

March 1989

FOCUS

The Magazine of the North American Data General Users Group

An American Abroad: *DG Goes International*

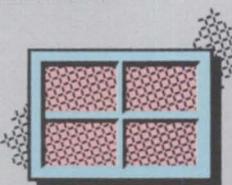
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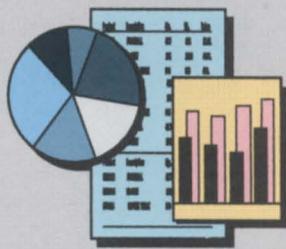
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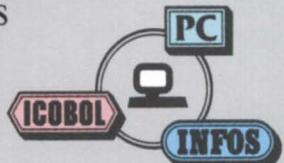
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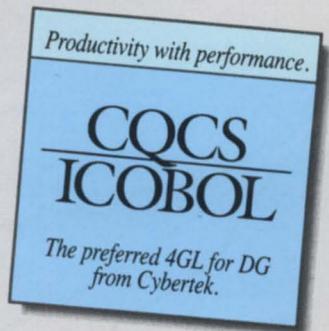
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The next step

What may be the biggest piece of news this month for NADGUG members is so well hidden you probably wouldn't notice it unless somebody tipped you off. Look at the "On-line Help" box on page 84. Still don't see it? Look closer and you'll see that some of the addresses and phone numbers have changed.

Big deal, right?

Bigger than it looks, actually, but it isn't obvious why. The new numbers and addresses are there because NADGUG has taken a very significant step: it now has the nucleus of its own staff.

Until now, the group has depended on the good will and budgetary largesse of Data General to pay salaries for the staff and provide the office services that keep NADGUG going. Those new addresses and phone numbers are the first visible signs of a transition that was set in motion more than a year ago.

NADGUG is nothing if not deliberate. For a long time the Executive Board has been tending toward greater independence for NADGUG. The push for autonomy didn't come about because of any dissatisfaction with the way DG's employees were managing NADGUG's business. Rather, there was a sense that the group was growing up and ought to be able to take care of itself.

(There was also the matter of taxes, of course. If the IRS determines that NADGUG is a single-vendor user group, it will rule against the tax exempt status the group applied for several years ago. By paying its own way, the group may be able to improve its tax status.)

The first step was to figure out whether the group could afford to go out on its own. Past President Joyce Carter visited with a few management companies to determine what the costs would be. The Executive Committee reviewed the proposals, and then recommended that NADGUG expand on the agreement that currently governs the publication of *Focus*. Using the leverage of the existing *Focus* offices, NADGUG would essentially lease employees to handle the group's staff responsibilities.

The Executive Board approved the rec-

ommendation in principle at last year's meeting in Philadelphia, but it's taken a while to get all the details settled. The post-conference accounting had to be reconciled, and the membership data base had to be brought to a good stopping place. Then there were the details of moving the computer, setting up new bank accounts, ordering new phone numbers, and training the new staff.

The transfer is complete now, but what does it mean for members? Well, first of all, membership records and *Focus* circulation are all handled in the same place now. This should make it faster and easier to resolve address changes and circulation questions. It will also make it possible for the NADGUG staff to begin compiling more extensive information about the people and companies that use DG equipment. A side benefit for NADGUG is savings on mailing costs, because we will finally be able to qualify for second class postage. In addition, the new NADGUG staff members will begin keeping accounting and budget information to help the officers and Executive Board with their decision making.

Less tangible are the benefits that come from increasing the autonomy of the user group. In many ways, it's like growing up. Data General has shown exceptional wisdom in the way it nurtured the group through the 14 years it took to get established. Like a parent, DG has provided help, guidance, attention, money, and finally a gentle nudge out the door—along with an admonition to stay in touch and come visit often.

A footnote: Debra Bedrosian, a DG employee, has done the bulk of the work to make this transition happen. First as user group secretary, and then as NADGUG coordinator, she knows the members as well as anyone, and has worked hard to help the group grow. Fortunately, NADGUG doesn't lose Debra in the transition. She will keep the same title and continue to work on NADGUG's behalf as a DG employee. From her office in Westboro, she will make sure that we do, indeed, stay in touch and come visit often. —GF

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Searchlist

In the November issue of DG's monthly newsletter there was a request for a facility to drop one (or more) items from a searchlist without having to rewrite it.

As a systems manager/programmer/operator for nearly three years at a small university in Denmark, I have become very good at using the CLI. One of the first macros I wrote was ADDSEA.CLI, which inserts a directory in front of the current searchlist. The first was a no-frills version:

```
searchlist %1-% [!searchlist]
```

Later on, two switches, /E and /V, were added for putting the directory at the end of the list and, respectively, for displaying the list:

```
[!equal,,%0/E%]
  searchlist [!searchlist] %1-%
[!else]
  searchlist %1-% [!searchlist]
[!end]
[!equal,,%0/V%]
  searchlist%0\EV%
[!end]
```

But how does one remove an item from the searchlist? The problem is to find the element in question and then remove it. REMSEA.CLI can be written as a macro which 1) calls itself with the directory and the searchlist as its arguments, 2) kills the searchlist, and 3) re-creates it by appending each argument, as shown in Figure 1.

Figure 1: Macro REMSEA.CLI

```
[!equal,,%1%]
  write %0% - Removes a directory from the
  searchlist
  write
  write Usage: %0\%{V}{L}{Q} {pathname}
[!else]
  [!equal,,%0/$2$3%]
    [!pathname %0%.CLI]/$2,%1%,[!searchlist]
    [!equal,,%0/V%]
      searchlist%0/L/Q%
    [!end]
  [!end]
  [!equal,,%0/$2%]
    searchlist/K
    %0\%/$3,%1%,(%2-%)
  [!end]
  [!equal,,%0/$3%]
    [!equal (%1%),(%2%)]
      searchlist [!searchlist] %2%
    [!end]
  [!end]
[!end]
```

Some weeks ago I discovered a very useful (undocumented) feature. If you insert a directory in front of the searchlist, an already existing entry will automatically be removed. Then all you have to do is remove the first element again. With the help of ?CAR.CLI and ?CDR.CLI the

new macro looks like this:

```
[!equal,,[!pathname %1%]]
  class2_error Can't find directory - Directory %1%
[!else]
  comment A non-directory argument causes a class 1 error.

  searchlist/1=warning %1% [!searchlist]
  [!equal [?car [!searchlist]], [!pathname %1%]]
    searchlist [?cdr [!searchlist]]
  [!end]
[!end]
```

(If you modify these macros, think of what would happen if they

were called without an argument.)

The macros CLASS2_ERROR, ?CAR, and ?CDR are explained in Focus January 1988. (All my function-macros begin with a "?", so they almost look like the CLI's built-in pseudo-macros).

Speaking of the January '88 issue, it also contained a macro called SET.CLI for creating temporary variables. As a CLI-programmer, you are well equipped with integer variables but you have only one string variable. Instead of just creating temporary files all over the file system, I decided to create a general method for storing and retrieving string variables. It consists of two macros, VARS.CLI and ?VARS.CLI, that take the name of a string-variable as their argument. In each user's home directory a special directory called .VARS is created. Here, all the temporary string-variables are kept as one-liners with an "&" at the end, as shown in Figures 2 and 3.

Attaching the "&" (or removing the NEW LINE character) can be done in many ways, but a very clever trick is explained in

DG's CBT-program on CLI-programming. As you can't just put an "&" at the end of your WRITE you have to masquerade it a bit. In the example I saw it was done by putting it inside a pair of angle-brackets:

write/L=%1% %2-%&<

but I prefer to put the "<>" at the end like this:

write/L=%1% %2-%&<

Figure 2: Macro VARS.CLI

```
[!equal,,%1%]
  class1_error Command requires arguments %0%
[!else]
  [!equal,,%0\12\VK\Q%]
    class1_error Switch unknown - %0/%
[!else]
  push; prompt pop
  directory :UDD:[!username]
  create/2=ignore/dir .VARS
  directory .VARS
  [!equal,,%0/K%]
    delete%0K% =%1-%
  [!else]
    delete/2=ignore%0/% =%1%
    write/l===%1% %2-%&<>
  [!end]
  pop
[!end]
[!end]
```

Figure 3: Macro ?VARS.CLI

```
[!equal (),([!filename [!pathname :UDD:[!user]]:.VARS:%1\%])]&
  ([!pathname :UDD:[!user]]:.VARS:%1\%)&
[!end]&
```

Using these macros, string variables become child's play:

```
vars FirstName [!read What is your first name?]
vars LastName [!read and your last name?]
  write Username: [!username] &
Last name: [?vars LastName] First name: [?vars FirstName]
vars/k FirstName
vars/k LastName
```

If you have any questions, please feel free to write to me, either at the address below or to <RUCJB@OS1100.UNI-C.DK>. You can also write to JAN BRUUN on RDS BBS (415/924-3652).

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News from NADGUG and its affiliates

Not long ago, NADGUG's conference organizers issued a call for papers to NADGUG members. I want to extend that idea into a call for papers to all of the regional and special interest groups, as well.

The Roundup column in *Focus* is one of the best vehicles for publicizing your group and its activities. People attend group meetings when they think they will get something worthwhile out of them; they want meetings to be interesting and productive. To attract more members, it is important that your group meetings are seen as exciting and informative. NADGUG wants your group to be as strong and successful as possible. This is why it has designated areas in *Focus* to promote RIGs and SIGs.

Not only is Roundup the best way to get your group recognized, it is free and easy! All you have to do is write the information down and send it to *Focus*. Or you can call and let us know what you need to announce, and we'll write it for you. The deadline for submitting an article is the 15th of the month two months before publication. In other words, in order to announce a meeting in Roundup that is going to happen in May, you need to submit your information by March 15.

Advertising in *Focus* is offered to RIGs and SIGs at no cost. Two-thirds of a page of advertising space is designated for RIGs and SIGs in every issue. To reserve space, your group should contact our office two months prior to the issue month. Either send us a copy of the ad, or tell us what it

should contain and we will design it for you.

The NADGUG spring board meeting is March 9 and 10 at the Hilton in New Orleans. Several regional and special interest groups will be petitioning for recognition at the meeting. In addition, the **RIG/SIG Committee** will meet to finalize plans for supporting RIGS and SIGS at the annual conference, as well as the rest of the year. Details will follow in future issues of *Focus*.

Plans are underway for reorganization and reactivation of the **Central Ohio users group**. RIG/SIG Committee Chairperson **Charlene Kirian** held a lunch meeting with **Bob Busick** and **Jerry Phillips** on January 17. The first meeting for the newly activated group will be in late February or early March. The organizers are planning an interesting meeting with a dynamic speaker who will be announced soon! Check your mail and future *Focus* issues for more details.

If you don't receive a mailing or you want more information, contact Bob Busick at 614/486-2966 or Jerry Phillips at 614/876-1270. Data General users in the Central Ohio area should not miss the chance to be associated with so many other interesting and knowledgeable DG users in the same area.

On January 12 and 13, Data General users who run **Cybertek's CQCS** met in Denver, Colorado for the purpose of forming a special interest group.

The first day of the two-day get-to-

gether was reserved for Cybertek to address future plans, announce new revisions, and show off new products. "Users only" was the theme for the second day's activities. Over 40 users in attendance gave suggestions for activities and benefits for the group. NADGUG's RIG/SIG Committee Chairperson Charlene Kirian gave the group tips on organizing a special interest group and advice on how to keep the group active. She pointed out the advantages of being a special interest group under the NADGUG umbrella. The group is planning on petitioning for NADGUG recognition as a SIG at the spring board meeting in New Orleans this month.

Officers were elected and plan to meet again in March. The group decided to publish a newsletter for its members. The newsletter will contain news, technical tips, a job bank, and other features specific to Data General and Cybertek's CQCS. To get on the mailing list, contact the group's secretary, **Steve Cohen**, at 601/325-3227.

It was the first time for CQCS users to get together and share concerns and experiences while having fun. Networks and contacts were made and strengthened over the two-day meeting. **Ray Walther** is the group's president. He can be reached at AIM Management, 11 Greenway Plaza, Suite 1919, Houston, TX 77046; 1/800-231-0803 or in Texas 1/800-392-9681. Δ

Cathlene Gentry is the RIG/SIG coordinator for NADGUG. She may be reached at Turnkey Publishing Inc., 4807 Spicewood Springs Rd., Suite 3150, Austin, Tx. 78759, 1-800-877-4787, (1-800-USR-GRUP).

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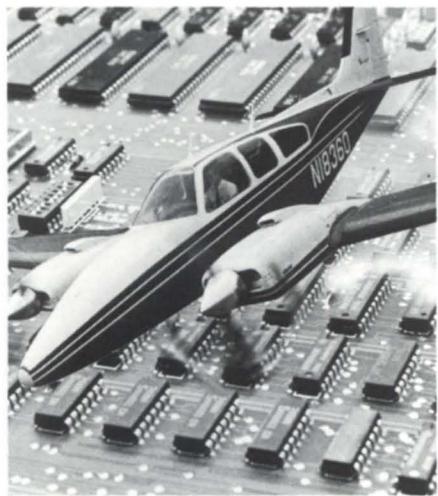
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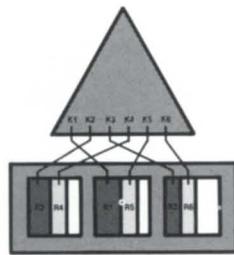
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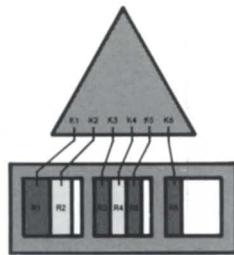
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INFOS reorganization with the VS.TOOBOX™



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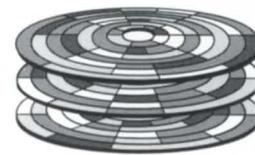
Modifications have made the INFOS file disorganized. As each record is accessed, a different page must be read from disk. A large amount of I/O is required, and INFOS performance is poor.



After the VS.TOOBOX:

Data records have been re-written sequentially. During sequential processing, each page must be read from disk only once. The amount of I/O is reduced, and INFOS performance is improved.

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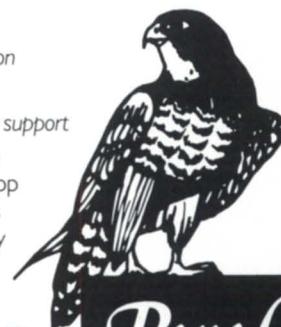
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LITIGATION



Data General wins round one of ADEX software fight

By Robin Perry
Focus staff

Data General won preliminary court victories in its battle to prevent unauthorized parties from copying or using its diagnostic software ADEX—but primary opponent Grumman Systems Support Corporation (GSSC) has vowed to continue the fight.

In late December, a federal judge in Boston granted a preliminary injunction against GSSC, a unit of Grumman Corporation, preventing GSSC from “copying, using, and possessing all or any part of Data General’s proprietary ADEX diagnostic software,” according to an announcement by Data General. The lawsuit, filed by DG in Massachusetts last year, claims that GSSC infringed Data General’s copyrights and misappropriated its trade secrets relating to ADEX.

In response to the injunction, GSSC President Joseph Mulderig said “obviously, we’re disappointed, but it’s far from over. It still has to go to trial by jury.” GSSC has developed its own diagnostic software that is comparable to ADEX, and its customer service will not be affected by the injunction, Mulderig said.

“Grumman is going to obey the order of the court,” said GSSC attorney Ron Katz, of the San Francisco law firm of Coudert Brothers. However, GSSC is going to continue its effort to legally use ADEX, he said.

Data General provides ADEX and other maintenance tools to members of its Co-operative Maintenance Organizations (CMO) program. Last summer, GSSC filed a suit against Data General in federal court in San Francisco that claims this tying of software and services to maintenance agreements is a violation of federal antitrust laws. The suit was dismissed without prejudice in January. Without prejudice is a legal term that means if a motion is dismissed, it can be resubmitted at a later date, said Ed Russell, DG spokesman. According to the judge in San Francisco, the claim could properly be filed in Massachusetts.

“If Grumman elects to file the claims dismissed in San Francisco as counter-claims in Massachusetts, we believe they will be without merit and will be vigorously defended,” Russell said.

GSSC will “absolutely, positively” file the suit in Massachusetts, said Mulderig. There are several issues other than the use of ADEX addressed in the suit, he said. In an open letter to GSSC customers, Mulderig stated that “it is our belief that DG, by limiting access of Grumman to diagnostic software, depot services, and other tools of the trade, is attempting to preclude Grumman and other third party maintainers from competing against DG on the maintenance of their computers.”

In other actions last November, Katz filed two lawsuits on behalf of smaller third party maintenance companies that claimed DG monopolizes the DG computer repair market through its ADEX policy and by restricting service companies from purchasing spare parts and other maintenance tools. One of the suits, brought by NPA Systems of California, has been dropped without prejudice “for reasons not related to the merits of the case,” Katz said.

The suit brought by Computer Products and Repair, Inc. (CPR) “still stands as an act of litigation in California. They have an option of bringing the suit to Massachusetts,” Katz said.

In a separate action in the United Kingdom, Data General was granted another injunction against a computer maintenance company. DG and its subsidiary Data General Ltd. won a temporary injunction that prohibits Granada Computer Systems Ltd. from possessing, using, or copying ADEX software until after a judgment is issued on the merits of the case, or until further action of the High Court of Justice. △

How to Protect Your DG® Computer And Make It Last Longer

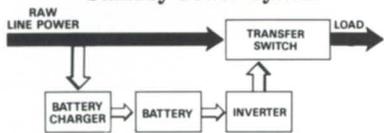
World's largest manufacturer of uninterruptible power systems for Minis, Micros, and LANs tells how

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Shown below are three traditional UPS configurations. Each has its advantages and disadvantages.

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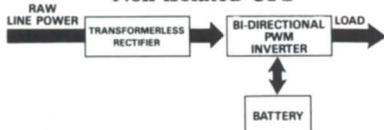
Advantages:

- Low cost
- Inverter normally off
- High efficiency

Disadvantages:

- No derived neutral
- Break in transfer
- Poor isolation
- Poor brownout protection
- Poor high line protection
- Poor lightning protection

Non-isolated UPS



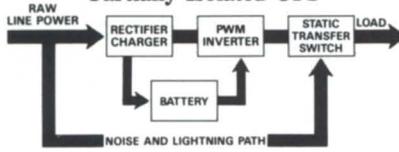
Advantages:

- Moderate cost
- Brownout protection
- High line protection
- No break system

Disadvantages:

- No derived neutral
- Poor isolation
- Inverter on continuously
- Poor lightning protection
- Non-linear load

Partially Isolated UPS



Advantages:

- Brownout protection
- High line protection
- Partial no-break system
- Separately derived neutral

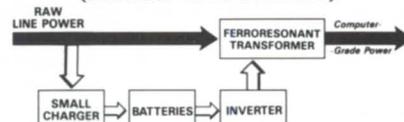
Disadvantages:

- Break in transfer to line
- Poor isolation
- Poor lightning protection
- Non-linear load
- Poor efficiency
- Expensive

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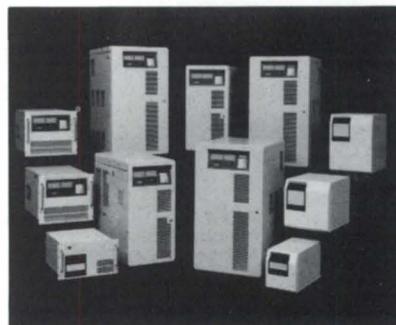
FERRUPS Provides Better Protection Than Any Other Design

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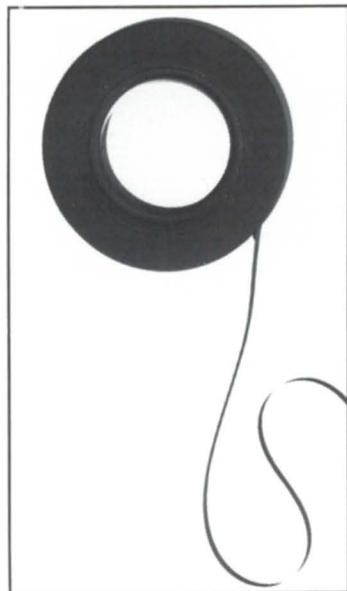
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or call 713/665-7500. (MV/2000 and MV/1400 users should send one tape cartridge.) Software contributions should be sent to the same address. Be sure to include your membership number.

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 include a self-addressed 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.

Big Brother

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

B.J.'s BBS contributions

This addition to the library consists of about 20 items, including various programs, documentation, and macros. Some of the more interesting items include the :SYSMGR benchmark suite, a continuous incremental backup, a clean-up file maintenance program, a program to find strings in files, and a type-backward program. 5,749 blocks.

CRREDIT

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

DBCHECK

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

DUMPOLOAD

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

ERP

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

FILEMNGR

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

FTNCVT

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

Games

Games is a collection from various places. Enjoy. 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. 416 blocks.

IMSLUTIL

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

JAG_UTIL

JAG_UTIL consists of several programs:

Filecount, Userspace, Scan, and Laminate. 1,501 blocks.

Kermit

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

Logout

Another autolog-out system. 246 blocks.

Look

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

Macbook

This is a collection of macros from the Colorado users group. 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. 492 blocks.

Misc Kerm

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

QHelp

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

SKLSCRN

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

Softtrans

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

SWITCHES

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

TEX 2.25

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

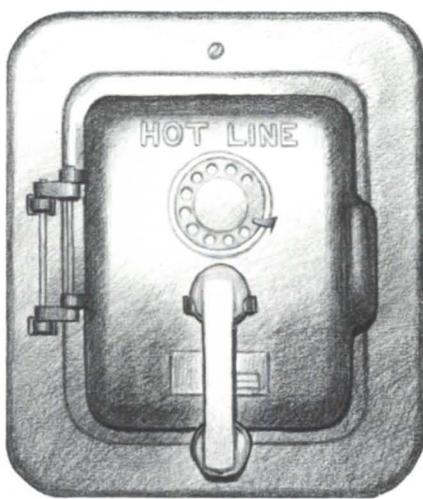
VT100KER

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

Xfer

Xfer is a tape-conversion utility. 653 blocks.

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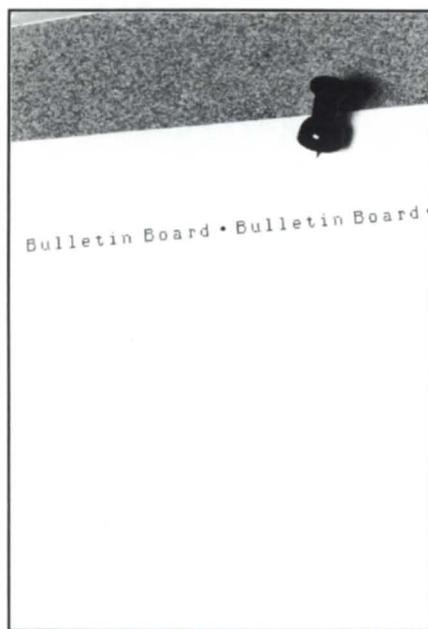
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Bits and bytes from the bulletin board



Master Console

From: Jeff Campbell

Does anyone know of a way to locate a master console further away from the CPU than the standard 50 feet? I need to move the console into an operations room about 100 feet away. Is this a safe thing to do or is my system going to get flaky because of it?

From: Dell Setzer

You'll probably have to go to current loop instead of EIA (RS-232) to be able to use longer lines. If you need them, Black Box sells EIA-to-current loop converters. Note that you'll probably have to use four-wire cable instead of two-wire plus ground.

From: Walter Mosscrop

You might want to try one of the EIA line distance boosters available. We use one of Inmac's fiber optic line drivers and it has worked perfectly from day one.

From: Tim Boyer

Couldn't you just go to a lower baud rate? We've got 4800 baud running over 250 feet with no problems. And there really is no noticeable difference between 4800 and 9600.

From: Richard Hankins

We use RS-232 at 19.2 Kbaud at a distance of 150 to 200 feet. Moving the master console to 100 feet should be no problem if you use the right kind of cable. The best cable to use for over 50 feet is shielded twisted pair with each pair with its own shield.

PC Integration

From: Bryan Boyle

If any of you haven't seen Rational Data System's report on PC Integration, I suggest you beg, borrow, or steal a copy if you can. Of all the words coming out of all of the vendors (both inside and out of the DG world), this has to be the best examination of how and what PCI means in the environments we work in. I highly recommend it.

I thought it proves 1) good ideas come from *all* people involved in technology, and 2) contributions that help move the technology forward can't be bottled up at one vendor or another. If more people took critical looks at global user needs, perhaps the products from all vendors would address the marketplace better.

From: Tom Moore

I couldn't agree more. But the first step in marketing or supporting a product is having a *good* product that is easy to use and functional. Period. The problem with the industry in general, is the "P" word, proprietary. It has slowly started to disappear, but in order to be profitable, a company has to find its place in a market, and pursue it fully.

From: Doug Kaye

Gee, thanks for the praise of our *Report on PC Integration*, Tom and Bryan. By the way, if anyone would like a copy, please call Michael McGill in our Pasadena office (headquarters): 818/568-9991. Ask for Kelly, actually, and she'll send you a copy at no charge.

TCP/IP 2.50

From: Bill Benedetto

Has anyone installed this product yet? I have not and was wondering if anyone has and what they thought. We will more than likely upgrade to this release.

From: Richard Kouzes

I got 2.50 to work, but I had to drop the wait for ports on ftp in the up macro (it waited forever). It was also essential that the network be quiet. We had a lot of collision problems due to a bad transceiver tap. In four attempts to bring up TCP/IP before removing wait for port ftp and removing routes, the system locked up solid in the up macro. No attempt to abort it worked so I had to reboot. After removing wait for port and routes, it came up and functioned. I was able to add routes only after the net became "quiet" despite the fact that all functionality was operational on both my MV TCP/IPs.

From: Jan Bruun

I have just received rev. 2.50, but it still doesn't support screen edits. The only problem I have had after revving up, is that when I TELNET to the MV, my terminal goes into some kind of page mode. I have to send a SPACE, NL, or any other character every half page. It reminds me of a problem I had when I forgot to link a multitasking program with the outer ring emulator.

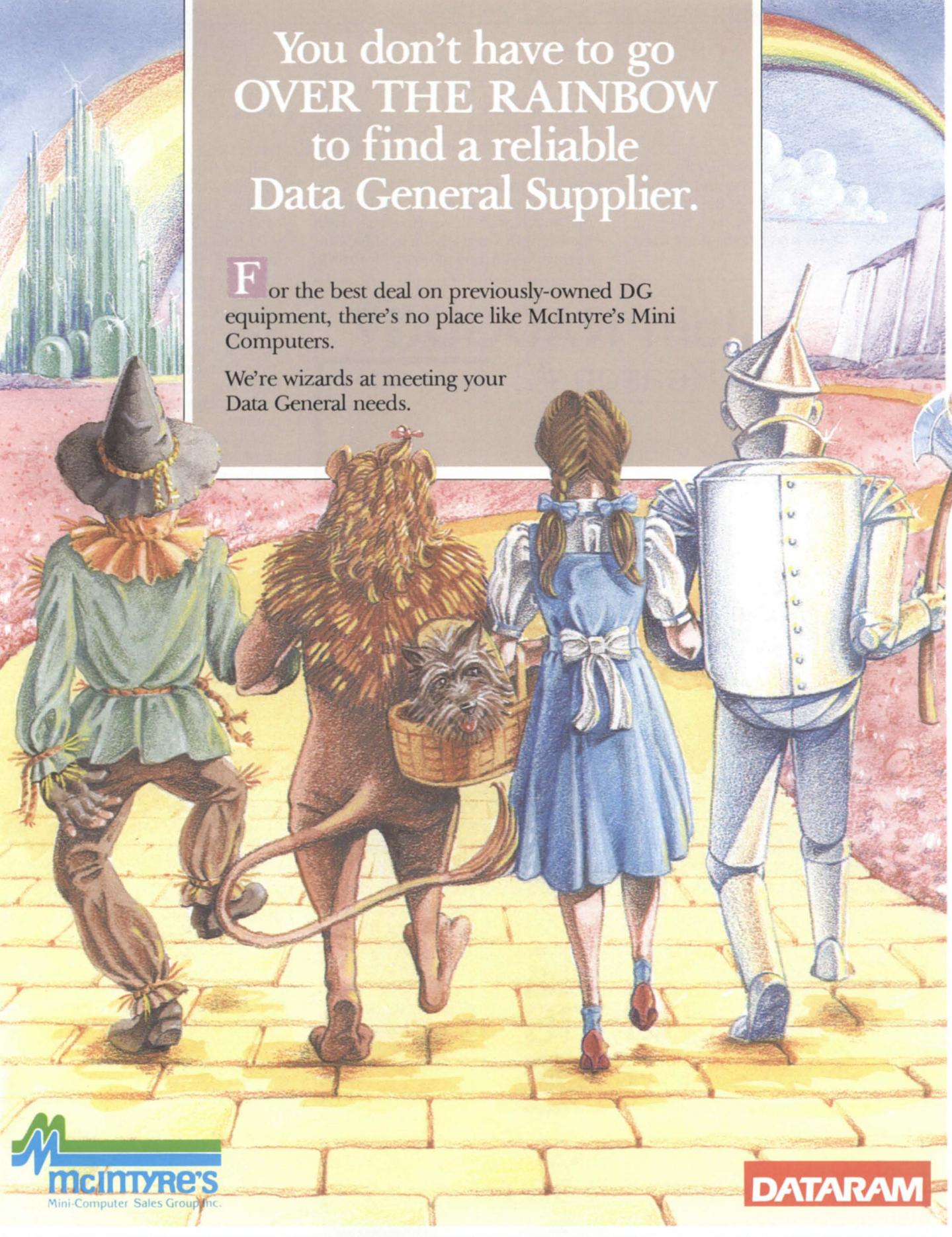
From: Bill Benedetto

I see that going to 2.50 is indeed a scary prospect. Thanks for the warnings. I will pass them on to our administrator and let him decide. He may decide to load it and see what happens . . . He's brave that way.

Printing between networks

From: Sam Pitts

I know that within CEO you can print across a Xodiac network. I also realize that you can QPRINT a job across the network via :net:15k:pathname, etc. However, can you create a queue on one machine and associate it with a CON port on another machine? Or can you "stack" the jobs up in a queue and somehow create a macro that "fires" them transparently across the network to print on an-



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other machine? Thanks in advance for any comments or tips.

From: Michael Meissner

I tried to do something similar by creating a print queue to a pipe, and it failed miserably because XLPT at the time was using block I/O (?WRB) to any file type that wasn't a console. Maybe it got fixed in 7.62.

C 4.00

From: Jan Bruun

Has anyone tried C 4.00? It looks good, but I'm nervous about the new optimizer.

From: David Down

We got C rev 4 last month, but I haven't done much with it yet (too busy with other things). I'm really looking forward to using the function prototype feature to

help reduce argument mismatches in coding.

From: Doug Rady

I have been playing with it some at a beta test site and have found it to be real reliable. There is only one module that I can't compile with optimization and that is documented in the release notice (exec.c in microEMACS).

It eats memory, especially with large files, and eats CPU. They are not kidding when they estimate compile times at twice as long. The .OB module size has gone up a bit but the .PR size hasn't gone up more than expected due to the changes in libraries. The /PROFILE option is interesting but limited. Nothing like Unix profiler.

As is demonstrated by the exec.c example, you may need to tack the volatile modifier onto some variable declarations. If you don't tack it on, the optimizer may do you a few favors that you really don't want.

Disk fragmentation

From: Margrit Eade

Is there any way to tell how fragmented your disks are other than dumping them to tape, wiping them, reloading them, and seeing if response time improves? I know about the DMS Disk Optimizer, but is there any way to evaluate the disk situation without buying the \$90 demo? Also, if you move data from one disk to a blank disk, does that "compress" the data? Thanks in advance.

From: Jan Bruun

I use DISK_ANALYZER from Eagle Software to determine if I should reorganize my disks (using DISK_ORGANIZER). Dumping onto a newly formatted disk should work, but my experience shows that it takes nearly the same time doing it with tapes.

From: Doug Rady

Last I saw, the Eagle demo was only \$50. Dumping to a clean disk works in terms of compacting space and lumping files together, but not much in terms of real organization.

From: Brian Johnson

The vendors of disk repackers won't be too thrilled by this, but I've always categorized such software as "anxiety-ware". (Got poor performance? Must be the dreaded disk fragmentation!)

Disk repacking sounds like a reasonable way to speed up disk I/O, but the

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fact of the matter is that its effect on operating systems that make use of sophisticated caching and buffering algorithms, and that are multiuser (i.e., multiple simultaneous requests for data from the same drive at the same time), is minimal. You can prove this to yourself by simply dumping a disk to tape, doing a Full DFMTR, and reloading the data. We had to do that last week when a 277 MB drive was swapped out. As a result of the "repack", the average seek dropped from 97 to 49 (an encouraging factor of two), but the average service time (use X DISCO/CYCLE=60 to see it) only dropped from 22 ms to 21 ms (a disappointing 5 percent).

The makers of the disk repacking programs argue that their programs are better than reloading because they use "optimal" repacking algorithms and allow placement of specific files nearer the center of the disk for faster access. Irrelevant. There is no universally optimal packing algorithm any more than there is a universal hashing algorithm. What may be optimal for online will be non-optimal for batch, and vice versa. Also, the incremental benefit of optimal algorithms over and above simple offload-DFMTR-reload strategies is microscopic for general time-sharing; significant results can usually only be seen during batch or during benchmarks.

In summary, there are other factors affecting your disk I/O speed as much or more than the minor slowdown caused by disk fragmentation (mostly having to do with balancing I/O across drives uniformly, or by avoiding I/O in the first place through proper cache sizing and adequate LRU sizes). Primitive single-user systems like MS-DOS need disk repackers, AOS/VIS doesn't. Several thousand dollars is an awful lot to pay to reduce disk I/O by 1 ms for a short time.

P.S. There is an easy way to get a rough idea of the fragmentation on your disk. Run DISCO while you're backing up the drive and capture the starting and ending access count and cylinders sought. At the end of the backup, divide cylinders sought by accesses and get average seek. The lower the number, the less fragmented the disk is. Do this for all your drives and then compare the "fragmentation" to the average service time from DISCO. I predict you'll see little correlation.

From: Doug Rady

Actually, in some cases, the commercial packages can cause a degradation in per-

formance. This is especially true in an environment where a lot of scratch files are created and deleted.

I have also seen this with DUMP/DFMTR/LOAD. For large files that are hit upon often, it can make a noticeable difference, which we have seen. This is mainly due to a reduction in travel time for the heads. We have several 30-70MB files that are random access via separate

key files (not our design).

64 MB ON 15K & 20K

From: Doug Rady

Word from the Detroit office is that you can now put 64 MB on an MV/15000 or a MV/20000! Supposedly they redid the artwork for the boards to deal with newer chips and power constraints. At last! Now, is 64MB as high as they will go? □

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Americas/Far East

Developing computer market unifies vast territories

Below is an interview with Wayne Fitzsimmons, vice president of Americas/Far East for Data General Corporation. To give readers another viewpoint, we have included on the following pages randomly selected profiles of users of Data General products throughout the world.

Focus: Why does Data General go to the trouble of addressing markets in so many countries around the world—why not focus the same amount of effort on a few countries and do extremely well there?

Fitzsimmons: First, being a multinational company allows us to serve other multinationals in all the markets they address, wherever they are. That gives us a tremendous competitive advantage. Also, in some of these countries we can become a dominant force because a lot of companies won't pay attention to them. In the Republic of South Korea, for instance, we are a major company—I think we're ranked third in terms of revenues. Each of these national markets may be small, but if you have several \$25 million operations, it adds up to a lot of revenue. Not all of them will be up at the same time, but as economies go up and down around the world we can balance our revenue opportunities and allocate resources according to market conditions.

Focus: Why does Data General combine countries that

are as far apart and as different as Argentina and Singapore into a single operation called Americas/Far East?

Fitzsimmons: One could be cynical and say there are three geographies in the world: North America, Europe, and the rest. I got the rest.

Focus: Okay, if that's the cynical view, is there another view you could take?

Fitzsimmons: Latin America is largely composed of third world and developing countries. Likewise Asia. But there is a kind of unity of business practices related to the stage of development of the computer markets, which are in stark contrast to North America. That's a good rationale for combining Asia and Latin America into a single group trying to serve that type of marketplace.

Focus: Can one person really understand everything that goes on in such a vast territory?

Fitzsimmons: I don't think it's down to one person. Obviously there's a significant management structure underneath me. One person can understand the business problems that arise in such a vast geography provided you've got competent management in the field.

Focus: If it depends on having competent management in the field, what is DG doing to assure that you have good managers in place?

Fitzsimmons: One philosophy that Data General has held to is that we try to employ a local team. In China we have Chinese and in Argentina we have Argentines. This policy also manifests itself in the fact that I'm an Australian running this vast operation known as Americas/Far East. Somebody like myself has a vastly different perspective from somebody who was born and raised in Wisconsin.

With trained management who are all locals, your job is a lot easier. I'm as comfortable dealing with Latin Americans as I am with Chinese, provided that the top guy in the national market can straddle the cultural differences. That's a very important part of the management skill level I'm looking for.

Focus: Is there anything in particular that prepared you for the job you hold now?

Fitzsimmons: I started with Data General in 1972 as general manager for Australia and New Zealand. There were six people when I started, but it had grown to a couple hundred by the end of 1979, when I left to go to the U.K. as a general manager. I left there at the end of 1983 and came to North America to take my current job. While I was in the U.K. I dealt with several international distributors, which prepared me for a broad geography. Australia, New Zealand

(Fitzsimmons continued on Page 29)

Puerto Rican fortress guards state operations

When Arnaldo Ramos was deciding which computer system to recommend to his client, he had more than the usual factors to consider. The system had to have remote capabilities, be able to support hundreds of users, share printers and other equipment, and, preferably, speak two languages. Then there was the fact that it was going to be installed in a 400-year-old fortress in San Juan, Puerto Rico.

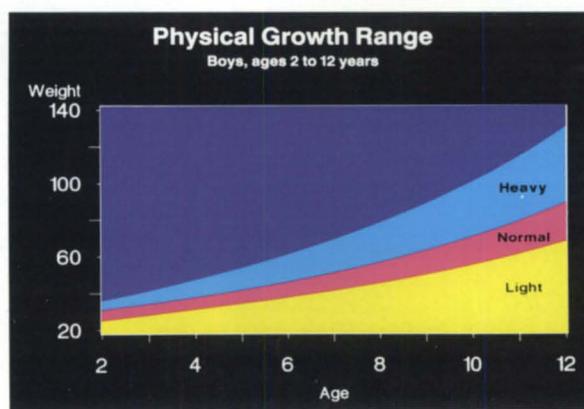
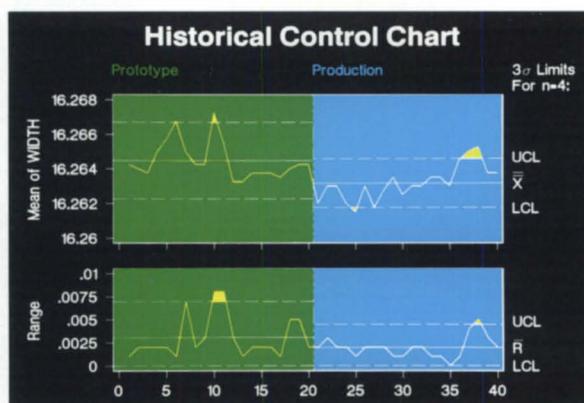
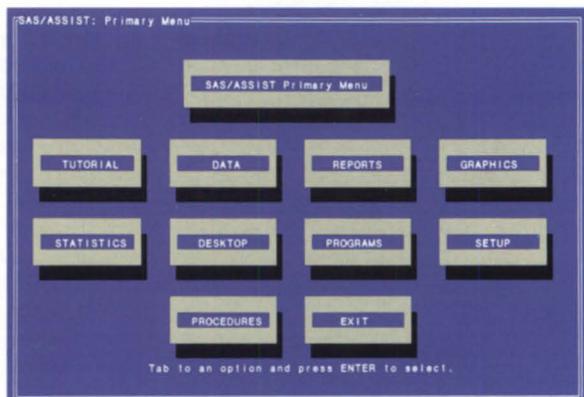
Ramos, a consultant and professor of computerized information systems at the University of Puerto Rico, assisted in choosing a system that would bring the operations of the Office of the Governor [Flag]

(Ramos continued on page 28)

La Fortaleza, DG's largest installation in Puerto Rico (photo courtesy DG Corp.)

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(Ramos continued from page 26)

into the computer age.

"I was called at the beginning of 1985 when the current administration (the Hon. Rafael Hernandez-Colon) took charge," Ramos said. "They had an old computer, but by that time it was not being used. We started from scratch."

Ramos was contacted by Sila Calderon, the Secretary of the Governorship (a position similar to the White House Chief of Staff in the United States). Calderon wanted to not only computerize the internal offices of the governor, but also those of over 100 government agencies scattered about the capital city.

"We evaluated several different office automation packages," Ramos said. "The decision to choose DG was based "not just on software, but also on the hardware." The Office of the Governor is located in a Spanish-built fortress known as La Fortaleza located in Old San Juan, so special consideration was given to the machine's distribution system. "The only one that could really provide us with that configuration at the time was Data General. We liked the user-friendliness of the programs, and the fact that they were available in both English and Spanish. We also liked the fact that all the applications were completely integrated. DG was the only one that offered a full office automation package for each computer."

Installers had to work carefully around the existing narrow



High tech/classic architecture
(Photo courtesy D.G. Corp.)

streets and colonial architecture. To preserve the integrity of the castle, cobblestones had to be removed to lay the LAN cable. These were numbered and put back in the same spot so that structural alterations would not be visible.

The initial installation included one ECLIPSE MV/4000, five MV/4000 DCs, 75 terminals, and 30 letter-quality printers. It has since been upgraded to one MV/15000 Model 10, five MV/4000 DCs, five MV/2000s, 150 terminals, and 60 printers. All of the systems are connected to the LAN Ethernet. Applications used by the government include CEOword processing, electronic mail, calendar, phone message and reminders, plus decision-based spreadsheets, datatables, and graphics.

Training was another important aspect of the installation, Ramos said. "We insisted on in-house training. Our computers are up and running 24 hours a day. After basic training, we went through a hand-holding period and we've continued to follow up. We are always training and retraining."

The La Fortaleza installation is one of the largest in DG's Americas/Far East region. Because of the unique challenges, it has turned out to be a mutually beneficial experience. "I am pleased with the way that Data General Puerto Rico works. They are very cooperative," Ramos said. "But I would say the people (at DG Puerto Rico) learned as much from us as we learned from them. It was a learning process for both of us." Δ

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(Fitzsimmons continued from page 26)

and Papua, New Guinea were a pretty big geography to start with but it was all under my control. When I got to the U.K. I was looking after England and Africa, and that gave me an exposure to multi-cultural and third world countries. Also, within the U.K. I developed quite a lot of practical knowledge about how you run the field marketing in a subsidiary of a multinational North American computer company.

Focus: Is it difficult to be even-handed with the management representing DG in different countries that may have very different ways of doing business?

Fitzsimmons: I don't see that as a major issue. The name of the game is to get paid for your computers. That's a common assumption amongst our management. They handle the business practices, and they bridge the differences in terms of the North American culture. Those differences are largely transparent for my daily activities, but I have to say that down the line there's a lot of very fast footwork to

accept letters of credit, get export licenses, and satisfy all the people involved in the transactions.

Focus: How do you find people in all these countries who have the background to do the job that DG needs done, and what do you provide in the way of training?

Fitzsimmons: First of all, a North American high technology company like Data General is a very attractive employer for skilled people in these countries. You can imagine that for a young engineer from Thailand who's been trained in the United States, that's the sort of job he'd like to have. So we can attract—as can our competitors—the very best talent in those countries. The starting point is skilled people, and then we have to adapt them into the Data General culture. We have a very comprehensive range of technical and management training courses that have expanded over the years so we can integrate anyone from a field salesmen right up to a manager right across the world.

There is one obvious problem, and that's language. Generally speaking, the senior management team in any country has to have a pretty good grasp of English. On the other hand, a lot of our sales and training materials are translated into many languages. We have a very large translation department here in Westboro to address those sorts of issues.

Focus: Does that include translating software products?

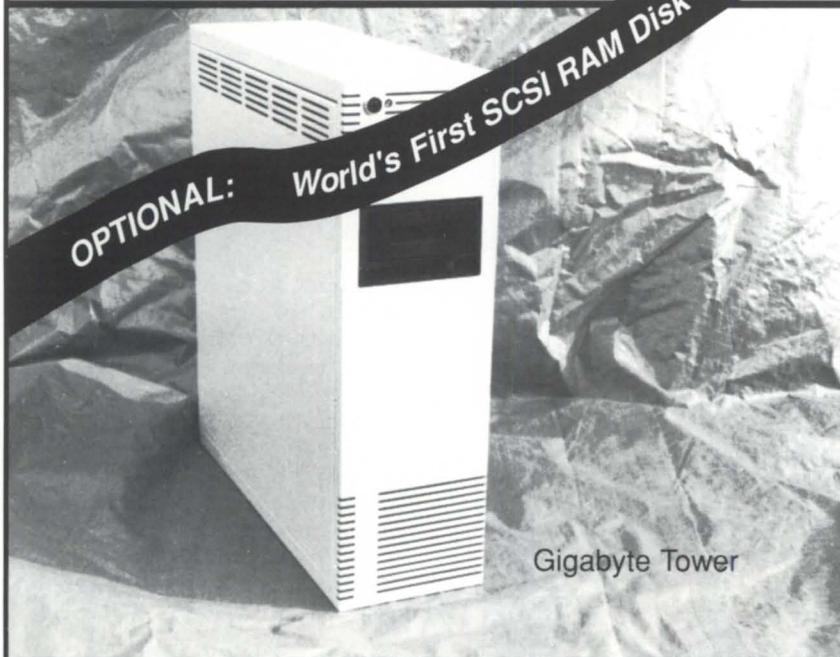
Fitzsimmons: Absolutely. We have CEO in all of the European languages, and we're on a path to announcing it in many Asian languages as well, which is much more complex. We have Japanese CEO and are working on Chinese and Korean versions.

Focus: Is Nippon Data General separate from your Americas/Far East territory?

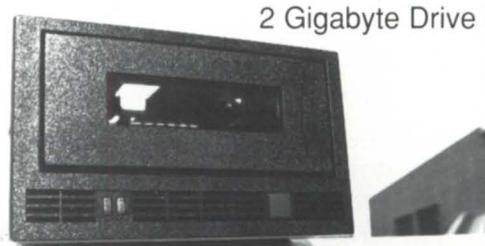
Fitzsimmons: Yes, but because of the pervasiveness of Japan throughout Asia, I work extremely closely with them.

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Focus: Where do Africa, India, and the Middle East fit into DG's organizational structure?

Fitzsimmons: Africa is a European responsibility. The Middle East is European. Dave Lyons and I are arguing about who is going to do representation in Iran and Afghanistan. We're not finding any volunteers.

Focus: What proportion of DG's revenues and earnings come from South America and Asia?

Fitzsimmons: Not enough. We have to be realistic about Latin America's debt problem. In 1987 we had a fantastic year in Latin America. In 1988 the bottom dropped out in Mexico and Brazil and Argentina; 1989 is not a lot better. The

business is volatile—you have to be swift of foot and adjust accordingly. One thing going for us is that while the inflation rates are incredibly high in Latin America, they're matched by the depreciation of the currency, so our operating expenses continue to go down in dollar terms every month.

Asia is where the real growth is. The Asian and Japanese revenues are a very substantial part of this corporation's total revenues, and are the most rapidly growing.

Focus: Which national markets in your territory do you pay the most attention to and for what reasons?

Fitzsimmons: Singapore, Hong Kong, the PRC (*People's Republic of China*), Taiwan, and South Korea. You don't have to be an intellectual genius to figure out why. Their gross national products cumulatively will exceed that of Japan in 1991. You better believe we're interested.

Focus: Do you see problems like patent infringements in foreign countries hurting the ability of a North American company to compete in these markets?

Fitzsimmons: To some extent, but through U.S. government pressure, that problem in those particular countries is rapidly disappearing. It's still a problem in some Latin American countries.

Focus: Are there any countries that are not producing very much for Data General right now that you expect to bloom in the next few years?

Fitzsimmons: Brazil. Mexico. India. Brazil in 1987 was the eighth largest economy in the world. Their political situation and the external debt have torn the country apart and they can't get focused on what they're going to do as a nation. They've got the extremes of poverty and wealth now, but when they get their act together, it will be a superb market and very well educated. We aim to be there—we've been very successful in the past but right now it's a very low revenue source.

Focus: What trade restrictions does DG have to work around?

Fitzsimmons: I'll give you a few examples. If you want to do business in India or the PRC, the U.S. Department of

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Commerce export regulations play very heavily. It's a common problem for American companies versus Europeans. Quite often the European governments are much more lax, and European companies can sell products that we don't get approval for—or if we do, it takes six months longer and we miss the business.

Another example is the inward investment policies. India does not allow 100 percent ownership, and neither does Brazil. It's difficult to get into China because of tax treaties or lack of tax treaties. Trading in a country like South Korea is very difficult because of the Foreign Corrupt Trade Practices Act. There's a whole host of regulations that restrict the manner in which you can conduct your business.

Focus: With the new presidential administration in the U.S., do you expect any of this to change?

Fitzsimmons: In policies like export regulations and trade restrictions it's going to be largely a continuation of the policies of the Reagan administration. I must say that I have high hopes that George Bush will be more business-oriented.

Focus: Service and software are very big parts of DG's business in North America. Do they carry as much importance for customers in your territory?

Fitzsimmons: Absolutely. In some ways we're ahead of the U.S. In the U.K. for instance, I set up a software products group back in the early 1980s to offer a software maintenance service in the same way we offer hardware maintenance. That service became more sophisticated and spread into New Zealand and Australia when I got to my current job. Some of the recent policies in North America, for instance the versioning approach, have fitted very well with what we've been doing for about the last five years. In New Zealand and Australia we've been cutting common invoices for software and hardware service for the last four years.

Focus: What types of applications are customers in the Americas and Far East addressing with DG systems?

Fitzsimmons: It's different in every country. Some of the applications you get in the third world are incredibly sophisticated. For instance, in Brazil we've been very successful with a company that's an information provider to all the banks.

They provide exchange rates and financial information throughout Latin America, as well as New York and Chicago and the U.K. We've installed 20 or more large systems for them over the last five years or so, including a couple of MV/20000s just before Christmas.

In Venezuela we're into the state-owned oil company, and they use CEO throughout their management team.

In South Korea we've installed hundreds of large MV systems into educational institutions and hospitals because we've got the application software, and they're quite sophisticated applications.

Focus: Does DG help developers who have promising applications running on DG equipment to bring them to other national markets?

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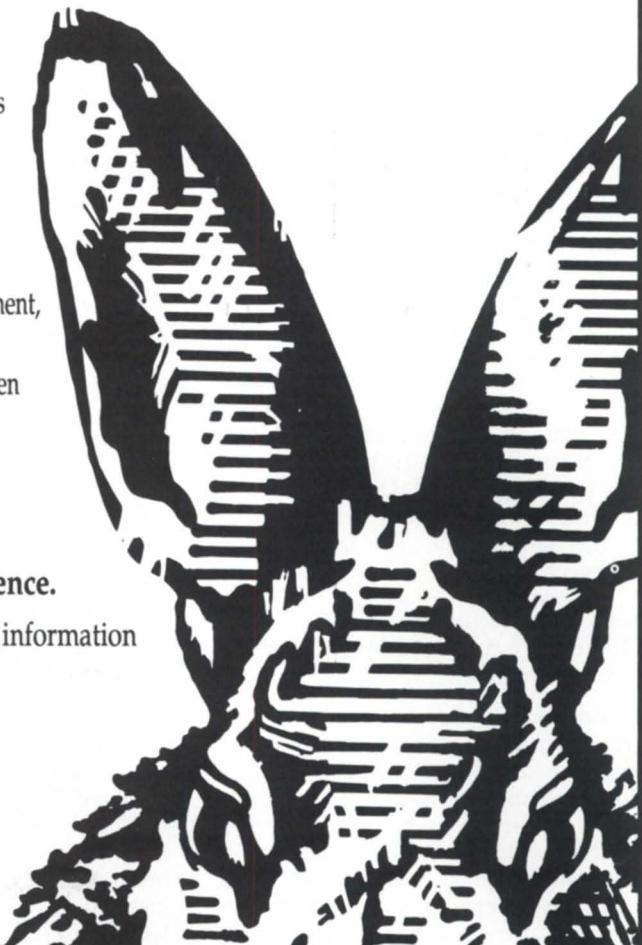
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ICOBOL on UNIX



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Fitzsimmons: We actively encourage that. In Australia, Data General Australia sells software written in the U.K. and U.S. Likewise Data General Corporation sells TEO/3D, which is basically an Australian software development. The VAR conferences we hold have a very strong international representation and cross-fertilization. Obviously it's in our interest to encourage all of that.



The competition is not as fierce in Latin America as it is, say, in Australia, where you've got every major vendor from North America, Europe, and Japan crawling all over a fairly small but sophisticated market

—Wayne Fitzsimmons

Focus: Who are the major competitors for DG in your part of the world?

Fitzsimmons: In Latin America it's IBM, Unisys (through Burroughs), NCR, and to a lesser extent Digital. Digital is not as well represented as a direct subsidiary as we are in Latin America. They're probably bigger than us, but we're much closer to them there than we are in North America.

The competition is not as fierce in Latin America as it is, say, in Australia, where you've got every major vendor from North America, Europe, and Japan crawling all over a fairly small but sophisticated market. The Japanese use it as a trial marketplace for all sorts of products.

In Asia, Digital, IBM, Unisys, Hewlett-Packard, Wang, and ourselves are probably the most visible. The Japanese are there very strongly, of course.

Focus: What standards (such as Unix, X.400, etc.) do customers in other parts of the world demand?

Fitzsimmons: In the telecommunications area, many of the companies are government owned and regulated, and they pay a lot of attention to the CCITT standards. We're very successful because of our capabilities with the established standards.

In terms of Unix, it varies a lot from country to country. Unix is about as pervasive in Australia as it is in North Amer-

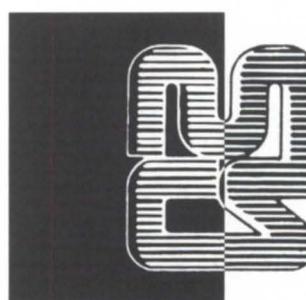
ica—strong in the technical market but not yet of age in the commercial market. In countries like Taiwan and Korea they're trying to figure out what to do with Unix. In Mexico with Pemex, the state-owned oil company, if you don't have Unix, you don't make it. In countries like Chile they don't care—Unix is nothing. Of course Unix is much bigger in Europe than it is in North America.

board from Hong Kong, but it failed, too. The customer was getting a little irate, so we called the U.S. and said to ship in an MV/20000 CPU board urgently, which still took a few days. It came in through Hong Kong and our guy was out at the airport calling the customer to say it's here, but when he picked up the package it was all crunched up. We showed it to the customer and he said, "Don't tell me about your problems. Fix mine." We ended up flying an engineer in from Australia with a board under his arm and we got the thing restored, but the whole incident took about 10 days. We can laugh about it now, but when you're in the middle of something like that, it's very serious business.

Focus: What are some of your goals for the next year?

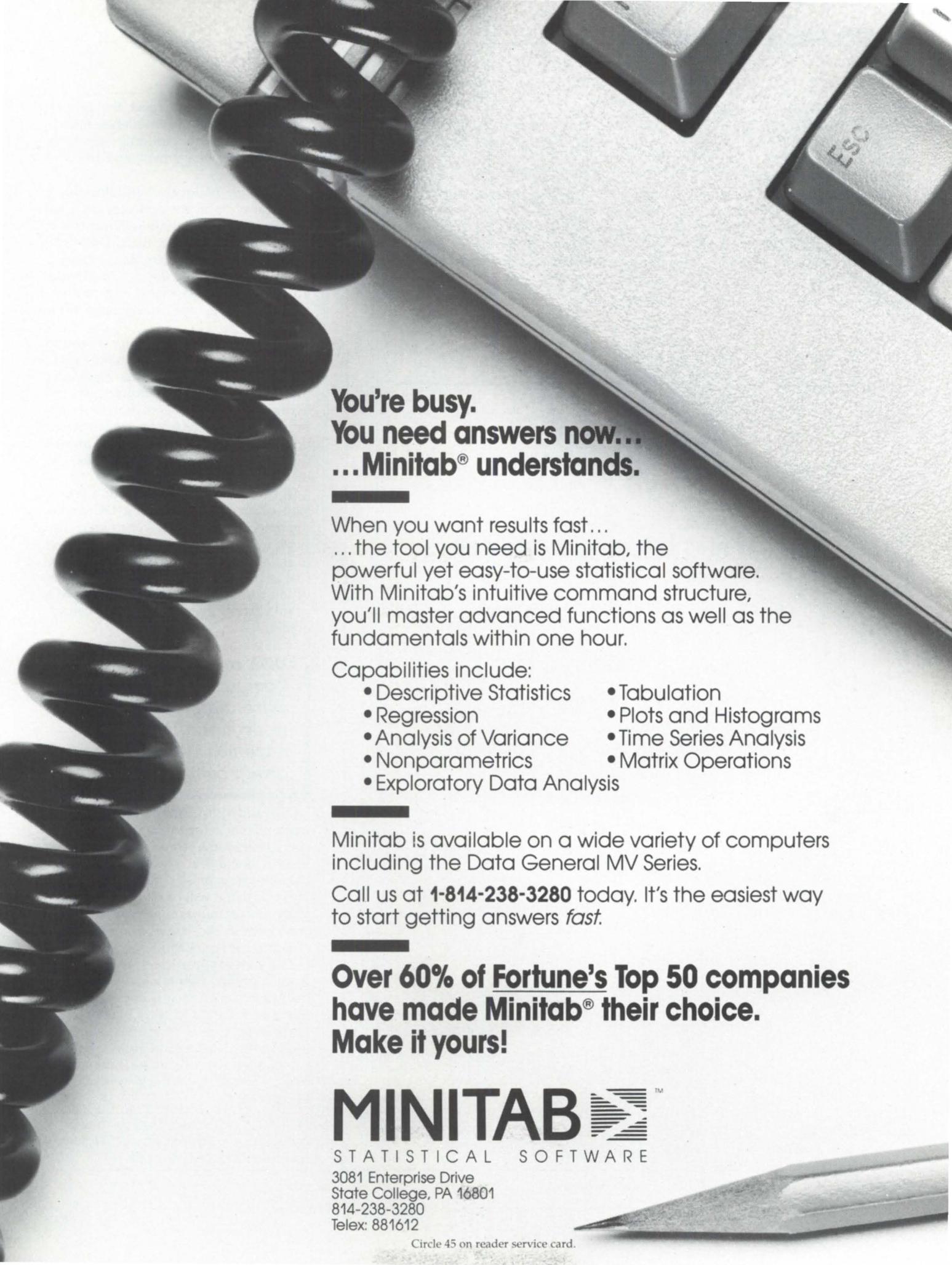
Fitzsimmons: We are really going after vertical markets either directly or through VARs. Secondly, we have very comprehensive plans to bring the sales force up to speed on Unix, so when our 88K products are launched later this year we'll be ready and able to sell this product—at the same time insuring that we don't take our eyes off our AOS/VS products. Thirdly, we're going to concentrate on the high growth opportunity in Asia. I have a personal goal to see that Data General exploits that opportunity to the maximum. △

DG is Australia's 'Initial Choice'



by Phillip O'Connor
Special to Focus

Mini Computer Systems is one of Data General Australia's oldest and most loyal VARs. We have been using Data General equipment since DG was first established in Australia by Wayne Fitzsimmons (now Data General's vice president Far East). We have seen DGA grow from just a handful of staff at a small office in Melbourne,



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Our own installation has developed from our first Nova 2 to our current site in which we have an MV/2000, a DG/30 running AOS, a DG/10 running RDOS, and the obligatory DG/One and Dasher 286. To the horror of the DG techs, the MV, DG/30 and Dasher are networked, to provide media compatibility with gen-

erations of clients.

Our customers range from single terminal MP200s (still going strong) to a legal firm with a network of an MV/20000, two MV/15000s, and half a dozen MV/2000s. Most are desktops and MVs running accounting and/or word processing applications. We provide general purpose business accounting systems, office automation, and specialist applica-

tions. Our aim is to meet the general computing needs of our clients, including programming, training, operator support, site management, and DG consulting services.

We are the national distributors for a selection of software packages for Data General systems, including Wordperfect, Rational Data Systems, Blast, DMS Systems, BJ, Inc., Le Software Man, and other overseas suppliers. A large proportion of our activities are associated with promoting, supplying, and supporting these products.

The population of Australia is around 16 million people, clustered in the capital cities, with over half in the regions of Melbourne (DGA's headquarters) and Sydney. This population represents approximately 2 percent of the United States' population, and DG's Australian market is approximately 2 percent of the DG market in the United States.

During 1988, DG carried out a television campaign representing DG as the "Initial Choice." The advertisement featured a conversation conducted entirely in initials and this caught on, to the extent of being satirized in one of our television comedy programs. It raised DG's profile in the general community considerably.

DGA and Mini Computer Systems were instrumental in organizing a national DG users group some years ago

DGA and Mini Computer Systems were instrumental in organizing a national DG users group some years ago. This has been inactive for a few years, but there has been interest expressed again recently, and we hope that it will be revived. There is a fairly strong informal network of users, especially in the larger companies and government organizations.

DG VARs appear to be less interested in such groups. Some VARs work in co-operation with each other, especially when in different states. Others remain fairly independent. Many VARs are not exclusively Data General dealers, but represent a number of manufacturers. Most VARs have an identifiable vertical market specialty. △

Phillip O'Connor is managing director of Mini Computer Systems Pty.; 411 Hawthorn Rd., South Caulfield, Australia.



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The art of marketing in India



Having sold Data General products in both India and the United States, Mrinal Sattawala, regional manager for Data Conversion Inc., knows that

the flavor of high-tech sales in the two countries is different. In India, extra helpings of patience and diplomacy are required.

Data Conversion Inc., based in Cambridge, Massachusetts is the international marketing and support branch of Patni International, a company that has been marketing Data General computers in India for about 10 years.

"We have over 100 Data General users (in India) in fairly widespread areas—government, manufacturing, financial institutions . . . almost all areas of activity," Sattawala said. "In addition to the hardware business, we have a software consulting business. We provide complete installation, warranty, and customer training."

Although Data General has a good reputation in India, selling the company's products is often a challenge because of the buyers' expertise. "It takes a lot longer to close a deal in India. It is a very technical market and there is a lot of technical selling that has to be done. We have to go through fairly rigorous benchmarking," Sattawala said.

In addition to the well-informed customers, the seller faces another obstacle in India, Sattawala said. Because of the large population, there is often resistance when a company proposes a change that could cause displacement of workers. The decision of whether or not to purchase a computer can be a controversial one.

"Companies making decisions (to purchase computers) have to look for more justification. They have to go through an intense union investigation. The visibility is much higher. Frankly, the amount of money (spent to purchase the computers) is nominal."

Sattawala said that Data General's financial losses of the past two years are also an area of concern. "It's just a hurdle we have to overcome with marketing," he said. △



Wullie Grant

In New Zealand: Optical technology cuts response time

New Zealand Industrial Gases Ltd. is Data General's largest commercial site in New Zealand. Located in Wellington, the main office has an MV/20000 Model II, three 6250 bpi tape drives, and a Zetaco Laser Re-



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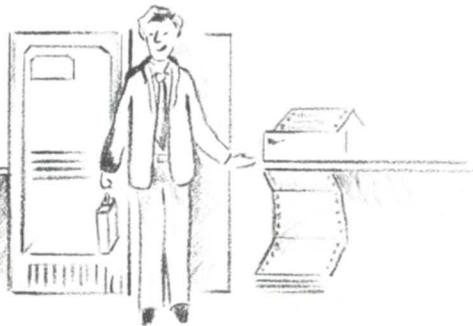
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Take advantage of all that the RIG/SIG program can offer! The roster of RIGs and SIGs is printed in this month's issue. If you don't find a RIG in your area or a SIG to meet your needs, contact the RIG/SIG Coordinator, Cathlene Gentry, 800/877-4787 (1-800-USR-GRUP), or the RIG/SIG Committee Chairperson, Charlene Kirian, 614/476-1237 for assistance.

cording Subsystem (LRS-10) optical disk.

Using this technology, Wullie Grant, manager of information resources, recently put several years of archived sales records online, which allows the company to cut the time required to perform a critical customer service from a week down to a few minutes.

NZIG is a 75-year-old firm that sells gases to the medical, manufacturing, cryogenic freezing, and welding industries. Customers are served from 21 offices throughout the country. When gas is sold, the cylinders in which it is packed are rented. Keeping track of the cylinders is therefore a critical part of the operation.

"If we charge a customer rental on 100 cylinders, for instance, and he thinks he only has 95 cylinders, we have to be able to prove that we actually moved 100," Grant said.

Under the old system, records of gas sales and cylinder movements were kept online, so that NZIG employees could access data on any of the 220 networked terminals on the system. The problem was that after 12 months, these records were transferred to microfiche. The microfiche printing machines are located in regional centers in Auckland, at the top of the north island, and Christchurch, on the south island. If a customer wanted a copy of an archived record, branch NZIG personnel had to call an office with a microfiche printer, wait for someone to find the correct film and print it, then wait for the copy to arrive in the mail. This process took about a week, according to Grant.

"We have quite a number of records, as you can appreciate, which we're supposed to keep seven years," Grant said. "Thousands and thousands of pieces of film."

The idea of getting the optical disk was to move the records—the cylinder movements and invoices—onto the disk, and make them available over the network, so that any NZIG employee, anywhere in the country, could find not only the current cylinder movements, but also find the previous movements."

He chose the LRS-10 because "the Data General optical system is a tape emulator. We wanted something that was going to be compatible with our interactive mode of operation."

NZIG employs 650 people, 20 of whom make up the information resources department. "I would describe us as a general commercial shop," Grant said. "We run sales ledgers, general ledgers, payroll systems, and management information systems. We keep the MV/20000 active Monday through Friday, about 20 hours out of the 24." △

DG Europe

Companies that succeed must do business across borders

The following is an interview with Dave Lyons, vice president of European Operations for Data General Corporation. Included on the next pages are profiles of end-users and interesting installations in Europe.

Focus: I've heard that Europe has accounted for an increasing share of DG's revenues and profits over the last few years. Why is that? Do you expect it to continue?

Lyons: Parochially speaking, I hope it does continue. DG does about one-third of its business now in Europe. Just to put that in perspective, back in 1982 we did about 20 percent of our business in Europe, so you can say that in the last five or six years our business in Europe has been growing at a faster rate than for the world as a whole.

DG does nearly half of its business now internationally, and it's becoming a greater proportion. That's not unusual in our business—IBM's business is about 55 percent international, for example. We see this trend

continuing over the next several years.

Focus: When you say Europe, how much of the world are you including?

Lyons: DG Europe includes Europe, the Middle East, and Africa. We have 15 subsidiaries representing all the major countries in Europe. In the Middle East and Africa we work through distributors.

Data

(Lyons continued on page 38)

Computer system steers animal supply vendor

Readers may recall coverage of Coopers Animal Health, a company located in Berkhamsted, England in our August 1988 issue ("Pilgrim's Progress: Site-seeing in and around London"). This month we bring you an update.

Coopers Animal Health was founded in 1984 with the ambitious goal of becoming the world's leading vendor of veterinary products. Through the timeless process of trial-and-error, it has established a computer system to steer it closer to that goal. The system has gone through several upgrades since its initial installation, beginning with a collection of 16-bit Desktop Generations that were quickly replaced by two MV/4000s. These were soon joined by an MV/10000, which in turn was soon replaced by an MV/20000. Cybertek's CQCS was adopted as a 4GL for development, and Oracle for a data base management system. An Ethernet local area network now connects the MV/20000 and two MV/4000s. An MV/15000 Model 8 was recently brought in to relieve overcrowding.

Information Systems Manager Richard J. Larter explained that the latest upgrade was necessary because, as more users (about 80, directly connected) were placed on the MV/20000, response time became too slow. "The need for information (in our business) is paramount—information about how our business is doing, and how the competitors are doing," he said. To alleviate the problem, word processing was moved off the MV/20000 and placed on the MV/15000.

While they had hoped to use a package designed for the medical profession (similar to that used by a company founder, the Wellcome Foundation) manag-

(Coopers continued on page 38)



Coopers Animal Health Ltd., Berkhamsted, England

(Coopers continued from page 37)

ers discovered that it did not suit their special needs. Coopers turned to an off-the-shelf product that more closely meets the requirements of its business. The demand in the medical business is relatively stable compared to that of the veterinary business, suggested Larter. "It is far more important in the animal business to get things to the customer fast."

With suitable hardware in place, and the accounting and order processing functions automated, Coopers' management is now in the early stages of training the sales staff to utilize the available technology.

"We are trying to get the sales people to use Oracle. What we're trying to do is put together a training and education program to give them awareness of the technology and of specific programs. We have found it is hard to change their traditional approach," Larter said.

"For the future . . . we've just been through some upgrades. The next two years should be relatively stable, with just the adding of some memory. On the whole, we're relatively happy with what we've got." △

(Lyons continued from page 37)

General has about 2,200 people in its European operations. I have a very small staff at our European headquarters in Paris—we've tended to put nearly all of the resources into the field operations.

Since the beginning of the fiscal year in October, four of the countries—the U.K., Germany, France, and Italy—are reporting to me directly. I also have a general European area that's headquartered in Zurich and includes all of the Scandinavian countries, Switzerland, Austria, the Netherlands, Belgium, Luxembourg, Spain, and Portugal.

We put that organization in place to reflect what we're seeing in Europe as the European Economic Community moves toward 1992 and a more open economic environment. This will allow us to be one level closer to our customers.

Focus: You mentioned the European Economic Community and the more open economic environment you anticipate in 1992. What changes are you expecting?

Lyons: You probably know about the movement to remove the barriers to trade

that have existed across borders within the EEC. The major countries are removing the trade and currency barriers to allow Europe to function more as a unified market, rather than separate countries with separate economic organizations.

Focus: We're hearing a lot about the possibility of a trade war between the European Community and the U.S. So far it only involves a few agricultural products, but does it concern you?

Lyons: Well, we're not going to be shipping any beef with improper hormones over there . . .

Seriously, I don't think anybody can say what's going to happen. You would hope that we won't get into a situation where import/export duties or trade barriers would prevent multinational companies from doing business there.

I have a very different view. I think the companies and organizations that will be successful in the Europe of 1992 and beyond are the companies that truly organize themselves as multinational companies. They will be companies that have a

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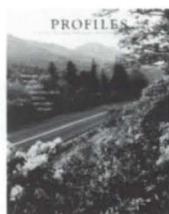
On shore, since most bookings and cabin assignments are processed immediately by reservation agents, any disruption of system availability can lead to service delays, or the increased costs of hiring supplementary agents. At sea, dependable system performance is vital to keep inventories and passenger billing under control.

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real presence throughout Europe and have the ability to develop and market applications across borders. European organizations will have to operate across borders, and the companies that succeed in doing business with them will have to be able to do the same.

Focus: Are you saying that it will be a fairly level playing field for multination-

als based in Europe and multinationals based in North America?

Lyons: We don't know that yet, and we're seeing the threat of trade restrictions, but my view from knowing the industry and the attitudes of our customers and the governments, is that the companies that truly operate multinationally will have a good chance to compete. Nobody knows

the specifics of what's going to happen, but I believe that the companies that will succeed will be those that are working now to get a stronger presence across all the major countries of Europe. I include Data General in that category.

Focus: How does Data General compare in that respect with the competition? Who are your major competitors?

Lyons: The competitors we see in Europe are very much the same competitors we see in North America. Day to day we deal with companies like IBM, Digital Equipment, and Hewlett-Packard. The added dimension you have in Europe is companies that have built up markets in their own countries, such as Siemens, Olivetti, ICL, and Bull. They are formidable, but in many cases they have really not become a force multinationally. Those companies, even though they're European, will have the same challenge that any North American company would have.

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Something that's common to all these markets is a strong move toward industry standards.

— Dave Lyons

Focus: Does the same hold true for the Middle East and Africa, where you're dealing through distributors?

Lyons: It's largely the same kind of environment. Something that's common to all these markets is a strong move toward industry standards. We have to be sure to implement a very competitive Unix offering. Our alliance with Motorola is going to provide some industry standard RISC-based hardware that will make us very competitive.

Focus: Are there any underachieving markets now that you expect to start producing for DG in the next few years?

Lyons: We have a very focused market strategy that we've been implementing in Europe for the last couple of years. We pursue a focused set of target markets,

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get to understand the segments we're pursuing, and then provide total solutions.

In Europe, we've chosen a few strategic markets, but even within those markets you've got to be very focused and choose the segments where you have the best chance to succeed. One of those target markets is finance. We've established a finance competency center in Zurich,

and we're now expanding that in London.

Another target market is government. In the last couple of years we have had very good experience in winning government contracts at the federal level, as well as the state and local levels across Europe. We won a very large contract last year in Holland with the Ministry of Social Affairs—about \$13 million for auto-

mating all of the employment bureaus across Holland with a network of more than 60 MV systems running CEO. We had a similar award as the office automation vendor of choice in West Germany—that was about a \$15 million deal built around CEO in the state of Baden-Wuerttemberg.

Another area where we have had a lot of focus is air traffic control. Just in the last three months we were awarded a very large contract in France. This is an industry that will be increasingly important all over Europe because of the growth in air traffic and the increasing emphasis on safety.

One other market I should mention is education, particularly prestigious universities in countries like Portugal and France. We think this is very important just because of the impact that these educational institutions have across all of industry.

Focus: You mentioned Unix and industry standards as a requirement for selling to governments in Europe. In general, which industry standards are your customers demanding?

Lyons: European customers have historically been in a leadership position in defining industry standards, especially in the area of communications. Data General's strategy of supporting OSI standards with the ISO organization is a sound one, because Europe is clearly defining that as a requirement for communications systems, and they are defining the standards for ISDN as we move toward an overall communications architecture. We have been one of the leadership companies in this area, for example, by making CEO mail available on X.400.

Unix is clearly another standard. There are many governments in Europe today that won't let you bid unless you have a clear response for Unix. I can remember as long ago as 1983 that European governments were defining that requirement, which was really before that became a clear requirement in the U.S.

There are other emerging standards in areas like videotext, where European customers may have experience that is ahead of the rest of the world. We've established a development center for communications products in Cambridge in the U.K. One of our reasons for doing that was to have a development presence in communications in Europe, so we could be quicker on our feet and respond to the standards that are defined in Europe.

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service differently for European customers than in North America?

Lyons: Yes. We've gotten to the point in Europe where software and services are in excess of 40 percent of our total business. Probably over the next few years more than half of our business will be other than the standard hardware offerings that we think of traditionally in our industry.

What we traditionally think of as field engineering is very important to our customers, but we also have a strong software services division that develops applications with and for our customers. There are other areas such as network design and overall communications and network services that are emerging as new requirements.

We're establishing our competency centers in Europe and staffing them with Data General people who understand key communications areas

Focus: You're saying that DG is in the process of transforming itself from a minicomputer company into a multinational company that provides computing, communications, and service solutions. If that's the case, what are the most pressing items on your agenda for the next year.

Lyons: First of all, anything we say about that transition has to make the important point that we will continue to support our current base of customers. The functionality that our customers get today with our proprietary systems is something that will continue to be a top priority for us. That means we will protect the investment they have in proprietary systems and applications like CEO. As an example of how important this is, the MV/40000 announcement was received tremendously well in Europe—as a matter of fact the orders we received for it in the first quarter were significantly above what we had anticipated.

It will be very important to us to work with the VARs, software vendors, and strategic allies as we move into these new industry standard worlds. We're providing them with the support up front to begin bringing up some of their critical applications on the new products.

Thirdly, as part of our total solutions strategy, we need to shift our resources—and our presence of mind—toward the solutions and the applications. In the past we may have been focusing just on the core technology and the price/performance. We're establishing our competency centers in Europe and staffing them with Data General people who understand key communications areas, that understand

Unix, that understand key industry areas like finance, air traffic control, Ada, and so on. These competency centers will provide the industry expertise to help our account teams and our customers get the total solutions they need.

The last thing I would say is that it's very important to pursue the right kind of strategic alliances to prepare us to penetrate the markets I've defined. We

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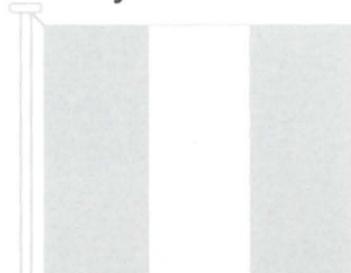
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will be very aggressive about putting strategic alliances together where they are required to put total solutions into a market. △

DG helps Belgium plastics plant operate smoothly



Joel Moisse is a systems manager for UCB in Brussels, Belgium, a company that produces high-grade chemicals, pharmaceuticals, and plastics used in computer chips, paints, raincoats, and a variety of rubber products.

"I am responsible for having 12 machines up day and night and for installing the latest upgrades from Data General," Moisse said. The 12 machines at seven sites range from an MV/1400 to an MV/15000 Model 10. The DG machines collect information at the different sites and feed it into the company's Sperry mainframe computer.

With the exception of a few disk crashes and some electrical problems at the manufacturing plant that were affecting the operation of the computers, Moisse reports that he has had little trouble with the machines. "We get our service from Data General Belgium, which has offices in Brussels. They give excellent service. We have no complaints. They give mostly rapid solutions to our problems and always have spare parts," he said. Data General Belgium has a contract with UCB to be at the plant within four hours of reported trouble.

"The major problem we have is with the software that is available for DG machines," Moisse said. "We can't find a solution for every problem we have. We were looking for a plant management (program) and we couldn't find it for DG, so we had to implement it on our mainframe."

He is currently running CEO on AOS/VS and plans to upgrade to AOS/VS II. "As far as the future of DG, they say it is with Unix, not AOS/VS. That fact that we have to decide to stay with AOS/VS or go to Unix is not very comforting." △

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BCT installing first MV/40000 HA in U.K.



BCT Business Systems Ltd. has the distinction of being the first VAR in the United Kingdom to install an MV/40000 HA (High Availability), Data General's most powerful computer. The \$3 million system was purchased by a central heating company with 40 branches throughout the UK.

"The reason that they purchased from us is that we already had the (appropriate) software in place," said Edward Stanley, a director of the company. The MV/40000 is scheduled to be fully installed by the end of this year.

As the sixth largest Value-Added Reseller (VAR) in the United Kingdom, BCT uses its three MV/2000s and one MV/7800 for two purposes: one is to develop custom software and the other, according to Stanley, is to support customers through a hotline for their computer systems.

Some 120 Data General customers may tap into BCT's support facility and BCT can either "interrogate their data, actually take over their machine to undertake any housekeeping tasks, or send them modified or enhanced programs," Stanley said.

BCT's claim to fame in the UK is its PACS software program for suppliers of building materials. "It is specially designed to assist in the control of the paperwork for a builder's merchant or a timber merchant, (what Americans call a building supplier). The building supplier will have a trade counter (inventory) of between 5,000 and 30,000 products. The builder will go to the building supplier and ask for any one of those 5,000 to 30,000 products," Stanley explained. PACS allows the supplier to locate the part easily and it provides the customer "a smartly designed piece of paper from which his bill will be produced automatically," Stanley said.

Stanley has only one concern about Data General, and that is profitability. "The products that they have are very good. My concern is that while all the competition has been making money, Data General has been losing money. But there are indications that they are pulling around."

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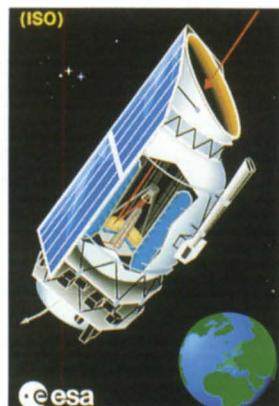
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Space chatter interpreted at Netherlands research center



How is a signal far out in space captured on the Soviet space station, the MIR, and processed into information understandable by humans? That is one of the challenges for the Space Research Laboratory in Utrecht, Netherlands.

Lammert van den Brink heads the computer division of the government-owned research center where he is responsible for "personal and system management" of the MV/8000 and MV/4000 that process scientific data from space.

"Our main business is the design and construction of scientific and astronomical instruments; and processing the data collected from the instruments after they are launched," van den Brink said. Most of the computer programs are written in-house using Fortran F77.

One of the instruments is the COMIS, stationed on the MIR, which "searches the sky for images of X-rays," he said. "We try to find new ones and record information about them." Using this information, scientists could discover the location of a black hole (a small and intense gravitational field that is thought to be a collapsed star). The data recorded on the COMIS is sent to the Soviet Union via satellite, where it is placed on tape. "The tape then comes to the Dutch Embassy in Moscow, then it is transferred" to the Space Research Laboratory, van den Brink said.

Another project underway at the Space Research Laboratory is the construction of an infrared space observatory that is being sponsored by an alliance of European countries. One function of the observatory will be to study the short wavelength spectrum. Of this exciting research in the leading edge of space exploration, van den Brink said, "Oh, it's just a job."

Many tongues, one voice



U.K. group reaches out to smaller users, other European countries

The Data General Users Group for the United Kingdom and Northern Ireland is holding its annual general meeting on March 9-10. Focus interviewed the group's president Hugh Ross to find out how it is doing, and what its goals and concerns are for the coming year.

Q. *In what ways is the DG Users Group most valuable to its members?*

A. One thing the group has done is to create a help line facility.

There are about eight or nine people in various positions and companies who are prepared to give help to users who encounter problems. If someone has a specific problem in a particular area or industry, they can talk with someone who is in a similar industry or who is using the same type of equipment. The help line began 18 months ago and it is used quite extensively. We now have a full-time, paid administrator who acts as a kind of fulcrum, a point of contact. The administrator who coordinates the process, Shelia O'Reilly, has been extremely effective in linking appropriate members.

Q. *How has being a part of the users group benefited you personally?*

A. Of course there is the helpline. I appreciate the fact that assistance is available from fellow users if any problems arise. The group also serves as a collective voice when talking to Data General management, and we are able to be more effective than an individual user would be. An example of that is AOS/VS revision 6. When rev 7.54 was announced,

there was a corporate decision from DG that they wouldn't support rev 6. The user group here in the U.K. put enough pressure on DG that we now have support for rev 6 as well. That's a particular incident where the user group has been of benefit, not directly to myself, but to a great number of users who were stuck on rev 6 and couldn't move to rev 7.54 either because their machinery couldn't handle it or because the cost was prohibitive.

Q. *What do you do to retain old members and to attract new members?*

A. Basically, the problem we have with membership is not so much retaining the older members; it's more a question of attracting the smaller members. The older members tend to stay with us because of the benefits they receive from the programs we run. We frequently hold one-day seminars, and we have an annual

smaller user. Basically, our numbers have gone up over the last couple of years and indications are that they will continue to grow. We are now just over 300 strong.

Q. *What reactions have you noticed from U.K. DG users concerning Data General's versioning policies?*

A. On the question of AOS/VS II, we actually polled all of our members here in the U.K. to get their impressions of the new policies that we *think* are coming out. Nothing has been officially announced to us, but we sent out the questionnaire and we finally got the results back a couple of weeks ago. Virtually all members said they couldn't understand why they should pay an additional fee for VS II. The majority believed the maintenance fees they paid over the last couple of years have helped to refine and define VS II. The added question is when does VS III come about? The results of our survey indicate that 99 percent of respondents were very much against this versioning policy for VS II. The consequence of this is that we have written to DG and asked for a meeting with their executives in the course of the next couple of weeks.

Actually, to be honest, I think we're hitting our heads against a brick wall. The decision has already been made in the States and I think it is going to be very difficult for us to get them to change their mind on it. As I say, a lot of people are very much against it and my company in particular. We just don't understand why we have to pay an additional license fee, irrespective of whether it's 20 percent or 30 percent or whatever. Our maintenance over the last seven or eight years should have paid for whatever went into making VS II. A lot of our users are asking about all the STRs they sent in and received responses saying the fixes would be in rev 8. Where is rev 8? And, how much of the new version is already contained in rev 8? We hope to get some answers when we meet but I'm not very optimistic that we are going to be able to change their minds on this at all.

As we move toward 1992 and the open Europe market, we should really be thinking of having one voice

conference in March of each year. Our members are very interested in special interest groups and we have already formed one for CEO.

The problem is that when you have a large percentage of bigger users in the group it is often difficult when planning conferences to address issues that pertain to the smaller members, such as the desktop publishing people. We think the CEO special interest group will help alleviate that problem because a number of the smaller users are using CEO. The CEO SIG group has created an outlet for the

Q. What are some of the problems particular to DG users in the U.K. that one wouldn't find in other parts of Europe?

A. We probably have fewer problems than some of the others. I think in the U.K. we have the advantage that we can talk to the top of the tree and to the decision-makers much easier than other people can. We certainly find that talking from the user group itself allows access to the top levels within DG in the U.K. It has to do with the relationship we have developed.

We are a group of extremely professionally minded people, and I think because we are professional, DG has recognized that we are not always going to be critical. I think they are seeing that we are there primarily to give help and advice to our members. At the end of the day we are both out to make money. And if DG is successful, the users will be affected positively; the converse is true as well.

Q. In addition to DG's versioning policies, what issues do you think will emerge at this year's spring conference?

A. Obviously, at the spring conference, we will be looking at quite a number of issues. Unix is still being looked at very closely, as well as VS II and VS III, increased software charges, and third party licensing.

Another issue we will discuss is that of starting a users group composed solely of European Data General users. We've already had contact with quite a number of others within Europe who are quite keen to start off a common user group. We believe that as we move toward 1992 and the open Europe market, we should really be thinking of having one voice. And so there are some thoughts of creating—I wouldn't exactly say a super user group—but a group of all DG user groups. It would meet on a bi-annual basis so that we could speak as one mind to DG within the confines of Europe. I've already had words with the Swedish and the Belgian chairmen, and one as far away as Turkey, and it looks as though we will have some success in getting things off the ground. I've invited these people to our conference as our guests. At the end of several days we should be able to de-

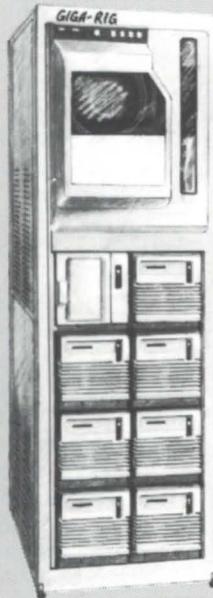
termine if this is feasible.

Q. What are some of the users group's goals for 1989?

A. Basically, we would like to increase our membership to 400. That is our primary focus. We also wish to improve the quality and increase the number of services we provide to members. Another aim for 1989 is, to a certain extent, to become more and more independent from DG itself. At the present time we work very closely with DG, and we do receive financial and other support from them. What we are striving for now to do is to try to become totally independent.

Something else we are looking at this year is starting our own in-house magazine. We've already set the wheels in motion and it looks that by the early spring of this year we should have something in place for our members. It will probably be a quarterly magazine which will go not only to members but basically to the entire DG community within the U.K. We'll use the magazine as a means of increasing our membership and also to keep our users more informed. △

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Sorta Merged



Converting label data is just one example of SORT/MERGE's usefulness

The SORT/MERGE utility is one of the most useful pieces of software available for DG systems. It is frequently used for data conversions and reformats, and it is also a good report generator. Recently, we used this feature to reformat a list for one of our clients.

The client was loading a mailing list onto a data base for use with PC software that sorts by various categories (city, state, or zip). The problem was, the list printed labels four up, that is, four labels across a print line. The database load was designed to print one address at a time. In essence, we needed to convert the four-up labels into one-up labels. This type of project is ideal for SORT/MERGE.

The print image file had eight lines for each label and no form feeds. The print lines in the input file contained 134 characters each; no shortening techniques were used. The format of the print line could be represented in COBOL as:

```
01 PRINT-LINE.
05 PL-NEWLINE      PIC 99 COMP VALUE 10.
05 PL-FIRST-LABEL  PIC X(30).
05 FILLER          PIC X(04) VALUE SPACE.
05 PL-SECOND-LABEL PIC X(30).
05 FILLER          PIC X(04) VALUE SPACE.
05 PL-THIRD-LABEL  PIC X(30).
05 FILLER          PIC X(04) VALUE SPACE.
05 PL-FOURTH-LABEL PIC X(30).
05 PL-RETURN        PIC 99 COMP VALUE 13.
```

Since we had eight fixed-length print lines for each set of four labels, the conversion was easy. I decided to break the input file into four new files. I then defined my input records at 1,072 bytes. Reading the entire set of labels, I picked out the fields belonging to each label and put them into a new file.

Making four passes against the original input file, I made each column of labels into a new file. I wrote four SORT/MERGE command files, one for each pass. These are shown in Figure 1. To run SORT/MERGE using these command files, I set @DATA to the input file name and then invoked SORT/MERGE with the single CLI command line of:

```
DATA <filename>; SORT/C=PART(1 2 3 4).CMD
```

When finished, I had four intermediate files with 240 byte records, each containing one label's worth of information. Then all I had to do was put them back together.

The first field on the first print line was the account number of the person on the label (the labels had originally been printed in account number sequence). I now had four fixed-length record files defined in AOS/VS with a record length of 240 (to show record length, use F/S/REC). The four files were in sequence, and the sort field was at the beginning of the record. I used the CLI command line form of SORT/MERGE to collate the data into a single file with the following CLI command:

```
MERGE INTO PASS2 FROM PART<1 2 3 4>
```

At this point I had a file with all the labels in it but no form controls. Since the input file definition in SORT/MERGE overrides AOS/VS, I used the sort command file shown in Figure 2 to add the NEWLINES back in. The CLI command line was:

```
SORT/C=ADDNL.CMD
```

Figure 1: SORT/MERGE command files

```
% PART1.CMD - SORT COMMAND FILE
%
INPUT FILE IS "@DATA", RECORDS ARE 1072 CHARACTERS.
OUTPUT FILE IS 'PART1', RECORDS ARE 240 CHARACTERS.
REFORMAT 2/31, 136/165, 270/299, 404/433, 538/567, 672/701, 806/835, 940/969.
COPY.
END.

% PART2.CMD - SORT COMMAND FILE
%
INPUT FILE IS "@DATA", RECORDS ARE 1072 CHARACTERS.
OUTPUT FILE IS 'PART2', RECORDS ARE 240 CHARACTERS.
REFORMAT 36/65, 170/199, 304/333, 438/467, 572/601, 706/735, 840/869, 974/1003.
COPY.
END.

% PART3.CMD - SORT COMMAND FILE
%
INPUT FILE IS "@DATA", RECORDS ARE 1072 CHARACTERS.
OUTPUT FILE IS 'PART3', RECORDS ARE 240 CHARACTERS.
REFORMAT 70/99, 204/233, 338/367, 472/501, 606/635, 740/769, 874/903, 1008/1037.
COPY.
END.

% PART4.CMD - SORT COMMAND FILE
%
INPUT FILE IS "@DATA", RECORDS ARE 1072 CHARACTERS.
OUTPUT FILE IS 'PART4', RECORDS ARE 240 CHARACTERS.
REFORMAT 104/133, 238/267, 372/401, 506/535, 640/669, 774/803, 908/937, 1042/1071.
COPY.
END.
```

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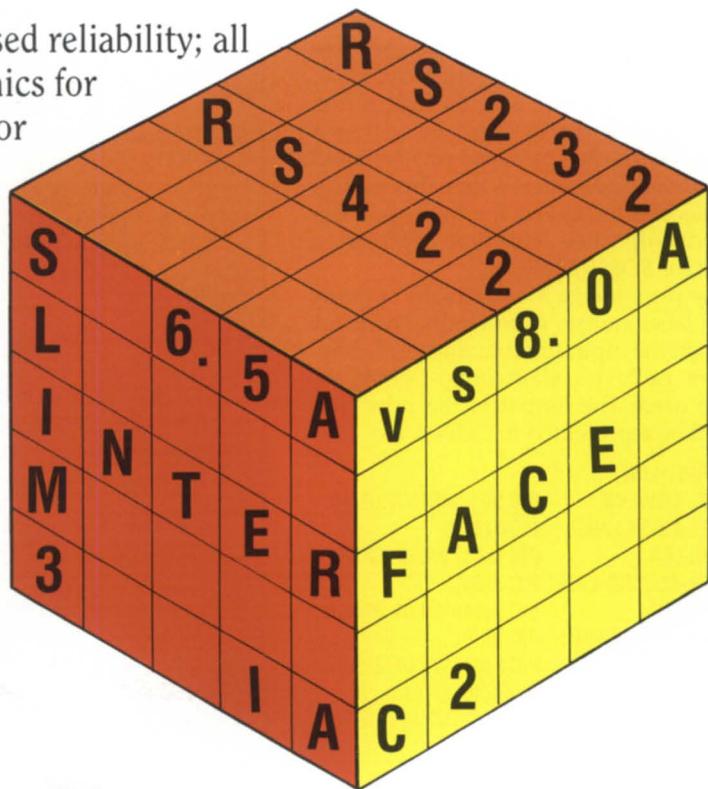
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Then I renamed PASS3 into something more meaningful and sent it back to the client. The whole process took just over one hour from start to finish.

Variable length

Now let's consider what to do using other parameters, like the case of the original print image file having print lines of variable length, anywhere from two to 134 bytes (a two-byte line containing a <NEWLINE> followed by <CR>).

This could be handled by making an additional pass prior to splitting into the four work files, using the command in Figure 3 to make the input file into fixed-length records. From that point on the processing would have been the same. As you can see, the command file replaces any <NEWLINE> (octal 012) and <return> (octal 15) with spaces. It then lengthens the record and makes the last character a <NEWLINE>.

Figure 2: Add NEW LINES

```
% ADDNL.CMD - SORT COMMAND FILE
%
INPUT FILE IS "PART2", RECORDS ARE 30 CHARACTERS.
OUTPUT FILE IS "FINAL", RECORDS ARE 31 CHARACTERS.
PAD TO 31 CHARACTERS WITH " ".
REPLACE ALL " " IN 31/31 WITH "<012>".
COPY.
END.
```

Figure 3: Variable-length print lines

```
% MAKE134.CMD - Sort command file
%
INPUT FILE IS "@DATA",
  RECORDS ARE DATASENSITIVE UPTO 134 CHARACTERS,
  DELIMITERS ARE "<015>".
OUTPUT FILE IS "PASS0", RECORDS ARE 134 CHARACTERS.
REPLACE "<010>" IN 1/LAST WITH " ".
REPLACE "<015>" IN 1/LAST WITH " ".
PAD TO 134 CHARACTERS WITH " ".
REPLACE " " IN 134/134 WITH "<015>".
COPY.
END.
```

Figure 4: Form feed with fixed-length lines

```
% MAKE1072.CMD - Sort command file
%
INPUT FILE IS "@DATA",
  RECORDS ARE DATASENSITIVE UPTO 1072 CHARACTERS,
  DELIMITERS ARE "<014>".
OUTPUT FILE IS "PART0", RECORDS ARE 1072 CHARACTERS.
REPLACE "<014>" IN 1/LAST WITH " ".
PAD TO 1072 CHARACTERS WITH " ".
REPLACE " " IN 1072/1072 WITH "<014>".
COPY.
END.
```

Form feed

In the next scenario, the input file has from six to eight print lines for each set of labels and uses a form feed when the last line on a label is complete. Assume once again that the print lines are fixed-length. In this case, I would use the command file in Figure 4 before splitting out the lines.

Variable length and form feed

Now let's suppose both of the above cases are true. Then we would keep <CR> as the end-of-line delimiter and keep <formfeed> as the end-of-record delimiter. This means getting rid of <NEWLINE> as the first byte of the print line. My approach is to make two passes using the command files shown in Figure 5. The first removes the <NEWLINE>, decides if you have a <formfeed> or <return>, pads to a fixed-length record using that character, and removes all extra

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carriage control before the 134th byte. The second command file reads the file using only a formfeed as a delimiter and pads those records to the fixed length of 1,072 bytes. When it adds spaces it does not change them to a form or carriage control because they are no longer needed for delimiter purposes.

SORT/MERGE has many other uses. If the sort order is not practical, you can merge back to the original order. You can do something as specific as isolate a zip code that is always in positions 21-30 in the last print line of each label even though the labels have from four to seven non-blank print lines with them. We haven't

Figure 5: Form feed with variable-length lines

```
% MAKEFIXED1.CMD - Sort command file
%
INPUT FILE IS "@DATA",
RECORDS ARE DATASENSITIVE UPTO 134 CHARACTERS,
DELIMITERS ARE "<014>",
DELIMITERS ARE "<015>".
OUTPUT FILE IS "TEMPO", RECORDS ARE VARIABLE UPTO 134 CHARACTERS.
REPLACE "<010>" IN 1/LAST WITH "".
IF LAST/LAST = "<014>" THEN PAD TO 134 CHARACTERS WITH "<014>".
PAD TO 134 CHARACTERS WITH "<015>".
REPLACE "<015>" IN 1/133 WITH "".
REPLACE "<014>" IN 1/133 WITH "".
COPY.
END.

% MAKEFIXED2.CMD - Sort command file
%
INPUT FILE IS "TEMPO",
RECORDS ARE DATASENSITIVE UPTO 1072 CHARACTERS,
DELIMITERS ARE "<014>".
OUTPUT FILE IS "PASSO", RECORDS ARE 1072 CHARACTERS.
PAD TO 1072 CHARACTERS WITH ">".
COPY.
END.
```

Figure 6: Drop blanks

```
% DROPLANKS - SORT COMMAND FILE
%
INPUT FILE IS "@DATA", RECORDS ARE 240 CHARACTERS.
OUTPUT FILE IS "@LIST", RECORDS ARE 240 CHARACTERS.
IF 1/20 = " " THEN SKIP.
COPY.
END.
```

Using SORT

Let's assume that the original file was not in order and that we wanted to sort the records by the first line of the address. Since the sort key is at the beginning of the record I can use the CLI command line. Instead of merging the files, I could perform a sort with:

SORT INTO PASS2 FROM PART<1 2 3 4>

One minor inconvenience I encountered while merging the original files was that not all of them were multiples of four. In order to weed out the blank labels, I added an additional step after the MERGE but before the ADDNL command file. The command file in Figure 6 shows how I dropped the records that had no information other than the account number on the first line of the label.

even begun to consider what you can do if you add the report writer module.

I have found SORT/MERGE to be an extremely useful tool, able to handle many data conversion requests from clients who exchange data with suppliers, customers, or other departments of the same company. With its ability to manipulate the contents of a record, translate bytes, select records, and load or unload INFOS databases, it provides an amazing amount of flexibility. △

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

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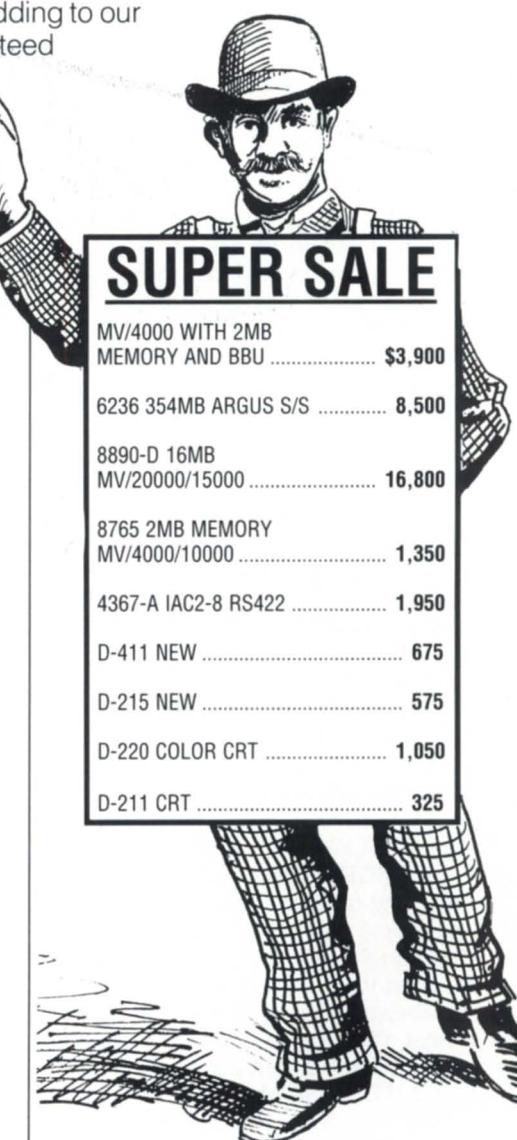
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HELP

Interpreting those arcane switches for the **CHARACTERISTICS** command

:HELP:CLI.TPC.CHARACTERISTICS

In the past, I've warned against depending too much on the information provided by the CLI's HELP facility. The best example I can come up with of a HELP topic that's filled with misleading information is the one for the CHARACTERISTICS command. Couple that with the fact that there probably isn't a CLI command that causes more difficulty for system managers, and "Presto!", a column topic. Or maybe it's my obsession with XLPT over the past year

:HELP:CHAR:FUNDAMENTALS

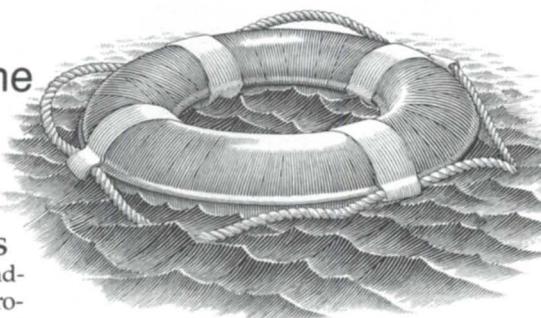
Before I launch into a discussion of the various CHAR switches, let's get a few fundamentals down first.

Port handling is done by PMGR (PID 1) with the assistance of some software that PMGR downloads into your particular multiplexor. For example, IACs run a piece of software contained in IACRS.PR. IOPs run IOPRS.PR. And so on. In addition, some of the preliminary grunt work involved with character I/O is handled in the requesting PID's ring 3 by the AGENT using a piece of shared code stored in LPMGR.PR (which stands for Local PMGR). For the rest of this column, I'm going to refer to this whole complicated mess as "PMGR".

Although you can theoretically do I/O to a port using any record format except for tape-specific ones (undefined and IBM format variable length), the two most common record formats are data-sensitive (?RTDS) and dynamic (?RTDY).

Over and above the specified record format, you can also indicate that the I/O is to be performed in binary fashion (?IBIN). If you so indicate, then PMGR read/writes the number of characters you have requested without interpretation.

If binary I/O is not specified, then PMGR does "standard" I/O; parity is set



on output and trimmed on input, ^C^x sequences work, and the ^A, ^B, ^D, ^E, ^F, ^H, ^I, ^O, ^P, ^Q, ^S, ^U, ^W, ^X, ^Y, ^Z, and DEL keys may be interpreted.

:HELP:CHAR:TERMINAL_TYPE

The console type (e.g., /605X) selects a table within the multiplexor (MUX) software that determines how to handle various terminal options like cursor addressing, line cancel (^U), EOL, and character delete so that "screenedit" style I/O can be handled within PMGR. No, Virginia, there isn't a CHAR/ANSI or a CHAR/VT100.

Over the years, many people have tried to solve the foreign terminal problem by editing the console-type tables within IACRS.PR, but all to no avail. Some lax programming has resulted in a lot of software that "knows" the CRT commands and bypasses the IACRS logic (e.g., DISCO, PED, and SED). That pretty much puts the kibosh on using non-standard CRTs.

:HELP:CHAR:KEYWORDS

The next group of CHAR switches are of the /keyword=value type. A lot of new keyword value switches were added in the last couple of revs of AOS/VS to allow customization of the modem signal timing logic.

Most of the keyword value switches are obvious (/BAUD=n/CPL=n/LPP=n/CHARLEN=n/PARITY=val/STOPBITS=n) and need no clarification.

/BREAK= is used to specify the action to be taken upon detection of a break sequence (defined as an interruption of the data line that lasts more than a few hundred milliseconds). This switch should

normally be set to BMOB (the default). Any software that uses a non-standard setting for this switch will set the value itself. Very few pieces of software use non-standard settings.

/TCC=ms/TCD=ms/TDW=ms /THC=ms allow customization of the timing required for modem connect/disconnect handling. The defaults work fine for most auto-answer modems, so don't play with these unless you know what you're doing. They are probably not the solution to the problems you've been having with your new El Sleazo modems, anyway; it's more likely that you've misconfigured the modems.

/TLT=ms only applies to half duplex lines. Half duplex lines are lines on which you can either transmit or receive, but not do both at the same time. Anyone using half duplex modems is not likely to be using them for consoles, so this switch (and its related on-off type switches /SMCD and /RTSCD) will typically be used only by CPU-to-CPU communication packages talking to leased lines.

:HELP:CHAR:ON_OR_OFF

The next category of characteristics are those that you set to be either on or off.

/ON/8BT causes PMGR to leave the parity bit alone during non-binary I/O. /OFF/8BT tells PMGR to set the parity bit for non-binary I/O according to either the /PARITY= characteristic (AOS/VS), or the current settings of the EPI and SPO switches (AOS).

/ON/CALLOUT is used for DG's incredibly popular voice-data PBX system. In other words, it's not of much general interest.

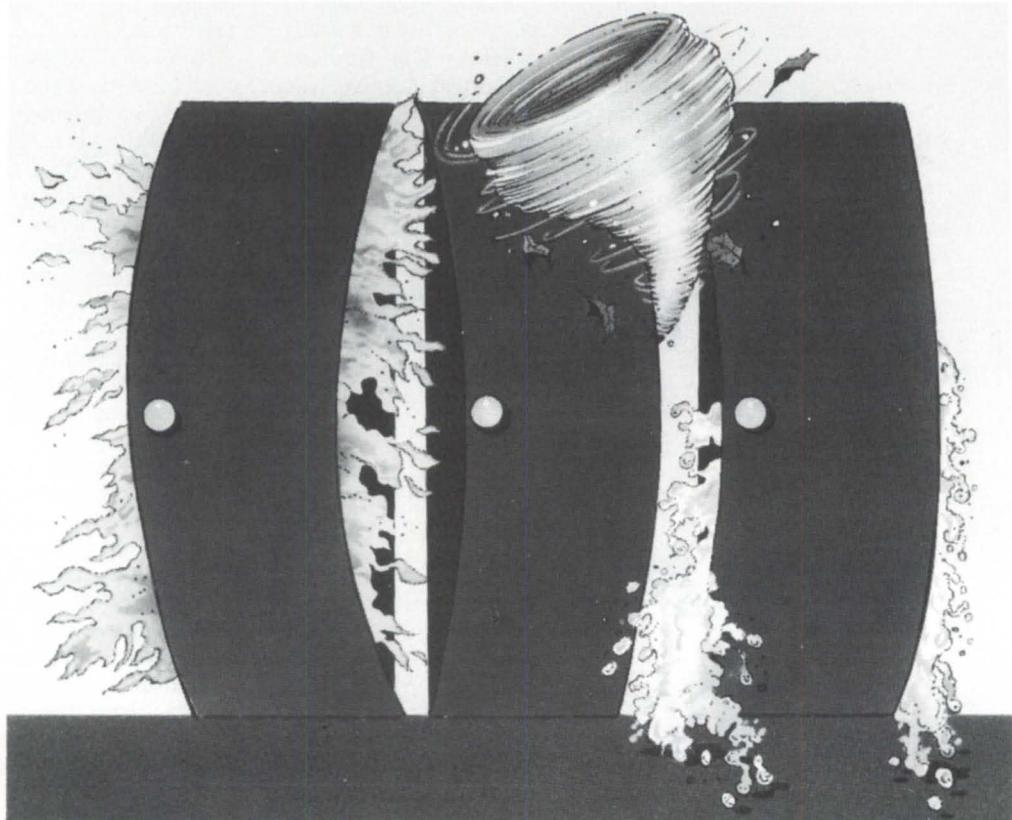
EB0 and EB1 are used to control the way that characters are echoed. The normal setting is /ON/EB0/OFF/EB1. /OFF/EB0/EB1 is typically used for ports without terminals (e.g., serial printers and communication links). The only other valid combination, /OFF/EB0/ON/EB1, is rarely used.

/ON/EOL causes lines longer than the current CPL value to be truncated. It is rarely used.

/ON/EPI and /ON/SPO apply only to the master console controllers (4010 or

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4075 style used for @CON0/1) and to old-style DG multiplexors that had no parity checking/generating capability (remember the 4060?). These two switches cause even parity to be checked/generated during non-binary I/O (odd parity is not available). Newer MUXes (e.g., IAC, ATI, etc.) use the /PARITY= switch instead.

/ON/ESC causes the ESC key to be

interpreted as ^C^A. This characteristic is set by BASIC and ICOBOL during program execution to allow the ESC key to interrupt keyboard I/O. This is a hold-over from the days before "real" function keys came into widespread use; ESC was the one and only function key. /ON/ESC is rarely used otherwise.

/ON/FF causes a form feed to be issued whenever the port is opened for the

first time. This characteristic is typically used on serial printers that are not handled by XLPT. In other words, it is rarely used.

/ON/FKT causes function keys to act as delimiters. If the characteristic is off, the function key code sequence is simply passed through to the program as data. Any program that uses function keys turns this characteristic on. It should normally be off. If you're wondering why this switch is needed instead of just some bits set in the delimiter table used for data sensitive I/O, the answer is that the delimiter is not the function key introducer character itself, it's the second character beyond it. The value of that character cannot be known in advance of the keystroke.

/ON/MDUA is a new kludge switch that was added to handle the case of intelligent modems used for both dial-in and dial-out. It overrides /MOD and allows you to talk to the modem before a call has been established (as indicated by the presence of DSR/CD). If the patronizing restriction that allows changing /MOD only from the master console was removed, then this characteristic would probably be unnecessary (a patch is available on the :SYSMGR BBS that eliminates the restriction).

/ON/NAS causes NEW LINEs to be converted to CR-LF pairs on output. On input, CRs are converted to NEW LINEs and LFs are converted to CRs. This characteristic is typically used for non-standard terminals and serial printers for which CR implies CR and LF implies LF. If CR implies CR and LF implies CR+LF, then NAS should be off.

/ON/NRM suppresses SEND messages to the port. We turn this characteristic on for all of our serial printer ports so that SEND @CON- commands, which can be done by any user, will not cause junk to appear on the printers. Some pieces of software, especially ones that do screen I/O (like COBOL), turn this characteristic on during execution to avoid having the screen despoiled by SEND messages. Opinions are divided on whether or not this is a good idea, especially when you're trying to send out a message that the system is coming down. That's undoubtedly why the URGENT option on the ?SEND command was added. Unfortunately, CLI currently doesn't support SEND/URGENT. You can only use this option if you write a program that uses the ?SEND system call.

/ON/PM is used to keep stuff from sliding off the top of screens when perusing text files. It stops and waits for a ^Q

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(XON) after LPP lines, or upon encountering an FF. The HELPV.CLI macro uses this BBS-like facility.

/ON/SHR is used to share a console between two processes. I love the description of this in CLI.TPC.CHARACTERISTICS: "A characteristic some DGC programs set." No kidding? Gosh. It also points out that this switch is DG-proprietary and shouldn't be used. I concur.

/ON/ST causes horizontal tab characters to be converted to the appropriate number of spaces by PMGR using eight column tab stops (columns 9, 17, 25, etc.). We used to turn this characteristic off on serial ports with printers that supported eight column tabs, or had programmable tabs that could be set by a cleanup file. It improved throughput noticeably when printing program listings and other text files with lots of tabs. Unfortunately, the new XLPT (7.62) unconditionally converts tabs to spaces for everything except VFU-assisted data channel printers, so the advantage has been lost. Progress marches on.

/ON/TO enables time outs. The default value is 30 seconds, but it can be changed (using the ?STOM system call, or the TIME OUT syntax in COBOL) to anything from 2 seconds to 65,534 seconds. Any software that uses timeouts sets the /TO characteristic itself, so you should leave it off.

/ON/UCO converts lowercase characters to uppercase on output only (the HELPV text is wrong). This is one of the Skokie characteristics (described in more detail later); Teletypes would neither print lowercase, nor convert it to uppercase. Amazing, eh?

/ON/ULC suppresses conversion of input characters to uppercase. This characteristic should always be on. It should only be used by data entry programs that require uppercase input, and where the pay rate is too low to hire clerks who can find the shift lock key.

/ON/WRP indicates that PMGR need not inject a NEW LINE (or CR-LF, if /ON/NAS) after putting a character in column n (where "n" is the current value of the /CPL=n characteristic). Read that last sentence a few more times; it's critical. There probably isn't a characteristic, other than /MOD, that has caused more problems than /WRP.

The cause of the difficulty is that CRT and printer designers have taken two distinct approaches for wrapping long lines. CRTs have to wrap as described above because the cursor has to go somewhere after depositing a character at the right margin. If the cursor were to stay in

column 80 waiting to see if the next character was a CR or not, then the user would get a bit confused during keyboard input into column 80; which character would the DEL key affect at that point? Normally the DEL key gets rid of the character to the left of the cursor. In this case, the DEL key would have to treat column 80 as a special case and delete the character under the cursor and then not move

the cursor left.

If you set /CPL=80/OFF/WRP, and then output a line exactly 80 columns long followed by a delimiter, a NEW LINE (or CR-LF) will be injected after the character in column 80, but before the terminator. But what if the terminator is a CR? In that case, the PMGR should replace the CR with a CURSOR UP.

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wrapping by forcing a CR-LF when an attempt is made to print *beyond* the right margin, instead of *at* the right margin as CRTs do. For these printers, the strategy to follow depends on which rev of AOS/VS and XLPT you're using. (This is due to confusion between PMGR and XLPT—see my previous columns on spooler problems for a more complete discussion of what settings to use).

:HELP:CHAR:CARD_READERS

I wonder how many card readers DG sells each year?

/ON/NNL suppresses the appending of a NEW LINE onto the data read from each card from a card reader. Card readers are rarely used anymore, and even among users with card readers this characteristic is rarely used.

/ON/PBN is used to read binary card images (i.e., it suppresses Hollerith to ASCII conversion).

/ON/TSP causes trailing spaces to be included instead of discarded. The only use I know of for this is FORTRAN card decks with Hollerith strings that are continued onto a subsequent card. Not exactly cosmically important to The Rest Of Us.

:HELP:CHAR:SKOKIE

The following characteristics attempt to provide support for some ancient terminals called the Teletype Corporation Model 33 and 35 KSR, which were made in Skokie, Illinois, of all places. These terminals were 10 cps (Model 33) and 15 cps (Model 35) hardcopy devices with a keyboard and optional paper tape reader/punch. Also, only the Model 35 could handle FORM FEEDs (hence the /SFF characteristic). Because these terminals were developed in the days before flow control, and because of their crude circuitry (the average doorbell is more sophisticated), they required fill characters to be added after any character that might cause them to do something that takes more than a character time (100 ms. or 67 ms.). The offending characters were CR, LF, HT, and FF. The manuals for these terminals actually contained formulas for calculating the number of fill characters required based on the distance in columns or lines. DG chose instead to implement fixed fill character counts that worked most of the time. When I was at DG ('72-'80), we used to get a call about once a year asking for the path location to adjust the fill character count.

The /OTT/RAC/RAF/RAT/SFF characteristics that support the Teletypes all work as advertised. /OTT is required

because the Model 35 generated a non-standard code (175 or 176 octal) when the ESCape key was pressed. /SFF was needed for the FORM FEEDless Model 33.

Why this stuff is still supported is a mystery. If any of you are successfully using any of these characteristics, please give me a call at (415) 550-1444 and I'll print a retraction.

:HELP:CHAR:FLOW_CONTROL

This may come as a surprise to some of you, but the default state for ports is for both inbound and outbound software flow control (XON/XOFF) to be enabled at all times, except when binary I/O is being performed on the port. Few programs perform binary I/O to PMGR ports, and many of those that do, like CEO and WordPerfect, do so unnecessarily. (*Aside to the CEO and WordPerfect developers, and anyone else that's interested: you should be using "binary data-sensitive I/O". If you don't know what that is, please call me and I'll explain it to you.*)

Programs that insist on doing binary I/O to ports, and which must also honor software flow control, have to set the /IFC (in the case of binary input) and/or /OFC (in the case of binary output) to force flow control in spite of the binary I/O. Unfortunately, this makes binary protocols such as XMODEM and YMODEM impossible on the port as long as either /IFC or /OFC is on.

Misuse of these two characteristics is probably the primary reason for the invention of the CLEARDEV/RXON command. Put simply, turning /IFC and /OFC on outside an application program that performs binary I/O is absolutely unnecessary, and will cause problems with application programs that need to do true binary I/O.

Hardware flow control using the CTS and RTS signals is supported only on multiplexors that handle modem signals (e.g., IAC-8s).

Another surprise for many of you: hardware input flow control (based on CTS) is enabled by default on all IAC-8 ports. In fact, you can't turn it off; it's hard wired into the IAC circuitry. So why is there a /HOFC characteristic? Who knows?

By default, RTS (hardware output flow control) is not supported on IAC-8s. RTS is turned on as soon as the port is turned on at system boot time.

:HELP:CHAR:MODEMS

Prior to AOS/VS 7.6x, the only modem characteristics were /MOD and /MRI. Let's ignore the new modem characteris-

WE HAVE MOVED

FROM STOCKPORT TO MANCHESTER

tics for a moment and look at how 7.5x and earlier revs worked.

/ON/MOD/OFF/MRI was designed for use with auto-answer modems. An auto-answer modem is one that answers the phone any time that DTR is on and ringing is detected. It hangs up the phone when a) carrier is lost, or b) DTR goes off. This behavior is typical of modems built in the last 10 years. This kind of modem handles the mechanics of answering the phone and establishing carrier without any intervention by the operating system. The fact that a call has been established is presented to the operating system as a *fait accompli* when CD and RTS are turned on.

/ON/MOD/ON/MRI was designed for use with non auto-answer modems. A non auto-answer modem is one that answers the phone whenever DTR goes from false to true, and hangs up the phone only when DTR goes from true to false. It's up to the operating system to monitor the RI signal and raise DTR when a ring is detected. It's also up to the operating system to force the modem to hang up the phone by dropping DTR when the user process terminates, or when it detects that CD has gone off (i.e., carrier was lost). Hardly any non auto-answer modems are around anymore, much less being manufactured.

:OLD_BUSINESS:XLPT

Apparently all the heat about the new XLPT introduced with AOS/VS 7.62 was not lost on DG. A major rework to address most of the problems has been undertaken and is slated to be released soon. Keep your eyes peeled.

In the *mea culpa* category, I recounted some items from my XLPT STRs last month and DG has since called in response to my STR and pointed out that at least one of my assertions was wrong; previous versions of XLPT did not remove trailing blanks. I don't know where I got the idea that it used to, but I stand corrected. However, the new version reportedly will remove them. Hooray! The status regarding honoring the /OFF/ST switch is still uncertain. △

Brian Johnson is the President of B.J. Inc., a San Francisco-based consultancy specializing in system auditing, system management, and performance analysis. :SYSMGR is a division of B.J. Inc. B.J. can be reached at 109 Minna St., Suite 215, San Francisco, CA 94105, 415/550-1444. The :SYSMGR bulletin board number is 415/391-6531 (1200 baud) or 415/550-1454 (voice).

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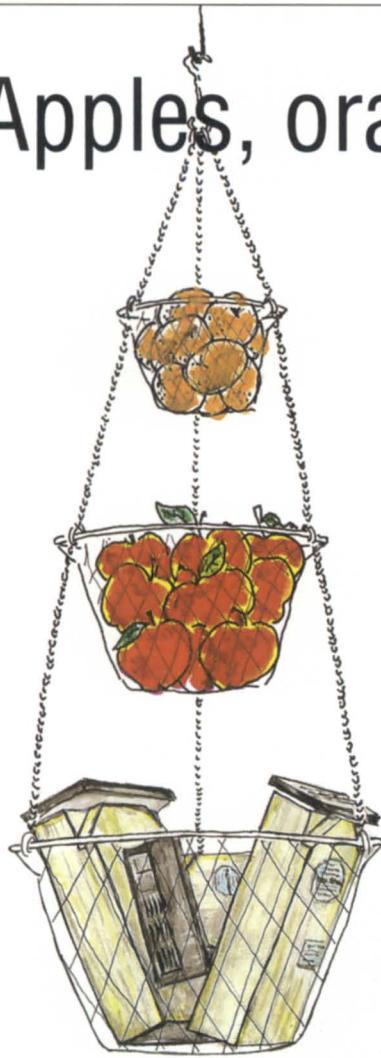
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Apples, oranges, and disk drives



If the speed on the 386 is any indication, the 88000 is going to be one hot computer

It's been said that computer benchmarks do nothing more than measure benches. This month's column is certainly proof of that. I bring perhaps the most complete collection of apples, oranges, and disk drives ever seen in a single set of tests.

Just the same, the results are very interesting. They reveal a lot about the future of Business BASIC, computers, and Data General.

Before I get to the conclusions, let me state that all the numbers on these tests are presented as they were furnished to me: I don't make any claims as to their accuracy. Furthermore, they are tests of tests: your applications are sure to behave differently.

Figure 1: Single user tests on various environments

Company CPU Software	Generate Prime #'s	KADD	Disk I/O (650000 bytes)		1 Million FOR /NEXT
			WRITE	READ	
Alloy IBM PS/2 60 MS-DOS	478 el	394 el	43 el	16 el	
Alloy IBM PS/2 80 MS-DOS	210 el	261 el	22 el	12 el	81 el
Alloy Desktop 20 RDOS	1334 el 1391 cpu	492 el 213 cpu	94 el 18 cpu	116 el 32 cpu	
Transoft ACER 386/16 SCO XENIX	242 cpu		21 el 6 cpu	36 el 6 cpu	
Transoft Olivetti 386/20 ATT Unix	160 cpu	123 el 79 cpu	16 el 4 cpu	25 el 5 cpu	207 el 206 cpu
Transoft MV/1400 BBASIC 4.20	433 cpu				
Maxon MV/15000 mod 8 BBASIC 4.20	336 el 269 cpu	193 el 47 cpu	138 el 14 cpu	41 el 13 cpu	67 el 65 cpu
Maxon MV/15000 mod 8 B32	147 el 68 cpu	223 el 40 cpu	66 el 9 cpu	19 el 9 cpu	34 el 28 cpu
B32 AMC 386/20 SCO XENIX	60 el 59 cpu	63 el 59 cpu	14 el 9 cpu	15 el 9 cpu	23 el 23 cpu

Figure 2: Multiuser tests

CPU Operating Sys Language	Users	KADDS EL CPU	KFINDS EL CPU	KDELS EL CPU	TOTAL EL CPU
MV/15000 mod 8 AOS/VS B32	1	110 40	100 38	93 36	306 114
	4	174 42	167 41	171 40	479 124
	8	175 45	157 44	154 42	442 131
AMC 386/20 SCO XENIX B32	1	71 67	64 58	73 65	208 189
	4	84 68	68 61	74 68	209 197
	8	92 76	76 69	86 75	231 220

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Documents can be saved and retrieved from the appropriate CEO drawer and folder. The CEO calculator is easily accessible as well, by using only a few quick keystrokes.

If a mail message is received while you are typing a document in WordPerfect, you will be notified at the WordPerfect status line. You can then use the CEO interrupt key to temporarily suspend

WordPerfect while you access your message through CEO. When you return to WordPerfect, the cursor will be right where you left it.

The WordPerfect/CEO combination will provide you with the same host of powerful features users have come to expect from WordPerfect 4.2. For example, you'll have the Thesaurus and 115,000-word Speller at your fingertips. Columns appear side-by-side on the screen as they will look when printed. Footnotes and Endnotes are automatically formatted and numbered for you. Macros let you record and automate keystroke combinations, and the Merge option allows you to combine data from two or more different sources into a single document.

With WordPerfect on your AOS/VS machine, you have the added benefit of opening as many as ten documents, and seeing two simultaneously on-screen.

If you've considered buying WordPerfect 5.0 for the IBM PC, rest assured that WordPerfect documents created on Data General machines can be retrieved into 5.0 format on the PC. Likewise, files created with 5.0 for the PC can be saved in 4.2 format and then retrieved on the Data General. (Features new to 5.0 will not transfer to 4.2.)

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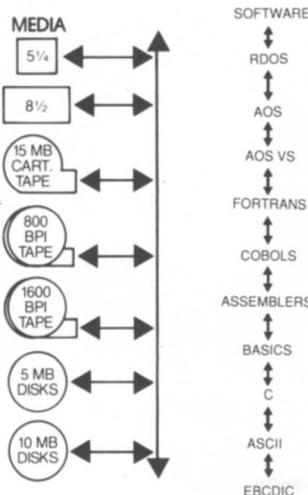
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BASIC

The tests show extremely varied results. This is due to several reasons: CPU speed, disk speed, operating systems, and language variations. Few of these results are actually comparable to each other. In other words, do your own tests before investing.

The slowest system was the desktop Model 20 running RDOS Business BASIC. Over 20 times faster was an AMC 386 running at 20 megahertz and B32 under XENIX

So, on to the fun! Figure 1 shows tests that were run with a single user on the system. The programs used are nothing more than stated: they are the bare minimum of code to do the function at the top of the column.

The tests show "el" for elapsed seconds and "cpu" for CPU seconds used (measured using SYS(5)). Here are a few observations:

- The slowest system was the desktop Model 20 running RDOS Business BASIC. Over 20 times faster was an AMC 386 running at 20 megahertz and B32 under XENIX.

- CPU timings on the MV/15000 Model 8 may not be entirely accurate. I believe the timings for system calls are estimated. Elapsed time may be better to look at; however, the relative speed of disk drives then distorts the results.

- CPU timings on the 386 machines may also be suspect. For Transoft's Olivetti 386 at 20 megahertz, note that the total of the three disk I/O tests was 164 seconds elapsed, 88 seconds CPU. B32's results for a similar machine were 92 seconds and 77 seconds. The prime number test (a straightforward test of CPU speed) shows B32 to be over three times as fast as Transoft. Something looks fishy!

- Comparing elapsed times between the MV/15000 Model 8 and the 386 seems fair though. The results are clear: a 386, running at 20 megahertz, is quite capable of outrunning the MV in both CPU and disk operations!

Data General has just announced a 386 of its own, the Dasher 386. It is a 16 megahertz machine, and comes with ATT Unix. It should also be able to run SCO XENIX, but you'll have to buy that at your local dealer, not DG. Will it work? How should we expect it to stack up?

There is no reason why the Dasher 386 should not be able to run the products from Alloy, B32, and Transoft. B32 and Transoft are perhaps more interesting; they both run in Unix multiuser mode.

The speed of the new Dasher 386 will probably be most comparable to the ACER 386/16 in the tests, putting it in the MV/15000 Model 8 range of performance, running a bit slower under Transoft, and faster under B32.

But, you say, you're not interested in single-user systems. Your users all want to hang a bunch of terminals on the system. You know that AOS/VS does a good job sharing its time over a bunch of users. Surely Unix will fall down here!

Figure 2 shows the results (with a major disclaimer, which I'll get to). B32, running on that same AMC 386/20, has elapsed

times substantially better than the MV/15000. What's more, the degradation does not go up as fast on Unix as it does under AOS/VS.

At eight users, B32 under Unix is almost twice as fast as AOS/VS running B32. Of course, running Data General Business BASIC will make the MV/15000 look even worse.

Now for the disclaimer: these tests do not do any screen I/O. AOS/VS unloads a lot of the work connected with screen I/O to the IACs. It is possible (and preliminary tests seem to support this) that Unix on a 386 does not do nearly as good a job. More tests are needed before deciding that Unix will be as good for real multiuser environments.

A cautionary note as well: there is nothing here that says these results can be extrapolated to 16, 32, or 64 users. We know that an MV/15000 Model 8 can handle 64; it seems very unlikely that the 386 can do the same.

Once again, how would Data General's Dasher 386 perform? Probably not much differently than the machine in Figure 2. The AMC's CPU advantage will probably be lost in the disk I/O results. The Dasher 386 allows you to add in up to 26 asynchronous devices, via adding in eight-line intelligent multiplexors. DG claims it will support up to 16 users, depending on application.

What conclusions can we draw from this for the future? Well, it seems clear that price/performance for Business BASIC is about to take a big jump.

The 386 running B32 or Transoft looks like it will be faster than

**There is no reason why
the Dasher 386 should not
be able to run the products
from Alloy, B32, and Transoft**

an MV/1400, at half the price. The message for both Data General and VARs is clear: the new technology cannot be ignored any longer. Even if you don't adapt to the new environment, your competition certainly will.

Data General's announcement of the Dasher 386 is timely. I've grown comfortable with DG over the years, and I'd rather buy what I need from DG than hunt for a new supplier. It also means that we can start testing our applications on the 386 under Unix without having to leave the Data General fold, which will certainly make the DG salespeople happy.

Part of Data General's strategy of bringing out the Dasher 386 with Unix is to give its customers a chance to prepare for the first 88000 machines, due out in a few months. If the speed of the 386 is any indication, the 88000 is going to be one hot computer!

What about Business BASIC for the Dasher 386 from Data General? Right now, it doesn't seem imminent. It would make sense for DG to put its efforts into the 88000 version for now, so that it will be ready when the flagship arrives. △

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

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Macro-Aid for Wordperfect

New editor simplifies revision of even the most monstrous macro

By Thane Perkins
Special to Focus

The latest, most fantastic, up-to-date Wordperfect feature is not in Wordperfect. For those who have used the M-Edit macro editor on PC Wordperfect macros and looked forward to the day when Wordperfect would offer it for DG users, it's finally here. Though you can use M-Edit to edit P-Edit and Planperfect macros, most DG users will use it to create, edit, and assemble Wordperfect 4.2 macros.

A Wordperfect macro is a file that records Wordperfect keystrokes. The following example shows how to create a macro that places the date at the top of any document:

- 1) Press CTRL-F10 and enter the name of the macro (DATE);
- 2) Press HOME, HOME, and the up arrow;
- 3) Press SHIFT-F5 and select option 1;
- 4) Press the NEW LINE key twice and the CTRL-F10 key again.

Now you can add a date at the top of a document by pressing CTRL-SHIFT-F10 and entering the macro name (DATE). The Wordperfect macro will repeat each keystroke, in order, just as you did when defining the macro. However, if you found you made a mistake while defining the macro, or you wanted to change the macro slightly (like placing the date flush right) you would have to completely redefine the macro.

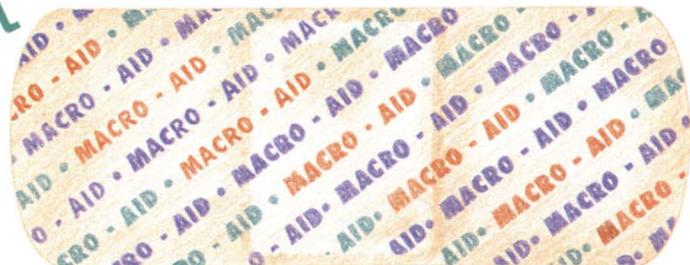
This is where the new M-Edit macro editor steps in. It is a specialized program editor. If you used a program editor, like SED or P-Edit, and retrieved the date macro, it might look like this: ^H^H^W1 (depending on the terminal).

The macro editor takes these characters and translates them so the same file in M-Edit looks like: <Home><Home><Up><Date>1.

In M-Edit, you can place the cursor under the "<" in "<Date>". To add the Flush Right to the macro, press CTRL-F10 and the Wordperfect function key for Flush Right (CTRL-SHIFT-F6). The Flush Right code is inserted in the macro between the up arrow and the date function. Once saved, this macro will run in Wordperfect 4.2 and will insert a date that is flush right.

Do not worry about having to learn a new and unfamiliar program. The core of M-Edit has the same Wordperfect function keys you are already used to. In fact, a good way to teach yourself about Wordperfect macros and the macro editor is to define a simple macro in Wordperfect, write down each step, and then create the same macro in M-Edit using the CTRL-F10 functions feature. As you follow the macro's hand-written script, you will be using the same Wordperfect keystrokes. Upon comparing the two files you can learn a great deal.

M-Edit is great for fine-tuning and improving your old standby



macros. It is a lifesaver for those who need to make changes to those monster macros of several hundred to a thousand keystrokes. It is also a way to troubleshoot macros that just do not want to work the way the user intended (many times there is an accidental keystroke fouling things up). If you want to delete one function or letter, you now have the ability. If you want to add a keystroke here or there, that is possible too. The user is the only limitation. He or she must keep in mind what effect each new keystroke will have on the document. Some features also have option numbers or letters that are crucial to how a macro runs. These must be included and entered in the appropriate place. Our date macro needed the option 1 to select the Insert Text feature.

One of the most usable features of M-Edit is the ability to quickly and easily send another user macros by mail. Simply retrieve the macro into M-Edit and print out a hard copy. Mail the hard copy of the macro to a fellow user. The fellow user brings up the M-Edit, presses CTRL-F10, puts the Wordperfect template on the keyboard, and simply keystrokes the macro in so it reads just like the one on paper.

For example, there is a chained-conditional macro (actually three macros that are chained together) I have had several requests for, and it is one that I use frequently while testing the Mark Text feature of Wordperfect. This macro creates a Full Form Table of Authority mark and then searches through the document and places Short Form marks where applicable. The user also has the opportunity to delete any of the Short Form marks if desired.

The following is my TOA.MAC macro. It is chained to the TOA.FOUND.MAC macro.

```
<Search><Delay 000><Pause><Search End><Block><Word Left>^^
<Delay 000><Pause><Mark Text>6<Delay 000><Pause><NL>
<Exit><Delay 000><Pause><NL>
<Page Down><Macro>toa.found<NL>
```

The next macro is a conditional macro, Named TOA.found.MAC, that is chained to itself if the search finds something and chained to TOA.NFOUND.MAC if it fails.

```
<Macro>toa.nfound<NL>
<Search><Search End><Mark Text>4<NL>
<Bold><Hyphen><Hyphen><Hyphen><Hyphen><Left><Left><Left><Left><Left>^^
<Left><Left><Left><Delete Right><Delay 000><Pause><Right>^^
<Delete Right><Delete Right><Delete Right><Delete Right>^^
<Delete Right><Word Right><Macro>toa.found<NL>
```

The last macro, TOA.NFOUND.MAC simply returns you to the top of the document so you can define the Table of Authorities if you wish, or restart the macro.

```
<Home><Home><Up><NL>
```

There are two things you need to note about the previous

macro editor print-outs: 1) the `^` mark is only used as a point at which the line is wrapped down to the following line and is not a Wordperfect function, and 2) the `<NL>` codes were added by me—you cannot normally see them in M-Edit.

No more mangled text

Anyone who uses, wants to use, or would like to learn to use Wordperfect macros shouldn't be without the macro editor, M-Edit. Once you get used to how macros are constructed, you can

skip the entire macro define process and simply create the macro in M-Edit. M-Edit will let you clean up any macro, and a stripped down, cleaned up macro runs much faster. If you have ever tried using macros and found that they mangled more text than they improved, now is the time to dig in and find out what happens and why. It is amazing how much you can learn about how macros work from looking at their structure in M-Edit. The greatest new feature in Wordperfect for Data General isn't in Wordperfect, but it's worth looking at. △

Knowing naming conventions makes it easier to locate macros

By Thane Perkins
Special to Focus

One of the more difficult aspects of working with Wordperfect macros is the naming convention used by Wordperfect. If you are planning to use the macro editor, you may find it difficult to locate some macros without a little help.

Convention #1: This is relatively easy. Check your List Files and you will find macros are listed by the name entered when defining the macro, followed by ".MAC" for Wordperfect 4.2 macros, ".PEM" for P-Edit 4.2 macros, ".MEM" for M-Edit macros (yes, you can create macros with an M-Edit macro), and

".MPM" for Planperfect macros.

Convention #2: Temporary macros can be created by using a single character to name a macro (the same holds true for hitting the NEW LINE key instead of entering a filename). These macros exist only as long as you are in Wordperfect. As soon as you exit from Wordperfect, they are deleted (if you exit Wordperfect abnormally, they will become permanent, however). Wordperfect names these macros for you by using the following pattern: ?X#.MAC. The "?" tells Wordperfect that the file is temporary; X is the character, and # is the PID number. If your Wordperfect process was at PID 34 and you created a macro and named it "H", your macro would be named "?H34.MAC". If you create a macro by pressing the NEW LINE key instead of entering a name, you will create a temporary macro that is the PID number followed by .MAC; i.e., "34.MAC".

Convention #3: If you create a macro and instead of typing a

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Figure 1: Macros created using a function key

W361.MAC	F1	W257.MAC	CTRL-F1	W341.MAC	SHIFT-F1	W241.MAC	CTRL-SHIFT-F1
W362.MAC	F2	W262.MAC	CTRL-F2	W342.MAC	SHIFT-F2	W242.MAC	CTRL-SHIFT-F2
W363.MAC	F3	W261.MAC	CTRL-F3	W343.MAC	SHIFT-F3	W243.MAC	CTRL-SHIFT-F3
W364.MAC	F4	W277.MAC	CTRL-F4	W344.MAC	SHIFT-F4	W244.MAC	CTRL-SHIFT-F4
W365.MAC	F5	W265.MAC	CTRL-F5	W345.MAC	SHIFT-F5	W245.MAC	CTRL-SHIFT-F5
W366.MAC	F6	W266.MAC	CTRL-F6	W346.MAC	SHIFT-F6	W246.MAC	CTRL-SHIFT-F6
W367.MAC	F7	W267.MAC	CTRL-F7	W347.MAC	SHIFT-F7	W247.MAC	CTRL-SHIFT-F7
W370.MAC	F8	W270.MAC	CTRL-F8	W350.MAC	SHIFT-F8	W250.MAC	CTRL-SHIFT-F8
W371.MAC	F9	W271.MAC	CTRL-F9	W351.MAC	SHIFT-F9	W251.MAC	CTRL-SHIFT-F9
W372.MAC	F10	W272.MAC	CTRL-F10	W352.MAC	SHIFT-F10	W252.MAC	CTRL-SHIFT-F10
W373.MAC	F11	W273.MAC	CTRL-F11	W353.MAC	SHIFT-F11	W253.MAC	CTRL-SHIFT-F11
W374.MAC	F12	W274.MAC	CTRL-F12	W354.MAC	SHIFT-F12*	W254.MAC	CTRL-SHIFT-F12
W375.MAC	F13	W275.MAC	CTRL-F13*	W355.MAC	SHIFT-F13*	W255.MAC	CTRL-SHIFT-F13*
W376.MAC	F14*	W276.MAC	CTRL-F14*	W356.MAC	SHIFT-F14*	W256.MAC	CTRL-SHIFT-F14*
W360.MAC	F15*	W260.MAC	CTRL-F15*	W340.MAC	SHIFT-F15*	W336.MAC	C3*

*Macros marked with an asterisk can be started by pressing the function key alone—you do not need to press CTRL-SHIFT-F10 first.

name you press a function key, Wordperfect names the macro using the method shown in Figure 1. This naming convention works for P-Edit macros as well. Simply replace the "W" at the beginning of the filename with a "P" and you have it; e.g., P360.MAC is a P-Edit macro that starts by pressing F15.

By following these naming conventions, you should be able to use List Files from M-Edit to find any file you want to edit or any

one you want to use as part of a new macro. You can also use the same convention when saving a Wordperfect macro file. □

Thane Perkins is a tester for the Data General Division of Wordperfect Corporation. He can be reached at 1555 North Technology Way, Orem, Utah 84057; 801/227-4455.

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Your skills are showing

The process of planning for data recovery can showcase your management skills

by Steve Handlos and Liz Straus
Special to Focus

As DP manager and an important member of your company's management team, you are well aware that developing immediate and long-range goals is one obvious way to promote a healthy climate for corporate growth. Your supervisors support you in this effort because they know that running a department without such a plan is akin to driving across country without a road map—it can be done, but it's much more difficult. The necessity of devising a method for data recovery may *not* be so readily apparent to your supervisors, however—until the system crashes.

This means that in addition to honing your management skills, you also need to become somewhat of a salesperson to convince your boss that the company needs a detailed set of procedures to handle unplanned (but not unexpected) data losses.

There are several reasons why taking time to develop an efficient, cost-effective way to retrieve lost information is preferable to dousing fires as they erupt:

- You gain a reputation as a problem-solver and become a more visible and valuable employee;
- Creating viable solutions long before they are needed offers time to test their effectiveness;
- Outlining and refining methods to deal with the unexpected insures your organization against costly shut-downs, making it more productive and organized.

Management by design

To succeed in making the data process-

ing function as important as possible within the organization, you must be aware of which issues are special concerns for your superiors, especially those that are unspoken. For top management, a disaster recovery program represents an insurance policy on the business; for you, it can provide yet another opportunity to demonstrate foresight, ability, and dedication to the company.

If one of your goals is to reduce the probability of data failure to the smallest possible value, consider the following:

- there is an event that will certainly cause the business to fail;
- the occurrence of that event *cannot* be controlled;
- the outcome of that event *can* be controlled.

Method of action

There are a couple of ways to get started with your data recovery program. Using a professional consultant is one option. A professional's skills, objectivity, and commitment to meeting your deadlines may contribute to a workable plan; additionally, by hiring a consultant, you will not interfere with internal projects.

Do-it-yourself planning guides are readily available in a range of prices and quality, and if you look carefully, you will find one that meets your needs. The guides contain technical information to help you evaluate current usage and prioritize functions.

It is up to you, though, to breathe life into the plan by customizing it to your organization. When designing your program you must know the direction of your company's corporate path, so keep the following in mind:

- What factors are bringing about changes to which your organization must respond?
- How will marketing techniques vary as a result of these changes?
- What are the growth trends within the industry, and how do they affect your company?

Training/Testing

The success of data recovery depends

on the skills of your staff, so training must be an integral and ongoing component of your disaster plan. You can get a good idea of how effective your training program has been during the testing phase.

The testing you do for this project is a little like writing a complex program—you know it won't work perfectly the first time. You make it work through diligent trial and error.

There is one big difference, however, between a program and a disaster recovery drill, and that is the human element. If inputs are constant, a computer running a program produces the same output; the human reaction is unpredictable.

Testing gives you the opportunity to review your training procedures and to modify them if necessary.

Your management skills are showing

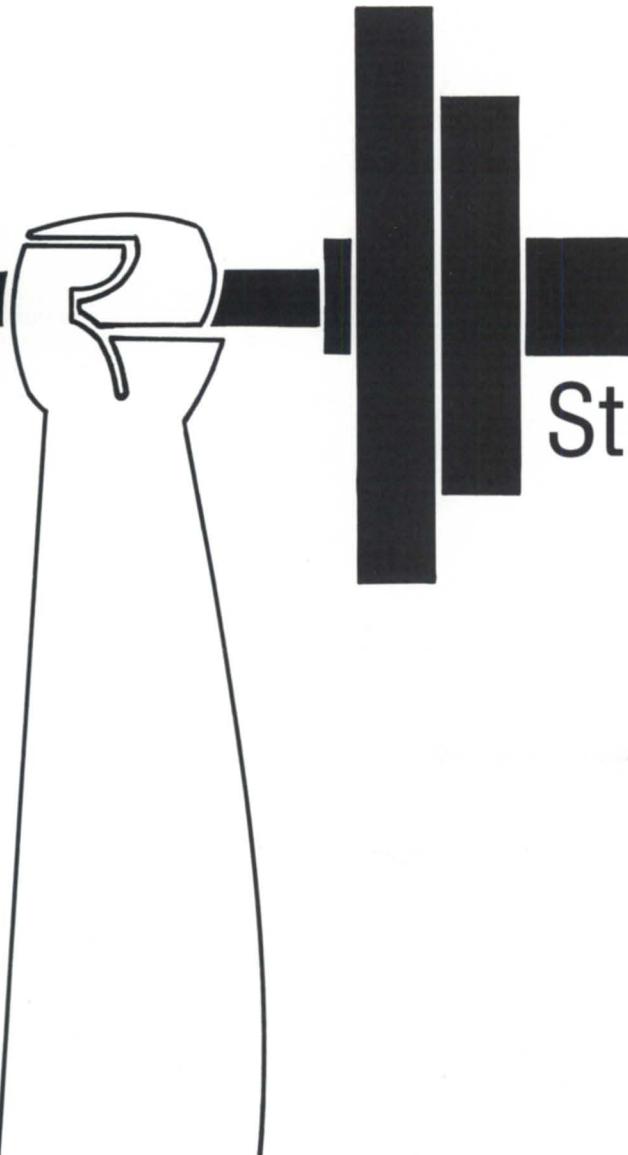
As you execute the recovery plan, be sure your managers are aware of the process. Invite them to the tests (once you are sure the procedures are working) and give them periodic progress reports in non-technical language.

Think of the disaster recovery as a bridge to company management. To be effective, the plan must become an integral part of the company's long-term planning. And, no matter how carefully the plan is researched, structured, and documented, it must be periodically reviewed and revised.

Disaster recovery is a serious issue that is frequently discussed and infrequently implemented. You can control the operation by assuming a true managerial posture—participate in the planning, delegate the production, and most importantly, analyze and document the results.

Δ

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



Strong arguments

Using Fortran and BASIC
to accept arguments from CLI

By John Huddleston
Special to Focus

This column describes two ways to accept arguments from CLI from within BASIC and Fortran programs running in AOS/VS environments. Some readers may remember the examples used here from my presentation, *Intelligent Processing with CLI*, given at the 1987 NADGUG conference.

Figure 1 contains the Fortran source and

Figure 1: Fortran 77 source code to get an argument from CLI

<pre> SUBROUTINE CLI_ARG(argv,argc,ier) %List (off) %Include "Qsym.f77.in" %List (on) C C *** J.HUD. 11/11/85 get arguments from the CLI C character(*) argv ! CLI argument C Integer*2 lpack(0:lsys_gtn-1)/lsys_gtn*0/ Integer*2 lpack_word(0:lsys_gtn-1) Integer*4 lpack_dword(0:(lsys_gtn-2)/2) C Integer*4 ier,AC0,AC1,AC2,lsys Integer*2 argc C Equivalence(lpack,lpack_word,lpack_dword) </pre>	<pre> c *** packet input will start c lpack_word(lsys_greq)=lsys_garg lpack_word(lsys_gnum)=argc lpack_dword(lsys_gsw/2)=0 lpack_dword(lsys_gres/2)=byteaddr(argv) C AC0=0 AC1=0 AC2=wordaddr(lpack) ier=lsys(lsys_gtmes,AC0,AC1,AC2) if(ier.eq.0 .and. AC0.gt.0) then argv=argv(1:AC0) else argv=" " end if return end </pre>
--	--

Figure 2: BASIC source code to get an argument from CLI

```

01480 rem
01490 rem subroutine ARG$ to get arguments from CLI
01500 rem programmed by J.Huddleston 11/11/85
01510 rem modified by R.Hartman 08/25/88
01520 rem
01530 rem arguments: argv$ = returned argument (char*(*) )
01540 rem      argc = position of argument requested (i*4)
01550 rem      len = encountered length of argument (i*2)
01560 rem      ier = return flag, 0=okay (i*4)
01570 rem Caveats:
01580 rem This routine must be contained within the main program
01590 rem and not be external in order to operate properly.
01600 rem The initialization of ARGV$ in this subroutine defines
01610 rem the maximum size of the CLI argument.
01620 rem
01630 sub ARG$(ARGV$,ARGC:integer*4,LEN:integer*2,IER:integer*4)
01640 rem
01650 option base 1
01660 declare integer*4 IADDR
01670 declare integer*4 GTMES_PACKET(3)
01680 declare integer*4 AC0,AC1,AC2
01690 let IER=0
01700 let ARGV$="xxxxxxxxxxxxxxxxxxxxxx"
01710 mat GTMES_PACKET=zer
01720 let IADDR=0
01730 let IADDR=addr(ARGV$)
01740 let GTMES_PACKET(1)=3*65536+ARGC
01750 let GTMES_PACKET(2)=0
01760 let GTMES_PACKET(3)=IADDR
01770 let AC0=0
01780 let AC1=0
01790 let AC2=addr(GTMES_PACKET)
01780 let IER=sys("gtmes",AC0,AC1,AC2)
01800 let LEN=AC0
01810 rem
01820 end sub

```

! ARBITRARY NAME	
! CLEAR THE PACKET	
! INITIALIZE ADDRESS	
! GET ADDRESS IN IADDR	
! lsys_garg + argument	
! NO SWITCHES SET	
! ADDRESS OF ARGV	
! RESERVED	
! RESERVED	
! PACKET ADDR. IN AC2	
! GOOD OLD SYSTEM CALL	
! PUT ARG LENGTH IN LEN	

Figure 2 contains the BASIC source. The Fortran source corresponds directly with Figure 13-30 of Data General's *Advanced Operating System Programmer's Manual Volume 2*. In this illustration, a packet is made up of three 32-bit double words (as opposed to 16-bit single words). The lower 16 bits of the first double word are the argument number and the high 16 bits are the request type, in this case ?GARG (copy the command line argument specified in the lower 16 bits to the ?GRES buffer area). The second double word is reserved and is set to 0. The third double word contains the byte pointer to the resulting argument.

In Figure 2 (BASIC code), the argv\$ is initialized to some value. If your argument turns out to larger than the 22 x's that are in the figure, then increase the number of x's to be as large as your argument. Note that the argc in the BASIC code is of type integer*32, since it will be

added to the ?GARG number (multiplied times 65536 to put it into the high 16 bits). The Fortran argc is of type integer*16 since it is put directly into the lower 16 bits of the double word.

The number of arguments used in the two examples is different. This is due to a modification by another programmer who wanted to use the return length in the BASIC code. Also, the Fortran code sets the return argv string just equal to the length so no extra characters are put out by the calling routine. One other caution, the BASIC code must be placed in the main BASIC module whereas the Fortran code can be a separate module. △

John Huddleston is vice president of the NADGUG SIG/UX. He can be reached at the USDA Soil Conservation Service, 511 NW Broadway, Portland, OR 97209; 503/326-2843.

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Off the charts

Optimum use of workstations requires file distribution strategy

Before it was possible to integrate PCs with minis via high-speed local area networks, being a system manager was simple. It took so much time and trouble to move a file from one computer to another that there was rarely a need for long discussions on where to keep your data. But with the advent of file servers on local area networks, the system manager now has to develop a "file distribution strategy."

After years of working with various forms of file service, we have developed guidelines for file management that apply to most PC integration users. My goal this month is to help you decide where to keep your files: which ones go on the file server, and which ones do you keep on your PC workstation?

I'll be referring to Rational Data Systems' PC/VS throughout the text, but comments apply to Data General's DG/PC*I as well. Note that revision 4.00 of RDS's PC/VS now includes True File Service in addition to the previously supported virtual disks and file import/export utilities.

In a typical environment, there are three places a file can be stored:

- on a PC user's hard disk;
- on a Novell NetWare file server;
- on an MV/family file server.

In addition, files stored on the MV/family file server can be accessed in one of three ways:

- true file service;
- virtual disk service;
- file transfer service.

These three access methods were described in last month's column. Refer to the February issue for details.

You may or may not have a NetWare server. Since PC/VS works well with it, many PC/VS users have added NetWare to their PC integration environments. The following discussion will be relevant to

those using a NetWare server as well as to those who are not.

Let us now consider the six attributes that are used to determine where and how a file should be stored and accessed.

Access from AOS/VS

If you need to access a file from an application or terminal connected to your MV/family computer as well as from MS-DOS, there are only two choices: through the file redirector (convenient) or via the file transfer commands (fast). Files on the

local hard disk, NetWare, and virtual disks are not readily accessible by AOS/VS programs.

Shared PC access

If a file must be shared by multiple PCs, on the other hand, you can keep it anywhere except on one PC's hard disk. NetWare is the best performer for shared files, but the PC/VS file redirector is the most convenient. If read-only access is acceptable, you might consider keeping the file on virtual disk (unless it's a program).

Figure 1: PC/VS file distribution chart (with standard ratings)

		File Service Options				
		PC Local Hard Disk	PC/VS File Redirector	PC/VS Virtual Disk	PC/VS File Transfer	Novell NetWare
File Service Attributes	Access From AOS/VS	N/A	4	N/A	2	N/A
	Shared PC Access	N/A	3	R/O:3 R/W:N/A	2	4
	Performance	4	1	2	2	3
	Program Files	4	N/A	3	N/A	3
	Convenience	4	3	2	1	3
	Frequent Backup	1	4	2	3	2
Total						

Figure 2: PC/VS file distribution chart (example: Wordperfect documents)

		File Service Options				
		PC Local Hard Disk	PC/VS File Redirector	PC/VS Virtual Disk	PC/VS File Transfer	Novell NetWare
File Service Attributes	Access From AOS/VS	N/A	4	N/A	2	N/A
	Shared PC Access	N/A	3	R/O:3 R/W:N/A	2	4
	Performance	4	1	2	2	3
	Program Files	4	N/A	3	N/A	3
	Convenience	4	3	2	1	3
	Frequent Backup	1	4	2	3	2
Total						

Virtual disks are fast and have low overhead, but if mounted read/write, they can only be accessed by one user at a time. Finally, consider file transfer (IMPORT and EXPORT) for occasional access or for large files.

Performance and cost

First, accept the fact that no matter how much you spend on your file server, it will rarely be faster than a hard disk attached directly to the workstation.

If a file has to be shared, but doesn't need to be accessed from terminals or applications on your MV/family computer, consider keeping the file on a Novell NetWare file server. NetWare is an operating system designed for nothing other than file service, and is typically at least three times as fast as AOS/VS. Furthermore, consider that the dollars per MIPS and dollars per megabyte are substantially less for a NetWare server than for an MV/family computer. The only time the MV is less expensive is when there is excess capacity that would otherwise go unused.

Program files

It is not possible to execute a program (.EXE or .COM file) via the PC/VS file redirector. At first this may appear to be an unreasonable restriction. However, consider that these files are of no value to AOS/VS, since they contain 8086/80286/80386 instructions. Furthermore, program files are accessed far more frequently than the files on which they operate. This includes the constant reading of overlays from within these files. For these reasons, programs should be stored on the local PC's hard disk (if they are private), on read-only PC/VS virtual disks, or on a NetWare file server (if they must be shared) for optimum performance.

Programs are also relatively non-volatile. They are not frequently modified, and if they are accidentally erased or destroyed, they can be easily restored from archival backups. This is another reason why they are excellent candidates for storage on local hard disks.

Convenience

Nothing is as convenient as the local disk. It's fast, its response time is predictable, and it's available even if the server is down for backup or maintenance. But on the assumption that other attributes are also important, the other options (in decreasing order of convenience) are PC/VS's file service, NetWare's file service, virtual disks, and finally, file transfers via IMPORT and EXPORT.

The more often a file needs to be backed up, the farther it should be kept from the PC's hard disk. Critical files are best kept on your MV/family computer, which has the best system management tools for backup and recovery. Individual AOS/VS files accessed via the PC/VS file redirector are the easiest to back up and restore, followed by files accessed via IMPORT and EXPORT, which are just some-

what less convenient to use. Files in virtual disk format are very easy to back up using standard AOS/VS utilities, but only entire virtual disks (not individual files) can be restored. NetWare includes good backup and recovery software, but it is not as convenient as using the existing AOS/VS tools. Finally, files stored on the workstation must be backed up by the user to floppy disk, or via PC/VS, possi-

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The file distribution chart

We have developed a file distribution chart that should help you decide where to store your files. There are six rows, one for each of the six attributes that may apply to a particular file. There are also five columns, one for each of the possible

places or manners in which a file could be stored.

For each file, identify the important attributes, then add up the numbers in each column for those attributes. If there are any N/As in a column for the attributes you've selected, you cannot use that column. Otherwise, the column with the highest score represents the best place to keep that file.

There are two versions of the chart: Figure 1, a complete chart which you may reproduce for your own use; and Figure 2, an example for documents that must be shared between PCs and users at AOS/VS terminals.

R/O and R/W

Note that the third box in the second row has two values. This is a reminder that PC/VS virtual disks may be shared, but only if they are accessed in "read-only" mode by all users. If you need read-write access, use N/A in this box. If you need read-only access, use a three.

Figure 2 is an example of how the chart should be used. For this purpose, we selected Wordperfect documents. These files may be accessed via terminals by users running the Data General version of Wordperfect. Because the file formats are compatible, these documents may also be accessed by users at PCs running the MS-DOS version of Wordperfect.

First, note that we have crossed out all numbers in the "Program Files" row. This is because these are data files, not programs. This attribute has no value in this case. If other attributes were also not of interest to us, we would, likewise, cross out those rows, but in this example, we're interested in all of the other attributes.

Now we look at all of the remaining squares. If there are any N/As left, we know we have encountered something that just won't work, so we write N/A at the bottom of any column that contains an N/A that is not crossed out. For example, there's an N/A in the upper left corner, because AOS/VS users would not be able to access files on a PC's local hard disk.

Finally, we add up all of the digits that are not crossed out in columns that are not N/A. The highest total should tell us the best way to store and access this type of file. In this case, the chart recommends we store the file under AOS/VS, and access it via PC/VS file redirector.

Of course, this chart is not foolproof, but we have found it to be a good starting point when organizing a distributed file system. I would appreciate hearing from anyone whose experience does not match this chart. △

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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 excerpted from the "1989 Rational Data Systems Report on PC Integration." For a free copy, contact RDS at 150 S. Los Robles Ave., Pasadena, CA 91101; 818/568-9991. Copyright 1989, Rational Data Systems.

Bugs in the system

Pests can invade your environment in several ways

Bugs can be serious problems at any computer facility—not programming errors or listening devices, but insects. According to Bill Spitz, chairman of the board emeritus of Big State Pest Control in Houston, Texas, it isn't so much the insects or rodents—no matter how unpleasant they are—but the products used to exterminate the pests that cause the most harm. "Pesticide dusts and aerosol

sprays can cause serious damage to delicate computer circuitry and even ruin electronic computerized phone systems," said Spitz.

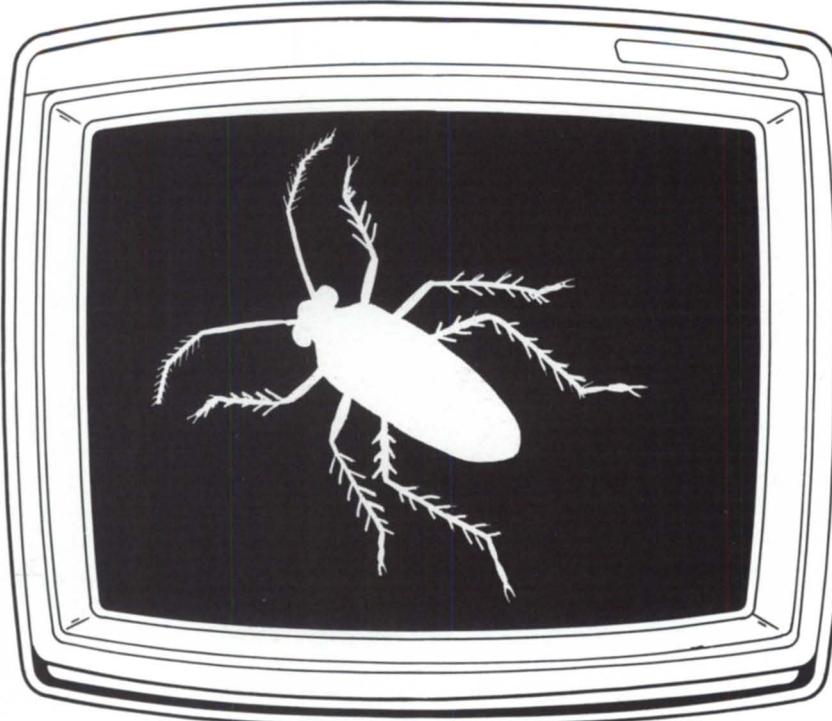
Insects and rodents can invade otherwise sterile premises in several ways. Roaches are particularly fond of paper, and can arrive in cartons of computer paper or in packing material around supplies or the computer terminals.

Many companies caution their users against bringing food or drink into the work areas. Spilling a soft drink in the mechanism or getting sticky chocolate on the computer keyboard is a bad idea, because food remains attract insects and rodents. It takes a "computer-literate" expert to get rid of them without damaging the computers.

For example, one well-meaning employee tried to eradicate a roach problem with spray pesticide and then with insecticide dust. By the time the exterminator arrived, the computers and the phone system were down. No one in the company had made the connection between the extermination attempts and the equipment malfunctions.

Spitz advises facilities to check regularly to catch a problem before it becomes a disaster.

"One time, rodents got into a Houston factory. They found a home under a wooden floor that held the computers that monitored all of the factory processes. The floor was raised to allow the air conditioning cooling the computers to circulate. Wires from the computers were

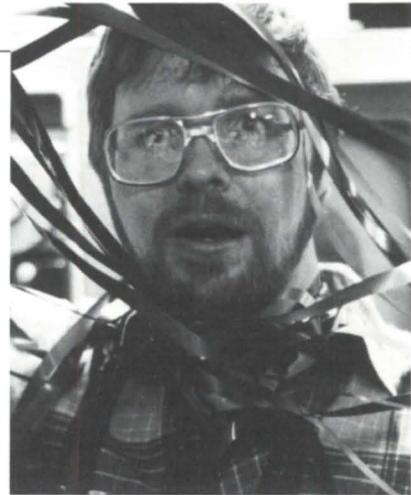


threaded through the space. A mouse chewed through a wire. That sent a message to the computer that the factory wasn't functioning properly, and hundreds of employees stood by as the plant automatically shut down. It took many hours of checking all areas of the plant for a system failure before the culprit, the mouse, was discovered."

Spitz offered the following suggestions:

- Never allow any food or drink in an area where there are computer or electronic computer phones.
- Unload supplies and computer terminals outside your facility and leave the boxes and packing material for trash pick up. Don't bring them into your facility.
- Check cartons of computer paper carefully for signs of insects before bringing them into your facility for storage.
- Don't use just any pesticide in a computer area. Call a computer literate professional to apply the chemicals.
- When you have computer or phone system malfunctions, consider pest or insecticide damage before scrapping your equipment.

Bill Spitz is the chairman of the board emeritus for Big State Pest Control. He can be reached at 3333 Eastside, Suite 116, Houston, TX 77098; 713/529-3598.



The IPC Man Cometh

Part 2: a simple way to code programs to wait for IPC messages

Last month, in Part 1, I discussed the various methods of inter-process communication provided by AOS/VS. IPC messages were the easiest to use, particularly since the CLI CONTROL command does half the work for you. The difficult task of checking on the progress of a program that is running in batch mode requires some direct two-way communication between you (via the CLI) and your program. This month I present a few easy-to-use tools with which you can implement this.

WAIT_FOR_IPC

What is required is a simple way to code your program to wait for IPC messages via the CONTROL command and then send back status information to your terminal, just like EXEC. Subroutine WAIT_FOR_IPC (Figure 1) is a deceptively simple little subroutine that hides all of the messy details from you. The first time it is called, it looks up its own program name (GET_PROGRAM_NAME was listed in *Focus*, July 1986) and then creates an IPC file with the same name in the

Figure 1: Subroutine WAIT_FOR_IPC

```

subroutine WAIT_FOR_IPC(ipid,message)
    implicit none

c>>>constants
%list(off)
    include "qsym.f77.in"      !?'', not 'ISYS_'
%list(on)
    integer local_port
    parameter (local_port=123)  !arbitrary

c>>>variables
c-->subroutine arguments
    integer ipid
    character(*) message

c-->local (stack)
    integer*4 ac0,ac1,ac2,ier,global_port
    integer*2 cre_pkt(0:?clth-1)  !for ?create
    integer*2 header(0:?iplth-1)  !for ?irec
    integer*4 wa_message
    equivalence (header(?iptr),wa_message)
    equivalence (header(?ioph),global_port)
    character*32 port_name
    character*256 message_buffer
    integer lm

c-->local (non-stack)
    logical first_time_called/.true./
    save first_time_called

c>>>externals
    integer*4 isys               !f77 intrinsic

c>>>begin
c-->create IPC port if first time called
    if(first_time_called) then
        call GET_PROGRAM_NAME(port_name)
        lm=index(port_name," ")
        port_name(lm:lm)="<0>"      !for ?create
        cre_pkt(?cftyp) = ?fIPC       !file type=IPC
        cre_pkt(?ctim) = -1           !current time flag
        cre_pkt(?ctim+1)= -1

        cre_pkt(?capp) = -1           !current default acl
        cre_pkt(?capp+1)= -1
        cre_pkt(?cpor) = local_port   !local port no.

        ac0=byteaddr(port_name)
        ac1=0
        ac2=wordaddr(cre_pkt)
        ier=isys(?create,ac0,ac1,ac2)
        if(ier.ne.0) return           !give up on error

        first_time_called=.false.     !for next time

        end if

c-->wait for a message (from anybody)
        header(?isfl)=0              !spool the messages
        header(?iufl)=0              !user flags (n/a)
        header(?ioph)=0              !receive from anyone
        header(?iopl)=0
        header(?idpn)=local_port     !on this local port
        header(?ilth)=len(message_buffer)/2 !buffer size (words)
        wa_message=wordaddr(message_buffer) !buffer address

        ac0=0
        ac1=0
        ac2=wordaddr(header)
        ier=isys(?irec,ac0,ac1,ac2)   !reserved
                                         !reserved
                                         !address of header
                                         !wait for IPC

c-->get sender's PID (returned in ac1) from global port no.
        ac0=0
        ac1=global_port               !reserved
        ac2=0
        ier=isys(?gport,ac0,ac1,ac2)   !reserved
                                         !ignore error
        ipid=ac1

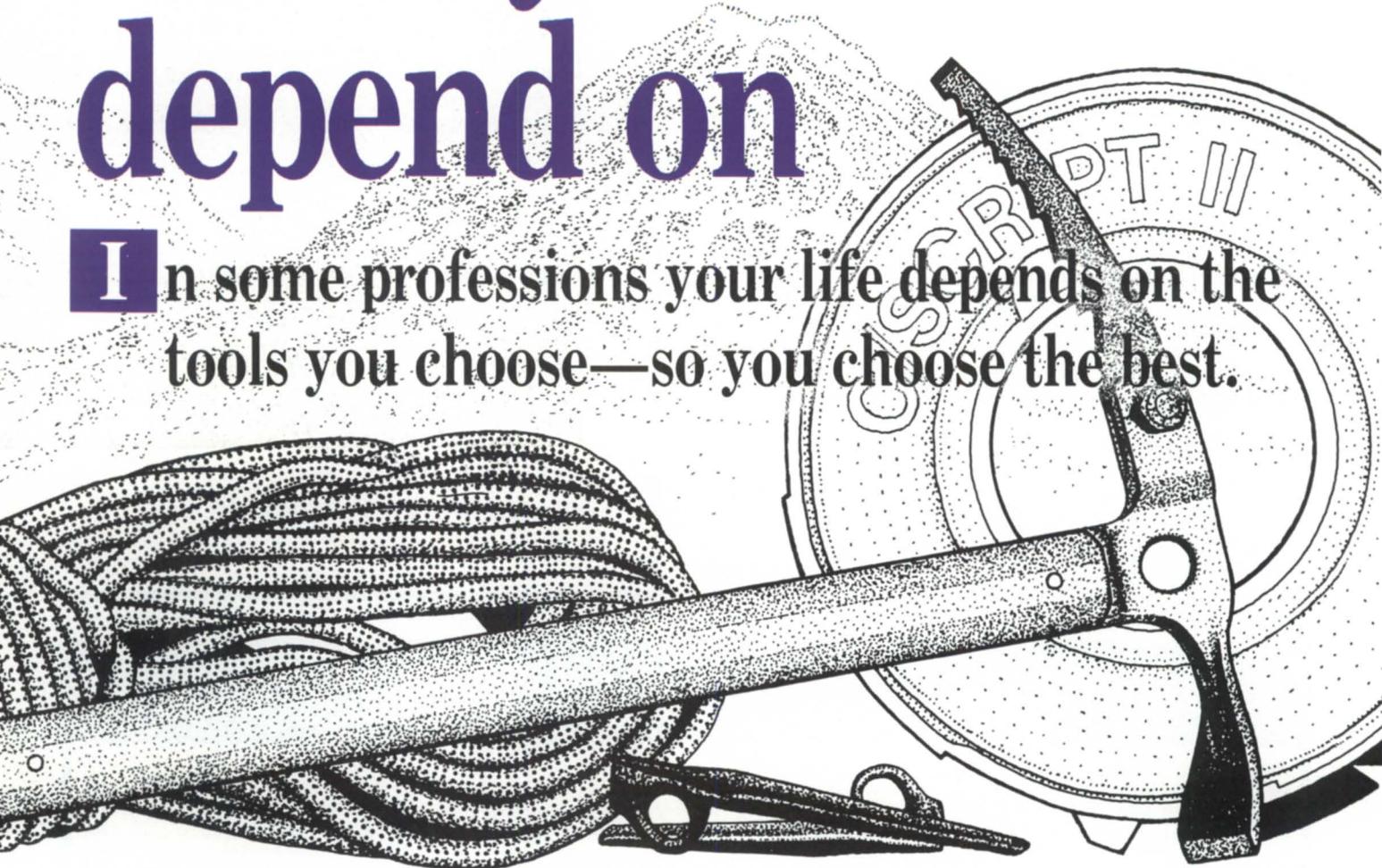
c-->return the message
        if(header(?ilth).eq.0) then
            message=" "               !unlikely
        else
            lm=index(message_buffer,<0>)-1
            message=message_buffer(1:lm)
        end if

        return
    end if

```

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Figure 2: WAIT_FOR_IPC modification: put PID in IPC filename

```

...
ac0=0
ac1=-1
ac2=0
if(isys(?pname,ac0,ac1,ac2).ne.0) ac1=0 !use 0 if error

```

current directory. After that and on subsequent calls, it simply waits for an IPC message on that file. When a message is received, the message and the PID of the sender are returned to the calling program for analysis and response.

For example, if the program is called MY_APPLICATION.PR, then the IPC file will be "MY_APPLICATION". If you run more than one copy of the program from the same initial working directory, there will be a filename collision since each program will try to create the same filename. You can modify this by including a PID number in the filename. The program can use ?PNAME to look up its own PID and then create a name using the PID (Figure 2). Note the use of F77 format i5.5 to output "0" characters instead of " " which is an illegal filename character.

Since your program probably has better things to do than sit around and wait for IPC messages, the best way to implement WAIT_FOR_IPC is with a task as shown in the example program in Figure 3. The TQSTASK routine (supplied with F77) initiates the SENTRY task. Independent of the operation of the main task,

the SENTRY task just loops forever, receiving IPC messages and sending replies. Since you can't pass arguments to a task subroutine, it retrieves information to reply to the sender through a COMMON block with the main task. When you LINK (or F77LINK) a program, the /TASKS=1 switch is the default. If you add a task such as this, you must use the /TASKS=2 switch when you LINK your program (assuming it is only one task without the SENTRY task).

EXEC parses its messages according to a defined grammar

If you run more than one copy of the program from the same initial working directory, there will be a filename collision since each program will try to create the same filename

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Figure 3: Example of application using WAIT_FOR_IPC

```

program UMPIRE
implicit none

c>>>variables
common/events/ n_strike,n_ball,n_foul
integer      n_strike,n_ball,n_foul

integer      ier
external     SENTRY

c>>>begin
c-->start up task 2
call tqtask(SENTRY,2,0,0,ier)    !task id=2, pri=0
if(ier.ne.0) call errcode(ier)   !oops

c-->main loop to count events forever
n_strike=0
n_ball=0
n_foul=0
do while(.true.)
  if(...) then
    n_strike=n_strike + 1
    else if(...) then
      n_ball=n_ball + 1
    else if(...) then
      n_foul=n_foul + 1
    end if
  end do
  subroutine sentry
  implicit none
  end

  ...<analyze message if you wish>...

  call SEND_IPC(pid,"(UMPIRE)")

  write(reply,1) n_strike
  call SEND_IPC(pid,reply)

  write(reply,2) n_ball
  call SEND_IPC(pid,reply)

  write(reply,3) n_foul
  call SEND_IPC(pid,reply)

end do

1 format("<15><11>No. of strikes= ",i5)
2 format("<15><11>No. of balls=  ",i5)
3 format("<15><11>No. of fouls=  ",i5)
end

```

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and responds accordingly. Since it knows the PID of the sender, it can also validate the command (hence the "valid only from OP" messages). If you wish, you may parse and validate the message, but most of the time I ignore it and send a progress report back to the user's console. CONTROL requires a non-zero message, so I just send something like:

```
)CONTROL MY_APPLICATION
hello
```

which "tickles" it and makes it cough back the report.

Your application can send messages back to the CLI with SEND_IPC (Figure 4). This subroutine is essentially an envelope around ?SEND so you don't have to count the number of characters in the message yourself.

Notice in Figure 3 that the first message of the reply identifies the program (UMPIRE) and subsequent messages contain a leading "carriage return" <15> to overwrite the "From PID n:" prefix that AOS/VS adds to each message and then a "tab" <011> to indent. I think it looks better that way (you can do exactly the same with [!ASCII,n] in your CLI SEND commands).

**CONTROL requires
a non-zero message,
so I just send
something like:**

```
)CONTROL MY_APPLICATION
hello . . .
```

Note that IPC files can be created only in the initial working directory (an AOS/VS restriction). That is why your UP.CLI macro contains the following:

```
PROCESS / DEFAULT /
DIRECTORY=@ EXEC
```

so that the IPC file "EXEC" will be created in ":PER" instead of the current directory. This makes it accessible to all users. Your application won't be able to do that unless you have SUPERUSER privileges to allow WRITE access to :PER.

Other uses for WAIT_FOR_IPC

A good example of this type of CONTROL application was presented by Tim Maness ("A Demon for Work", *Focus*, December 1986). His DAEMON program loops forever, waiting for and acting on IPC messages to do specific tasks that require privileges on behalf of a non-privileged user.

WAIT_FOR_IPC not only provides you with a window to view the progress of your batch program, it also provides a mechanism for terminating your program in an orderly fashion.

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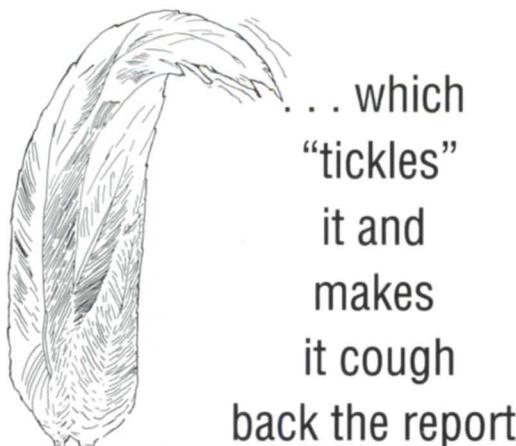
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If you can't wait for the program to finish or if you think it is in an endless loop, you can send a STOP command to the program so it can terminate itself. For security, you can either require a password to follow the STOP command;

) CONTROL MY_APPLICATION STOP password

or only accept the command from certain PIDs.

Even if the main task is in a loop, the "sentry" task should still respond to the IPC message (you can adjust the relative priorities of the "sentry" task to suit your application). This method of terminating a program is better than TERMINATE or QCANCEL. Most programs buffer disk I/O and it is quite conceivable that a program may not access the disk until the end of the program. If you blow it away prematurely, you will lose all of the data still in the buffers. If you have it terminate itself normally, it will flush the buffers. I recall the F77 folks in Westboro telling me that F77 I/O now uses 64 KB buffers, so that if your application writes less than 64 KB to a file, it won't even talk to the disk until it STOPS.



... which
"tickles"
it and
makes
it cough
back the report

Another trick

If you start up the same program in different directories as we do, you may want to know which PID corresponds to which directory. If you look at the input queue with QDISPLAY, it will tell you the pathname of the input file you QBATCHed or QSUBMITted but it won't tell you which PID. When you use CONTROL to talk to a program, you are talking to a file, without knowledge of the actual PID. Of course, your application can respond with its PID number, but there is another way to keep track of directories and PIDS. You can start up each copy of the program with the directory name

in the process name:

) QBATCH PROCESS/DEFAULT/NAME=[!ENAME,[!EFILE,[!DIR]]] XXX

then when you do "?" you can see which PID is running in which directory. This will only work if the simple directory name is less than or equal to the maximum process name length

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Figure 4: Subroutine SEND_IPC

<pre> subroutine SEND_IPC(pid,message) implicit none c>>>constants %list (off) include "qsym.f77.in" !?', not 'ISYS_' %list (on) c>>>variables integer pid character(*) message integer*4 ac0,ac1,ac2,ier integer lm integer*4 isys !f77 intrinsic </pre>	<pre> c>>>begin c—>get the message length (exclude trailing blanks) lm=len(message) do while(lm.gt.0.and.message(lm:lm).eq." ") lm=lm-1 end do if(lm.eq.0) lm=1 !blank message c—>send the message ac0=pid !PID of destination ac1=byteaddr(message) !bp to message ac2=lm !length (bytes) ier=isys(?send,ac0,ac1,ac2) !ignore error return end </pre>
--	--

of 15 characters. For example, if the initial working directory is :UDD:GRANT:TEST then CLI command WHO will show the process as:

PID: 29 GRANT TEST :PUBLIC:XXX.PR

Clarification from last month

In last month's article I said the maximum length of an IPC

message was 256 bytes. Since the IPC header has room for a 16-bit number, the maximum length is probably 32,767 words. △

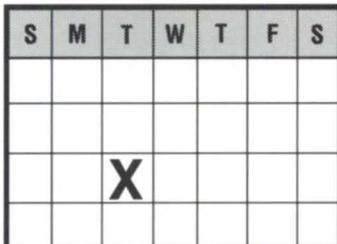
John A. Grant is a geophysicist with the Geological Survey of Canada. He is also system manager, chief cook, and bottle washer for the Exploration Geophysics Subdivision's MV/4000. He may be contacted at 601 Booth St., Room 591, Ottawa, Ontario, K1A 0E8; 613/992-1082.

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For more information about future meetings, or about the Detroit RIG itself, contact the president David Richardson. David can be reached at FX Coughlin, 27050 Wick Road, Taylor, MI 48180, 313/946-5850.

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DG introduces industry-standard Dasher/386 Unix

Westboro—Data General Corporation has introduced an entry-level, multiuser Unix system based on its Dasher/386 personal computer.

The Dasher/386 Unix platform incorporates a 16-megahertz Intel 80386 microprocessor, is compatible with the IBM PC-AT, and uses the industry-standard 386/ix (Unix V/386 rev 3.0) product set developed by Interactive Systems.

"The 386/ix operating system is a flexible, multiuser, multitasking platform for the development of new applications, in addition to supporting a wide range of existing Unix applications," said Herb Osher, Data General's director of product marketing. The 386/ix also features portability for SVID-compliant applications to and from DG/UX 4.0.

The Dasher/386 Unix system supports up to 16 MB of system memory in 1 MB or 4 MB increments and up to 318 MB of internal disk storage. Also provided are intelligent eight-line serial controllers that allow up to 26 asynchronous serial connections for terminals, modems, or printers as well as an integrated parallel printer port. High-capacity peripherals offered in the Dasher/386 Unix system include a 150 MB SCSI tape drive with optional error checking and correction.

The 386/ix is complemented by a full range of optional support software. Available from Data General and third-party vendors are language compilers, text-processing software, system language compilers, text-processing tools, communications and networking products, and the Interactive VP/ix MS-DOS-under-Unix facility. Third-party vendors also have database/4GL system and graphics libraries available for use with the system.

In a related announcement, Data General said that it has signed an agreement with Language Processors, Inc. (LPI). The agreement states that DG will offer LPI's 32-bit controllers on the Dasher/386, including BASIC, Cobol, Fortran, Pascal, PL/I, and LPI-DEBUG (an interactive source-level debugger). Data General will also license language products and compiler technology from LPI to develop and market industry-standard compilers for fu-

ture Data General systems based on Motorola's 88000 RISC processor.

The foundation of the 386/ix product set is the 386/ix operating system, a flexible application runtime environment based on SVID-compliant, AT&T-certified Unix system V/386 rev 3.0. Two of the most popular Berkeley facilities are also featured: the C shell, a command language interpreter; and Sendmail, a general-purpose, inter-network mail routing facility. An MS-DOS file transfer facility enables users to transfer files between MS-DOS and Unix operating systems using fixed disks or diskettes.

Ward MacKenzie, vice president of corporate marketing for Data General, said the announcement "further demonstrates our commitment to an industry-based Unix product line and will complement future RISC-based processors."



The Dasher/386 Unix system with 40 MB of disk storage, 4 MB of memory, and a 386/ix runtime operating system is priced at \$7,320. The same system with 70 MB of disk storage is available for \$8,020.

The 386/ix product set is offered in seven separate modules. The 386/ix runtime operating system (with TEN/PLUS user interface) for one or more users is \$299; for three or more users, \$645; the 386/ix Software Development System is \$595; the 386/ix Text Processing Work-

bench, \$195; the network connection facility is \$299. The VP/ix environment (with MS-DOS) for one or two users is \$395; three or more users \$795; TEN/PLUS User's Toolkit and TEN/PLUS Programmer's Toolkit are \$199 each. △

Circle 76 on reader service card.

DG offers 727 MB Winchester subsystem

Westboro—Data General Corporation has released an eight-inch, 727 MB disk drive subsystem that offers high capacity, reliability, and performance at a low cost per MB of storage. The new disk drive—designed for medium and larger multi-user, interactive environments—is supported on ECLIPSE MV/family systems with burst multiplexor channel (BMC) support, including the ECLIPSE MV/40000 superminicomputer announced in October.

The disk drive (Model 6492) features 727 MB of formatted error checking and correcting data storage with 16 ms average seek time and 8.3 ms average rotational latency, complemented by a 43 KB data buffer. Subsystems of up to seven of these drives can be managed by a single BMC controller (Model 6434), resulting in more than 5 GB of storage per CPU slot in 727 MB increments. Packaging allows over 1.4 GB of storage in seven inches of vertical rack space, and over 5.8 GB in a meter-high cabinet.

"The performance of the 727 MB, eight-inch disk subsystem is similar to that of the Data General Combined Storage Subsystem (CSS) but at a lower cost per MB. It also offers incremental growth to higher storage capacity," said Joe Clayton, product manager for Mass Storage Peripherals.

The 727 MB, eight-inch Winchester disk drive (Model 6492-A) is priced at \$16,400. The BMC controller (Model 6434) is \$7,000. Immediate delivery is available. The disk drive subsystem includes a one-year, on-site warranty. △

Circle 77 on reader service card.

Western Automation buys Spectra Logic

Boulder, CO—Western Automation Laboratories, Inc., a manufacturer of

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 (1-800-USR-GRUP)

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memory products, controllers, and peripherals, purchased the assets and corporate name of Spectra Logic division from Cipher Data Products, Inc. of San Diego. Spectra Logic will maintain its headquarters in Sunnyvale, California, as a division of Western Automation, and will continue to manufacture its existing product lines.

Western Automation, a manufacturer

of computer peripherals for over eight years, provides products for numerous markets including spooling and network products for PC CAD systems, and memory expansion products for Unix-based systems. Spectra Logic is a manufacturer of disk and tape controllers for minicomputers, including Data General. The purchase will allow Western Automation to expand its offerings to the Data General

Market.

Western Automation, 1700 N. 55th St.,
Boulder, CO 80301; 800/227-4637; 303/449-
6400. Δ

Circle 78 on reader service card.

DG and TLD Systems offer Ada/1750A

Westboro—Data General Corporation has signed an Independent Software Vendor (ISV) agreement with TLD Systems Ltd under which TLD Systems will supply its Ada/1750A compiler systems for use with Data General ECLIPSE MV family computers. The compiler allows development and testing of Ada programs that are targeted for U.S. MIL-STD-1750A-based systems.

Ada is the computer programming language required by the U.S. Department of Defense and NATO for use on all computers integral to weapons systems.

Components of the Ada/1750A compiler system include a MIL-STD-1750A compiler, run time library, program library manager, macro assembler, extended memory linker, simulator, symbolic debugger, single program kernel, and multiple program kernel.

The software is licensed on a host CPU basis, on a company-wide basis, or on a company-plus-subcontractor basis. Pricing for the Ada/1750A compiler system ranges from \$5,000 to \$90,000.

Circle 79 on reader service card.

Patented screwdriver design won't slip

New York—Innovative Computer Tools, Inc., has announced the Compu=Driver, a tool specially designed to fit over male screw locks (standard "D" connectors). The patented design adapts to the screw slot to eliminate slippage during tightening and untightening.

The tool was designed by a data communications technician who got frustrated with lining up the slot of a screw only to have it slip after 1/8 of a turn. The Compu=Driver is available in two models: Model 4, a four-inch pocket size (\$11.95) and Model 10, a 10-inch size for hard-to-reach areas (\$14.95).

Innovative Computer Tools, Inc., 165 W. 18th St., New York, NY 10011; 212/675-8077. Δ

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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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Language Processors, Inc., 959 Concord St., Framingham, MA 01701
Federal Office (301) 595-2558, Telefax (508) 626-2221

The companies mentioned herein own various trademarks.

Circle 40 on reader service card.

Data General reported a loss of \$19.5 million in its first fiscal quarter ending December 24. Company officials said they still expect to make a profit for the year, following three years of losses.

The loss was blamed on slower sales due to anticipation of DG's announcement of the MV/40000 last October. Orders for the MV/40000 exceeded expectations, according to **Ed Russell**, a DG spokesman. However, since the machines didn't begin shipping until the end of the quarter, the company was not able to book the revenues, Russell said.

Russell added that the development of computers based on Motorola's industry standard 88000 microprocessors is on schedule. The first members of the new product line should be announced this quarter.



Data General launched its effort to capture the small- to medium-sized hospital market by announcing an independent software vendor (ISV) agreement with **Infostat, Inc.** of Dallas. Under the agreement, Infostat will supply its Hospital Information and Control System software, running on Data General ECLIPSE MV/family systems, to hospitals with 75 to 250 beds.

The Infostat Hospital and Information Control System is a Unix software package that features online, real-time processing, and a fully integrated patient data base. The software runs under the DG/UX operating system on MV/family computers, from the MV/7800 DCX through the MV/20000 Model 2.

Frank Keaney, DG's vice president, North American Sales Division, said the move will allow Data General to provide "turnkey solutions to hospitals who previously found our systems too large for their needs."

Founded in 1982, Infostat develops and markets turnkey computer information systems for hospitals. Infostat's products utilize a set of fourth-generation development tools, 4th Write, and run under the Unix operating system.



Among the recent internal organizational changes announced at Data General: **John Kavazanjian** is the vice president of a new Communications Systems Group reporting to Senior Vice President **Colin Crook**. **Lee Henning** is the vice president of International Manufacturing and Central Manufacturing Services. All

Far East Manufacturing operations (Thailand, the Phillipines, Singapore, and the European Distribution Center) now report to him.



Recruitment of value-added resellers (VARs) is a high priority at Data General, where VARs account for 50 percent of equipment revenues. The Solutions Recruitment Division of DG recently held a sales training session on ways to recruit more VARs. Targeted are those resellers who are now doing business with Wang Laboratories.

Along these lines was the recent announcement of DG/WCC, a tool to convert Cobol programs written for Wang systems into programs that will run on MV machines. The product is intended to give Wang VARs and end-users a low-cost migration path to the MV family line.

"Data General's Value-Added Reseller program has made strides that place it at the top of the industry. We believe that we provide a superior alternative to the Wang community, with higher discount margins, and systems with greater processing power," said **Rick Boyink**, director of the Solutions Recruitment and Development Division.



A DG VAR reports that he is pleased with DG's efforts to attract VARs. **Jim Whipple**, president of **Admark Service Inc.**, was quoted in *Computer Systems News* as saying that he has noticed an improvement in relations with DG in the past 12 to 18 months. DG has been implementing suggestions made by the VAR advisory council into its VAR program. Areas for improvement, Whipple said, would be advanced communication about upcoming products and technology (like the industry-standard Unix systems based on Motorola's 88000 RISC chip), and better deals on peripherals purchased from OEMs and resold under DG's label. Currently, DG won't service printers bearing the Toshiba label, even if the identical printers are sold with the DG label, he said.



But can it change a tire? A DG/One laptop computer was presented to the **Los Angeles Philharmonic** by DG Southern California Regional Sales Director **Bruce Wiens**. The laptop will be used to handle administrative chores while the philhar-

monic is on tours. Data General sponsored the Los Angeles Philharmonic's 1988 Summer Season at the Hollywood Bowl.

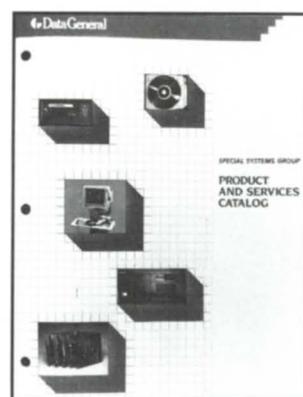


Wordperfect rev 5 will soon be ready for DG systems. Users who have been impressed with the PC versions' desktop publishing features will soon get a chance to try them out on DG systems, according to several sources. A demo version is now being shown to certain influential parties, and an announcement was imminent at press time. Beta test copies of Wordperfect Office rev 2 are also making the rounds.

Data General salespeople are apparently paying more attention to Wordperfect, as well. **Guy Pribyl**, Wordperfect's manager for the DG market, reported that sales through DG had increased considerably in recent months. VARs still account for 80 percent of Wordperfect's sales to DG customers, however.



All NADGUG members should receive a free copy of the Product and Services Catalog of Data General's **Special Systems Group**. The full-color, 34-page catalog lists 57 special-purpose hardware products and a wide range of solutions to special applications.



First-time entries in the catalog include the rack-mounted ECLIPSE MV/2500, a bar code scanning terminal with laser gun or wand, a point-of-sale terminal, and a series of general purpose interfaces for the ECLIPSE MV/1400, MV/2000, and MV/2500 processor family. If you have not received a catalog, call any Data General sales office, or Data General in Westboro at 508/480-7150.

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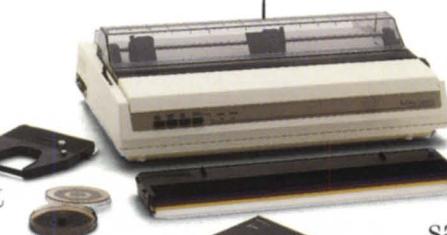


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