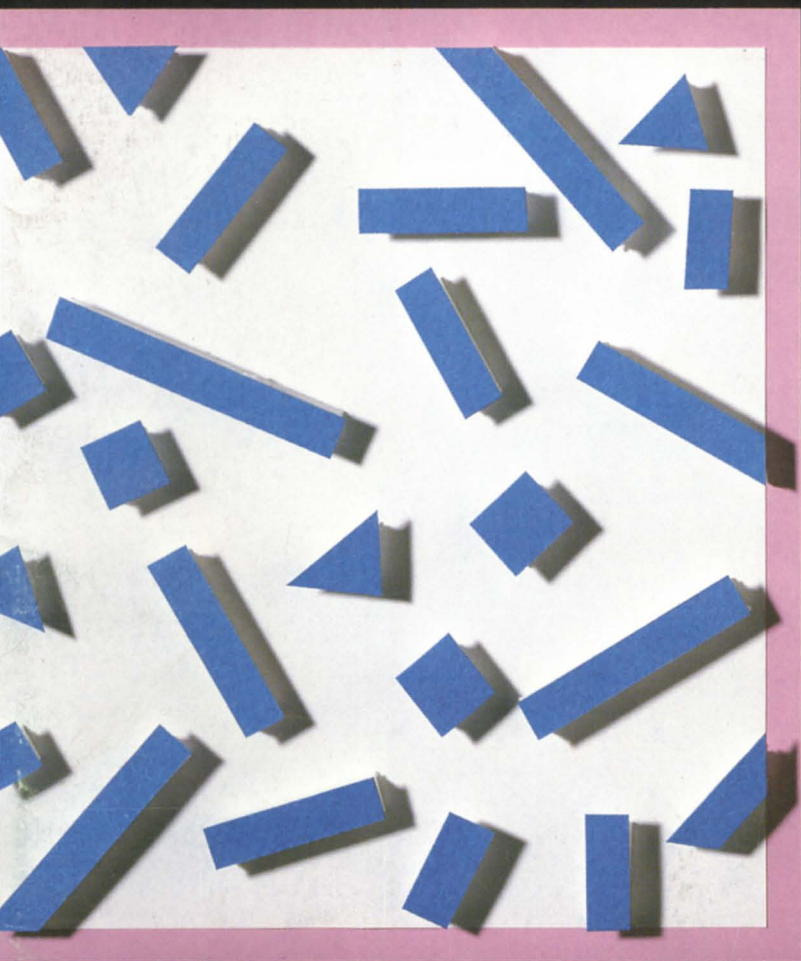
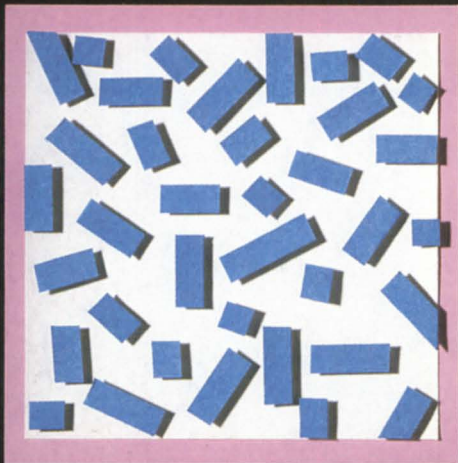


October 1989

FOCUS



The Magazine of the North American Data General Users Group



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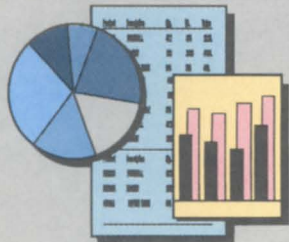
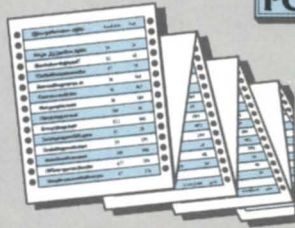
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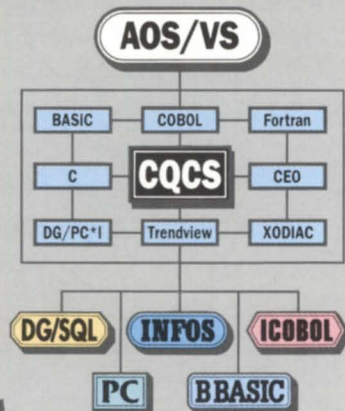


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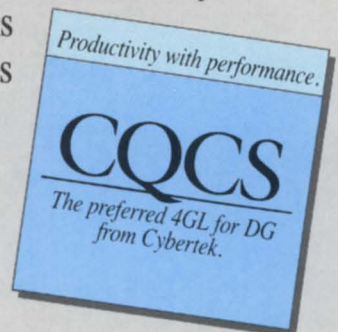
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PRESIDENT'S PAGE

A refreshing attitude
by Donald W. Clark

6

EDITOR'S NOTE

A good-sized dog

8

ROUNDUP

I speak, therefore . . .

Recruitment drive reaps
new speakers for interest groups
by Cathlene Gentry

12

RIG/SIG

Year in review

Opportunities await those who join
by Charlene Kirian

19

OASIS

A foot in the door

Meeting with DG marks start of new era
by Bobbie Pressman

20

FOCUS ON: MIS

The emerging MIS department:
from data processing
to data abstraction

22

UNIX

Warming up to Unix

If you've been giving Unix the cold shoulder,
consider the following redeeming qualities
by Don Dewar

32

COMMUNICATIONS

Bridge over muddied waters

CEO's Agent-User-Interface and LU6.2 form
a "bridge" for electronic mail
between MV and IBM systems
by William P. Rawlins

36

SECURITY

Entrance exam

A director of computing services is instructed to
provide modem access for faculty members. How
does he keep students from beating the system?
by Charles L. Busch

42

INTERVIEW

Marketing with muscle

DG's new vice president of marketing shares
his views on customer satisfaction, cradle-to-grave
responsibility, DG's recent reorganization,
and more

46

MANAGEMENT

The poor performer

When an employee's work does not meet company
standards, it's up to the manager to assess and
eliminate the cause
by Steve Handlos and Liz Straus

56

THE WORKSTATION

The secret's out

Combining forces, Rational Data Systems, Novell,
and Data General introduce a LAN operating
system that can be ported to varying host
environments
by Doug Kaye

60

DISASTER MANAGEMENT

Software arsenal

Disaster at Pine Bluff tests the military's
information management system
by Seemee Ali

64

BULLETIN BOARD

Bits and bytes from the bulletin board

66

ON-LINE HELP

Who to call about NADGUG and Focus

66

PRODUCT REVIEWS

PC sharing for the mini mindset

PC/Remote delivers the benefits of networking
minus the space, money, wiring, and support hassles
by Tim Boyer

70

POWER SOURCES

When power corrupts

Hidden effects of minor electrical disturbances
can be costly
by Aldo Falossi

76

SYSTEM CONCEPTS

Good connections

IPCs can be used to let programs communicate
over a network
by Michael Dupras

80

SOFTWARE LIBRARY

A complete listing of the NADGUG
software library

87

MACROS

Automating the program
building process

Combining the flexibility of CLI macros with
a small C program, Western New England College
has developed a versatile tool for program building
by Pete Szaban

88

SYSTEM MANAGER'S LOG

At what cost?

AOS/VS II tuning offers hope for improvement
in disk I/O, but increase in CPU consumption
is here to stay
by Brian Johnson

94

PRODUCTS AND SERVICES

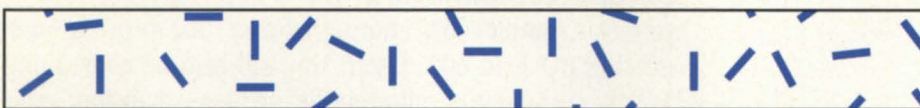
The latest products for DG systems

100

PRISM

Brief notes from the DG community

108



Cover by Pat McMurray

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A refreshing attitude

"I want to know what Data General has to do to keep you as a customer." Ron Skates' question was simple enough, but I could see that he was very serious. In my opinion, the very fact that he was asking it says a lot about a refreshing attitude among DG's executives.

Skates, who is DG's chief operating officer, asked his question while sitting at a restaurant table about midway between Westboro and Boston. Others around the table included nearly all of DG's top managers, plus two NADGUG officers and several members of the NADGUG Executive Advisory Council. The occasion was the annual summit meeting between DG and NADGUG, which was held at the beginning of August this year.

Frankly, I was impressed. Never before had DG put on such a solid show of support for the user group. This was more than a series of cameo appearances by various managers. Not only were we having dinner with virtually all of DG's top managers—including John Abbott, Howard Berg, Joel Schwartz, Steve Baxter, Angelo Guadagno, Ron Skates, Herb Richman, and Ed de Castro—but all of them stayed to talk.

And it was more than just a show of support. They were talking in substantive ways about the issues and concerns we were raising with them.

Of course, it helped that we had done our homework. Before going to Westboro, we had conducted a survey of NADGUG members to determine which concerns and issues were most on their minds. On the basis of the survey we had some fairly objective information to help us answer questions like the one Skates was posing. About two weeks before the meeting we had sent copies of the survey results up to Westboro so the DG managers would be able to respond to the NADGUG members' concerns.

The DG people had also done their homework. Starting that evening and continuing on through the next day, we

participated in a series of presentations addressing virtually every one of the concerns the survey had raised. There's not enough space to go into all of them here, but in general I can say that DG has already started working on many of the issues, and they will be ready to provide answers to most of the rest of them during our annual meeting in New Orleans.

Nearly as important as the specific policies and programs we were previewing at the summit meeting was the attitude displayed by the DG people. What I saw was a willingness to hear about any problems that customers might be experiencing, and a sincere desire to get them fixed.

In general tone, this was the best summit meeting I've seen in all the years I have been with NADGUG. There was considerable enthusiasm on both sides even before we got into the formal discussions, and the optimism we got from DG was a great plus. There are a lot of new faces on this management team, and they didn't seem to have any illusions about this being an easy job for them. They know that DG is undertaking a dramatic comeback effort, and that they can't afford to fail. They also appeared to have a greater appreciation than ever before of their current customers—they know that they can't succeed with their Unix/Aviiion strategy unless they earn the continued loyalty of their traditional Eclipse/MV customers.

We did the best we could to answer Ron Skates' question, but in the end we had to suggest that they come to New Orleans and spend some time talking directly with users to find out for themselves what they need to do. Several of them committed to do exactly that.

If the DG officers we talked with are able to follow through on the commitments they made—and I have every reason to believe they will—then I believe we can look forward to a very productive period for both NADGUG and Data General. Δ

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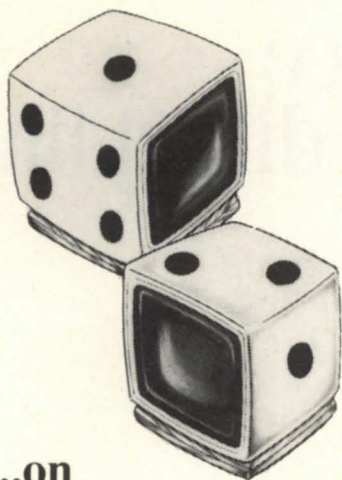
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EDITOR'S NOTE

A good-sized dog

In the flurry of preparing for the 1989 NADGUG conference, I've had a hard time thinking of anything else—but the art department won't let me procrastinate another minute. If I don't get this written today, they'll probably hang me in effigy. Honestly, I do have something else to say, but first let me share a bit of our preconference euphoria.

More than 500 people have already preregistered (with more than three weeks to go) and the letter carrier brings another bundle of applications each day. The T-shirts, badges, and tote-bags are all ordered, the exhibitor booths are nearly sold out, travel arrangements have been made, and the staff has made plans for covering the registration area and NADGUG information booth. Of course, it's dangerous to put too much stock in our own press releases, but really, all signs *do* point toward another record-breaking conference.

Everything seems to be going well . . . but why do I have this gloomy feeling that we've forgotten something important?

Perhaps that question could be handled better by a psychiatrist. The only answer that comes to my poor befuddled mind is that all the planning and hoopla that go into making each year's conference the greatest show on earth tends to obscure an important fact: NADGUG is more than just the annual conference. In case that sounds like anathema, here's another fact: as hard as it may be for me to admit it, NADGUG is also more than just *Focus* magazine.

Those of us who spend our weeks worrying about the details of the conference or the magazine tend to forget that we are only small appendages on a good-sized dog. I had the opportunity to reflect on that recently when Richard Finmore,

vice president of the DG User Group for the United Kingdom and Northern Ireland, asked me to write about a page and a half for the premier issue of their new magazine. They really could have saved the ink, because the thrust of what I had to say was simply this: the user group is there to help people solve problems, get ideas, make plans, and save money. The conference and magazine are simply means to that end.

One NADGUG event that has a lot to do with that central purpose almost always gets upstaged by showier activities such as the conference and magazine. I'm referring to the annual "concerns" survey of the membership, which is followed by what Jess Brown refers to as the "Swampwater Meeting" with DG's top management. (In case you don't know him, Jess chairs the Performance SIG; he also lobbies for the "lets-not-get-too-organized-about-this" side in NADGUG deliberations.) The purpose of the concerns survey is to gather some reliable data about the issues that are worrying users. With statistics in hand, NADGUG's officers then meet with the people at DG who are in a position to do something about them.

As I write this, NADGUG's officers have just returned from this year's Swampwater Meeting. Based on the survey responses, these are the 15 most pressing concerns they took to DG management.

1. CEO users said they want bug fixes and better performance for rev 3, as well as continued support for those who have chosen to stay with rev 2.

2. Customers expressed the feeling that DG salespeople should be better informed and more helpful.

3. Users would like to see DG recruit a larger number of independent software

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4. There is still a feeling that the way DG implemented the versioning policy for AOS/VS and AOS/VS II was not fair to users.

5. A similar feeling remains with respect to the new software support policies—even though DG has dropped the requirement that each site has to have at

least one Support Plus agreement before it can get Software Subscription Service.

6. Users would like DG education and training to be more economical.

7. DG service personnel should be more sensitive and pay more attention to their customers.

8. DG should do more with marketing and advertising to develop a reputation as a "solutions-oriented" company.

9. DG Service should be priced more competitively.

10. DG should review its prices—especially for software products—to make sure they are competitive.

11. Users would like DG to continue to develop and improve languages and utilities like SWAT, DEBUG, SED, DUMP/LOAD, SORT/MERGE, INFOS, etc.

12. Users want DG's assurance that AOS/VS and AOS/VS II will continue to be developed.

13. Users gave a broad range of suggestions for improving both the content and update procedures for DG's documentation.

14. Compatibility and portability are important concerns—users want DG's operating system development teams to adhere to standards.

15. Spare part availability has been a problem in some regions.

Some items from this list of issues may surprise you. Bear in mind that NADGUG's priority list changes from year to year, which is probably very good evidence for the effectiveness of these Swampwater Meetings. In my opinion, the biggest reason why the issues change from year to year is because DG has taken the initiative to fix the problems that NADGUG brings to their attention so constructively.

Also bear in mind that the concerns survey *always* contains surprises for DG's management. Certainly, the marketing people at Data General were caught quite off guard last year to learn how strongly their customers objected to the set of versioning policies that were introduced with rev 8 of AOS/VS. Developments since then have shown quite clearly that DG's managers were acting in good faith; they had offered a policy that they *thought* would give users what they wanted: continuing support for older versions of software products that undergo major revisions. However, to users the new policy looked like an attempt to take away the updates they thought they already had paid for with their software subscription fees.

The confrontation over versioning underscored how hard it is to keep the lines of communication open between company and customers. It is obviously in the best interests of both DG and its customers to work harder than ever at keeping the dialog going. Δ

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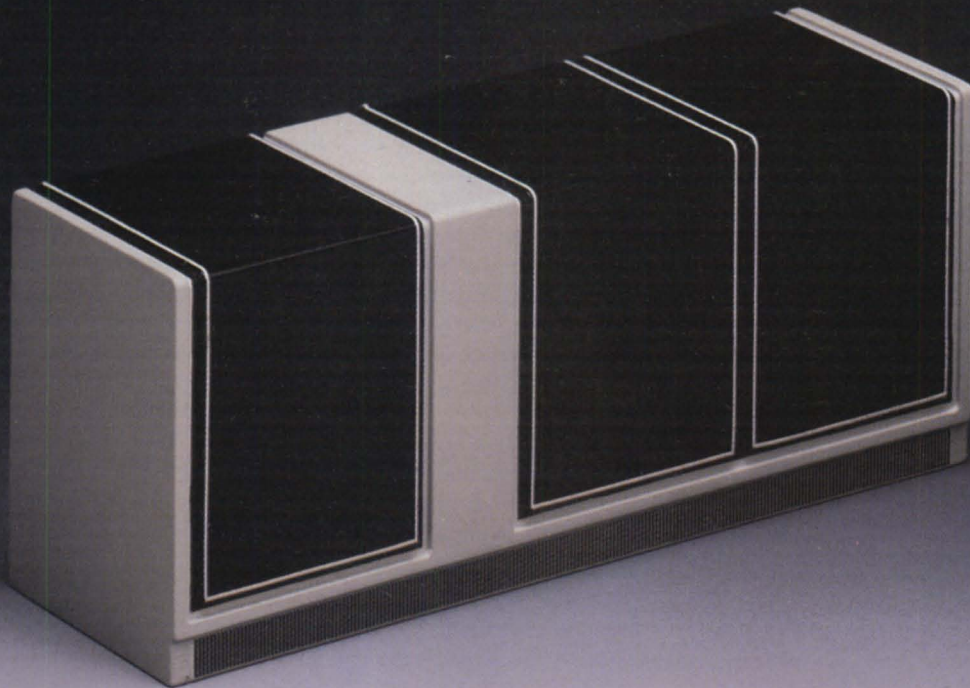
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I speak, therefore...

Recruitment drive reaps new speakers for interest groups

As a result of our speakers bureau recruitment drive, 25 new names have been added to our list of people interested in appearing before interest groups. Applications were received from around the country and the world. Subjects range from office automation products and AOS/VS issues, to RDOS, information systems in health care, and terminal emulation.

Most of these experts will speak for no charge if a group agrees to pick up expenses. A good number of the potential speakers will take care of their own expenses, leaving the group with a great, DG-specific speaker absolutely free. RIG/SIG leaders who attend the NADGUG '89 conference can pick up a copy of the latest list of speakers at the NADGUG booth. Other groups can expect to receive theirs in the mail at the beginning of October.

In order to keep the speakers bureau as up to date and useful as possible, applications will be inserted periodically in *Focus*. If you are interested in being a part of the speakers bureau and you are attending the conference, please stop by the NADGUG booth and pick up an application. If you can't make it to New

Orleans, call me at 1-800/877-4787.



On July 27, the **San Diego RIG** held a meeting to reorganize, motivate, and develop a plan of action for itself as a regional interest group. NADGUG RIG Western Vice Chairperson **Leryl Cash** was on hand to offer advice on how to keep a RIG active and productive. It was decided that the San Diego RIG will meet bimonthly, beginning on September 28 at the Torrey Pines Inn. After September, meetings will take place on the second Thursday of every other month.

At the September meeting, representatives from the local Data General office will set up an Aviiion system so that RIG members may get acquainted with DG's future. **Peter Walsall** and **Chris Thorpe**, who are both attending the conference, will report on the announcements that were made and the NADGUG business that was accomplished.

The group would like to encourage DG users in the San Diego area and Orange County to attend meetings and get involved. Peter (619/560-8112) and Chris

Start-up services offered by NADGUG

NADGUG and the RIG/SIG committee see RIGs and SIGs as the backbone of the organization. The more these individual groups grow, the more the national group grows. I'd like to encourage anyone who is thinking about starting up a new group to give us a call and let us help you get started. Below are some of the start-up services that NADGUG offers.

- **\$200 Funding**—these funds are to be used to help out with start-up costs. Half is an interest-free loan to be repaid when the group becomes financially self-sufficient. The remaining \$100 is an outright grant.
- **Start-Up kit**—This kit includes sample newsletters, by-laws, and start-up notices from other groups. General guidelines are provided, as well as suggestions for initial mem-

bership drives, group promotions, and meeting agendas.

- **Focus coverage**—*Focus* magazine will announce your group's start-up activities in this column. This column will be available to report your meeting notices or details on any other events. Additionally, *Focus* will provide copies to RIGs and SIGs upon request, to be distributed at group meetings or initial mailings.
- **Mailing labels**—You will receive mailing labels with the address of other NADGUG members in the relevant geographic region or special interest.
- **Roster**—Your group will be listed in the RIG/SIG roster, which is published and distributed quarterly.

Data General has a vested interest in supporting its customers. It is for this reason that the sales offices, and

the Marketing/Development Groups provide support to the RIGs and SIGs. This support includes:

- Authorization of an individual or individuals to be responsible for working with the customer in developing the group.
- Helping out with initial mailings. Sending meeting announcement or membership promotions to customer lists.
- Assistance in setting up meeting locations and speaker programs.
- Budget provisions to assist in financing the above support items.

If you have any questions about the start-up services please give me a call. I am looking forward to getting many new groups started, and passing on the benefits of a local group to all NADGUG members. Δ

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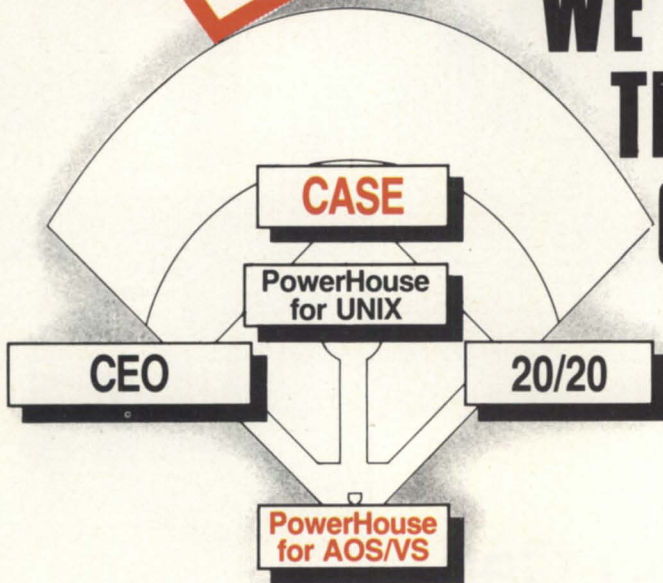
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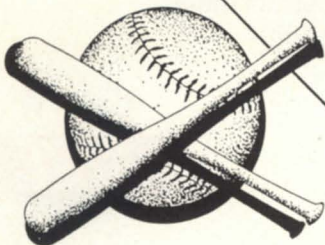
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(619/275-2892) would like to hear from anyone interested in joining the group or having suggestions for meeting topics and activities.

The **Chicago Area Data General Users Group (CADGUG)** elected officers at its July meeting. **Chuck Goes** was elected president, **Paul Gibson** is the vice

president, and **Jim Siegman** continues as treasurer. The position of secretary is open at this time.

A representative from the Customer Support Center in Atlanta was on hand at the September 6 meeting. CADGUG's annual dinner meeting is scheduled for October 17. A guest speaker will talk about Unix software development. November's meeting will concentrate on

X.25 networking. Information about CADGUG and its activities can be obtained by calling **Chuck Goes** at 312/930-0020 or **Jim Siegman** at 312/673-1700.

The **Los Angeles End Users of Data General Equipment (LA EDGE)** will hold its second annual LA EDGE Hardware Expo at the Brookside Country Club in Pasadena on Tuesday, October 10, at 7 p.m. Several vendors who provide Data General and Data General-compatible equipment will be on hand to display and demonstrate various hardware items. This is a chance for attendees to see equipment they may not have seen before, and ask questions about how the new products might fit into their organization. It is a great place to see the latest hardware announcements. Last year's Expo was quite a success! Interscience Corporation will host a cocktail hour at 6 p.m. A buffet will be available during the expo.

On November 7, LA EDGE will meet to talk about Unix issues, again at the Brookside Country Club. In the LA EDGE tradition of fun holiday meetings, the December 5 meeting will be "Casino L'Edge." Much of the proceeds of this evening will be donated to local charities.

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

A new regional interest group is in the works down south. On July 27, DG users in the Western half of both Carolinas, and the eastern portion of Tennessee, met to talk about forming a RIG. If you use Data General equipment and live in or around this area, please contact **Charlene Kirian** at 704/251-9551 for details of start-up activities.

If you're reading this while in New Orleans, stop by the RIG/SIG section of the NADGUG booth and say "hello." 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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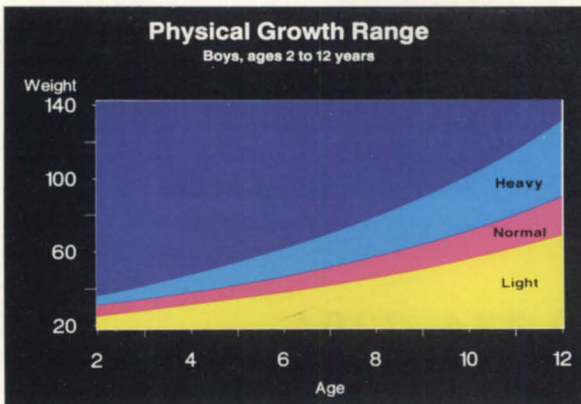
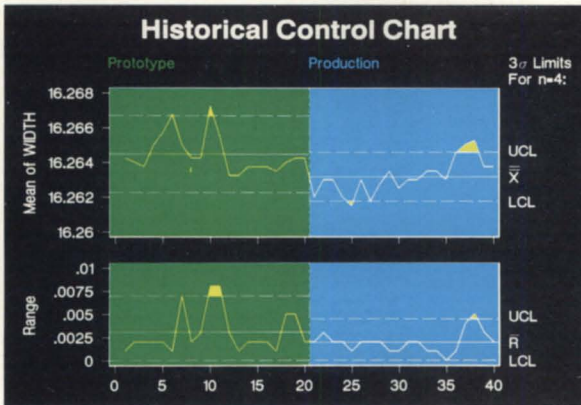
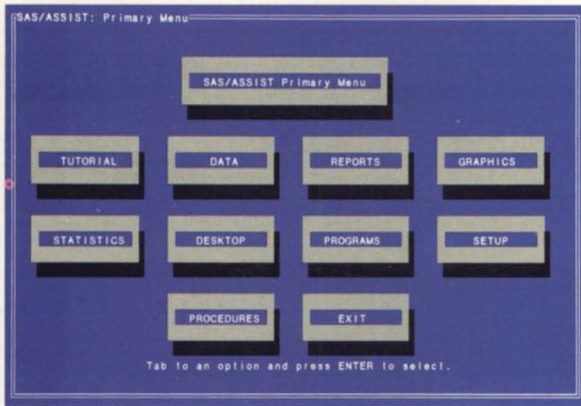
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Year in review

Opportunities await those who join

by Charlene Kirian
RIG/SIG chairperson

What a great year! We've had several new groups get started and we've been able to visit some of them to offer our support and encouragement.

We've also produced a speakers bureau of available speakers and topics. Most of the speakers are members of NADGUG and would like to share their specialized knowledge with other groups.

We've had the opportunity to meet and talk with many DG users across the country. They all seem to agree that joining a RIG or SIG is a good step. They have gained insight into certain products and have acquired knowledge from other users, as well as having shared their own information.

During this year's conference, we are holding our first RIG/SIG Workshop. If you are reading this article upon receiving your copy at the conference, the workshop is probably in session at this very moment! We're hoping for a good turnout of RIG/SIG leaders, so we have an excellent program planned.

This is one of the few opportunities we have to sit down with the leaders of the interest groups to discuss their specific problems and share their successes. It's a lot of hard work to keep a group active! Members need to stay involved with the groups and help to maintain the motivation that is so necessary.

RIGs have a special need with delivering new programs each month that are interesting, stimulating, and informative. With everyone's busy schedule, it's important to make the meeting interesting to bring people back each month.

NORTH AMERICAN DATA GENERAL USERS GROUP

SIGs are unique in that most SIGs only meet once a year at the conference. It does not allow much time for interaction and discussion between attendees. That's why we are encouraging SIGs to hold workshops during the year. This will give users of similar products or users in the same type of industry an opportunity to spend some time discussing mutual interests.

I have a great committee that works hard to help groups with their special needs. Listed below are the vice chairpersons according to division: Steve Kern, 201/327-6300, Eastern RIG vice chair; Leryl Cash, 206/253-3474, Western RIG vice chair; Bobbie Pressman, 312/948-1814, SIG vice chair.

Another invaluable help to me and the groups is Cathlene Gentry, RIG/SIG coordinator with *Focus* magazine, who writes the monthly "Roundup" column, collects information from all the RIGs and SIGs, and performs numerous other tasks to make my job easier.

This was my first year to serve as RIG/SIG chairperson, so I've needed the support of former chairpersons to continue the success we have enjoyed in the past. I'm pleased with the results I've seen this year, and am excited about the new year as we look forward to new opportunities and experiences. Δ

Charlene Kirian is a contributing editor to Focus magazine and president of Computer Training Associates, Inc., BB&T Building, Northwestern Plaza, Asheville, NC 28801.



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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.

OASIS

A foot in the door

Meeting with DG marks start of new era

by Bobbie Pressman • OASIS president

I recently spent a day speaking directly with representatives from Data General about many of the concerns of office automation users. Although OASIS (Office Automation Special Interest Group) and Data General representatives have met on many occasions, this meeting was special. Its purpose was to begin the process of clarifying our "official" contact lines with DG.

This opportunity came about as a result of a discussion at NADGUG's spring board meeting, during which several special interest groups, including OASIS, expressed the need to improve communications with Data General.

Rather than voicing our concerns to an impersonal entity, we wanted to be able to speak directly to a person (or people) at Data General who would act as a messenger of sorts and pass along our questions to the proper people—those who know the answers and who have the authority to give them.

On June 13, I met with Betty Anne Fortunato, marketing manager for Educational Services, to discuss some of the issues surrounding DG's Education Services. These include:

- Prices of the classes and appropriateness of content for the audience.
- Training materials: The general consensus was that most of the training materials are good, especially the "at a glance" series. Some sites have voiced concerns regarding packaging logic (sending out spiral-bound books with three-ring binders), and lack of revision-oriented updates to user manuals.
- Also discussed were misunderstandings and inconsistencies with discounts.

On the subject of office automation product development, I spoke to the following people: Skip Richards, senior department manager for CEO Software Development; Bob Primmer, product assurance engineer for Office Products Support; and Bruce Evans, senior prod-

uct manager for the Distributed Applications Architecture group. Some of the product issues and concerns addressed were:

- DG pricing policy regarding the AOS/VS version of CEO Write
- Lack of response from Data General on numerous concerns that have been voiced in the past (pricing issues, OIS, . . .)
- Hardware requirements for new revisions of CEO
- Serious concerns regarding support for rev locked sites
- Quality control on new revisions of office automation software.
- There are not enough security options or levels available for system administrators. (OASIS would like the opportunity to work with the developers on this issue.)

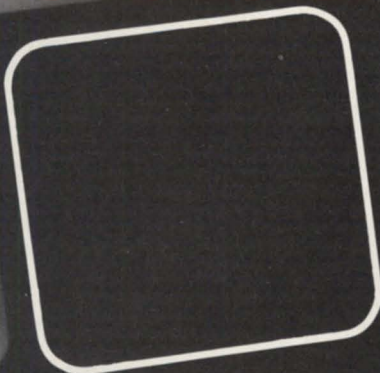
All of these issues, and others not mentioned, were discussed in-depth during this full-day meeting. One of the most pressing problems highlighted was a lack of clear communications, often caused by assumptions made by those on both sides of issues. At the time of publication of this article, Data General had not finalized all of its answers to the questions, so I will not exacerbate the problem by printing partial results here. However, as soon as I am given the information, it will be made available to OASIS members and *Focus* readers.

I hope to have the information in time for the conference in New Orleans. If so, I will review the information with OASIS members who attend the OASIS business meeting. OASIS is a tremendous vehicle for direct communications with DG. Please join me at the OASIS workshop and business meeting in September. Your participation and support of the OASIS SIG will help ensure the strength of the organization.

In addition to the individuals mentioned above, I would like to thank Debra Bedrosian and Gerri Rebello for coordinating the meetings, and taking notes during the discussions. Δ

Bobbie Pressman is president of OASIS and the manager of training and office systems at Deutsche Credit Corp., P.O. Box 329, Deerfield, IL 60015; 312/948-1814.

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The emerging MIS department: from data processing to data abstraction

Taking our cue from the Conference '89 theme, "Emerging technologies: Changing the challenge," the *Focus* staff wanted to find out how NADGUG members see the MIS function changing in their organizations. Are MIS managers keeping up with current technology? Do their departments have a higher or lower profile than in the past? What do they consider will be the biggest challenges in the next few years?

It didn't take much prompting to get MIS managers to speak on these topics. Obviously, they have given the issues a lot of thought. And as we proceeded with the interviews, some trends became quite evident.

MIS managers must constantly work at keeping up with changes in technology. They are voracious readers of trade publications and they attend conferences, such as NADGUG's, whenever they can. Universally, the MIS managers we interviewed said that their departments have higher profiles than in the past. Whether they are automating a college campus or predicting market trends for a manufacturing company, one thing is certain—MIS managers are key players in the success of an organization.

They have moved out of the remote computer center and into the proverbial boardroom; along the way they evolved from mere processors of data into important decision-makers. From their positions, they can see how all departments are

functioning, and they are often in the best position to coordinate information between those departments.

MIS managers are not only asked to provide reports, but more often they are being called upon to abstract only the information that is useful to managers, and to not bother them with the rest. And so, MIS managers are more than technical whizzes who keep the computer system running smoothly . . . they are teachers, they are analysts, and they make decisions that will affect the future of an organization.

One decision in particular is weighing more heavily on their minds these days: whether or not to migrate to the Unix platform.

Another thing that struck us was the versatility of MIS managers. In addition to basic technical ability, they have to be able to learn new concepts and understand how those concepts fit into the big picture of an organization, no matter what kind of organization it is.

The MIS managers we interviewed were selected from the NADGUG membership roster, and represent corporations and associations, municipalities and housing authorities, manufacturing companies, colleges, and a regional farm cooperative.

We hope you'll see these interviews as we do—refreshing reminders of the potential of data processing, which has only just begun to be realized. Δ



“When I came here it was a culture shock. I had to know everything from how to calculate the utility rate structure to how the police department does uni-

form crime reports every month. When I came on, the MV/10000 was installed, but none of the new software was installed. Data processing used to be under finance. They hired me as a director and put me in charge.

“My responsibility is to make sure that the software we’re requesting works. I rely on the other directors. They are the ones who know what they want the software to do, I just have to make sure it gets written up in the proper way and to make sure that the hardware will work, and that

Profile: Ramona Brown, director of information management services, City of San Marcos, Texas.

Responsibilities: Direct all automated systems within the city.

DG hardware: MV/10000 used for financial accounting, utility billing, building inspections, payroll, and other administrative functions. In the process of installing police records on MV/7800. Sixty users on the MV/10000 and assorted PCs.

the hardware that the engineer is proposing is large enough for the data we will be keeping. And so, we’re working as a team.

“I am directly under the city manager. Basically, the city manager doesn’t want details, he wants a summary. The [San Marcos City] Council asked me at the beginning of our retreat, ‘What would happen, Ramona, if you got sick?’ I could honestly say that my staff of two people could take it. They could not grow and create new applications, but they could do the operations.

“I can’t stress to you how much our city manager has backed us up. He understands the MIS concept of how I can help him. He is striving to make the other departments aware that I provide a service, that we are important, and to use us.” Δ

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“A challenge that I’m realizing is more and more important is looking at the structure of data in the laboratory and trying to develop better standardized definitions across the different units in the laboratory and between our clients.

“The need is already upon us to share data directly—to send results to (our clients) in digital form so that they can be entered into their data base. I think the need to come up with some uniform definitions for data with a uniform architecture for how we look at information that the state might want to use is greater and greater.

“One of my biggest challenges is convincing users in the specific units that they need to take a bigger perspective on their data. That they need to look at the potential—early on, when they set up their systems—that their data will be used by others later.

“For instance, the Department of Health will go out and collect water samples and bring them to us to make sure they meet certain standards. Every time a new well is drilled in the state, it is assigned a unique well number. There will be water samples collected from that well. This gives the people who are trying to assess the quality of groundwater in the state some information about groundwater in that location.

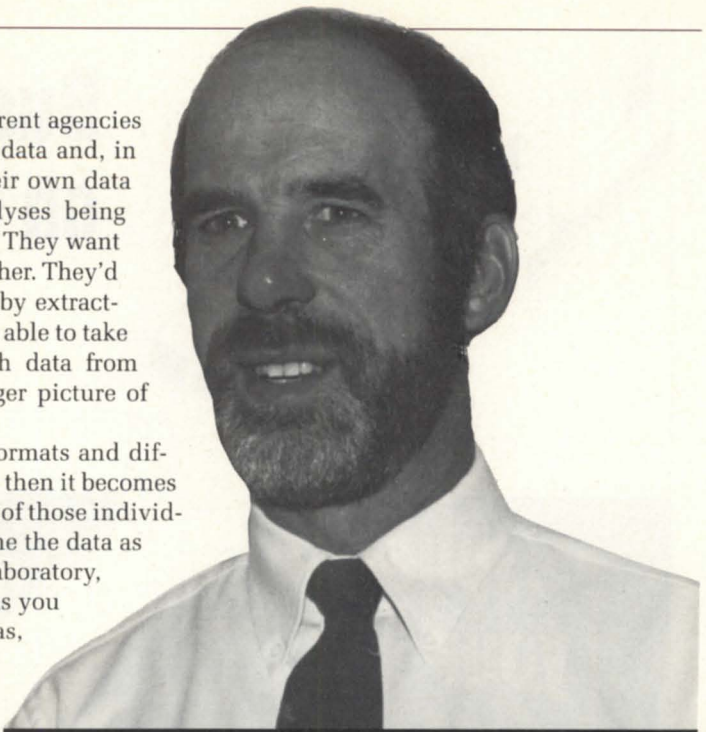
“The results of the groundwater samples are of interest to several people in other state agencies—the people in the Pollution Control Agency, people at the Geological Survey, people who are doing planning and land management, even the Department of Agriculture, which is concerned about pesticides getting into

groundwater. All of these different agencies want to be able to look at the data and, in fact, are collecting some of their own data and have other separate analyses being done on groundwater samples. They want to be able to bring this data together. They’d like to do simple assessments by extracting data from data bases and be able to take our data and combine it with data from other laboratories to get a bigger picture of what’s happening.

“If you have different data formats and different definitions for your data, then it becomes a colossal project to do any one of those individual reports. You have to redefine the data as it comes from each separate laboratory, or from each separate agency, as you try to straighten it out. Whereas, if you have an overall architecture to begin with, and the data is collected and stored under those definitions, then doing combinations later becomes much more simple.

“It’s my perception that that’s the way MIS is going—that more and more you’ll be looking at corporate data definitions and architectures; that corporations are going to realize that they need to tie together all their data. They’ll be looking more and more at better definitions, and more centralized definitions. They’re going to have somebody like a data cop.

“A lot of users have developed systems on PCs that are not under the wing of MIS. Some of those systems become pretty important to the company, but when the time comes when they need to integrate that with the overall corporate system, they go through lots of consternation, and lots of work in trying to get their data to fit in with the other data. I just think that we’re approaching a time when MIS has to communicate to the other users the importance of setting up their data in a consistent way—a way that’s consistent in the use of the corporation. I think we’re going to see more and more of that. If you don’t,



Profile: Steven Ring, supervisor of the Data Management Unit in the Division of Public Health Laboratories, within the Minnesota Department of Health, Minneapolis.

Responsibilities: To direct overall use of computer and information technologies in the laboratory; develop software programs, purchase hardware, implement an information management system, provide reports for management.

DG hardware: MV/15000 Model 10. Twenty-two D/450s, 34 D/211s. The laboratory has two major production sections: environmental and clinical.

you end up restricting yourself in what you can tie together and integrate, or you end up that every time you want to integrate a project, you have to do all this translating. It’s very frustrating and time-consuming.

“I think it’s inevitable that this is going to happen. As networking becomes more common and each agency sets up its own data bases, the need for sharing the information between the states and having the state be able to look at all of the data that pertains to a particular area [will increase]. It’s going to become necessary and the state is going to put the resources into developing that kind of architecture. I think we’re seeing some of that happening right now.

“Recently, our legislature

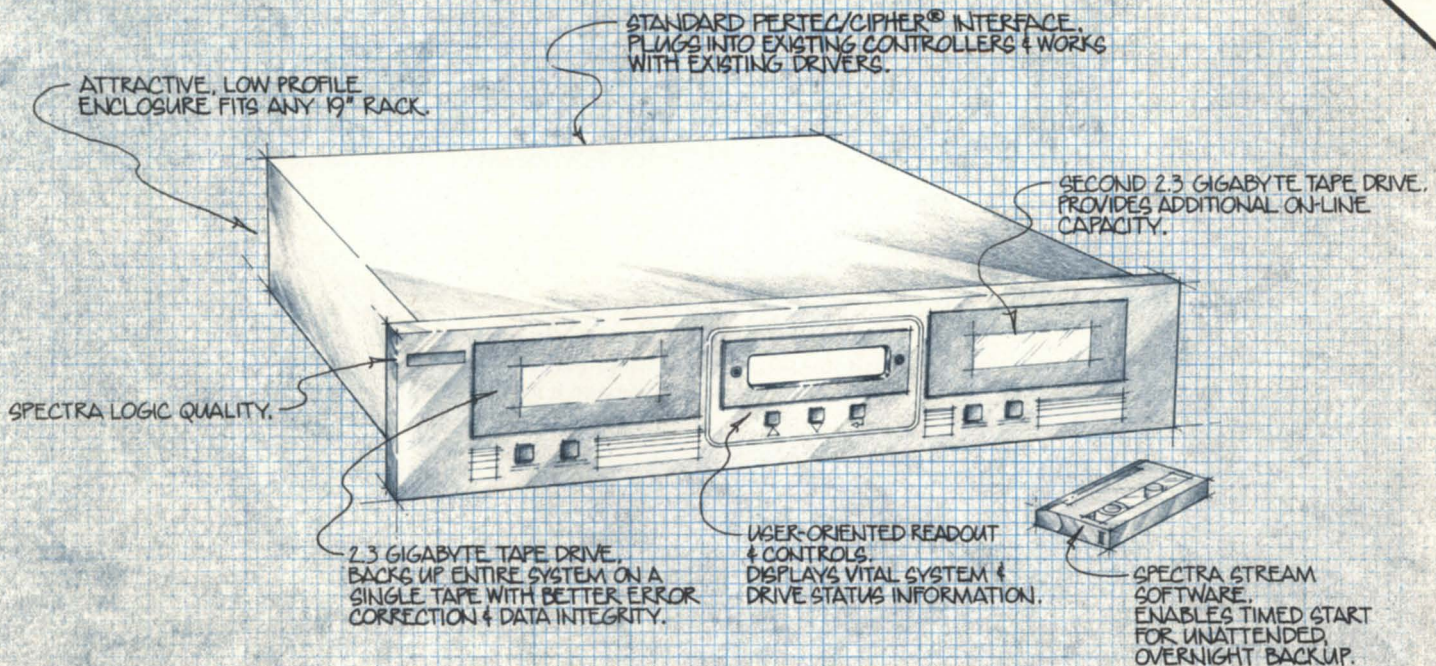
established an Information Policy Office to look at all the information in the state of Minnesota. It will take a long time before we’ll get down to the details of data format. To get the information from above, to have the legislature say this is important—that filters down to the underlings like myself, who say, ‘Let’s not jump into this data base project. Let’s try to coordinate it with our client so that this data will be easier to use with others.’

“I think that the way networking is going, it is going to be quite feasible to tie many different kinds of systems together. I think that’s one of the strengths of the DG system. They do have capability to hook to many other different systems.” Δ

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Profile: James McFarlane, director of Computing Services for Alvin Community College, Alvin, Texas

Responsibilities: Provide computer services for the college, assist in selection of computer equipment for different departments.

DG hardware: MV/15000 model 10 and an ethernet network serving 125 users.

“We’re now two years into the use of the Data General system. None of us here had worked with Data General before, so our first challenge, obviously, was to learn the Data General way of doing things—getting our system solid, which it is, and then beginning to grow with it. My challenges have now changed from ones of implementation to ones of growth. Now that we’ve established what we want to do with our system, we’re trying to expand it into classrooms, offices, and laboratories all over campus.

“[The profile of the MIS Department] is probably much higher simply because we have gone from an old Hewlett Packard system that basically served one building, to a networked Data General system that serves nine buildings on campus. When you do that, you get highly visible very quickly. Now you’ve brought computing on to the desktops of clerks, managers, administrators, and many of the classroom students.

“By the time we got ready to change our main computer system, we had a very computer-literate campus here in terms of secretaries, clerks, and departmental managers using computers. We integrated those computers on to our network. That’s why we bought IBM computers—so that when we changed our computer system we would have a good chance of compatibility. In fact, we have not had to throw out a single investment we’ve made in personal computers because they’ve all been compatible with our new Data General system.” Δ

Profile: Alan Perlman, MIS manager, San Diego Housing Commission.

Responsibilities: Coordinate all data processing needs, including systems analysis programming, new product acquisition, budgeting, and training.

DG hardware: MV/15000 Model 8 connected to a local area network of PCs.

“A big issue is an easy way to access data from the MV, or to bring data from the MV to the PC. We have the technology to do it, but it is still not a seamless integration. The PC-users still have to make a request of us to put the data in a format that they can use.” Δ

“Basically, MIS is considered part of the top management team, so that’s how we’ve moved into the boardroom. The biggest need that we have is minicomputer/PC integration, and that’s given pretty high priority.

“Our biggest challenge right now is how to best expand our system, given the new technologies on the horizon; deciding to stay with the existing technology, as opposed to the RISC technology.

Profile: Frank E. Cherek, Chicago Board of Trade

Responsibilities: Supporting the staff of the organization in its mission of providing a place to trade commodities.

Operating system and hardware: AOS/VS on an MV/20000 Model 2, with a corporate-wide network of IBM and IBM-compatible PCs.

“The biggest challenge is to get all of our computers—minis, micros, and mainframes—communicating with each other, and all of our users communicating with each other.

“Two years ago, we were basically a standalone environment. If you were on an IBM system, you were on an IBM system. If you were on a Data General system, you were on a Data General system. The need to transfer information back and forth between all the systems and all the computers has become critical to our operation.” Δ

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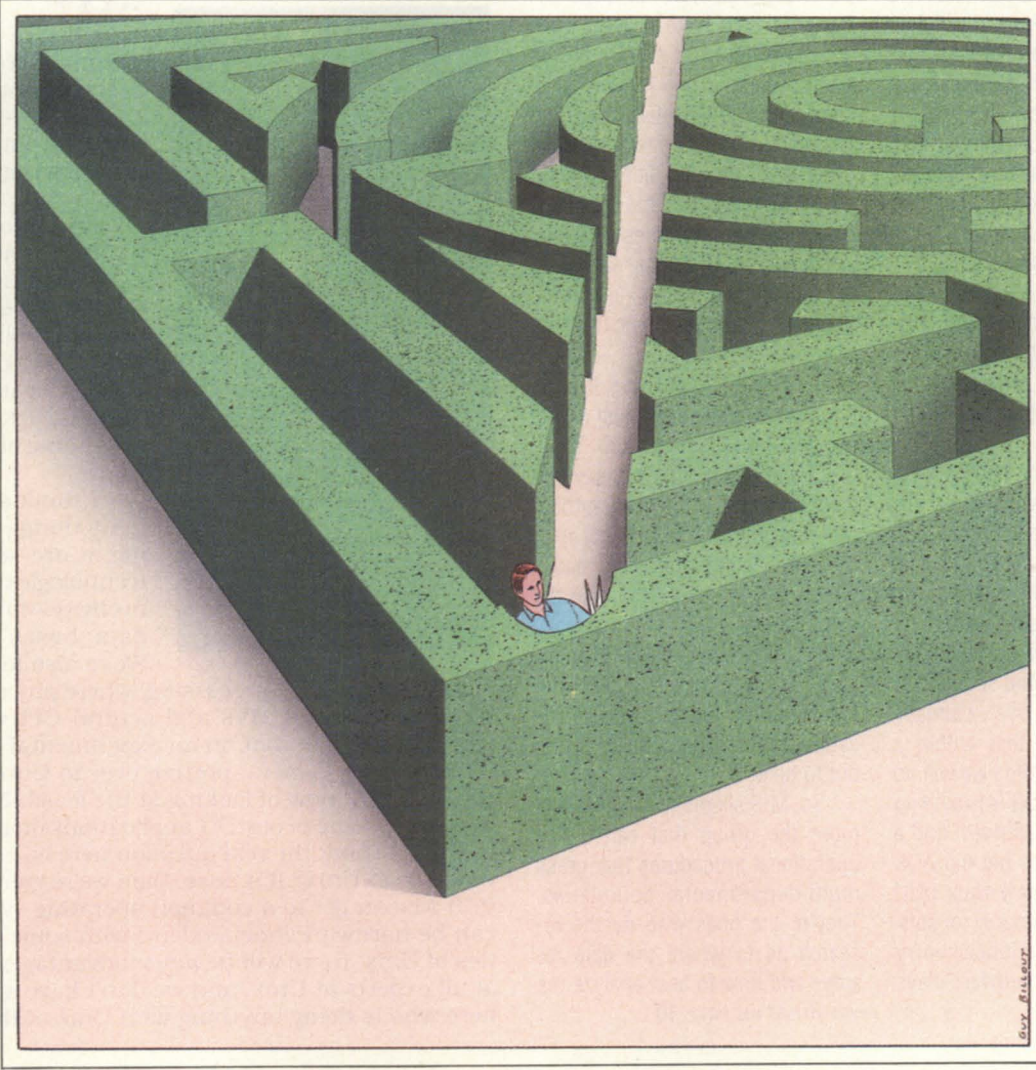
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“One of the areas that I’m being pressed into service is better conversion of data requirements into usable information.

“For a very long time, EDP departments simply replaced operational tasks with an automated function; they streamlined those areas and used the computer for repetitive processes. Where I’m called in over and over now, and where I have to develop strategic plans, is to take this data that’s been collecting now for about 10 years within my company, and develop systems that can analyze the data, and to a large extent incorporate that with expert systems and artificial intelligence to come up with actual recommendations for how the company should better run itself.

“In other words, we have a lot of financial data that we’ve collected over the past 10 years, and we have to find ways and means in which to analyze this data to take into consideration changes in product lines, and changes in the way in which the company is doing business, and, have systems that can speculate and say, ‘well, based upon what we see as a future, this is a better way in which to develop our products.’

“We’re just in the infancy of it. That’s where I spend most of my time . . . looking at strategic ways to use the processing power that we have and the data that we’ve collected.

“I think [emerging technology] falls into three areas. The first area is the standardization of operating software; that we no longer get bogged down in solutions that are specifically matched to hardware; that the hardware is an incidental part of my job; that the software is independent of that. We’ve already made the decision that within a three-year period of time we will no longer run AOS/VS. DG is providing us with a hardware platform and a conversion path from the old AOS/VS system to the new Unix platform. We can look primarily for software solutions and no longer worry about what role the hardware plays in it.

“The second area is in the area of expert systems. These are software tools that allow you to program the human resource capability that you have into a set of rules and tools that allow you to manure the data that’s collected. In our case, we would use expert tools to track financial information, as well as to track results of manufacturing data that we have while we’re putting together equipment.

“The third area—we’re not sure what the impact will be—is the whole area of artificial intelligence: to predict how the company should respond based on a large body of information.

“[MIS] has a much higher profile. There was a time when each company had many different departments, in which each department was the expert in that department: you have a financial department, you have an engineering area, you have a sales area, you have an order entry area, on and on. Each group is very proficient and very professional and “the expert” in that one area. Most companies do very little work in trying to figure out the interrelationships between these various departments. Usually it was up to a controller, a single individual within a corporation, to do this type of work.

“What they found was that as companies grew, you just could not deal with that approach. There was too much going on to say that a controller could know everything that was going into a financial area, the engineering area, the manufacturing, the order entry, and the sales areas. And what basically ended up happening was that the only group that emerged that knows all the relationships of the various different departments turns out to be MIS.

“So, MIS seems to be more and more the group that can define operational procedures that cross multi-departmental boundaries. They’re the ones who do the research as to where the data resides and how to best analyze the

continued on page 30



Profile: Steve Kern, manager EDP systems, Werner & Pfleiderer, Ramsey, New Jersey.

Responsibilities: All program development, operations, and telecommunications within the MIS area.

DG hardware: MV/10000, combination of PCs and Dashers.



Profile: Larry Nelson, manager of systems integration, Southern States Cooperative.

Job description: Responsible for integrated solutions and systems programming for a farm supply cooperative that covers a six-state area.

DG hardware: MV/20000 with 100 users; MV/15000 Model 10 with 140-plus CEO users; 250-plus MV/2000s at retail stores and wholesale locations; seven MV/1000s; MV/2500; MV/4000. Over 150 PCs in federal office.

“We’re in agreement around here that our biggest challenge facing us over these few years is networking and integration. We’re positioning ourselves so that—irrespective of what CPU the information is on—we can provide use for the data on a timely basis . . . whether it be data from some of the applications of the MV/20000 or data from the remote locations on the MV/2000s, or whether it be something off the IBM mainframe.

“I think some of the primary things that we’re looking at are some of the new technologies in terms of connectivity—to be able to share data bases across CPUs. We’re also looking at the

issues of cooperative processing, where processing is shared between PCs and MVs and central CPUs. We’re getting into a little bit of that on an experimental basis.

“With Data General porting over to Unix, we are in the process right now of looking at the feasibility and the cost of porting some of our DG applications on a test basis over to Unix. I think the real question here is, can the industry really go to Unix? If it does, then we’re going to have to do it. If we can get to a common operating system where we can be hardware independent, with some of the capabilities of Unix, there will be major advantages. But we’re not at all experts at Unix, and we don’t have anybody around here who is doing anything with Unix at this point.” Δ

WordPerfect Office™ Now Available for Data General

WordPerfect Corporation has released WordPerfect Office 2.0 for the Data General AOS/VS operating system. Comparable to the recently released Office product for IBM PC networks, WordPerfect Office provides several products to automate the office environment.

The flexible Shell menu can be used to organize all the programs available to a particular user. Single key access to any program on the Shell menu, and easy interrupt from one program to another, gives a user power to suspend temporarily one process while entering another. Any AOS/VS program can execute from the Shell menu, and submenus allow the user access to as many programs as they like.

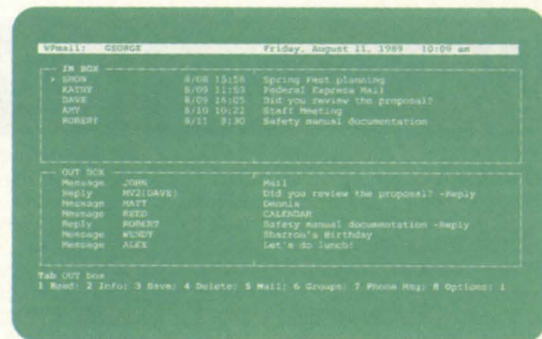
In addition to the Shell menu, WordPerfect Office has enhanced the electronic mail feature to support sending messages, document, and files all at the same time in one envelope. A user can now send carbon copies and blind copies, along with his regular mail. Screens have been improved to make the sending and receiving of mail flow more smoothly.

The improved Calendar screen now displays up to eight weeks at a time. The user can set appointment memos, and to-do's for each day and view them all simultaneously. A new auto-date feature has been added to

schedule repeating appointments. The alarm feature is available to notify the user of important appointments. Best of all, the to-do feature prioritizes the to-do items and will roll them to the next day if they are not completed.

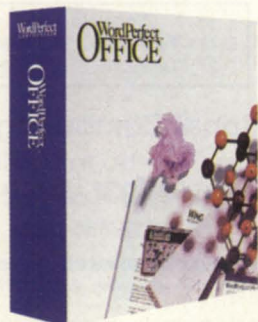
A simple, easily defined database, Notebook provides a convenient way to organize information. All Notebook files are saved in WordPerfect merge format so they are ready to use with WordPerfect documents.

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Three programs have been added to the Office software. File Manager is a list files-type feature accessible directly from the Shell. P-Edit is a full-screen program editor, and M-Edit lets a user customize macros without having to rewrite them.

Evaluation copies of WordPerfect Office are available by calling (801) 222-4100, or contacting your Reseller.



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continued from page 28

data, in many instances. What we're finding more and more is that MIS hires a programmer analyst that, let's say, has experience in financial analysis. That person may work in the finance area, but he may be under the auspices of MIS as far as his technical background and his exposure to various different data bases and systems that MIS is running.

"MIS is now becoming a very important part of corporate strategic planning. There are many companies today that cannot continue to do business without MIS. The banking and insurance areas are prime examples where they could just not deal with the complexities of everyday business without a well-working MIS department. At Werner and Pfeiderer, we also have found this to be true. It's becoming more critical to have timely data and to put this data to use. Because of the time constraints,

it's usually MIS that has its hand on the pulse of the company.

"Our largest requests from management now are to develop reporting systems that give them flexibility. They want the ability to make a generalized request and then have the ability to 'tweak' it at their desks. They're not looking to develop reports on their own, but they're looking to be able to have a report and have the flexibility to close in on specific areas on that report.

"In the past, we would hand them a 500-page report, of which they only needed a very small subset of data, but they didn't know that until they actually saw the full 500-page report. What they're asking for, is that we give them the tools so that once they have that report, they can query on that report. But they don't want to have to develop the report from scratch.

"At a certain point an organization grows so large that you have to do business in a different manner. You can run into situations where you have the example of the dinosaur—by the time it realizes that the tail is burning, half its body is gone because it isn't responding fast enough. These are all problems that are very, very real. Companies are getting much larger as a result of computers... and the current software is not keeping up.

"That is the single most sore point across all different hardware platforms. The thing that DG is speculating (and now everyone is in the fray), is that if you are using a Unix platform, then companies will feel that there will be much less risk to write software that runs under Unix and runs under many different hardware platforms. Therefore, by virtual fact that the risk is decreased,

there will be more software out there.

"We're taking a risk [by moving to Unix]. We're looking to go with software that's fairly state of the art. The idea is to position yourself both in terms of hardware and software, so that you can evolve with a software product as it gets better.

"You've heard the expression, 'Information is power.' Well, information is power, *only* if someone knows how to use it effectively. That's where MIS is heading. I'm constantly confronted with less technical issues, and more issues on how to use data that has information, rather than just pure data. I think that's what the goal is in the future... to stop developing 1000-page reports and give concise analytical information that tells how to run the business better, more efficiently, as well as profitably." Δ

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Warming up to Unix

by Don Dewar
Special to Focus

SYNOPSIS

If you've been giving Unix the cold shoulder, consider the following redeeming qualities.

While recently attending a class, I was distressed to hear many of the students, who happened to be AOS/VS programmers, complaining about Unix. Even the instructor joined in. Many of the complaints centered around Unix's "clunky" shell interface and its lack of features when compared with AOS/VS. In this article, I'll address some of these complaints and outline what I believe are the most valuable virtues of Unix.

Unix is not AOS/VS

The first thing that any AOS/VS user or programmer must keep in mind is very basic. Unix is *not* AOS/VS. With Unix you are learning a new and different operating system and a powerful tool—it's important to be open-minded.

Design goals

Comparisons between AOS/VS and Unix are unfair because this is not a comparison between apples and apples. When Cadillac designed cars in the '60s, the design goals were to create large, luxury cars that appealed to affluent consumers. When Volkswagen designed the Beetle, on the other hand, the design goals were to build a car affordable to everyone.

Guess what? Two very different automobiles emerged.

Comparing AOS/VS and Unix is analogous. AOS/VS was designed to be a full-featured operating system that provided easy-to-use interfaces to Data General's proprietary hardware architecture. Conversely, Unix was designed to run on any hardware architecture and provide an interface for the technical user. As Unix became more commonly used, a design goal to standardize the operating environment was added. This helped keep Unix from metamorphosing into unrecognizable dialects.

The differences between these two design goals are easily exemplified when comparing the AOS/VS CLI and its Unix counterpart, known as the shell. CLI provides an interactive interface to AOS/VS using features that are part of a specific set of Data General terminals. The Unix shell provides an interactive interface to Unix, but it makes no assumptions about the input hardware and, therefore, can be used from almost any terminal.

Unix takes some prizes

To say that AOS/VS "takes the prize" over Unix in every category would be a mistake. There are some aspects of Unix that are, in many respects, superior. One area where Unix has significant advantages over AOS/VS is the Unix script language. Although the AOS/VS macro language is a powerful and useful tool, the Unix script language provides typed user-named variables, arrays, and complex flow structures. As a programmer, I appreciate the extra power and flexibility these features give me.

Another plus Unix has is the way Unix tools work with the shell and the script language. Features like redirection and pipes make Unix tools easy to use with the shell and script language. The use of pipes and redirection allow the Unix user to avoid having to make temporary files that are so much a part of the CLI macros.

The old shell game

One complaint that was echoed time and time again during the class had to do with the subtle, but significant, differences between the AT&T Bourne shell and the Berkeley C shell. The Unix shells are programs that, like CLI in AOS/VS, act as the user interface to Unix. The two shells are different because they were developed

separately. Yet, these differences are really a non-issue.

In fact, the availability of two shells, as in Data General's DG/UX, can be an asset. The programmer or user has a choice, and there are even a few cases where one shell does a better-job than the other. One case is the availability of a "NO-CLOBBER" setting in the C shell. This useful feature warns you if you are about to copy information onto an already existing file. In the Bourne shell, or if "NO-CLOBBER" is not used in the C shell, it is very easy to lose a file by accidentally using it as the output argument to a command or tool.

Hardware independence

One of the most important reasons for advocating the use of Unix is that it runs on many different hardware platforms. This fact provides significant advantages to developers and customers alike.

To a developer, it means being able to go anywhere and develop software without having to learn another operating

environment. In addition, if your software is ANSI compliant (or follows the C coding standards advocated by Kernigan and Ritchie), it will be reasonably portable to other hardware platforms. For programmers with a big ego (like me), the fact that my software is now potentially available to more users is a great advantage.

To a customer, it means a greater choice of hardware and software. Unix's ability to run on multiple hardware environments creates a competitive situation that provides distinct financial advantages to purchasers of Unix-based computer systems. On the software side, it means that the customers can be more selective and choose software that provides the exact features that are needed to get the job done.

Industry standard

Unix is quickly becoming an industry standard. The great momentum of industry standards will, over the long term, create a more stable and productive com-

puting environment around the world. And, in an industry where the only certainty is change, some type of stability is welcome and could lead to great advances in technology in the future. An industry-standard operating system also provides many of the advantages described in the previous section. Of course, it also means that companies, such as Data General, who can continue to produce quality, low-priced Unix systems, will gain a distinct market advantage and a competitive edge.

Customize your Unix

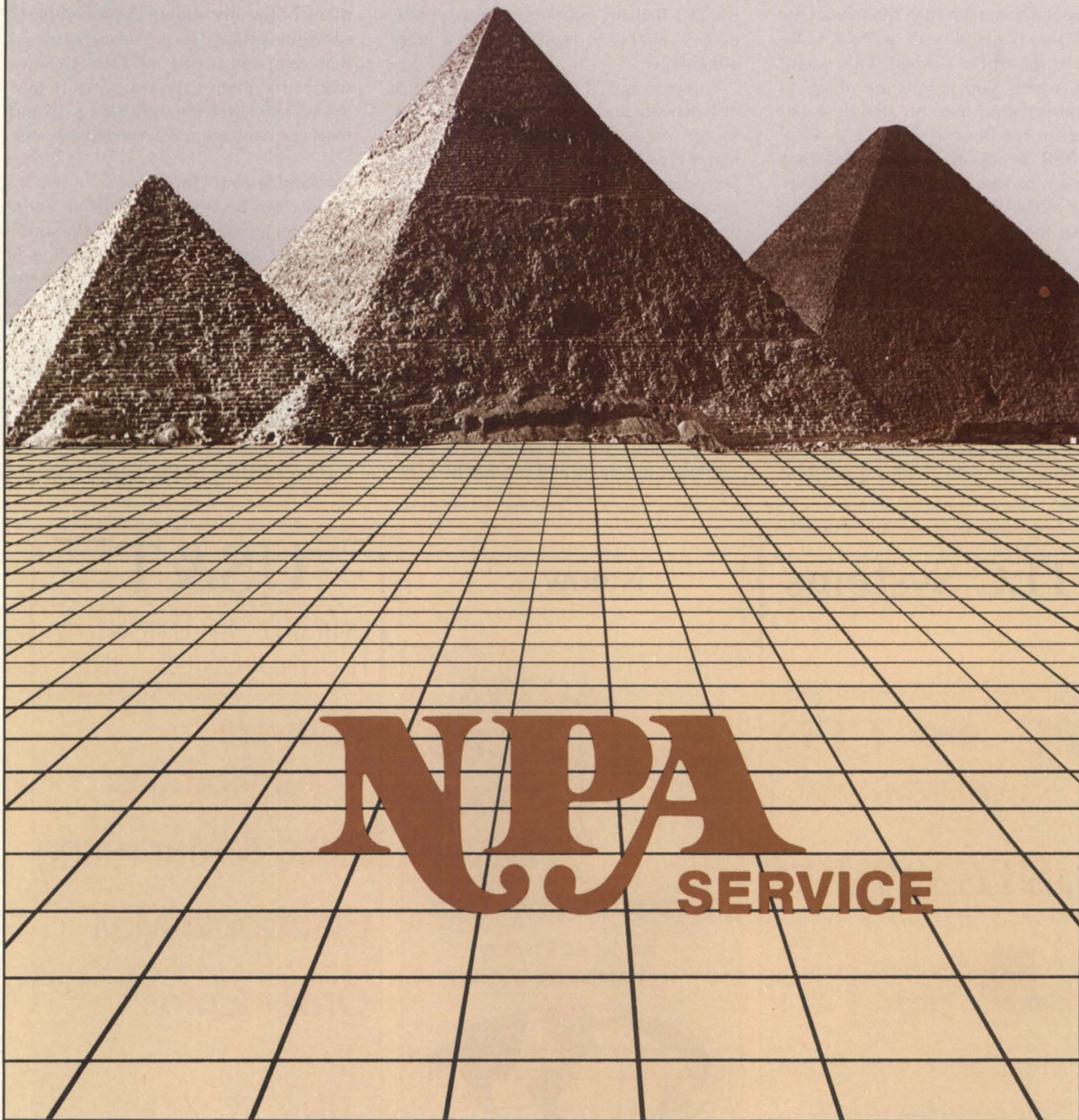
Unix can be customized for an entire site or for an individual. One of the strategies used in Unix is the application of tools to get a job done. A Unix site can provide its own tools to add additional features and functionality. Moreover, the sources to the Unix kernel (the essence of Unix) and tools are commonly available at a price, so that Unix sites that need another feature can add it.

Individual users can customize some aspects of Unix to their own needs or

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tastes with a number of files and commands. For instance, there is a command much like the CLI prompt command that allows you to set the Unix prompt. AOS/VS users might prefer the parenthesis prompt that they are used to.

Smoothing the transition to Unix

DG/UX provides some tools to allow an AOS/VS user to make the transition to Unix smoother. DG/UX supports both Unix shells and has a tool called "Editable Read." As was mentioned earlier, Unix has two popular shells that each act a little differently. The fact that DG/UX supports both of them allows users to choose the shell they are most comfortable using.

The DG/UX Editable Read allows users to have full editing capabilities of any given command line, using keys that they have mapped for their specific purposes. An AOS/VS user could map the Control-B key to be "word backwards" as it is with CLI. Traditional command line input in Unix is hampered by only allowing deleting and retyping of characters (this is part of keeping the shell hardware independent).

In addition, Data General has another Unix implementation, MV/UX, that runs on top of AOS/VS for installations that don't have a full computer devoted to Unix. I have found MV/UX a marvelous training aid for myself, because if I wasn't sure if I did the right thing in Unix, I could often check my work from AOS/VS.

Unix into the future

The DG/UX implementation of Unix has several "designed-in" advantages that will allow it to move into the future. First, it is a more modular implementation that readily allows addition or replacement of features. Second, DG/UX has support for multiple processor capabilities. Recent hardware offerings from Data General, for example, have shown that there are distinct technical and financial advantages to creating computer solutions comprised of a small number of CPUs. (Indeed, there is work going on by some companies to show that this is also true of computers comprised of many thousands of CPUs.)

Don Dewar is a software engineer at Data General Corporation.

And, as far as Data General is concerned, multi-processing capabilities are very important. It is clear that the design of the Motorola 88000 chip set can and will continue to support multi-processor designs.

Some final ramblings

For those readers who are still not convinced, keep in mind that standardiza-

tion is extending to the Unix graphical interface. Such interfaces may mean less machine independence, but they also mean an easier interface for those who want or need it.

While I believe in AOS/VS and am very happy to use it, Unix, on the other hand, gets the job done and provides significant advantages to me and to the people for whom I write software. Δ

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Bridge over muddied waters

by William P. Rawlins
Special to Focus

SYNOPSIS

CEO's Agent-User-Interface and LU6.2 form a "bridge" for electronic mail between MV and IBM systems.

One of Data General's customers uses CEO electronic mail on an MV/20000 and a third-party electronic mail package on an IBM mainframe. When company management mandated the requirement for users on each side to exchange electronic mail messages, they approached Data General's Software Products and Services Division (SPSD) to see if we could help.

Background

SPSD had already developed an LU6.2 (Logical Unit 6.2) program for this customer. LU6.2 is an SNA (system network architecture)-based methodology for two programs running on different computers to exchange data with each other.

In a series of articles, (*Focus*; September '88 and October '88), I described how we used LU6.2 to communicate between the Data General MV family system and the IBM mainframe system. The Data General users wanted to inquire into data on the IBM system using their regular Data General screen programs. The articles described how we use LU6.2 to communicate between the two systems and provide the necessary inquiry capabilities.

We wrote an LU6.2 server program to run on the MV family. Multiple inquiry programs, also running on the MV family, submit their inquiry requests to the LU6.2 server program. The server program submits the requests to a data base look-up program on the IBM system, using LU6.2 and SNA. The data base look-up program on the IBM system returns data records to the MV family server program, which returns the data to the inquiry program(s). (See Figure 1.)

Electronic mail transfer

A few months after the LU6.2 connection was established, our customer mandated the requirement to transfer mail between CEO and a third-party electronic mail package on their IBM mainframe. If the mail on the IBM mainframe had been

Figure 1: LU6.2 Server

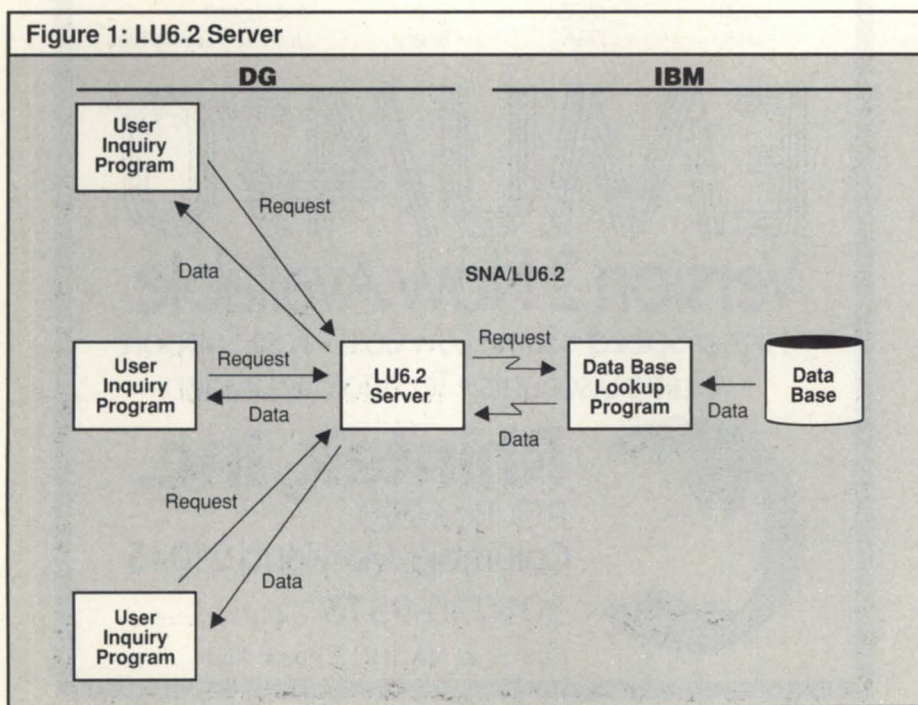
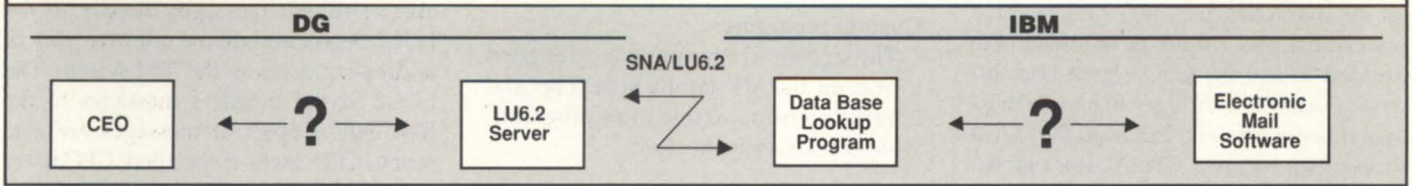


Figure 2: Interface software needed



generated by IBM DISOSS or PROFS office automation products, we could have used CEO Document Exchange Architecture (DXA) or CEO PROFS Exchange Architecture (PXA), respectively, for mail transfer. But since it was not, we looked for another way.

Using the LU6.2 server

We needed an interactive data transfer

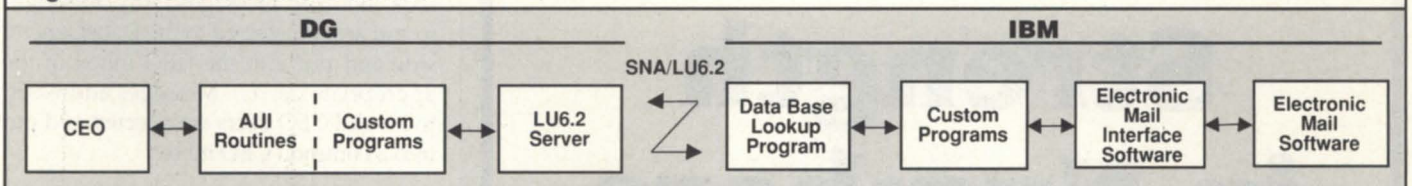
tool. Since the LU6.2 Server was already set up, we decided to use it for data communications between the Data General and IBM systems (application program interface LU6.2 software provides a communications interface to programs adhering to the IBM LU6.2 protocol standard for advanced program-to-program communications). But we needed to interface CEO to the LU6.2 Server on the MV fam-

ily side. On the IBM side, the IBM programmers needed to interface their electronic mail package to their data base look-up program. (See Figure 2.)

Implementation approach

This article focuses on the MV family side of the solution. The first project phase entailed the sending and receiving of only short messages. We defined a short mes-

Figure 3: Interface software defined



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sage as one consisting of 22 lines of text (at 70 characters per line) or less. Five mail addresses would be allowed. We decided to use the CEO Agent-User-Interface (AUI) as a "bridge" to handle message transfer between CEO and the LU6.2 server. (See Figure 3. The AUI is a group of Data General software routines that interface custom programs to the CEO filing system, post office, calendar facil-

ity, and queue management facility.)

Custom programs

Three custom programs were designed to run on the MV family side. The AUI libraries were linked into these programs, which are described below:

***Send Mail program:** We decided to write a short message mail program to send mail rather than use the CEO short mes-

sage facility. In this way, we would be able to submit messages directly to the LU6.2 Server and define our own way of addressing users on the IBM system. The LU6.2 Server transfers messages to the IBM side. Copies of messages are also sent to CEO users, if specified. CEO users can execute the program in one keystroke with a specially defined CEO function key.

***Polling program:** The LU6.2 conversations between the MV family and IBM systems were initiated by the MV family side, so the IBM side could not send mail directly. Messages to be sent from the IBM side to the Data General side were first queued to a file on the IBM side. We designed a polling program to submit requests to the LU6.2 server to "poll" the IBM side for messages. Any messages found are transferred to the Data General side and put into the CEO inbox of the appropriate user(s). Messages addressed to invalid CEO users are rejected and put into a common CEO inbox.

***Common inbox read program:** To automatically notify IBM users when they sent mail with an invalid CEO address, we provided a program to read the rejected mail messages in the common CEO inbox. The program sends the messages back to the IBM side with a notification that the mail address is invalid.

Figure 4 (page 40) shows how these programs are used.

Replies added

In the first project phase, the system had no automated facility for sending replies to messages sent from the IBM side to CEO. CEO users were instructed to use the Send Mail program as if they were sending a regular short message. However, it was not uncommon for users to read messages in their CEO inbox and use the CEO reply feature to send replies back to the IBM user. During the second project phase, we addressed this concern. The CEO users were then able to reply directly from CEO. The replies still end up in the common CEO inbox, but we expanded the capabilities of the Common Inbox Read program to check for replies and send them to the IBM side (via the LU6.2 Server).

Current state

With the message transfer facility func-

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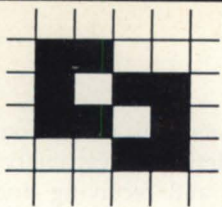
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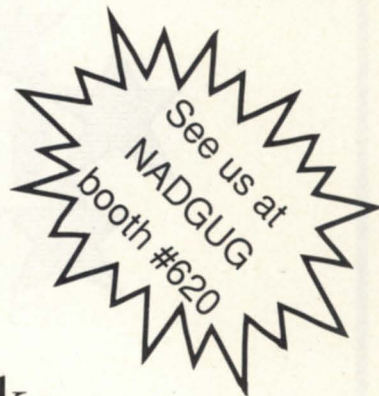
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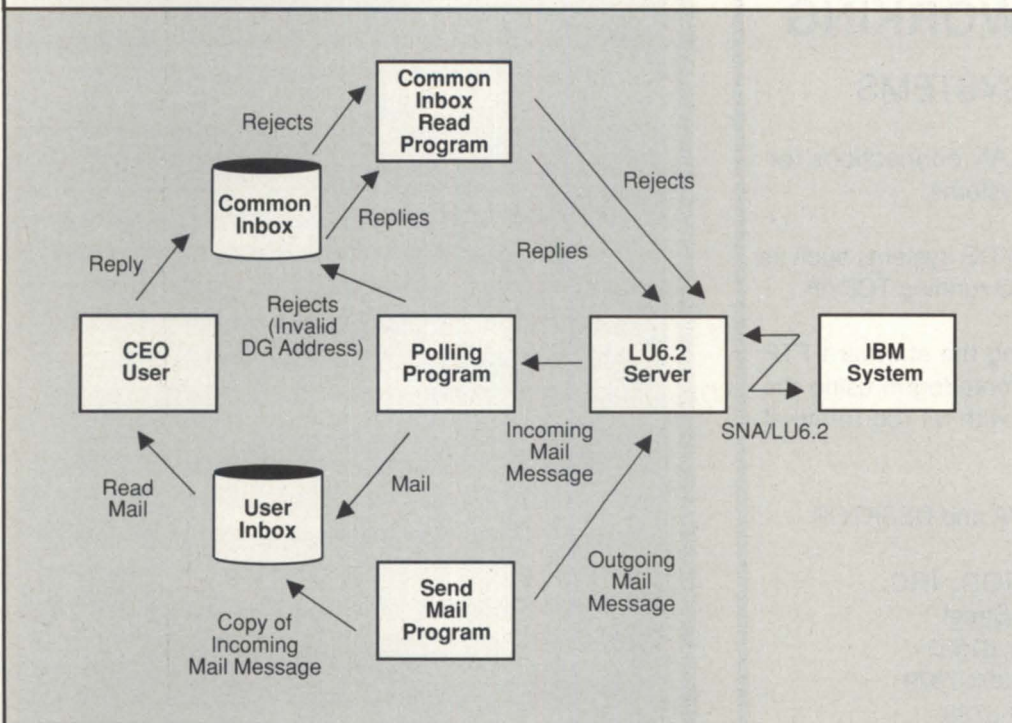
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Figure 4: Process flow on the MV



tioning smoothly, our customer is considering the capability of sending and receiving documents (in addition to short messages).

The combination of CEO, the Agent-User-Interface, LU6.2, and custom programming served to meet our customer's electronic mail requirements. Two major departments have been connected electronically instead of by paper. Electronic mail has replaced "telephone tag."

There are few information requirements that can't be solved by custom programming, no matter how unusual or complex the requirements. Δ

William P. Rawlins is a project manager at Data General's Software Products and Services Division in Atlanta. He can be reached at 404/448-6072, 3617 Parkway Lane, Norcross, Georgia 30092.



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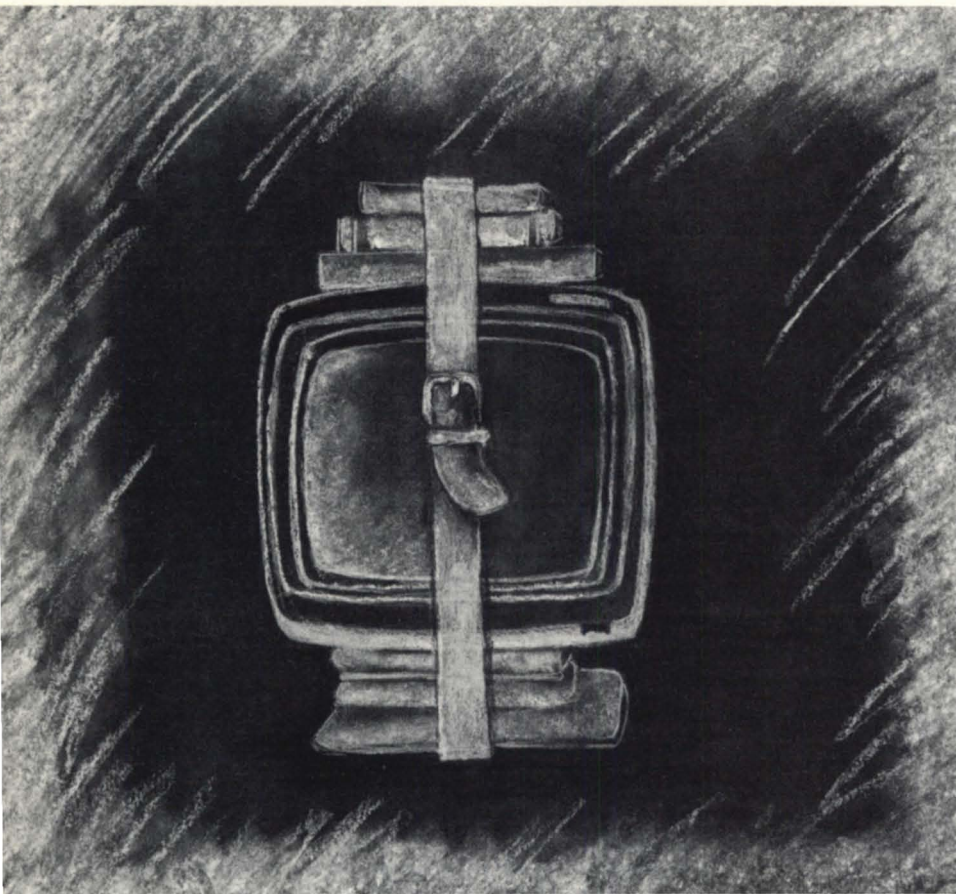
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by Charles L. Busch
Special to Focus

Users who need access to remote computers could care less about what is involved in providing this functionality. In terms of a file from a remote system, they just want it—and they want it now. They don't know or care how large the file is, whether magnetic tape would be a better way to exchange it, or who pays the telephone charges.

This scenario developed at Ohio Northern University when some faculty members became interested in using our MV/10000 to dial other computers. To non-technical administrators who have read media hype about the miracle of electronic data exchange, this sounds like a simple, inexpensive task. Subsequent meetings with administrators raised the following questions: will the modem be used to dial long distance? (Yes. Why should calls be restricted to Ada, Ohio?); Who will pay for these long-distance calls? (the user); Can students use the modem? (No). As more details were worked out, it became evident that this job was going to be a challenge to implement; however, we had a mandate from the administration—just do it!

The challenge

After some investigation, it became apparent that for modems and modem software to use a console line, the line would have to be disabled. But if it was disabled, it would be open to any user. Being on a college campus, it wouldn't take long for ingenious students to find out how easy it was to let the modem do the dialing and the university do the paying. The simple CLI copy command could be used to send modem commands and establish connections.

Since we needed to distribute the cost of the phone calls and deny access to students, it became apparent that we couldn't leave the console line disabled

all the time. AOS/VS provided no direct help in managing console lines. We needed to come up with a way to keep the console lines enabled except when an authorized user needed to dial out.

This need for our MV/10000 to talk to other computers, along with the ever present challenge of college students trying to beat the system, created an interesting problem to solve.

Wouldn't it be nice . . .

Our first attempt was to build a CLI command file in a compilable language, compile the program, and have users execute the CLI using the compiled process. The CLI file would execute programs and commands that would: 1) deny unauthorized users; 2) log uses; 3) enable and disable console lines. The compiled language allowed us to hide the contents of the CLI. (Boy, wouldn't it be nice to have a CLI that a user could execute but not read?) This worked except that a Ctrl-C Ctrl-B interrupt caused the CLI to die without executing the rest of the CLI. This left the console line disabled so that anyone could use it. Obviously, we needed another solution.

Two programs are better than one

Since console enabling and disabling require special privileges, we decided to write two programs. The first one is a server running under username OP that is PROCed when the system is started. It performs services for the second program, which is its customer.

Server program ONUSUP (Ohio Northern University Supervisor) is similar to the one written by Tim Maness and published in *Focus* magazine in December 1986. It:


- 1) Becomes a server
- 2) Obtains superuser and superprocess privileges
- 3) Creates an IPC port in :PER to receive messages
- 4) Begins to loop and listen for:
 - a) a break in the customer's connection message
 - b) a disable console message
 - c) an enable console message
 - d) a message asking for the console status (reported back to the customer)
- 5) Sends messages to a console.

CONSOLE_CTRL is the customer pro-

gram that a user must run to gain access to a modem console line. It:

- 1) Confirms that the incident log file exists
- 2) Finds the user's name and checks for authorization; if the user is unauthorized it logs the attempt in the log file
- 3) Confirms that server ONUSUP is running

- 4) Finds global port number, and PID of server ONUSUP
- 5) Becomes a customer of server ONUSUP
- 6) Finds an available enabled modem console line
- 7) Sends an initial message file to the user's console
- 8) Asks server ONUSUP to disable the console line




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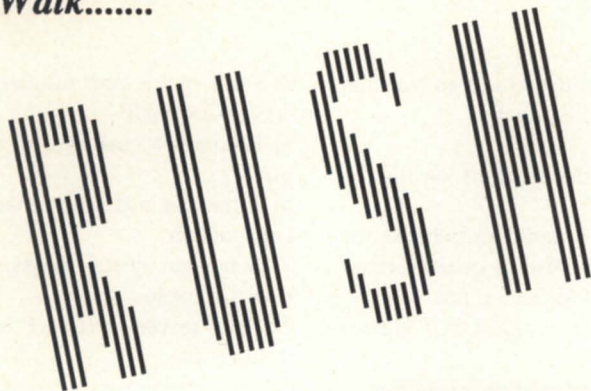
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- 9) Logs the line disable incident into the log file
- 10) PROCs up a son process running CLI and turns control over to the user. When the user says BYE to the son, the PROCed process dies and control is returned to program CONSOLE_CTRL.
- 11) Asks server ONUSUP to enable the console line
- 12) Breaks connection with server ONUSUP
- 13) Sends an IPC message to server asking to be disconnected
- 14) Logs the line enable incident into the log file.

Now for the details

In order to keep track of uses and unauthorized attempts to use dial-out modems, we needed an incident file to log disable commands, enable commands, and unauthorized attempts. Into this file we write the date, time, username, action, modem line number, and the number of the console requesting a modem. This information, along with the telephone bill, allows us to assess the charge to the user. The log of unauthorized attempts is helpful in tracing people who are "testing" the system.

Program CONSOLE_CTRL also has logic to let only specific user names that begin with "F" use dial-out lines. In our case, user names that begin with "F" (faculty) are the only group authorized to use this facility. If necessary, a table of acceptable user names could be placed in a file and checked by the program. Any criteria necessary to control who uses the lines can be easily programmed into the code. If the attempt is from an unauthorized username, the incident is logged and the user informed by a message that he or she is not authorized to use dial-out modem service.

In order to control more than one dial-out line, we created a file that contains the name of each console line that has a dial-out modem connected. CONSOLE_CTRL opens this file and looks for a console that is enabled. To find one, an IPC message is sent to server ONUSUP asking the console status for a particular console number. ONUSUP responds with either ENABLED or DISABLED, indicating that line's console status. Based on the response, it will either send a message back to ONUSUP asking it to disable the line, or look for

another line. When the complete list of dial-out lines has been exhausted and no enabled line found, it reports to the user that no dial-out lines are available.

To provide the user with some instructions about using dial-out modem service, a message file (MESSAGE) is printed to the terminal just before the line is disabled. The message explains that the user should assign or use the console line immediately, because any user can gain control of the line while it is disabled and unused.

A son process is PROCed up and control is passed to that son. Now the user can use the modem software, execute a program to dial a call, exchange a file, or access a bulletin board. When the user finishes using the line, the BYE command passes control back to the customer program. It then enables the modem line and logs the time in the log file.

The necessary customer/server relationships were also established to let CONSOLE_CTRL and ONUSUP communicate with each other. This was required so that CONSOLE_CTRL and its user needed no special privileges to run.

Server program ONUSUP, running with the necessary privileges, performs functions that need to be done by OP. Some functions require an answer so, when necessary, it reports information back to the customer via an IPC message.

One last suggestion would be to change the names of the server commands. Any user who knows the command names could issue them directly to ONUSUP. I'm sure there is a way for the server to check the process name and act only if the customer process name is correct, but since we occasionally like to issue the commands directly to ONUSUP, we chose instead to disguise the command names.

As you could expect, the two programs consist of mostly system calls. Since many languages support these calls, one could write the outlined procedure in any language that supports the necessary calls. My choice was Fortran. These programs are each approximately seven pages in length. I would be glad to send anyone

listings of the programs and files we use to manage our dial-out modem lines. If you would like a magnetic copy, send me a tape. I will also submit them to the NADGUG library.

The programs are fairly straightforward, but getting all the system call parameters correct was a battle for me. This was my first serious attempt to use system calls and I consequently spent con-

siderable time trying things that didn't work. Hopefully, if you need to control modem dial-out lines, a listing of the programs described here will save you considerable time.

I would be interested in either reading about other solutions to this problem in *Focus*, or talking to persons who have other ways of managing dial-out modem console lines. Δ

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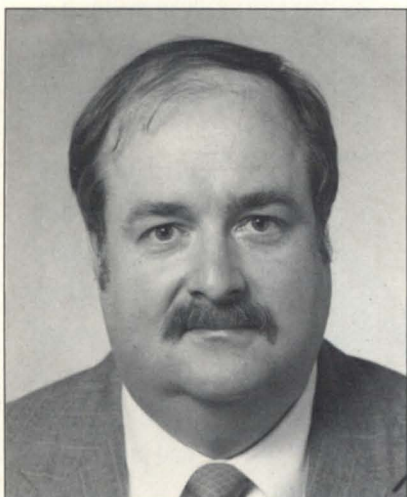
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Larry Busch is the director of Computing Services at Ohio Northern University. He may be reached at Ohio Northern University, Computer Center, Ada, Ohio 45810; 419/772-2362.

MARKETING WITH MUSCLE

SYNOPSIS

DG's new vice president of marketing shares his views on customer satisfaction, cradle-to-grave responsibility, DG's recent reorganization, and more.



In a year marked by major changes in Data General's management lineup, probably the biggest surprise came last April when DG announced that Stephen P. Baxter would replace Ward MacKenzie in the top marketing spot. Baxter, 40, comes to Data General from Unisys, where he worked for 16 years, most recently as vice president of product marketing for U.S. Information Systems. He joined Burroughs (which later acquired Sperry to form Unisys) in 1973 as a software development specialist. He earned a B.S. from the Sloan School of the Massachusetts Institute of Technology, and holds an M.B.A. from the Harvard Business School.

In the following interview, Baxter describes the philosophy he brings to his new job, and tells how he plans to turn DG into a market-driven dynamo.

FOCUS: Looking at your biography, it's obvious you had a lot of relevant experience at Burroughs and Unisys. But I'm curious about what set you apart from the other people who were being considered for the position. Why do you think you got the job?

BAXTER: It's tough to compare myself to the other candidates, but I imagine that the key issues had to do with my philosophy about how you approach the marketplace. First and foremost I believe that you have to make sure you understand what's going on in the marketplace. The product marketing and program management functions are important, but only in the context of making sure that we're solving very real customer business problems. The marketing organization has to be clearly aligned with two sets of customers. The first set is obviously the people who buy from you, but the second set is the Data General sales force and the Data General VARs. We have to make sure we articulate to them how the benefits and salient characteristics of our products can make the end user more competitive. And we have to put it in terms the end user can clearly understand.

Second, we have to make sure that we focus our field organization on priority markets, that is, the markets that have the best fit between the features/functions/performance content of our products and the characteristic business problems of that market. We have to focus both on the line of business and on the channels that are most appropriate for getting to those end users.

The third area in my philosophy is making sure our people have a true sense of ownership for the product/market segments they work with. By that I mean cradle-to-grave responsibility for an entire product family. While Data General has consistently done a good job of bringing products to fruition, we need to do more to give the same people a sense of responsibility for delivering information about the product to the customer—being more outward-focused. We want people to have that sense of accountability and authority, so that after they launch the product, they know they also have to follow it day by day and week by week to make it successful.

The marketplace has changed dramatically over the last seven to ten years. You

have to be more oriented toward the customers and solving their problems, and less enamored with the technology.

FOCUS: Is this philosophy you're describing so unusual? Or are a lot of companies trying to do things this way now?

BAXTER: Many more companies are seeing the customer's need for a total solution—they want a vertical solution that may be based on a number of horizontal packages and on the seller's ability to interconnect them in a heterogeneous computer environment while keeping the total cost of ownership down. It's not just offering hardware, but the solution, the integration into existing networks, long-term service and support, and perhaps some consulting. The "product" that customers are looking for is dramatically different, and certainly a number of companies are starting to recognize this. I think at Data General we've been able to accelerate our implementation of an organizational structure and marketing philosophy to take advantage of the changes.

FOCUS: You obviously developed your philosophy long before you came to work for DG. In fact, you must have looked at Data General as a competitor at least some of the time. Looking at the company as an outsider, what did you see as DG's strengths and weaknesses?

BAXTER: One of DG's key strengths was—and is—the significant strong relationship with third-party providers of software. Both as a competitor and now that I'm working here, it seems that DG is a company that recognizes that solutions are what customers are looking for, and that software is a fundamental piece of that. A second strength was that DG has consistently invested in research and development for the future, making investments that may not have their payoff in the next 90 days, but are fundamental in building the foundation. Third, the company has had a strong cash flow and balance sheet so they could afford to make those investments; its finances were consistently well-managed. Fourth—and I think this is unusual—this is a company that has had a rich and prosperous history, yet it looks at where the market is going and makes fundamental changes in its direction by looking at other key areas of

growth, such as communications and open systems. Not many billion-dollar companies are able to transform themselves that way, changing the culture, the mind-set, and even the fundamental direction of the company. The ability to manage change here has been clearly demonstrated.

Finally, they've been able to produce very good, high technology hardware/software platforms. Notice I listed that fifth, and not in the top four.

FOCUS: You're no doubt quite familiar with all the changes Data General has gone through—closing plants, downsizing the staff, reorganizing the structure. Did these problems cause you to feel ambivalent about accepting the job?

BAXTER: Not at all. When I looked at those five fundamental strengths, I had to ask what was the key area where you could pull the lever to really execute off those strengths. I saw a match between the kind of marketing philosophy that I just espoused and the kinds of strengths I saw in DG. It seemed to me to be an ideal match that would benefit me, in terms of having an environment where working together as a member of a team I could pull a lever that would make a great deal of difference, and to Data General, in terms of having a way of leveraging off their fundamental strengths.

FOCUS: You've already referred to the transformation—the managed change—that the company has been going through. Do you think the broad outlines of the finished product are already in place, or is there more to come?

BAXTER: For our industry, there's a pat answer for that question, but I don't mean it to sound that way. It is the ability to anticipate and adapt to change that really keeps companies ahead of the marketplace. That's coupled with the ability to fund change. If individuals within the company think, "This is the way the market is going to be in three years, but the lead time to get there is two and a half years," you have to be able to start making those kinds of investments today. From what I've seen, Data General is able to look at those kinds of changes and fund the needed investments well in advance of the time when you could see a

quarter-to-quarter return on the investment. You will continue to see a lot of change at Data General, but the fundamental strategy is in place: the three-pronged strategy with the MV line, the open systems, and the communications servers.

FOCUS: DG users think of DG as a very well-kept secret. They like the products,

but they wonder why more people in the industry don't know about DG. They tend to blame it on DG's marketing. Are they right?

BAXTER: I think the kinds of visibility Data General has enjoyed in the past have been focused on hot hardware technology. That kind of recognition is tough to make widespread when the market is be-

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coming more solution-oriented. People will see immediate changes in the message we're trying to get out. Good price/performance is important, but only if you also have the solutions, the systems integration capability, the consulting capabilities, and service and support. That kind of message will have a much broader appeal.

FOCUS: Earlier you were talking about trying to give DG employees cradle-to-grave responsibilities for the products. I hear that you've already implemented a new organization for DG's marketing effort, which presumably would help do that. Would you please outline how the responsibilities are divided and who is filling the top marketing positions?

BAXTER: What we did was institute a structure within the corporate marketing organization to focus on product line management. Of course, corporate marketing goes beyond product management—it embodies things like business

planning, channel marketing, marketing communications, and operational support—but the new organization takes the people who had substantive responsibilities in the various product families, and aligns them very closely under a product line marketing concept.

The first product line group is called Eclipse Systems, and they have total responsibility for all the products required to compete successfully in that marketplace. That goes beyond the hardware platform; it includes software, whether it was developed internally or on the outside, services, support, and consulting. Taking all that into account, the group is measured as if it were a separate business. That is, we look at what revenues they're generating; what profit they're generating from a pure product point of view (not taking into account field sales costs and those types of things). For example, the person responsible for the launch of the MV/40000 is also responsible for making sure that we are proactively working on the kinds of promo-

tional programs and solution packages that will make his or her forecasts actually come true. This group is headed up by David Ellenberger.

Another arena which is one of our key areas of growth is Open Systems—the Unix marketplace. We're giving them the same types of responsibilities: not just the launch of the Avion product line, but answering questions like what kind of advertising do we need? How are we going to package third-party solutions? Which third-party horizontal software developers do we need on the systems in order for the vertical suppliers to put their solutions on our platform? What kind of data communications do we need in order to integrate them into a network? Again, we're going to measure the group by things like market share, revenue, and gross margin contribution. This group is headed by Janpieter Scheerder.

There's a third area called Networking and Distributed Communications. They are responsible for making sure we can participate in a fully productive fashion

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in a number of heterogeneous networks—making sure that we design and market products that adhere to either de facto or de jure industry standards so that we can be a solution of choice that can be easily integrated into a network. In an acting role heading up that group is Herb Osher.

The fourth group is the Cross Systems Products. These are products that would normally go along with and be part of the solutions we offer in the other three areas. Examples are PCs, terminals, mass storage devices, and tape and printing subsystems. That group is also being headed by Herb Osher on an acting basis.

This organization gives these four groups 1) the ability to decide what markets are the best fit for the hardware/software/consulting/services we have to offer, 2) control over how the products are brought to our customers (again, "customers" includes both the end users and our salespeople, so they can be more effective in presenting that story), and 3) a quantitative measurement system that gives them the sense of authority and accountability. It will help us make sure we have not just a product launch, but a marketing program that can be executed by people in the field.

FOCUS: The Cross Systems Products—do you mean them to be primarily support for the other groups, or will they market to a broader range of prospective customers? For example, with PCs or terminals, will you market them to people who don't use other Data General equipment?

BAXTER: There's a three-tier priority list on that, and I'll use your example of PCs to illustrate what I mean. First is the primary market of end users or VARs who currently are investing in traditional Data General equipment. Whether it's in the Aviiion or the Eclipse market space, these people have a natural affinity for DG products, and as we are able to offer PCs first in a more time-effective fashion, and then more cost-effectively, we think it will be a tremendous market.

The second tier is the large bids, typically for Fortune 1000 companies and government agencies, where they would love to have a single company provide a broad range of PCs, along with the interconnectivity of the PCs with multiple local and wide area networks. With our ability

to interface into ethernet, token ring, Novell, and so on, I think we have a significant leg up on that.

The third tier comes from the dramatic change in the man-machine interface that's coming about in the PC world. As a reference there, I'll use the work we're doing with the Object Management Group. As standards like the NewWave Object Management Facility start evolv-

ing, complementary products that will be coming out from Data General over the upcoming months will let us offer a packaged solution—not just the hardware platform to run on, but also incorporating as an integral part of that package the new man-machine interface. That marketplace, we believe, includes a whole range of people who have not done business with Data General before, but who

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will look at the entire package and see that we offer the best solutions. This third market is heavily dependent on some state-of-the-art offerings that we have talked about under the umbrella of our distributed applications architecture.

FOCUS: Won't it take a very different style of marketing for these commodity-type products. For instance, with the Aviion line targeted at a market where there are already a lot of established vendors, how will the marketing thrust differ from what DG has done with the MV line?

BAXTER: The key there is how you address what I call the intellectual dichotomy: how can you offer a value-added in a standards world? For the PC type products, our answer is to have a product with a level of compatibility beyond what most others can offer, along with the ability to cleanly interface to a multitude of local area and wide area networks, and being able to deliver a total package. Ours

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is the opposite of the Heathkit approach that says, "Here it is, you figure out how to put it together." A second fundamental aspect of our value-added is being able to take advantage of the new user-centered computing concept where one can have a standardized man-machine interface but still interface with a variety of applications.

A third bullet on that list is the full participation in a client-server environment, where if the user needs a task done, it doesn't matter whether that task happens to be physically on the processor that's sitting on their credenza, or whether it's done remotely in the network; it's transparent to the user and gets done at the most appropriate node.

Yes, it does require a different kind of marketing. It goes more toward what we were discussing earlier: solution-oriented marketing where the package you're delivering is not just what's wrapped in plastic in the box, but it's also the kinds of services and integration that go along with the box.

FOCUS: We have begun to get some evaluations back from third-party developers who are working with the Aviion product line. They seem to be pretty impressed by its quality and price/performance. Are those kinds of issues going to be important in your marketing for these commodity-type products?

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BAXTER: Price and performance are necessary, but not sufficient conditions in order to be a proactive competitor in that marketplace. It's necessary, because in our case it proves to be a differentiator, and there's a certain subset in that marketplace where raw board price/performance will be an advantage. However, to address a much broader range of the marketplace, both technical and commercial, you've got to look not only at the price/performance of the boards, but how it operates from a systems point of view, and how it can interface to other solutions that may exist in a network.

So your feedback is good news and bad news. The good news is that it's a solid, reliable product. The bad news is that it doesn't tell the entire DG story in that arena.

FOCUS: What changes do you hope to make in the kind of image that Data General projects through its advertising and its relationship with the media?

BAXTER: Two things will lead to a more focused image for us. One is the clear articulation of those three fundamental marketplaces we're participating in: distributed applications, Eclipse line, and open systems. The other is to stress that what we deliver to the customer is a total solution.

FOCUS: A few years ago DG was trying to reduce its dependence on the VAR channel, but your predecessor, Ward MacKenzie, was credited with re-establishing good relationships with DG VARs. What are you going to do to retain that momentum and increase the number of "solutions providers" using DG systems as their primary platform?

BAXTER: This may be a little controversial, but I'm not sure it's necessary to have the *most* solutions. It's *very* important, however, to make sure that the partners you have are offering quality solutions so the end user is able to reap the benefit of our portion of the package. Item two is being able to provide those suppliers with a very broad range of horizontal platforms on which they can add their solution and their expertise.

I guess in terms of my personal endorsement of the VAR channel, you could go back to my record with my previous

employer. I would refer you to the May 1987 issue of *VAR Business*, where the VARs themselves gave their view of the companies and the people running the VAR channels. That was after I had been running the channel at Unisys for about a year.

FOCUS: Over the last few years Data General has been concentrating its VAR efforts on specific vertical markets, for

example, financial institutions, hospitals, and a few others. Will you continue to focus on these vertical markets, or will you be making some changes to the list?

BAXTER: Whenever you make a list you're in danger of overlooking somebody, but I'll just have to accept that as a fact of life. We've certainly made some significant inroads in the legal market

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place, and the retail marketplace has been very favorable. In hard goods distribution and in discrete manufacturing we're also showing strength. What you're seeing is an application of the total solution approach in very precisely defined markets. As opposed to just "manufacturing," we say we have the right package for discrete manufacturers with sales of \$20 million to \$500 million. Or for "health care," we decide to concentrate on 300-to-500 bed hospitals—there's a category where we have some strong partners.

FOCUS: Obviously, you're aware of how much Data General is depending on continued revenues from the MV line to provide the financial strength to help the company gain a foothold in the Unix and communications markets. What problems are you having to solve in order to keep that momentum?

BAXTER: I don't view this as a difficult problem, and the reason is that if some-

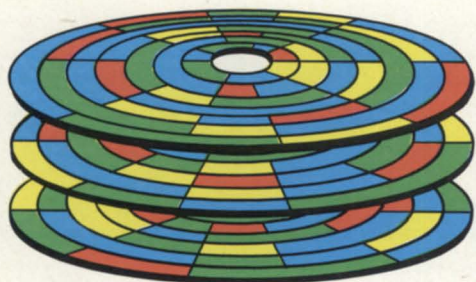
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WITHIN THAT PRODUCT
FAMILY, WITHOUT THE NEED
FOR THAT LINE ITEM
IN THE BUDGET CALLED
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body has already made a commitment to the MV family, we'll be able to keep them happy by providing them the opportunity for dramatic growth within that product family, without the need for that line item in the budget called "conversion." We have consistently and continually announced significant enhancements to both the hardware and the software in the MV product line. Recently we announced significant new disk and magnetic storage subsystems for that product line. It so happens that those subsystems also work on the Aviiion product line; we're really giving the customer a reason to grow their information systems with Data General.

FOCUS: I hear lots of product ideas from the wish lists of DG users. Of course it's DG policy not to comment on products under development, but I'd like to ask you to comment on the viability of some of these ideas. Specifically, how about extending the "high availability" machine configuration to include small and mid-

REORG?



Before reorganization: Directory information, frequent files, and available space are scattered throughout the disk. System performance is poor because of high average seek distance.

With the **DISK.VIEW™** illustration to the right, it's easy to see that the disk and the underlined file have become fragmented. This disk needs the **DISK.PAK™!**



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size MVs or the 88K machines?

BAXTER: Unfortunately, I'm going to have to lapse back not only on the company policy, but to responsible policy based on the Securities and Exchange Commission, where they state that you can't comment on products unless the information about those products is generally available in the marketplace.

The most I can say is that you will continue to see significant feature enhancements across our product lines lending themselves to a level of resiliency and high availability.

FOCUS: What about putting a version of the AOS/VS operating system on the Aviiion?

BAXTER: I think you have to look at the kinds of investments we make in terms of the returns for the end user. If someone is looking at the Aviiion platform, the main driving force is probably its price/performance in an open systems environ-

ment. While it's probably a technically elegant thing to think about putting operating system "A" on platform "B," the overwhelming majority of the prospect base would be more interested in the benefits of open standards like Unix, communications, and the man-machine interface.

FOCUS: NADGUG has enjoyed a good working relationship with DG for many years now. There have been frank discussions between users and DG personnel, management has been responsive to users' concerns, and local DG offices have been instructed to support regional interest groups even when they didn't want to. What opportunities do you see for maintaining or extending this relationship?

BAXTER: I see this as part of making sure that DG has an appropriate closeness to the customer. The user group surely facilitates a broad array of input about what customers want, what they expect, and what they need—which can be three different things. It's a very efficient way for

us to get direct input without multiple levels of filtering going on. We believe it can be tremendously beneficial for us to get that kind of direct input.

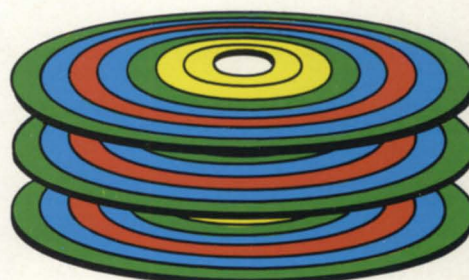
Just as important, it allows our customers from both a management and technical point of view to have direct interface with the executive management and technical expertise of Data General. That allows them to solve very frustrating short-term problems, or to get a general sense of the philosophy and direction of the company.

FOCUS: So will we see you in New Orleans this September?

BAXTER: I have been in meeting after meeting to make sure we're doing our share to make your meeting as productive as possible. I will be spending days—not hours—in New Orleans, because I believe there is no better multiplier for me to help execute the type of strategy I talked about earlier, than for me to be there talking with DG's customers. Δ

RELAX!

After the DISK.PAK™: Directory information and frequent files are clustered on a few cylinders, and available space is contiguous. System performance is dramatically improved because of lower average seek distance.



The **DISK.VIEW™** illustration to the left shows that the entire disk and the underlined file are now well organized. **DISK.VIEW** can also be used to see which file is using a certain block.

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The poor performer



SYNOPSIS

When an employee's work does not meet company standards, it's up to the manager to assess and eliminate the cause.

by Steve Handlos and Liz Straus
Special to Focus

John has been assigned a task that is part of a major project's critical path. Once again, his deadline has passed and he doesn't seem to be in a rush to finish. Other staff members are waiting for his work to be completed before they continue with their tasks. What has happened?

Joe is John's manager. Before we begin, it is important that we understand the relationship that Joe has with John, and John's peer employees. The cause of poor performance might be the employee, but it might also be the environment. Once Joe observes a problem in performance,

he needs to take additional steps to assess the situation.

The environment as a cause?

The first step is to eliminate the environment as a cause. The environment would be the cause if:

- The manager does not understand management practice, or
- The manager is not applying the principles of management.

If Joe does not understand or apply the principles, then John is likely to be one of many poor performers.

Let's assume that Joe understands the principles of management and has already established the appropriate standards by which all the employees work. He has communicated those standards to all employees without bias. He measures performance against those standards on a regular basis. He understands how to use rewards, punishment, and extinction, the three basic motivational techniques. He has applied all the management techniques that he should be applying on a regular basis. Now he must deal with the special issues related to poor performance.

The employee as a cause?

In this case, the employee is the cause. Joe understands how to manage people, and is applying the principles correctly. John is the only poor performer.

To resolve the problem, Joe will classify John into one of three categories. They are:

1. John has a bad attitude about his job. He does not want to do it, and doesn't care if he does a good job.
2. Normally John is a good employee, but he is suffering from a short-term problem of unknown origin.
3. John sincerely wants to do a good job, but is not capable of doing it because he doesn't have the skills.

If John is in category one, Joe's objective is to get him to perform adequately or leave the organization. A transfer is probably not in the organization's best interest. While it may appear ruthless, this direct approach is usually the most successful.

If John is in category two, Joe's objec-

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tive is to have John identify the problem, deal with it, and then return to normal.

If John fits into category three, then his objective is to determine why he cannot do the job. Further assessment is necessary. John may have to leave Joe's department, but Joe would prefer to keep him in the organization since he is sincerely interested in doing a good job. Training is a possible solution.

Assessment and corrective action

The easiest way to assess the situation and to get John to perform is often considered very difficult by supervisors. Joe should require John to continue to do his job. No exceptions. No excuses. He will continue to specify the job standards as he has in the past.

He will ask John why his measurement of performance is not satisfactory in com-

parison to the standard. He will ask John to improve the measurement; that is, do a better job. He will continue to measure performance. He will continue to compare that performance with the standard. Joe will ask for John's own evaluation. Ultimately, John will realize that he cannot hide his poor performance. He will either do a good job, explain the cause of poor performance, or leave.

Employee relations can become a costly problem for companies. Joe avoids all these problems when the employee makes the assessment himself. Joe also eliminates guessing about the cause. Once the cause is known, the solution becomes obvious to everyone.

Joe realizes that supervisors sometimes postpone these assessments because they dislike being involved in what might become a confrontation. But Joe has found from experience that the sooner the questions are asked, the better. Rapid action results in little or no confrontation. Waiting increases the likelihood of an unpleasant reaction.

An ounce of prevention

Your objective as a manager should be to prevent the problem. You do this by developing and using sound personnel interviewing techniques and good management practices. Your first line of defense is a good employee selection process. There is a proven way to do interviewing. Many people take this lightly. They shouldn't, since mistakes here cause problems later.

Managers also need to maintain an environment that encourages achievement. This is accomplished by mastering personnel management techniques. Some people have these skills naturally. Most need training to acquire the knowledge in a reasonably short period of time. Using knowledge on the job and taking refresher courses can improve your ability to manage and prevent problems associated with poor performers. Δ

Steve Handlos, the president of Productivity Systems Development Corp. and Data Safe Corp., can be reached at 2138 Ashley Phosphate Rd., Suite 206, Charleston, SC 29418; 803/553-6649. Liz Straus, the president of Stewart and Assoc., Inc., can be reached at P.O. Box 11944, Columbia, SC 29211; 803/771-4636.



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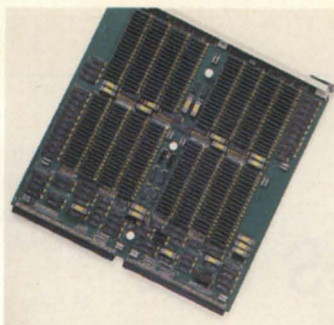
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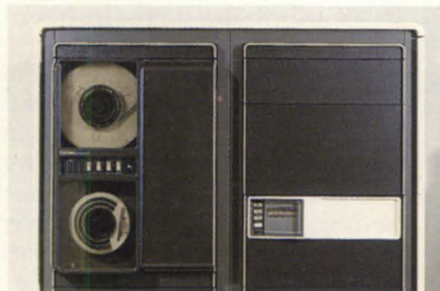
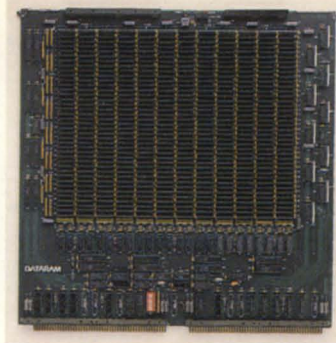


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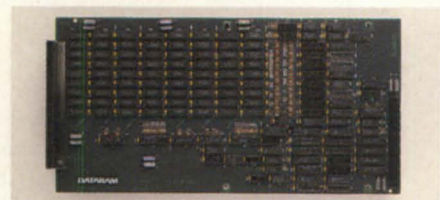
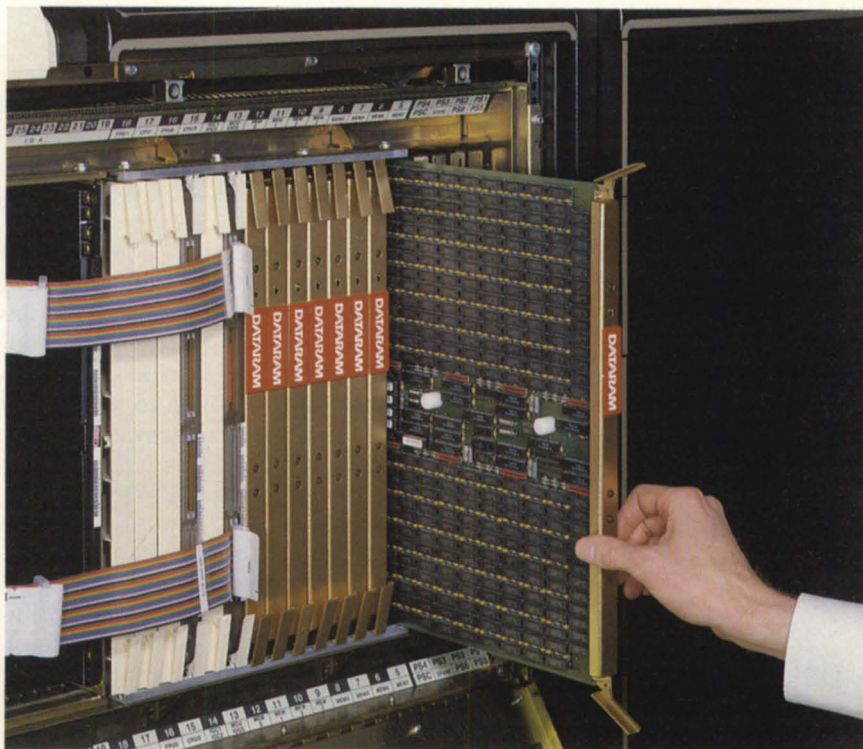
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The secret's out

SYNOPSIS

Combining forces, Rational Data Systems, Novell, and Data General introduce a LAN operating system that can be ported to varying host environments.

Netware comes to AOS/VS

It's been a difficult secret to keep, and some of the rumors that have crossed my desk have been quite hilarious, but I can now tell you that we have been working with Novell on a project called Portable Netware for over a year and a half. Netware is Novell's LAN (local area network) operating system that normally runs on 80286 and 80386 servers, and Portable Netware is an implementation written in C that can be ported to many different host operating system environments. Portable Netware is compatible with Advanced Netware/286 release 2.15.

On February 27, Novell and Data General announced a "relationship." The obvious outcome of this relationship is the implementation of Portable Netware under AOS/VS and DG/UX. Novell has signed up several minicomputer vendors for Portable Netware in addition to Data General, including Hewlett-Packard, Prime, and NCR. Most of these implementations are on Unix-based systems, and Novell itself will be hosting Portable Netware under DEC's VMS.

Netware for AOS/VS

There will be two implementations of Netware on Data General systems. The one of interest to most DG users today is Netware for AOS/VS, which will be developed by Rational Data Systems. The other implementation is for Unix on Data General's new MC88000 processor line. Both RDS and Data General will distribute Netware for AOS/VS, and both companies will offer support services to their customers.

Availability

This is a large project and, as you can imagine, trying to coordinate a three-way development effort between RDS, DG, and Novell is not an easy process. We are,

after all, spread out all across the country. As of this writing, it's still too early to be sure, but Netware for AOS/VS should be generally available in early 1990.

Where does it fit?

The question I have been asked most often is "Where does Netware for AOS/VS fit in the scheme of things?" There are already two other LAN-based PC integration products for DG users: Rational Data's PC/VS and Data General's DG/PC*I.

Rational Data Systems has been touting PC/VS's Novell compatibility for over a year in anticipation of this announcement, and most of the work that we've put into PC/VS during the past 12 months has been towards this goal. The underlying XNS protocols have been adapted to the Novell version called IPX, and we have replaced PC/VS's original LAN device drivers with new drivers licensed from Novell.

The net effect has been 100 percent compatibility between PC/VS and Netware, and that compatibility extends to Netware for AOS/VS as well. Will Netware replace PC/VS? No. Netware will not include some of the most important features of PC/VS, such as virtual disks, remote command execution, and the Notifier, nor will it support PC/Mail.

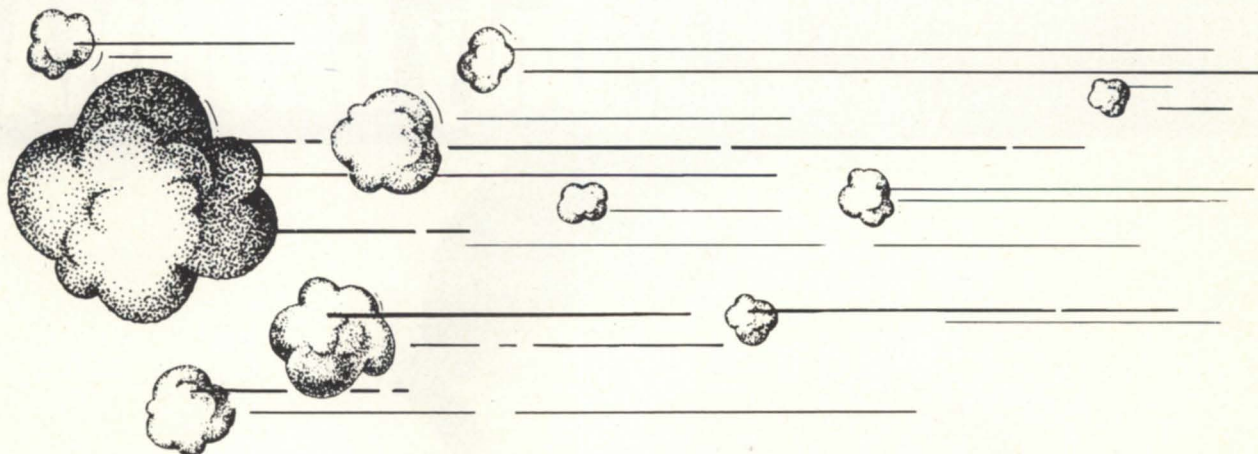
What about DG/PC*I?

There are two different "families" of PC networking products today: one is compatible with Microsoft's MS-NET, the other is compatible with Novell's Netware. DG/PC*I is in the former category, as is 3Com's 3+Open and products from many other vendors.

Although many vendors have licensed MS-NET from Microsoft, very few of these vendors offer products that are truly compatible with one another. For example, you cannot access a 3Com server from a workstation running DG/PC*I. Each MS-NET vendor uses different protocols at the lower layers to support their implementations of MS-NET. Data General uses the ISO transport and network layer protocols for its own DG/PC*I family of products. As there are no other vendors offering MS-NET based on the ISO protocols, DG/PC*I workstations can only communicate with DG/PC*I servers (i.e., MV family minicomputers).

All implementations of Netware, how-

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ever, use a highly standardized variation of the XNS protocols at these lower layers. That means every implementation of Netware is 100 percent compatible with every other. No matter whose hardware you select for your Netware LAN, it will be able to communicate with any other hardware running Netware.

By adopting these same protocols as the basis for PC/VS, we can guarantee that any PC running Netware can also run PC/VS and hence access your MV family computer.

Data General recognizes the importance of both of these de facto standards, MS-NET and Netware, and has demonstrated this by continuing to enhance DG/PC*I in addition to supporting Netware for AOS/VS.

Freedom of choice

I think it is important that you have the freedom to select the best server for a given application. Sometimes you may want to use an MV; other times you may want to use a PC. With PC/VS and Netware you can use both PCs and MVs as servers, and you can use a wide variety of LANs and controllers.

Popterm: more Netware compatibility

The latest version of Popterm, our DG terminal emulator, can operate over a LAN and communicate directly with Data General's new ITC/128 and ITC/64 controllers as well as DG Term servers.

What protocols do the ITC controllers use? That's right, the XNS protocols upon which both PC/VS and Netware are based. So you can use PC/VS, Netware, and Popterm on a single LAN, sharing a single controller in each PC workstation. This level of compatibility is not available with any other software in the DG environment. This new technology was described in detail in the May and June 1989 issues of *Focus*.

Doug Kaye is the chairman of Rational Data Systems. He can be reached at 1050 Northgate Drive, San Rafael, California, 94903, 415/499-3354. This article is excerpted from the "1989 Rational Data Systems Report on PC Integration." For a free copy, contact RDS at 150 South Los Robles Ave., Pasadena, CA 91101; 818/568-9991. Copyright 1989, Rational Data Systems.

The book is back

One last thing: Ever since we came out with our 1988 *Report on PC Integration*, we've been besieged with requests for the 1989 edition. Well, it's finally done. This year's edition is up to 114 pages filled with information on PC integration products and strategies ranging from terminal emulation and asynch file transfer programs all the way to local area net-

works and distributed processing.

Just like the 1988 edition, the 1989 *Report on PC Integration* is free to all users of Data General computers. If you'd like a copy, just call our main office in Pasadena, California, 818/568-9991, and ask for Kelly.

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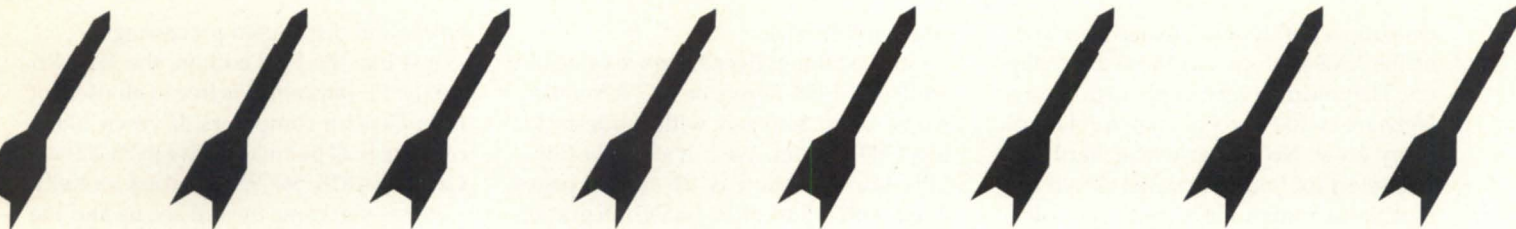
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Software arsenal

SYNOPSIS

Disaster at Pine Bluff tests the military's information management system.

by Seemee Ali
Focus staff

Eternal vigilance pays. Cold war or no cold war, the Department of Defense must go on with its tests and simulations and planning for "the worst"—not necessarily excluding its own fumbles. In June, at the Pine Bluff Arsenal in Arkansas, a pallet of rockets containing chemical munitions fell off a truck; one rocket exploded, and toxic gases started escaping from some of the others, cracked by the mishap.

OK, so this didn't really happen. But it *could* have happened, and that's where eternal vigilance comes in. The Arkansas scenario was actually part of a yearly simulation by the Defense Department to test the responsive ability of military installations. The results have not always been glorious; a vast amount of information is involved, ranging from weather conditions to the feeding of evacuees. Often staff have had trouble staying abreast of the rapid flow of data. Last year, the simulation site used networked PCs, but data entry took so long that by the time information was available for reports, it was old and obsolete. The staff

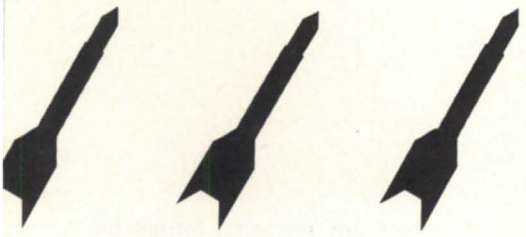
ended up using paper methods instead, and lost 50 percent of the incoming information. Important tasks were left unassigned, and many of those that were assigned were left unfinished, again because of problems with the flow of information. The right information never seemed to reach the right people.

At Pine Bluff, the solution lay in a mini-computer approach. Upgrading their DG MV/4000 to an MV/15000, the arsenal invested in an information management software package from DMS Systems called Genisys. Rather than a single data-entry operator, four people entered information on post, with six additional remote operators for every shift. Several terminals were also available to staff who needed immediate access to incoming data.

"The other approach," said Ben Spigle of DMS, "would have been to have somebody write up a program in a programming language." Spigle worked with Amanda Kight, a programmer at Pine Bluff who coordinated the response to the simulation. He said that "Genisys was useful because Mandy was able to do the entire implementation herself with just support from DMS." The software is now being used on a daily basis to log routine operations, but had been introduced only a few weeks before the exercise. With just two practice sessions before the accident simulation, Kight admitted that "it was a major undertaking to do something of that magnitude with a software package that no one had tested out on our post."

Fortunately, the system was easy to learn. The data entry operators trained for two hours, in advance of the simulation, and, in Kight's words, "did real well" on the menu-driven program. "They would just enter the number, and as long as they knew how to get from field to field, it was OK," she explained.

The beginning of the accident simulation was marked by four power outages within the first 10 minutes of the exercise. These first few minutes were crucial,



Kight said, with a deluge of incoming calls concerning important details of the accident. "We were down for 45 minutes," she said, "waiting for the network to come back up. It took us probably three or four hours in the exercise to actually catch up on the entries, because the information was coming in so fast up there. They [the data operators] were normally behind at least half an hour or so... all of a sudden we were down for 45 minutes." The disk mirroring system designed by DMS Systems in case of a system crash was not needed, however, and after the initial jolts, things seemed to go more smoothly.

Each event that took place was entered into an events file, with assigned tasks stored in a separate file. Kight said that the high point of the exercise "was that as soon as the information got into the system, everyone who was involved could see it immediately." Two big-screen television monitors were set up in an emergency operations center (EOC) room so that decision makers could see minute-by-minute updates of information going into Genisys files. The resulting decisions were immediately entered into the system, and the status of each task being assigned was updated automatically. This streamlined approach to information management paid off in the form of a 95 percent reduction in error rate compared with last year's simulation.

Pine Bluff is the only military installation currently running Genisys, but Kight added that inquiries are coming in frequently from other locations with questions about both the Data General hardware involved as well as the Genisys software package.

Genisys now runs on a 24-hour-a-day basis at Pine Bluff. It is taken down briefly, once a week, to reboot the system. Back-ups are made every night without interrupting the program. Kight says that, currently, the Genisys data base holds over 5,000 records. "If an accident did occur," she said, "they would just go back into an exercise kind of situation." Δ

Colorado Data General User's Group



The Colorado Data General Users Group (CODGUG) consistently provides its members with services and benefits that are a valuable source of knowledge and entertainment. It is also a great place to get advice, help, and good DG conversation!

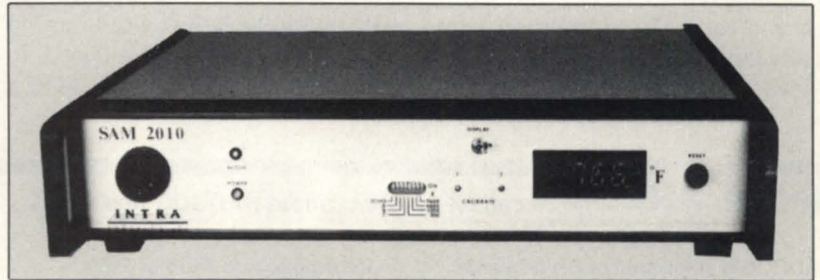
Bi-monthly meetings are geared towards Data General topics and sometimes evolve into seminars or tours of DG sites in the area. To help members get the most out of their DG systems, CODGUG offers newsletters packed with information, a "macro book", and many other helpful hints.

The next CODGUG meeting is scheduled for November 9. For details of the November meeting, or any other CODGUG activities, call Bruce Cary at 303/755-6300.

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Bits and bytes from the bulletin board



Good news and bad news

From: Stan Gula

Anybody have anything good to say about recent revs of TELNET in AOS /VS TCP/IP? The last time I was looking into this, there was still a restriction to TTY support—full-screen work could hang or crash TELNET. Has this changed? Has AOS/VS II affected this at all?

From: Jim Dingman

There is good news and bad news. Suffice to say, do you have AOS/VS or AOS /VS II? Without AOS/VS II, you will be forever restricted to TTY terminal support. TCP/IP_II will be released from DG in November, I am told. That product will have full-screen support. It will also be integrated into the AOS kernel (good and bad). That integration is apparently the reason why us VS users will not have access to that product.

IAC-8 as Bigfoot

From: John Meyer

I have an MV/8000 and am running NANOS (multi-user, 32-bit version of RDOS). I have an IAC-8 and an Interlan NT-10 ethernet controller. The problem appears to be corrupted packets that are somehow being stepped on by the IAC. If I remove the IAC from the system it runs great (i.e. the Interlan diags fail, showing a checksum error and the com program agrees). Any ideas?

From: Richard Kouzes

We had this problem two years ago. If it's the same as our problem, you just need to move the IACs farther down the bus so that the LAN card comes before the IAC. This increases the LAN hardware so that packets aren't lost from IAC activity.

Inquiring minds want to know

From: John Grant

Is anyone using optical disk? I am thinking of getting one for dead storage of our data. Is the 5070D disk from DG the only choice (it emulates a DG tape drive)? The literature says the capacity is 1 GB—how much of that is real storage (i.e. is there a lot of formatting overhead, as on mag disks)? Has any manufacturer managed to get them faster than 100KB/sec write and 300KB/sec write (average)? I assume that with the 5070D, I can do COPY and LOAD/DUMP just like tape. Can I also do ?OPEN and ?READ/?WRITE just like

tape? Is there any universal format for these drives?

Assuming I do a straight COPY of a file (i.e. a stream of bytes, no formatting), can I take the disk and read it on another 1 GB drive on a different machine? (I'm a dreamer). What about small disks for PCs? Would that be an alternative, i.e. hang it on a console line and copy stuff to it in the evening so interactive users wouldn't suffer? I need to back up 300-500 2400-foot tapes with little or no access required in the future.

From: Tim Boyer

Why not go to one of the 2 GB 8 mm cartridges? One cartridge will hold about 50 2400-foot tapes, so you could get your whole archive on 10 cartridges (\$10 each). You could also use it for day-to-day backup, and it costs less than optical (somewhere around \$9,000 for the subsystem). Take your pick of interfaces—Megatape uses the Zetaco BMX-2, Delphi uses scuzzy, I don't know what Data Plus uses, and DG has just announced its own unit.

From: Jim Dingman

I am also thinking of purchasing an optical disk for our Aviiion workstation. The company's name is Delphi Data, in San Diego. The model is EO-644. The capacity is 644 MB per cartridge. I believe it uses a SCSI bus. They sell the MV system controllers (among other DG-com-

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patible peripherals). You might also be interested in their 2 GB, 8mm cartridge tape backup unit (also for MVs).

Blast off

From: James Spellman

We have an MV/2000 Model 2 with LAC-12s and Multitech-224E/H modems attached to con 17/18 (modem ports). What CHAR settings, cables, or modem switch settings do we need to 1) dial in as a user and 2) disable port and start Blast? Our biggest problem is the infinite loop on send/receive and port hangs.

From: Kevin Danzig

First, you don't have to use the modem ports. You need to set both echo and verbosity off; the loop is caused by echo alone. They work well in error-free. If you are transferring a lot of ASCII data, data compression (MNP-5) helps.

Inquiring minds: the sequel

From: John Grant

I'm thinking now that maybe it makes more sense to use something like Megatape's GT-88 for dead storage and off-site backup of my 250- x 2400-foot tapes rather than optical disk. Then I will have a unit I can also use for routine system-wide backups.

If I copy all of my 2 GB tapes to 8 mm tape, how should I treat the tapes if I expect to be able to retrieve the data later in case of a catastrophe? I think conventional wisdom on 9-track is rewind every six months and re-copy every three to five years. Just how robust and stable is that 8 mm tape? I think it is "metal" tape, not oxide tape, isn't it?

Any comments regarding optical disk vs. 2 GB tape, keeping in mind that I want to use it for dead storage primarily, but maybe also to retrieve the data for processing (since it's easier to load one or two 8 mm tapes than 15 reels of tape)?

Here's something else—if I am going to get either tape or disk, it would be nice if I could hook it up easily to a PC as well (dual ported or manually-switched). Is there something specific I should look for to facilitate this, i.e., can I only do that with a SCSI drive?

From: Tim Boyer

The only unit that is not SCSI is the

Megatape GT-88. They use the Pertec, while everyone else (including DG) uses SCSI. I haven't looked, but I assume you could get a Pertec interface for the PC. In that case, the GT/88 mod 2 comes with a switch that allows you to hook it to two CPUs and switch with the push of a button.

Yes, they are metal-particle tape, but I don't know what kind of retention they're going to have.

From: Doug Rady

The GT-88 comes in a model with a "dual port" built in. You will need some sort of interface card for the PC side, though. The 8 mm drive seems to make much more sense.

Not a real turn-on

From: Andries Holtzhausen

The 16-bit CLI has no command to turn



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on System Manager privileges. One work-around is to make a copy of the CLI.PR and apply the following patch to it:

```
SMON+24 [LDA 0,1,3] [LEF 0,2,0]
SMON+32 [JMP SMON+35,1] [NOP]
```

The patched CLI runs with SM privileges on.

I have no problems with it, except that

CLASP demands to be the only System Manager around. So whenever I run CLASP, I must first chain to the classic version of CLI.

From David Down:

An easy command to turn on System Manager Privileges is JPI/2=IX. This will last until you get an error by doing something like DEL/1=I. You could put this in

a macro with ON and OFF arguments to simulate a command.

Bug-induced panic

From: Doug Rady

It seems that one or more of the AOS /VS groups has decided to enforce the illegality of some characteristics regarding IAC-16s, namely the use of modem characteristics and the use of CLEARDEV /SBREAK. Now this might have been fine if, and I mean if, they had made these just another error condition that returned an error number with the usual error message text in ERMES. But nooooo, someone decided that the IAC should panic. Thus, instead of harmlessly penalizing the person attempting the "illegal" command, 7.65 will shaft all users on the IAC, and give the system managers and operators some fun dealing with irate users. I wonder if this means that anyone can issue a CLEARDEV/SBREAK against his/her/its own console and panic an IAC-16?

From David Down:

The IAC panic on a break is a bug, and there are a couple of IACRES patches available that you need to apply to fix it. We had the same problem before applying the patches.

From Michael Travis:

I got a patched IACRS.PR, but it didn't fix it in all cases. Note that the Kermit break function will have the same effect. (That's how I found the problem.)

From Walter Mosscrop:

An additional point: VS 7.60 allows the sending of a break (via the ?CLR DV system call) via both an IAC-8 and IAC-16. If DG has removed this, it's going to hurt.

Whining, but only in theory

From Doug Rady:

Theorem: AOS/VS II = AOS/VS +/- 3dB

From Bob Shepard:

How about a corollary: AOS/VSII = AOS/VS +/- \$#@!??*&
Or am I whining spinelessly?

From Doug Rady:

I think yours should read: AOS/VS II = AOS/VS + \$\$\$ + *&@!##%^%^&*. Δ

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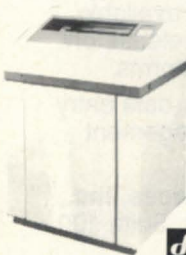
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SYNOPSIS

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I'll have to admit one thing right up front. Being the old conservative dinosaur that I am, I've never had much use or interest in PC-based networks. Since I was raised and educated in the age of minis, I've always thought that it's a heck of a lot easier to just put the application on a machine that was designed for multiple users, rather than trying to twist an operating system that was designed to be

single-user into a multi-user configuration. Thus, whenever someone tells me of the great idea they have for a dBase application, I tell them to give me the specs and I'll write it in ICobol—that way, everyone can use it.

Occasionally, however, I'll admit that it would be nice to share disks, printers, and files between the dozen or so PCs that we have hanging around here. I haven't done anything about it because a) I don't have the space or money for a new 386, b) I don't want the support problems and headaches that go with installing a PC network, and c) there's enough wire running behind my desk already, without installing a dozen coax cables.

Then along comes Rational Data Systems with PC/Remote (referred to from here on as RDS and PCR). With PCR, I don't need to buy the 386, because it uses my MV as the file server. Operations are simple, and PCR comes with a memory-resident menu program to make them even simpler. And I don't need to run coax through this 80-year-old building, because it uses the same asynchronous wires that I'm using to hook the PC to the MV. In other words, I get the benefits of a network without the attendant headaches. This, I like!

The first feature that I think of when talking about networks is shared disks. PCR enables each user to have an unlimited amount of virtual disks sitting on the MV, with up to four active at one time. The disks can be up to 32 MB large, the DOS limit.

Initially, the disks must be created through PCR using the PCR CREATE command. They can then be mounted and dismounted as you need—e.g., PCR MOUNT 123FILES E:. From then on, it appears to the PC that you have another drive out here, and you can do anything with this drive that you would do with your actual drives, using the normal DOS commands—DISKCOPY, CHKDSK, and so on.

I sent my Lotus files to the MV by typing COPY *.WK1 E:, and can then access them through Lotus. Later, if I want to work on Wordstar files, I have a choice—I can either mount WSFILES as drive F:, or dismount 123FILES and mount WSFILES as E:. By combining these methods, your available disk space is limited only by your MV disk space. Think of it as having four floppy drives—but the

floppies will hold 32 MB. Once you have data on these disks, they can be shared between users by mounting the disk READONLY.

This means that your files can be kept on the MV, with its larger disks, and backed up through your normal backup. Hopefully, you back up your MV more often than your users back up their PCs, and you won't have those piles of floppy backups sitting around.

Caveat #1: remember, this is all being done on an asynchronous line. You're not going to get blinding speed out of this setup, and you shouldn't expect to. On the other hand, the network is not restricted to direct connections—you can access PCR over your modem. Try doing that with ethernet!

Sending and receiving files is also made easy by PCR, since there's nothing to start up on the MV side. To transfer a file from the MV to the PC, the command is PCR IMPORT <sourcefile>, and, going the other way, PCR EXPORT <sourcefile>. PCR will perform the transfer and convert the file name, if necessary. There are switches that will allow you to transfer the file in text or binary, and you can specify the resulting file name (and, on an export to the MV, the file type). Multiple-file transfers are also possible, and the full range of PC and VS wildcards is supported, so a command such as PCR EXPORT *.WP is perfectly valid.

As mentioned above, transfer speed is not blinding. I clocked it at 540 bytes/sec on a 9600 baud line. One reason for this lack of speed is Rational Data's decision to optimize system throughput, rather than transfer speed. From a user's standpoint, this is a good decision. Consider a program like BLAST, which is going to be used at one, or possibly two, terminals for file transfer use, and can achieve tremendous speed by using heavy file compression and other tricks. It also uses over 50 percent of the CPU. PCR is designed to be used by many users simultaneously, and if each user gobbled up 50 percent of the CPU, the results would be . . . not optimal. Ugly, even. So instead of speeding up the transfer by sending data a byte at a time, RDS sends data in 128-byte packets, the IAC default. By slowing down one user a little, you speed up everyone else a lot.

In addition to sharing disks, network users want to be able to share printers.

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PCR RPRINT will allow anything sent to your PC printer to be redirected to an AOS/VS queue, file, or device. You may have up to three simultaneous devices redirected. For example, PRN can be going to @LPT1, while PRN1 is going to @CON12, and COM2 is being sent to :UDD:TIM:PRINTERFILE. After you have issued the command, anything sent to that device on the DOS side is redirected

to the appropriate AOS/VS file.

This makes it completely transparent to the PC user. If I want to print a Lotus file, I don't do anything differently that I did before PC/Remote, but the output is on my 800 LPM main printer. For those of you currently printing 80-page Lotus reports on a 60 CPS printer, this is the *only* way to print. From DOS, a command like TYPE AUTOEXEC.BAT>PRN will

result in the file being printed on the main printer. And if you've always wanted a laser printer, but couldn't decide which department should get it, here's a way to let them all use it.

Sooner or later, you're going to want to log onto the MV. So you fire up your terminal emulator and . . . whoops! PCR has hold of the communications lines. Not to worry—RDS has seamlessly integrated its Popterm emulator with PCR. Starting Popterm (whether as memory-resident or standalone) halts PCR on the VS and drops you into the CLI. From there, typing BYE will halt Popterm, restart PCR, and drop you back into whatever program you were working on.

As an example, I'm currently writing this article in Wordstar, with the file on virtual disk E:. Typing Popterm's ALT= gets me out of Wordstar and into the CLI, and BYE brings me back to my article. Pretty slick! The only problem with this scheme is that I consistently forget to type BYE, and instead use the ALT= sequence to terminate Popterm. As a result, I can't continue to use disk E: because Popterm is already active. Wordstar outputs strange messages, and smoke starts to rise from the PC. The problem is easily solved by getting back into Popterm and logging off, but it is annoying. I can't think of a better way of doing it, though—there will be times when you definitely don't want to log off when getting out of Popterm. I suppose I'll just have to get into a new habit.

Also included with PCR is a program called the Notifier. The Notifier alerts you when you have received mail from CEO, Wordperfect Office, or another PCR user. Since I am not running WP or CEO, I didn't have a chance to test this, but the PC-to-PC mail works just fine. The syntax is SEND <username> <message>, and the message box pops up on your screen. An optional package, PC/Mail, allows you access to CEO's electronic mail facilities.

PCR has an extensive script language, which will allow you to automate everything from logons to file transfers. The script language is too rich to describe here, but let me give you an example of what the login script does. It transmits a new line, checks for the "Username:" prompt from EXEC, prompts the PC user for a name and password (without echoing), and sees if EXEC returns the "Invalid

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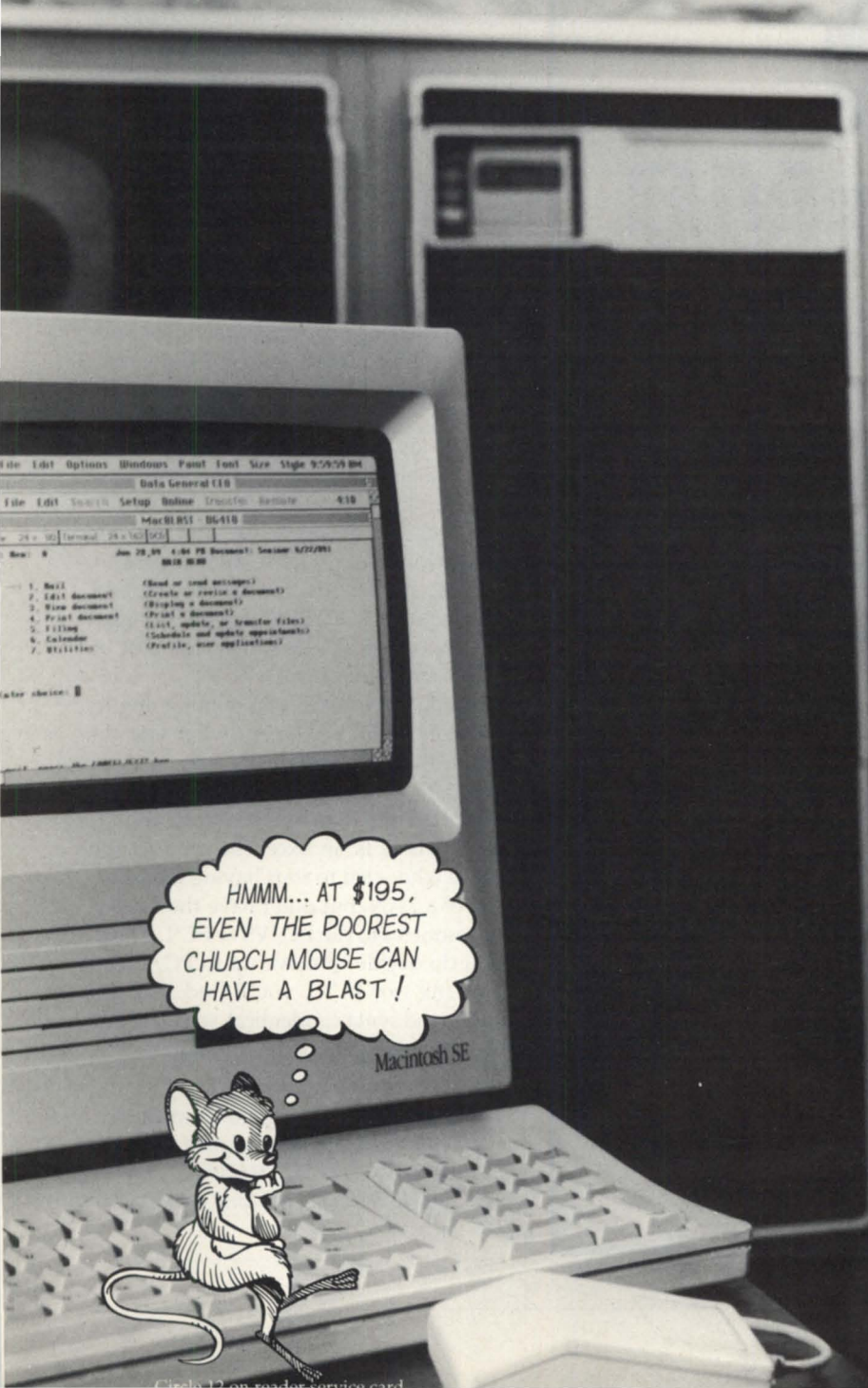
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Macintosh SE

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username—password pair” message. If so, it returns for another try; otherwise, it checks for the AOS/VS prompt, starts up PC/Remote on the MV end, and exits.

This is accomplished by a small number of commands, and the syntax is logical and readable. To wait for the VS prompt for 30 seconds, for instance, the command is WAITFOR “)” 30. To branch

out if the prompt wasn’t received, PCR uses:

```
if not found
  display “Didn’t get CLI prompt”
  disconnect
  exit 200
endif
```

To modify the script for my needs, I didn’t even open the book—it’s that readable.

Yet, it’s also extensive enough that just about anything that you’d want to do could be automated.

Now, to tie all of this together. If, like me, you don’t like to learn new commands or the switches that go along with them, RDS has included yet another TSR called PCRMENU. Once you’ve loaded PCRMENU into memory, the ALT-0 sequence pops you into a pull-down menu window. From there, you can select anything that can be done in PCR. For instance, move to the TRANSFERS selection and highlight EXPORT. You are prompted for DOS name, VS name, mode, conversion, confirm, element size, and file type. So anything that can be done on a command line through the use of various switches can be done through the use of PCRMENU. For those of us who still have to look in the CLI manual to find out what switches are valid with MOVE, this utility is invaluable.

What does all of this cost? RDS has come up with what seems to me to be a very rational (sorry) method of pricing PCR. It charges per user. If you’re running an MV/20000 with 8 PCs, you’re going to pay less than someone running an MV/8000 with 16. I know that pricing by CPU is an industry-standard practice, but I’ve never quite understood it—especially in the compatible-processor world. This scheme makes sense. You pay for what you use, no more and no less. A PCR license for 16 users runs \$6,000, and this includes POPTERM, so your per-user cost is only \$375—less than the cost of many emulators alone.

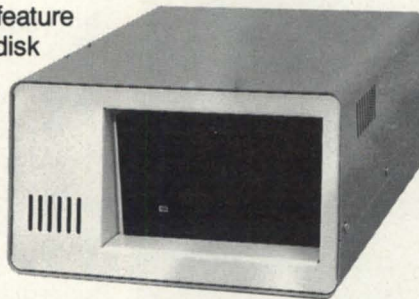
For \$375 per user, you’re not going to get a 10MBPS LAN—but what you do get is a useful, inexpensive way of sharing data and peripherals, coupled with one of the best terminal emulators around. PC/Remote is an excellent product for those who want to start having the benefits of a LAN, but don’t have the money or resources to run PC/VS or PC*I. And if you do decide to move up to PC/VS or NetLink (for PC*I), you’ll find that the command syntax is identical, so you won’t have to relearn all of the commands. 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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When power corrupts

SYNOPSIS

Hidden effects of minor electrical disturbances can be costly.

by Aldo Falossi
Special to Focus

When electrical power is made, the outcome from the generating equipment is an alternating wave form that is clean, steady, and pure. From the generating plant to your facility, the power is routed through a number of switching points and distribution transformers. How the electrical service performs once inside your facility is affected by your equipment and the other utility customers (and their equipment) connected to the same utility feeder.

A utility's claims of reliability are seldom questioned by the average homeowner, since minuscule interruptions, surges and/or spikes, are not visible and do not obviously affect the refrigerator, waterbed, or other appliances.

A utility's responsibility to supply good electrical power stops at the meter outside your facility. In the past, utilities have been reluctant to go inside a customer site, since power analyses have shown that problems encountered by utilities are not just related to lightning, rain, storms, and accidents. They can include transients, noises, and spikes—which cause more damage to some equipment than lightning.

In the computer power industry, a transient is usually referred to as the "rust"

of electronics—it never sleeps—and it can slowly knock out a computer system, or any other device with a chip or microprocessor.

Transients are insidious errors that may happen when a utility switches from one substation to another, or when your neighbor turns on a 10-ton air-conditioning unit.

To find the hidden cost of electric power as it relates to computerized equipment, one must analyze the type and duration of power-related problems and how they affect your operation. Your utility company may be willing to help by offering power analyses and recommending preventive actions against these power abrasions, sometimes called sags, surges, noise, or blackouts.

A study by IBM revealed that, on the average, a computer encounters approximately 125 events per month that can cause improper operation and therefore increase service costs. The IBM study was done at a number of computer facilities inside the utility power meter. (See Figure 1.)

An outside power meter study conducted by AT&T found that a direct lightning hit, or lightning on the distribution power grid, causes damaging sags and blackouts. The utility's suppression equipment in the distribution system momentarily disconnects the power line when the lightning hits the sys-

tems. (See Figure 2 on page 78.)

An additional study conducted by a major computer publication shows power disturbances have costly effects on chip microprocessor-based equipment. These costs are additional to those in your utility bill, in terms of hardware damage, short- and long-term memory loss, and hard disk crashes. (See Figure 3 on page 79.)

What the studies show is that raw utility power should not be fed directly to sensitive and critical microprocessor-based devices. It causes loss of data, downtime, increased service cost, reduced equipment life, and frustration and low morale in the users of equipment.

Hidden costs

The need for protection from hidden costs due to poor utility power has spearheaded an industry that delivers over \$2 billion worth of power protection devices to people who use chip microprocessor machines.

Uninterrupted operation

Some operations cannot withstand even the slightest power imperfections—hospitals, intensive care departments, police dispatchers, computer process control, and real-time computer systems must be operative all the time. Insignificant power could result in a critical disaster.

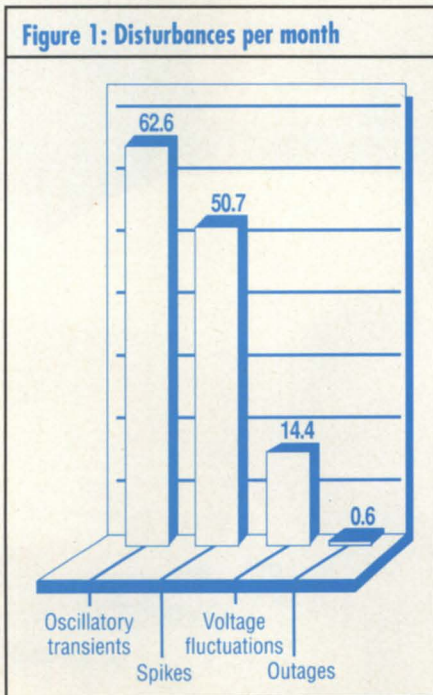
Data integrity

Power outages and disturbances can randomly change your data manipulation function from correct to incorrect results. If you're printing payroll checks, instead of paying an employee \$500, you pay \$5,000. That kind of mistake may be corrected. But if you're making money transfers from New York to Cuba, you hope that the data error is in your favor. Otherwise, making adjustments and/or trying to receive your overpayment back can be frustrating.

Maintenance and service

You call your service people to repair what appears to be intermittent operation between your computer and disk drive.

After two service calls and replacement of two modules, you discover that when your elevator starts, the disk drive crashes. A power analysis shows how the elevator starter motor affects the rest of the equipment plugged into the main feed.



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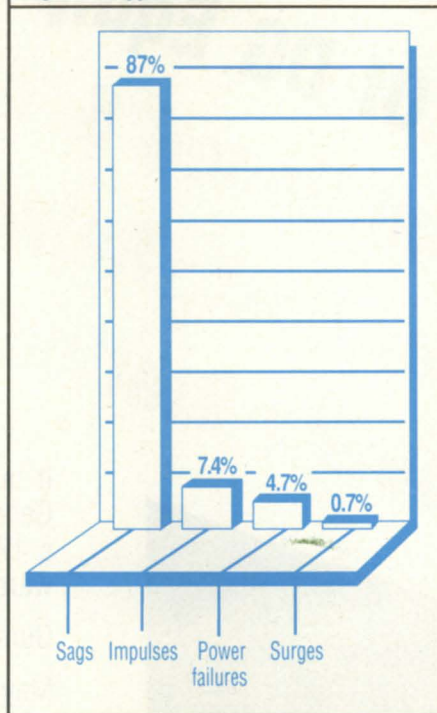
Equipment cost

The more expensive and sophisticated your computer-based devices, the higher the hidden cost for damaged equipment. For years, we believed that semiconductor devices, once operative, would not age and would work forever (the panacea over the old technology consisting of vacuum tube products). Not so. We now know that small spikes and electrical noise have a cumulative pitting effect on semiconductors, reducing drastically the life of the device.

Cost of data

Since the value of computerized data files can only be established by the user, the cost of damage and/or outright loss can only be measured by the owners themselves. Bank of America, American Airlines, and the Internal Revenue Service, to name a few, spend hundreds of thousands of dollars to power their computer system from devices that protect the system in the event of abnormal power behavior.

Figure 2: Types of disturbances



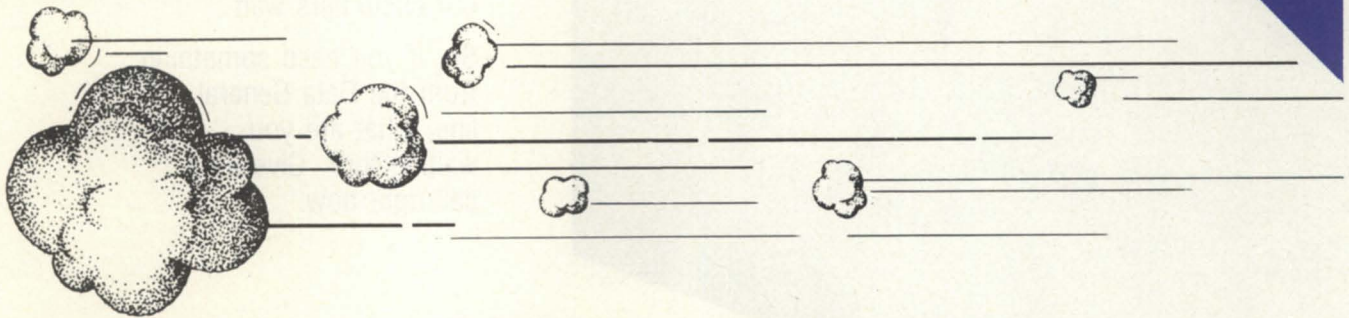
Customer relationship

Ask your bank or airline how much they spend on computer power protection to keep you happy. How can you measure the cost of losing a customer because your computer system was down? Loss of business because a potential customer called someone else is harder to measure than power problems.

Cost and time to recover

If you've worked with microprocessor-based devices, you know that one of the most frequently used statements is "save." Reconstructing work that you may have in volatile memory can be a real problem. Sometimes, to restart a system after it has failed may take anywhere from a few minutes to several days. The crash of American Airlines' SABRE for a few hours was measured in millions of dollars. The costs can be staggering, considering that sometimes an entire organizational department or company is idle for hours.

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Organization, people, and morale

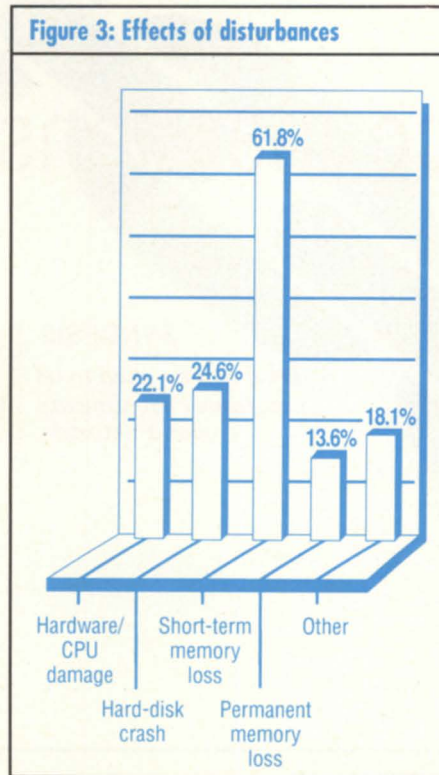
Let's face it, an organization, its people, and their morale are affected by how often and for how long your system is malfunctioning or is outright inoperative. How can you measure turnover of employees, frustration, and low morale because of power-related problems affecting the operation of your system?

Conclusion

When your computer is down, the hidden cost of your power-related problems can be a couple of orders of magnitude higher than your monthly utility bill.

What the market needs for microprocessor-based devices are power supplies that operate isolated from the utility power, continue to operate during brown-out and blackout, and either start a motor generator automatically or provide an unattended (human-free) shut-down of the complete system (with automatic restart when the power comes back). The power protection systems of today (like the utility companies) burden the cus-

Figure 3: Effects of disturbances



tomers with unnecessary expenses in a market that is already too expensive.

Why should you pay for AC to be converted to DC, when it is eventually converted back from DC to AC to power protect your equipment? Ninety-five percent of chip microprocessor-based devices operate on DC, including disk and tape drives. Why don't we have AC-to-DC isolated, regulated, noise-free power supplies within the individual devices themselves, and small battery back-up to either automatically shut down your system or start a motor generator for long blackout?

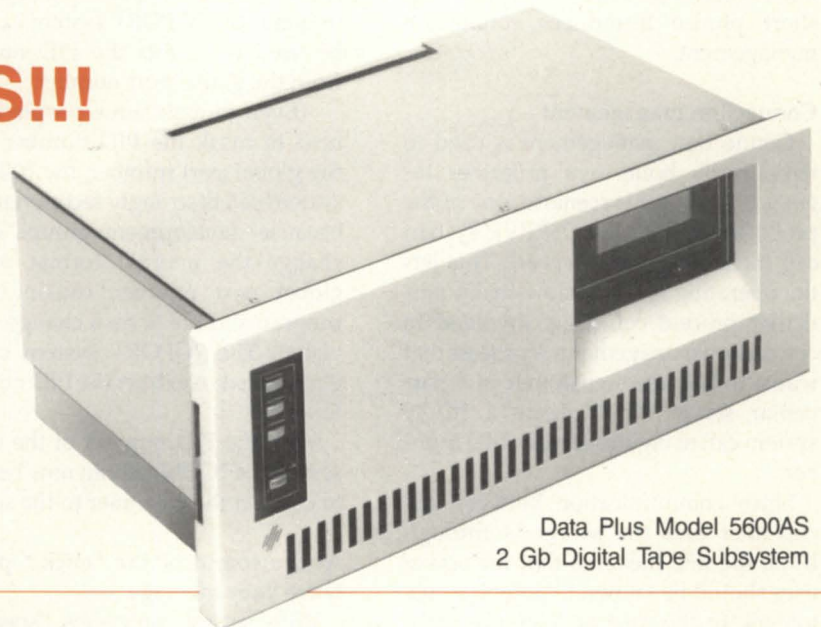
This author welcomes replies from the utilities companies and the power protection industry. Δ

Aldo Falossi, founder of Cipher Data Products (San Diego, California), and most recently, Cable Management Systems (Irvine, California), holds a B.S. in physics from the University of Pisa. He has more than 20 years of electronic experience and has authored numerous application-oriented articles.

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Good connections

SYNOPSIS

IPCs can be used to let programs communicate over a network.

In lieu of the normal bit of humor that opens this article, please take a minute to reflect on the good times that you had this summer.

OK, that's enough. Back to business. One of the system concepts discussed in previous issues is that of inter-process communications. In those articles, we reviewed how to build IPC files, and the system calls involved in passing data through those files. This month, I would like to show how IPCs can be used to talk to some of the system services available, and in particular, how they can be used to communicate around the world.

EXEC, networks, and CEO

Most of us are familiar with a command line that starts "CONTROL@EXEC something_or_other." Some of us have heard about CEO. Others still, have heard of networks that do not have an 80386 as the main processor. How are these state-

MESSAGES FROM BEYOND

In order to send and receive IPCs to communicate with X.25, your process must "become a customer of X.25." This short phrase introduces connection management.

Connection management

Connection management is used to temporarily bond two processes together. To start this scenario, one of the processes will issue a ?SERVE system call (hence the name server). This lets the operating system know that a particular process could get involved in connection management. A process that wants to become a customer of a particular server would issue a ?CON system call using the server's PID number.

Since communication between the customer and the server is through IPCs, the IPC filename that the server uses should be known to potential customers. In the case of X.25, the pathname is ":PER:X25\$" or "@X25\$." To connect to a particular server, a potential customer uses the IPC pathname and issues the ?ILKUP system call.

?ILKUP is used to do an "IPC look up" of the global port number of the IPC file. With the global port number in hand, the ?GPORT system call can be used to extract the PID number from the global port number.

(Even though some people know how to mask the PID number from the global port number, the ?GPORT system call is strongly recommended, because development groups could change the internal format of the global port number, causing your programs to break on a change of revision. The ?GPORT system call is guaranteed to extract the PID number for you.)

With the PID number of the target server, the ?CON call can now be used to connect the customer to the server.

At the sound of the "click," please leave your message

With several processes "speaking each other's language" or communicating at full tilt, it would be nice to be reassured that a particular process is listening. (As with people, programs

that talk without anyone listening are subject to their sanity being questioned.) Connecting the two processes together asks AOS/VS to inform the party of the first part that the party of the second part has passed away, should the party of the second part meet a premature end of the conversation. AOS/VS informs the party that is still alive by sending an IPC message. The name for this particular type of message is "an obituary message."

Obituary messages are similar to the termination message that a process would receive if one of its child processes dies. The distinction is that termination messages are sent only to the parent of the deceased process, while obituary messages are sent to processes that were connected to the deceased.

Connection bits and bytes

The AOS/VS system call dictionary and the system concepts manuals discuss termination and obituary messages in depth. The format of the message and the flags for the messages can be found in :UTIL:PARU.32.SR. Δ

A Programmer Calls His Dog.

“See Us At
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WITH COBOL

```
IDENTIFICATION DIVISION.  
PROGRAM-ID. CALLDG.  
ENVIRONMENT DIVISION.  
SELECT ANIMALS  
    ORGANIZATION IS INDEXED  
    ACCESS IS DYNAMIC  
    KEY IS ANIMAL-TYPE  
    ASSIGN TO BEASTS.  
DATA DIVISION.  
FD ANIMALS  
    RECORD CONTAINS 16  
    CHARACTERS  
    DATA RECORD IS ANIMAL-REC.  
01 ANIMAL-REC.  
    03 ANIMAL-TYPE PIC X(8).  
    03 ANIMAL-NAME PIC X(8).  
PROCEDURE DIVISION  
START.  
    OPEN INPUT ANIMALS.  
    MOVE 'DOG' TO ANIMAL-TYPE.  
    READ ANIMALS INVALID KEY  
    DISPLAY 'BAD ANIMAL'  
    LINE 10 POS 1.  
CALL-SPOT.  
    DISPLAY 'HERE' LINE 10 POS 1.  
    DISPLAY ANIMAL-NAME HIGH  
    LINE 10 POS 16.  
    CLOSE ANIMALS.  
STOP RUN.
```

WITH SYSTEM Z

Here, Spot.

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Eliminate Machine Dependence

Programs developed with System Z are not dependent upon the hardware or operating system they were developed on. The executable code can be "copied" to other systems with no change or recompiling. For example, you might have a program developed under UNIX and then decide to install it on a DEC VAX under VMS or a PC under DOS. Graphics, function keys and other conventions previously accepted as "machine dependent" are portable.

Performance + Productivity + Portability

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ments related? Well, you probably guessed right if you said IPCs. In the EXEC case, we use the IPC file (:PER:EXEC) to ask the EXEC process to perform various actions on its resources (terminals, printers, queues, etc.). The source of the message is the user's CLI.pr, which has built a packet, and issued a ?ISEND system call.

CEO also uses IPCs. The use of them is not restricted to messages between the control program and the word processor. They are also used between the various CEO server processes (CEO_POA, CEO_CSA, CEO_QMA, CEO_FSA, CEO_LOG, etc), their "boss" (CEO_OP), and even your programs (if you are using the CEO Toolkit). Many people restrict their thinking about IPCs and the network to controlling how the network is run by "CONTROL @XTS . . ." commands, or the like. However, IPCs can also be used to let your programs talk

Many people restrict their thinking about IPCs and the network to controlling how the network is run by "CONTROL @XTS . . ." commands

over the network.

Did you say "IPCs over the network?"

Let me answer that question right now. No. IPCs can only communicate with processes on the same host. But, IPCs can permit a program to pass data across the

network. I will admit that I am being a little tricky here in temporarily hiding some information from you, or at least, waiting until the next paragraphs to show you how it is done. (For those of you who have more than one computer connected together, please read on. For the others, please continue dreaming of days gone by.)

A brief network primer

If I issue the CLI command "WHO [!sons OP:NETOP]," I get the following results:

PID: 5 OP	XTS	:NET:XTS.PR
PID: 6 OP	RIA	:NET:RIA.PR
PID: 7 OP	RMA	:NET:RMA.PR
PID: 8 OP	FTA	:NET:FTA.PR
PID: 9 OP	SVTA	:NET:SVTA.PR
PID: 10 OP	MTA	:NET:MTA.PR

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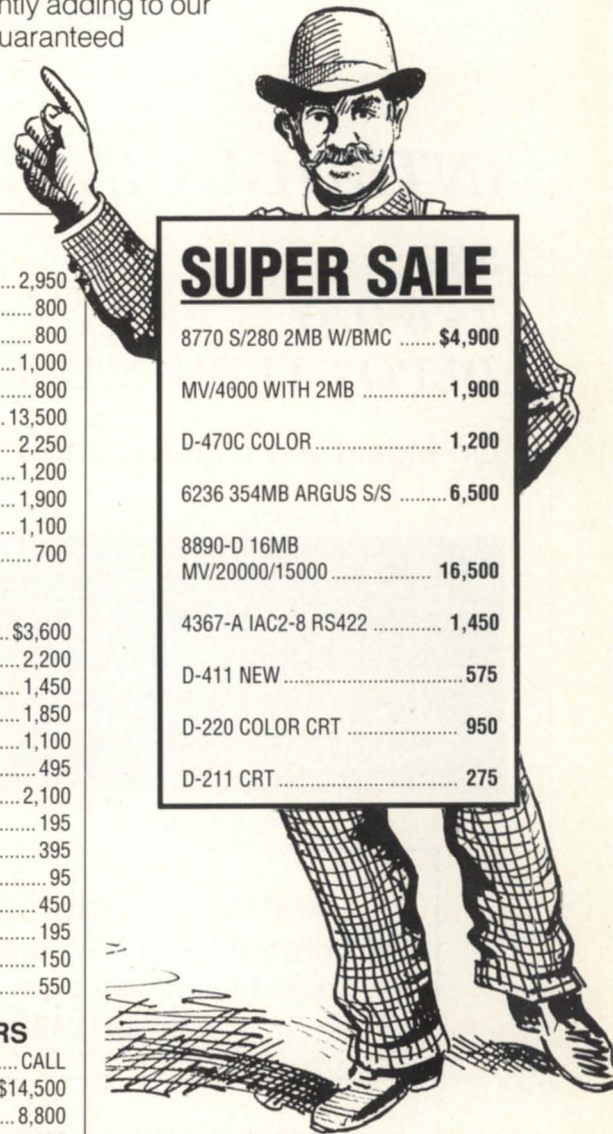
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mation across the network? Well, the simplistic answers would be "use UFTA to move a copy of the file across the network" or "use RMA and the CLI MOVE command." These approaches, while they have their uses, are not of much help to a program. However, we can make use of

the facilities that are inherent in the network processes themselves. The Xodiac network management system can help programs communicate over a network. It has two different interfaces available: a system call interface and an IPC inter-

face. The system call interface acts just like a call to any other system call, with packets and flags, and the like. The primary difference is that the calls are not described in the normal system call dictionary, but are shown in the document *Programming with the Xodiac Network Management System (AOS and AOS/VS)* (ordering number 093-000175).

The IPC interface allows a program to call upon the network service by issuing IPC messages which contain requests for services. The responses, errors, requests, statistics, data, etc., are passed between your program and the network in the IPC headers and data buffer. In order to send IPC messages to obtain X.25 services, your program must become a customer of the X.25 server process. (Refer to the sidebar on page 80 for the details.)

Network services

Among the network services available are access to RMA and FTA (the resource management and file transfer agents), and to connections between NPN (network process name) files. In keeping with trying to send information from process to process across the network, let's look closer at the NPNs and what they do.

:NET

In the :NET directory there are file types that do not exist anywhere else on the system. Two of the types that interest this discussion are HST and NPN file types. HST files are used by the network processes and indicate that the network knows about a host by that name. (Notice that the HST file name differs slightly from the name used during the NETGEN—a remote host with the name "FUBAR" will have an HST file called "FUBAR\$." The file in :NET with the name "FUBAR" is of type RMA, and is used by the RMA for deflection to the remote host.)

NPNs—the file and not the transistor

NPNs are essentially a network equivalent of IPCs, in that they share a number of characteristics:

- A file exists of that type
- There may be only one file of that name in the specified directory

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- The file doesn't have a file size
- Communication is initiated by opening the IPC or NPN
- Data can be both received and transmitted through the IPC or NPN
- The filename is the "master key" to access. (*Editor's note: The term "master key" is a somewhat obscure reference* to a series of television commercials aired by Data General in Australia in the early '80s.*)

A big difference between NPNs and IPCs is that with IPCs, a connection is not required to be able to pass information, while with NPNs, a connection between the two processes *must* exist before information can be interchanged. Please note that the connection is not of the same type as that used by IPCs. With NPNs, the connection is managed by Xodiac and is a virtual circuit between processes on the network.

Remote connections

To establish a connection between processes, the receiving process will issue a NACALL (network await call) on its local NPN file, while the sending process will issue a ?NCALL (network call) on the remote NPN. When the ?NCALL is made, the process that issued the ?NACALL will wake up, and either open the connection and accept the incoming call, or close the NPN, thereby refusing the call. From that point, the two processes can exchange data by using the ?NREAD and ?NWRITE facilities, until the connection is closed with ?NCLOSE. Assuming two hosts, by the name of FOO and BAR, with an NPN by the name FUBAR, the above would appear as:

Host FOO	Host BAR
1 connect to X25	connect to X25
2 ?NACALL on	:NET:FUBAR
3 ?NCALL	:NET:FOO\$:FUBAR
4 ?NREAD or ?NWRITE	?NWRITE or ?NREAD

more reads & writes until whenever . . . either host decides to

5 ?NCLOSE

repeat steps 2 through 5 until either host disconnects from X.25.

To make things even easier for the pro-

cesses to find each other, most of the programs that make use of such facilities use one common name, and an NPN exists on both machines, so that they can call each other. In the example above, if FOO tried to call BAR, the call would timeout, because there is no BAR task with an

?NACALL outstanding.

The butler did it!

To give an analogy, think of X.25 as your street. Connecting to X.25 shows that your house is on the street, and that you have a door. The ?NACALL tells you

AOS/VS. . .



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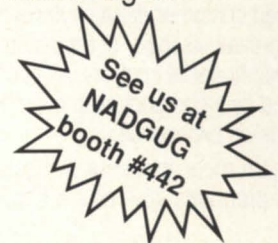
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butler to open the door when the bell rings. Outside, someone rings the bell. (They may have been ringing for a while, but only your butler can hear the bell; so until you wake him up, he won't answer the door.) The person ringing the bell has an option if the door is not opened imme-

diately by your butler: wait with a finger on the buzzer, or leave. The time spent waiting is determined by the caller (the time-out value was specified by the programmer).

Upon hearing the doorbell, the butler will open the door, see who it is, and let

you know the user identifier (a 16-bit field in the ?NCALL packet). At this point, you can tell your butler to either close the door, using ?NCLOSE, thereby refusing the caller, or let the caller into the house. By telling your butler that you want to ?NWRITE or ?NREAD, you are implicitly accepting the caller into your home. The caller won't go away until either one of you close the door. (Your butler, in the meantime, is just looking on. He was not told to do anything else.)

It is possible for someone else to try to ring your doorbell while you are talking to the first caller. Unless you have told your butler to go wait by the door (?NACALL again), the second caller will wait until the timeout expires.

It is also possible to have more than one door to your house, in which case you would have to tell your butler to listen for callers at each door. To distinguish which caller you are talking to, all conversations (from the ringing of the bell to the closing of the door) are referenced with a virtual circuit ID. The user identifier allows you to determine if the caller is a bill-collector, lost tourist, best friend, or computer salesperson, etc. It is possible that in your normal visits from each of the callers, you might have a different sequence to the conversation. You can determine which sequence you will use based upon who the caller is. (This allows one process to place several simultaneous calls to you posing as different people on each call.)

As shown, IPCs can be used by two (or more) processes to exchange information across the network. It is in this manner that network features such as RMA, RIA, RDA, NSA, and other processes communicate. Assuming that the processes agree upon the format of the data being passed, they will be communicating, and not just closing the door in each others' faces.

Next month, I'll probably discuss how to get X.25 to transfer a file for you, and then we'll get back to "normal" AOS/VS system concepts. 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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A complete listing of the NADGUG software library

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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. (Special thanks to Kevin Danzig for help with preparing the MV/2000 cartridges.) 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.

Please include a self-addressed envelope with sufficient return postage. In compliance with postal regulations, do not date the postage. Either disable the date printing completely, or set the date to "--" or zeros.

Big Brother

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

B.J.'s BBS contributions

This addition to the library consists of 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

This is the old RDOSScreen editor ported over to VS. 51 blocks.

DBCHECK

This program checks the open status of an INFOS file and examines the check-pointing status of a file. 230 blocks.

DUMpload

DUMpload is 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.

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

This is a Fortran 5 to Fortran 77 translator. 287 blocks.

Games

Games is a collection from various places. A new version of Conquest has been added as of April '89. 19,516 blocks.

Glossary

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

IMSLUTIL

This is 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

Kermit is a file-transfer protocol developed at Columbia University. Uses 9,328 blocks.

Logout

Another auto log-out system. 246 blocks.

Look

Look is used to view text files. It allows you to move forward and backward in a file. This program was donated by Data General. 438 blocks.

Macros

This is a collection of macros from various sources. 452 blocks.

MENUDIR

This is an initial user menu that can chain to other applications. It features a

password-control system. From the Fed SIG. 492 blocks.

Misc Kermit

An expanded version of AOS Kermit, 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

QHelp is 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

This is the Cobol standard entry screen featured in George Burns' article that appeared in the April 1988 issue of *Focus*. 385 blocks.

Softrans

This is a file-transfer protocol written in Fortran 77. It's used to communicate with proprietary PC communications packages. 496 blocks.

Spell

Can check the spelling of a word or spell-check a document. Submitted by Richard Kouzes. 5,163 blocks.

SWITCHES

SWITCHES is 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 recently revised the TEX software to include a command language. TEX is being distributed as shareware. At the end of 30 days, either remove it from your system or send the author a \$45 fee. 495 blocks.

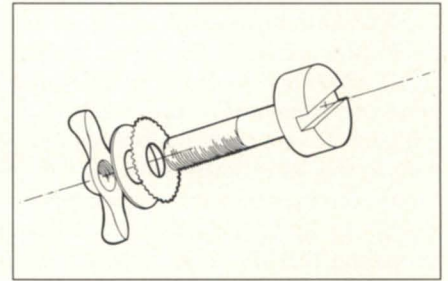
VT100KER

VT100KER is the VT100 emulator from John Grant. 1,135 blocks.

Xfer

Xfer is a tape-conversion utility. 653 blocks. Δ

Automating the program building process



by Pete Szaban • Special to Focus

We have developed a utility at Western New England College to assist us in automating the program building process when working under AOS/VS in a compiler language. It has a smaller learning curve than many commercial software engineering tools, and can be used across a variety of languages where the classic compile-and-link procedure is used to build programs.

When developing software, it is not uncommon to have source code that spans several files. These source files may also embed other include or header files. Building an executable program (.PR file) usually involves passing each source file through the compiler, then linking the resulting object module(s) (.OB files) together using a linker.

As programs get larger, more computer

resources are required by the compiler and linker, and the relationship between source files becomes more complex. Hard-coding compile and link commands in CLI macros automates the program building process, but can waste programmer and computer time compiling each source module whether it needs to be compiled or not.

We wanted to have the flexibility of CLI macros to build programs, but eliminate the problem of unconditionally compiling each source module. We also wanted the utility to work for programs written in any compiler/assembler-based language. The Unix operating system has a utility named "make" that does this (and more), but AOS/VS does not. Our solution consists of a CLI macro (Figure 1), and a small C program (Figure 2). The program is invoked by the macro, and the macro is invoked by a programmer-written script file. Before the utility can be understood, quick explanations of file dependency and time last modified (TLM) are in order.

To build an object file, we must have all the appropriate source and include files. Each object file is therefore dependent upon the existence of its independent source files. Similarly, to build the executable file, we must have previously built all the object files, or in other words, the executable file is dependent upon the existence of all the independent object files. To restate it briefly, the single de-

SYNOPSIS

Combining the flexibility of CLI macros with a small C program, Western New England College has developed a versatile tool for program building.

Figure 1: File '\$.CLI' macro to invoke the TLM program

```
comment Invoke tlm program if /? switch is
comment passed. Otherwise perform CLI
comment commands if string is empty.
comment This macro changes the CLI string.
[!neq,(%/??%),()]
  x/s tlm %-%
  [!neq,(%1%),([!str])]str/k[!end]
[!else]
  [!eq,([!str]),()]%-%[!end]
[!end]
```

pendent file can't be built, unless all of the independent files already exist.

Every time a source or include file is edited, and saved, AOS/VS updates that file's TLM to the current time. When that source file is compiled, or linked, the TLM of the resulting output file is updated. By examining the TLMs of the object file, and its dependent source and include file(s), a decision can be made as to whether or not compilation is required. If a source or include file was modified after the object file was created, the compiler should be invoked, otherwise compilation is not necessary. Since AOS/VS CLI does not currently have the capability to easily compare TLMs, we developed the C program in Figure 2.

When the program is executed, it is

given arguments corresponding to the pathnames of the dependent file, followed by the corresponding independent file(s). The dependent file *must* be the first argument. The order of the independent file(s) does not matter. The program simply compares the TLMs of all its arguments, then returns the name of the most recently modified file. If the dependent file can't be found, it is assumed to be very old. This is done to make sure that a new dependent file will be built. If one of the independent files can't be found in the current directory or on the CLI searchlist, it is impossible to build the dependent file. In this case, an error is returned.

The programmer will probably not invoke the program directly. In most cases, the CLI macro (Figure 1) will be used as

an interface to the program. The macro as shown performs two different functions, depending on the switches passed to it. In one case, the decision to build a new dependent file will be made. In the other case, CLI commands will be either skipped or processed, depending on the last decision made.

If the macro in Figure 1 is invoked with the "/?" switch, the C program in Figure 2 is executed. The macro then makes a decision as to whether or not it is necessary to build/rebuild the dependent file, and stores the result of that decision in the CLI STRING. The first macro argument will be assumed to designate the pathname of a dependent file. All succeeding arguments will be assumed to designate pathnames of independent files.

Figure 2: File TLM.C

```
# include <packets, filestatus.h>

/*
Western New England College
1215 Wilbraham Rd.
Springfield, Massachusetts 01119

Revision 01.00.00      July 7, 1987
tlm determines name of most recently modified
file from a list of file pathnames, and returns that
name as specified on the command line.

Use:
    x/s tlm file1,file2,file3,...,filen

This program is usually invoked from the
associated CLI macro:
    :UTIL:$CLI

Returns:
    Returns the name of the newest file from
the list of filenames to the CLI.

    This program was set up for use with the
$.cli CLI macro, for making a simple MAKE-like
utility. The first filename MUST be the name of
the dependent file. The other files are assumed to
be independent files. The order of the
independent files does not matter.
*/

/* Error Handler/Exit Routine */

void sysreturn( errorcode, string1, string2 )
int errorcode;
char *string1,
    *string2;
{
    int ac2 = $RFCF;
    char temp[ 80 ];
    /* The 2 Input Strings MUST Fit Into
    Here */
    /* Build The Return String */
    strcat( strcpy( &temp[ 0 ], string1 ),
            string2 );
    /* Check For An Error */
    if( errorcode ) ac2 |= ( $RFER |
        $RFEC );
    sys_return( errorcode, &temp[ 0 ],
        ac2 | strlen( &temp[ 0 ] ) );
} /* End Of sysreturn */

/* MAIN PROGRAM */

main( argc, argv )
int argc;
char **argv;
{
    struct StatName
    {
        P_FSTAT stat;
        char *name;
    } sn1,
    sn2,
    *curfileptr,
    *newfileptr;
    int error,
        filei,
        ac1 = ( 1 << 30 );
    /* Check For Bad # Arguments */
    if( --argc < 1 )
        sysreturn( 0, "Syntax: ", "x tlm
        dependent_file,independent_file(s)");
    /* Check If Dependent File Already Exists */

    newfileptr = &sn1;
    if( ( error = sys_fstat( ( newfileptr-
        >name = *( ++argv ), ac1,
        &newfileptr->stat ) ) )
        /* If Dependent File Doesn't Exist, Assume
        It Is Very Old */
        if( error == ERFDE )
            newfileptr->stat.stmh.long_time = 0;
        /* Handle Error Other Than File Does Not
        Exist */
        else if( error )
            sysreturn( error, "Can't Access Dependent
            File: ", newfileptr->name );
        /* Loop Through Dependent Files On
        Command Line Checking TLM's */
        for( curfileptr = &sn2; --argc; )
        {
            /* Get Status On Current File */
            if( ( error = sys_fstat( ( curfileptr-
                >name = *( ++argv ), ac1,
                &curfileptr->stat ) ) )
                sysreturn( error, "Can't Get File Info For: ",
                    curfileptr->name );
            /* Determine Which File Is Newer & Update
            Pointers Appropriately */
            if( newfileptr->stat.stmh.long_time <
                curfileptr->stat.stmh.long_time )
                curfileptr = ( curfileptr == &sn1 ) ?
                    ( ( newfileptr = &sn1 ), &sn2 ) :
                    ( ( newfileptr = &sn2 ), &sn1 );
        }
        /* Return Name Of Newest File In CLI
        STRING */
        sysreturn( 0, newfileptr->name, "" );
} /* End Of main */
```

Each argument should resolve to a file-name, and there should be at least two arguments: a dependent file, and at least one independent file.

When the macro in Figure 1 is invoked with no switches, the macro arguments should correspond to a CLI command. If the last decision made was to rebuild a dependent file, that CLI command will be processed. If the decision indicated that rebuilding was not necessary, the CLI command will not be performed. Be sure to invoke the macro with the "/?" switch *first*, so that a decision can be made *before* processing any CLI commands. If the macro is initially invoked without this switch, the results are random, depending on the contents of the CLI string.

The program in Figure 2 was written under Data General C Revision 4.00, and can be compiled from CLI by adding the C directory to the searchlist, and entering the following command:

```
) SEARCHLIST {your C directory name}
[!SEARCHLIST]
) CC/LINK TLM
```

We place the macro from Figure 1 and the compiled C program in the ":UTIL" directory, and set the ACLs so that all users are able to access them:

```
) SUPERUSER,ON
*) MOVE/V,:UTIL,TLM.<PR,ST>,$.CLI
*) ACL,:UTIL:TLM.(PR,ST),+,RE
*) ACL,:UTIL:$.CLI,+,RE
*) SUPERUSER,OFF
```

All the pieces of the utility have now been presented. It is now just a matter of putting everything together. Several examples are outlined below:

Example 1: The simplest case

The simplest case involves writing a script file to build a program (Fortran is used in this example) from a source file named "MAINPG.F77." The script file is shown in Figure 3 (page 92).

The first line of the script file invokes the \$.CLI macro. The "/?" switch is used to indicate that a build/no-build decision is to be made. The utility first gets the TLM of the dependent file "MAINPG.OB." (If the file can't be found, it is assumed to be very old.) The TLM of the independent file "MAINPG.F77" is compared to the TLM of the dependent file "MAINPG.OB." If "MAINPG.F77" was modified AFTER "MAINPG.OB.," it

is necessary to rebuild "MAINPG.OB." Otherwise, "MAINPG.OB" is up to date and does not need to be rebuilt. The result of this decision is stored in the CLI STRING. If the dependent file "MAINPG.F77" could not be found, an error would be returned, since it is impossible to build a dependent file without all its independent files (how could you compile a program without first having the program?).

The second line of Figure 3 passes the CLI commands necessary to rebuild the dependent file to the \$.CLI macro. In this case, it is simply a compile command. The compile command will either be passed to CLI or skipped, based on the result of the test performed on the first line.

The third line of Figure 3 performs a test similar to the one on the first line. The executable file "MAINPG.PR" is rebuilt based on a comparison of the TLMs of "MAINPG.PR" and "MAINPG.OB." Again, if the independent file "MAINPG.OB" was modified *after* the dependent file "MAINPG.PR," it will be necessary to rebuild a new dependent file: "MAINPG.PR." If the independent file "MAINPG.OB" does not exist, the compile probably failed. An error will be returned since it is not possible to build the program without all of its object modules. Do *not* rely upon an error message being displayed whenever a compile or link fails, however; compile and link operations usually fail, leaving old or incomplete files.

The last line of Figure 3 passes the CLI command necessary to build the dependent file from the independent file; in this case, simply an F77LINK command. This link command will only be executed if deemed necessary by the result of the test on the third line.

In general, script file lines beginning with a "\$" will be passed to the CLI or skipped, based on the result of the previous TLM test. TLM tests are performed on script file lines beginning with "\$/?." Notice that the order of the lines in the script file is extremely important! The test *must* be performed *before* the lines containing the CLI commands. Also, note that the object files must be built before the program file.

Example 2: Fixing a few pitfalls

Example 1 assumed a few things that

might not be true. The programmer may wish to add switches to the compile or link. It may become necessary to change the searchlist for access to different libraries. The \$.CLI macro has the side-effect of modifying the CLI STRING. If a link or compile terminates abnormally, scratch files sometimes remain. Figure 4 (page 92) shows a modified version of the script file from Example 1 that takes some of these things into account.

The first three lines of the script file in Figure 4 are unconditionally passed to CLI whenever the script is invoked. To preserve the current CLI string, a PUSH command has been added. The PROMPT POP command restores the CLI environment level, should the script file terminate abnormally. The "DELETE,?.TMP" command cleans up unwanted temporary files that may have been left from previous operations (some developers may not want this command, so use your own judgement). The SEARCHLIST command adds the Fortran directory to the searchlist (your system manager may not have placed the F77 directory in :UTIL).

The lines at the end of Figure 4 are unconditionally passed to CLI whenever the program build does not result in a fatal error (not necessarily when the program has been successfully built). The pop command at the end of the figure resets the environment (namely the STRING and SEARCHLIST) to the way it was before the script was invoked.

The switch enhancements made to the script file body allow for the /DEBUG switch (for SWAT), and the /OPT switch (for program optimization). To build the program with SWAT, use the CLI command:

```
) MAINPG.MAKE/DEBUG.
```

To build the program without SWAT, use:

```
) MAINPG.MAKE.
```

To compile with optimization, use:

```
) MAINPG.MAKE/OPT.
```

If the script file in Figure 4 is invoked twice, without modifying or deleting any files, no compiles or links will take place. The compile and link can be forced by editing and saving the independent file MAINPG.F77, or deleting the object file



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MAINPG.OB. A link only can be forced by deleting the MAINPG.PR file.

Example 3: Multiple modules

The examples shown up to this point have been trivial. It might be just as easy to key in the commands manually as to develop a script file. In this example, assume that we want to build a program named MAINPG.PR that consists of Fortran modules MAINPG.F77 and SUB1.F77, the assembler module SUB2.ASM, and the C module SUB3.C. MAINPG.F77 and SUB1.F77 have the include files QSYM.F77.IN and COMPG.CM. The SUB2.ASM has an include file :UTIL:PARU.32.SR. The SUB3.C includes the file PG.H.

The idea is the same, but the script file shown in Figure 5 has become a little more complex. The dependent files that contain include files list those include files as independent files. Notice that the order of the independent files is not important as long as the dependent file is listed first. Both Fortran routines include the same two files, but they are listed in different orders.

When combining multiple high-level languages, it will usually be necessary to amend the link command line with libraries and switches. As words of warning, don't count on the TLM of files supplied by Data General (e.g. PARU.32.SR). We usually include these files for completeness of documentation, but never rely upon their TLM. Also, watch for include files that have their own include files. These nested include files should be added to the list of independent files, or there is no guarantee that the program will be up to date.

When working with many modules, it is usually more convenient to use the LFE utility, and to combine the modules into one library. By calling the library a dependent file, and all object files independent files, it is possible to use this utility to rebuild libraries as well as programs. Be careful when doing this, however, as LFE updates the TLM of a library!

Several compromises were made in putting this package together. There is still quite a bit of overhead in repeatedly starting a 32-bit C program (wouldn't it be great if Data General would make a [!DEPENDENCE . . .] pseudo-macro in CLI?). Some alternatives we have considered include patching the XYZZY com-

Figure 3: File 'MAINPG.MAKE.CLI' Script file for MAINPG.PR

```
$/? MAINPG.OB MAINPG.F77
$ F77 MAINPG

$/? MAINPG.PR MAINPG.OB
$ F77LINK MAINPG
```

Figure 4: Modified version of file MAINPG.MAKE.CLI

```
PUSH;PROMPT POP
  DELETE/1=IGNORE/2=IGNORE,?.TMP
;COMMENT NO SPACES IN THIS LINE
SEARCHLIST :UTIL:F77 [!SEA]

$/? MAINPG.OB MAINPG.F77
$ F77%//% MAINPG

$/? MAINPG.PR MAINPG.OB
$ F77LINK%\OPT% MAINPG

POP
```

Figure 5: Multi-module version of file MAINPG.MAKE.CLI

```
PUSH;PROMPT POP
  DELETE,?.TMP
;COMMENT NO SPACES IN THIS LINE PLEASE!
SEARCHLIST :UTIL:<C,F77,LANG_RT> [!SEA]

$/? MAINPG.OB MAINPG.F77 COMPG.CM
QSYM.F77.IN
$ F77%//% MAINPG

$/? SUB1.OB SUB1.F77 QSYM.F77.IN
COMPG.CM
$ F77%//% SUB1

$/? SUB2.OB SUB2.ASM :UTIL:PARU.32.SR
$ X MASM SUB2.ASM

$/? SUB3.OB SUB3.C PG.H
$ cc%//% sub3

$/? MAINPG.PR MAINPG.OB SUB1.OB
SUB2.OB SUB3.OB
$ X LINK%\OPT% MAINPG SUB1 SUB2
SUB3

POP
```

mand of CLI to replace the C program, or at least rewriting the C program in 16-bit assembler.

We have noted four main deficiencies in the TLM program as presented here. First of all, the present program can't be

used to perform the equivalent of the Unix touch command. The Unix touch command accepts filename templates, and sets the TLM on the specified files to the current time. This is handy for "forcing" selected modules to be rebuilt. Secondly, there is no "force" option to mandate that the entire rebuilding process take place. Third, the original TLM of a library is not saved. Finally, the only way to be sure the program was built properly is to examine the CLI output, looking for compile and link errors. We considered the addition of options to handle these cases, but felt that it would only add complexity.

The work-arounds we have used for these problems usually involve making working copies of libraries to preserve the original library TLM (this also implies the double-edged sword of allowing others to access the library while a copy is being rebuilt), or deletion of a few key dependent object files. Deletion of all dependent files will, of course, result in the rebuilding entirely.

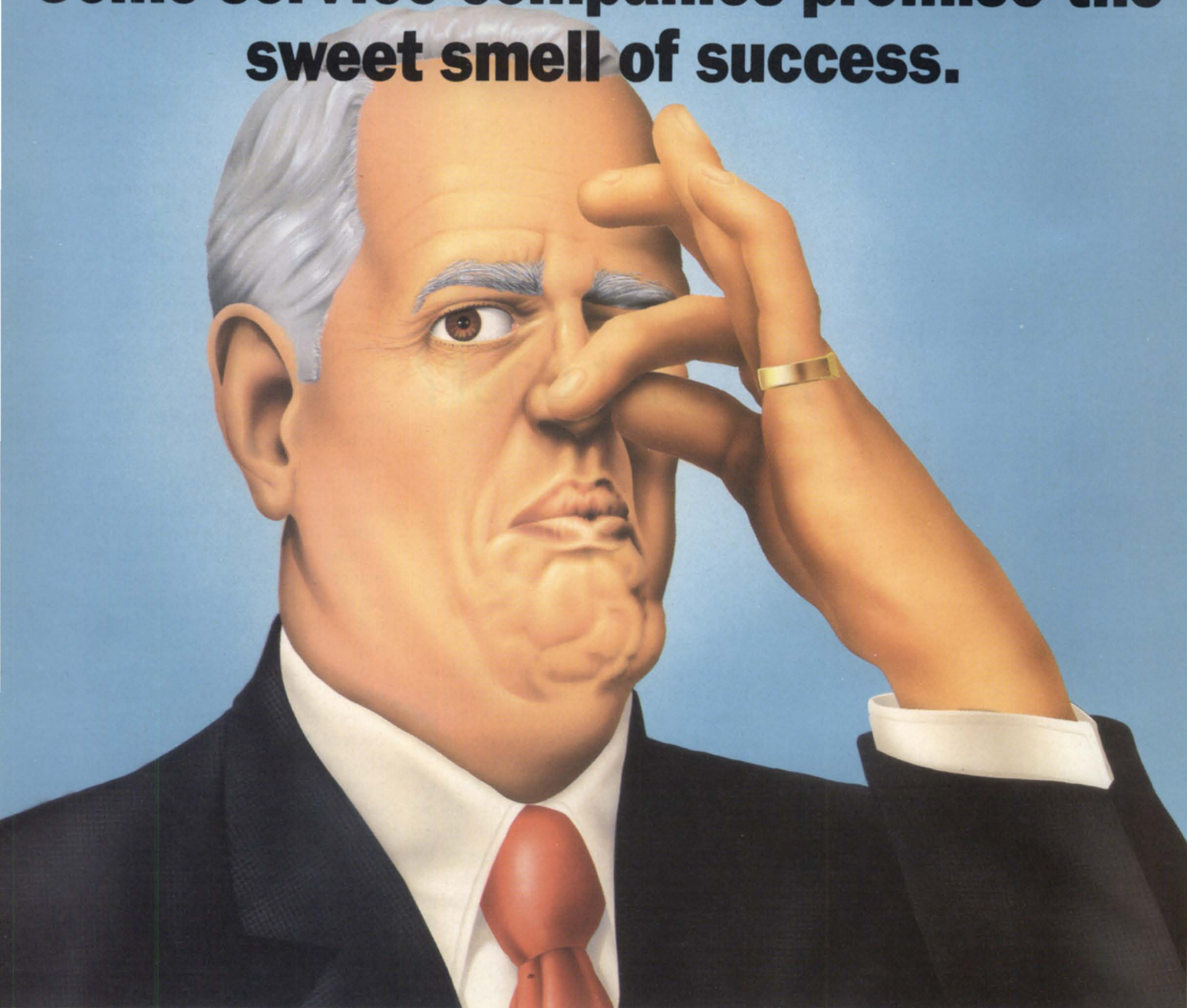
We wanted to keep as much of the utility as possible in CLI macros in order to have the features of the CLI. C was selected for the TLM comparison program in order to get the utility quickly operational. We opted for a single macro with a switch to select each function, over the creation of several separate macros. This reduces the number of files that need to be maintained, and keeps the :UTIL directory less cluttered.

In our environment, it is difficult to justify keeping large object and executable files around. These files eat up disk space, and are only used a few weeks per year. Without the automation this utility affords, someone would have to annually determine file dependencies for software developed by students who have long since graduated.

This utility is a helpful tool when the script files are kept up to date. We have used variations of it to automate everything from building simple programs to multi-tasking multi-ring programs with shared libraries to updating the installation of software. Δ

Pete Szaban is technical programmer at Western New England College in Springfield, Massachusetts, and can be reached at 413 /782-1239

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SYNOPSIS

AOS/VS II tuning offers hope for improvement in disk I/O, but increase in CPU consumption is here to stay.

Last month's mini-analysis of the slowdown of directory-intensive operations under AOS/VS II compared to AOS/VS elicited some comments from the AOS/VS II group at DG.

First, they felt that the use of the CLI DUMP command on zero-length files was unfair in that it failed to reflect the offsetting effect of the increased efficiency of AOS/VS II's New File System when it comes to doing bulk I/O on files. That's true, but in fact I did not intend to measure the speed of bulk I/O; rather, I was concentrating on the increased cost of directory I/O operations. To that end I used the DUMP of the directory containing 1,000 empty files as the most convenient way to force the operating system to deal with a series of typical directory I/O operations; specifically ?GNFN/?FSTAT/?GOPEN/?CLOSE. Also, because I wanted to measure just the operating system work with minimal user program involvement, I used CLI's DUMP command instead of DUMP_II. Just getting DUMP_II initialized involves hundreds of page faults and a not inconsequential amount of system ring CPU time expenditure, in spite of what DUMP_II claims in its output statistics. Maybe in some future column I'll analyze the beneficial effects of AOS/VS II bulk I/O vs. AOS/VS.

Secondly, the AOS/VS II group asked me to point out that the apparent 3,500 percent increase in physical disk I/O during the directory delete was really unfair because the actual percentage is a function of how many files the directory contains (i.e., a directory with only 500 files would have only experienced an increase of about 1,750 percent). Yep, that's true. Also, they pointed out that directory deletions are fully cached under AOS/VS, but only partially cached under AOS/VS II, and that caching this sort of operation under AOS/VS II does not appear to be out of the question and will probably be accomplished at some point during the inevitable tuning which AOS/VS II is going to undergo in the near future as more operational data is collected. That's good news, but I have to wonder how this kind of basic performance difference didn't get spotted during the years of AOS/VS II alpha testing, not to mention the months of beta testing.

When I queried the AOS/VS II group on the chance of the significantly increased system CPU consumption being decreased, the response was less hopeful. However, they did point out that the average system call times recorded under AOS/VS II (using the SCTIM patch) are significantly greater than those recorded under AOS/VS, because AOS/VS II does a better job of charging the CPU time associated with disk I/O to the particular system call that caused it to be expended. That seems to be true, but a lot of other system calls not associated with disk I/O also had significantly higher values for CPU time. To demonstrate this, I recently ran the system call timing report program from :PERFMGR and :PERFMGR II on two similarly configured MV/4000 systems, one running AOS/VS 7.65 and the other running AOS/VS II 1.10. The results are shown in Figure 1.

So, I guess the net-net here is that there's hope of some improvement in the physical disk I/O situation with respect to directory I/O, but some increase in system CPU consumption is here to stay. Start saving your shekels for an MV/99000 Mod XVI and some faster disk drives . . .

:COBOL:DECOMMIT

Back in my System Managers Log col-

umn of June '87, on the subject of shared libraries, I outlined a wonderful facility for packaging all those site-specific sub-routines written in Cobol (or selected other languages like PL/I and Fortran) as an inner-ring .PR file so that application programs could ringload the .PR file at execution time and save significant amounts of working set size and significant amounts of disk, due to reduced application program .PR file size. In our case, every Cobol program in the shop ringloads something called OSL6.PR, which consists of just under two megabytes of code. Except for a single assembly language routine, all of the code is Cobol.

Many people called or wrote as a result of that column and recounted dramatic decreases in working set sizes and .PR file sizes, but now it appears that this facility may go away.

I logged onto OIS the other day and was browsing through the Cobol section when I ran across a bulletin to the effect that the Cobol group in software development never intended for Cobol to be used in inner rings, and DG can't guarantee that any inner ring Cobol code that works now will continue to work in the future. Too late, guys. There are a bunch of us out here already using that "feature" like crazy and there'd be hell to pay if it started not working. How is it that it works so well currently?

Anyway, I'd appreciate it if those of you out there using Cobol in inner rings would call me or drop me a line so I can put together an environmental impact statement for the DG programming department. If enough of us don't stand up and get counted on this issue, then by the time that inner ring Cobol actually quits working, it will be too late to complain.

:AOS_VS:7.65

Several people have called to ask about erratic IAC output on AOS/VS 7.65. The symptom is that occasionally IAC output will simply cease for several seconds.

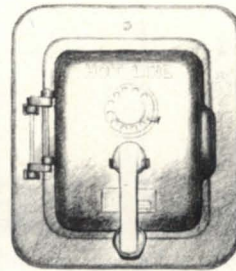
At first, I didn't think that there was a problem because I hadn't seen it on our IACs. Then I noticed something peculiar about the output on our master consoles when we upgraded to 7.65. When TYPEing a file on the master console (a 9600 baud D412) the output mostly goes full blast, but then it occasionally appears to slow to about 2400 baud for seconds at a

time. I noticed this same symptom on the master console of our beta version of AOS/VS II back in January (rev 1.00) and wrote it off as a peculiarity of AOS/VS II and NFS. When the same symptom showed up on the master consoles of AOS/VS 7.65, I decided to see if the IACs were affected by the master console I/O quirk. Sure enough, TYPEing a file on the master console causes all IAC I/O to cease

for two or three seconds every ten or fifteen seconds at about the same time that the master console slows down.

The problem has all the earmarks of some sloppy interrupt mask management, so I called both the AOS/VS and AOS/VS II groups and related the problem. Both groups promised to pursue it, but that was just a few days ago, so I don't have any resolution news yet. I'll let you

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know as soon as something happens. In the meantime, try to avoid using the master console for anything other than the usual EXEC message traffic. If other use is unavoidable, then you might try lowering the master console baud rate to 2400 baud or less to minimize the effect.

:NAWLINS

This issue of *Focus* is being distributed

Figure 1: A comparison of MV/4000 system call times

System Call	Time in ms.		%change
	VS I	VS II	
TMSG	.059	.350	+493%
KWAIT	.090	.370	+311%
INTWT	.096	.370	+285%
GSHTPT	.112	.390	+248%
LOGEV	.116	.640	+452%
SUPRO	.139	.420	+202%
ITIME	.139	.420	+202%
GTOD	.143	.430	+201%
SINFO	.143	.380	+166%
MEM	.149	.590	+296%
DVSTT	.151	.460	+205%
SYSPR	.158	.430	+172%
SUSER	.174	.520	+199%
VALAD	.182	.460	+153%
OPREC	.200	.480	+140%
BNAME	.241	16.910	+6917%
HNAME	.268	1.950	+628%
VCUST	.270	.540	+100%
DADID	.272	.550	+102%
GDAY	.274	.420	+53%
WDELA	.299	.560	+87%
SGNL	.326	.700	+115%
PIDS	.387	.670	+73%
UNWIR	.428	.630	+47%
RUNTM	.429	.710	+66%
DCON	.431	.670	+55%
PNAME	.486	.860	+77%
CON	.548	.840	+53%
TABT	.552	.590	+7%
IREC	.563	1.130	+101%
ALLOC	.632	34.810	+5408%
MEMI	.680	.950	+40%
RPAGE	.736	.980	+33%
PMTPF	.743	.850	+14%
XPSTA	.758	1.150	+52%
FUNLO	.934	1.350	+45%
DACL	.947	2.240	+137%
GPRNM	.970	2.790	+188%
WIRE	1.152	.960	-16%
KHIST	1.370	1.620	+18%
UPDAT	1.391	8.220	+491%
RDB	1.433	7.060	+393%
PGFLT	1.438	3.800	+164%
MBFU	1.491	1.830	+23%
PSTAT	1.508	1.780	+18%

at NADGUG's Conference '89 in Nawlins, so a lot of you are going to be reading this while laying around in your hotel room trying to make the tough decision about which hospitality suites are worth enduring for a handful of hors d'oeuvres and a couple of beers. Well, put a big black X over the calendar in the space corresponding to 22:00 Tuesday night. That's when Sleaze '89 hits the bricks for

System Call	Time in ms.		%change
	VS I	VS II	
WRB	1.686	11.290	+570%
GCLOS	1.783	8.980	+404%
SOPPF	1.792	4.290	+139%
MBFC	1.803	2.320	+29%
MBTC	1.807	2.410	+33%
GPID	1.970	2.000	+2%
FLOCK	2.021	1.510	-24%
BLKIO	2.108	13.080	+520%
GNFN	2.307	14.740	+539%
SPAGE	2.579	5.420	+110%
IS.R	2.671	3.400	+27%
ISEND	2.917	3.660	+25%
MPHIS	3.026	3.230	+7%
DIR	3.421	12.600	+268%
OPRS	3.606	3.880	+8%
RDUDA	3.722	17.500	+370%
RNAME	3.792	22.640	+497%
ILKUP	3.820	16.690	+337%
OPSEN	4.100	4.470	+9%
ESFF	4.353	13.470	+209%
WRUDA	5.126	22.190	+333%
SSHPT	6.403	4.810	-24%
GTACL	6.531	24.520	+275%
SATR	6.931	27.690	+300%
GFNAM	7.878	38.040	+383%
GACL	8.088	19.270	+138%
FSTAT	8.355	21.610	+159%
GOPEN	8.661	23.590	+172%
GLINK	8.666	29.850	+244%
GNAME	8.731	18.240	+109%
DELET	8.991	81.120	+802%
SCLOS	10.663	18.350	+72%
SOPEN	11.981	27.740	+132%
CRUDA	13.042	69.960	+436%
SACL	20.975	33.240	+58%
SLIST	26.140	98.440	+277%
RENAM	27.241	53.080	+95%
RINGL	31.322	53.730	+72%
GLIST	33.643	6.830	-79%
CREAT	42.429	45.440	+7%
GPROC	68.478	114.990	+68%

Avg percent change: +313%

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8811.LOG	306688	Crunched	75%	77264
BILLING.LOG	532000	Crunched	94%	35252
DISCO.PR	110592	Crunched	49%	56489
DISCO.ST	18432	Crunched	74%	4892
EMPLOYME	5793	Crunched	45%	3221
KEY.EMP	9747	Crunched	46%	5303
Total	7	10334433	81%	99192

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a little flesh benchmarking in real time.

Several people have asked what is the algorithm for determining which night we do the Sleaze Tour. That's easy; it's always the night before the NADGUG business meeting. Going on the Sleaze Tour involves sleeping late the next morning, so you have to decide which is more important; the Sleaze Tour, or the give-away at the business meeting. This year the business meeting is followed immediately by The Spectacle, so that means that we can sleep in even later than we did last year.

What's The Spectacle, you say? Well, once upon a time, every NADGUG Conference included a session, usually the last one on Thursday, where selected members of DG's senior management (the Christians) were exposed to a room filled with snarling users (the Lions) who pummeled them with embarrassing questions, some of which had to do with broken promises from the previous year's Spectacle (ANSI terminal support was a favorite). Well, apparently a few of the more



thin skinned members of DG's senior management decided a couple of years ago that The Spectacle, although the highlight of the conference as far as the attendees were concerned, was a bit too tacky for persons of their stature to endure, in spite of the freebie junket involved. So, last year we saw the introduction of a very carefully staged confrontation between some pre-tamed Lions in the form of the NADGUG Advisory Panel, and some awake, but hardly trembling, Christians in the form of DG's senior management du jour. On a scale of 1 to Yawn the session got a solid 9.99.

I have no expectation that this year's Spectacle will be any different, so that means we can all sleep in until 1 p.m. on the day after the Sleaze Tour, and then mosey on down to the AOS/VS II system manager's panel moderated by yours truly.

Finally, I, for one, will miss having Frank Keaney at this year's Conference. Any members of DG's senior management who are willing to put their AMEX

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card at the hotel lobby bar every night this year in place of Frank's AMEX card will be welcomed with open arms. We'll laugh at all of your jokes, even if we've heard them before. We might even place an order or two for hardware. Or at least promise to.

:NEXT_MONTH

Next month I'll announce the winner of the UPDATE.CLI Memorial Trophy, which is being awarded at the NADGUG conference to the submitter of the piece of source code that most exemplifies the slogan "MIPS The Breakfast of Champions."

I'll also be announcing the award of the 1st Annual :SYSMGR Tuning Award to a certain DG software development group. The trophy is so awesome (tacky?) that I predict other groups will be falling all over themselves speeding up their products in order to qualify for next year's trophy.

Finally, for the last few months I've been working on a column surveying the new world of high speed modems that use the Microcom Networking Protocols to achieve speeds of up to 19,200 baud on voice grade lines. I'm also going to cover how to get them to work with AOS/VS II, but I've had incredible problems obtaining some technical data from DG Direct. As soon as I get the info, I will publish the column. For now, all I can tell you is that we currently have a pair of Microcom AX9624C modems (the same ones that are sold by DG Direct) on our MV/4000s working with the asynch port speed set at a fixed rate 19,200 baud, and with the modems accepting calls at any call-in modem speed up to 9600 baud. Only one minor problem remains unresolved.

Stay tuned, sports fans. 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/AUTO-BAUD) or 415/550-1454 (voice).

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The latest products for DG systems

New PC workstations from DG promote distributed computing strategy

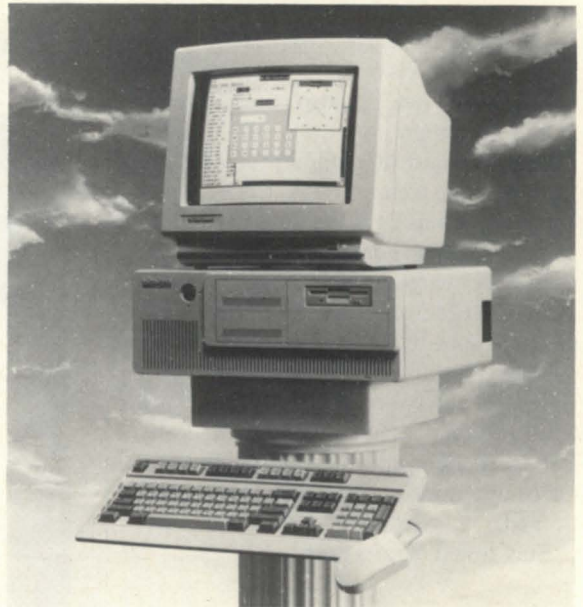
Westboro—DG has expanded its Dasher series with the introduction of three new models—Dasher/286-12c, Dasher/386sx, and Dasher/386-25. The PC-compatible workstations run MS-DOS and offer a range of performance, configurability, and footprint features.

On the low end is the Dasher/286-12c, a compact 80286-based PC workstation featuring a 12-inch wide, 15.5-inch deep, and 3.75-inch high chassis. It includes a 3.5-inch, 1.44 MB diskette drive; two serial ports and one parallel port; built-in VGA video support; AT-interface disk adapters; single diskette controller; and two 16-bit I/O slots available for add-on cards such as fax, modem, and LAN. An internal 3.5-inch, 40 MB disk drive is optional.

Dasher/386sx offers the size and lower cost of an 80286-based computer, with the performance and growth potential of



Dasher/286-12c



Dasher/386sx

an 80386-based system, DG says. The mid-size PC workstation consists of a 16 MHz Intel 386sx microprocessor, a 40 MB internal disk drive, 2 MB of memory that can expand up to 8 MB, a VGA controller, a 1.44 MB diskette, and a keyboard. A total storage capacity of 200 MB can be achieved using two internal 100 MB drives.

Dasher/386-25, the high-end PC workstation based on the 25-MHz Intel 80386

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microprocessor, functions as both a single-user and multi-user system. The base system includes a 156 MB ESDI disk drive, two MB of memory (expandable to eight MB using the system board, and up to 16 MB using a 32-bit memory card), a 5.25-inch diskette drive, VGA controller, keyboard, and MS-DOS 3.3. In each system, there is a total of five half-height, 5.25-inch storage bays and eight I/O slots, with a 150 MB cartridge tape also available for tape backup.

All three systems support DG/PC*1 personal computer networking software, CEO office automation software, and other components of Data General's distributed computing strategy. Prices for the 286-12c, 386sx, and 386-25 systems, all including hard disk, are \$2,995, \$3,795, and \$8,495, respectively. All systems are available 30 days after receipt of order.

Data General Corporation, 3400 Computer Drive, Westboro, MA 01580; 508/898-4051.

△

Circle 99 on reader service card.

AVX-30 X-Window display station marks the alternative spot

Westboro—DG's new AVX-30 X-Window display station, designed to complement the Aviiion family of 88000 RISC-based Unix workstations, acts as an alternative for applications that require workstation-quality graphics resolution and windowing capabilities, but not the local compute power of a workstation or high-end PC.

With the X-Window system interface standard developed at M.I.T., the AVX-30 can access timeshared applications across a local area network of hosts and servers from multiple vendors, with choices including OSF/Motif, Hewlett Packard's NewWave, and IBM's Presentation Manager.

The system supports ethernet (through TCP/IP networking protocol); built-in Telnet support lets users access hosts that



The AVX-30 X-Window display station

do not support the X-Window system standard. In addition, a built-in VT100 terminal emulator allows serial access to



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one host while maintaining its LAN connections. With the AVX-30, users can match an application to the most appropriate compute server on the LAN.

In contrast to a PC or workstation, the AVX-30 maintains centralized MIS control over any data stored on a secure server. It combines a 12.5 MHz Motorola 68000 with display video RAM (VRAM) and a graphics co-processor, and up to 4.5 MB of zero wait-state system RAM.

The system features a 16-inch square screen, overscan capability (eliminates the black border on black-on-white text), and a 1024 x 1024 pixel, 105 dot-per-inch, bit-mapped display. The monochrome monitor displays nearly two full pages of text, providing room for several simultaneous windows.

Starting at \$2,795 (including keyboard and three-button optical mouse), a quarter of the price of more traditional solutions, the AVX-30 X-Window display station is immediately available from DG.

Data General Corporation, 3400 Computer Drive, Westboro, MA 01580; 508/898-4051. △

Circle 100 on reader service card.

Aviion Software Services to support RISC-based products

Westboro—Data General demonstrated its commitment to provide a complete line of services and support for Aviion customers with the announcement of Aviion Software Services.

These services provide end-users and VARs with technical service and support options for a range of Aviion software platforms, including DG/UX, Data General's Unix operating system designed for RISC machines.

Aviion Software Services' four main offerings allow customers to choose from a flexible menu of service and support options tailorable to a variety of Aviion configurations including workstation, server, and multi-user packages.

The Integrated Service Program offers low software and service prices with the purchase of both hardware and software service. It includes on-line information service, and software/documentation updates, as well as phone support and remote call assistance from DG's Customer Service Center in Norcross, GA.

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Traditional Software Services include DG's premium Support Plus Service that includes toll-free telephone support, remote software support, on-line information service, and automatic distribution of revisions and updates of software and documentation. The full line of software services is similar to that which Data General has offered AOS/VS system users for many years.

DG/UX Start-up Service assists new Unix users in learning how to use their Aviiion systems. This single-price offering incorporates a custom systems engineering DG/UX consulting program, Unix computer-based training, and Unix documentation. It is provided on-site and scheduled at the customer's convenience. The basic two-day program is priced at \$3,320. A three-day program provides

additional time to customize the user needs and environment.

DG/UX Technical Consulting Service, targeted at VARs and technical users, includes two days of technical consultation tailored to the user's environment. This service incorporates high-level technical consultation in the areas of performance, device drivers, porting issues, training, and documentation. The basic two-day service costs \$3,700. A three-day program includes customized technical consultation.

Both the DG/UX Start-up Service and the DG/UX Technical Consulting Service are delivered by a special core of systems engineers who have significant experience with Unix systems. Data General also offers a range of programs to assist customers in porting their application software to Aviiion systems.

Data General Corporation, 3400 Computer Dr., Westboro, MA, 01580; 508/366-8911. Δ

Circle 101 on reader service card.

Revisions, revisions...

Westboro—A new revision of the MS-DOS ICobol programming language is available from DG. It features complete program and file compatibility with ICobol applications running on Data General's AOS/VS and DG/RDOS operating systems.

Additionally, DG has announced Revision 2.0.1 of the 386ix operating system from Interactive Systems Corporation, which now supports the TCP/IP communications protocol. TCP/IP lets PC workstations running 386/ix communicate with Data General MV family and 88000 RISC-based Aviiion systems. Xenix-compatible, Rev 2.0.1 has been enhanced for international use and improved in its performance capabilities.

Data General Corporation, 3400 Computer Drive, Westboro, MA 01580; 508/898-4051. Δ

Circle 102 on reader service card.

Cognos links Powerhouse and 20/20

Ottawa—Cognos Incorporated has begun shipping its 20/20 Database Connection, which supports Data General's native file systems, for DG's MV family of minicomputers. Providing a seamless bridge between 20/20 and the Power-

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Ad INDEX

Company	PG#	RS#	Company	PG#	RS#
Ames Sciences, Inc.	102	1	Interscience Computer Corporation	68	56
Amnet, Inc.	101	2	Jacobsen & Associates, Inc.	86	57
AMR	103	3	Language Processors, Inc.	69	58
Asset Remarketing Corporation	17	4	Lions Gate Software	97	59
BASIX Development Group	99	5	MAXON Computer Systems Incorporated	61	60
BL Associates	4 & 5	6	MAXON Computer Systems Incorporated	78	61
Catalina Computers, Inc.	72	7	MAXON Computer Systems Incorporated	82	62
Clafin & Clayton Inc.	39	8	McIntyre's Mini-Computer Sales Group, Inc.	77	63
Coastal Computer Services	71	9	MegaTape Corporation	31	64
Cognos	14 & 15	10	Minitab Statistical Software	107	-
Colorado Data General Users Group	65	11	NADGUG	38	-
Communications Research Group	73	12	NADGUG Bulletin Board	107	-
Compuplan International, Inc.	40	13	NADGUG Regional Interest Group	39	65
CompuTek Ltd.	69	14	NPA Systems, Inc.	34	66
Computer Arts	19	15	Oracle Corporation	11	67
Computer Arts	107	-	Program Systems, Inc.	102	68
Computer Engineering Associates, Inc.	75	16	Rational Data Systems	98	69
Computer Products & Repair, Inc.	91	97	Rave Computer Association, Inc.	13	70
Computer Systems Remarketing Corp.	102	17	Rhintek, Inc.	35	71
Computer Training Associates, Inc.	69	18	Robert Reese & Associates, Inc.	71	72
Concept Automation, Inc.	44	19	Robson & Deakin Ltd.	103	73
Cybertek Software, Inc.	C2	20	Sabra Systems, Inc.	84	95
Data Assurance Corporation	8	21	SAS Institute Inc.	18	-
Data Bank Associates, Inc.	97	22	SCIP	1	74
Data General Continuing Products Division	C3	23	Security Computer Sales	48	75
Data General Corporation	3	-	Spectra Logic	25	76
Data General Customer Service Division	27	24	Synergistic Software Company Ltd.	69	77
Data General Direct	7	25	Sysgen Data Ltd.	96	78
Data Investors Corporation	83	26	:SYSMGR Bulletin Board	107	-
DataLynx	63	27	:SYSMGR, a division of B.J. Inc.	37	79
DataLynx	85	28	:SYSMGR, a division of B.J. Inc.	71	80
DataPlus	79	29	3CI	58	81
Dataram Corporation	59	30	Threshold, Inc.	57	82
Dataram Corporation	59	31	Transoft Limited	23	83
Dataram Corporation	59	32	US&T	33	84
Dataram Corporation	59	33	Vantage Software, Inc.	65	85
Dataram Corporation	59	34	Verdugo Computers, Inc.	9	86
Dataram Corporation	59	35	Viking Software Services	67	87
Delphi Data	39	36	Wild Hare Computer Systems Inc.	43	88
Design Data Systems	54	37	Wild Hare Computer Systems Inc.	45	89
Design Data Systems	55	38	Wizard Systems	71	90
Digital Dynamics Inc.	50	39	WordPerfect Corporation	29	91
DMS Systems, Inc.	47	40	Zanthe Systems	96	92
DMS Systems, Inc.	49	41	Zetaco	C4	93
DMS Systems, Inc.	51	42	Zortec, Inc.	81	94
Eagle Software, Inc.	16	43			
Eagle Software, Inc.	52 & 53	45			
Essex Computer Service, Inc.	93	46			
Fast Track Systems, Inc.	95	47			
Flying Point Software	41	48			
Grumman Systems Support Corporation	62	49			
Hanson Data Systems Inc.	99	50			
HBI Business Systems	10	51			
Indocomp Systems, Inc.	74	52			
Infodex	21	53			
Interface Electronics	105	54			
International Computing Systems	30	55			
International Computing Systems	104	96			

PRODUCTS AND SERVICES

Company	PG#	RS#
Cognos Incorporated	104	98
Data General	101	99
Data General	102	100
Data General	103	101
Data General	104	102
Data General	107	103
Nanosecond Systems, Inc.	107	104
Threshold, Inc.	107	105

house fourth generation language, and enabling users to retrieve information directly from a Powerhouse application into a 20/20 spreadsheet, the product is an extension to 20/20, Access Technology's spreadsheet package for multi-user computers.

Several customized support features have been developed specifically for Powerhouse users. These include activity logging, support of Powerhouse Quiz query language, support for data base management system-specific features (like Powerhouse subfiles and data formatting), the use of named queries to allow users unfamiliar with Powerhouse to use the spreadsheet as a data base reporting medium, and support for data bases and file types, including DG-specific data files.

The 20/20 Database Connection for Powerhouse is available from both Cognos and Access Technology at prices ranging from \$800 for the MV/1000 to \$16,800 for MV/40000s.

Cognos, Inc., 3755 Riverside Drive, Ottawa, Ontario K1G 3Z4; 613/738-1440, ext. 4306. Δ

Circle 98 on reader service card.

REM-RDOS emulator available for IBM-PCs and compatibles

Woodland, CA—Nanosecond Systems, Inc., has announced the availability of its REM-RDOS emulator for IBM-PCs and compatibles running under PC/MS-DOS. REM executes standard RDOS save (.SV) files without modification. Revision 1, available this month, will run any unmapped, single task program, and revision 2, coming in the fourth quarter, will add extended memory management and multi-tasking. The company anticipates a version for the Aviiion in 1990.

REM's applications include a cross development environment for RDOS assembler, ICobol or other languages; real-time control and simplified multi-tasking applications under MS-DOS; data and application conversion; and PC integration in the RDOS world.

The new emulator uses MS-DOS files and directories, eliminating the need to partition disks or convert file formats. Utilities for reading RDOS floppies in

MOVE or system format, and for data conversions using MS-DOS files on RDOS are also included.

Nanosecond Systems, Inc., P.O. Box 81, Woodland, CA 95695; 916/662-4334. Δ

Circle 104 on reader service card.

WHO_LOCKED_IT? (The burning question answered)

Auburn, AL—WHO_LOCKED_IT?, a subroutine for ICobol, enables a program to determine which user has a given record locked. The subroutine, marketed by Threshold, Inc., can be used in standard DECLARATIVE routines, or assigned to a Screen Demon "hot" key to give an operator instant access to the AOS/VSPID, username, and console name of the process that has the operator's requested record locked. WHO_LOCKED_IT? is available for revisions 1.4 and 1.5 of ICobol, at a cost of \$250.

Threshold, Inc., 165 E. Magnolia Ave., P.O. Box 831, Auburn, AL 36831-0831; 205/821-0075. Δ

Circle 105 on reader service card.

New boards double MV/7800 memory capacity

Westboro—A new line of memory boards from Data General significantly increases the memory capacity of the MV/7800 XP family of minicomputers. The new boards allow MV/7800 XP users to have 4, 12, 16, or 24 megabytes of add-on memory, depending on need. The MV/7800 formerly offered only 4 or 10 MB of add-on memory.

Based on high-capacity chips, the new boards are designed for memory-intensive applications. They provide a path for use of CEO rev 3 and AOS/VSP II applications.

The new memory boards are priced as low as \$1,000 per megabyte of memory, as opposed to \$1,250 per MB of existing memory in the MV/7800 XP. They are available for immediate delivery.

Data General Corporation, 3400 Computer Dr., Westboro, MA, 01580; 508/366-8911. Δ

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Oracle Corporation has signed an agreement with Data General to port Oracle's relational data base management products to the Aviiion family. DG has agreed to sell Oracle's products for AOS/VS, Dasher 386 Unix platforms, and Aviiion systems running DG/UX.

DG will begin selling Oracle's products on AOS/VS and Dasher/386 Unix systems in the fall and will sell Oracle for the Aviiion family when the software becomes available in the third quarter.

The two firms also signed a long-term, comprehensive technology exchange agreement to ensure that Oracle software is optimized for all DG-specific technologies.

AMNET, Inc, of Framingham, Massachusetts, signed a value-added reseller agreement with Data General. Under the agreement, AMNET will sell its PC-based X.25 packet-switching wide area network solution using the Dasher/286 or Dasher/386 platform.

Executive tango. William Cunningham, age 50, has been named vice president of Data General's Worldwide Manufacturing operations. Cunningham was formerly vice president and general manager of the Worldwide Manufacturing, Distribution, and Research and Development groups at Apollo Computer, Inc. Cunningham succeeds Frank P. Silkman, senior vice president of manufacturing, who is retiring after eight years with the company.

Former DG executive Ward MacKenzie was recently named vice president of strategy and business management for Bull HN Information Systems. MacKen-



THE DATA POLICE

zie resigned from Data General last spring, where he held the position of vice president of marketing. MacKenzie will reportedly be involved in the development of a line of Unix-based systems for Bull.

MCBA, Inc., and Data General have signed a cooperative marketing agreement to port MCBA Classic accounting, distribution, and marketing software to the Aviiion family systems. DG will begin selling the software this fall through its value-added reseller program.

Data General has signed an independent software agreement (ISV) with Legal Data Systems (LDS), a value-added reseller for Digital Equipment Corporation, to provide the first legal solutions running on the DG Aviiion systems. LDS's software system, Rainmaker, is aimed at law firms of 10 to several hundred attorneys. It is immediately available for MV family systems and will be ready for the Aviiion family during the fourth quarter.

Zortec, Inc., has signed an independent software agreement (ISV) with Data General to jointly market System Z, a comprehensive applications development environment running on the MV family line of computers.

sales and service locations to over 60 nationwide. Grumman Systems Support provides field service and depot repair, sales and installation, and other professional services related to computer systems integration.

With the mid-August announcement of 11 new members, the **Object Management Group** now numbers 29 member organizations. According to OMG's executive director Chris Stone (who also serves Data General as a group manager, software), "This additional endorsement by key industry players demonstrates the growing importance of object management technology to new application development."

Representing new member AT&T, Frank T. Wigg said, "Standards for object management will lead to development of next generation office applications that break the barriers between voice, fax, image, and text in mixed operating system and mixed hardware environments."

OMG's new members are Aion Corp., AT&T, Borland International, Coordination Technology Inc., Eastman Kodak, Netwise Inc., Objectivity, Ontologic, Softron Inc., Unify Corp., and the University of Colorado.

OMG also announced the formation of a Technology Committee charged with influencing the direction and standardization of core object-oriented products and technologies. △

Grumman Systems Support Corporation has begun offering service in five new locations. The new locations are Charleston, South Carolina; Erie, Pennsylvania; Athens, Georgia; Denver, Colorado; and Kansas City, Kansas. These locations bring the total number of Grumman

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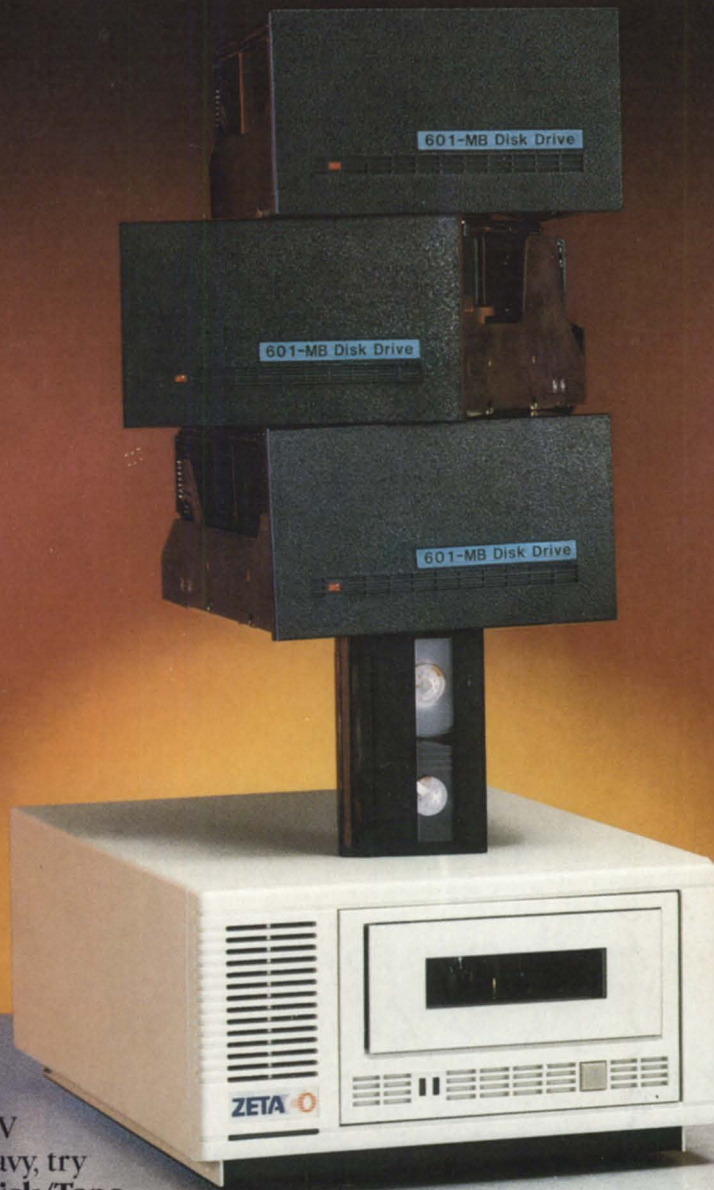
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