macroassembler (MASM), specifically about the .PART and .NREL pseudo-ops. The .NREL directive is used to tell MASM to place everything that follows it into a normal (predefined) relocatable partition, as specified by the argument to the .NREL pseudo-op. The argument specifies whether this area is to be a shared data (.NREL 5) or a shared data partition (.NREL 1 or .NREL 7). The .PART pseudo-op is used when you want to define your own partitions in NREL memory. (To learn more, refer to the LINK and MASM reference manuals.) Using the MASM pseudo-ops is a way to implicitly define the shared area.

Shared memory going three times . . .

The third way to use shared memory pages is to use a special form of the ?OPEN system call to open a file for shared access.

Shared memory files

As with IPCs, you can start using shared memory by opening a file. Instead of using the normal ?OPEN system call, use the ?SOPEN call. The ?SOPEN call differs significantly from the normal ?OPEN call, in that it doesn't use a packet. The information used by the call is: in AC0, a byte pointer to the pathname of the file you want to open; in AC1, either the channel number on which you want to open the file, or -1 if you want AOS/VS to assign the channel number; and in AC2, a zero if you want to open the file read-only, or any non-zero value if you want read /write access to the file.

When complete, this call returns the file's channel number in AC1. On files that will be used for shared memory, the element size of the file must be four, or an integral multiple thereof.

Paging Dr. Shared Memory

After opening a shared memory file, you may read from the file with the ?SPAGE system call. The ?SPAGE call requires the channel number of the file in AC1, and the address of a packet in AC2 (AC0 is reserved, and set to zero before making the call). The ?SPAGE packet flag byte allows the option of having read-only access to the data. The packet also requires that you specify the number of disk blocks (4 or a multiple of 4), the starting disk block address, and the base address at which to read in the page(s) from the disk file. (You might notice that the packet looks very similar to the ?RDB /?WRB system call packet. In fact, it is identical.)

If reading the disk file beyond the current size results in an end-of-file (EOF),

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then AOS/VS allocates more blocks to the file, fills the blocks with zeros, adds them to the file, and then reads the zeros into the shared memory area defined in the system call packet. Of course, if there was data in the disk file, it would have been read into the defined shared memory space, assuming that there were no errors with the call. If another process opens the same file, and reads the same disk pages into its shared memory address space, then the data (or code) is shared.

Don't forget to ?FLUSH, it's a long way to the disk

After modifying data, you might want the disk file to reflect the changes. This is done by using the ?FLUSH system call. To use it, simply specify any address within the shared memory page that you want AOS/VS to write to the disk.

If you are not sure which pages were modified, AOS/VS has another feature that flushes all changed pages to the disk. This system call is ?ESFF (emergency shared file flush). When a process makes this system call, AOS/VS goes through the list of shared memory pages used by the file whose channel number was supplied as the argument to the call, and flushes them to the disk file. (Having done the ?ESFF call, it is probably best to also issue the ?UPDATE system call with the same channel number, to force AOS/VS to update the file descriptor for the file. This helps to ensure that the file system properly reflects the size of the file, etc.)

Releasing shared memory pages, and flushing a second time

When you finish using a shared memory page, you can notify AOS/VS that you want to remove a page from the address space. (The page is not necessarily removed from memory, as another process might be sharing it.) To release a page, use the ?RPAGE system call, and specify any address within the page. The most significant bit of the specified address is a flag to AOS/VS that indicates whether to flush (bit 0 set) the data to the disk before releasing the page, or to just release the page (bit 0 cleared).

Closing up (for now)

Shared page files are closed with the ?SCLOSE system call, instead of the normal ?CLOSE. This call takes as an argument (AC1) the channel number of the shared memory file to be closed. Bit 0 should be set to tell AOS/VS to release the shared pages from the address space. (If any pages of the file are still in the address space, AOS/VS will complain with an error code.)

This completes our introductory tour of shared memory pages. We thank you for flying *Focus* Airlines, and hope that you will join us next month for our tour of the other features. Δ

Michael Dupras is senior consultant for the Software Products and Services Division of DG Canada. He may be reached at Data General, 1827 Woodward Dr., Ottawa, Ontario, Canada K2C 0P9.

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Help! No more documentation

by Michael E. Marotta
Special to Focus

SYNOPSIS

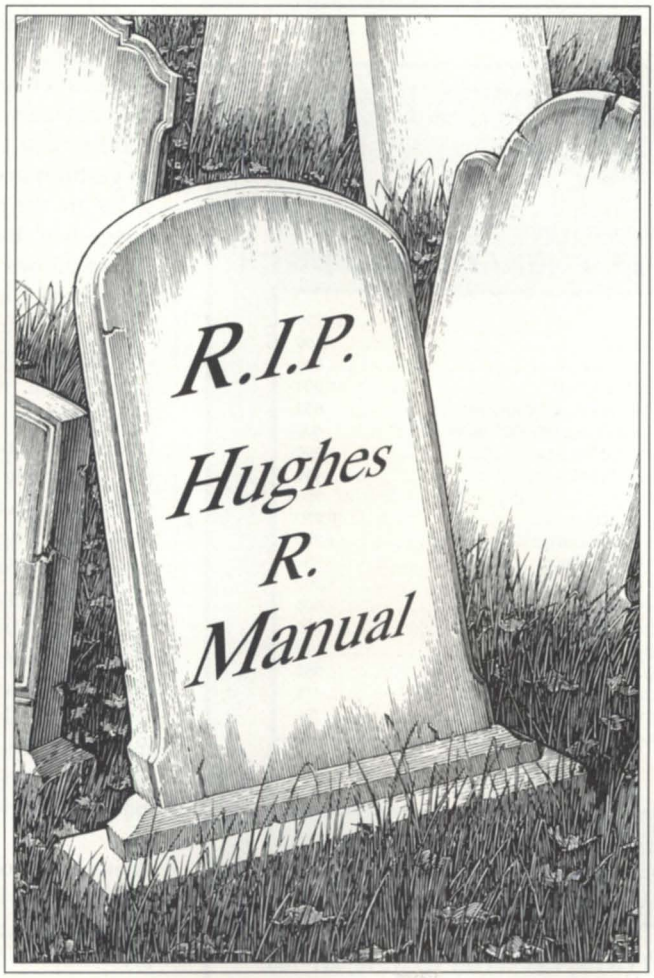
The computing environment of the future is self-supporting and has no need for books.

The user manual is dead.

Do you consider the fuel gauge of your car to be documentation for the gas tank? You could, if you wanted to take a different view. Within three to five years, calling context-sensitive online help "documentation" will also be taking a different view. Eventually, all good information processing systems will provide self-referential information.

In the early days of software compilers, messages like ABEND (ABnormal END of program—it blew up because of a bug) were a primitive expression of this goal. Of course, you still relied on the user manuals, but the direction was clear; the compiler itself told you what you were doing wrong. In recent years, dBase's ASSIST mode helped move us away from user manuals. Hypertext support is another step toward integrated environments that provide self-referential information. Of course, today dBase, etc., still come with manuals. The fact remains that the trend away from documentation is well-defined.

Computing has advanced by allowing people to access and manipulate more and more information. Taking time away from the keyboard to read a user manual subtracts from the power of the computer. An ideal computing environment is self-supporting and has no need for books.



Paradigms

In William Gibson's cyberpunk novel "Neuromancer," the hero asks an artificial intelligence program if it can read his mind. The AI responds, "Minds aren't read. See, you've still got the paradigms print gave you . . . " Commands like READ, WRITE, and PRINT were incorporated into "high level" languages like Cobol, Fortran, and Basic. Even today, a large set of memory locations (64,000 of them) is called a "page." These are bookage metaphors. The computer programmer who uses READ and WRITE statements has one foot in the pre-computer age.

The English word "print" comes from the Latin word "premere" which means "to press." The old Romans pressed their styli into wax tablets. Of course, wax tablets weren't the only ancient medium. If he were here today, Julius Caesar would appreciate CTRL-S for "no scroll."

Computing will advance out of the Era of Print when you never need to open a book. Already shareware programs from PC-SIG have this instruction printed on the diskette label:

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This activates the GO.BAT program that tells you what to do with the diskette. If

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this is too arcane, the user needs a course in informatic literacy.

Today's educators may bemoan the fact that young people do not read. Yet products like Nintendo offer something that cannot be had in the pages of "Silas Marner." Even science fiction from 30 years ago reflects the attitude that reading was a leisure activity meant to be savored. This is one reason that computer user manuals have a historical reputation for turgid prose. It was assumed that the reader had *time* to study the manual. But we live in a world of *just in time* production methods. Today's user is not a programmer annotating greenbar printout while waiting for a turn in the job queue. Today's user is a business professional, an engineer, a teacher, an artist, etc., who needs an answer *now*.

Multi-media programming

Both television and computing are driven by programs. Advances in compact disk technology and interactive video point to the day when a user can call up a recording that shows by example what needs to be done. The tireless tutor will repeat again and again, using different phrasing, what the user does not know.

When you talk to someone, you rely on gestures and facial expressions. Type styles are the printed equivalent of gestures. Even the best hard copy output device allows a limited choice of type fonts. In fact, using many type faces for different kinds of emphasis is self-defeating: the page becomes cluttered, a typographic nightmare. On the other hand, there is no substitute for an attractive but no-nonsense female who looks the user in the eye, raises her right hand with the index finger pointed up, waggles the finger slightly and says, "File not found. The program you have requested is not on the system."

Consider that the Apple Macintosh allows the user to choose a set of sound effects like boing or a monkey laugh. Prompts like these can be annoying when multiplied by a roomful of users. Even so, it points to the fact that sound can be exploited to give information to the user.

Writer's market

Someone will have to create all of this online context-sensitive interactive CD user support. Within three to five years,

mere wordsmithing will not be enough. Knowledge of "paintbrush" software will be the default value and videography will be the preferred tool for those who design help documentation. America's lead in computer technology is unsurpassed. Some people in other countries are surely doing interesting and important things, but overall, English is the *lingua franca* of computing.

The designer of help documentation will have to face the fact that not every English speaking person knows what a "bobby pin" is. In England, the little wire hair clip is called a "gripper." When a PC of the future is frozen and will not eject the diskette, the CD-ROM cannot tell the user to stick a bent bobby pin in the little hole. It must show a picture of what needs to be done.

Even so, spoken instructions are designed as written words. The language of instruction will have to improve or else we will be confronted with a stern-faced, uniformed helper who says, "The MAINTAIN CONTROL FILE option allows the user to establish and maintain the operation master controls for each specific operation in a multi-operation chain." (This is a direct quote from a user manual offered by one software developer.) Creating online help requires that you have the user's viewpoint.

Documentation as specification

Today, the user's manual is the design specification. Structured programming is predicated on the assumption that you start with the output and trace the procedures back to the input. Creating the user manual before the coding begins is the right way to schedule a project. We already have a wide range of demo makers. Rather than rely on a sheaf of papers, the best way to design a system is to start with a demo. Online, context-sensitive help should be included in the initial design. Systems analysts who work with vendors in the development phase must insist on superior Help in addition to accurate data retrieval, calculation, and reporting. It is natural to expect that we will need Help as part of this process. Δ

Michael E. Marotta is a technical writer with a decade of experience on Data General and other equipment. He works in manufacturing and business environments.

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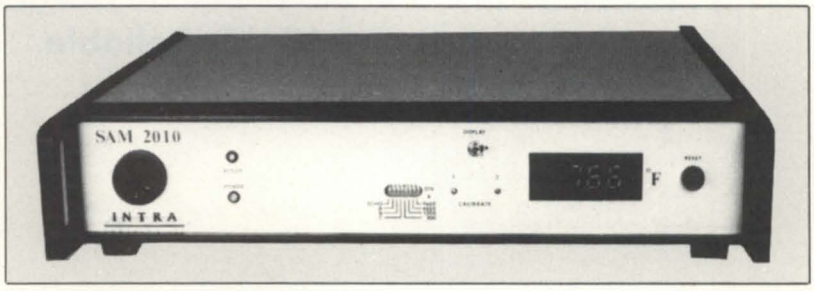

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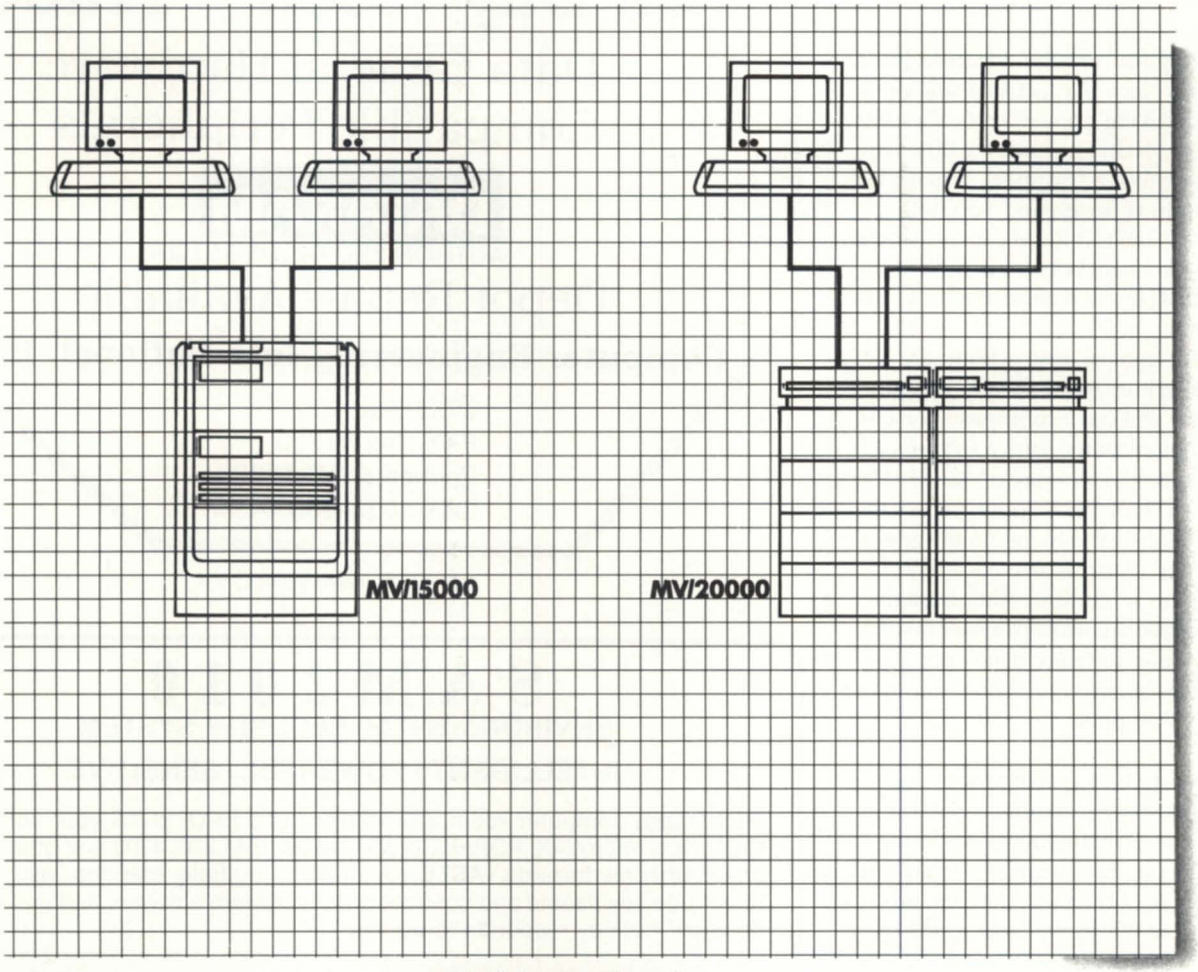

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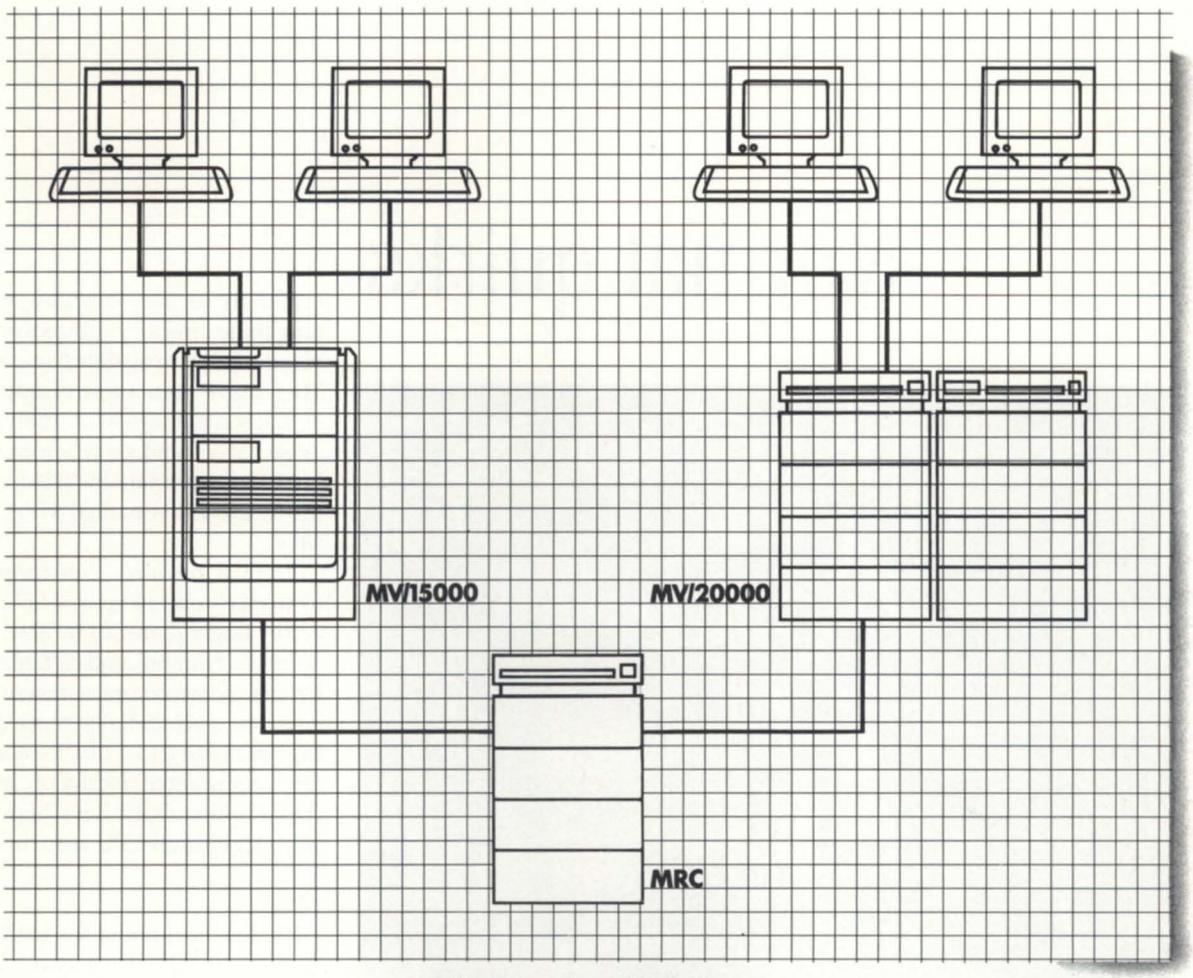

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Normal quirks

SYNOPSIS

Advice du jour on the unobtrusive CLI32, the AOS/VS II decision, and more.

:CLI32

I mentioned last month that I was in the process of test driving the new CLI32 product and would have some scoop on it at a later date. Well, the scoop is pretty boring.

So far, CLI32 has been very unobtrusive. Aside from a few of the normal quirks one would expect in a complex product, there haven't been too many surprises. The biggest plus is CLI32's immunity to stack overflow when scanning huge directory subtrees and its marvelous ability to do date/time arithmetic. There have been a few disappointments in that some things like variables, if/then/else, labels, and go-to's weren't added, but I can appreciate the wisdom of keeping CLI32 as compatible with CLI as possible.

From a resource consumption/performance point of view, CLI32 is considerably larger than CLI (a 500+ page WSS is not uncommon), and certainly no faster. In fact, some complex macros seem to consume substantially more CPU than they did with CLI. I don't see much hope for a substantial reduction in memory consumption, but I have high hopes for some significant CPU reduction.

:VS_II

We're still running the loaner copy of AOS/VS II 1.20 on one of our MV/4000s with a 1 MB disk data cache. The general consensus of everyone who uses it is that it is still noticeably more sluggish than the other MV/4s running AOS/VS 7.65, even with the disk data cache scoring a consistent 35 percent overall success percentage. However, 1.20 is noticeably swifter than the 1.10 rev we used previously. Several DG people are fond of hinting that the new adjacent element I/O capability of AOS/VS II can actually speed up disk throughput compared to AOS/VS, especially when doing things like DUMP_II.

As it happens, we had a unique opportunity to test this contention a few weeks back when a disk started to get flaky on one of our AOS/VS systems. We decided

to move the disk's contents over to a freshly DJ'ed spare disk on the AOS/VS II system. I timed the DUMP_II (using an 8mm tape with /BUFF=32768) on AOS/VS, and then timed the same command on AOS/VS II several days later when we moved the disk's contents back to the freshly repaired disk on the AOS/VS system.

AOS/VS II took 25 percent longer to DUMP_II the disk, even though it was presumably less fragmented than the AOS/VS DUMP_II that we compared it to. I attribute a significant part of the difference to the increased system CPU consumption on AOS/VS II due to NFS. Even worse, the LOAD_II took 40 percent longer on AOS/VS II than it did on AOS/VS several days later, but this may be because the AOS/VS system has my famous RUNLC1 patch installed to speed up LOAD<,_II>s and MOVEs.

A curious situation has been reported to me by several grapeviners; it seems that various DG offices around the country are strongly pushing AOS/VS II upgrades on existing users. This seems a bit puzzling to me. What could the motive possibly be? It can't be revenue; the upgrade fees are not going to make much of a dent in the next quarter's fiscal results. If having to maintain both AOS/VS and AOS/VS II is causing DG pain, a quick cure is painfully obvious: free upgrades to AOS/VS II and a two year wake for AOS/VS.

People keep calling me and asking whether I think they should ante up and upgrade to AOS/VS II. For the rest of you who haven't called, here's my standard advice du jour. If you're happy with AOS/VS and feel no need for any of the new hardware and software that only works with AOS/VS II, then stick with AOS/VS for as long as it makes sense, perhaps forever. On the other hand, if an MRC is in your future plans, I'd get the upgrade out of the way as soon as possible.

Our plan is to stick with AOS/VS for the foreseeable future on the mainly batch production systems, and probably add a little MV/1400 to the network to handle AOS/VS II product checkout. So far, AOS/VS and AOS/VS II connected together via XTS/XODIAC have caused zero problems in terms of compatibility or macro differences. We've run across a few minor differences, but they were either sloppy programming on our part (AOS/VS II checks default and reserved packet locations a little more closely), or were things we would have had to change anyway if we upgraded to AOS/VS II.

:AOS_VS_7.67

Speaking of the RUNLC1 patch which I mentioned above, some of you will be receiving AOS/VS 7.67 in the next month or two. The good news is that the RUNLC1 patch is no longer necessary. As I indicated in my December column, Larry McCoskery and his gang have made the patch obsolete by changing the source code. Now the rest of you who have an understandable fear of using Unofficial Patches can see what the more reckless few hundred of us have been seeing for the last couple of years since I first pub-

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lished the patch.

I may get a chance to check out some of the other long awaited features if a pending beta site deal goes through. The one I'm dying to try is the new selective SYSLOG capability.

:THE_YEAR_IN_REVIEW

For some reason, a significant number of questions seemed to recur more often this past year than they did during previous years. In some cases the question has been the subject of a previous column somewhere along the line. Maybe I could take a year off and have the editors just reprint some of my old columns . . . just wishful thinking.

Anyway, I'm going to summarize the most frequent topics and if you need in-depth info you can consult the previous columns. Machine readable copies and an index are available on the :SYSMGR BBS.

:TYIR:CHARACTERISTICS

The most heavily recurring themes regarding console characteristics are the appallingly misleading descriptions provided by the HELP *CHAR command, blanket use of the /IFC and /OFC characteristics when they are generally unnecessary, and the nearly universal confusion regarding the /AUTOBAUD, /MDUA, /MOD, and /MRI characteristics coupled with how dial-in modems need to be configured to work properly.

Along this line, configuring statistical multiplexor flow control to work properly with AOS/VS II tops the list in terms of the frequency of phone calls. Just today I was talking to a user who casually mentioned that they had just finished swapping out their statistical multiplexors for the third time, and gee whiz, it still hangs ports two or three times a day. What a surprise.

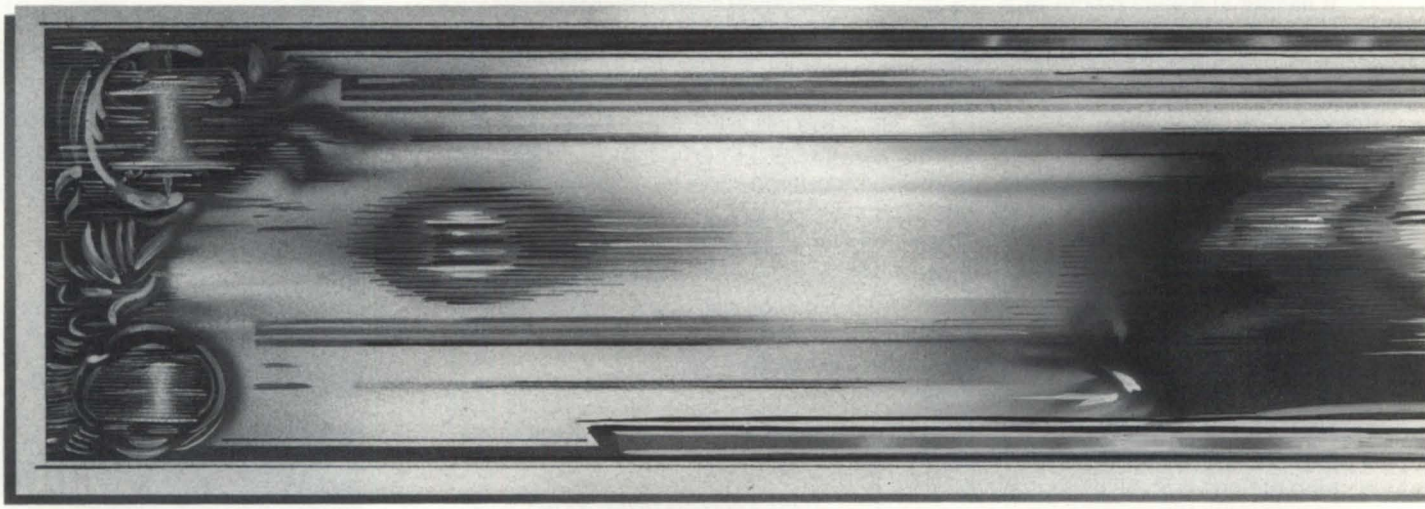
:TYIR:MIPS

I hope I don't embarrass the user who sent me a fax yesterday with this question, but it's worth recounting. The user was interested in obtaining a MIPS scaling factor that would enable him to estimate the speed at which some Cobol applications that are currently running on an IBM system would run if they were moved to an MV. Paraphrasing heavily, my answer was 1.00, plus or minus 2.00. My recommendation was to pick a typical chunk of code, convert it to run on the MV, and then measure it on both systems. I figure that this test would effectively reduce the uncertainty in the MIPS factor to plus or minus 1.00 instead of plus or minus 2.00. Still not very helpful, I'm afraid, but such is the nature of comparing complex software systems using only the cycle time of the underlying processor. Does anybody else have a better answer to this problem?

:TYIR:8MM

I seem to have become the focus of a lot of questions about the new 8 mm video tape cassette backup units, probably because I was one of the first to install one last January when we took on a client who was developing a controller for the

THE ULTIMATE OBJECTIVE:



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unit and needed some AOS/VS expertise to get it integrated with AOS/VS II.

Most of the questions were related to the disappointment a lot of users experienced when they installed the units and found that their backups were not substantially quicker than using traditional nine-track tape units (not counting the volume change time). Most of the callers were on MV/8000 class machines, or smaller, and did not have large numbers of large files, and therein lies the answer.

The real problem has to do with the resource consumption of the DUMP programs involved and the operating system CPU overhead required to open, read, and close the thousands of small files and directories taking part in the backup. On our MV/4 running AOS/VS 7.65, DUMP_II and the system regularly consume over 85 percent of the CPU and can't keep the cartridge tape going at anything better than about 80 KB/sec. We weren't surprised when we found that the cartridge was no faster than our old 6026 tape units (we have two on each MV so volume change time was not an issue). We had never seen the 6026 drives go full speed for more than a few seconds at a time, so we didn't expect much. The only time we saw full speed was when DUMP_II hit a large data base file, and the biggest ones we have are relatively small (about 30 MB). The bulk of our files are in the sub megabyte size range, and the time required to open/close them is about the same as the time required to read the data from disk and write it to the tape.

So, does this mean that installing the 8 mm unit was a mistake? Hardly. In terms of convenience, physical storage space, and media cost it was a definite winner. And the reliability seems to be just as good, if not better than the nine-track stuff it supplements.

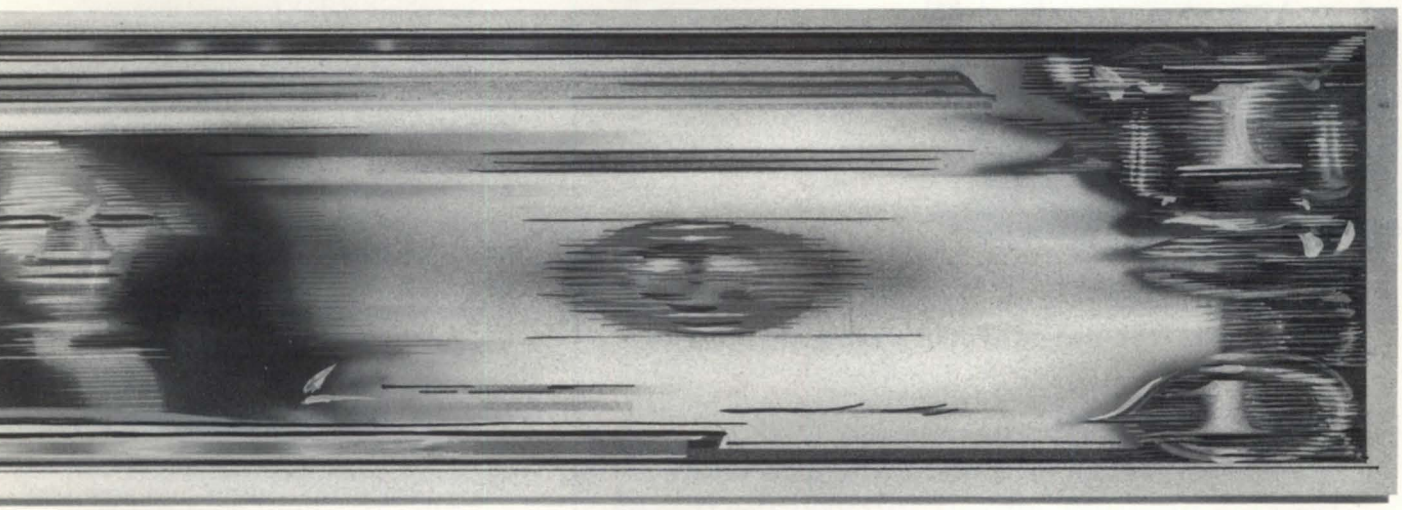
:TYIR:CONSOLIDATION

Quite a few system managers were inducted into the Horror Story Hall of Fame this year as a result of consolidations. A consolidation is when you take the load on two separate MV systems and combine them onto a single system that's supposedly twice as fast and has as many disks as the original two systems. The usual driving force behind consolidation has to do with reducing physical space requirements and/or saving on maintenance contract costs.

The problem with consolidation is that it only works if a) both of the original systems were not operating at anywhere near capacity, and b) the resulting total PID count was not close to the current Guinness record for MV series systems (currently about 500 PIDs). Out of six consolidations I had contact with this year, one was a success and the rest produced abysmal response times. Ignoring the specifics of each case and just looking at the raw scores, it's clear that consolidations need more attention and safety margins than they've gotten in the past. A seventh consolidation is in the works as I write this, and I'll report the results as soon as I get them.

In the meantime, try thinking of con-

COST EFFECTIVNESS



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solidations this way: is upgrading to a situation where half as many operating systems are performing work on your behalf and twice as many users are competing for the same global server and operating system resources really an upgrade or a downgrade?

:TYIR:XLPT

XLPT and third party printer setups are a perennial favorite when it comes to phone calls. Based on what I hear, it's a wonder that anybody gets anything printed the way that they expect it. Some of the calls were caused by the changes between the old and new XLPTs, but most of the calls were related to simple configuration screw ups. The discouraging part is that few of the calls were related to the same problem. Printer configuration, especially lasers, just seems to be a minefield of potential problems and requires both an in-depth knowledge of XLPT and the operating system, and a thorough familiarity with the printer's behavior and options. I get the impression that a consultant could make a decent living just doing printer setups.

:TYIR:C++

For some reason, a lot of people called to cry on my shoulder about the lack of Object Oriented Programming (OOP) on DG systems. I can't think of why they thought I would be a kindred spirit, except that I've recently converted all my high level language stuff to C from RATFOR. I put OOP in the same category as LISP, APL, ADA, Smalltalk, Esperanto, and all the other niche languages that have attracted a rabid, but tiny group of followers. In fact, I was sorely tempted this month to heavily plagiarize an excellent piece in *Dr. Dobb's Journal* (Dec '89, Vol 14, No. 12). The piece is by a talented writer named Scott Guthery and is titled "Are The Emperor's New Clothes Object Oriented?" I recommend it highly. I think it's available on-line as part of Compuserve (try GO DDJ).

:TYIR:FRAG

The subject of disk fragmentation was a hot topic this year in this magazine, the "other magazine," and on the NADGUG BBS. There seem to be many advocates on both sides of the issue, and a serious dearth of broad spectrum quantitative results. In response to the rampant emotionalism on this issue, I've adopted the following attitude: Try it. If it works, or even if you just think it works, then do it. If not, then don't do it.

:TYIR

Keep the cards, letters, faxes, and phone calls coming. Without them I wouldn't have anything to write about. Δ

BJ is the President of B.J. Inc., a San Francisco based consultancy specializing in system auditing, system management, and performance analysis. :SYSMGR is a division of B.J. Inc. BJ can be reached at 109 Minna St., Suite 215, San Francisco, CA 94105, 415/550-1444. The :SYSMGR bulletin board number is 415/391-6531 (300/1200/2400 with optional MNP class 4, CHAR/605X/CHARLEN=8/PARITY=NONE/AUTOBAUD) or 415/550-1454 (voice).

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A complete listing of the NADGUG software library

ACK • Terminal emulator/file transfer program for both AOS/VS and AOS machines. 432 blocks.

Big Brother • Automatic log-off program written in Fortran 77. Donated by the U.S. Forest Service. 181 blocks.

B.J.'s BBS contributions • About 20 items, including various programs, documentation, and macros. Some of the more interesting items include the :SYSMGR benchmark suite, a continuous incremental backup, a clean-up file maintenance program, a program to find strings in files, and a type-backward program. 5,749 blocks.

Black Jack • Kim Medlin of Data General presented this at the Las Vegas conference. 15,079 blocks.

CRTEDIT • The old RDOS screen editor ported over to VS. 51 blocks.

DBCHECK • Checks the open status of an Infos file and examines the checkpointing status of a file. 230 blocks.

DUMPLOAD • A Macintosh program to dump and load AOS/VS-compatible dumps on a Macintosh. 140 blocks.

ERP • A process-termination program developed by NASA and modified by Manville. In Fortran 77. 338 blocks.

FCOPY2 • Submitted by Jim Siegman, this utility makes two copies of a file at once.

FILEMNGR • With this new version, you can move, copy, delete, view, and perform several other options faster. This is distributed as shareware. If you try it and continue to use it, you are requested to pay a registration fee. From Kim Geiger. 459 blocks.

FTNCVT • A Fortran 5 to Fortran 77 translator. 287 blocks.

Games • A collection from various places. Enjoy. 19,516 blocks.

Glossary • A program from John Grant that builds a list of words used in a document and shows where they are used. 416 blocks.

IMSLUTIL • A collection of CLI macros, Cobol routines, and assembly routines callable from Cobol. By IMSL of Houston. 6,154 blocks.

JAG_UTIL • JAG_UTIL consists of several programs: Filecount, Userspace, Scan, and Laminate. 1,501 blocks.

Kermit • A file-transfer protocol developed at Columbia University. Uses 9,328 blocks.

Logout • Another auto log-out system. 246 blocks.

Look • Used to view text files, Look allows you to move forward and backward in a file. Donated by Data General. 438 blocks.

Macros • A collection of macros from various sources. 452 blocks.

MENUDIR • An initial user menu that can chain to other applications and features a password-control system. From the Fed SIG. 492 blocks.

Misc Kerm • An expanded version of AOS Kerm, this now includes other versions of Kermit including DG/One Kermit. 6,298 blocks.

Notify and Prior • Two contributions from Concept Automation. Notify tells you when a process has terminated. Prior lists the priorities of processes. 273 blocks.

QHelp • A tree-structured help facility. 2,277 blocks.

RDOS Kermit • Now available. You must request the Kermit tape (rather than the library tape) to get RDOS Kermit.

SKLSCRN • The Cobol standard entry screen featured in George Burns' *Focus* article of April, 1988. 385 blocks.

Softrans • A file-transfer protocol written in Fortran 77 used to communicate with proprietary PC communications packages. 496 blocks.

Spell • Checks the spelling of a word or spell-checks documents. Submitted by Richard Kouzes. 5,163 blocks.

SWITCHES • The GET.SWITCHES routine from John Grant's column in *Focus*. 1,297 blocks.

TEX • Version 2.26a is now available. TEX (Terminal Emulator with Xmodem) is a terminal-emulation program written by David Down. He has revised the TEX software to include a command language. TEX is distributed as shareware. At the end of 30 days, either remove it from your system or send the author a $45 fee. 495 blocks.

VT100KER • VT100 emulator from John Grant. 1,135 blocks.

Xfer • A tape-conversion utility. 653 blocks. Δ

All NADGUG members interested in receiving the NADGUG software collection should send a 1,200-foot tape to:
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MV/2000 and MV/1400 users should send one formatted, error-free tape cartridge. Software contributions should be sent to the same address. Be sure to include your membership number. Allow 4-6 weeks for delivery.

People with AOS/VS rev 6 should send a 2,400-foot tape and specifically request DUMP_II instead of the usual compressed version. The decompression program is rev 7 specific.

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C-E-oooooh!

SYNOPSIS

New office automation products for PCs provide options for CEO users.

It's that time of year when we take a look at the latest PC products for CEO users, and this year there are two new products to evaluate: CEO Object Office from Data General, and Release 2.0 of PC/Mail from Rational Data Systems. Time, space, and propriety do not allow me to fully review these products. One of them, after all, was developed by my company, but considering that, what can you expect from this month's column?

In the process of designing PC/Mail 2.0, we talked to a lot of CEO and PC users, and I think I have a pretty good handle on what they want in a PC-based front-end to their minicomputer office automation (OA) systems. So rather than a totally objective column, consider my prejudices, and develop some of your own. Hopefully, one of my fellow *Focus* columnists or some other wise and unbiased soul will undertake to write a legitimate review and comparison of these two products.

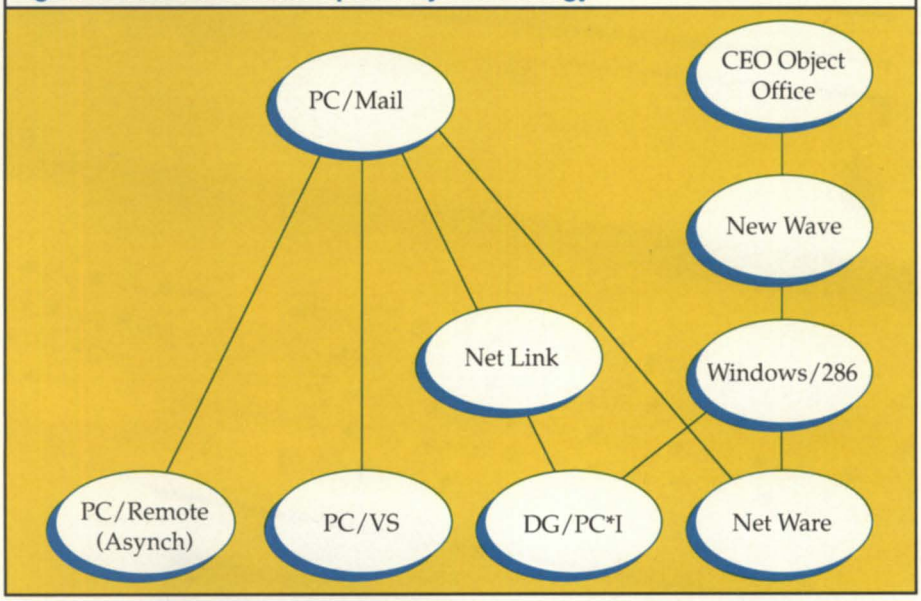
What and why

CEO Object Office (or CEOOO for short) and PC/Mail share a common goal. By distributing the front end of CEO to the PC workstation, there are three primary benefits: (1) off-loading interactive tasks from the minicomputer, (2) presenting the user with a much-improved interface compared to a VDU, and (3) allowing integration of PCs into a complete OA environment. CEOOO goes one step farther, by providing a complete graphical user interface for other MS-DOS applications.

CEO Object Office

I've never heard the acronym CEOOO pronounced, but "C-E-oooooh!" would not be inappropriate. CEOOO is flashy and impressive. I run the fancy demo I received from DG on my Dasher/286 to achieve divine inspiration during moments of intense mellowness. (This is

Figure 1: CEOOO is based upon a layered strategy



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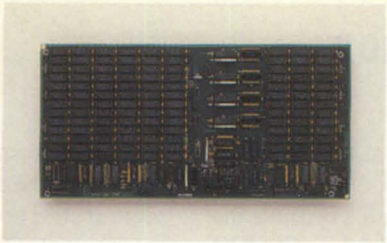

New memory boards use the full potential of the MV/7800X. Dataram DR-7800X boards in 4, 8, or 10MB capacities let the CPUs support more users and applications, improve terminal response time. DR-7800X memory upgrades can be user installed in minutes, require no hardware or software changes, and have no affect on your DG warranty or service agreement. **Dataram Corp. Phone 1-800-822-0071 (NJ 609-799-0071).**

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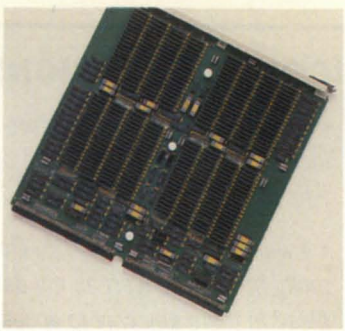

Dataram DR-1520 memory comes in 8, 16 or 32MB board capacities. The add-in memory uses 1Mb RAM technology to upgrade processor performance, and does not affect DG service arrangements. Boards are user installable, have Enable/Disable switch and LED indicators. **Dataram Corp. Phone 1-800-822-0071 (NJ 609-799-0071).**

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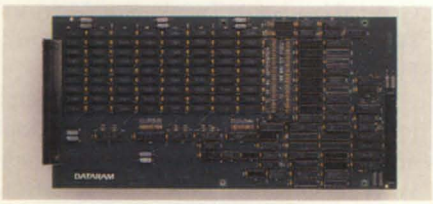

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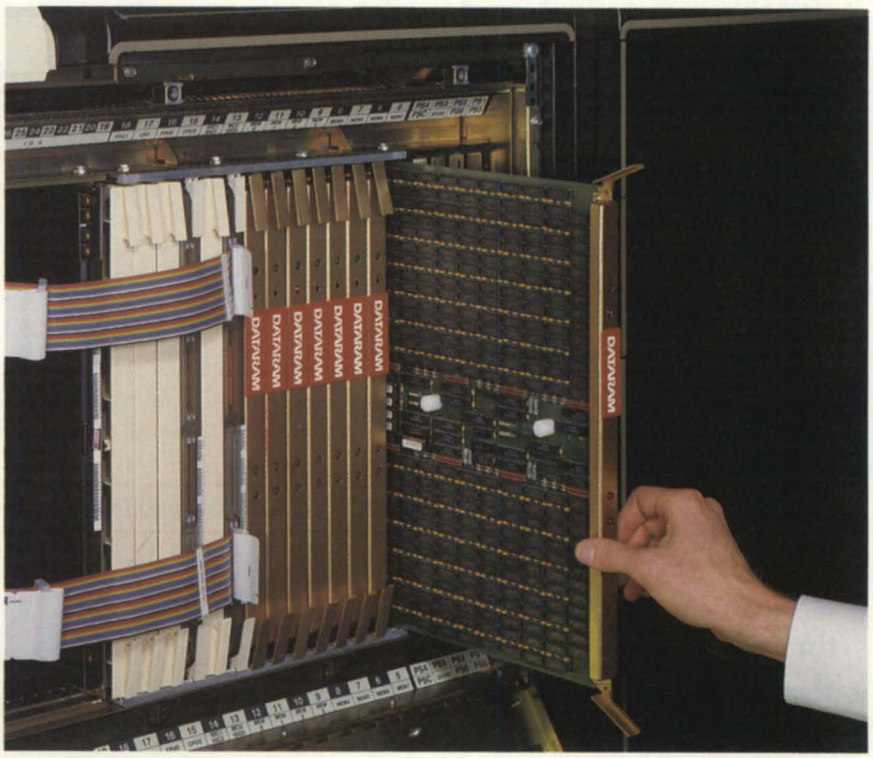

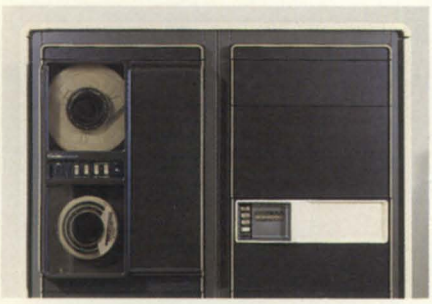

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California, remember.) Unfortunately, the real CEOOO won't run on my Dasher /286; Data General says it's because the expanded memory required by CEOOO is incompatible.

In keeping with Data General's new *buy vs. build* strategy, CEOOO is a package based upon many layers of products from other vendors. (See figure 1.) The bottom layer is the hardware, an 80386 or fast 80286 with a mouse, hard disk, EGA or VGA, and at least 3 MB of expanded memory.

On top of the ubiquitous MS-DOS, one installs Data General's DG/PC*I LAN-based PC integration software. This provides both the Netbios platform and the MVNET file service required by CEOOO. When it is available later this year, CEOOO will also support Netware for AOS/VS.

GUIs

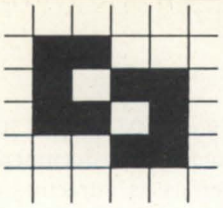
While most MS-DOS applications today include their own command or menu-driven interface, there is a movement underway to standardize these environments. Simple applications typically operate in the text mode with pull-down menus controlled from the keyboard or an optional mouse.

More sophisticated programs, including CEOOO, require a graphical user interface, or GUI. There is an intense battle raging among the GUI vendors, and even within the product offerings of some of them, including IBM and Microsoft. Data General has bet its Twinkies on Microsoft Windows/286 and Hewlett Packard's New Wave.

Whereas Windows/286 is a feeble attempt by Microsoft to make a PC look and feel like a Mac, when one loads New Wave on top of Windows/286, it starts to look pretty good. New Wave is an object oriented user interface that includes a special filing system called the Object Management Facility, or OMF. OMF allows filenames longer than DOS's 8+3 characters, and its folder/document model of the filing system appeals to many users.

Figure 2: CEOOO and PC/Mail comparison

	CEOOO	PC/Mail
Minimum CPU	80286-12MHz (80386 recommended)	8088
Main memory required	640 K	512 K
Expanded memory required	3 MB	0
Mouse required	yes	no
Monitors	EGA/VGA only	any
Display mode	graphic	text
Platforms:		
Works with DG/PC*I	yes	yes
Works with PC/VS	no	yes
Will work with Net Ware	yes	yes
Environments:		
MS-DOS only	no	yes
Windows/286	yes	yes, text mode
Desqview	no	yes
Asynchronous	no	yes (requires PC/Remote)
Interaction	icons/mouse	menus/keyboard



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Finally, on top of New Wave and OMF comes CEO Object Office, which communicates over the DG/PCI LAN to user agent processes and from there to the CEO Post Office Agent (POA) and Filing Service Agent (FSA). Put it all together and you can now do most of your CEO mail and filing chores at your workstation instead of on a VDU.

Data General is pushing CEOOO in three ways: First, as an inherently valuable PC-based application. I often talk about the benefits of distributed or (forgive me) *cleaved* applications, and a PC front end for CEO is one of the most obvious.

Second, DG feels that New Wave is one of the environments of the future. This is pretty bold, especially since DG had to license the technology from (and pay royalties to) competitor HP. Although it can't be done yet, one can imagine that New Wave will some day run under Windows/386 (quite different from Windows/286) and eventually OS/2. As part of its DAA, or Distributed Applications Architecture, Data General has stated that New Wave will be one of the supported operating environments of the future. (X-Windows and Motif under Unix being others.)

Third, Data General sees CEOOO as a product that will bridge to the Aviion product line. Although CEOOO itself, (which is MV- and CEO-based) will not operate with Aviions, a new product designed to work using an Aviion mail server will be similar to CEOOO.

Functionality

What can you do with CEOOO? Pretty much most of CEO's mail and filing functions. You can compose messages, attach files and documents (either from MS-DOS or from CEO), and you can send them using the standard CEO options such as Certified, Confidential, etc. You can carbon copy or blind copy as well as file or print messages on either MS-DOS or AOS/VS printers. When it comes to filing, you can examine your drawers, folders, and documents. You can move documents between your MV and PC, then view, edit, and return those documents.

CEOOO's interface is attractive and easy to use, once you get used to icons and mice; all things considered, CEO Object Office is a slick piece of software. It represents the state of the art in MS-DOS graphic interface technology.

History

Many moons ago, RDS and Data General cooperated on a PC LAN-based CEO front end. After a while, we went different directions: DG towards PC/WS and CEOOO, and Rational Data Systems towards PC/Mail. There were, and still are, two different product philosophies, and perhaps for good reason. Whereas Data General needs to look good compared to DEC, HP, Wang, and IBM, we (RDS) do not compete with these other companies.

Out of this difference came PC/Mail and now PC/Mail release 2.0. PC/Mail's goals are similar to those of CEOOO. Similar, at least, in functionality. Like

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CEOOO, PC/Mail provides a fairly complete PC-based front end to CEO mailing and filing. The differences between these products lie in their environments.

PC/Mail

Where CEOOO requires a large and powerful workstation, PC/Mail can run on the smallest and slowest PC or XT. If you give it a color monitor, that's fine (it looks that much better) but an old monochrome tube looks just fine, too. Expanded memory? Not needed. A hard disk? It helps, but not really necessary. You can run PC/Mail on a diskless networked PC.

PC/Mail is also designed for operation over an asynch line (direct connection or modem) using the RDS PC/Remote platform. PC/Mail includes extensive optimizations to minimize the communications traffic (and hence the load on the minicomputer) in order to make the dial-up environment a realistic one.

Although far from exhaustive, the chart in Figure 2 (page 46) highlights the significant differences between CEOOO and PC/Mail.

Making plans

In speaking with CEO users, I find they are considering three different plans. Some sites are excited about CEOOO while others prefer PC/Mail. The third group plans on using both.

This third group sees the following reasons for using each product: Use CEOOO when:

- a user purchases a new '386 system with the required memory, etc.;
- users run other Windows/286 programs such as Excell or Pagemaker. (Many of these already have large and fast 80386 systems); or
- the organization is prepared to commit to Windows/286 as a standard environment.

On the other hand, use PC/Mail when:

- a user has an 8086, 8088, or 80286 processor, or does not have an EGA or VGA monitor or mouse;
- when PC/VS is the platform of choice;
- asynch use (direct connect or modem) is required; or
- the site already has a menu or other user interface system that is not compatible with Windows/286.

In summary, CEO Object Office and PC/Mail represent two good methods for distributing CEO to the PC workstation. One is a high-tech state-of-the-art flashy program, while the other merely gets the job done in a low-profile manner.

I'll leave it to someone more objective to really rake both of these products over the coals in a future review and detailed comparison. Δ

Doug Kaye is the CEO of Rational Data Systems. He can be reached at 1050 Northgate Drive, San Rafael, CA 94903, 415/499-3354. For more information or a free copy of the "1989 Rational Data Systems Report on PC Integration," contact RDS at 150 South Los Robles Ave., Pasadena, CA 91101, 818/568-9991. *Copyright 1990, Rational Data Systems, Inc.*

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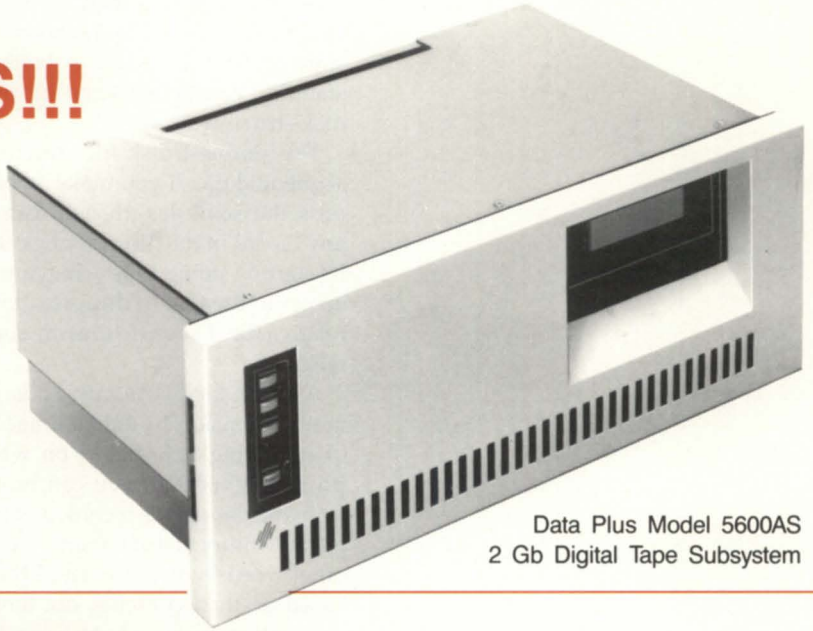

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Reconcilable differences

SYNOPSIS

4GLs and data base management systems differ considerably. Jim Siegman explains.

Four basic types of files exist on any system: system software, application software, infrequently used "trash" files, and the data base, which includes just about everything else. How does a data base management system (DBMS) fit into this picture?

Essentially, a DBMS is simply another means to store and manipulate data in files. It is distinguished by its internal structures and by the methods it uses to store and retrieve data. A better understanding can be achieved by reviewing disk structures.

The simplest disk file structure is the sequential file. If you make all of the records the same length, you can retrieve any record in the directory by calculating its starting point, thus achieving random access to the file. In this case, you have a relative file. The structures are simple and efficient.

A secondary structure adds a whole new dimension to data storage. Instead of retrieving data based on where it is physically located, you can build a key from the data in the record, and store and retrieve information using the key. In other words, you can retrieve the records based on their contents, not their physical location. Just as a book has extra pages devoted to an index or table of contents to help you find the desired data, additional disk storage space is needed to build and maintain an index of keys to the records.

ISAM, you Jane

There have been many versions of keyed structures over the years, but Data General's ICobol ISAM is the most elegant example of keyed files I have worked with. A single file in a program exists as two files on the disk. The data portion has a sector (512 bytes) of file dedicated to structural parameters, plus a small overhead for each record (which varies with the number of keys). The index portion of the file contains a structure that allows retrieval of any records by any of the pre-defined key sequences. This is an effective compromise between minimal disk overhead and minimal CPU resources required for access.

Sequential access to records in any key sequence is accomplished by reading the "extended" record, which includes the data, plus the overhead or header that contains pointers to the next record. The records may be anywhere in the physical file, and are retrieved by reading random blocks of the data file. The beauty of this structure is that sequential processing can be almost as fast as if the data was stored in a sequential file. The index is used only for random access, thereby allowing the best possible performance for random retrieval as well.

The next step in complexity—in the Data General world—is to allow a record to be stored under any number of keys, allowing each key to have a subindex (or subfile) associated with it, as well as with other keys. In ISAM, this would be analogous to having one directory with many different files. Under Infos, it is managed as a single structure.

For example, let's say you have a product file for an electronics store. You could have an index of each product line: televisions, radios, speakers, cassette players, etc. Each of these product groups would have a record in the data base. Each product group key would then have an index (or subfile) with individual

model numbers and prices for each component. You could also share these records with an index of manufacturers. You could scan the entire product line by either manufacturer or product type. This can be accomplished with a small collection of ISAM files. Infos treats all of the files, subfiles, indexes, and sub-indexes as a single complex structure, using the term data base to describe it.

When is a DBMS not a DBMS?

Although Infos certainly allows structures of a complexity worthy of a data base management system, Infos is not usually considered a DBMS by industry professionals for one very important reason. It, and all of the other file structures mentioned so far, have one common link: none can verify or manipulate data. It is entirely up to the application programmer to maintain the key structures and data integrity.

A true DBMS has a data dictionary built into the file management software. While each system has its own method, standards are emerging in the industry. One of the earliest and best known is CODASYL. Although the terminology may vary from system to system, the data base administrator defines files/subfiles, records, and fields and the various parameters of each. A complete system not only allows full definition of the structure and relationships of the data, but also of the values allowed and even the security levels required to access each piece of data.

A few months ago, I discussed the impact that poorly designed data base management systems can have on system performance. Throughout that column I used the terms data base and 4GL (fourth generation language) interchangeably. I'd now like to set the record straight by defining what makes a 4GL, and how it relates to the data base described above.

I won't go into detail about the evolution of programming languages, nor will I discuss the design techniques used with DBMSs. The latter topic was covered thoroughly in Kim Medlin's article, "Go fourth and multiply" (*Focus*, November '89)

A 4GL could comfortably be defined as non-procedural programming language. Under this definition, perhaps half of the AOS/VS users would discover they have a 4GL (at least for reporting purposes) on their system and they didn't even know it! I am referring to the Report Writer module of SORT/MERGE. The report writer module lets you lay out a report simply by specifying fields and locations. In addition, you can have calculated fields, sub-totals, totals, and many other features. You can specify record inclusion/exclusion parameters and vary the output sequence. Many professionals, however, do not consider RPG or the Report Writers of Cobol or SORT/MERGE to be 4GLs because they are limited to reports only. They require that a 4GL be able to handle other types of programs.

There are a number of 4GLs available on Data General equipment, like Oracle, Cognos' Powerhouse, Henco's Info, and others. Some of them were developed as an interface to, or in conjunction with, a data base system (dBASE III is a perfect

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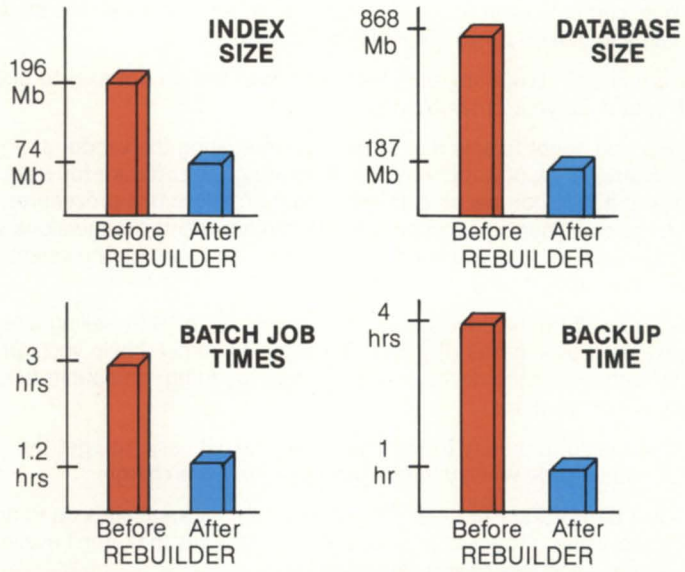

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example in the PC world) instead of being developed solely as a 4GL.

A good example of a standalone 4GL is CQCS from Cybertek, which lets you build file and record definitions in the data dictionary. Part of the definition includes how it is stored on the system. CQCS interfaces to "flat" or sequential files, BBasic files, MINISAM files, Infos files, or DBMS and SQL data bases. There is no proprietary filing system attached to it. It uses any or all of the native filing systems and provides the programmer /user with a 4GL interface to that filing system.

In our shop we use the following languages to develop applications: ICobol (45 percent), Cobol (4 percent), MASM (1 percent), and BBasic/B32 (50 percent). The addition of CQCS would allow us to link smaller applications into a single large system. We could continue development on all of our software systems using CQCS for the new programming and eventually replace the 3GL programs.

Another characteristic typical of a 4GL is flexibility. 4GLs do for applications what spreadsheet programs do for estimations and modeling. You can define a system and quickly implement a prototype. Within a matter of hours or days, you can enter real data to see if your design was adequate and accurate. If not, simply change the record definitions, screen layouts, and report layouts. With a 4GL, you can build a prototype and test several methods in the same amount of time it took to develop models for a 3GL.

The ability to prototype an application and change it quickly is probably the most important characteristic in our evolving definition of a 4GL. It follows that maintenance of a 4GL is typically much less involved than that of a 3GL.

To summarize the two definitions, a data base management system is a filing system or data storage and retrieval system that has definitions of the data elements and data structures as an integral part of the system. The user interface to a DBMS can be through any language, whether proprietary or standard, procedural or non-procedural. A 4GL is a programming language that is non-procedural, comprehensive in ability, and filing system transparent. It gives us the ability to prototype and modify software on the fly.

Then why the confusion? Many vendors market 4GLs and DBMSs in a single package. Few traditional 3GLs are equipped to handle the complex file structure of DBMSs, while 4GLs demand complexity of their file management systems.

I hope the distinction between these very different, yet frequently bundled, types of software is clear. I apologize and will never again make the mistake of using the terms 4GL and DBMS interchangeably. See you next month. Δ

Jim Siegman is a contributing editor to ***Focus*** *and treasurer of the Chicago Area Data General Users Group. Send comments or questions to him c/o Datamark Corp., 3700 W. Devon, Suite E, Lincolnwood, IL 60659; 312/673-1700.*

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Out to crunch

SYNOPSIS

For the packrat in you, ARC 1.30's combination file compressor and archive program makes housekeeping easy.

If I had to pick the most useful utility that I've got on the PC, it would be ARC. You see, I tend to accumulate information on the disk—old versions of software, public domain programs that didn't quite turn out as advertised, old columns that I can't bring myself to get rid of. Lacking infinite disk space, however, these programs would soon overwhelm me.

That's where ARC comes in. ARC, from System Enhancement Associates, gathers all of these files into one file for easy housekeeping. While it is doing that, it also applies some sophisticated file compression techniques to reduce disk space.

I'm stingy about disk space. It probably started in my youth, when I was running a CS 40 with a Phoenix disk—five whole megabytes fixed, with another five removable! The habits that formed then have carried over to this day, and I still find myself searching the disk for files that I can put on tape. Now there's an easier way.

A few years ago on the RDS bulletin board, I used ARC as an example of the kind of software that is out for the PC that should be out for the MV. I received a message in return explaining that, because of the size of the DG market, something like ARC would never appear. Well, the market has either become larger or more vocal, because Data Bank Associates released ARC for the MV in July.

The current version, ARC 1.30, is compatible with ARC 6.02 on the PC, and contains a number of significant enhancements from ARC 1.21. This version will retain a file's ACL type, TLA, TLM, UDA, etc., and yet still be readable by the PC's version of ARC. This was an absolutely vital enhancement. Under the previous release, when I moved my ICobol directory to ARC and then de-ARCed it, the files all came back as type UDF, and nothing would run.

ARC is really misnamed. I wouldn't pay anything for an archive program, since I've already got two "free" ones that work rather well—DUMP and DUMP_II. An archive program simply takes all of those loose files that you've got in :UDD:TIM:JUNK and combines them into one file for easier housekeeping. To find out what's in the combined file, simply do a LOAD/N. There are also file compressors out there for the MV. Those of you who have the NADGUG library tape know that the files come in compressed format, and need to be extracted with COMPRESS.PR.

What makes ARC different (and so handy) is the combination of the two in one step. The standard practice with COMPRESS is to DUMP the file(s) and then compress them. Otherwise, you'd have to COMPRESS each file individually. In addition, when extracting files, COMPRESS creates all new files as UDF files, so you can't run them. If you wanted to check on the NADGUG tape for a certain file, you would first have to decompress the file, and then do a LOAD/N, something that would take a considerable amount of time. With ARC, typing ARC L <archive> accomplishes the same thing. In order to add a file to a COMPRESSed dump, the procedure would be something like this: deCOMPRESS it, LOAD it, delete the .DMP and .DMZ file, move the file that you want added to the directory, DUMP the files, and COMPRESS the DUMP. With ARC, the procedure would be:

```
ARC A <archive><filename>
```

ARC also pays for itself during file transfers. For my article on PC Cobol compilers, I wanted to port my customer file maintenance program to the PC. I figured that it was a simple, self-contained program that would be easy to get over. I forgot about the copy files and ended up having to transfer 1.5 MB in 55 files from the MV to a PC. Even at 9600 baud, this took the better part of an hour, and an endless amount of typing X XMSEND <filename>. Then I tried it after using ARC on the files. They compressed down 80 percent to 315K, and transferred in about 9 minutes. Could your installation use that kind of time saving?

I decided to try ARC on my :UTIL:ICOBOL directory. It's got a good mix of data and programs, and is decently large (3.7 MB). The compression took just over 11 minutes, and reduced the files by 67 percent, to 1.2 MB. This doesn't include EMLS—EMLS compresses from 16 MB to 19K, which skews the results. While this isn't quite as fast as a MOVE, it's still pretty speedy and remember, I'm running on an MV/8000—not the world's hottest box. The comparable time on an AT for the same files was

6 1/2 minutes. The people at DBA tell me that they are in the process of re-coding critical portions of ARC in assembly language, which should greatly improve the speed.

Once you have programs ARCed, you don't even have to extract them to use them. Like most of us, I've got programs on the system that I rarely run. I use REPORT once a week, for about 10 seconds, and the rest of the time it sits on my disk taking up space. I could archive it, and then once a week extract REPORT and run it, but there's an easier way. The command ARC R REPORTARC REPORT will search the archive REPORTARC for REPORT.PR, extract it, run it, and delete it all in one step.

Of course, one of the big selling points of ARC (for me, at least) is that Data Bank Associates is working closely with System Enhancement Associates to be certain the files ARCed on the MV can be unARCed on the PC, and vice versa. I've conducted tests with over 50 ARC files, going both ways, and have not encountered any difficulties.

The major difference between PC ARC and VS ARC is its handling of long filenames. On the PC, filenames are limited to eight characters, with a three-character extension. Since VSARC files are supposed to be readable by the PC version, what does it do with a name like CHEMICALS.FILE.NX? Well, there are two ways of doing it. The early versions of VS ARC limited you to a PC length filename. The current version, however, uses an alias.

On the VS side, the filenames would ARC and de-ARC just as they are. On the PC side, however, the files would be stored as CHEMICAL_.00 and CHEMICAL_.01, both valid PC filenames. In this way, you can pass files back and forth while ignoring naming incompatibilities.

Name conventions are a problem, however, when passing a file from the PC to the MV that contains illegal MV filename characters. If you were to ARC a

Figure 1: ARC command line options

```
USAGE:
ARC/TYPE=nnn {command}{options}
{arcfilename} [filename [filename . . .] ]
COMMANDS:
a    = add files to archive
m    = move files to archive
f    = freshen files in archive
u    = update files in archive
d    = delete files from archive
x,e  = extract files from archive
r    = run files from archive
t    = test archive integrity
l    = list files in archive
v    = verbose listing of files
c    = convert to latest format OPTIONS:
w    = suppress warning messages
b    = retain backup copy of archive
m    = move files to archive
s    = suppress compression (store only)
o    = overwrite existing files when extracting
5    = Build file with PC Version 5.3 Format
(No Long Filenames)
SWiTCHES: /TYPE=nnn, sets file type for
input or output.
All switches allowed on an F/S command are
allowed in ARC.
```


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file called !TEST#@ on the PC, and try to extract it on the MV, you would get a ?CREATE error. Since there is a way to get long MV filenames to the PC, there needs to be some way to get invalid PC filenames to the MV, like replacing all of the invalid characters with a "?." Until then, don't create files on the PC with names like !TEST#@.

There really isn't much to criticize with this product, and when I did make suggestions, DBA was more than willing to make improvements. In fact, usually they anticipated me. In general, ARC does not deal well with subdirectories. Future releases will have subdirectory support, which will enable a command like ARC ATEST :UTIL:ICOBOL:#, but for now, it won't work. Another feature that ARC lacks (this problem is scheduled to be fixed by the time you read this) is adding to archives across directories. Say, for instance, that I have a common archive called :UTIL:ARCHIVE:ARCHIVE.ARC. If I am in :UTIL:ARCHIVE, I can add or move a file into ARCHIVE.ARC. What I *can't* do is be in :DISK2:PROGRAMS and type ARC M :UTIL:ARCHIVE:ARCHIVE LOGON.CO, because I get another ?CREATE error. However, this command works fine on the PC version.

I'd have to say that the major problem with ARC is a minor problem—the error messages. I'd like to have something other

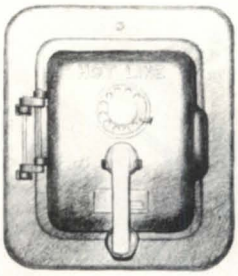
Figure 2: Output from ARC V ICobol

ARC File Archive Program

Name	Original length	SF*	Size now
ANALYZE.DD	11538	86%	1662
ANALYZE.PD	8192	36%	5279
CALC$$LIB.NX aka CALC$$LI._00	2048	95%	111
CALC$$LIB.XD aka CALC$$LI._01	2048	91%	202
SMINISAM32.PR aka SMINISAM._00	63488	84%	10738
SMINISAM32.ST aka SMINISAM._01	20480	83%	3603
TYPE.DD	2005	55%	914
TYPE.PD	2048	27%	1500
UP.ICOBOL.CLI aka UP._00	1845	45%	1027
UP.MRA.CLI aka UP._01	1093	39%	674
XMODEL	23084	57%	10124

*SF = stowage factor
Note: A total of 135 files compressed an average of 67 percent.

IN CASE OF EMERGENCY



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than a traceback call confronting me when I do something that I shouldn't have. A good example is trying to archive a permanent file. If you use ARC A, it will work fine. Using ARC M, which in effect means archive the file and then delete it, you get the following.

```
•Abort•
Cannot delete permanent file
?DELETE unlink
Error: From program
PROC/DEF/IOC/BLOCK/SONS,ARC,m,test
```

Now, if you were paying attention to the screen, you know which file it aborted on. And if you sit there and think for a while, you realize *why* it aborted, and you do a PERM OFF. But I think that DBA's next project ought to be the writing of some error message routines.

ARC is key code protected, like much of the software coming out nowadays. However, it's a particularly benign form. Unlike most of the key code schemes around, this one can be moved, deleted, or reloaded—it's simply another file. I like this scheme. When I had disk problems, I had to call one vendor three times for a key code each time I reloaded the disk.

This program is one that I will definitely buy—if only to keep my tape library down to size. I just tried it on my invoice duplicate file. I keep a duplicate copy of all invoices printed, because hard copies around here have a tendency to be misfiled and lost. November's file went from 10 MB to 1.2 MB. Now I can keep a years' worth online, for not much more disk space than one month's worth used to take. And since ARC now enables redirecting the listing file, I can have a program do an ARC/LIST=INVOICE-.LISTING INV1189 and enable the users to retrieve the file interactively. This is a program long overdue for the Data General world.

ARC is available from Data Bank Associates, 20010 Century Blvd, Suite 104, Germantown, MD 20874, 301/540-5562. The price is $1,500 for an MV/40000, $1,275 for a MV/20000 mod II, and $850 for all other machines. ARC comes with a one-year support agreement, which includes free upgrades. It also includes a license for the PC version of ARC.

Odds and ends dept.

I just finished gamma testing Quattro Professional from Borland, and it's been released, so I can talk about it. If you are considering a move to Lotus 2.2 or 3.0, *don't* do it—at least not until you've tried Quattro. It takes less memory, runs on anything from a 512K 8088 on up, includes file linking and a Harvard Graphics type graph annotator, and is in general a superb program. We've got both new versions of Lotus, and I'm relegating them to the back shelf (and ARCing the files on the PC!). Δ

Tim Boyer is EDP Manager at Denman Tire Corporation. He may be reached at P.O. Box 951, Warren, OH 44482, 216/898-2711 or on the NADGUG bulletin board at 415/924-3652.

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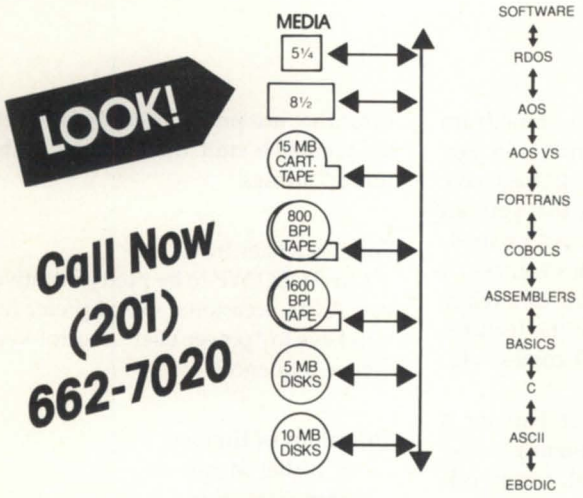

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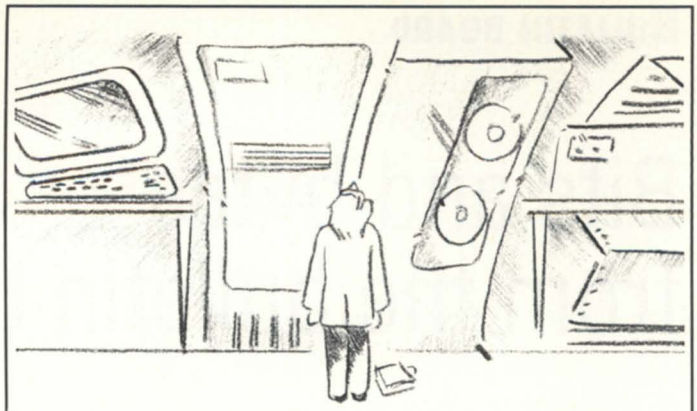

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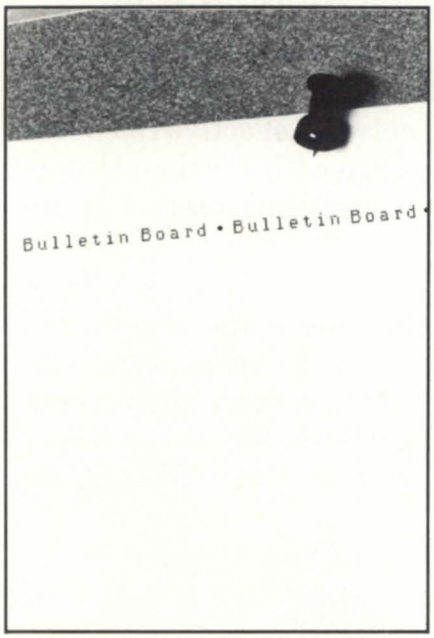
Bits and bytes from the bulletin board



Editorial opinions

From: Jim Krause

I am new to Data General and would like to know what is the best editor that runs under AOS/VS?

From: Doug Rady

Some of the editors I know about:

SPEED—teco-like editor. Suffers from still being a 16-bit program. Those who don't like the teco-like command user interface might say it suffers from being cryptic. It is powerful, and it comes with AOS/VS.

SED—a screen editor. Suffers from being a line-editor with function key support. A very basic editor. It does have a built-in spelling dictionary that you can look up with, but there is no active spell-checking. Depending on who you ask, it is either a fairly decent editor or a really sad editor. SED has none of the features of the Unix SED. This SED comes with AOS/VS.

SLATE—another DG editor. This one is part of the Text Control System product that DG sells. It is powerful, screen oriented, and fairly decent. It has been clocked as very slow on some operations. It grabs a large chunk of memory when it starts, regardless of the size of the file you're editing. Being a part of a DG product, it costs money.

EMACS—the DG EMACS editor is OEM'd from CCA. It is powerful and very screen oriented. It is a bit of a memory pig. This particular editor runs under AOS/VS and DG/UX, as well as several other systems. Since it is a DG product, it costs a good chunk of money.

SCRED—I haven't heard too much about this one. People who use it like it.

MicroEMACS—a very powerful, fast editor. Public domain, and runs on a dozen or more operating systems.

From: Richard Kouzes

I vote for SCRED—we've used it for years and it's great. You can adapt it to any CRT.

From Tim Boyer:

SCRED is Rational Data's editor. CRT-EDIT is more or less a screen-oriented version of SPEED. How about Wordperfect?

From: John O'Keefe

Wordperfect P-edit is pretty good as far as text editors go. It's just like the Wordperfect software except that it uses text files with <NL>s. It has macro features that are pretty good. SED is better for recursive stuff though, like "substituting" strings.

From: Michael Travis

I find CEO WP to be pretty intuitive to use. As an occasional user, I prefer function keys to "power user" control-key or escape sequences.

Questions of literacy

From: Walter Mosscrop

Just two questions:

1) Page 21 of the AOS/VS 7.65 release notice, item 17: "System calls ?CLRDV, ?SCHR, ?SECHR, and ?SEND now require PID W/System Manager status." Is this right or does DG need better proofreaders?

2) Page 34, IAC-8 memory available: 5100 bytes. With Kanji support: 7070 bytes. Someone please tell me that I'm right and the figures are reversed, or I'll get an ulcer figuring out new input buffer sizes.

From: Bruce Johnson

It's been a long time since I read that release notice. However, I don't think you necessarily have to have SYSMGR turned on to perform all the calls you mentioned. The bit about SYSMGR privilege probably refers, in the cases of ?SCHR and ?SECHR, to setting DEFAULT characteristics.

?CLDRV has always needed to be from PID 2 unless the calling process had the file open. I haven't played with it recently, but I discovered it once when I got tired of waiting for my part-time operator in another city to be around for me to issue CLEARDEVICE on a particular port. I wrote a program to do it by opening it, clearing it, and closing it. That still worked in 7.62.

The reference to ?SEND probably referred to the ability to override CHAR /ON/NRM. The last time I tried it, after

turning on SYSMGR privilege, it didn't work, even though the release notes said it would. I don't recall whether that was 7.62 or 7.65.

DG has always needed proofreaders. Haven't you ever seen the message "Error occured" (sic)? While literate people can program, it doesn't necessarily follow that all programmers are literate.

Modem mavens

From: Tom Scheiderich

I need some quick opinions on modems. I have to buy some modems for use from Los Angeles to London. I have been told that Telebit T2500 (with V/32) really screams. DG wants me to buy Microcom modems (2400 baud versions that supposedly work up to 12K baud). Since most of my work is going to be terminal emulating, file compression is not a real issue, so the 2400 baud modem will still only be running at 2400 baud. I was told that the T2500 baud modem starts at 18.2K baud (no compression) to 19.2K baud (with compression). DG says that lines to Europe will only work well at 2400 baud. (They say that they are getting that info from AT&T.)

However, I have a friend who tells me that he is using a Telebit modem from Dallas to Korea and is getting better than 9600 BPS using the T2500. Very confusing! The other problem is that the Microcom 2400 is $850 from Data General, which seems a bit steep when you can get a Telebit Trailblazer (9600 baud) for about $800, and a USR 9600 for about $700. I also heard from some that the Microcom didn't seem to handle noise very well, but others seem to like it. Help!

From: Michael Meissner

Telebit modems are supposed to be able to handle just about any line the telephone company throws at you (the only place I've heard that is too noisy is London, England). Check to see whether the foreign telephone companies will allow Telebits or not (some do, some don't). Bear in mind that if the MV has IACs, the poor thing won't be able to handle much fast input (9600, 19.2K, etc.). Δ

The NADGUG/RDS electronic bulletin board is available to all NADGUG members. The phone number is 415/499-7628. There are no fees for use other than the telephone charges.

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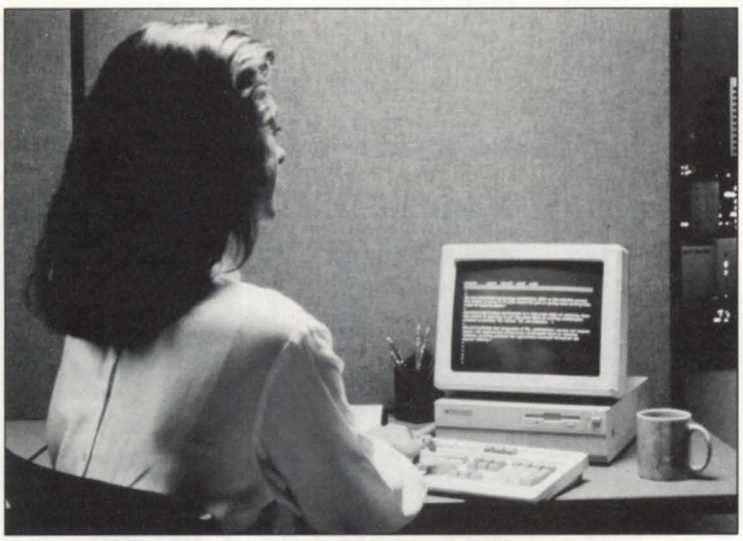

The new Dasher/386-16c is based on the Intel 80386SX processor.

Westboro—DG announced a small-footprint PC based on the Intel 80386SX processor that runs software written for full, 386-based personal computers at a price comparable to its 286-based machines. The new 16-MHz Dasher/386-16c offers an easy growth path from the 286-based 12-MHz Dasher via the swap of a CPU card.

According to Data General, the new Dasher was designed to be the most compact 386SX-based PC available. The chassis measures 12 inches wide, 15.5 inches deep, and 3.75 inches high. It weighs less than four pounds.

The base system includes a standard 1.44 MB, 3.5 inch diskette drive with optional high-speed 40 MB or 100 MB hard disk. Built-in features include two MB of memory on the CPU board (expandable to 8 MB), two serial ports and one parallel port, VGA video controller, and floppy disk interface. Two full-size, 16-bit expansion slots are available for LAN cards, modem cards, fax cards, and other third-party add-on boards. A third slot houses the CPU card that contains the 386SX processor, all single in-line memory modules, and an optional floating point co-processor.

Packaged with the Dasher/386-16c is an industry-standard MS-DOS operating system that allows users to run popular DOS applications. The base price of the Dasher/386-16c is $3,795, which includes a 40 MB hard disk, 2 MB memory, 3.5 inch diskette drive, VGA controller, QEMM-386, and MS-DOS 4.01. The system is available 30 days after receipt of order.

Data General Corporation, 3400 Computer Drive, Westboro, MA 01580; 508/898-4072.

Δ

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Entry-level RISC

Westboro—Data General introduced an entry-level RISC-based system, the Aviion AV/5010, that performs at 20 Dhrystone MIPS and sells for $29,900.

The machine can be used as a deskside server or multi-user system. It is available with a six-slot industry-standard VME-compatible chassis, 8 MB of memory, a 322 MB 5.25-inch full-height Winchester disk, 150 MB 1/4-inch cartridge (QIC) tape drive and up to 64 MB of error-correcting code memory. The system is also available with 2 GB cartridge and reel-to-reel tape options.

The AV/5010 complements previously announced AV/5100 (deskside) and AV/6100 (rack mountable) systems that start at $52,000. The AV/5100 and AV/6100 servers are available with a clock speed of 20 Mhz. The AV/5100 and AV/6100 systems come in single or dual-processor configurations performing at 20 or 40

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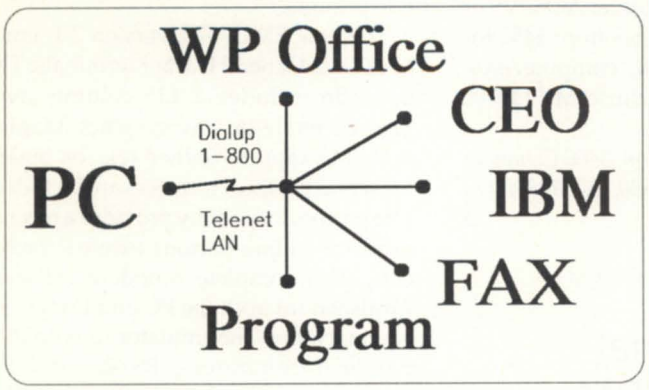

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CEO answering machine monitors e-mail

Westboro—CEO Answering Machine gives DG's CEO office automation product the same functionality as an answering machine for a telephone. It monitors users' CEO in-boxes, and replies to new CEO mail with a recorded message.

The product incorporates on-line help, and, according to DG, requires no special training to use. A number of options can be utilized to allow for changing recorded messages or forwarding of urgent mail.

CEO Answering Machine is compatible with CEO Revision 3.0 or greater on Eclipse family systems under AOS/VS or AOS/VS II. Pricing ranges from $450 for an Eclipse MV/1400 DC computer system to $5,220 for an Eclipse MV/40000 HA.

Data General Corporation, 3400 Computer Drive, Westboro, MA 01580; 508/898-4183.

Δ

Circle 75 on reader service card.

D470C terminal emulator for IBM micros

Columbia, MD—Rhintek, Inc., announced a major upgrade to its EMU/470 color graphics terminal emulator. A sliding window (full duplex) implementation of Kermit is now included. This version supports European keyboards and character sets (including code page 850). Graphics printing is available for IBM Proprinter and HP Laserjet compatible printers.

The new EMU/470, version 2.1, emulates Data General Dasher terminals. The upgrade includes a 135 column compressed mode on any graphics adapter. Both file capture (either text or binary files) and protocol transfers are included. The protocol capability provides a mechanism for calling various external protocols, with complete Xmodem software furnished for both the PC and Data General machines. The emulator runs on IBM personal computers, PS/2s, and PC clones. It can simultaneously drive a PC compatible printer and a mouse. Dasher terminals are limited to one or the other of these functions. EMU/470 provides a superset of the capabilities of the various DG terminals.

EMU/470 uses a multi-tiered menu system providing the user with comprehensive, intuitive control without interfering with the keyboard emulation. The program has more than 70 macro-definable keys as well as automatic dialing,

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logon, and logoff functions. Users can define an unlimited number of configuration files, each with different logon sequences, color schemes, macro programmable keys, etc. EMU/470 will run standalone, or under CEO Connection.

Licensed for a single system, the product is not copy protected, so users can back it up or put it on hard disk. Users can select baud rates from 300-19200. EMU/470 uses all 12 function keys found on IBM enhanced keyboards and all four COM ports available under PC-DOS 3.3. Free unlimited product support is provided for registered users.

The new product sells for $195 with shipment available within 24 hours. Outside the United States the price is $229. Current license holders of EMU/470 can update to the new version for $10.

Rhintek, Inc., P.O. Box 220, Columbia, MD 21045-0220; 301/730-2575. Δ

Circle 77 on reader service card.

BBasic menu control

New York—Bac-Tech Systems has a menu and security control system available for users of Business Basic. The product presents a solution for organizing and setting up application menus. Security is controlled at the user level and can be optionally integrated. Other features include user-generated on-line help, optional logging that records events such as log-on, selected menu or program, basic errors encountered, and sign-off. An optional printer control subsystem that handles all tasks required to queue print jobs to specific devices, and allows print or update programs to be driven directly from the menu system, is also available.

Bac-Tech Systems, Inc., 270 Lafayette St., New York, NY 10012; 212/334-8288. Δ

Circle 72 on reader service card.

EDI management software for Eclipse MV family and Aviion

Westboro—Translator EDI (electronic data interchange) management software, manufactured by Metro-Mark Integrated Systems, Inc., is being ported to DG's Eclipse MV and Aviion systems. The soft-

ware helps reduce the costs of processing business documents by providing for the exchange of purchase orders, invoices, order acknowledgements, bills of lading, and other documents electronically.

Translator uses a standard format, and was previously available only on IBM platforms. The software comprises both a PC-based and a host-based component. The PC portion runs on any IBM-compatible PC, including DG Dashers, and provides an interactive menu-driven user interface that handles trading partner profile, system profile, and EDI message standards maintenance, and data mapping specifications. The host-resident translation software component handles the processing of translation, receiving, document distribution, application routing, and interface to the data communications system.

The Metro-Mark software is compatible with various transmission methods and complements the Data General communications and multi-vendor electronic messaging and document exchange products such as DG/X.400, CEO MAIL, CEO DXA, and CEO PXA.

Data General Corporation, 3400 Computer Drive, Westboro, MA 01580; 508/898-4074. Δ

Circle 76 on reader service card.

Four MB memory modules for Aviion workstations

Acton, MA—AVRAM/4, a new 4 MB memory module for the Aviion, is available from Signal Computer Products. The product features surface mount technology to keep power consumption low, and is built to manufacturing specifications that include 72 hour burn-in and 24 hour testing in an Aviion workstation. AVRAM/4 is hardware and software compatible with the Aviion and DG/UX.

Signal offers a lifetime warranty policy with the memory module, and promises replacement boards within 24 hours. Pricing for AVRAM/4 starts at $1,450.

Signal Computer Products, Inc. 411 Massachusetts Avenue, Acton, MA 01720; 508/263-6125, fax 508/635-0423. Δ

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ON-LINE HELP

Who to call for answers about NADGUG *and* FOCUS

NADGUG

Membership, address changes
Jennifer Foye **800/877-4787**
(Outside the U.S.) **512/345-5316**

Information on RIGs or SIGs
Cathlene Gentry **800/877-4787**
(Outside the U.S.) **512/345-5316**

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- SMBASIC

Let the North American Data General Users Group (NADGUG) connect you with other Data General users who have a similar special interest and who want to share information, ideas, problems, and solutions. No matter what the special interest is behind the group — equipment, systems or application software, major language, operating system, industry type — the reason is the same: to work together to exchange ideas on how to get the best performance out of your DG system.

Listed above are NADGUG's current special interest groups. If you are interested in making the connection with one of these groups, or if you have an interest that needs a group, please contact NADGUG's RIG/SIG coordinator, Cathlene Gentry, at 1-800-USR-GRUP (512/345-5316 outside U.S.) for further information.

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Data General was awarded a seven-year, $127 million contract to supply more than 6,000 Aviion family workstations and servers to the **U.S. Department of Interior**. The Distributed Information System II (DIS-II) will be used to establish a nationwide computer network for the department's Water Resources Division.

The system will include office automation, electronic publishing, and geographical information systems (GIS). Using Data General's DG/UX Unix operating system, the network will integrate the work of third-party hardware and software companies on the project, including **Ingres Corporation, Frame Technology Corporation,** and **Prior Data Sciences.**

As part of the process to get the award, DG passed a number of complex performance tests.

■

Data General made its first sale of hardware to the Soviet Union. In addition to Data General, players in the international partnership include **NPO Parma**, a Soviet software development organization, **Voest Alpine Industrieanlagenbau GmbH**, an Austrian industrial engineering firm, and **Voest Alpine Vertriebs**, the firm's marketing organization.

Under the joint venture, called **Perekat**, software designed by NPO Parma on Data General Eclipse MV computers will be marketed by Voest Alpine to ministries and industries in the Soviet Union. Voest Alpine has been doing business in the Soviet Union for 40 years.

"In the time of improving relations between east and west, Data General is pleased that we have become the first major American computer company to enter into a joint venture with a significant technology company from the Soviet Union," said Data General Chairman of the Board **Edson de Castro**, at ceremonies held at Perm, an industrial center in the Soviet Union.

Data General, which has supplied computer systems to Voest Alpine for 15 years, was approached by the Austrian company two years ago to discuss the possibility of establishing the joint venture.

■

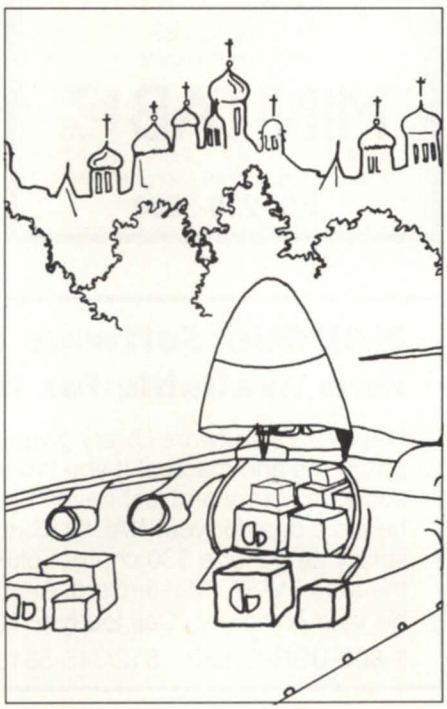
Speaking of international joint ventures . . . a couple of months ago, *Focus* announced that Data General's **Telecommunications Products Division** had quietly delivered a prototype telecommunications system to **Nippon Telephone & Telegraph**. We wondered when we would see the results of this "Asparagus" project, also known as HHX (high-speed hybrid exchange). Our spies report that the BI 3000, an open-architecture intelligent network processor that allows customers to transmit data, voice, and computer information, was displayed publicly for the first time at an NTT trade show in Tokyo.

■

Cincinnati Bell Information Systems and Data General have teamed up to provide a CALS (computer-aided acquisition and logistics support) turnkey solution on Aviion systems using third-party software products. CALS is a **Department of Defense** plan to use digital information to design and acquire defense weapons systems, ships, and equipment.

■

Data General is supplying the hardware for a three-year, $2.7 million GIS (geographic information system) project in Louisiana that will detail emergency plans for energy-related crises, like oil spills and refinery explosions. Commissioned by the **Louisiana Department of Natural Resources**, the plan involves gathering and organizing information that is currently stored on incompatible computer systems in several state offices.



At the heart of the project are 18 Aviion workstations using Infocad software from **Digital Matrix Systems, Inc**. Project coordinator is **C.H. Fenstermaker & Associates** of Lafayette.

■

Rave Computer Association, a computer system supplier specializing in Data General equipment, opened a new East Coast sales office in Warwick, Rhode Island. The office will be managed by **Craig Zaneski** and former DG employee **Mike Dodier**.

■

Adding 750 applications to the Aviion platform, Data General announced Unix versions of its ICobol and BBasic programming languages. Applications originally written for Nova and Eclipse MV family systems can now be run, without recompilation or conversion, on Dasher /386 and Aviion systems.

"Since the introduction of our Nova computers in 1969, Data General has been protecting the investments of their OEMs, VARs, and end-users by ensuring software compatibility between old and new systems," said Vice President of Corporate Marketing **Stephen P. Baxter**. "This tradition continues with our Aviion family."

The Unix versions of ICobol and Business Basic will be available 30 days after receipt of order. ICobol and BBasic software licenses range in price from $295 to $2,950, depending on the system.

■

Kudos to **Debra Bedrosian**, NADGUG coordinator, for being selected by Data General to receive a Director's Award. Debra was recognized for her outstanding work on behalf of NADGUG during the past year, during which she helped coordinate the transfer of NADGUG offices from Westboro to Austin, and worked tirelessly on Conference '89, NADGUG's first to be held in a convention center. Δ

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