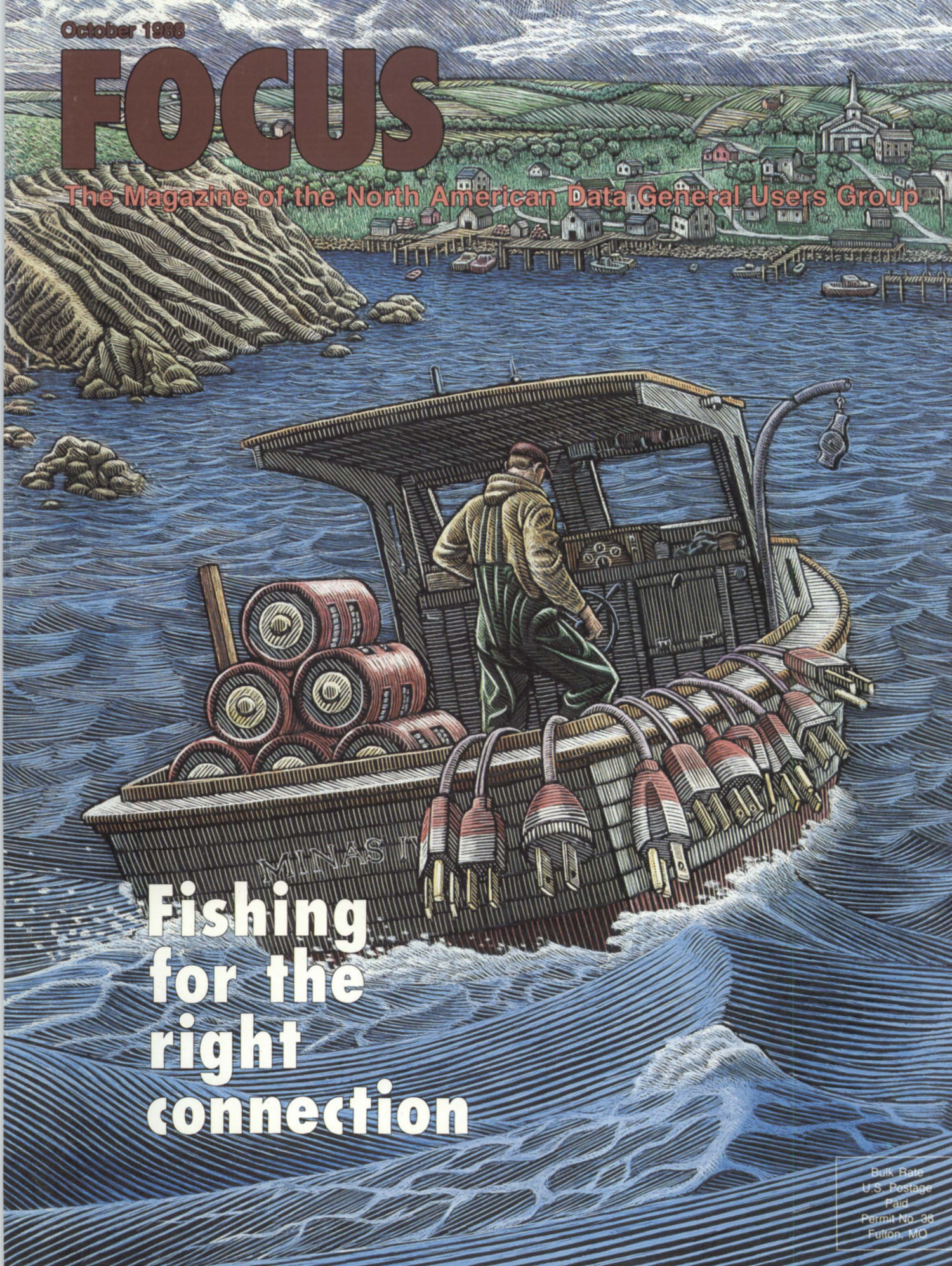


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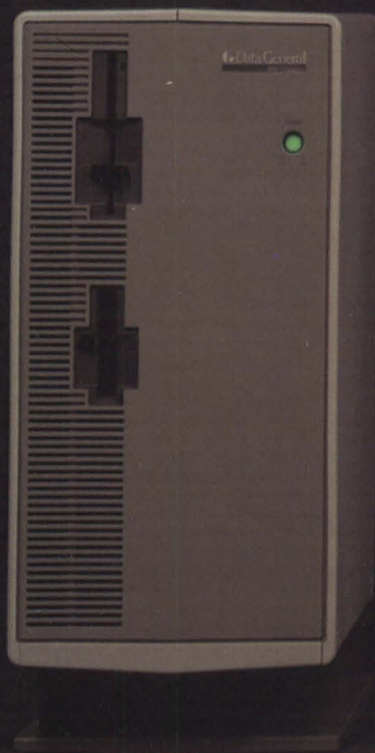
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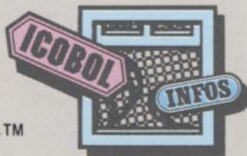
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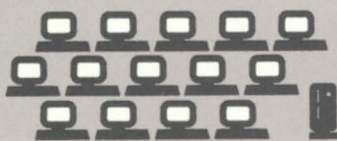
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Cover illustration by Douglas Smith.

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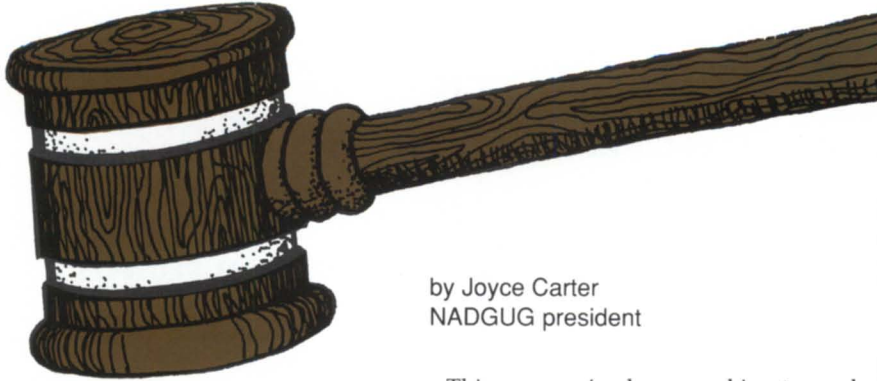
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Parting words



Handing the gavel to Don with regrets—and gladness

by Joyce Carter
NADGUG president

I remember a year ago how glad and anxious Calvin Durden was to hand the president's gavel to me. Recently, I have found myself diligently praying that Don Clark would really show up at the conference, so he could be sworn in as president.

Now that my term as NADGUG president is about to end, I find my office knee-deep in NADGUG papers, my housework months behind, my body needing a rest, and my mind absent without leave.

Please don't misunderstand me. I do appreciate the honor of having been your president, and I have enjoyed this year as president. The year has been filled with excitement, travel, frustration, confusion, challenge, hope, accomplishments, failures—and threats from my husband.

NADGUG is growing at a steady, healthy, and manageable rate. Our membership is the highest ever, this conference was the largest ever, our budget has increased, and NADGUG and Data General are working closer than ever for the users' benefit.

NADGUG is coming of age. It's spreading its wings and wandering farther away from the nest that Data General has generously provided for the past 15 years. As a grown-up organization, we are learning to make our own decisions, budget our money, spend our resources wisely, assume more responsibility, and understand what that responsibility means.

This maturity means that NADGUG officers, committees, NADGUG staff, *Focus* staff, and conference and exhibit staff have more work to do and more people to deal with. It means we have larger budgets to manage and more bills to pay.

This year, we've been working toward incorporation. We have developed our first set of policies and procedures. Job descriptions have been written for officers, committees, and staff. Even more important than these documents is the fact that we have developed a greater understanding through improved communications and more involvement in all aspects of the NADGUG organization.

When I took on my first duties in NADGUG, I wasn't sure what was expected of me, what my duties were, who I answered to, what resources were available, etc. By the time I knew what needed to be done, my time was running out. With as much time, energy, and pain as we have given to these projects for NADGUG, we have helped to pave the way for each person who is willing to assume a leadership role in NADGUG. This will help us to handle our growth and maturity more productively, more cost-effectively, and more efficiently.

I am looking forward to next year as chairperson of the Planning Committee. There are still many ideas, methods, and goals that I would like to see fulfilled. My husband, Jerry, doesn't share this attitude, however.

I used to believe that the president of NADGUG should serve a two-year term. With the wisdom of hindsight, I've changed my mind. A presidential term of two years would guarantee one or all of the following: divorce, unemployment, insanity. Worst of all, there would be no immediate past president to chair the Planning Committee.

Thanks go to all the people who have helped me this year. There are so many that it would be impossible to name them all. I want to wish Don Clark the best of everything in the coming year as president. Don is aware that all of the officers and committee people will do their best to make 1988-1989 an even better year for NADGUG. Δ

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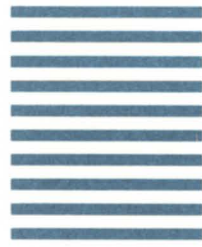
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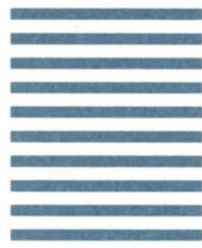
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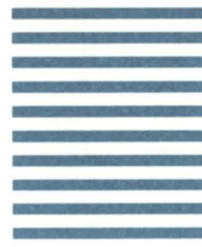
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Kid gloves

Putting controversy in Focus

How much controversy should *Focus* carry? Should it delve into arguments and take a stand on issues that affect users?

For most of the past three years, you would have had to look hard to find much controversy in *Focus*. Granted, there were lots of opinions, but they dealt mostly with technical issues. There may be strong differences of opinion about technical issues, but they don't usually lead to strong words or bad feelings.

Focus hasn't consciously shied away from controversy, but we have pulled a few punches. Our stance from the beginning has been that we won't publish criticism unless it is constructive. Our basic assumption is that all parties to controversies within the DG community are starting from a position of goodwill. Nobody is perfect, so mistakes happen—but they don't spring from evil intentions. A workable solution is almost always possible if the sides will just get together and discuss the issues without resorting to fighting words.

I once heard Andy Rooney describe one of his segments on *60 Minutes* as "soft-hitting journalism." The piece was about a professor who got \$30,000 from the government for doing a study about how people spend their time in national parks. Rather than just saying that people eat picnics and take pictures and walk around looking at trees and animals, the professor padded out the study with lots of useless statistics and academic jargon. Although the report was rather silly, and probably wasteful, there was no villain in the story—just a nice, somewhat pompous professor doing what he thought the government wanted. Rooney's point was that he didn't

need to tear the professor's dignity to shreds in order to point out that the government shouldn't be commissioning studies like that.

We've indulged in a fair amount of soft-hitting journalism at *Focus*. In some cases, it took a lot of careful editing to blunt the criticism while leaving the point intact. There's always the risk, however, of turning a valid criticism into an apology. There are times when it's necessary to speak more forcefully than we're accustomed to on behalf of the concerns of users.

Not long ago, the Editorial Advisory Board said *Focus* should be more open to controversy. Rather than always trying to be an impartial arbitrator, *Focus* should take more of an advocacy role, speaking out on behalf of users. How often and how strongly we should speak out is something we haven't yet been able to decide. Two examples will show how complicated these matters can become.

Take the case of a well-known software vendor that had been suffering financially due to problems at the parent corporation. There were rumors that it might even have to file for bankruptcy in order to get protection from its creditors. Should *Focus* have publicized the plight of the company, in order that users who were considering the software could be forewarned and make other plans? But what would that do to the company's chances of working its way out of the bind? And if adverse publicity caused the company to fold, where would that leave users who were already committed to the company's products?

We decided not to say anything in this case unless the company in question actually filed for bankruptcy protection. Was *Focus* too conservative? I don't know. You tell us. (One thing we did *not* consider in this case was whether adverse publicity

would cause the company in question to stop advertising.)

The other example is DG's pricing policy for CEOwrite, which has since spilled over to DUMP_III/LOAD_III (see the bulletin board discussion on page 58 for more details). Users feel that their software subscription payments should entitle them to receive these products at no extra charge. DG, on the other hand, contends that the changes to CEOwrite and DUMP_III/LOAD_III are so significant that they are essentially new products; therefore, DG wants to charge separately for them.

This is the only clear "us against them" issue I can recall in the last three years—for which I am very thankful. NADGUG is built on the belief that cooperation between DG and its customers will benefit us all. In this case, though, both sides have clearly defined arguments to support their own point of view, and it's hard to see where the middle ground might be. We've attempted to make room in the magazine for both sides, but in this case, I think DG's policy is a mistake.

I think I can be objective on this one; I don't have software subscriptions on either of the products in question. It's true that DG needs to recover the development costs for providing the significant new features in the enhanced products. However, isn't that the justification for pay-as-you-go software subscriptions? Surely the subscriptions will cover development costs within a few years, especially if software subscription fees go up along with the purchase price for the enhanced product.

After the pressures on DG's earnings during the past few years, management naturally wants to recover costs as quickly as possible. After all, the company has a profound responsibility to earn a profit for its shareholders. Perhaps it is the pressure to recover costs quickly that led to DG's stance on this issue. But while they were articulating the arguments in support of their position, did anybody at DG stop to consider how customers would react? DG's position is producing a degree of antagonism that far outstrips anything I have seen in three years—but it shouldn't have been a surprise. It's easy to see why users think the company is making them pay twice, and it's almost impossible to see how any argument, no matter how logical or well-stated, could persuade them otherwise. In other words, this is a decision that is guaranteed to cause hard feelings. The question I have to ask is this: is the revenue that this pricing policy will generate worth the antagonism it is creating?—G.F. Δ

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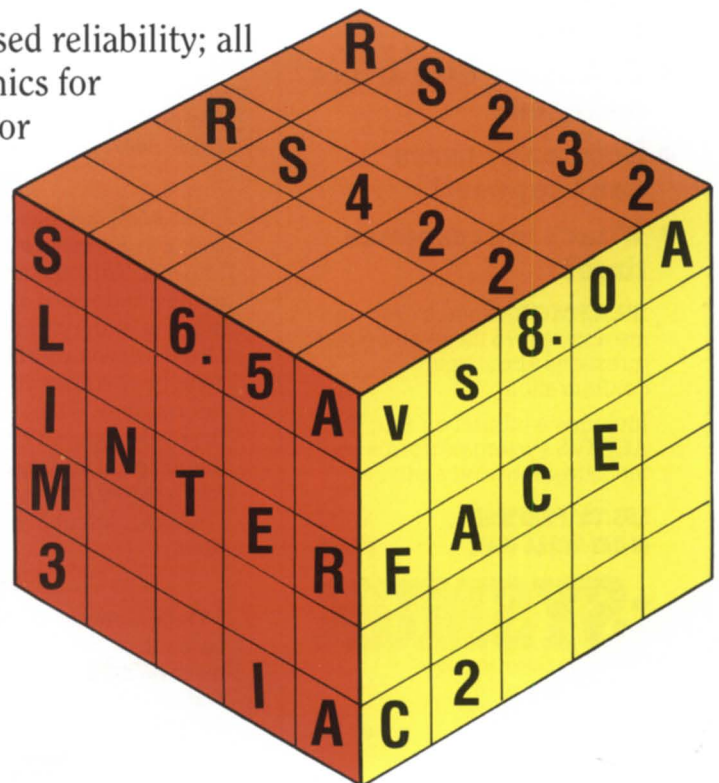
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ROUNDUP



News from NADGUG and its affiliates

by Cathlene Gentry
RIG/SIG coordinator

PADGUG (Pittsburgh Area Data General Users Group) held its August meeting at the local Data General headquarters. After reviewing the minutes of their June meeting and hearing the treasury report, the members listened to Eric Fredrickson's presentation. Eric, the vice president of Marketing with DMS Systems of Salt Lake City, gave a presentation called "Rounding Out Your Office Automation and System Performance."

PADGUG's next meeting, to be held at the DG headquarters on October 5, will review a software product, but a speaker has not yet been confirmed.

Ken Krugh is president of PADGUG, so if you want any information about the group, contact him at LMV Leasing, 121 Freeport Road, Pittsburgh, Pennsylvania 15238-3447; 412/826-8200.

Pat McGraw has been working hard trying to get a user group organized in the Phoenix, Arizona, area. He is planning a mailing and anticipating an organizational meeting at the end of September or early October. If you are a DG user in the Phoenix area, be checking your mailbox for more information on the startup of this group. If the mailing doesn't reach you, but you're interested in finding out more, contact Pat McGraw at Acram, 2901 W. Clarendon, Phoenix, Arizona 85017-4601; 602/264-0288.

Data General Field Engineering was on hand at the Dallas Area Users Group meeting on August 9. Mike Strong, the Dallas branch manager for Field Engineering, gave a presentation on DG's

multiyear discount service agreement. Although this meeting had a smaller turnout than usual, the group has 160 names on their mailing list, and is working to build up their telephone list.

The group welcomes anyone in the Dallas area to join them at their dinner meetings held at the Brookhaven Country Club on the second Tuesday of every month. Any questions should be directed to Marco Fehlbaum, Fannie Mae, 13455 Noel Road, Dallas, Texas 75240; 214/770-7555. △

OASIS-OIS bulletin board ready

by Denise L. Sikorski
Chicago Board of Trade

Good news! The OASIS-OIS bulletin board is a reality!

For those of you who have not discovered this beneficial tool, the Data General On-Line Information Service (OIS) is a menu-driven service available 24 hours a day. It provides quick access to information on Data General products and services. A growing list of features includes electronic message posting, system patches, revision information, status of STRs, and NADGUG bulletin boards allowing user-to-user communication (this is where the OASIS bulletin board fits in).

As systems administrator, I am responsible for maintaining categories, cleaning up old files, conducting surveys, writing articles, and implementing anything else you would like to see. Of course, I have a partner in crime: Bobbie Pressman, president of OASIS. Together, with the help of Charlene Kirian, we have come up with some ideas we think will be helpful. Mike Curran of Data General helped us set up the following categories:

- headlines—general information, upcoming meetings, etc.
- help me—questions or problems that other users can help solve.
- technical FYI—performance issues, rev information, etc.
- warnings/gotchas—self-explanatory
- user programs—in-house programs written by users that could be helpful to others
- helpful hints—creative alternatives and answers that make CEO do "tricks" and other innovative ideas.

Bobbie and I would like this tool to be beneficial to all. So log on, leave messages, leave suggestions, leave questions. Have fun! Our goal is to have an active bulletin board. △

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First impressions from Conference 88: food, fun, friends, a few fights

A week before the start of NADGUG's 1988 annual conference, the preregistration total reached 854. For Barbara Hoogasian, the NADGUG coordinator, that was a watershed: she finally felt confident that the total would top last year's count. One day into the conference, it looks as though she was much too conservative.

Last year's conference in Las Vegas drew the highest previous total—more than 900, counting exhibitors and staff. Nobody knew whether Philadelphia could match the draw of Las Vegas, and Barbara admitted to a few anxious moments during the first days of preregistration. However, with on-site registrations keeping the staff too busy to get a total count, nobody doubts that the 1,000-attendee barrier has been shattered.

Monday evening's welcome reception brought a crowd that overflowed the hotel ballroom and spilled into the corridors outside. Data General's Bob Tway welcomed the attendees and observed that, with attendance running so far ahead of what he had seen in Las Vegas, it was obvious that the attendees had come to Philadelphia ready to go to work.

At that moment, Tway may have been the only person in the room without food in his hands. The theme for the reception was "A taste of Philadelphia," and at various stands around the hall there were long lines to get cheese steak sandwiches, sausage, Chinese food, seafood, and do-it-yourself ice-cream sundaes.

Jugglers, mimes, and magicians wandered through the crowd to distract anybody who was too intent on business. Just as things were settling down, a band of mummies marched in with music and dancing. Gradually the crowd thinned out, but the lobby bar stayed busy long into the night.

■

Getting to the hotel turned out to be a challenge. Construction in the area has made some streets look like a war zone, and even the taxi drivers admit that getting around has been a problem. The hotel itself is scheduled for a renovation—and needs it—but behind-the-scenes work by Karen Horst, Phyllis Danieli, and the NADGUG staff has made things as smooth as possible for attendees and exhibitors.

This may be the last year NADGUG can host its annual meeting in one hotel. The limited space in the exhibit hall sold out long before the conference started, and a half dozen booths had to be added in the hallways to accommodate the overflow. All the hotel rooms reserved for attendees were claimed three weeks in advance.

■

NADGUG's growth goes deeper than the numbers would indicate. When the members gather en masse, it's suddenly obvious that women, though still a minority, are much more involved in user group activities than they were in the past. Users from countries outside North America—Sweden, Belgium, the Netherlands, Finland, Australia, and France, to name a few—are here in greater numbers, as well. There are also significantly more suits and ties in evidence this year, but what this means is anybody's guess. . . .

■

The meeting of the NADGUG Executive Board on Sunday continued a tradition of old friends and new faces. In addition to the current officers, three past presidents attended (a fourth showed up later at the bar). In all, 41 people participated in the Executive Board meeting: 23 representing regional or special interest groups, 5 committee heads, 5 officers, 3 from Data General, 3 NADGUG staff, and 2 from *Focus*. This was the first board meeting for about half of those who attended.

Outgoing President Joyce Carter presented a set of job descriptions for the officers and committee chairs—the first time these responsibilities have been

clearly defined. She also reported on the status of the exchange program with the Data General users group in the United Kingdom, as well as the meeting last spring with representatives from other computer groups. She named a committee to study the multivendor user group concept and make recommendations for how NADGUG should participate in it.

Treasurer Frank Perry reported that NADGUG's CPA firm is pursuing the group's request for tax-exempt status, but expects that the Internal Revenue Service will deny it. He said that expenditures are currently running ahead of the amounts budgeted, but that the cash on hand (\$87,019 as of July 31) was sufficient to cover all the group's obligations.

Barbara Hoogasian reported that overall membership for NADGUG has grown nearly 14 percent since last year. The NADGUG staff has arranged for a toll-free phone number for membership inquiries, and is now accepting credit card payments for memberships and *Focus* subscriptions. The member directory is about a month behind schedule, but should be ready to mail to the membership by the end of the year. Finally, Data General is offering NADGUG members unlimited free use of its OIS electronic bulletin board and data base for the remainder of 1988.

Jim Siegman reported that the Audit Committee had reviewed the procedures and expenditures for the publication of *Focus*, and determined that everything was in order. Publications Committee Chairman Wes Thomas said that *Focus* is producing earnings for NADGUG, and is expanding its editorial content to include more coverage of personal computing. Both of the electronic bulletin boards sponsored by NADGUG are getting more use, and the NADGUG software library is also quite successful.

Paul Duck's RIG/SIG Committee report included requests for recognition of regional interest groups in Philadelphia, Alabama, and northern Ohio, as well as a special interest group for the music and recording industry. Paul also introduced the new RIG/SIG coordinator, Cathlene Gentry, who reported on her activities during the three months since she joined the NADGUG staff.

C.A. Miller, who took over as chairman of the Executive Advisory Council when Rene Dominguez resigned, said the council has eight active members. When they met with DG executives this summer, they

used the NADGUG member survey to identify the topics for discussion. He invited the board members to suggest additional ways that the EAC can help promote communications between users and Data General.

The Meetings Committee noted that this year's conference, in addition to being the biggest ever, also has a more varied program. There are six parallel sessions during most time slots, and they are organized around "tracks" for end-users, technical users, and management. This is also the first year the conference has included off-site activities—and the attendant logistical headaches of getting 600 people to and from a professional baseball game. Next year's meeting in New Orleans, the group will be using a convention center for the first time. By the next meeting of the Executive Board, the committee expects to have firm plans for Seattle in 1990, and site selections for 1991 through 1993.

The committee reports to this point were fairly brief and uncontroversial. However, the Planning Committee changed that when the chairman, Calvin Durden, opened the discussion of incorporation and bylaws changes for NADGUG. Peter Marx, as legal counsel for NADGUG, explained that incorporating the group would provide liability protection for officers and members, and greater continuity for the group. Getting the proposed changes to the bylaws to agree with the proposed articles of incorporation resulted in some unusual parliamentary procedures and a few heated exchanges. In the end, the board was able to recommend that the membership adopt the revised articles and bylaws at its general business meeting.

■

One item that was introduced at the Executive Board meeting has become a major topic in the hallways and meeting rooms. Although the company isn't ready to provide details as yet, Data General will be splitting AOS/V5 into two separate products sometime in the new fiscal year. This will involve a restructuring of the licensing fees, and there will be an upgrade charge for customers who choose to go to the New Filing System (previously known as rev 8). Customers who choose to stay with rev 7.x will be able to get support for an indefinite period.

Rain on Monday dampened some spirits and delayed some arriving flights, so attendance at the DG educational seminars might have been a bit lower than otherwise. Skies were clearing on Tuesday, perhaps in answer to Barbara Hoogasian's prayers. If the rain had continued, she would have had to deal with approximately 10 busloads full of people holding nonrefundable tickets to a rained-out baseball game—to say nothing of the buses that still would have to be paid for regardless of whether they carried anybody to Veteran's Stadium.

Fortunately, it was a beautiful evening, unless you were a San Francisco fan. The Phillies won 7-5, and the section of NADGUG seats got progressively noisier during the game. Many felt slighted that the NADGUG visitors were barely mentioned on the stadium scoreboard ("Data General Users Group" did flash briefly on the screen—right after "St. Patrick's Altar Boys"). Leryl Cash and Todd Kurland settled the score, though. They led a cheer that started out with one side chanting "tastes great!" and the other side responding "less filling!" Soon, the cheer segued into one side yelling "NAD!" and the other "GUG!"

■

There has been a lot of fun so far, but Bob Tway was right when he said that people came ready to work. Tuesday's sessions began with a keynote address by Dr. Nathan Goodman of Codd and Date International on the subject of distributed data base systems. Goodman's talk established the tone for the main emphasis of Conference 88, connectivity and networked solutions. Joe Forgione of Data General followed with a discussion of Data General's strategy for networking and communications.

The remainder of the conference is packed with so many sessions that everybody seems to be having trouble deciding which ones to attend. Nearly everybody, however, is making time to visit the exhibit hall and talk with vendors about their products. For their part, the vendors seem quite pleased both with the attendance and the enthusiasm of the attendees.

There's never enough time for everything, and time just ran out on this dispatch from Philadelphia. The only thing left to say is that more coverage is coming next month. Until then, this bit of advice: don't miss Conference 89 in New Orleans.

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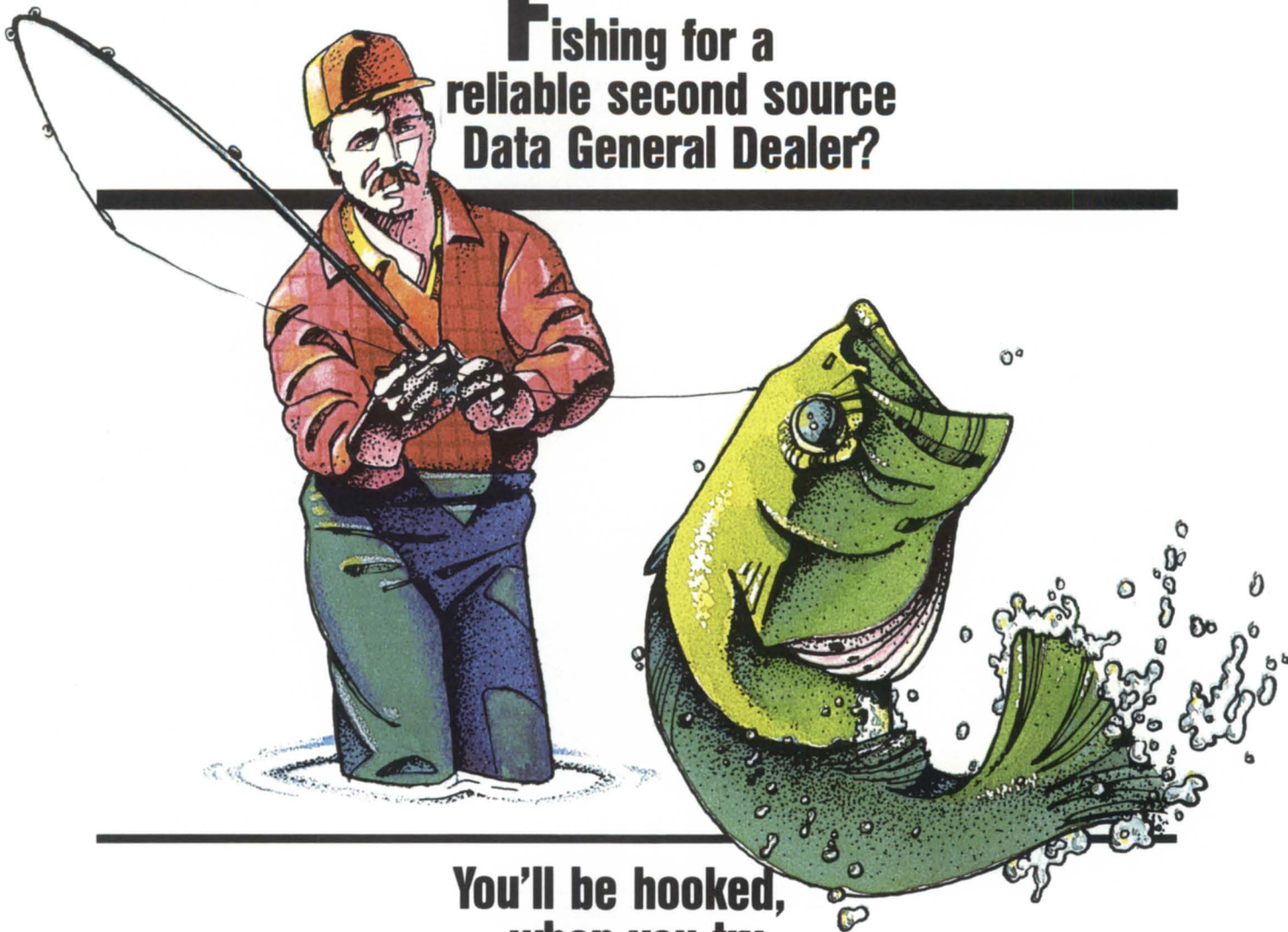
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A complete listing of the NADGUG software library

NADGUG librarian Randy Berndt is now able to make the software library available to users of MV/2000 systems. Previously, MV/2000 tapes couldn't be serviced, but Kevin Danzig of the Danzig Corporation in Northvale, New Jersey, has volunteered to handle the conversions. All NADGUG members interested in receiving the NADGUG software collection should send a 1,200-foot tape to:

Randy Berndt
American Urological Association
6750 West Loop South, #900
Bellaire, Texas 77401

or call 713/665-7500. (MV/2000 and MV/1400 users should send one tape cartridge.) Software contributions should be sent to the same address. Be sure to include your membership number.

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

Please also include a self-addressed return envelope with sufficient return postage. In compliance with postal regulations, do not date the postage, because the tape will not be returned to you on that date. If you send it at the end of the month, please have the postage read for the following month.

DBCHECK

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

DUMpload

DUMpload is a Macintosh program to dump and load AOS/VS-compatible dumps on a Macintosh. Uses 140 blocks.

FILEMNGR

You can move, copy, delete, view, and perform several other options. 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. Uses 459 blocks.

FTNCVT

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

Games

Games is a collection from various places. Enjoy. Uses 19,293 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. Uses 416 blocks.

IMSLUTIL

This is a collection of CLI macros, COBOL routines, and assembly routines callable from COBOL. By IMSL of Houston. Uses 6,154 blocks.

JAG_UTIL

JAG_UTIL consists of several programs: Filecount, Userspace, Scan, and Laminare. John Grant has reserved some rights on his stuff, so check the documentation for specifics. Uses 1,501 blocks.

Kermit

Kermit is a file transfer protocol developed at Columbia University. Uses 9,328 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. Uses 438 blocks.

Macbook

This is a collection of macros from the Colorado users group. Uses 342 blocks.

MENUDIR

This is an initial user menu that can chain to other applications. It features a password control system. From the Fed SIG. Uses 492 blocks.

Misc Kerm

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

QHelp

QHelp is a tree-structured help facility. Uses 2,277 blocks.

SKLSCRN

This is the COBOL standard entry screen featured in George Burus's article that appeared in the April 1988 issue of *Focus*. Uses 385 blocks.

SWITCHES

SWITCHES is the GET.SWITCHES routine from John Grant. Uses 1,297 blocks.

TEX

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. Uses 495 blocks.

VT100KER

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

Xfer

Xfer is a tape conversion utility. △

ON-LINE HELP Who to call for answers about NADGUG and FOCUS

NADGUG's electronic bulletin boards

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Rational Data Systems415/924-3652
OIS (to get an OIS ID and password, contact a DG Field Engineering telemarketing representative)800/325-3065
In Massachusetts800/952-4300
In Canada416/823-7830

NADGUG membership, address changes

NADGUG staff.....508/898-4067
or.....800/825-4442

Information on RIGs or SIGs

Cathlene Gentry512/345-5316

Editorial questions, comments, article suggestions

Greg Farman or Carolyn Kelly (please send product announcements to the address listed below).....512/345-5316

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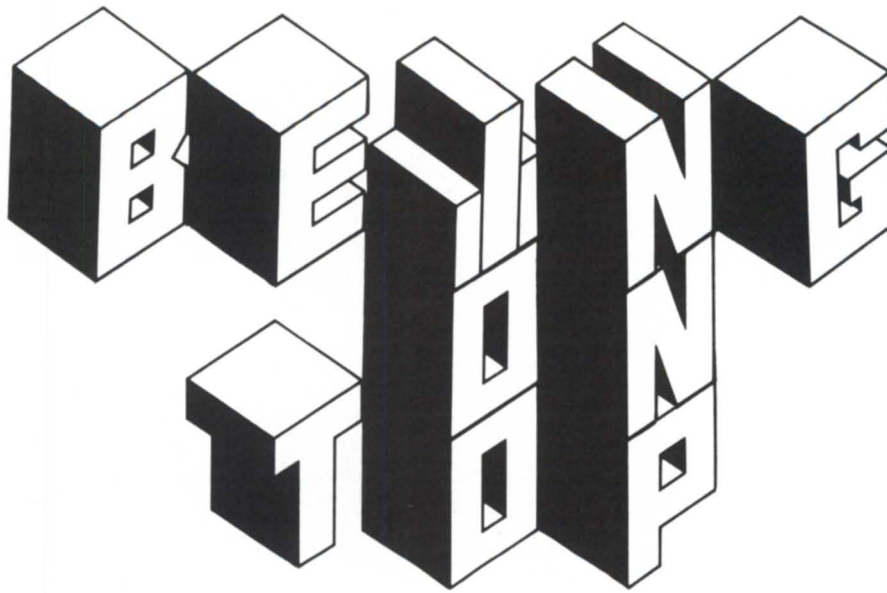
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Managing a DP staff requires credibility and communication skills. Part II

by Steve Handlos and Liz Straus
Special to Focus

"We're going to need more information before we expand into new markets. I don't want to make a final decision until the Data Processing department has given us their input."

"We'll decide what we need to have. Then we'll set some time frames and send a memo to Data Processing."

Which of these statements describes how management perceives your department? Why do some senior executives hold the data processing function in high regard, while others treat it as an afterthought? Your credibility and communication skills play key roles in shaping management's perceptions.

It's important that you develop an awareness of how you and the Data Processing department are perceived. In last month's article, we discussed the steps you can take to develop credibility. Understanding what you can and can't do is fundamental. Then you have to communicate that understanding effectively.

Successful communication within the corporation begins by understanding that managing is a form of selling, and that certain procedures must be established.

Selling is successful communication. It is the art of getting others to see a problem and its solution in a way that maximizes your opportunity for participation. In this context, almost any discussion is, therefore, "selling."

The most significant rule is to treat

management the same way your company's sales representatives treat customers. Customers are listened to, they are convinced, they are persuaded, and their objectives are served.

*Great communication
in the selling process
is composed of two
key skills—
appropriate
questioning and
effective listening*

You are selling a "product"

Most successful managers recognize that their data processing services are the "product." Management reports, customer information, invoices, and your input are all your products. They are vital to your company's well-being. Your role, if properly presented, is significant.

In last month's article, we spoke about a product that saved the company \$50,000 per year. The more products you sell (develop), the more your company will save. The more you save the company, the more you make it successful, and the more valued your opinion will be. Therefore, it is in your best interest to sell as many products as you can.

One data processing manager we know

routinely sends a one-page survey to each department head asking for feedback on services provided by that area. Not only is the evaluation information helpful, but the available services are "advertised" throughout the organization.

You do have customers

The users are your customers. Be sure you develop a sense of your customers' "big picture." What are the long-range goals and objectives? This thought process leads to the invention of new products (programs, networks, etc.) that help your company become more successful.

Because your products are significant, you need to learn as much as possible about your customers. Identify and understand the internal structures and politics of the office. Which departments have the most responsibility and authority? If there's a problem with conflicting project demands, who makes the final decision?

Categorize the various management areas by level of data processing awareness. One of your jobs as a salesperson is to educate. You must create an understanding of the functional process you manage (not the technical one). Management should understand the amount of time and staff that are required to achieve the desired results. Your process of project management should be clear to them.

A common complaint from data processing management is that the project requests they receive would require unreasonable amounts of time and staff

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Says Rod Bosscawen, Senior Vice President at NCNB:

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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 512/345-5316 for further information.

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resources. After two years of unsuccessfully trying to educate users on the relationship between requests and results, one DP vice president brought in a consultant who defined the project management process and helped establish priorities and an appropriate work flow. Almost overnight, the situation changed.

Involve your customer

Communication is a two-way street. To establish credibility, you need to confirm that you understand what is important to the user. Great communication in the selling process is composed of two key skills—appropriate questioning and effective listening.

The key objective in your questioning is to identify and confirm needs. Keep in mind that what the user perceives the need to be and what you perceive the need to be may not be the same. Don't assume you know what the user wants. Confirm with questions. Find out exactly what is expected.

You will need to use both indirect questions (those that cannot be answered simply with a "yes" or "no") and direct questions (those that can be answered simply with a "yes" or a "no").

Select your word choices carefully. Don't impose technical jargon on management with a condescending explanation. You are less likely to receive a positive reaction if the listener feels intimidated, confused, or ignorant. People prefer to do business with people they feel are just like them.

We often ask the Data Processing staff to list common internal terms, then create a parallel list that translates these terms to "managementese." Instead of saying, "This disk has a capacity of 354 megabytes . . ." say, "This disk will hold all our customer records for the next five years." Your president will understand the second sentence.

The listening process is a series of split-second sensations, evaluations, and interpretations. In order to maximize your listening skills, focus on the speaker, concentrate on the words, take notes, ask questions, and summarize the content for confirmation.

One of the most effective ways to get management to concentrate on your message is to take notes. People tend to edit their comments more carefully if they know you are recording them.

Get commitments

Ask for a clear commitment on what is needed and the specific tasks and areas in which the user will participate with you. Convey the attitude that the project is a

joint one, rather than a task that has been delegated to you.

The president of a major corporation has avoided the problem of missed project deadlines by asking the Data Processing manager to give him a to-do list for each project. This provides the necessary information to meet deadlines. Preparing this list should be your first step in responding to management's requests—if they don't ask for it, you should volunteer it.

Limit your initial commitment to the time it will take to make a time estimate. Defer specific production task commitments until you have had an opportunity to review the request and consider all the implications. Speaking too soon and not being able to deliver your promises will destroy your hard-earned credibility.

Follow-up

Obviously, your selling job is going to be less than successful if you cannot follow through on your commitments.

Document your commitments in writing to the appropriate people. This will make you think about what you have to do and the steps you need to take to get it done. It will serve as a guideline for your action plan.

Also, plan regular, nonspecific meetings with management to understand how the company does business and how the decision-making process works. It will help you ask better questions and be perceived as a member of the management group.

Take the initiative

You have the right attitude and motivation. You know how to do your job technically. Now sell yourself and your data processing products. Recognize that to sell yourself, you must communicate effectively and lead your customers to the conclusion that you and your services are critical to them and the company's success. When you do that, you will be in a position to influence information decisions. Δ

Steve Handlos established Productivity Systems Development Corp. and Data Safe Corp. His companies' products include contract programming, a data-entry program generator, disaster recovery services, and training. He can be reached at 2138 Ashley Phosphate Rd., Suite 206, Charleston, SC 29418; 803/553-6649. Liz Straus is the president of Stewart and Assoc., a marketing consulting firm that also offers customized management training for data processing people. She can be reached at P.O. Box 11944, Columbia, SC 29211; 803/771-4636.

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The Zen of documentation

Or the art of manual labor

by Michael E. Marotta
Special to Focus

"The MAINTAIN CONTROL FILE option allows the user to establish and maintain the operation master controls for each specific operation in a multioperation chain." So reads a user manual created by a very successful software developer. You could do better than that. But would you?

When creating documentation, people forget who they are and who they are writing for. People who speak well suddenly become poor writers. It is as though they are possessed by a demon that forces them to be stilted and wordy.

Try this version of the opening paragraphs: "MAINTAIN CONTROL FILE gives you the power to create and track the master controls for each operation in your chain."

Even more, the title MAINTAIN CONTROL FILE is poor. MASTER FILE or CONTROL FILE would be just as clear. Designing an interface requires that you see the world through the eyes of the user.

You first

McGruff the Crime Dog comes on TV several times each morning to warn my daughter: "Users are losers and losers are users, so don't use drugs, don't use drugs." Then several times a week, she hears me talk about the great user manuals I am creating and the wonderful user interfaces I have designed.

Programmers also say unkind things about the people who pay their salaries. "Dumb user" can be heard in any software shop. Yet, writing software with ICObOL or BBASIC is not the same thing as having created ICObOL or BBASIC. Programmers use software and hardware developed by other people. We are all users.

Then why rely on a word that applies to everyone? You might just as well say, "When the American enters a 7 in this field, processing will begin." Or how about: "The human can choose any of

three options from the following menu."

Just say "you." "You" speaks to the reader. It is a good attention-getter, and it works on the deepest levels of the subconscious. Saying "you" puts you, the reader, at the center of attention.

Of course, there are times when a manual will explain to one person how other people use the software or hardware. There are also times when a manual can become overloaded with "you . . . you . . . you." Synonyms like "operator," "clerk," "programmer," "manager," etc. work quite well.

There is nothing inherently wrong with the word "user." In fact, being a user is something to be proud of. Unfortunately, to 99 percent of the people who rely on computer systems, being a "user" is not a distinction of honor. You can avoid the word, or you can preface your documentation with a synopsis of *Tron*.



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In the Disney movie Tron, morally correct programs seek to serve their users. The evil Master Control Program wants all programs to serve its needs instead. The MCP is undone when it digitizes and reads in a user. The user (hacker and video-game master Kevin Flynn) has godlike powers in the artificial realm of a computer. That the goal of computing is service to the user is a tenet of faith expressed by Dumont, a corporate officer who began building computers in his garage.

But even if you could get people to see your point of view, then what? Being a user is good? So is being an American. Just say "you."

A case for fonts

When you talk to someone, you rely on gestures and facial expressions. Type styles are the printed equivalent of gestures. Even the most limited output device allows you

some choice of type styles and sizes. You can use CAPITAL LETTERS, **boldface**, and **BOLD CAPITALS**. Your readers will also appreciate underline and UNDERLINED CAPITALS. Italics is for strong words like *always* and *never*.

If you have access to a good word processing system, you can rely on many type styles. Pick one to show computer output and another for user input. Be sure that these are different than chapter section headings.

Today's laser printers and desktop publishing software make it easy for you to emphasize your words and highlight your meaning. You can even get good results with a low-end dot-matrix printer and a shareware word processor. An Okidata 83 driven by PC Write can make your documentation come alive.

Pushing your text processing system to its limits is like practicing a speech in front of the mirror. Not getting the most out of your publishing system ensures that you will drone to your audience.

Organized or assorted?

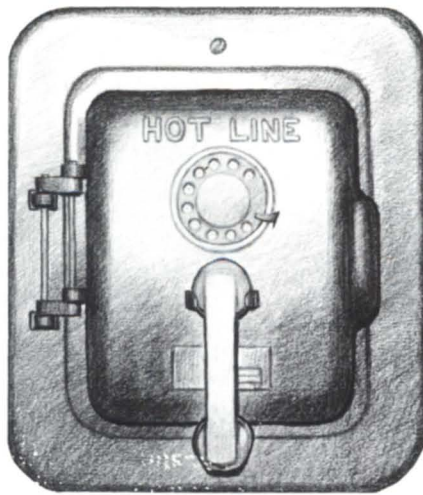
You would be hard-pressed to find a user manual that does not have a table of contents. However, many profitable companies still turn out documentation with no index. The argument against indexing takes two forms. First, the manual is short. Second, the software is well designed, so everything is already arranged by concept. There is some merit to the first statement. The second assertion is usually false.

Assume that the part number is a field in a record for inventory control. When the customer is sent an invoice from accounts receivable, isn't the part number one of the output fields? Creating an index will help make this apparent. Your client will know, the programmers will know, the people in customer service and sales will know.

The index is the guide to the internal relationships that comprise any complex system. Organizing your thoughts is as important as having thoughts. Without an index, you do not have a user's manual. What you have is an assortment of statements.

Short manuals can serve their readers without an index. However, before you decide not to have one, make one anyway. If you find that all of the references to each key item appear on their own pages, then the index is superfluous. On the other hand, if key items are discussed in various contexts throughout the manual, then the manual needs an index.

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Documentation as specification

Software project leaders will go to great lengths to have everyone on the team in on discussions. The system will be created and then handed over to a technical writer for documentation. This is one reason that most software falls short.

Consider the menu-driven system created by a successful software house. From the main menu, you select reports.

This submenu offers 14 choices, each of which has the word "report" in it. That word is redundant. Unnecessary words clutter the screen. They make it hard for the user to perceive directly what is required. Getting your documentation specialist in on the ground floor of the design effort will ensure that your system speaks clearly to the user.

It is too easy to fall into the pits of jargon.

Software asks the accountant if the time has come to "edit hash file headers," while the engineer must decide if the system should "link batch entries." Your technical writer will point out these errors.

The user manual is the design specification. Structured programming is predicated on the assumption that you start with the output and trace the procedures back to the input. Creating the user manual before the coding begins is the right way to schedule a project.

"We got what we asked for but not what we wanted." Complaints arise because the seller and buyer of software do not communicate clearly. A contract usually includes a functional description of the software. The functional description is often techno-babble in support of unctuous marketing. If the agreement is based on a complete user's manual, there are fewer misunderstandings.

The right person for the job

Generally, classified ads for programmers identify the hardware, operating system, software, and application. Finding a technical writer requires a different approach.

Developing documentation requires a user's viewpoint. A technical writer cannot become immune to shop jargon. Too much experience in a limited environment will shade your writer's eyes.

A writer who knows nothing about computers can also be a curse. The technical writer for a project at an automobile factory relied on his typewriter. He was doing fine until the users decided that the word "array" should be substituted for "matrix" throughout the entire manual.

You never know all of the people who will rely on the system you create. Documentation is best developed by a generalist. In-depth knowledge of AOS/VS internals is less important than user-level experience with MV machines. Your system will probably be in an environment where Data General equipment coexists with VAX or Big Blue machines. A writer who can appreciate the differences among product lines will be able to emphasize the features and benefits of your system. This will reinforce the feeling of confidence that your clients must have to do their work.

English is a rich language. Its Germanic and Latin heritages have been supplemented with words like catamaran, safari, xenophobe, and wigwam. Your users will have an in-house vocabulary that must not be confused with computer jargon. What is a "file" to a company that

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makes rasps? A good typist never "hits" a key; you "strike" it. Yet documentation for the automotive industry should avoid the word "strike." Computerists often refer to the cessation of a process an "abort." But don't forget that this word is taboo in many other contexts.

A good technical writer recognizes that you read with both the back and the front of your mind. Judiciously chosen synonyms are one key to successful technical writing. Your technical writer should have experience with a broad range of readers. The best technical writers have experience creating fiction and nonfiction for newspapers, magazines, or video.

Dear diary

The person who buys your system today cannot tell you who will rely on it tomorrow. You can never completely predict the requirements and experiences of all your users. Good documentation grants the opportunity to make notes in the manual.

Designers of printed material know the importance of white space. This lesson has not been learned by all computer systems developers. A DG-based vendor provided a user manual of 300 pages on 150 sheets, each page 60 lines of text, 80 columns wide. The users resorted to index cards and steno pads. Once each person learned their tasks, they never referred to the manual. When they had problems, they called the vendor for a verbal explanation. The vendor kept insisting that the answer was in the manual and that this question had already been answered three months ago. Documentation that allows handwritten enhancements helps avoid pitfalls.

If you give your users the power to make handwritten enhancements, you have a key to identifying the features that will become upgrades. If you provide custom software to a few hundred clients, you can invite customers to specify their future purchases.

When a user makes a note in a manual, it indicates that the documentation was lacking. Often this is natural and unavoidable. You cannot always anticipate your reader's ignorance. It is also true that any product can be improved. A large manual for a complex system can fall victim to techno-babble. Getting copies of those handwritten enhancements is

Michael E. Marotta is a systems analyst with a decade of experience on Data General and other equipment. He specializes in creating user manuals.

important to the process of perfection.

Once upon a time

Star Trek's Scotty is the stereotypical engineer. His idea of fun is curling up with a good technical manual. Few of us share his preference. When you take home a user's manual, you are not looking for a good read. A willing suspension of disbelief is not exactly the right attitude.

Your pulse will not race as you wonder if the input will ever find the file, or if the instruction to strike the <enter> key was just a red herring.

Yet, a user's manual is indeed a story. It is the narrative of your product and what it will do. Documentation tells the user how to benefit from your product. When you read good documentation, you see yourself using the system. Δ

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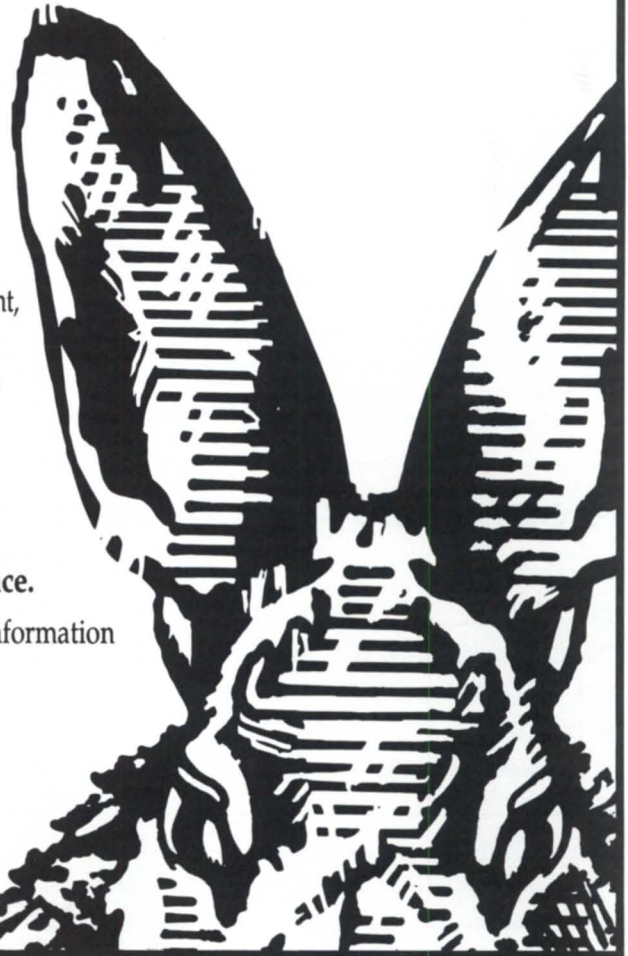
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The conversation

Using the LU6.2 server to communicate through IBM's SNA. Part II

by William P. Rawlins
Special to Focus

In the September issue of *Focus*, I introduced the concept of LU6.2 from the perspective of the applications programmer. (LU6.2, Logical Unit 6.2, permits application programs on different computers to "talk" with each other. Systems Network Architecture [SNA] is used as the underlying communications structure.)

The problem

At Data General's Software Products and Services Division (SPSD), we were approached by a customer who had a critical information need. The information system on their MV/20000 needed on-line inquiry access to the corporate mainframe data base. 3278 emulation would not suffice, because information was needed from both the MV and the mainframe for a single inquiry. Batch transfers of data from the mainframe using remote job entry file transfer would not suffice, since up-to-date information was needed. LU2 (Logical Unit 2) would not suffice due to the potential of changing screen formats on the mainframe. We recommended LU6.2.

Using LU6.2, an application program on the MV can transmit a data record key to a data base server program running on the mainframe. The data base server program can retrieve a data record from its data base and return the record to the application program on the MV.

For a single application program running on the MV, the need and solution appeared as in Figure 1.

However, multiple application programs on the MV needed to access data on the mainframe. One potential solution to this problem involved establishing LU6.2 communications by linking a common LU6.2 communications subroutine with each application program, as shown in Figure 2.

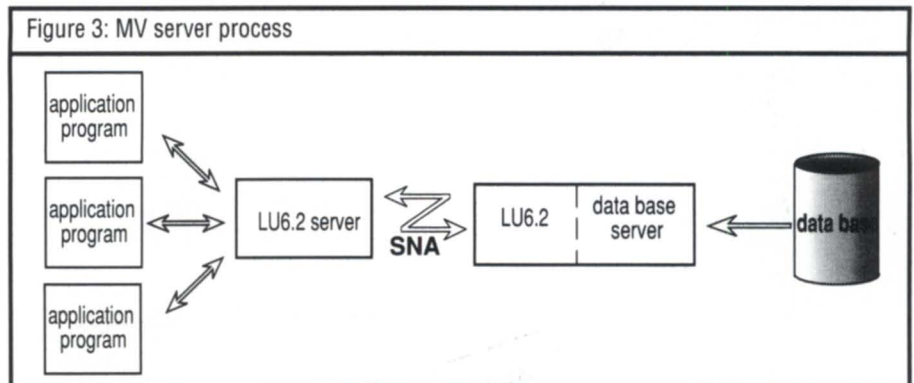
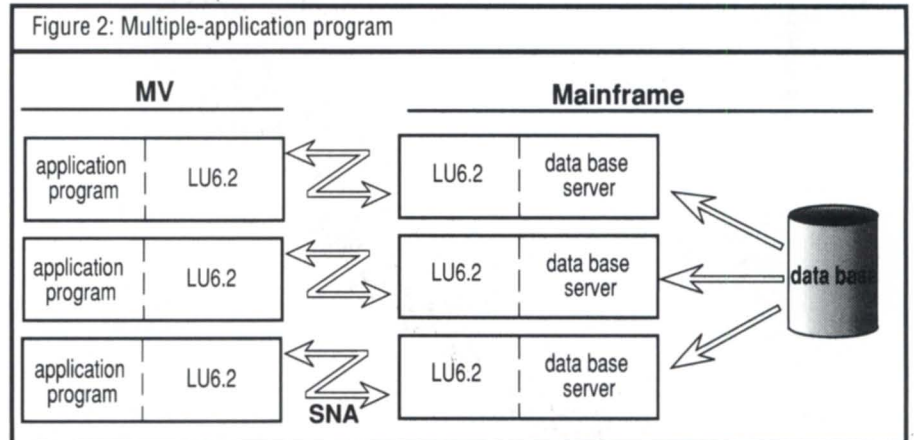
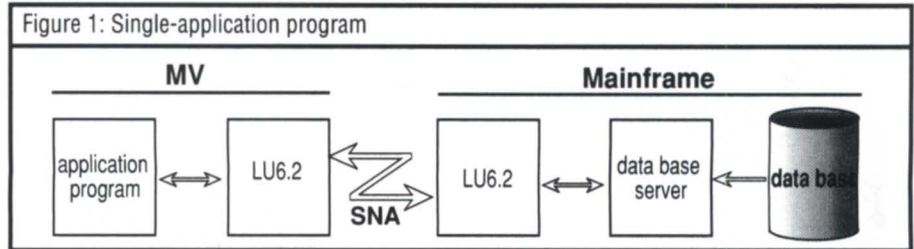
This approach, though workable, was not optimal. If each application program established an SNA session with a mainframe data base transaction program and released the session when the transaction was complete, the associated overhead would adversely affect response time. In addition, since the mainframe system managers naturally wished to limit the impact on other mainframe operations, the number of mainframe transaction programs available to service remote requests would sometimes (perhaps, often) be smaller than the number of MV application programs requesting service.

We designed a procedure, shown in Figure 3, in which an "MV server" process provides a single point of service to all applications requiring a mainframe data base access. Use of a server removes the objections raised to the previous model by keeping SNA sessions open and providing equitable access to limited resources.

Additionally, application program complexity is greatly reduced by placing all LU6.2-related logic in the server process.

We created a subroutine library that could be LINKed with the MV application programs (customers) as an interface to the LU6.2 server. The interface subroutines would require the application program to supply a data area containing input to the transaction and an area in the program that can receive output generated by the transaction. The LU6.2 server can transfer input data to the mainframe and output data to the application without knowledge of the data structure and content.

Figure 4 shows the relationship among application programs, the LU6.2 server, and the mainframe data base server. An editable configuration file on the MV specifies the characteristics of the LU6.2 server, such as the number of host data base requests that can occur simultaneously.



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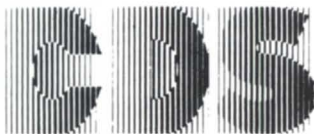
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This approach satisfied the customer's critical information need in an optimal fashion. Dual inquiries—one using a terminal lookup on the MV and one using a terminal lookup on the mainframe—would not be required. One application program on the MV can obtain and present all of the necessary information, with the user being unaware of the background activity.

Advantages of an LU6.2 server

The general advantages of using an LU6.2 server instead of direct LU6.2 access from the application program are summarized below.

- SNA sessions are established and maintained by the server. Each application program with a data request doesn't have to establish an SNA session. Therefore, request-to-reply time is shortened.
- There is no danger of trying to initiate a conversation and finding the necessary resources unavailable. Application programs do not need to incorporate mechanisms for arbitrating and retrying of requests.
- Since applications do not have direct access to critical communications and host resources, a "misbehaving" application

cannot "forget" to release resources that should be shared.

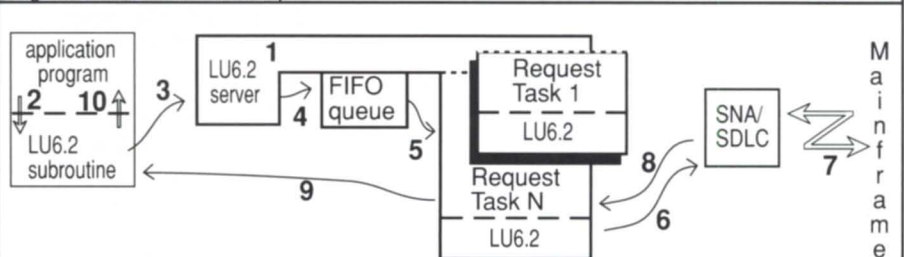
- Application coding and SNA resource management are greatly simplified.
- Changes in the communications protocol between the LU6.2-using entities (the LU6.2 server on the MV and the transaction program on the host) can be made without the need for recoding or reLINKing of application programs.

At our customer's site, there is a further advantage in having a data base server on the mainframe system: if data types and sizes in the data base change, the transaction program can return the previous image of the data to the LU6.2 server. Therefore, no immediate changes are necessary on the MV.

Some industry analysts say that LU6.2 will be the de facto standard for remote data base access, particularly between computers of different architectures. Data General has the software tools to back up that potential. Δ

William P. Rawlins is project manager for the Software Products and Services Division of Data General. He can be reached at 3617 Parkway Ln., Royal Peachtree Corners, Norcross, GA 30092; 404/448-6072.

Figure 4: Overall relationships



1. The server is brought up. It consults the configuration file to see how many tasks should be created to handle requests from the application program. The number of request tasks determines the number of mainframe data base requests that may occur simultaneously.

2. The application program calls an interface subroutine to pass transaction input to the server and wait for output to be generated.

3. The subroutine connects the application to the server and passes the request. The subroutine pends the applications until a reply is received from the server; however, use of the AOS/VS Connection Management facility enables the application process to recover if the server process should terminate abnormally.

4. The request is put on a FIFO (first in, first out) queue in the server.

5. Request tasks service the queue. When a request task dequeues an entry, it establishes a

conversation with a mainframe transaction program. If there are more requests than request tasks, the FIFO queue provides a waiting area until resources become available.

6. The LU6.2 communications portion of the request task obtains transaction input from the application process and asks SNA to transfer the data to the host.

7. Data movement—SNA on the MV and mainframe computers perform the data exchange process, and the mainframe transaction program transfers output back to the MV.

8. The request task receives transaction output.

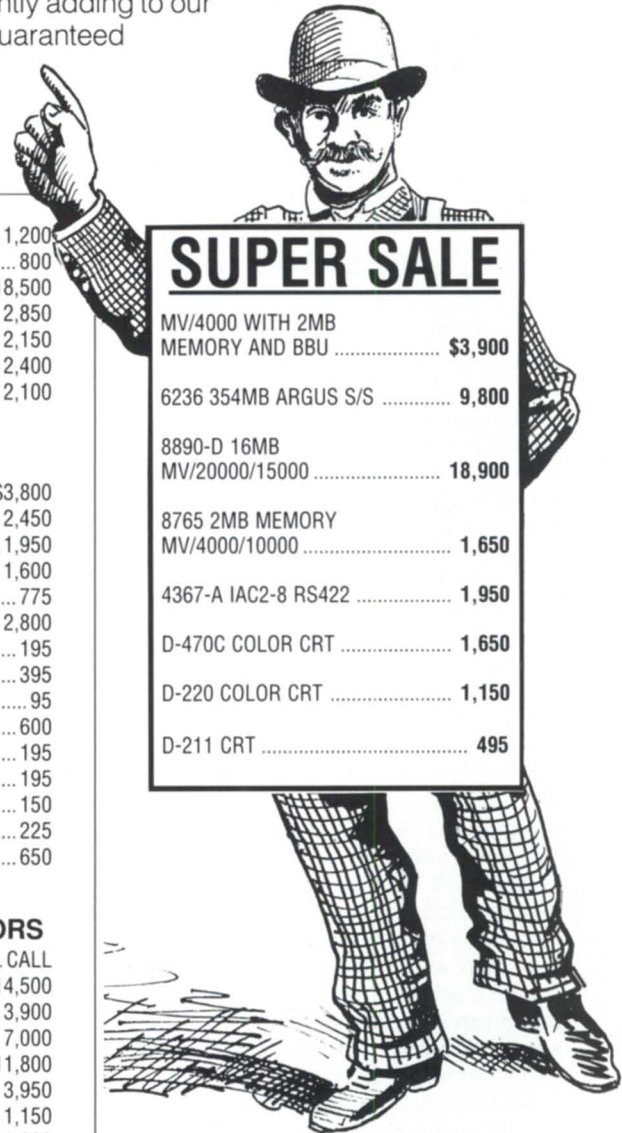
9. Transaction output is moved to the application program's data area, and the interface subroutine is notified that the transaction has completed.

10. The subroutine returns control to the application program.

Note: The LU6.2 conversation and data movement mentioned in step 7 were discussed in detail in the previous issue and therefore are not covered here.

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Using X.400 for intercompany communications

by Alex Cullen and Jock Shearer
Special to Focus

Data General's CEO network extends to every Data General office and to most employees. It has become our major vehicle for intracompany communications. We have looked for a way to extend this communication to our suppliers and customers. Our goals are to find a method that is easy to implement, easy to use, inexpensive, and secure. Using DG/X.400 in a multicompany electronic mail network meets these goals.

DG's customers and suppliers have diverse relationships with us, in their needs for communication with individuals within DG, and in their technical capabilities. Although many of our customers have CEO, not all of them use it as their sole or primary OA system. A much smaller cross section of our suppliers have DG systems, and their technical capabilities extend from highly sophisticated "early adapters" to organizations with much simpler OA. We need a solution that works within this variety of needs and capabilities.

Establishing an intercompany network must take several issues into consideration.

- **Cost sensitivity.** Since this will be an additional communications method, as well as a new way of doing business, initial investments must be minimized.

- **Compatibility with existing systems,** both our internal CEO and whatever types of systems that these companies use. The

success of an electronic mail system is highly dependent on it being built on current environments.

- **Ease of use.** This is important for users to find this as an acceptable replacement to telephones, fax machines, and overnight mail.

- **Technical support** within a multi-company environment. Each company linking to DG must be able to receive the support they need for their users.

- **Security.** Corporate management is reluctant to support links to other companies without assurance that not only our system is secure but that confidential information cannot inadvertently be sent to unauthorized people.

Our solution to these requirements was a "hybrid" public and private mail system, utilizing a single host running DG/X.400 as the gateway between customers and suppliers who have implemented X.400 interfaces to their own OA systems. That way, they can link directly to this host via the Telenet PDN. Companies not supporting X.400 on their systems can use Telenet's Telemail service to communicate with us.

Since we chose to implement X.400 on a single host, we have only one copy of the software and data bases to maintain. All other hosts in our network use standard CEO mail to send and receive mail through this host; no additional software is needed. We set up a number of DG/X.400 "site aliases" that met our internal users' needs to communicate with their business contacts. (See Figure 1 for more information on X.400 addressing and DG/X.400 site aliases.) This single gateway arrangement also means that there is a single point for activity logging and usage accounting.

Initially, very few of our vendors and customers had X.400 capability, so we provide an X.400 link to Telenet's Telemail service. Telemail can be accessed in a variety of ways: dumb terminals, PCs, or larger systems with terminal-emulation software. Telenet provides these users with technical support, including assistance integrating with their internal systems.

Figure 1: X.400 addressing and DG/X.400 site aliases

An X.400 address, referred to as an O/R name, is defined in terms of the following information:

- country
- administrative domain—a recognized public mail service. This can be thought of as the equivalent to the public postal service.
- private domain—the name the administrative domain assigns to a private mail system. This is a rough analogue to the mailroom of a company.
- organization and organizational unit(s)—as required by the private domain to qualify an individual
- personal name information—as defined by the usernames on the private domain mail system
- other values as required by the private mail system.

A "typical" X.400 O/R name might be:

```
Country=US / Administrative
Domain=TELEMAIL /Private
Domain=DG.CORP / Organization=DGNS /
Personal Name=Alex Cullen
```

As this addressing form is cumbersome, DG/X.400 provides the ability to define aliases and site aliases. A DG/X.400 alias defines the complete O/R name for a user, and is the equivalent of a CEO personal alias. A site alias is simply a partial O/R name, requiring only one additional field to qualify a specific user mailbox. Because of this capability, in our implementation, it's possible for any CEO user to use the format:

```
<username>@<site alias>:X400
```

to mail to an external mailbox. For example, a person in Purchasing can send mail to a supplier using the format:

```
J.SUPPLIER@PUBLIC:X400
```

Side benefits for our management of this service are that Telenet bills the customer for their Telemail usage, thereby distributing costs, and a single DG/X.400 site alias is sufficient to provide addresses for all Telemail users.

Our implementation met DG's security requirements several ways:

- DG/X.400 provides mail exchange only; outside users are never logged onto our internal systems.

- Messages from outside parties contain the X.400 O/R name of the sender, and therefore aren't confused with mail from DG internal staff. With this, we decrease the chance that confidential information is inadvertently sent in response to a message received from an outside party.

- X.400 systems must know of each other and exchange passwords before messages are exchanged.

- There is a single point for activity logging.

To implement intercompany electronic mail, we decided that those internal groups with significant communications with outside companies would introduce it to those companies. Purchasing, Marketing,

Sales, and other organizations feed leads to us on companies interested in pursuing electronic links. We follow up on these companies to see if direct X.400 links are an option for communications. Those companies without X.400 capability are referred to Telemail, who follow up by providing mailboxes, training, and support.

The response to this expanded electronic mail capability varies. Within DG, the integration with our CEO usage has been well received. For our customers and suppliers, key factors seem to be the type of communication needed, the degree of integration into existing OA, and the organizational willingness to implement changes in their systems. The largest users at present are our suppliers who have frequent contact with a few specific individuals. Some companies use this capability infrequently, say for urgent document transfers. Several of our suppliers have found this to be a useful platform for solving specific problems, such as multiple-recipient messaging, where until now there has been no easy method. Usage is building slowly, as both

our internal users and our customers and suppliers become accustomed to this capability and begin to use it to replace faxes, phone calls, and overnight mail.

Although our experiment with intercompany networking is still very young, initial response is positive. Because DG/X.400 provides a secure and manageable method of linking different mail systems, corporate management is now more comfortable with establishing these links. Beyond some initial start-up problems, our implementation has proven to be reliable and easy to use. At present, cost savings of intercompany electronic mail are soft, and result from more efficient information exchange. We feel that the benefits of better communications with our vendors and customers will become more apparent as time goes by. Our goal remains to use this capability to strengthen ties to our customers and suppliers. Δ

Alex Cullen is program manager and Jock Shearer is marketing manager for Data General in Westboro. This article is based on the presentation they gave at the NADGUG conference in Philadelphia.



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A LAN tutorial

A close look at local area networks sheds light on communications buzzwords

The world of local area networks is so full of buzzwords that it feels almost like a private club open only to communications gurus. With this article, I'm attempting to open up this seemingly exclusive technology, so the rest of us can understand it.

This month, I'll explain the difference between StarLAN, Arcnet, and Token Ring. Next month, I'll round out the discussion with Ethernet and Lattisnet. I'll compare the relative merits of each popular data link and physical technology. From a technical standpoint, these articles will examine LANs from the bottom up, in reference to the Open System Interconnect (OSI) model. By the time we finish, I hope you will understand why your choice of cabling should be independent from your choice of network software.

Local area networks: the next step

Once you're past terminal emulation and have your asynch file transfer system working, you'll discover you've got yet another mixed blessing on your hands. That plethora of MS-DOS applications will begin to generate large volumes of valuable data that needs to be shared throughout your organization. Unfortunately, the PC workstation just isn't a good place to keep it. It needs to be moved back to the centralized minicomputer (which we'll now call a server) for two specific reasons: (1) from there, it can be distributed to others in your organization, and (2) the centralized server is far better equipped to manage the data.

You will also find that the volume of data now exceeds the capabilities of the low-performance asynchronous link; it's time to consider a local area network.

The layered approach

Local area network functions are broken down into seven conceptual layers. These layers, shown below, are specified by the Open System Interconnect (OSI) model, a standard that has gained wide acceptance. The layers are also a great help in allowing us to compare and combine LAN technologies with one another.

- application
- presentation
- session
- transport
- network
- data link
- physical

The raw underlying data rate can make a substantial difference in network capacity

Starting from the bottom, the physical layer describes the actual wiring and connectors you use to build the network, while the layers above bring you closer and closer to the user working with application software at the top.

When designing a network, it's best to adopt the same layered approach. It's important to understand that a decision at one layer can often be made independent of decisions at other layers. For example, if you decide you want to use twisted-pair wiring, there are many products that support this. Likewise, if you start with the top levels of software, you have a wide variety of cabling schemes available.

One of your first decisions when designing a network will be what type of cable to use. There are three basic cabling types: coaxial cable (coax), twisted pair,

and fiber optic.

Until this year, I recommended coaxial cable for all but the smallest networks. Recently, however, a number of high-performance protocols have become available. Two of these (Arcnet and Lattisnet) are so good that I now recommend one or the other of them for many customers.

You may have heard that Ethernet (IEEE 802.3) has lots of collisions, and that the Token Ring (IEEE 802.5) is much better. Or you may have been told that Token Bus (IEEE 802.4) is only for use in factories. Don't believe it.

In six years of experience with local area networks, I have yet to encounter a real-life situation in which the choice of Ethernet versus Token Ring (for example) makes any difference whatsoever. What I have found, however, is that the raw underlying data rate can make a substantial difference in network capacity. Not surprisingly, a 10 mbps (ten million bits per second) Ethernet can handle a little more than twice the traffic of a 4 mbps Token Ring and about 10 times as much as a 1 mbps StarLAN.

Selecting a LAN

The rule here is to select the speed of your LAN based on the number of workstations you will connect, not upon the speed at which you want to move data from point A to point B. Ethernet isn't much faster than a StarLAN when there are only one or two PCs, because you can't get data in or out of the computers that fast anyway. But start adding stations, and you'll soon use up the bandwidth available. This bandwidth must be shared by all the devices on the LAN, and when it gets used up, the network itself (rather than the computers or their disk drives) becomes the bottleneck.

Let's start with the slowest and least expensive scheme and work our way up to the fastest technologies.

StarLAN

AT&T developed StarLAN as a way to

take advantage of the unshielded twisted-pair wiring already installed in so many office buildings. In fact, much of this wiring is still owned by the telephone companies.

StarLAN's clock rate is 1 mbps. It uses a carrier-sensing protocol with collision detection (CSMA/CD) nearly identical to the much faster and more expensive Ethernet.

Like all LANs, StarLAN requires a controller for each PC workstation. Data General manufactures DG/StarLAN controllers for all of their MS-DOS systems (including the DG/One). From there, inexpensive wire is run up to 800 feet to a hub. Each hub can connect to 12 workstations. Hubs may be connected through other hubs (cascaded) with as many as five levels to build complex network trees. The maximum total network diameter of a StarLAN is 8,000 feet.

Data General's DG/PC*I supports StarLAN directly as one of the two basic DG/PC*I cabling schemes.

Rational Data Systems' PC/VS supports StarLAN-based Novell networks. In this configuration, a short segment of Ethernet cable is used to bridge from the Novell Netware server to the MV computers.

If you use DG/PC*I software, you must use Data General's own DG/StarLAN controllers, which cost \$650 each. If you are using Novell Netware, you can use controllers from other manufacturers, such as Western Digital or Microm/Interlan, which cost substantially less.

Data General's 12-port StarLAN hubs cost \$750. Therefore, the combined cost per connection of DG/StarLAN is \$713 per workstation, not including cabling:

Controller	\$650
Share of hub (750/12)	\$ 63
Total per connection	\$713

The advantages of StarLAN are listed below:

- **Low cost**—By using inexpensive, unshielded twisted pair, the wiring costs of StarLAN are among the lowest. Hubs are also inexpensive.

- **Simplicity**—StarLAN is the simplest of all network technologies and can be installed and expanded by unsophisticated users.

Some of StarLAN's disadvantages include the following:

- **Performance**—StarLAN is one of the slowest LAN technologies, at only 1 mbps.

- **Capacity**—At 1 mbps, the maximum number of concurrent users may be severely limited. Consider that each workstation may be capable of

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communicating at a rate of up to 30 KB (250,000 bits) per second. The actual throughput rate of StarLAN is roughly 500,000 bits per second. Therefore, after adding only a second workstation, the network itself (rather than the workstation or the server) may become the performance bottleneck.

• **PS/2s**—There is currently no StarLAN support for the microchannel-based IBM PS/2 computers if Data General's DG/PC*I software is used. However, microchannel-based computers may be used in Novell-PC/VS hybrid LANs.

Arcnet

Arcnet was developed by Datapoint Corporation in 1977. Standard Microsystems picked up where Datapoint left off and has built Arcnet into one of the most popular technologies in the PC LAN market.

Arcnet operates at a clock rate of 2.5 mbps and uses a token-passing protocol. Arcnet was originally based on a combination of bus/star topology using RG-62/U coaxial cable. In that configuration, the wiring costs approach those of Ethernet, but result in only 25 percent of Ethernet's bandwidth. Although Arcnet continued to win praise from various PC industry magazines, we did not recommend it.

Many Arcnet users discovered, however, that by judicious use of baluns (transformers), they could convert the signals from 93-ohm coax to inexpensive twisted pair and back again. In 1987, Standard Microsystems took this idea to heart and released twisted-pair controllers and hubs for Arcnet, eliminating the need for baluns. In addition, SMC designed inexpensive units to bridge between coax and twisted pair. Arcnet fiber-optic repeaters have also recently been announced by Standard Microsystems.

The maximum length of an Arcnet twisted-pair wiring segment is 400 feet from a hub, and up to 10 PCs or repeaters can be daisy chained within that distance. Repeaters can be used to connect one segment to another, permitting the design of large networks.

Rational Data Systems' PC/VS supports Arcnet-based Novell networks. Data General's DG/PC*I does not support Arcnet.

At \$295, Arcnet controllers are less expensive than virtually all others. Eight-port, twisted-pair hubs are priced at \$750, but since as many as 10 PCs can be daisy chained to each port, the cost may be substantially reduced. We use the figure \$325 (again, without cabling) to estimate

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the cost of connection per workstation:

Controller	\$295
Share of hub	\$ 30
Total per connection	\$325

The advantages of Arcnet are as follows:

• **Low cost**—When configured for twisted pair, Arcnet is by far the least expensive LAN technology.

• **Good performance**—Although not as fast as the Token Ring or Ethernet, Arcnet is suitably fast for most applications.

• **Simplicity**—Arcnet is nearly as simple as StarLAN. Arcnet and StarLAN both use telephone-style modular connectors.

• **Flexibility**—Arcnet's ability to use coax, unshielded twisted pair, and fiber make it the most flexible of all network technologies.

Arcnet's one disadvantage is that Data General's DG/PC*I does not support it.

Token Ring

First released in 1985, the Token Ring is IBM's second venture into PC LANs. The first product, PC Network (based on Sytek's broadband scheme) is no longer an important technology, although it is still supported by IBM.

The Token Ring operates at 4 mbps, primarily over shielded twisted pair, and there are options for fiber and coaxial cable as well.

There was quite a stir when IBM announced the Token Ring. No one was surprised by the basic scheme, but in addition to the shielded twisted-pair wiring, IBM surprised the industry by claiming that the LAN would also operate over unshielded twisted pair. In those days, AT&T's StarLAN looked like an important product in the LAN market, and IBM's ability to run at 4 mbps (as opposed to AT&T's mere 1 mbps) appeared to be a real coup.

Ultimately, however, it turned out that the Token Ring's ability to run on unshielded twisted pair is severely restricted. A maximum of 76 connections are supported in this configuration, and the quality of the wire itself must be very good. Many users have installed their Token Rings using existing telephone cabling, only to discover that it was inadequate and had to be replaced.

In an unusual move, IBM and IEEE have agreed on a basic standard for the Token Ring. IEEE 802.5 is compatible with IBM's product. However, IBM's implementation goes far beyond IEEE's in the area of network management functions.

Although the Token Ring is electrically a true ring (i.e., the signal from one station

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is physically wired to the next, and so on, until it returns to the first station), the "ring" passes through a hub between each station. The wiring, therefore, looks just like StarLAN.

A typical hub connects up to eight workstations and can be linked to other hubs to form a very large ring. From the outside, it may appear that a tree structure is being built, but in fact, the configuration is always a true (although convoluted) electrical ring.

Data General's DG/PC*I does not support the Token Ring. Novell's Netware supports it based upon a variety of manufacturers' controllers (including IBM's). Rational Data Systems' PC/VS can be run on any PC connected to a Netware Token Ring (or other) LAN. The final connection to the MV server is accomplished via a short piece of Ethernet coaxial cable run from the Netware server to the MV.

The Token Ring hardware is more costly than that of StarLAN or Arcnet. An IBM controller for an AT-class machine costs \$695 (\$895 for PS/2 microchannel systems). Hubs are more reasonable: \$600 for an eight-port IBM Multistation Access Unit. Remember, also, that it's shielded, and you should not plan to run the Token Ring on existing telephone wiring.

Controller	\$695
Share of hub	\$ 83
Total	\$778

The advantages of the Token Ring are twofold:

- **Moderate speed**—At 4 mbps, the Token Ring can support four times as many workstations on a single LAN as StarLAN.

- **IBM standard**—Many large corporate customers are more comfortable with bearing the IBM name.

The disadvantages are also twofold:

- **Expensive**—The Token Ring hardware is not cheap, and the requirement for shielded wire further increases the cost.

- **No DG/PC*I support**—Data General's DG/PC*I does not support the Token Ring.

△

Doug Kaye is a partner in Rational Data Systems. He can be reached at 5725 Paradise Dr., Corte Madera, CA 94925; 415/924-0840. This article is an excerpt from the "Rational Data Systems Report on PC Integration." For a free copy, contact Rational Data Systems at 330 N. Brand Blvd., Glendale, CA 91203; 818/507-4235. Copyright © 1988 Rational Data Systems.



^ABC+:#:+.F77\X+

Getting your programs to accept complex templates as arguments

If you read this column on a regular basis, you have probably noticed that CLI arguments and switches are two of my favorite topics (see my columns on GET_SWITCHES in the September, October, and November 1986 issues of *Focus* and my START_PROGRAM column in August 1988). Why? Because knowing how to use them is essential to writing good application programs. This month, I want to talk about filename templates, which are often supplied to applications as CLI arguments. Of course, they need not be entered in the command line: your application may use hard-coded filename templates, or they may be entered from the keyboard during dialogue. The examples used in this article will be command-line arguments.

First, let's warm up with a few examples to illustrate some of the cases. Assume program FOO is an application that analyzes Fortran 77 source-code files.

Example 1

```
) X FOO XXX.F77
```

This is the simplest case; just retrieve the filename as CLI argument 1 and open the file. The argument can be retrieved with system call ?GTMS or my GET_SWITCHES routine (available from the NADGUG software library).

Example 2

```
) X FOO (!FILENAMES,+.F77)
```

Assuming FOO has been written to retrieve only argument 1 from the command line, this is an easy way of using the same program to process several files that match a template without rewriting it. However, it does incur unnecessary overhead, because the program must be executed once for each file. However, as far as the program is concerned, this is the same as the first example, because it sees only one filename for each execution.

Example 3

```
) X FOO XXX.F77 YYY.F77 ZZZ.F77
```

This is another variation on example 1. The program has now been rewritten to process *all* command-line arguments (not just argument 1). This means the program only needs to be executed once to process a series of files. Unfortunately, the program still does not accept templates.

Example 4

```
) X FOO (!FILENAMES,+.F77)
```

Without rewriting the program again, the CLI can be used to generate a list of filenames as one or more arguments. This combination is probably the easiest way to implement an application that processes a series of files. It is better than example 2, because it eliminates the multiple executions of the program, and it is better than example 3, because example 3 doesn't support templates.

A more complex case

If all arguments are indistinguishable from each other (filenames, numbers, or anything you wish), then example 4 is quite adequate. But what if there are different types of arguments for different positions in the command line? Suppose FOO is a "search" program: argument 1 is the name of the file to search, and argument 2 is the entity to search for:

```
) X FOO XXX.F77 RETURN
```

In this case, the program must be coded to retrieve only argument 1 as a filename and argument 2 as a search string. If the following is used:

```
) X FOO (!FILENAMES,+.F77) RETURN
```

the command line may expand to:

```
) X FOO =XXX.F77 =YYY.F77 RETURN
```

which is more complex to process because of the variable number of arguments. Of course, the program could assume all arguments are filenames except the last argument; however, other applications may not have such obvious solutions.

In this example, the easiest way to use the program on several files is:

```
) X FOO (!FILENAMES,+.F77) RETURN
```

which has the extra overhead discussed in example 2. A better solution would be to code the program to accept a template as argument 1:

) X FOO +.F77 RETURN

Dream on . . .

Most users would expect that an application that accepts a simple filename as argument 1 should also accept any of the following filenames, pathnames, or templates as well (and so they should); i.e.,

```
) X FOO XXX.F77
) X FOO +.F77
) X FOO (!FILENAMES,+.F77)
) X FOO ABC:XXX.F77
) X FOO +.F77X+.F77
) X FOO ^ABC+:#:+.F77X+
```

Unfortunately, as you shall see, these cases require special consideration.

?GNFN: the template processor

AOS[VS] has a single system call (?GNFN) that is used to expand a template into a list of filenames. It doesn't actually generate a list; instead, it is "primed" with a template and then repeatedly called to "read" the DIR/CPD/LDU directory file and return the next filename. An "end-of-file" return signifies "no more files." The order of the files is in "hash" order, exactly the same as is generated by a FILESTATUS command without /SORT, i.e., in the order they appear in the directory file. In other

words, no order at all.

It seems simple enough: retrieve argument 1 from the command line, prime ?GNFN with it, and loop until there are no more names. However, a simple implementation of ?GNFN will result in an "ILLEGAL FILENAME TEMPLATE" error in the last four examples above. The reason is that ?GNFN only accepts simple templates that contain wild cards for pathnames: *, -, and, + but not =, :, #, \, or ^.

The strange appearance of "=" in a filename may not be obvious, but remember that when [!FILENAMES] is used to generate a list of filenames, it prefixes each filename with "=", i.e.,

```
) X FOO (!FILENAMES,+.F77)
```

may expand to:

```
) X FOO =XXX.F77
) X FOO =YYY.F77
. . .
```

To get around this, you can modify the command line to remove the "=" prefix:

```
) X FOO (!ENAME,[!FILENAMES,+.F77]).F77
```

To see the difference, insert a WRITE command before "X" and try each version. This command line is rather complex to enter, and can be eliminated if the program checks for the presence of "=" and skips over it.



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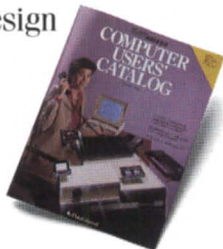
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GET_NEXT_FILENAME

Yes, here is yet another subroutine for your toolbox. GET_NEXT_FILENAME (see Figure 1) has a simple calling sequence and handles *all* templates. Its use is illustrated in the test program shown in Figure 2. Entry-point GET_NEXT_FILENAME_INIT accepts either a directory name or "<0>" for the current directory. If the template is complex, the directory argument is ignored. The template can be a simple filename (XXX.F77), a simple template (+.F77), a pathname (ABC:XXX.F77), or any combination of these (^ABC+:#+.F77\X+). No system errors are reported, and no error codes are returned, which keeps the calling sequence simple. If there are any errors in GET_NEXT_FILENAME_INIT (?OPEN error or mismatched parentheses), the first call to GET_NEXT_FILENAME returns "end-of-file" (FILESIZE=-1). No FILESTATUS is attempted if the complex template contains unmatched (, [], or <>, because /1=IGNORE/2=IGNORE doesn't suppress that error.

?GNFN will choke on exclusion templates, (i.e., +F77\X+) or complex templates that include pathname fragments (i.e., ^ABC+:#+.F77\X+). The CLI processes these templates by splitting them into simple templates for use with ?GNFN, and supplementing ?GNFN with its own pattern-matching algorithm.

Rather than reinvent the wheel, I have chosen a simpler (but a bit slower) way to handle complex templates. Since ?GNFN is brain-damaged and the CLI is so smart, I let the CLI do all of the dirty work. If a complex template is supplied, GET_NEXT_FILENAME calls subroutine CLI (see the July 1986

Focus) to do a FILESTATUS to a scratch file ("=?[!PID]GNFN.TMP") and then reads the names from the file. The scratch file is rendered "invisible" by deleting it after it has been opened. The filename disappears from the directory, but it is not actually deleted until the file is closed, i.e., when the program terminates normally or abnormally.

Figure 1: Subroutine GET_NEXT_FILENAME

```

c  entry      GET_NEXT_FILENAME_INIT(directory,template)
      subroutine GET_NEXT_FILENAME(filename,filesize,filetype)

      implicit none

c>>>constants
%list(off)
      include      "qsym.f77.in"      !'? instead of 'isys_'
%list(on)

c>>> variables
c-> subroutine arguments
      character* (*)  directory,template
      character* (*)  filename
      integer*4       filesize,filetype
    
```

(continued)

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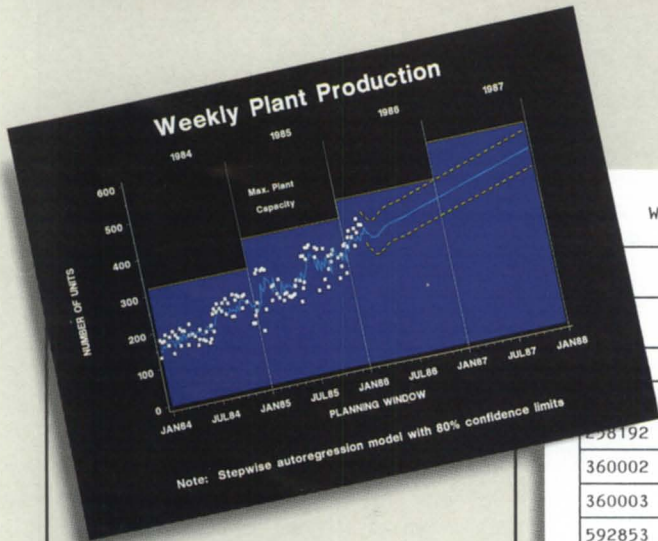
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60	6	4	9	6.5	83
70	7	4	10	7.0	85

```

c--> local stack
integer*4  ac0,ac1,ac2,ier
character*256 temp
character*1  c
integer      i,i1,i2,n_square,n_round,n_triangle

integer*2  pkt_fstat(0:?sith-1)  !for ?fstat
integer*4  size
equivalence (pkt_fstat(?sefm),size)

integer*2  pkt_delete(0:?gcpl1-1) !for ?delete

c-->local non-stack (preserve values between calls)
integer*2  pkt_io(0:?iosz-1)      !for ?open/?gnfn
integer*4  ba_temp                 !byte address
integer*4  xba_filename            !byte address
equivalence (pkt_io(?ifnp),ba_temp)
equivalence (pkt_io(?ibad),xba_filename)
save      pkt_io,ba_temp,xba_filename

integer*2  pkt_gnfn(0:?nfln-1)     !for ?gnfn
integer*4  ba_filename             !byte address
integer*4  ba_template            !byte address
equivalence (pkt_gnfn(?nfnm),ba_filename)
equivalence (pkt_gnfn(?nftp),ba_template)
save      pkt_gnfn,ba_filename,ba_template

character*256 temp_template

```

```

logical      init_called,complex
save        temp_template,complex,init_called
data        init_called/.false./

integer*4    ier_open
save        ier_open

c>>> externals
integer*4  isys

c>>> begin
if(.not.init_called) then
stop "call GET_NEXT_FILENAME_INIT first!"
else
if(ier_open.ne.0) go to 999      !no files if ?open error
end if

c--> get next filename with ?gnfn or ?read
1  if(.not.complex) then
ba_filename=byteaddr(filename)  !put name here
i1=1                              !start at byte 1
ac0=0                              !reserved
ac1=pkt_io(?ich)                  !aos/vs channel no.
ac2=wordaddr(pkt_gnfn)            !address of packet
ier=isys(?gnfn,ac0,ac1,ac2)
else
xba_filename=byteaddr(filename)  !put name here
i1=3                              !skip 2 leading blanks

```

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```

ac0=0 !reserved
ac1=0 !reserved
ac2=wordaddr(pkt_io)
ier=isis(?read,ac0,ac1,ac2)
end if
if(ier.eq.?ereof) go to 999 !no more (?gnfn or ?read)
if(ier.eq.?erifc) go to 999 !invalid template (?gnfn)
if(ier.ne.0) go to 1 !ignore: next file

c-> get file information
if(complex) then
    i2=index(filename,"<12>")
    filename(i2:i2)="<0>" !replace delim with null
end if
ac0=byteaddr(filename(i1:))
ac1=0 !pathname, resolve links
ac2=wordaddr(pkt_fstat)
ier=isis(?fstat,ac0,ac1,ac2)
if(ier.ne.0) go to 1 !ignore: next file
filesize=size
filetype=iand(pkt_fstat(?styp),int2(377k))

i2=index(filename,"<0>")-1
filename=filename(i1:i2) !blank pad [& shift left]
return

c>>> eof: no more files
999 filename=""
    filesize=-1 !indicates eof
    filetype=-1

c-> close directory/temp file
ac0=0 !reserved
ac1=0 !reserved
ac2=wordaddr(pkt_io)
ier=isis(?close,ac0,ac1,ac2)
init_called=.false. !need INIT again

return

c>>> begin
entry GET_NEXT_FILENAME_INIT(directory,template)

init_called=.true.

complex= index(template,".").ne.0.or.
# index(template,"\\").ne.0.or.
# index(template,"#").ne.0.or.
# index(template,"^").ne.0

c-> create scratch file of filenames if complex template
if(complex) then
c...check template first before FILESTATUS
n_round=0
n_square=0
n_triangle=0
do i=1,len(template)
    c=template(i:i)
    if(c.eq."(") n_round= n_round +1
    if(c.eq.")") n_round= n_round -1
    if(c.eq."[") n_square= n_square +1
    if(c.eq."]") n_square= n_square -1

```

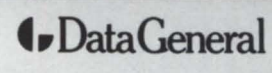
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Janitor in a DRAM



These routines may not do windows, but they can unclutter your system

:HOUSEKEEPING

I don't know why, but spring-cleaning hasn't really ended for me yet this year. I'm not exactly a tidiness freak, so that doesn't explain it. Maybe I just finally got fed up with spending nights and weekends as the system janitor instead of the system manager.

Anyway, the latest symptom of my compulsion is a small collection of software that currently goes by the name of the Janitor job.

:DESIGN_GOALS

The whole idea of this particular package of software is to get rid of files that have become obsolete from old age, and to do it at a time when it won't bother anybody else on the system.

Sounds simple enough, doesn't it? Just whip up a little macro to delete the unnecessary files if their last modification date is old enough. Then throw together a little batch job with an /AFTER switch, so it runs the macro at dark-thirty and re-QSUBMITs itself to run at the same time the next day. Well, that's what I thought too—until I tried to do it and ran into a few challenging problems.

:STEP.01

The first problem I ran into involved identifying which files are older than *x* number of days. There is no way to do date arithmetic in the CLI without writing the world's hairiest macro (please don't send me any examples). What I really needed was a short program to return a date *x* days ago in CLI format. Then I could use the Build macro (see my August 1987 column in *Focus*) with /BEFORE/TLM=date to make a list of files to be deleted.

Well, the date arithmetic program proved to be pretty simple, given the AOS[/VS] system calls for converting dates into scalars and back again. Figure 1 shows the assembly source program and the macros to rebuild and run it. Note that in the process of writing it, I decided to also allow dates in the future. I haven't figured out a use for this yet, but the feature was a freebie, so....

Using the program is pretty simple. Here's an example I just did:

```
) DATE
14-Jul-88
) DATER -30
) WRITE [!STRING]
14-Jun-88
```

Figure 1a: DATER.CLI

```
[!INEQUAL,%/REBUILD%,]
XEQ MASM16 %\%
XEQ LINK/SYS=VS16 %\%
DELETE/2=IGNORE/V %\%.OB
[!ELSE]
[!EQUAL,%1%.]
WRITE
WRITE Usage: %\% {+/-}no-of-days. You must specify
WRITE either "+" or "-" as part of the argument value.
WRITE
WRITE This program returns a date in the past or future in
WRITE the STRING Variable. The date is in CLI format suitable
WRITE for use with /AFTER or /BEFORE switches in commands that
WRITE do not normally take +/- date values.
WRITE
WRITE For example suppose you wanted to delete all files older
WRITE than 10 days. You could do this:
WRITE
WRITE .....[!ASCII 251] DELETE/2=IGNORE/V FOO
WRITE .....[!ASCII 251] %\% -10
WRITE .....[!ASCII 251]BUILD/BEFORE/TLM=[!ASCII
333]!STRING [!ASCII 335] FOO
WRITE.....[!ASCII 251] DELETE/V [!ASCII 333]FOO[!ASCII 335]
WRITE.....[!ASCII 251] DELETE/V FOO
WRITE
[!ELSE]
XEQ/S %0-%
[!END]
[!END]
```

Figure 1b: DATER.REBUILD.CLI

```
DELETE/2=IGNORE/V DATER.<ER,LS>
CREATE/DATASENSITIVE/TYPE=TXT DATER.(ER,LS)

[!EQUAL,[!SYSTEM].AOS/VS]
XEQ MASM16/E=DATER.ER/L=DATER.LS/U DATER
TYPE DATER.ER
XEQ LINK/SYS=VS16 DATER/LOCAL
[!ELSE]
XEQ MASM/E=DATER.ER/L=DATER.LS/U DATER
TYPE DATER.ER
XEQ LINK DATER/LOCAL
[!END]

DELETE/2=IGNORE/V DATER.OB
WRITE Done!
```



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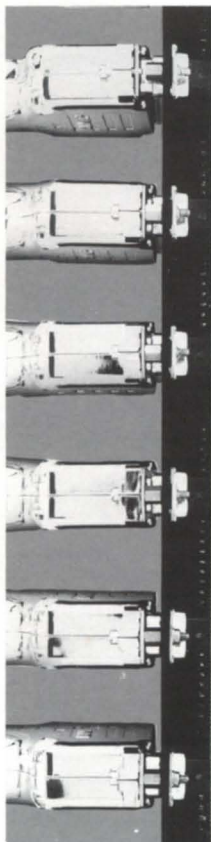
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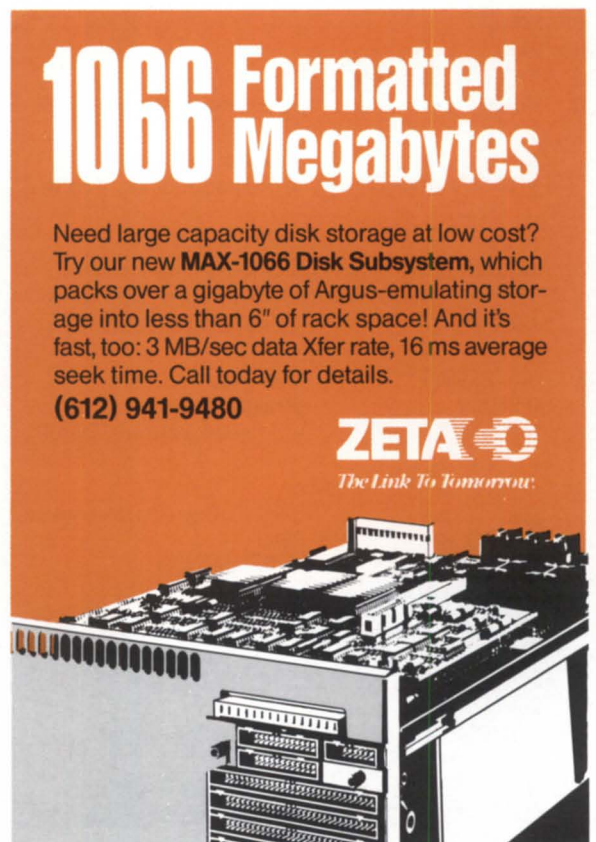
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Figure 1c: DATER.SR

```

;This program returns a date in the past in AOS[/VS] format.
;The date string is returned in the CLI STRING variable if
;the program is used with XEQ/S.
;
;Usage:  DATER [+/-]days
;        FILESTATUS/AFTER/TLM=[!STRING]
;
;        .TITLE  DATER  ;Return the AOS[/VS] date n days ago
;        .ENT    DATER
;        .REV    0.00    ;July 14, 1988
;
;        .ZREL;      ;Maximum visibility
FPUSV: .BLK 18.      ;Opinions vary on the size req'd for
;                  ;this area depending on which DG manual
;                  ;you read. Luckily AOS/VS ignores ?IFPU
;                  ;anyway (maybe later AOS revs do too).
;
GTMPKT: .BLK ?GTLN  ;?GTMES packet
        .LOC GTMPKT+?GREQ
        ?GARG      ;Request type
        .LOC GTMPKT+?GNUM
        1          ;Argument no.
        .LOC GTMPKT+?GSW
        -1         ;Don't need them switches
        .LOC GTMPKT+?GRES
ARGBP:  ARG*2     ;BP(argument area)
        .LOC GTMPKT+?GTLN
;
NDAYS:  -.
MON:    -.
YR:     -.
MONSBP: MONS*2
DATEBP: DATE*2
DATE:   .TXT "99-XXX-99"
.ERROR: ERROR      ;.ERR<zero>R, not .ERR<oh>R!
;
        .NREL 0      ;Unshared data
ARG:    .BLK ?MXPL/2 ;A reasonable size arg, n'est pas?
;
        .NREL 1      ;Shared code & data
        .NOLOC 1     ;Tidy listing mode please
MONS:   .TXT "JanFebMarAprMayJunJulAugSepOctNovDec"
**      .NOLOC 0     ;Sleazy listing mode again
;
ERROR:  LDA 2,FLAGS ;Error flags
        ?RETURN    ;Return to caller
FLAGS:  ?RFCF+?RFEC+?RFER ;CLI format, AC0=code, ERROR
;
;It all starts here with the FPU initialization.
DATER:  SUB 1,1      ;PRM (as Prog's Ref Man advises)
        SUB 2,2      ;PRM
        ?IFPU FPUSV ;Initialize the FPU
        JSR @.ERROR ;Oops
;
;Get the days argument.
        SUB 0,0      ;PRM
        SUB 1,1      ;PRM
        ?GTMES GTMPKT ;Get the number of days
        JSR @.ERROR ;Oops
        SBI 1,0      ;Adjust the arg length for CIS
        LEF 1,3B10   ;Unpacked decimal, leading sign

```

```

        IOR 0,1      ;Form the CIS attribute word
        LDA 3,ARGBP  ;BP(argument)
        LDI 0        ;Float the numeric value
        FFAS 0,0     ;Fix it to an accumulator
        STA 0,NDAYS  ;Save the +/-days value
;
;Get today's date and compute the days-ago date.
        ?GDAY       ;Get the current day
        JSR @.ERROR ;Oops
        ?FDAY       ;Convert the date to a scalar
        JSR @.ERROR ;Oops
        LDA 1,NDAYS ;Days ago/hence
        ADD 1,0     ;Deduct from the lo order part
        ?CDAY       ;Convert back to human format
        JSR @.ERROR ;Oops
        STA 1,MON   ;Save for later
        STA 2,YR    ;Save for later
;
;Format the day.
        FLAS 0,0    ;Float the day
        LEF 1,4B10+1 ;CIS attribute (unpacked, unsigned)
        LDA 3,DATEBP ;BP(date area)
        STI 0       ;Stuff the day
        LEF 0,"-    ;'-
        STB 3,0     ;Stuff it
;
;Format the month abbreviation.
        INC 3,2     ;BP(month abbrev field)
        LDA 3,MONSBP ;BP(month abbreviations)
        LDA 0,MON   ;Month
        SBI 1,0     ;Zero base
        MOVZL 0,1   ;Month*2
        ADD 1,0     ;Month*3
        ADD 0,3     ;BP(month abbreviation)
        LEF 0,3     ;LEN(month abbreviation)
        MOV 0,1     ;LEN(DEST) = LEN(SRC)
        CMV        ;Copy it
        LEF 0,"-    ;'-
        STB 2,0     ;Stuff it
;
;Format the year.
        INC 2,3     ;Position for year
        LDA 0,YR    ;Year
        LEF 1,100. ;(100.)
        CLM 0,0     ;Century check
        67.
        99.
        SUB 1,0     ;20xx: deduct 100.
        FLAS 0,0    ;Float it
        LEF 1,4B10+1 ;CIS attribute
        STI 0       ;Store it
;
;We're outta here.
        LDA 1,DATEBP ;BP(date area)
        LDA 2,DATFLGS ;Flags
        ?RETURN      ;Return the result
;
DATFLGS: ?RFCF+9.    ;CLI format, message length = 9 bytes
;
        .END DATER

```

:STEP.02

Now we've got to write a macro that accepts a template and a minimum age and deletes any files that match the template and

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are older than the minimum age. Having the Build macro available makes this a piece of cake. The macro, TRASH_OLD_FILES.CLI, is shown in Figure 2.

Figure 2: TRASH_OLD_FILES.CLI

```
[!EQUAL,%2%,]
WRITE
WRITE Usage: %% days templates. . .
WRITE
WRITE Deletes all the files which match the template and
WRITE haven't been modified in the specified no. of days.
WRITE
[!ELSE]
DATER -%1%
DELETE/2=IGNORE/V ?%\%.[!PID].BLD.TMP
BUILD/BEFORE/TLM=[!STRING] ?%\%.[!PID].BLD.TMP %2-%
[!NEQ,[!SIZE ?%\%.[!PID].BLD.TMP],0]
DELETE/V [?\%.[!PID].BLD.TMP]
[!END]
DELETE ?%\%.[!PID].BLD.TMP
[!END]
```

:STEP.03

The next step is to create a batch job that can be QSUBMITTED to run at 1 a.m. each morning to re-QSUBMIT itself, and then invoke the TRASH_OLD_FILES macro for each set of files to be deleted.

Here again, we run into a date arithmetic problem. At first glance, most users are tempted to use QSUBMIT/AFTER=+24 to have the batch job resubmit itself. This creates lots of problems, the most obvious one being that the job will run later each night by the amount of time it took the previous night to get to the QSUBMIT/AFTER=+24 command (anywhere from seconds to hours).

What luck! We just happen to have a little program called Dater, whose author had the foresight to allow forward date calculations.

:STEP.04

The final step is to determine what files need to be deleted and what minimum age to use for each. This depends to a great extent on the kind of software in use on your system, but I'll just go ahead and list the stuff we trash each night and maybe you'll pick up some ideas.

Here's what we designated as trash:

Days

old	Template
5	:#:?.BRK
5	:#:?.DMP
5	:#:?.JOB
5	:#:?.MDM
5	:#:?.TMP
5	:#:+.ED
5	:#:UDD:+.FTA.OUTPUT.-
30	:NET:LOGFILES:+.LOG
60	:UDD:OP:OLD_SYSLOGS:+.LOG
60	:UDD:OP:OLD_ERROR_LOGS:+.LOG

Those last two templates involve the directories where we move the previous syslog and error log files before we start fresh ones in the system UP macro. Sixty days allows time for us to run any necessary REPORTs, and for our Field Service engineer to analyze the error logs.

Figure 3 shows the final batch job file. The job is "bootstrapped" the first time using this command:

```
) QSUBMIT/JOB=JANITOR JANITOR.JOB
```

Figure 3: JANITOR.JOB

```
COMMENT The Janitor job

COMMENT Queue me up to run again after 1 am tomorrow.
DATER +1
QSUBMIT/AFTER=[!STRING]:01:00:00/JOBNAME=JANITOR&
/QOUTPUT=@NULL/QPRIORITY=255 JANITOR.JOB

COMMENT Set my process environment
SUPERUSER ON ; COMMENT Gotta have it
PRIORITY [!PID] 511 ; COMMENT Low impact

COMMENT Take out the trash
TRASH_OLD_FILES 60 :UDD:OP:OLD_ERROR_LOGS:+.LOG
TRASH_OLD_FILES 60 :UDD:OP:OLD_SYSLOGS:+.LOG
TRASH_OLD_FILES 30 :NET:LOGFILES:+.LOG
TRASH_OLD_FILES 5 :#:?.<BRK,DMP,JOB,MDM,TMP>
TRASH_OLD_FILES 5 :#:UDD:+.FTA.OUTPUT.-
TRASH_OLD_FILES 5 :#:+.ED

WRITE Done
```

After this command, the job is self-perpetuating.

Note that this first interactive QSUBMIT runs the job immediately, and its output goes to the BATCH_OUTPUT queue by default. This is intentional; it lets you check out the job's operation once before it re-QSUBMITs itself with the output going to @NULL. You might want to remove the /QOUTPUT=@NULL on your system and let the output happen every morning just so you can spot the kinds of problems described below.

A couple of last items. Note that in the actual .JOB, you might be tempted to combine all the templates that involve "#" and that specify the same age into a single invocation of the TRASH_OLD_FILES macro to save scanning the entire directory structure *n* times. Don't do it unless you're sure that the number of matches will be relatively small (less than 10 KB worth of pathnames). That's why I use a separate command to handle .ED files. That's also the reason that I specify the "#" templates last; so the previous templates have a better chance of not causing CLI restarts. If you have some directories that are huge, and persistently cause CLI restarts, just modify the templates to bypass them until you can get them broken up into smaller directories.

:WRAP_UP

If you're not into entering the files from the figures, you can get the entire set of source, macro, and job files from the :SYSMGR BBS as item AOSVS16:UTILS:JANITOR. They can be downloaded by phone, or the entire BBS contents can be ordered on tape for a nominal charge (call me). Copies of the package have also been submitted to the NADGUG BBS and the NADGUG tape library.

△

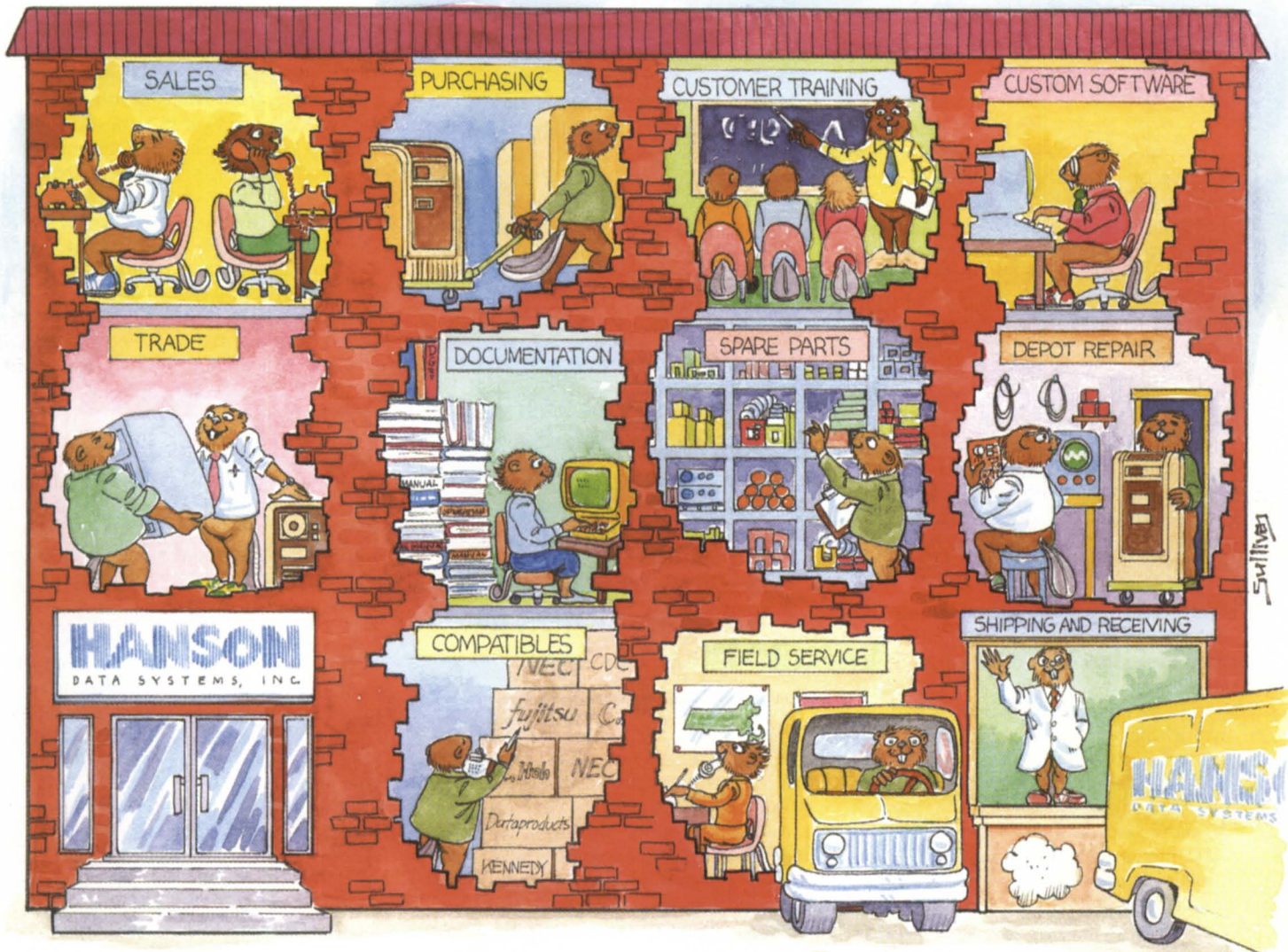
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Jim parcels out answers to his bundle of mail

This month, I will concentrate on catching up on all the mail that has been sent to me lately. I want to thank you for your questions and comments, and want to encourage you to keep those cards and letters coming. Even if one of the columnists can't answer the question, we can print it and ask our readers for help. As for you readers who *can* help, the answers to some of these questions are lengthy, and could easily become a feature article. So if you have an answer, write it up and send it in. If you think it might be too long for this column or the letters column, you may have an article struggling to get out. Call one of the editors, and they'll help you with it. (They're real good about that, and they don't even bite!)

Unorthodox but not unprecedented

About a year ago, I put forth one of my pet theories in a column. Unfortunately, my column was too long for the space allotted in the magazine that month, so my idea never made it into print. Well, here it is now.

I have been wondering about the feasibility of a marketing idea. Suppose a company temporarily offered highly discounted prices (say, 75 percent or more) of initial software licenses to sites that already held some minimum number of licenses (perhaps the system, a compiler, and a utility) but required the site to sign up for a minimum of two years of software subscription or one year of support on all the licenses (new and old). That company would sell a whole bunch of licenses it

might not otherwise have been able to sell.

Although very little profit would be made from the initial sale, the costs of distribution would be covered. Furthermore, the support revenue would see a significant increase for at least a year or two or, the vendor would hope, for several years beyond that. This would be good both in the short run and the long run for the company, especially since that extra software would need extra disk drives to be stored on, and all that extra programming would need more machines on which to run.

I have also heard rumors about a different processor that might be called the MV/40000. Other than the rumors, I have no solid information on that machine

At the time that I originally thought of this idea, I contacted Dave Lyons, vice president of Marketing at Data General, to see what he thought. He said he would be interested to see the reader response, and if there was strong interest, they would consider it.

I would like to conduct an unscientific, informal poll regarding this idea via Quick Connect cards. Who thinks it's a good idea, who doesn't, and why? I will forward all replies and comments to DG. This is a chance to give some input on the way DG

prices software (a hot topic in the wake of the CEOwrite pricing uproar).

Another oops?!

OK, I give up. Call a throat specialist for a podectomy (foot-from-mouth removal). Back in June, I answered a question about memory boards. I said that according to my favorite hardware guru, the 8765 2 MB universal memory could be used in the MV/4000, MV/10000, S/280, and MV/8000 II. I was surprised to find the MV/8000 included in that list, and so were a number of readers who called me. So when I called my favorite guru back, he said no way will it work in the MV/8000, original or model II. I thought he had listed four systems it would work in, but it was just the first three.

Mail call

The volume of mail has increased lately, in addition to one or two oldies that have been lying around a little longer than I was aware of, so today we get to look at reader mail.



Let's start with the question from Mr. Gang Yingfu of Changsha Communications Institute, People's Republic of China. His question: "After the MV/20000, will DG show a new system . . . what and when?"

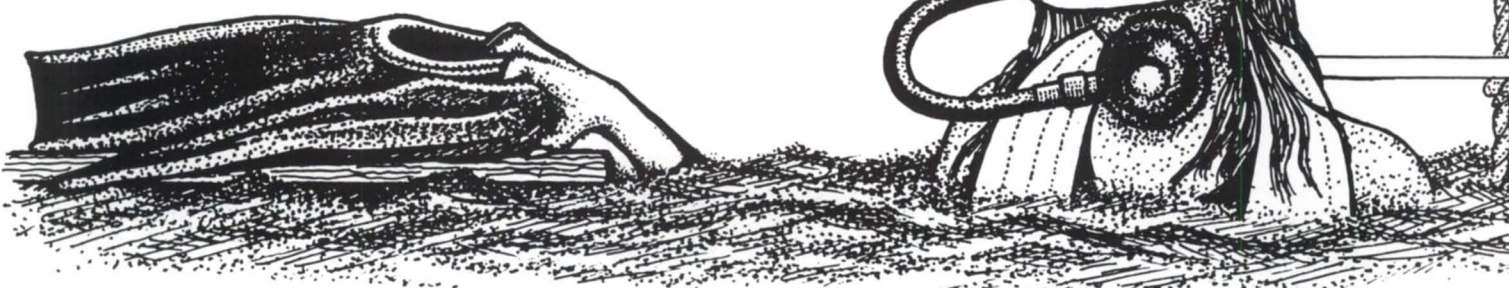
At this point, I have only heard rumors. DG has a few MV/20000s mod II (with two processor boards) in the field now, and the hardware used to select the second processor allows a theoretical maximum of 16 processors in one chassis. I have heard some rumors about an MV/20000 mod III but have not been able to confirm them. I have also heard rumors about a different processor that might be called the MV/40000. Other than the rumors, I

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have no solid information on that machine.

Concerning when, I expect it will be in the next few months. DG is nearing the fiscal year-end, and they usually like to start the new year with a bang. It is possible that they may even say something about it at the end of August, in which case you may already have your answer by the time you read this.

However, the next introduction in the DG lineup may not be a bigger box but a "clusterable" or multiprocessor system; for example, one might be built around the new Motorola 88000 system in progress. It's just a guess on my part, but I don't expect to see anything concrete from that project until at least next spring. On the other hand, my guesses on timing have been off before, and I wouldn't be too surprised if I've missed again.

Let's get to the one that gave me a good chuckle. Mark Pagno of Marathon Oil Company asked, "How much memory will AOS/VS rev 8 require?" I know it's a reasonable and serious question, but my immediate reaction was "All of it!" After a few seconds consideration, I added, "and then some." By the time you read this, I hope to have a better idea, having returned from the conference.

My gut feeling is that it will boot and run comfortably with 2 MB or less in our environment. Since I found that 7.5x and 7.60 do quite nicely with an average of 1.5 to 1.75 MB in our environment, this would indicate that it would take .25 to .5 MB more than rev 7.5. However, if you are running CEO and you go to rev 3, you will see even more of a demand, since the new CEO now requires DBMS in addition to INFOS for the server processes. So hold on, I will get back to this question later.

On the other hand, I have seen a couple signs that DG might be hitting a peak on memory usage. Early reports on rev 7.62 indicate that XLPT was enhanced to allow a single process to control many devices, thus reducing the memory requirements for any system that uses more than two printers. This may be the beginning of a trend: the 16- to 32-bit conversion of AOS/VS may be far enough along that we have the required functionality—and now DG can work on efficiency (not unlike what happened with AOS/VS ICOBOL). If so, then, the next few releases will see significant performance improvements with stable or even slightly reduced memory usage.

The next question comes from Stephen Boyle of Data General in England. He asked, "I require a source for a software package to control a mass mailing operation. Any suppliers?"

Yep. Me. I have one that has been functionally tested, and I am in the process of cleaning it up. It should be ready for distribution by the time you read this. It runs under 32-bit COBOL and requires either INFOS or Infolynx.

There probably are other suppliers out there. If anybody wants to add to the list, drop me a line.

Here's one from Dan Lapp. I called him a few months ago with the answer, but my notes were misplaced, so it hasn't made it into print until now. He asked, "Can PCs networked together using Novell be integrated to MV systems using PC*I?"

Yes and no. Rational Data Systems recently announced an interface to the Novell network through their PC-integration product, PC/VS. PC*I doesn't support this interface yet, but because PC*I is built on top of PC/VS, it may be only a matter of time before that functionality is added.

J.T. Pierce of E-Systems asked, "How [do I] interface a Centronics E-series band printer to an MV/7800 (AOS/VS) via an MCP1. (EVFU seems to be the problem)."

Well, I don't know about that particular setup, but I did a column in May of 1986 complete with macros to control foreign printers and to download the VFU memories on them. If you can't scare up a copy, give me a call, and I'll send you one. I know a number of sites that have found that technique useful. Regarding his hardware configuration, are there any users out there who can help fill in the details on this? Give me a ring if you can.

If I may digress again, one user called and complained that the macros and techniques presented in that column were not working very well; they couldn't control which print jobs started when they changed forms. I knew that I had left out the "CONTROL @EXEC BINARY @xxx" command, which may or may not have had something to do with the problem.

It turned out, though, that they had never used forms before and were not sure how the forms command worked with QPRINT and EXEC. As a result, they took out all references to forms. That, of course, was

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the cause of their trouble. The whole point of using forms was to control which print jobs were processed. Removing those options removed all the control. They called back a week later after restoring the macro to its original state and announced that it now worked perfectly. The moral: If you modify someone else's software because you don't understand it, don't be surprised if it doesn't work. In addition,

do be surprised (and a little suspicious) if it *does* work.



Gregg Leidel of Hillhouse Associates Insurance wrote to ask: "Will Oracle RDBMS ever be available through DG, with appropriate dollar-volume discounts applying?"

I'll be honest, I don't know. That is entirely up to Data General and the owners of Oracle. I feel safe in guessing that it won't happen, at least not in the immediate future. Data General has offered the Henco product for some time now. Also, DG uses CQCS by Cybertek internally. Data General would probably rather officially support something like Cybertek that runs solely on Data General machines. On the other hand, it would make sense to offer a migration path from DEC and others to the DG environment via a product such as Oracle or SIR. I'll try to find out something for the next issue.



Masotti Aldo of Informatica Veneta in Italy has two questions. I'm not sure I can solve either one, so if anyone out there can help, please do. The first request is "I need floppy compatibility in 8-inch format on an MV/4000 with IBM 36/38/34 at the lowest price."

I don't know of any utilities that will read or write data with the IBM structure, and I'm not familiar enough with that Big Blue series to speak with confidence. Can anyone out there help? If so, contact me and I'll make sure we get the solution passed along.

His second request is "How can I connect in network Xenix-286 systems and AOS or AOS/VS systems?"

I'm not sure what software he is running, but DG does offer TCP/IP, which is one type of Unix network. Again, any readers have any ideas?



The next card (or photocopy) was difficult to read, but I think it goes like this: "I want to write a program to connect our MV to a DNC. I want to get more information from the MV side, especially the IAC. (I've got the IAC program manual). I have no control when I use PL/I. I don't know what the status of the I/O port is when I do comm." This question is from Ferdinand Lau of Data General Singapore.

The first DNC (Direct Numeric Control) communications package I am aware of was written in Fortran about eight years ago by McDonnell Douglas, but the company decided not to support it due to lack of interest at that time. A few users are still using descendants of the original as it has been updated and added to over the years. Coincidentally, one of my associates and I have been considering developing our own implementation in Fortran. Perhaps if you have some additional

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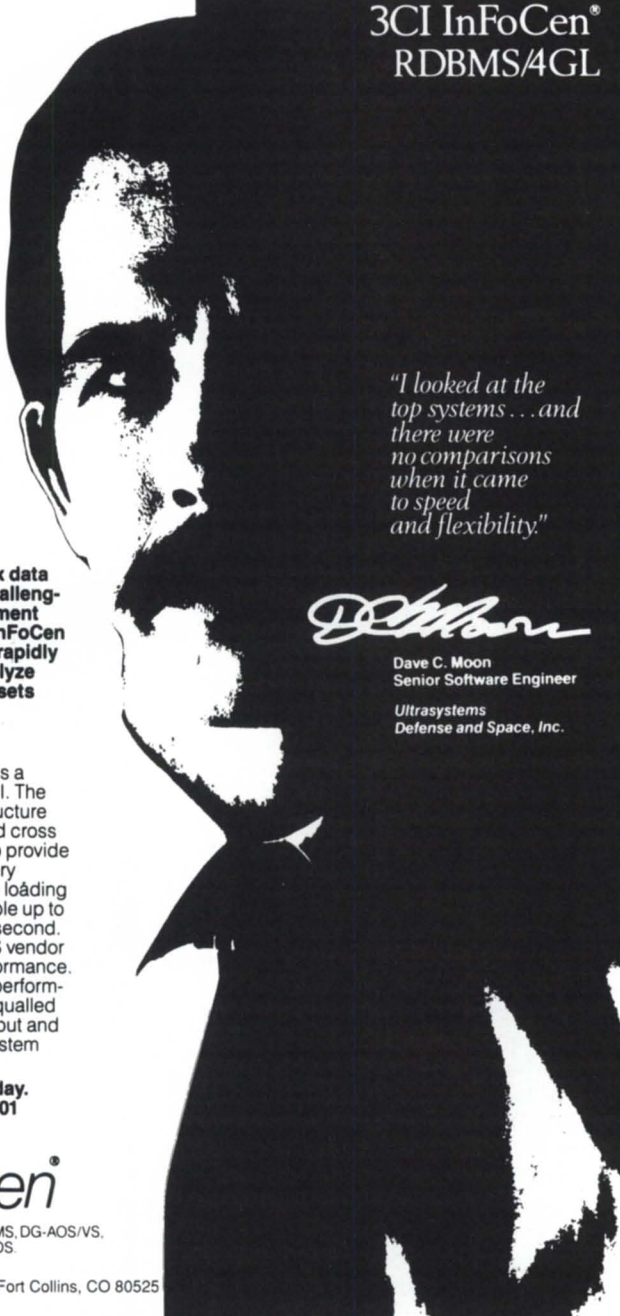
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information, we can provide some detailed assistance.

In the meantime, there are many things that I might suggest to get you started on the problem. The first is the DNC machine. You must find out what type of protocol it uses, both hardware and software. I will assume that it uses RS-232 hardware, since you are trying to connect it to an IAC. Secondly, what type of handshaking does it utilize? If there is hardware handshaking involved, you will need to find which signal it raises when ready and drops when busy. Connect this to pin 5 on an IAC-8 or the LAC on an MV/2000 or MV/1400. Also, when using the LAC, you must set /HOFC on for that port. Hardware handshaking is not supported on an IAC-16.

The most important issue is what type of software protocol does the DNC use? If it uses pure ASCII text (no control characters other than DC1, DC3, CR, LF, and FF), then you can open the port as a data-sensitive file and read and write to it at will. On the other hand, if it uses packets that start with BOT and end with EOT and uses ACK and NAK for software handshaking, then that port must be opened as a binary file. This is fairly easy with Fortran and should be easy with PL/I.

Another problem that can seriously complicate matters is whether or not there are timing issues involved. In other words, if the host transmits something and is supposed to receive an answer within 3 seconds or else retransmit, then the port has to have time-outs enabled as well. This means using the ?GCHR, ?SCHR, and ?STOM system calls. You may even have to go so far as to multitask your program and have the input and output portions of the program run as two separate tasks. I did this recently using assembler for the input and 32-bit COBOL for the output. Works fine, but is rather tricky.

You also added that you have a DG/One and a Dasher/286 in addition to the MV/4000. You can look into one of the many packages that now run under MS-DOS to talk with DNC machinery. You may have to dedicate one of your MS-DOS systems entirely to the task, but that might be cheaper than spending weeks

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beating your head against the wall developing software for the MV/4000 to talk DNC.

I don't think you will have to go so far as programming the IAC. That is a lot of work. The operating system is flexible enough that you should be able to get the data you need in and out of that port. It may take a multitask program with read and write tasks running independent of

the main processing and control task, but it certainly should not require that you go so far as to program your IAC.

■

So I'm off to the conference, and I will have met a number of you by the time you read this. Hope I saw you there. Keep on sending in those cards and letters. Δ

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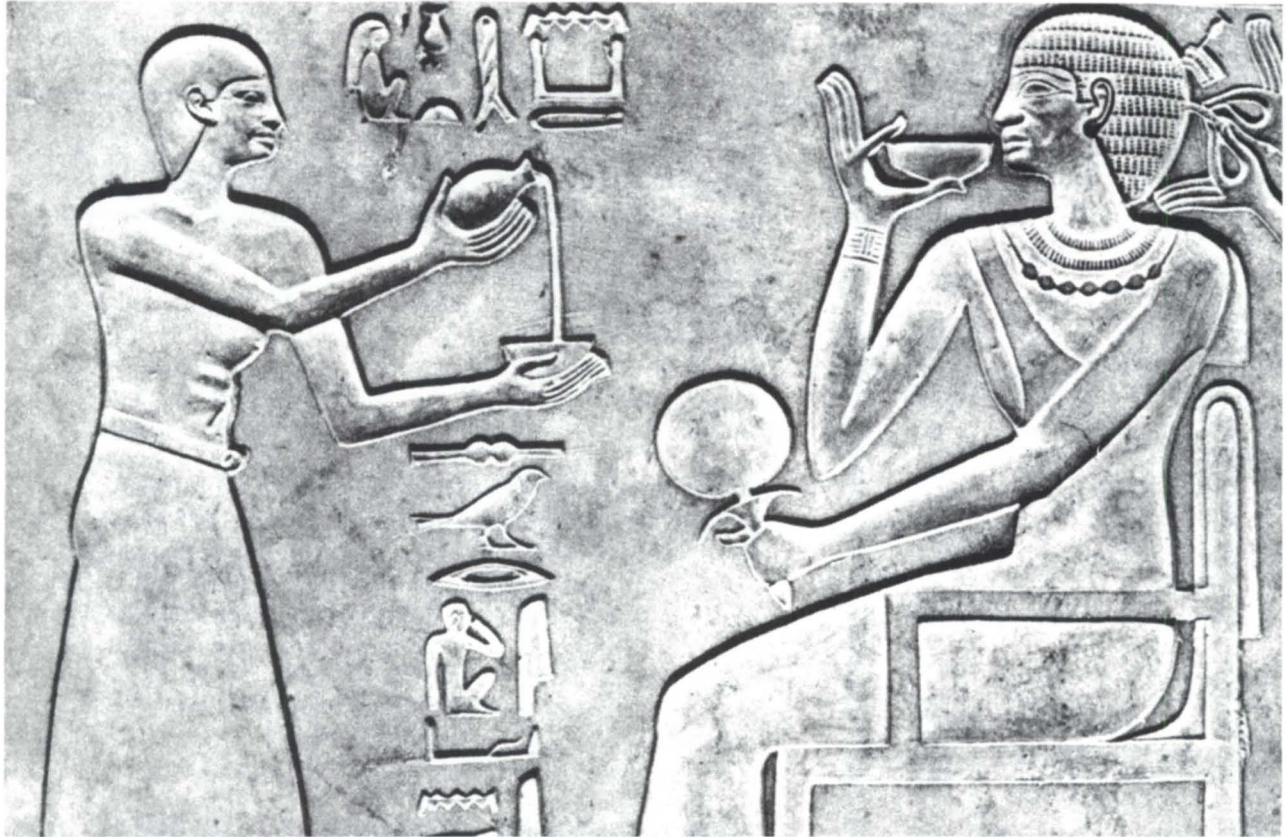
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Turning the tables

SQL is replacing the old standard for data management

Listen. . . . Can you hear it? It's the quiet rumblings of change. For quite a few years now, INFOS II has been the safe choice as an application development foundation.

There it is again. Listen closely, because those rumblings are coming from the grand and mysterious ANSI—the group that establishes industry standards. As it sets formal standards, ANSI greatly influences the computer community. Let's take a quick look at how those rumblings will affect data base management.

A significant standard was born with the ANSI COBOL specification X3.23, vintage 1974, which allowed for a data access method called ISAM (Indexed Sequential Access Method). No question about it, ISAM was a significant improvement over its predecessors. INFOS was then created as a superset of ISAM. It has served us well. However, in the computer business, 1974 seems like eons ago, even to the "Grandmother of COBOL," Grace Hopper.

Standards come and standards go. It's not a neat, predictable process, but a continuous evolutionary pattern: a superior innovation replaces older technology, leaving in its wake those individuals who would not or could not change with the times.

The great and mysterious ANSI has recently bestowed upon us a new standard for data base management: SQL. That's pronounced SEE-kwul, and it stands for Structured Query Language. This is probably not the first time you've heard of SQL, and I can assure you, it won't be the last.

SQL's roots reach back to the 1960s, and are embedded deeply in the IBM mainframe tradition. However, during the last decade, as mid-range computers have become more powerful, SQL techniques have become practical for minicomputers.

So what is SQL? And what makes it

better than the familiar indexed filing systems? Let's look at some major components of SQL data base management systems (DBMS), so you can begin drawing your own conclusions. (Remember, there is no such thing as a "perfect" data management system. The specific requirements of each application determine which DBMS is best suited for the job.) During this discussion, I will, of course, be mentioning Data General's SQL product, DG/SQL.

The relational concept

At the heart of SQL is the concept of a relational DBMS. What does "relational" mean in this context? It's really quite simple.

First of all, a SQL data base is a collection of "tables." In standard file-management terminology, a table is called a record type (e.g., employee records and department records). When two or more tables have fields that have identical meaning (e.g., the department code field that appears in both the employee and department records), those tables are implicitly related. In other words, we can access the employee and department tables jointly, because they share a relationship based on the similarity of the department code fields.

As a concrete example, examine the following table descriptions.

```
01 EMPLOYEE-TABLE.
    05 EM-BADGE      PIC 9(06).
    05 EM-NAME      PIC X(30).
    05 EM-DEPT-CODE PIC 9(02).

01 DEPARTMENT-TABLE.
    05 DE-DEPT-CODE PIC 9(02).
    05 DE-DEPT-NAME PIC X(30).
```

The mere presence of the two department code fields allows each employee record to be related to its corresponding department record. The following SQL statement demonstrates how the above two tables can be "joined" by their department code relationship.

```
SELECT EM-BADGE, EM-NAME, EM-DEPT-NAME
FROM EMPLOYEE-TABLE, DEPARTMENT-TABLE
WHERE EM-DEPT-CODE = DE-DEPT-CODE
```

The above statement selects (READs) from the data base all employee and department records where the respective department codes match. And this relationship can be accomplished without defining any physical access paths between the two tables. This type of relationship is not restricted just to single fields in two tables. It can exist for any combination of fields from many different tables.

This implicit relationship between similar fields from different tables is the basic foundation of the SQL relational DBMS. It allows many other features to exist.

Nonprocedural language

SQL contains a concept that is radically different from anything in the ISAM world. SQL is nonprocedural. I'll explain with an example. With indexed filing systems, if you want to access employee records sorted by employee number and employee name, you would typically define an index over each of those fields. To store an employee record, you would first WRITE the record specifying the primary key and then perform a WRITE INVERTED to establish the employee name access path. You would perform another WRITE INVERTED for each additional index you want the record to be associated with. This, my friends, is very procedural.

With SQL, a single INSERT statement performs all of the above logic. How does SQL know how much work to do when a statement is issued? It knows by using the DBMS definitions stored in the data dictionary. This is quite logical. Why make each individual program issue redundant data base I-Os when those definitions can be stored in a central dictionary?

In short, with a procedural language, you describe how to perform an operation. With a nonprocedural language, you simply describe what you want to happen. SQL figures out how.

Set-at-a-time processing

SQL allows you to perform complex operations for many records with one data base statement. This is called "set-at-a-



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time" processing. For example, if you wanted to use an indexed filing system to update all employee records of two departments with a 10 percent raise, you'd have to write a program with several conditionals and I-O statements. With SQL, this could be accomplished with one statement. In other words, SQL can process many records. This power can create some ridiculously simple programs.

Recovery

Even the best-designed applications have to be able to withstand the unexpected (e.g., system crashes, an inopportune ^C^B, etc.). DG/SQL does it automatically.

Assume you have a logical operation that modifies three separate records. If your application is written with an indexed filing system, and the system crashes somewhere within that logical unit of work, how will you recover your data base to a consistent state? If you haven't included complex recovery algorithms in your application (and virtually nobody does), there is absolutely no way you can be assured that your data base will be in a consistent state. Yech. There must be a better way!

Voila—DG/SQL. With DG/SQL, all data base I-Os are performed within user-defined I-O boundaries called "transactions." Transaction boundaries are defined by SQL statements within your program. In the example above, the three I-Os would be included within one transaction. If the system was to crash within the boundaries of that transaction, DG/SQL would automatically "roll back" (undo) all the I-Os in the transaction. This would occur without a single line of application source code being dedicated to recovery. This assures the integrity of your data base.

With this feature of DG/SQL, it is genuinely difficult to corrupt a data base in this way. If you're accustomed to old-style file management systems, this feature is like magic.

Data independence

When a data base management system offers data independence, you can change the structure of the data without having to change programs. This is very important both in the development and production phases of an application.

For example, DG/SQL allows you to add or drop an index without modifying programs. Try that with an indexed filing system.

Security

DG/SQL's data dictionary records many pertinent facts regarding security. Every time a program is compiled, the data dictionary keeps a record of what programs access the data base and what fields are accessed by each program. You can define access to certain data for specific users or user groups. You can also define various rights for each user and user group for accessing the data base and/or data dictionary. To be brief about it, DG/SQL's security features are powerful and flexible.

High-performance system

DG/SQL was designed and written with AOS/VS in mind. It can therefore claim certain performance advantages.

- DG/SQL employs inner-ring data management calls instead of slower IPC calls.

- DG/SQL also takes full advantage of the 32-bit architecture of AOS/VS. File management systems that run on both 16- and 32-bit machines cannot claim this.

- DG/SQL is also fully multithreaded for optimum performance in a multiuser environment.

- The DG/SQL pre-compiler stores optimized I-O statements in the data dictionary, allowing for faster access to the data.

Catch the wave

Even though this discussion of SQL is somewhat limited, you can see how powerful and flexible this DBMS is. And don't be overly concerned with the SQL learning curve. You can write SQL statements in familiar languages like COBOL, PL/I, and others. You can even use Present to generate reports and update the data base.

Because SQL is now an official industry standard, this is a perfect time to begin utilizing DG/SQL. The momentum is building, and the trend will continue. New development tools that use DG/SQL as a foundation will continually become available. Some of these tools are still just rumor. I'll let you know as they become realities.

The water is warm. Come on in. Δ

Kim L. Medlin heads special projects for the Commercial Software Development Group of Data General's Software Products and Services Division. He can be reached at Data General, 3617 Parkway Ln., Norcross, GA 30092; 404/448-6072 ext. 2007.

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BB benchmarks

Reviewing price, performance, features, and compatibility for three versions of BBASIC

About a month ago, Data General released its new version of Business BASIC, rev 5.00. Since then, you've probably seen several articles talking about the new release and its features. I'm sure you want to know how rev 5.00 compares with B32 and BBASIC rev 4.20.

This month, I'll answer that question by looking at the new product's price, performance, features, compatibility, and support.

Price

Here, BBASIC rev 5.00 is the hands-down winner. You can get it for just the price of keeping current your Software Subscription Service with Data General: if you already have AOS/VSBusiness BASIC support, the new version should come through the mail. For new licenses, B32 costs as much as or more than the development license from Data General for the same machine.

Performance

B32 had a strong performance advantage over the previous release of Business BASIC, 4.20. It continues to have most of this advantage over the new release.

Figure 1 shows the results of tests run on a lightly loaded MV/15000 mod 8. We've used these tests before, and they seem consistent with what users experience on live application code.

In a mix of all the tests, B32 was 98 percent faster than rev 4.20 in terms of CPU-time used, and 74 percent faster in total elapsed time.

BBASIC rev 5.00 was 24 percent faster

than rev 4.20 for CPU, and just 10 percent faster in elapsed time.

Looking at the tests in more detail, we find that there is only a slight difference in speed now on K*** statements (KADD, KDEL, etc). This reflects that, given the structure of BBASIC index files, there is probably only one optimal way of coding those statements.

On CPU-bound activity, B32 was better than 3 times as fast as the new release. In creating a 10,000-key index, B32 was more than 2.5 times as fast. And on LREADs and LWRITES, B32 was 3.6 times faster.

While our benchmark tests show that rev 5.00 performance is clearly better than that of rev 4.20, it seems to have made up only about a quarter of the advantage that B32 had.

Features

If you are only planning to convert to a new BBASIC, and not planning to change any applications, it's fair to look just at the performance results before deciding. On the other hand, if you plan to update your

applications or create new ones, features should also be compared.

Virtually all of the new features in rev 5.00 have their counterparts in B32. Looking at it from the other side, BBASIC rev 5.00 still lacks a number of features that are present in B32. In my opinion, several of these are key to designing applications to meet the needs of users in the 1980s. For example:

- B32 allows the integration of Business BASIC into CEO and the Wordperfect shell. Applications can be designed to "hot-key" back and forth quite easily (even existing programs). In rev 5.00, you still need to go back to the menu and PROC up CEO or Wordperfect if you want to use them.

- The screen save features in B32 allow you to do all sorts of windowing applications in your software, providing PC-style ease of use. For example, your application could "pull down" the list of customer names and numbers over the order-entry screen, and refresh the screen back to the way it was after you had found the right customer.

Figure 1: Benchmark results for B32, BB4.20, and BB5.00

Notes: All tests were carried out on a lightly loaded MV/15000 mod 8, with the exception of the prime numbers test, which was standalone.

BB5 was generated as triple precision, with the debug option. Exactly the same programs were used by all three interpreters with the exception of test 10, in which B32 used the B32 utility LINDEBLD.

#	Test	B32		BB5		BB4	
		CPU	Elapsed	CPU	Elapsed	CPU	Elapsed
1	!TABLE TABLE.LS	14.2	174	33.9	220	41.0	265
2	ENTER "TABLE.LS"	1.7	4	2.3	5	2.6	9
3	10,000 KADDs	41.5	132	47.0	146	56.6	215
4	10,000 KFINds	38.2	125	37.6	129	48.4	175
5	10,000 KNEXTs	12.2	32	10.8	35	14.4	30
6	10,000 KDELs	35.8	136	40.2	157	49.2	188
7	10,000 LREADs	3.1	29	11.2	68	16.2	57
8	10,000 LWRITEs	3.0	34	11.3	50	16.3	57
9	Primes to 10,000	10.7	11	34.5	35	45.0	46
10	LINDEBLD (10,000)	<u>25.5</u>	<u>90</u>	<u>67.1</u>	<u>372</u>	<u>78.6</u>	<u>296</u>
		185.9	767	295.9	1217	368.3	1338

Relative CPU and elapsed times:

B32 vs. BB4: 98 percent faster CPU; 74 percent faster elapsed

B32 vs. BB5: 59 percent faster CPU; 59 percent faster elapsed

BB5 vs. BB4: 24 percent faster CPU; 10 percent faster elapsed

Conclusions: Although the mix of tests does not pretend to exactly reflect a commercial environment, the performance ratios between B32 and BB4 are close to what has been found in live situations, indicating that the percentage figures are reasonably useful.

- The \$WINDOW command in B32 allows you to invoke the powerful Wordperfect window editor as a statement in your program, without the overhead of a SWAP or a PROC. This is far more efficient whenever you need to allow the user to edit some free-form text.

- B32 has a DO..WHILE construct for more structured coding.

- B32 is easier to debug. In particular, staying in a SWAPped program after an error is encountered helps tremendously.

- B32 does all its internal calculations using quad precision. This makes ERROR 16s (overflows) virtually impossible. It also is a quick cure for the problem of a report with totals exceeding \$21 million (under double precision).

One of the enhancements in rev 5.00 puzzles me a bit: while programs and data areas can now each be up to 128 KB, rev 5.00 provides no increase for the limits on statement numbers (9999) and the number of variables in a program (348). B32 allows up to 512 KB of program and data area, and increases the limits on statement numbers and variables substantially.

Compatibility

In moving from rev 4.20, both rev 5.00 and B32 force you to recognize the realities of running in a 32-bit environment. That is, operating-system-dependent STMB statements and UCALLS have to be changed. B32 probably makes this a bit easier with its \$SYSCALL, \$WORDADDR, and \$BYTEADDR statements.

However, going to rev 5.00 does not require that you LIST and ENTER all of your programs like B32 does. The save files are upwardly compatible. (If you'll remember, the last couple of revisions of Business BASIC required that you do the LIST and ENTER.) It was probably to maintain this compatibility that the decision was made not to increase statement numbers or available variables.

Support

Last month, I sniped that the bugs I'd found in my early testing of rev 5.00 would probably not be cured by the time you read the article. It turns out I was wrong. Data General seems to be pulling out all the stops on this product. They are turning around fixes faster than I have ever seen them do before.

I had an update tape in my hands just two weeks after reporting the problems. This is at least four times faster than usual.

On the other hand, most B32 problems seem to be fixed within 24 to 48 hours. I don't think this is because the DG

developers are any slower at fixing problems—it's probably just that they have more layers of reporting and management to go through.

I should also note that one of the problems I mentioned in my column last month was misstated. I had thought that PRINT @(X,Y) statements went to the wrong position on the screen sometimes. The problem was actually that the function MOD(-110,100) returned different values. This has been fixed.

Overall, the quality of both packages appears to be excellent.

One other consideration has to be the commitment to providing support. Data General, with its huge resources, is not really open to much doubt. B32, having more than 200 installations and close to one site a day converting, also seems to have the critical mass to survive.

Conclusion

Data General's revision 5.00 is a definite improvement over 4.20. However, its performance is not enough to drastically revise your DP planning. It probably won't allow you to forego that CPU upgrade you've been dreading, or allow you to buy a computer one size smaller than you thought.

Our benchmarks show that B32 delivers a considerably bigger performance improvement. Its higher cost could be more than offset if the performance gain results in savings on hardware upgrades. Its additional features will also be important for software developers.

Overall, the fact that Business BASIC rev 5.00 even exists has to be considered important. Data General is clearly still committed to Business BASIC as a language, and we can expect it to be supported for the foreseeable future. This ensures it will be around for a while.

The improvements in rev 5.00 will have another important result for all of us, no matter which product we use. Competition is an incentive for both DG and the B32 people to improve their products. B32 still has an edge in performance and features, but the B32 people now have a stronger incentive to keep their users happy. Of course, happy B32 users are usually happy Data General users too, so Data General also benefits. Δ

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

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(from page 37)

```

        if(c.eq.<"LT">)    n_triangle=n_triangle    +1
        if(c.eq.<"GT">)    n_triangle=n_triangle    -1
    end do
    if(n_square.ne.0.or.n_round.ne.0.or.n_triangle.ne.0) then
        ier_open=?erifc          !invalid filename char
        return
    end if

c... create scratch filename with [!PID]
ac0=0                          !n/a if ac1=-1
ac1=-1                          !get pid of self
ac2=0                          !reserved
ier=isys(?pname,ac0,ac1,ac2)
if(ier.ne.0) ac1=0              !use pid 0 if error
write(temp,"(=?',i5.5,'gnfn.tmp')") ac1

c... build scratch file of filenames
i1=index(temp," ")              !include space
i2=index(template," ")-1        !exclude space
if(i2.eq.-1) i2=len(template)    !no trailing spaces
call cli("filestatus/nheader/cpl=1/1=ignore/2=ignore/l=")//
# temp(1:i1)//template(1:i2)//";bye/l=@null<0>")

c--> prime ?gnfn with simple template
else

c... skip leading '='
if(template(1:1).eq."=") then
    i1=2                          !ignore leading '='
else
    i1=1
end if

temp_template=template(i1:)      !copy [& shift left]
i2=index(temp_template," ")
temp_template(i2:i2)="<0>"
ba_template=byteaddr(temp_template)

if(directory.eq."<0>") then
    temp="="                        !current directory
else
    temp=directory                !as supplied
end if

pkt_gnfn(?nfky)=0                !reset for ?gnfn
pkt_gnfn(?nfrs)=0                !reserved

end if

c--> open scratch file or directory
i2=index(temp," ")
temp(i2:i2)="<0>"

pkt_io(?ich)=0                    !aos/vs returns channel
pkt_io(?isti)=?ofin+?icrf+?rtds  !input, datasensitive
pkt_io(?isto)=0                  !n/a
pkt_io(?imrs)= -1                !def blocksize
pkt_io(?ibad)= -1                !defer buffer until ?read
pkt_io(?ibad+1)=-1
pkt_io(?ires)=0                  !reserved
pkt_io(?ircl)= 256                !max. record length
pkt_io(?irrl)=0                  !n/a

```

```

        pkt_io(?irnw)=0            !reserved
        pkt_io(?irnh)=0            !n/a
        pkt_io(?irnh+1)= 0        !n/a
        pkt_io(?idel)= -1        !default
    delimiter
        pkt_io(?idel+1)=-1        ! table
        ba_temp=byteaddr(temp)    !file/directory to open

        ac0=0                      !reserved
        ac1=0                      !reserved
        ac2=wordaddr(pkt_io)       !address of packet
        ier_open=isys(?open,ac0,ac1,ac2) !save ier_open for later

c--> make scratch file invisible
if(complex) then
    pkt_delete(?gcprfw)=0          !reserved
    pkt_delete(?gcpcn)=pkt_io(?ich) !aos/vs channel
    ac0=0                          !use packet
    ac1=0                          !reserved
    ac2=wordaddr(pkt_delete)
    ier=isys(?delete,ac0,ac1,ac2)  !ignore error
end if

return

end

```

Figure 2: Another use for subroutine GET_NEXT_FILENAME

```

program test_get_next_filename

implicit none

integer      fsize,ftype,idummy,l_name,n_file
character*32 template
character*256 filename

c>>> begin
write(*,*) "Enter template"
read(*,"(a)") template

call get_next_filename_init("<0>",template)

n_file=0
do while(.true.)
call get_next_filename(filename,fsize,ftype)
if(fsize.lt.0) go to 999      !no more files


n_file=n_file+1
l_name=index(filename," ")-1
write(*,*) "file=",filename(1:l_name),
# " ", size,type=",fsize,ftype
end do

999 write(*,*) n_file,"files"
stop
end

```

△

John A. Grant is a geophysicist with the Geological Survey of Canada, where he manages the Exploration Geophysics Subdivision's MV/4000. He may be contacted at 601 Booth St., Room 591, Ottawa, Ontario, K1A 0E8; 613/992-1082.



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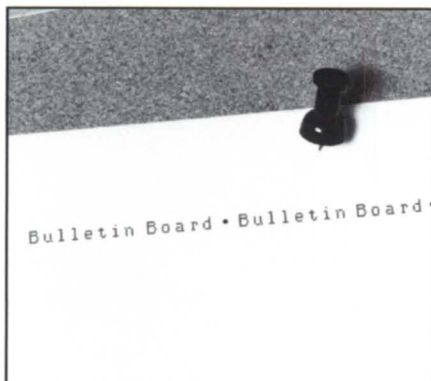
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BULLETIN BOARD

Bits and bytes from the bulletin board



DUMP_III/LOAD_III

From: Randy Berndt

Well, DUMP_III/LOAD_III is the next arrow in the DG quiver. An open question to DG: If you are going to make things separate products and price them separately, using the RFEs we sent in to Support Plus for them, then *why are we paying all that money for Support Plus!* I [run] a small site (MV/4000, 6 MB, 13 users), but I paid DG (over two years) more than \$25,000, and now they want me to buy CEOwrite and DUMP_III/LOAD_III separately.

From: Tim Boyer

To: Randy Berndt

Sounds exactly like the ICOS-to-ICOBOL upgrade. After they fixed everything that we had been griping about for years, they called it a new product and wanted \$5,000 for it. I promptly did so, dropped all software support, and now pay for upgrades when (and if) they arrive. Where is the incentive to upgrade a product if they can get us to pay money and get nothing in return, and then announce a new product and get us to pay for it all over again?

From: Margrit Eade

To: Randy Berndt

In fact, everyone should forget about buying DUMP_III/LOAD_III and get the DBR system from DMS Systems instead. We have a shop with 17 MV/10000s, and we have been using DBR for more than a year without any problems. We need it because we do a lot of disk recoveries. Our DG Argus drives fail at the rate of about one a month! (I am not affiliated with DMS in any way.)

From: Michael Meissner

To: Doug Kaye

I know there will be an improved DUMP_II in one of the AOS/VS 7.6 releases. DUMP_III is intended to provide more back-up features.

From: Jeff Campbell

To: Michael Meissner

Sounds like DG wants to compete with DMS's product.

From: Michael Travis

To: Doug Kaye

Dump_III/Load_III is essentially the DBR product from DMS Systems. Separately priced, but DUMP_II/LOAD_II will continue to come for free with AOS/VS.

From: Doug Kaye

To: Michael Travis

Mike, the implication is that these programs were licensed from the DBR folks, true? That makes more sense. Too bad they changed the name. Just adds to the confusion.

From: Michael Travis

To: Doug Kaye

Yes, that's what DG has told us. So you can get DBR from DMS, or from DG (as DUMP_III/LOAD_III). I suppose some sites will find it easier to buy from DG. DUMP/LOAD_II will continue to come free with AOS/VS, and will get some enhancement. We're told that in rev 8 DUMP/LOAD_II will have hard-error bypass capability. DG seems to be more willing to sell third-party solutions than in the past. They are going to resell the Megatape cartridge tape, for example.

Unix battle lines

From: Tom Manning

To: Jeff Campbell

There's been a lot of press recently concerning the battle lines being drawn between AT&T, Sun, and the other industry heavy hitters, IBM, DEC, Honeywell-Bull, HP, etc. with regard to Unix. I'm strictly an AOS/VS shop, but considering DG's more-than-rumored emphasis on Unix and the Motorola DG RISC chip pact, I'm curious to know on what side of the fence DG is ultimately going to fall? My impression is that this is too big an issue to play the maverick role, especially considering DG's obvious leanings toward a Unix-directed hardware future. Anyone else have any misgivings?

From: Doug Rady

To: Tom Manning

DG has committed to supporting the Unix flavor that 88Open ends up using. A

recent article in *Computer Systems News* had someone from DG who stated that they would be porting the DG software packages to Unix to keep the VARs happy. . . . 88Open has committed to AT&T/Sun for the applications binary standard but has been making noises about joining OSF in an effort to mediate between the two groups. Also, "some sources" at Sun have said that Sun is making overtures to OSF due to problems working with AT&T. AT&T, of course, denies that there are any problems relating to Sun. DG can't do other than support the 88Open Unix flavor due to the pact with Motorola and the DG commitment to industry standards. One might assume that we could expect to see CEO on the 88000 boxes, [I hope] without INFOS . . . if it happens.

Zork

From: Randy Berndt

A reward of 100,000 Zorkmids (Z100,000) is offered to anyone supplying answers to the following burning question: What is the command sequence to activate the CLI function from inside Zork? A lesser reward (Z11.50) is offered for any other useful, but esoteric, information. All replies should be addressed to Randy Berndt. Thank you.

From: David Down

To: Randy Berndt

How about the source for Zork? That should answer all your questions! It's written in PL/I with a pre-compiler. I tried to convert it from AOS to AOS/VS, but the whole data portion was Huffman-encoded and linked in somehow, so I never did get it working.

From: Randy Berndt

To: David Down

Yes, I would like the source. I couldn't find it anywhere. It may answer the CLI problem. The version I have in the NADGUG software library from about 1984 is for VS. If you want to leave it here, that's OK, or I could call your system and get it, or send me a tape. Whatever. Thanks. I have credited your account at the Bank of Zork with the reward (non-interest account, sorry). Thanks.

From: David Down

To: Randy Berndt

The source files are pretty big and wouldn't be practical to upload. If you send a tape with a post-paid return mailer, I'll be glad to give you a copy of it. Send to:
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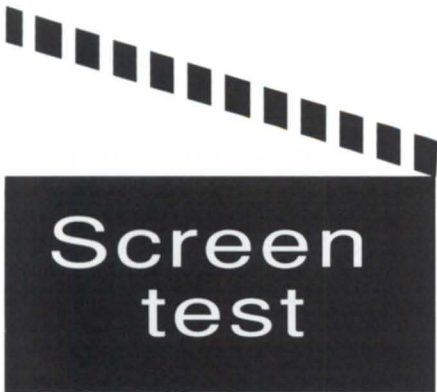
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An interview with DG's terminal product manager sheds light on the latest offering

Just two days after DG introduced its new family of computer terminals, Jeffrey Joy told *Focus*, "We're already swamped with orders, so it looks like we've done something right." As DG's product manager for terminals, Joy has been

responsible for the Dasher terminal line for about two years. Prior to that, he worked with the Desktop program. In this interview, he talks about the changes users can look for in the most visible part of their DG system.

Q. I didn't see any references to the name "Dasher" in the information that introduced DG's new terminals. Are you still using the "Dasher" name?

Yes, but we don't really stress it, and the name will probably fall into disuse over time. It doesn't appear to have any great *raison d'etre* at this point.

Q. One of the most striking features about the new terminals is the price tag. There were rumors earlier about a major internal debate over pricing of the new terminals. Who won?

There's always a major debate whenever we talk about pricing. I think the pricing most accurately reflects the current view of Data General toward the marketplace. In the past, as you're well aware, we've come from a more traditional mini-

computer proprietary background. We've made some statements in the past year that have radically changed that, notably our moving to Unix and our thrust into the RISC architecture. This merely adds some fuel to that fire.

We realize that if we're going to participate in an industry-standards environment, we have to have features and prices commensurate with that environment. You can't have a terminal that's an industry-standard product priced twice as high as other industry-standard products.

Q. How did you go about setting the prices that are now published?

It's based on the reality of the marketplace. Terminals with this type of functionality are selling in the market for approximately these prices. It's important for us to be competitive in all areas of the system: we can't subsidize CPUs with terminals or vice versa. Each has to stand on its own merits.

Q. If my memory is correct, it's been nearly five years since the last major

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renovation for DG's terminal products. What's been going on in the meantime?

The products were actually renewed about two years ago with the move to the D215/D411/D461 family. It was still the same housing, but the innards changed a lot. What we've basically learned in that time is how to manufacture products costs competitively.

There was a lot of education going on within the company with regard to automated manufacturing, manufacturing overseas, taking into account merchant market components as opposed to manufacturing everything ourselves. As you will recall, we phased out the Sunnyvale facility about that same time. Overall, we've learned how to work smarter, not harder. We've moved a big step toward our goal of being an industry-standard supplier on an equal footing with anybody else in the industry.

Q. Will the new terminals be manufactured in Singapore?

No, actually we recently closed our factory in Singapore and about nine months ago we opened a new, large facility

in Bangkok. The opening and closing was due to a lot of financial and tax reasons, but the result is that we have a modern facility in Bangkok producing all of our commodity products over there.

Q. Clearly, the new terminals were designed to appeal to end-users, with a sleeker design, slightly larger screen, and better resolution. What kinds of industrial design help did the company get in designing a contemporary-looking terminal?

None except our own design people. As you said, it had been five years since we did a retooling on the design. A lot's changed in five years, and the design people were itching to be let go on the thing.

Q. The screen is now 14 inches as opposed to 12 on the earlier series. Why?

One of the things you want to look at when you're doing a commodity product, and it's something that perhaps we neglected in the past, is what the commodity prices are for products in the marketplace. For example, if you buy a

CRT tube, you clearly want to buy something where there are a zillion of them already being produced. You don't want to go after an oddball size or oddball phosphor type or something else that's going to have to be custom made, difficult to maintain, and difficult to second source.

We had to learn how to source commodity parts better, and how to get the economies that exist in the industry. The 14-inch tube is now riding the curve down to where it is actually no more expensive than the 12-inch tube. So clearly, you get more for less if you ride that curve.

Q. There are lots of features in the new terminals that aren't immediately apparent. Which of them do you consider the most significant?

There are actually two things, and they address two significant issues. One of them is the fact that we now have DEC compatibility. This is something that users have requested for a long time, and it plays very strongly to our position that we want to be a player in a multivendor environment. Also, moving toward a Unix environment where DEC emulation is the

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standard, this will clearly help us work better and more efficiently. That's very important from a strategic standpoint. It also answers some long-unaddressed user concerns, and that's no small feat.

Secondly, there's the evolution of dual porting. Up until now, our terminals have been evolutionary steps, one from another—nothing too radical. I think dual porting and the whole concept of having

multiple sessions on a terminal is something that is radically different, and something we're going to be expanding upon in the future.

The world is more used to concurrency than it used to be, and people are now doing windowing on PCs and operating in LAN environments. The time is ripe for the idea of being able to manage two sessions simultaneously and toggle back

and forth between them. This will be a very valuable feature for our users for a variety of reasons. It improves productivity and ease of use in a multivendor environment. Also, in a situation where you need high availability, you could have a disk pack that's ported to two CPUs, and those two CPUs could then be ported to one terminal, so the disk data is always available as long as one of the CPUs is still running.

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Q. In addition to the dual port, the new terminals have a hot-key feature. Would you explain that?

The D216 does not have sufficient memory to actually maintain two active sessions in memory at the same time. It is dual ported, so you can connect to two hosts by going into the soft set-up menu and picking the emulation you want as the current or active emulation. Then when you leave the menu, you are in that emulation on the selected port. To get out of that environment, you go back into the setup menu and select the auxiliary port and the proper emulation. When you exit, you'll be connected to the other host, but the original session is no longer in memory. The host connection has not been dropped; it's just pending. But the data that was on the screen is no longer there to be restored.

The hot key that's available in the D400 models means there's enough memory to support two concurrent sessions and two screens of data simultaneously. Also, the operation of going between the two is as easy as a keystroke. Once you set up the two sessions, by simply hitting CMD-ALPHA LOCK, you can jump back and forth between the two screens without losing the data.

Q. And you can hot-key between alternate emulations as well?

Yes, you could even have two emulations off one port. Let's say you had a data switch, a PBX, or some kind of multiplexor, and you had one line running down from that to your terminal. That switch could then switch between two or three different hosts. You could set DEC and DG emulation off of one port and toggle between the two emulations and send the appropriate character sequences to your data switch to tell it to switch hosts.

Q. What about the "push screen" feature?

Push screen just makes something easy that used to be difficult to do. With the D400 class terminal, you have two screens of memory at your disposal. In the past,

that was organized as 24 lines by 207 columns. If you were an ambitious programmer, by using the set margin and a number of other commands, you could set up essentially two screens and go back and forth between the two, writing on one screen and then bringing it into the viewable screen. It took a lot of programming and wasn't easy to do.

What we did was to put all of that into one command called push screen, which allows you to take what's on the current viewable 80 by 24 screen, push it off into memory, and bring the other page onto the viewable screen. Then you can do something with that screen, issue that command again, and flip-flop the two.

The value here is principally for people who are creating screens that can't be recreated easily, for example, under COBOL or BASIC applications where a complex accounting screen has been set up and you enter data, then all of a sudden you want to interrupt that so you can go read your CEO mail. Now you can go back to the original screen without having to recreate it. It's very valuable just to be able to pull it back up so you can continue working. This will also be incorporated in the next rev of CEO toolkit.

Q. I understand that there's an internal clock on the new models, but that it has to be reset if the unit is turned off. There's also a provision for resetting the clock with a macro at log-on time. What's the rationale for the clock?

The need to have CEO refresh the status line takes up CPU cycles. Refreshing the time on everyone's terminal once a minute means you're bringing inactive sessions off the disk and into memory simply to update the person's status line. That's awfully wasteful. You can gain a lot of performance by telling CEO not to update the status line but to have the time kept locally in the terminal.

Secondly, if you're operating in a dual-host situation, what's the correct time if one host is in Cleveland and one's in Boston? This way, you keep a local time that you set for yourself.

Q. How do you access the time?

There's an escape sequence that you send to the terminal to tell it where on the screen you want the clock to appear and to set its time. You can have that issued from a macro at boot-up time, or you can issue it from the CLI at any time. It's like any other terminal command sequence. You issue it, and the clock appears on the screen at that location and stays there. It's basically

like a cursor in that when the screen scrolls, it stays where it is.

Q. Will future revs of CEO include the macro for resetting the screen clock?

No, that's not planned. This is the type of feature that some users will love and others will hate. I feel it's a whole lot better just to make it available—it's a very simple little macro that anyone can include in

their log-on sequence—than to put it in CEO and have lots of people scream that they didn't want it.

Q. How will maintenance be different for the new terminals?

The terminals come with a one-year, mail-in warranty. We've reduced the complexity of the terminal basically to one giant chip. It's so reliable and so easy

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Circle 9 on reader service card.

DG's new terminal goes up for review by associate publisher

Data General shipped *Focus* a D462 terminal shortly before formally announcing the product, which gave us a chance to evaluate it for ourselves. Naturally, the first step was to connect it up and verify that it worked in most respects like the D461 it replaced. The soft setup is quite simple to use, and the DEC and Tektronix emulations are easy to select, although we did not actually test them. Instead, we turned it over to Sharon Dennis, the *Focus* associate publisher, to get her assessment of the new terminal series.

Sharon spent nearly a month working with the D462 in her normal office activities, which include word processing, electronic mail, spreadsheet, and remote communications. Here is her evaluation:

"The first thing I noticed about the terminal is the shape—it is square, both the screen and the base. Personally, I like the square screen, because it has a clean, crisp look. The tube will rotate about 45 degrees, so you can turn it around without moving the base of the terminal.

"The terminal we received had the optional nonglare screen. It's great! This is my favorite feature. It makes the screen a lot easier to read.

"The screen itself is slightly larger, and the characters are a bit bigger and squarer than before. This can be an advantage, especially if you're reading the screen from a few feet away. The D462 also has separate controls for brightness and contrast. I didn't really notice much difference from the contrast control, however.

"The off/on switch is located in front, along with a small green light that glows when the terminal is on. I like this. I appreciate not having to get up and reach behind the terminal to turn it on and off each day. Sometimes it's the small things that make life easier." Δ

to get at that we can offer significantly lower cost maintenance and also offer a one-year warranty by allowing the user to mail this part back. If you believe your terminal is failing, you call up our Atlanta support center, and they will diagnose the problem and ship the appropriate FRU (field replaceable unit). When you get the FRU, you unbox it, slide out the logic tray, replace the part, and mail the old part back to us. Anybody with a Phillips screwdriver and a minute of time can do it.

Q. The new terminals use some modifications to the character set. Will there be any implications for users?

There may be. We took out the mosaic character set and replaced it with a few more characters to enrich the Data General character set—trademark symbols and legal characters, for example. We also put in characters from the PC character set, so people who are porting software from PCs will have a much easier time not having to find or make up characters for menus or boxes or whatever. It will make life harder for people who wrote software that used the mosaic character set. It was

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The Value Added Resellers whose products are advertised on these pages are all Data General VARs and have been recognized in the marketplace as leaders. This section of Focus provides a sampling of the products that are available through DG VARs. If your company is a DG VAR that would like to be included, or if you know of other DG VARs that may be interested, please contact the Focus Associate Publisher at 512/345-5316.

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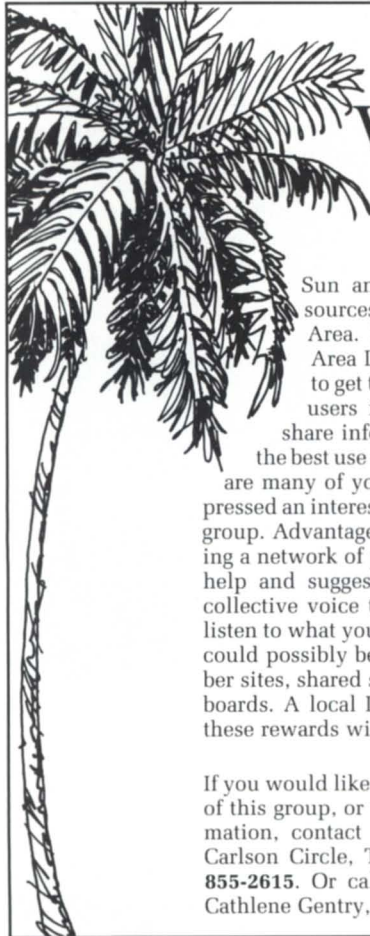
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Sun and water are two basic resources abundant in the Tampa Bay Area. DG users, too. Tampa Bay Area Data General Users, it's time to get together and meet with other users in the Sun Coast region to share information and ideas to make the best use out of your DG system. There are many of you in this area that have expressed an interest in forming a local DG users group. Advantages of belonging include having a network of people you can count on for help and suggestions, also the power of a collective voice to ensure Data General will listen to what you have to say. Other benefits could possibly be newsletters, tours of member sites, shared software, and group bulletin boards. A local DG users group offers all of these rewards with very little cost.

If you would like to take part in the formation of this group, or would like additional information, contact Paul Duck at Orbi, 14390 Carlson Circle, Tampa, Florida 33625; 813/855-2615. Or call the RIG/SIG coordinator, Cathlene Gentry, at 512/345-5316.

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Circle 46 on reader service card.

a gut call, but it was a good trade-off.

Q. What haven't we covered?

There are a couple of things. One is the removal of current loop support. Current loop has always been a standard communications interface for us, but I'm sure you've noticed that a lot of the IACs that are coming out now are not supporting current loop, and RS-422 has really become the supported long-line protocol for us. This terminal reinforces that position. We're offering current loop as an add-on device that does current loop to RS-422 conversion. For people replacing terminals that use current loop, they will need to get the adaptor. For anybody installing new systems, our recommendation is to go with RS-422.

Secondly, the stress on ergonomics is important. There's been a lot of press in recent months on human factors, health in the workplace, and so forth. We've tried to take all the known European standards—for instance the DIN standards from Germany and the Swedish ergonomic standards—and incorporate those into our product line. The housing is the same as the terminals we sell in Germany, which is very rigid on a lot of ergonomic issues. The mesh screen that we offer as an option is both an antiglare shield and an antistatic screen. Static electricity buildup on the screen has been implicated in contact dermatitis and a number of other health hazards. If there's a positive 10,000 volt charge to the screen, that means there's a negative 10,000 volt charge to your face, so half the particles in the air get attracted to the screen and muck it up, and the other half get attracted to your face. By negating the charge on the screen, you should get a more healthful environment.

Another significant new feature is the electrical overstress shielding. In the past, we found from looking at the failures of terminals that were sent for repair that a large amount of them were due to static damage of the communications port. This could be due to using unshielded cables, lightning striking, or very commonly, from people just connecting the terminals. The first thing they usually do is turn on the terminal to see whether it's working, then they go to connect it to the console line. One hand is on the screen building up a 10,000 volt charge while they monkey around with the back trying to connect the cable. It doesn't take too much to zap some of the components, so what we've done is to provide electrical overstress protection on the communications port. It's very unlikely now that random static discharge will cause a port to fail. Δ

PRODUCT SPOTLIGHT

DG offers five new customer services

Westboro—DG has announced five new service programs for its VAR and end-user customers. The service and support programs include the Multiyear Plus agreement, the VAR Service Seller, the VAR Service Manager, the extension of Remote Assistance Coverage, and CEO Start-up services.

Multiyear Plus is a long-term service agreement that offers substantial savings to customers through discounts and price protection. It is available to DG hardware maintenance customers in three-, four-, and five-year terms, allowing them to obtain long-term service for an entire system while receiving discounts of up to 10 percent.

For customers who sign the Multiyear Plus agreement, maintenance prices are fixed for the first three years. In the fourth and fifth years, there is a price-increase cap of 5 percent. Customers receive discounts of 5 percent for on-site hardware service during the second year and 10 percent during the third, fourth, and fifth years.

The agreement includes all the benefits of On-call Hardware Services, which provides unlimited on-site repair service and advanced remote diagnostic services.

When equipment under warranty is placed under the Multiyear Plus agreement, customers receive the full benefits of contract service in lieu of warranty service, at no charge during the warranty period.

DG VARs can now participate in two new service programs. Participants in the **Service Seller** program earn commission credit to their account with DG when they sell DG's service programs and products. VARs who sign up their customers for Multiyear Plus contracts will earn a one-time commission credit of 10 percent of the annual billable amount of the contract. VARs who sign their customers up for one-year contracts will earn a one-time commission credit of 4 percent.

The **VAR Service Manager** program is designed for qualified VARs that choose to participate in the maintenance process by purchasing service and assisting in managing the service process for their customers.

The Service Manager program provides participants greater account control and the ability to offer full packages of systems and service, as well as compensation through direct reductions on service

contract invoices. The levels range from 5 percent for an annual on-site hardware service base valued at \$100,000 to 15 percent on a \$4.15 million base.

Extended Remote Assistance Coverage now gives customers covered under DG's Multiyear Plus or On-call Service Agreement the standard "7 x 24" Remote Assistance Coverage. This coverage provides customers with remote assistance support from the company's Customer Support Center in Norcross, Georgia, seven days a week, 24 hours a day.

CEO Start-up is an array of service and support programs to help customers get started with CEO office automation software. The services include help with implementation and installation, educational services, and ongoing software maintenance. CEO Start-up is less expensive than purchasing the service items individually. Three different levels of CEO Start-up are available, each tailored to customers' experience levels. Δ

Circle 75 on reader service card.

Low-end member joins MV family

Westboro—Data General has introduced the Eclipse MV/2500 DC, an integrated minicomputer system in office packaging. With integrated disk and tape storage, strong input/output performance, and a high-performance CPU, the new MV/2500 DC systems can be tailored to meet the needs of up to 64 users in distributed data processing, departmental office automation, and small business environments.



Priced at \$30,000, the entry-level system includes the CPU with integral floating-point unit (FPU), 8 MB of memory (expandable to 24 MB), integrated mass storage controllers, and office packaging. It also includes one 322 MB Winchester disk and one 21 MB streaming cartridge tape drive, which offers media

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compatibility with the MV/1400 DC and MV/2000 DC.

The system can also be purchased with the integral, high-performance 130 MB cartridge tape drive in place of the 21 MB tape drive for \$35,000. Both cartridge tape drives are compatible across the entire MV series, as are the integral Winchester disks. Remote access capabilities allow Data General field engineers to diagnose system problems on line as part of the DG maintenance agreement.

The base system board features a CMOS gate array 32-bit CPU for maximum density, high speed, and reliability, and includes a high-speed system cache. Either 8 or 16 MB add-on memory modules are available. I/O options include synchronous controllers, asynchronous controllers, LAN (802.3) controllers, and DG/StarLAN controllers.

All MV systems support the Combined Storage Subsystem/DC (DSS/DC), a standalone mass storage peripheral cabinet with a maximum capacity of 1.28 GB.

The MV/2500 DC operates under AOS/VS, DG/RDOS, and DG/UX.

Systems are covered by a full one-year parts and labor warranty and are available for immediate order, with delivery 30 days ARO. △

Circle 76 on reader service card.

New terminals from DG released

Westboro—Data General has announced a new family of terminals priced as much as 50 percent lower than other models. The new models, D216/216E, D412, D462/462E, D578, 5230BC, and 5230LG, will replace the D214/15, D411/61, D577, and 5244BC.

All models are based upon an ergonomic design featuring a wedge-shaped, 14-inch monitor with tilt-and-swivel design. They display 24 lines by 80 or 132 columns. The monitors are available in both green and amber displays with user-adjustable brightness and contrast.

The new D216-based 5230BC and 5230LG models incorporate an integral bar-code wand or hand-held laser gun scanner. The bar-code scanning terminals



are ideal for applications requiring fast and reliable keyless data entry, such as medical, retail, inventory control, and automated identification. When enabled, the terminals auto-discriminate many bar-code formats, including UPC, EAN, LOGMARS, Interleaved 2-of-5, Codabar, and 128.

The D216 model supports DEC VT100 emulation, while the D412/462/462E models support DEC VT220 and Tektronix 4010 graphics emulation.

The D216 and D412/462/462E models feature dual-port capabilities, enabling one

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or more host computers to be connected simultaneously. They also allow a host computer and dedicated printer to be connected simultaneously. Each port can operate in any of the following modes: Data General, DEC emulation, Tektronix emulation. With the ability to access more than one port, users need only a single terminal to handle multiple applications. By returning to the soft set-up menu, users

can reassign an emulation.

In addition, users can have two CPUs hot-keyed off of one of the new terminal models. Through the use of "hot-key" switching, users can toggle back and forth between hosts. In addition, if one CPU goes down, another terminal may be accessed quickly to keep working.

Other features include a "push screen" command, windowing, and screen

management.

The family of new terminals comes with a one-year mail-in warranty. Delivery for D216 is immediate; the D412 and D462 is 30 days after receipt of order; D462E, 5230BC, 5230OLG are 60 days ARO; D578 90 days ARO.

Model	Function	New price	Old price
D216	data entry	\$ 445	\$ 895
D412	editing	\$ 545	\$1195
D462	editing/ graphics	\$ 995	\$1495
D462E	ergonomic workstation	\$1935	n/a
D578	DP security	\$ 995	\$1495
5230BC	bar-code scanning terminal (wand)	\$1145	\$1595
5230LG	bar-code scanning terminal (laser gun)	\$2945	n/a

Circle 77 on reader service card.

New 322 MB Winchester increases storage capacity

Westboro—A 5.25-inch, 322 MB Winchester disk drive is now available for use with DG's Combined Storage Subsystem for Departmental Computers (CSS/DC) and the Combined Storage Subsystem (CSS). The new drive increases maximum disk storage capacity by 37 percent for the mid-range to high end of the MV series, while reducing the cost per megabyte for these systems.

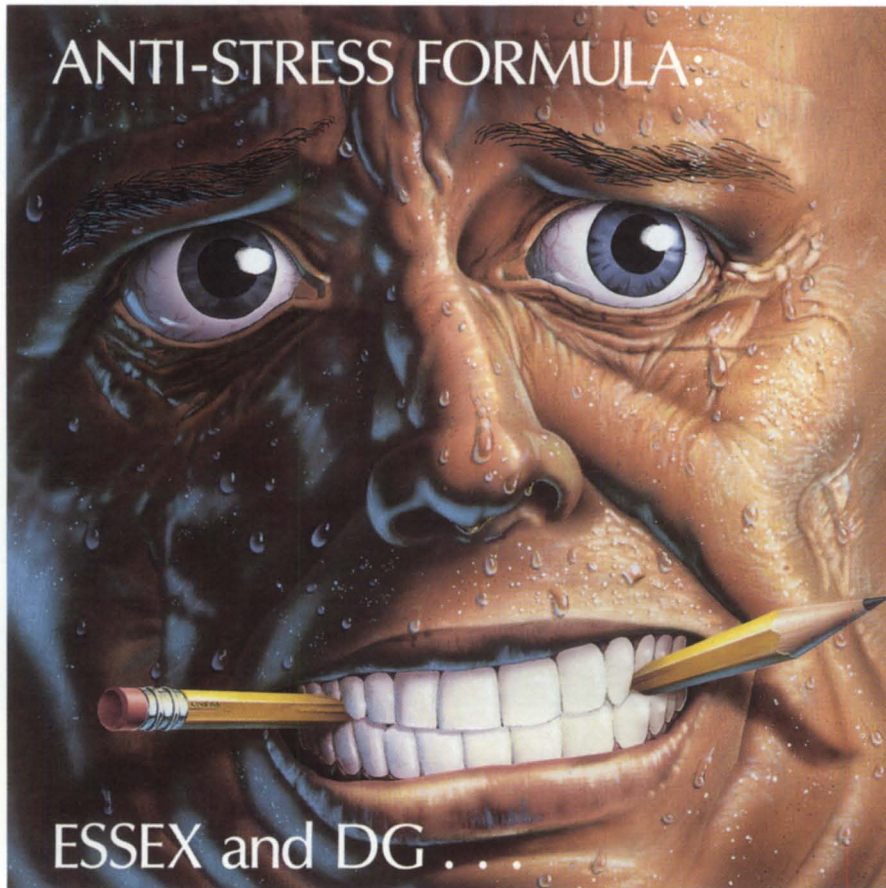
The new disk (model 6491) features 322 MB of formatted, error-checking/correcting (ECC) protected storage with 18 ms average seek time and 8.33 ms average rotational latency. It offers a sustained data transfer rate of 937 KB per second.

The cost is \$7,500. Delivery is 60 days after receipt of order. The disk drive includes a one-year warranty. Δ

Circle 78 on reader service card.

CEO Gateway new from DG

Westboro—Data General has introduced CEO Maili, a CEO office automation gateway application that allows CEO customers to interchange mail and documents with TCP/IP-based systems. Using the TCP/IP mail standard



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Circle 32 on reader service card.

called Simple Mail Transfer Protocol (SMTP), CEO customers can exchange mail and documents with SMTP-compatible operating systems such as Unix, MS-DOS, and Ultrix.

CEO Maili allows a CEO user to send electronic mail messages, CEOwrite, CEO Word Processing documents, and ASCII text files to a user utilizing SMTP standards. CEO users can use existing CEO electronic mail functions such as sending a certified message, an urgent message, and a confidential message. CEO Maili also allows SMTP users to send electronic mail messages and ASCII text files to CEO users.

CEO Maili enhances a range of existing Data General CEO document-exchange protocols including DG/X.400; CEO exchange products to MCI mail and telex; and CEO PXA, Data General's PROFS exchange architecture. CEO Maili requires CEO rev 3.00 and TCP/IP for AOS/VS rev 2.5. Pricing for CEO Maili ranges from \$687 for use on the Eclipse MV/1400 computer to \$5,225 for the Eclipse MV/20000 model 2 system. Δ

Circle 79 on reader service card.

Data General debuts Interactive RPG II

Westboro—Data General has introduced AOS/VS Interactive RPG II software, a comprehensive RPG II application development and execution environment. It enables existing RPG II application programs written for IBM System/36 to run efficiently on Data General's Eclipse MV series of computers.

This product launch is part of a marketing program to recruit IBM VARs and end-users.

Also planned for the near future is the introduction of DG/UX Interactive RPG II, which allows users to take advantage of Unix applications, as well as the wide range of software tools available for the proprietary AOS/VS operating system.

AOS/VS Interactive RPG II software prices range from \$960 to \$15,200, depending on the processor. Δ

Circle 80 on reader service card.

New Dasher/386 system is compatible with IBM PC/AT

Westboro—Data General has expanded its line of PC offerings at the high end with

the introduction of the Dasher/386. This IBM PC/AT-compatible system provides cost-effective, high-speed processing power for a wide range of applications and environments. Both MS-DOS 3.3 and GW-BASIC 3.2 are bundled with the system.

The Dasher/386 features an Intel 80386 processor that operates at 16 MHz and supports standard PC and PC/AT buses.

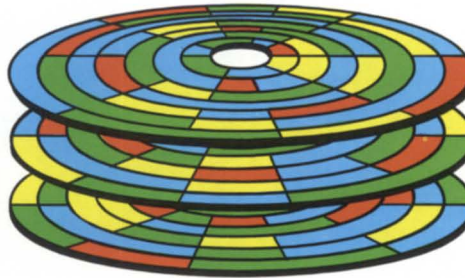
The system can function as standalone, as a personal computer in a networked Data General PC* environment, or as a technical workstation or multiuser PC.

At the entry level, the Dasher/386 includes 1 MB of system memory, expandable to 16 MB; an EGA adapter card; one 5.25-inch, 1.2 MB diskette drive; and a 40 MB or 70 MB Winchester fixed disk. A second 40 MB or 70 MB Winchester

REORGANIZE DISKS IN PLACE,

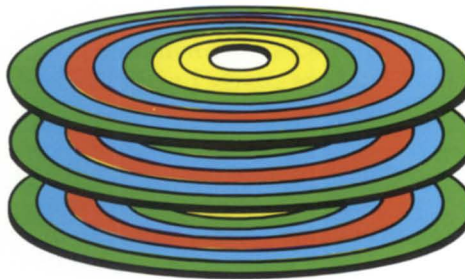
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fixed disk is also available for a total of up to 140 MB of storage capacity.

Other options include a 3.5-inch, 1.44 MB diskette drive that can read and write 3.5-inch, 720 KB diskettes, and a second 5.25-inch, 360 KB or 1.2 MB diskette drive. Video options include a 12-inch monochrome monitor; a 13-inch EGA color monitor; and a high-resolution, 15-inch monochrome monitor for desktop

publishing applications. A total of 10 I/O slots are standard: 5 for the base system and 5 for industry-standard PC cards. The system features an RS-232C serial port and a Centronics-style parallel port. The Dasher/386 is available as a desktop unit with an enhanced PC/AT-style keyboard. A pedestal floor-mount option is also available. The Dasher/386 includes a one-year hardware warranty.

The newest revision of MS-DOS, which is included with the system, provides support for a variety of software environments, including the standard, single-user software applications such as Lotus 1-2-3, dBase, and Wordperfect. In addition, MS-DOS 3.3 supports a multitasking environment through MS-Windows and a networking environment including MS-Net and Netbios. It also supports DG/PC*I for distributed processing.

The Dasher/386 base unit consists of a 1 MB system with a 40 MB disk, 1.2 MB floppy disk, an enhanced PC/AT-style keyboard, an EGA video card, a monochrome monitor, and MS-DOS 3.3. The unit is priced at \$5,735. It is available within 45 days. Δ

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Persoft shipping Smarterm version 4.0

Madison, WI—Persoft has started shipping version 4.0 of Smarterm. Version 4.0 emulates the full range of text terminals that can be connected to Data General host computer systems, including the D410, D400, D210, D200, D100, and with this upgrade, D214 and D215 terminals.

Among the features added to version 4.0 is support for the enhanced keyboard standard on all IBM PS/2 machines. Color selection parameters have been added to allow users to specify background, foreground, and attribute color combinations for each set-up configuration. Xmodem CRC and Ymodem have been added to improve the speed and accuracy of file transfer. Also included is an on-line help screen that lists keyboard mappings used with CEO. Version 4.0 supports the use of com 3 and com 4 baud rates to 19,200.

The retail price is \$175. Free upgrades are available for those who have purchased Smarterm 400 within 60 days of the release of version 4.0. For those who own an earlier version of Smarterm 400, an upgrade will cost \$75. Quantity pricing is available to dealers who wish to organize large-scale upgrades by corporate customers.

Additionally, users who need the Xmodem/Ymodem protocol on their host system can purchase Data Bank Associates' TurboTran, an upgrade of Data Bank's XMP Xmodem program for DG hosts. It also integrates with DG's CEO and facilitates automated file transfer. Together, Smarterm 400 version 4.0 and TurboTran

provide PC-to-host file transfer. Persoft is offering version 4.0 with a TurboTran tape. The bundle costs \$375, and is available from Persoft or Persoft dealers.

Persoft, Inc., UW Research Park, 465 Science Dr., Madison, WI 53711; 608/273-6000. Δ
Circle 82 on reader service card.

Data General offers Sniffer LAN protocol analyzer

Westboro—The DG/Sniffer LAN protocol analyzer, a prepackaged combination of hardware and software, is a LAN protocol analyzer for StarLAN or Ethernet networks. The unit acts as a real-time monitor displaying network traffic, statistics, and other information concerning local area networks (LANs). It can also disassemble and display the internal structure of data frames, allowing users to see the communication between nodes.

Capabilities include capture, display, trigger, traffic generation, and file management. A cable tester is also included for Ethernet models.

It is available on the Data General Dasher/286 or the DG/One. Δ
Circle 83 on reader service card.

Zetaco subsystems rated at 4 MB/sec

Minneapolis, MN—Zetaco, Inc., a supplier of Data General-compatible data storage products, has announced two fully integrated disk subsystems that feature synchronous data transfer rates of 4 MB/sec, with bursts up to 4.75 MB/sec.

Both new subsystems, model SKS-HP646 and model SKS-HP1202, include two disk drives. Both emulate Argus/DPJ drives and are plug-compatible with Data General's Eclipse and MV series minicomputers under the AOS or AOS/VS operating systems.

Model SKS-HP646 provides 646 formatted megabytes, while SKS-HP1202 has 1,202 formatted megabytes. Since the controller in the subsystem supports up to seven disk devices, the subsystems can be expanded to a maximum of 4.2 GB. Drives are packaged in 3.5-inch-high modules that hold two drives and their power supplies, and fit into a Data General meter-high cabinet.

Dual-drive SKS-HP subsystem list prices range from \$21 to \$29 per megabyte, and add-on modules are available for \$16 per MB. The products are available 30 days ARO from Zetaco or its authorized stocking distributors.

SKS-HP subsystems consist of Zetaco's Argus-emulating disk controller, which has the capability for both synchronous and asynchronous data transfers, and

synchronous SCSI disk drives in the 5.25-inch form factor. The subsystems are formatted at the factory and are supplied with cables, documentation, and everything needed for complete connection.

Zetaco, Inc., 6850 Shady Oak Rd., Eden Prairie, MN 55344; 612/941-9480, telex 290975, fax 612/941-1395. Δ

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To get more information about products and services that were advertised or listed in the Product Spotlight section of this month's **Focus**, just circle the appropriate reader service numbers on the adjacent reader service card and mail. It's easy and it's free!

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Grumman Systems Support, a computer maintenance company, has filed an antitrust action against Data General in San Francisco. The action alleges that Data General monopolized the market for maintenance of DG computers by using such techniques as forcing purchasers of certain software also to purchase maintenance services. The suit, filed on July 18, 1988, will probably go to trial next year.

The legal action appears to be in response to a suit DG filed against Grumman last year for allegedly using illegal copies of ADEX, DG's proprietary diagnostic software.

A fourth-quarter team? Data General has reported a net income of \$1.9 million, or \$0.06 per share, for its third quarter, which ended June 25. This time last year, DG reported a net loss of \$65.1 million, or \$2.40 per share. That total included a nonrecurring charge resulting from a restructuring and cost-reduction program of \$53.8 million, or \$1.99 per share.

Although these numbers show significant improvement over last year's performance, the minicomputer industry is suffering from an overall slump, as shown by lackluster results for Tandem and Prime, as well as DG. DEC, however, continues to beat the trend, keeping the mid-range market alive.

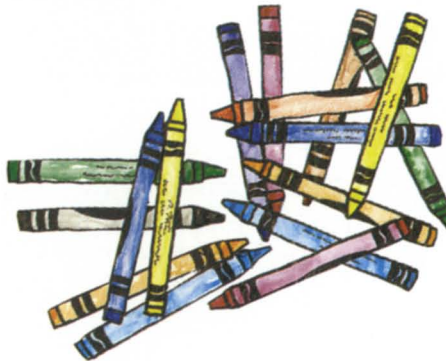
Ron Skates has been selected to fill the new position of executive vice president and chief operating officer for Data General. Reporting to Edson de Castro, Skates will supervise daily operations for all company divisions. Industry analysts have speculated that de Castro is trying to remove himself from daily operations, letting Skates look after the books and giving himself more time to concentrate on product development and long-term strategies.

Industrial Resources Enterprise Contract Services (IRE) of Singapore has recently purchased an Eclipse MV/2000 DC computer to be used in the accounting, payroll, contract, and stockkeeping departments.

With 100 employees and nearly 3,000 contract workers, IRE is one of the largest contractors in Singapore to offer painting, architectural coating, waterproofing, and building maintenance services. Customers include the Singapore Housing and Development Board, as well as other

property owners. The Eclipse MV/2000 DC is the first multiuser system installed in IRE.

Data General coloring books have been distributed around corporate headquarters for employees. DG previously provided more than 1,000 coloring books to outside organizations, including the Italian American Victory Club, the Easter Seal Society's Agassiz Village in Maine, and the Kinder Care day-care center in Westboro.



Data General previewed the latest revision of its DG/UX operating system recently at the Uniforum D.C. Conference held in Washington, D.C. The conference, geared to federal government agencies, provided DG with the opportunity to discuss Unix and industry standards with consultants and customers.

During the show, DG demonstrated several third-party software applications running on DG/UX and an MV/2000.

DG in China. Dalian Locomotive and Rolling Stock Works and Shanghai Maritime Institute have both recently installed DG Eclipse MV series computers. Dalian Locomotive and Rolling Stock Works was founded in 1901 and has become China's leading factory in the industry with 11,000 employees. Its main products are diesel engines, steam engines, and locomotive compartments. One of first firms in the industry there to computerize, the company installed two Eclipse MV/4000s and three Desktop systems in 1986 for administration, management, and engineering application software systems.

Shanghai Maritime Institute teaches more than 4,000 students about communication and transportation. It recently purchased one Eclipse MV/20000, an MV/7800, and four MV/7800 DCs to be used

for office automation, networking, MIS, and other computer studies.

Ada Expo '88 will be held October 9 to 12 in Anaheim, California, at the Anaheim Convention Center. The third annual conference will feature more than 70 exhibitors, 3,000 attendees, and 25 educational seminars. For more information, contact Dean Altwater, program coordinator, at 301/662-9400.

Soft Solutions of Orem, Utah, has executed a termination agreement with CMS/Data of Tallahassee, Florida. The agreement ended a four-year agreement between the two companies wherein Soft Solutions developed CLO, a legal application software package for CMS/Data.

Data General's subsidiary in the United Kingdom and Ireland has won an office automation contract with National Westminster Bank. Worth more than \$3.6 million, the contract calls for DG to provide office automation equipment to National Westminster's general management at their group headquarters. The order includes Eclipse MV/20000 superminicomputers, PCs, and CEO office automation software.

In addition, Data General has signed a long-term agreement with Midland Bank, making it Data General's largest value-added reseller in the United Kingdom. Midland is also the first bank to sign on as a marketer of packaged business solutions based on DG minicomputers to corporate clients.

Bank of America, which prepares payrolls for more than 7,000 different companies, recently upgraded four Eclipse MV/10000 systems to Eclipse MV/20000 computers. The purchase totaled to approximately \$1.6 million worth of Data General equipment. Each month, Bank of America prints 2.5 million paychecks for its customers.

The NADGUG staff in Westboro has a new toll-free number available for users interested in membership. It's 1-800/825-4442. Δ

Gilt-Edge Security: Memory from Dataram

Dataram's MV Upgrade Plan Can Save Enough to Buy Your Next DG Processor

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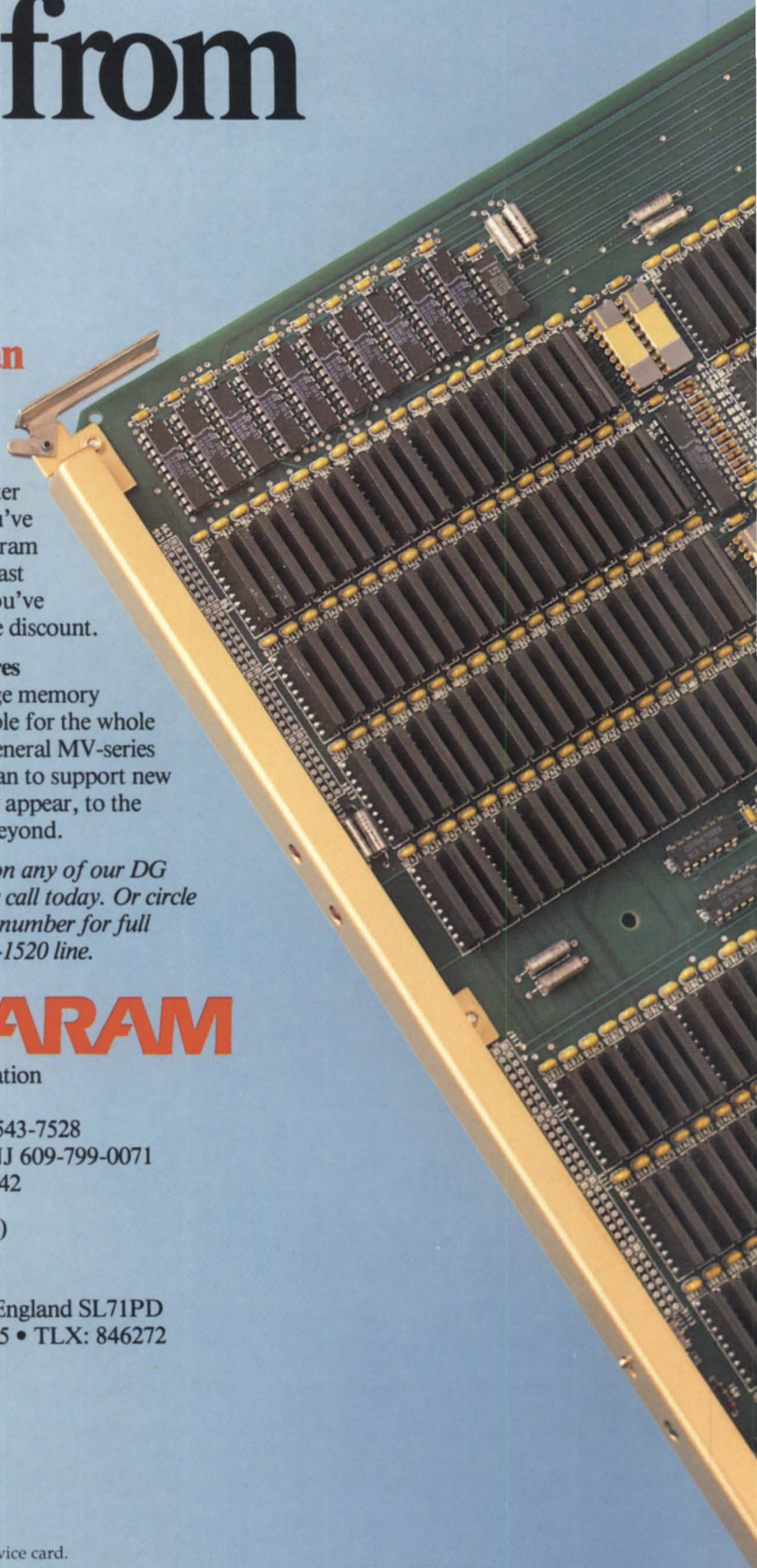
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