FOCUS

The Magazine of the **North American Data General Users Group**

April 1986

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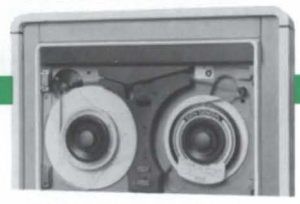

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FOCUS

The Magazine of the North American Data General Users Group

Woodcut illustration by Jost Amman in Standebuch ("Book of Trades"), 1568. This book presented over 100 occupations, from the Pope to scissors sharpener. The occupation of graphic arts is shown here—one printer is removing a newly printed sheet from the press while another one inks the type. In the background, compositors are setting type at typecases.

As part of our special on computers and the mass media, the Focus staff researched in-house publishing (see page 10) and Penta Systems International, recognized as a leader in computer software for the publishing/printing world (see page 12).

SOCIETY OF NATIONAL ASSOCIATION PUBLICATIONS

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It's working

People don't get involved with a user group just to get a magazine. Although we like to think that *Focus* is a nice bonus for NADGUG membership, we know it's not the only reason for joining. For most users, the top-of-the-list reason is to make contact with people who will be able to help when questions or problems arise. The next priority for many is having a voice in Data General's decisions about new and ongoing products, services, and policies.

Our mailbox brought ample evidence this month that users are indeed influencing DG through their membership in NADGUG. Take, for example, Vice President William N. Bentley's letter: it affirms that recent enhancements in support for SNA products resulted directly from requests by users. Or consider CEO Software Development Manager Skip Richards' thank-you to members of the Office Automation Special Interest Subcommittee: their help in setting priorities for enhancements to CEO will make a difference in future revs of the product.

We also heard, but haven't been able to confirm, that AOS/VS rev 7 will fix a problem that has filled our mailbox and many of *Focus'* pages. Ever since Jim Siegman said in the October issue that the !READ command in CLI macros could create security breaches, we've been getting letters with suggestions for fixing the problem. If what we hear is correct, DG has added a /S switch to !READ; it causes the system to ignore any input following a semicolon, thereby denying malevolent users a chance to break out of the macro.

These may seem like small things, but they show a lot of people inside DG are not only listening to what users have to say, but are also taking steps to give users what they need. NADGUG is working.

Δ

I just returned from the spring planning meeting of NADGUG's Executive Board, held February 27-28 in Orlando. Everything I saw there—from the hotel facility and preliminary agenda, to plans for the spouse program—points toward an excellent Conference 86 next August 11-14. Complete coverage of the 2-day board meeting will have to wait until next month, but it's not too soon to begin work on one of the charges the board gave *Focus*.

NADGUG's leadership wants to see more in the way of reader surveys and straw polls; they want members to have a more systematic way of voicing their opinions and concerns, and they want to be able to report the results to DG's management. If recent history means anything, this approach will yield results for users.

In coming months, watch for surveys on the reader reply cards that are bound into *Focus*. They will ask questions—as yet undetermined—about subjects like spare parts availability, software licensing policies, service escalation procedures, pricing policies, quality assurance, documentation, and shipping procedures. Please take the time to fill out the cards and return them. They *will* make a difference.

In the meantime, call or write us (or drop us a note on the NADGUG bulletin board system, phone 415/924-3652). Tell us which topics are especially interesting to you. Even better, help us devise questions for the surveys that will yield the most informative responses possible.

This is a new step for *Focus,* and for me it's an exciting step. I've watched with pleasure as the magazine has grown and improved, and I've enjoyed the compliments it has received. But the magazine is essentially a tool for the group. It's a channel for communication, and it's a channel that is about to go full duplex. We know people at DG are listening. It's up to us as users to take advantage of our opportunities to tell them something meaningful.

To borrow a line from the United Way, "Thanks to you, it's working." Δ

—G.F.

FOCUS

The Magazine of the
North American
Data General Users Group

This is no way to run swift word processing.

Though CEO software for Data General systems includes word processing among its many capabilities, the clumsy structure and huge memory requirements make its use a burden on your entire system. It will slow you down in the word processing race.

It would be one thing if there were no alternative. But WordPerfect's fleet-footed 4.05 version is reason enough to give CEO the boot.

WordPerfect takes an early lead in performance.

Commands in WordPerfect are executed in record time. And WordPerfect is written so efficiently, it can actually handle more word processing users on your Data General system, using less memory. So more of your system's power can be used for purposes other than word processing.

WordPerfect sets the pace in features.

CEO was written to handle a myriad of tasks around the office. WordPerfect was written to do word processing better than any program anywhere. So WordPerfect's specialized word processing capabilities are miles ahead of CEO's. WordPerfect has a split screen function for dual document editing, a facility for writing outlines automatically and a table of contents generator, to name a few. But WordPerfect's greatest feature is the swiftness with which all features are performed.

WordPerfect adds a dash of simplicity.

WordPerfect's function-key orientation makes it easy to learn in the short run. Because of its super keystroke efficiency and hard-copy printout that matches on-screen display, WordPerfect is also easier to use in the long run. That means winning results with less training time.

WordPerfect sprints to the finish.

If the switch from CEO gives you cold feet, keep in mind that it is actually less expensive to purchase WordPerfect for your Data General system than to upgrade your hardware for more memory, which is what you'll eventually need with CEO. And through CEO Connection, your current CEO files can be changed over to WordPerfect files.

In other words, you have nothing to lose. Except a lot of heavy baggage that'll slow you down in the word processing race. For more information see your dealer. Or call or write:

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WordPerfect is also available in RDOS and MS/DOS versions.

Circle 37 on reader service card

Services for SNA products

I am writing to personally inform you of an announcement I believe is of general interest to the Data General user community. On November 18, 1985, Data General announced the availability of structured software installation services and SPSA services for Data General's IBM-compatible SNA software products (see announcement in *Focus*' Product Spotlight, March 1986, pages 46-48).

Questions regarding the availability of this type of support for DG/SNA products have come up in past NADGUG meetings, and I am pleased to inform NADGUG that they are now available.

In developing the DG/SNA offering, we interviewed users running a variety of SNA applications to understand the various types of user support requirements. The resulting service offering directly reflects the needs and requests of our current DG/SNA users.

To support the new service offerings, we have developed an implementation guide for customers, which addresses issues in planning and implementing communications networks. The guide will be available as a standard DG document and also included as part of the DG/SNA manual set.

During installation, Data General systems

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FOR THE MIS DIRECTOR
We give you the ability to reduce the applications backlog while improving the overall design and efficiency of your system.

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- Up to a 99-line report format.
- Information gathered from 99 records.
- Sorting.
- Break level handling with subtotaling.
- Conditional printing of fields, lines, or records based on programmer-defined criteria, using break levels, literals, constants, or field-to-field comparisons.
- User-selectable output destination, selected at runtime, including primary or secondary printers, spool files, and screen display.

FOR THOSE WHO DO

We are pleased to announce that in response to user demand, we are releasing Revision 1.4 with these exciting enhancements:

- 99 files are allowed for both File Maintenance and Print programs.
- For each record, you may READ, CREATE, UPDATE, or DELETE in any combination.
- For any of the above four functions, you may specify conditions under which they would occur.
- For any record being created or updated, to include the primary record, you specify how it will determine the value for each field in the record, i.e., input, equal to another field in another record, or the same record; define a complex calculation or specify user code.
- 99 print lines per print program.
- Display Only fields for File Maintenance fields.

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engineers will collect specific information on the customer's system and configuration. For SPSA customers, that information will be forwarded to the Customer Support Center in Atlanta. Should problems arise after installation, the software support representative will have ready access to installation-specific information needed to troubleshoot problems as quickly as possible. In addition, Data General has established a relationship with an independent IBM host facility to serve as a "Known Good Host" if installation or operational verification is required.

Our goal in field engineering is to provide the highest level of service to our user community. Thanks to input from our users and dedicated effort within Data General to bring this offering into being, we believe we will achieve our goal for DG/SNA service.

William N. Bentley, Vice President
North American Field Engineering
Data General Service, Inc.
Milford, MA

CEO priorities

Editor's Note: The following letter was addressed to Charlene Kirian, author of our OA Today column.

I received from Chris Stone the list of CEO enhancement requests submitted by the OASIS members. Some of these items are already high on our priority list for implementation in upcoming revisions of CEO and CEO Decision Base. Each item will receive our careful consideration.

Chris and I receive dozens of requests for enhancements. We typically must prioritize these, based on the number of times each item has been requested and on our estimation of their relative importance. Your prioritized list, representing 20 or more organizations, provides us with a much clearer understanding of which additional facilities are most in demand.

I want to express my appreciation for your effort in providing us with this input. Speaking as a developer, it is most rewarding to know that we are building those products that will be of the most value to users.

Howell (Skip) Richards, Manager
CEO Software Development
Data General
Westboro, MA

Simple patch to CLI.PR

Editor's Note: The following letter was addressed to Jim Siegman, the person who receives the most mail around Focus' editorial department.

In February's *Focus* (page 10) you stated agreement with Tom Gutnick that he could break into CLI via console interrupt during CLI initialization. This can occur when the ^C^A is generated after the console interrupt task is fired off, but before the first instruction of the macro is executed. This problem can be fixed by simply preventing CLI from ever accepting command input from the prompt.

Attached is a simple one-line patch to CLI.PR. This patch will prevent anyone from breaking into CLI from an initial IPC macro. The patch should be applied to a copy of CLI.PR, not the original.

```
; THIS PATCH IS TO SECURE AOS/VS
; CLI.PR FROM CONSOLE INTERRUPT
; THIS VERSION IS TESTED FOR REV
; 6.XX AOS/VS
%PROGRAM
;
; ON ENTERING THE COMMAND-LINE
; LOOP, FLUSH BUFFERS AND ?RETURN
; LOCATION    OLDVALUE    NEWVALUE
LOOP+2        [407]       [401]
;
; END OF PATCH.
```

Robert Kras
Worchester, MA

Thanks!

Editor's Note: This letter was sent to Charlene Kirian, author of our OA Today column.

Your article in the December issue of *Focus* (page 16) was absolutely great! It has so many of the ideas I've been working on implementing here in my company.

As office automation specialist for our company, I run into many of the problems you mention in your article. One of them concerns users who don't seem to (or don't want to) grasp any of the CEO concepts. Your suggestions will certainly be kept in mind next time I come across a "problem" student.

I'm particularly interested in knowing a little bit more about how you schedule your classes (e.g., a monthly training schedule, etc.). I have started putting together our in-house training material, but haven't as yet implemented an official training program.

Any information you could pass along to me on this topic will be greatly appreciated. I look forward to joining NADGUG and to reading your next article in *Focus*.

Enid Nolasks
Office Automation Specialist
Tetra Pak, Inc.
Shelton, CT

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Security: the human side

The real threat to security comes from within

by David Bellin
Special to Focus

Recent *Focus* articles and letters have discussed important aspects of computer security, including password and access list controls, and restrictions on use of the AOS CLI facilities by casual users.

In my years as a consultant to Data General users, I have seen security considerations, once a taboo topic, become a frequently raised concern. Media attention has made many clients wary of damage to their systems by outside hackers, and I am called upon to develop mechanisms that guard against such events. While such considerations are important, we shouldn't ignore the human side of computer security.

Too often it is people, not technology, who are the cause of security breaches. In fact, some security analysts argue that a majority of breaches are caused by insiders—employees—rather than outside hackers. Transaction logging and password protection are only partial answers to the problem.

No security technique will be effective without security consciousness among the computer system users. Passwords, modem phone numbers, etc., must be protected from prying eyes. A security measure often overlooked is the careful tracking of diskettes, tapes, and disk packs. This means disks shouldn't be left scattered around workstations

OPERATIONS LOG

Date 2/14/86

Time On	Time Done	Initials	Application Processed
9:10 am	9:45 am	JV	Order summary report
10:00 AM	11:30 AM	FG	Entered TODAY'S ORDERS
11:30 am	3:05 pm	SL	Programming: new payables program
3:30 pm	4:45 pm	JV	Printed today's invoices, did backup, and turned off computer.

Figure 1

Portions excerpted from The Complete Computer Maintenance Handbook, by David Bellin, published by Harper & Row, Publishers, Inc. © 1986. Reprinted by permission.

Figure 2

Code of Conduct for Computer Users

All employees who use the computer should abide by this code of conduct. If you have any questions or suggestions, please contact the director of data processing.

(1) Confidentiality: The confidentiality of the information contained in the computer should be respected. Users should not distribute or make known information in the computer's files except as necessary in the normal course of their job functions.

(2) Privacy: (a) Certain data in the computer are considered private. No attempts should be made to access files in the computer for which you are not authorized. Such attempts may be grounds for dismissal. (b) No information in our computer, either about our customers or about our company, may be given out in response to any inquiries (by phone or in person) without the permission of the company's president.

(3) Integrity: The computer is vital for the company to function. Therefore, all users should strive to make sure all data entered into the computer are correct. No information should be erased, except as part of regular standard procedures, without authorization.

(4) Security: Each user has been assigned a unique identifier and password. These passwords should be kept private and should *never* be shared with another employee. The computer should never be left unattended, nor should disks or tapes be left unattended without being locked securely. Employees who have not been assigned a password are not authorized to use the computer and should not be permitted to do so.

(5) Copies: It is each user's responsibility to ensure that there are adequate backup copies of current work. The director of data processing has responsibility for maintaining current copies of production programs and data files at the end of each month's cycle.

(6) Fun: All users are free to use the games disk during lunchtime or after hours. There is a BASIC disk that may be used if you are writing your own programs.

and computers. As many computer stores have discovered, disks are vulnerable to any person who walks by them. Don't attempt to guess why people might want to take a disk—for some, it's enough that the disk is available. Why give them the opportunity? All magnetic media that's not mounted in a drive should generally be under lock and key.

Another security measure that's simple but seldom used is the operations log book. Every person who uses the computer should be required to sign a sheet that is kept beside the machine, noting the date, time, name, and reason for using the machine. This should be done even if a transaction logging system is in use, to deter those who are "borrowing" passwords from others. It will also discourage people who like to sign on just to "look around" to see what they can find. Because they have to sign their name, it will give them pause if they are ever asked for an explanation. A simple form like the one in Figure 1 is sufficient.

Perhaps most importantly, every company should develop a code of conduct, such as the one in Figure 2. It should be printed and distributed to all computer users. New users shouldn't simply get a copy via interoffice or electronic mail; review the code with each person as part of their training, and make sure they understand the reasons for the guidelines. If you desire, it's possible to have employees sign a document acknowledging they have read the code and agree to abide by it, although for many firms this is more alienating than helpful.

Your policies on the use of company computers for personal projects should be spelled out clearly. This doesn't have to be a complete prohibition—after-hours use may be fine, but state this exactly. Privacy of word processing files is also worth your consideration.

One caveat: a printed code of conduct shouldn't be confused with confidentiality or nondisclosure agreements. The code doesn't replace or conflict with such arrangements at all.

One important item in the conduct code bears directly on security and is often overlooked. This is the question of privacy and individual rights. What information in your company's computer files can be disclosed to others, and under what conditions? For example, what should an operator in the A/R department do when a phone call comes in requesting information on a client? Should they perform a computer inquiry and give the information out? Would you have them do anything differently if the call were from another department instead of an outside caller? Realize that federal and/or state law may enter into this area, especially regarding information on individuals rather than companies. These laws include the Federal Privacy Act of 1974, the Fair Credit Reporting Act of 1970, and the EFT Act of 1978.

I suggest a strict practice concerning the need to know versus the right to know. Don't give users access to anything they have no need to know. Even if users have the right to see the data, they don't necessarily *need* to see it all the time. This principle has long been recognized in government agencies.

In summary, while many technical fixes (call-back modems, transaction logs, passwords, etc.) are important ways to improve computer security, you shouldn't ignore the people side of security. Giving advance thought to your legal and moral obligations, and writing them down in a code of conduct, may help you avoid many problems. Don't forget the old-but-true management axiom—"People are our most important asset." Δ

David Bellin is a veteran consultant for DG users. He specializes in Business BASIC systems and security audits. His Complete Computer Maintenance Handbook was recently published by Harper & Row. His coursebook titled Managing Your DG RDOS System was published in 1981. He is an assistant professor of computer science at William Paterson College in Wayne, New Jersey. He can be reached at 44-65 Kissena Blvd., Flushing, NY 11355-3069; 718/539-6500.

Almost, but not quite

DG's laser printers bring near-typeset quality to in-house publishing

by Greg Farman
Focus Staff

The cost of looking good in print isn't nearly what it used to be. When hot type was the state of the printer's art, jobs had to be set letter by leaden letter, and fine printing remained the realm of specialists. Only experts had the equipment and skills to do the job. Now, anyone with a DG computer and a few thousand dollars can do it for themselves almost—but not quite—as well.

Hot type has long since been replaced for most purposes by phototypesetting (also called "cold type" to contrast it with the molten lead from which traditional type was made). The new technology brought the cost of fine printing down, and small typesetting shops sprang up. As typeset quality grew less expensive, the public developed a taste for printing that looked good on the page. Old-line printers may have lost business to their new competitors, but the market for good-looking pages expanded.

Computers soon proved they were apt allies of cold type for the elaborate counting required to hyphenate and justify columns of text. The more exacting the job, the bigger the computer and the more complex the software. Although typesetting was less costly than before, especially fine or large printing jobs still looked best when done on very expensive equipment.

So, while the industry was making typeset quality more available and less expensive, the public was becoming much more aware of quality issues. How fine is the resolution of individual characters? How consistent is the line and letter spacing? How sophisticated are editorial amenities like hyphenation, sub- and superscripts, special characters, and pagination? What about artistic elements like kerning (the special rules for spacing pairs of letters, such as W and A, that look odd if spaced by the usual rules)?

Apple's Macintosh and Laserwriter took these trends to their current extreme. With the graphics capabilities of the Macintosh, it's not unusual to hear lawyers or teachers using typographic terms like font, point size, and justification. With the 300 dot-per-inch resolution of the Laserwriter, it's possible for unsophisticated users to print their documents in nearly typeset quality. The price of the Macintosh and Laserwriter also makes it possible for almost any small business to bring near-typeset quality in house.

However, Mac-publishing is not likely to put high-quality typesetting shops out of business. While the demand for better-looking output is making Mac-printed documents a familiar fixture in business today, the same demand is making users and businesses acutely aware of the shortcomings of the low-end technology. "Near-typeset" is simply not good enough for high-quality printing. Its resolution is not good enough, and the software that drives it lacks the sophistication of the real thing.

So who cares? Obviously ad agencies, book and magazine publishers, and other businesses that strive to present a polished image care a lot. But for many applications, the in-house publishing approach is good enough—and much cheaper than sending the work out to a specialist.

Data General recognizes the growing market for in-house publishing, and is taking steps to provide products to serve the needs of the market. According to one product manager at DG, the company is "looking heavily" into the area of office publishing and technical documentation. While the laser printers DG announced last fall provide a low-end solution—they can handle text and graphics produced by CEO word processing, Wordview, Trendview, and CEO Drawing Board—they don't yet offer a comprehensive answer to the Macintosh. The company is exploring arrangements with various third parties to provide the rest of the solution.

The DG laser printers themselves are based on print engines supplied by Canon. According to another DG product manager, Canon was the only supplier that could provide 300 dot-per-inch resolution and an integrated controller. Other criteria on DG's shopping list were good throughput (eight pages per minute), reliability, quiet, text and graphics capabilities (eventually to be combined on the same page), and flexibility for fonts, paper handling, and applications.

DG offers its laser printers in two versions. At the low end (priced at $3,500) is the Model 4557, which is essentially a high-speed letter-quality printer capable of text and line drawings. The Model 4558 ($5,995) was developed more for the in-house publishing market. With 1.25 MB of memory, it is described as a vector-driven raster engine with support for GKS-based graphics. Since it takes about 1 MB of data to describe a one-page document in raster format, the 4558's ability to receive and process graphics commands in vector format saves substantial CPU resources.

For both of DG's laser printers, the standard fonts (courier 10-pitch in standard, italic, and boldface; courier 15-pitch; and portrait or landscape orientation options) can be supplemented with other font cartridges. Downloadable character sets will eventually give users virtually any font they could want.

New features will be coming within a year, and price adjustments can be expected over the life of the product. For some users, practical in-house publishing with DG equipment is already here. Others will want to wait for better quality and lower prices. Δ

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But as good as Data General products are, there are better. So to give your DG computers the benefit of super performance at sub-par prices, we've become authorized distributors for selected equipment like controllers from Spectralogic and Zetaco, printers from NEC and C. Itoh and disks from Control Data.

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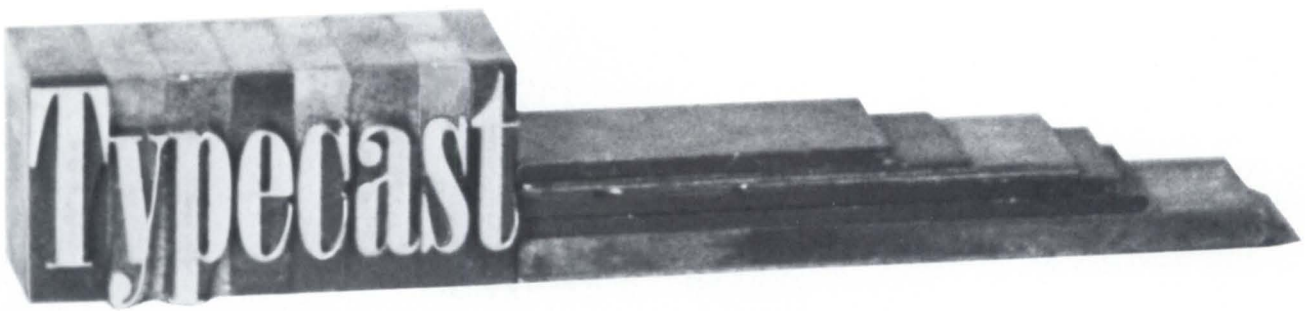


It's time to reprint the history books and make Johann Gutenberg move over. His well-known invention of movable type in the West came *500* years after its actual invention in China. Pi Sheng (1023-1063 A.D.) developed printing from movable and reusable type by cutting independent calligraphic characters from thin clay and heating them over a fire to produce hard earthenware type. Printing, often called the second most important invention in human history (writing gets top billing), actually existed since the eighth century. It originated when Chinese culture and the Buddhist religion were exported to Japan, where the earliest surviving datable printing was produced. (*A History of Graphic Design* by Philip Meggs, Van Nostrand Reinhold, 1983).

The history of the typesetter's art is beguiling, but I need to skip a few centuries to another pioneer—Penta Systems International, Inc., of Baltimore. Maryland may be a long way from China, but Penta is a company with original ideas, looking to the future, worth looking at. It's been around since 1966, has more than 450 systems installed worldwide, and is an authorized DG system distributor.

The staff at *Focus* talked to Penta's staff to learn directly about Penta and its future, especially in relation to DG. Jo Bruen, coordinator of marketing services, summarizes it well: "Our future is continuing to serve basically the needs of anyone who needs to put type on a page."

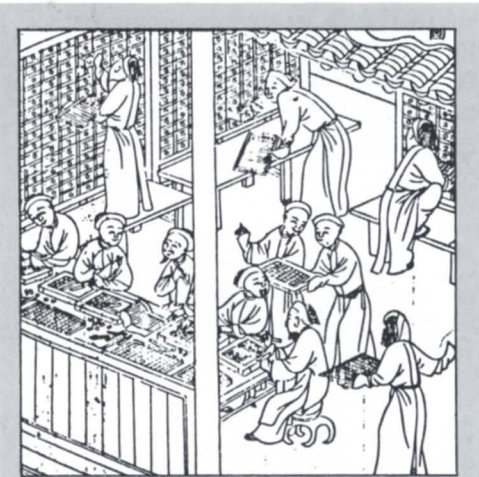
Penta currently focuses on three market arenas: (1) The composition world—trade shops, ad shops—was the company's first target area. Penta will continue to provide it with composition and pagination systems, and enhancemants to these products. Their personal computer-based Desktop Composition System processes and paginates text and math, and the 16- and 32-bit composition systems can handle batch and WYSIWYG (literally, What You See Is What You Get) interactive page make-up.

(2) Penta entered a major new market in 1983 by producing a comprehensive system for writers and editors. That market is being pursued with enthusiasm equal to that given the composition market. The Editorial System automates editing for book, technical documentation, and corporate publishing. "You put the two together and see that we are addressing many of the needs of corporate publishing, electronic publishing, and office publishing," Bruen said. MV/ users may add Composition or Editorial Systems to their MV/ systems.

(3) In-plant users are the third market Penta is actively pursuing. The company currently supports more than 120 clients in this area. People who produce technical documentation within a plant are one example, and their needs include extended graphics capabilities.

Recognizing the increasing need for integrating text and graphics, Penta recently expanded its graphics capabilities. The new comprehensive system is called Penta-GRIPS—GRaphic Image Pagination System. It allows line art, CAD/CAM drawings, and photographs to be captured or created, edited, and merged with text. Graphics and text are placed on a page in two ways—interactively at Penta's graphics workstation, or automatically by Penta's pagination software. A pho-

Compositors setting a book in wooden movable type, an illustration from 'Wu-ying-tien chu-chen pan ch'eng shih,' a manual on movable-type printing written in 1777 by Chin Chien, the superintendent of the Imperial Printing Office.



Penta, a DG OEM, predicts further changes in the publishing world

by Jeanne Sangster
Focus Staff

totypesetter, laser printer, or laser typesetter outputs the fully composed page. Penta drives more than 25 different output devices, including the Mergenthaler 202 and 101, Compugraphics 8600, Alphatype CRS, AM 6400, and the QMS Laser Printer.

According to Hank Firey, senior vice president of sales, the graphics solution is the result of research based on users' needs, including in-plant and corporate customers in industries such as aerospace, automotive, computer, insurance, and banking, as well as commercial users serving these industries.

"We moved slowly on the graphics, because it requires large amounts of storage," Bruen explained. The company waited until 354s and 528s were available to handle these storage requirements; PentaGRIPS offers up to 45 gigabyes of disk capacity. According to Bruen, "We embrace new technology as quickly as we're convinced it is feasible."

The future? "We'll be looking for new technology as it comes along. . . . Everybody's watching optical disks, for example," Bruen hinted. "I'm sure at some point we'll get into color, but not today—we're talking about future future."

Penta approaches new technology with caution, for an important reason—their customers are concerned with meeting deadlines, and the company doesn't want innovations interfering with production schedules—"Traditionally we may wait a few months for technology to crystallize and become stable before we'll integrate it into our products. The idea is that it doesn't do any good to have a lot of 'Gee, whiz' if your magazine doesn't get out on time. We don't release our products until we know they're not going to throw off production schedules. It's important for everyone to meet deadlines. . . . We'll take advantage of and move in new directions, but we're not really going to be the developers of new technology outside of our traditional marketplaces."

Penta's future is in many ways tied to DG's ventures, Bruen said—"Since we are a DG OEM, we are very interested in taking advantage of DG's new developments. With the MV/2000 and the MV/20000, especially the 2000, I think we see new opportunities in terms of networking."

Ethernet will also play a part in Penta's future, according to Bruen—"A lot of people want Ethernet to do distributed processing. DG has some products that address the needs and the requests for distributed processing."

Laser printers are already causing dramatic changes in the publishing world (see this month's related article on in-house publishing). An obvious advantage of lasers over typesetters is their ability to draw much more cleanly. One cost-efficient feature of lasers is that they provide plain paper proofs of composed pages without the expense of typesetting. "We have people presently using laser printers as proofing devices, and the only complaint we have from them concerns lack of fonts," Bruen said. That lack has already been addressed by designers of higher-priced laser printers—while the Apple Laser Writer offers only a handful of fonts, the Tegra Genesis has many more, and the Mergenthaler Linotronic 300 has "lots and lots," Bruen said.

I'd like to watch Pi Sheng's face as we elaborated on the distinctions between laser printers, phototypesetters, and laser typesetters. He'd definitely be concerned about ways to handle his storage requirements, which make ours look insignificant—one Confucian work from the second century was a collection of stone books that took up thirteen acres.Δ

Penta-Tonic

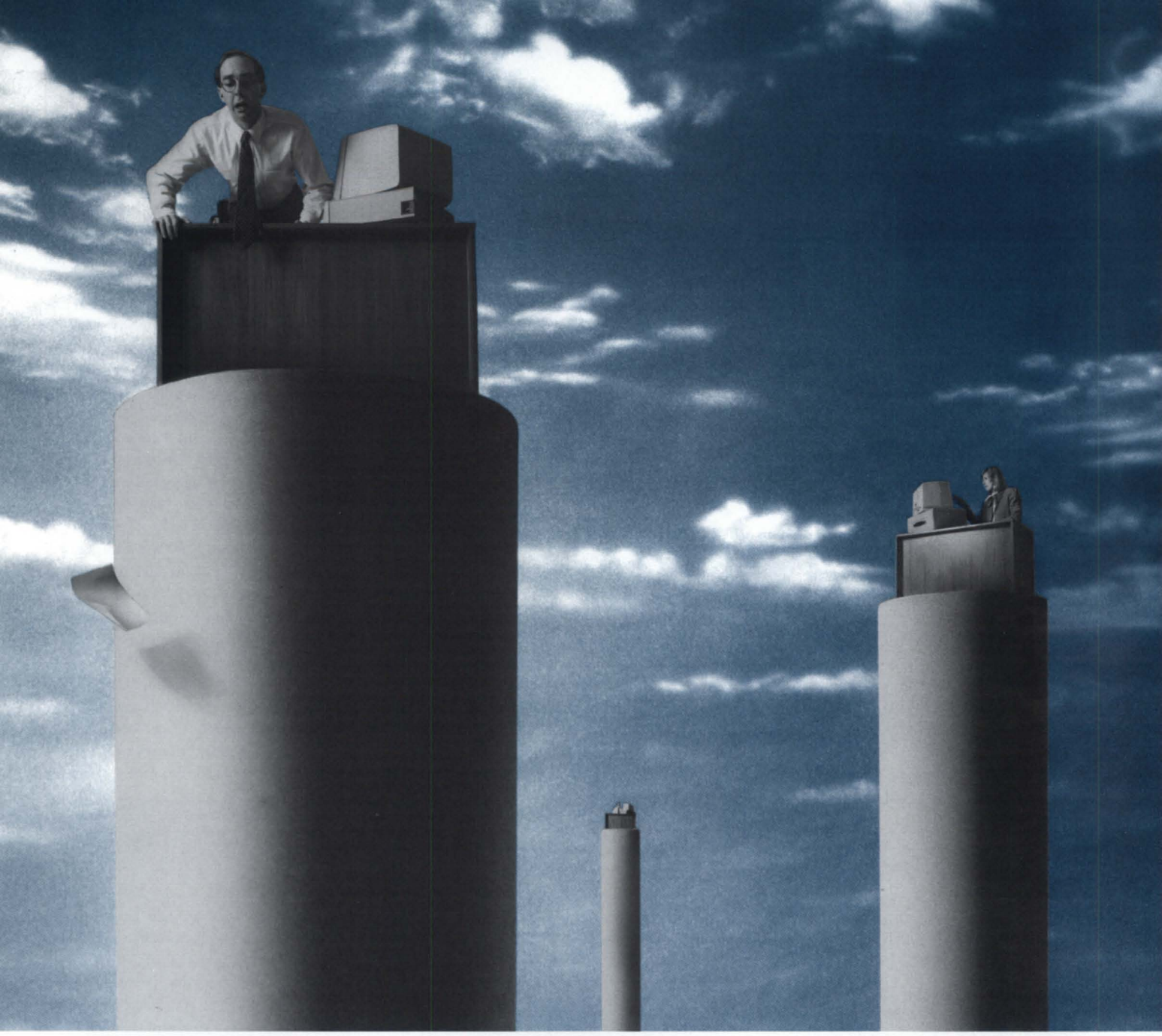
There are more than 450 Penta systems installed around the world, in settings that include small "Mom and Pop" typeshops, book publishers, ad agencies, insurance companies, university presses, and scientific research organizations. The Penta Users Group is open to all users of Penta Systems International equipment. It has held annual meetings since 1979 as a forum to exchange information and ideas.

Over 267 members attended last June's annual meeting, and more are anticipated at this year's—June 6-8, in Baltimore. The annual meetings offer a variety of technical and management sessions that address such applications as advertising work, book work, and in-plant operations, according to Calvin Cox, secretary of the group.

The group recently expanded its focus with annual Top Management Conferences. Stephanie Bludau, the group's president, initiated the expansion in 1985 because she noticed the typesetting industry "doesn't give itself much attention from a management standpoint. . . . Little in life as we know it is *not* accompanied by the printed word. Yet as state-of-the-art as we are forced to be in our industry, our management needs are often neglected as an industry, as Penta users." The conference, held last January in Florida in conjunction with the American Management Institute for Management Competency, was a practical approach seminar, and "one of the best meetings we've had," according to Bludau. Next year's Top Management Conference will be in San Diego.

The group's board consists of 12 people who represent a variety of the field's aspects, including in-house publishing and commercial typesetting.

According to assistant director Debbie Summers, local users groups hold meetings in their own areas and handle their meetings individually. The national group sends out about five newsletters per year. The group is separate from Penta International, although they work together to plan meetings. Annual membership fees are $150 per company, and there's no limit to the number of employees a company is allowed to send to meetings.Δ



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See you there.

Conference 86

Media sampler

Who's doing what with DG equipment

by Greg Farman and
Jeanne Sangster
Focus Staff

Video Production

Name: Michael J. Werner, president
Organization: Werner Associates, Wyckott, NJ
Application: Video postproduction work, including animation and simulation
System: various—includes S/230 under RDOS and MV/4000 under AOS/VS

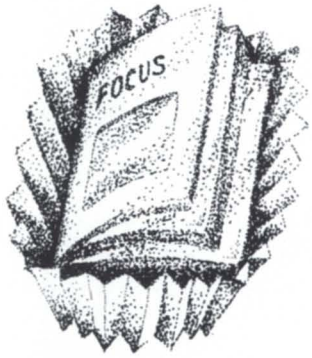
"It's too bad you're not the DEC magazine," said Michael Werner. A dispute with DG over support for RDOS on 32-bit machines has pushed Werner's company toward more intensive use of its two VAX 11/780s, but he still speaks fondly of the S/230. "I believe that old Eclipse had 64 users on it at one time, running multiuser BASIC programs. It's an absolute warhorse."

Werner Associates specializes in computer graphics, especially in the area of animation and postproduction work for video broadcasts. Recent credits include animation for the version of the the "Live Aid" concert that was broadcast to Japan. Werner, the veteran of 15 years of postproduction work, is a former partner of Lorne Michaels, producer of "Saturday Night Live."

Rendering three-dimensional color graphics requires huge amounts of memory and CPU cycles: the system processes arrays that are usually 2000 by 2000 by 24 to display colors for each pixel in a high-resolution screen. Animation is done by rendering individual screens, then outputting them by direct memory access to a frame buffer, and from there, usually, to a 35 mm frame-by-frame camera. Werner adds that it's also smart to capture the frames on magnetic tape.

The company's S/230 is still used for motion tests and wire framing, but it doesn't provide shading or rendering. However, prototype files from the S/230 can be transferred directly to the VAXes or MV/4000 for further processing. Terry Kennedy, the company's principal programmer, figured out the file transfers.

At this point, Werner is still angry that DG didn't support RDOS on 32-bit machines. However, he says the MV/20000 might change his mind. He is in the process of rewriting his software to sell it as a turnkey system.



Periodicals

Name: Richard H. Lineback, Ph.D., director
Organization: Philosophy Documentation Center, Bowling Green University, Bowling Green, OH
Application: Bibliographic data base, manuscript preparation, subscriptions, business management
System: Nova 4X with 256 KB memory, disk, tape, 6 terminals, running BASICX applications under RDOS

The Philosophy Documentation Center got its start when Bowling Green University gave Richard Lineback the summer off to study how computers could be used in the field of philosophy. Lineback, who combines a background in electrical engineering with a doctorate in philosophy, found that philosophers lacked a central compendium of abstracts for the scholarly articles and books they write. He knew there was a need for the service, and he believed it could pay for itself if it were done intelligently.

Now celebrating its twentieth anniversary, the Philosophy Documentation Center produces the quarterly *Philosophers' Index*, which abstracts more than 300 journals and about 1,000 new books each year. Other publications include *The Directory of American Philosophers* and *The International Directory of Philosophy and Philosophers*.

The Center's work is done with a 6-year-old Nova and a collection of homegrown programs. Bibliographic data on authors is entered, the authors are invited to submit abstracts, and finally the abstracts are indexed by professional philosophers. As each entry is made, it gets about 600 built-in edit checks that look for common mistakes such as misplaced umlauts in foreign language abstracts. Presently, the information is kept in separate sequential files; the bibliography, abstract, and index entries are matched up later by sort-merge. When the final version is ready, it is dumped to tape and sent to a typesetting company in Cleveland to be turned into camera-ready pages for the printer.

In addition to its editorial chores, the Nova also handles mail list and accounting duties. Lineback does not market the system, but it has been adopted by organizations including the *Religion Index*, the Criminal Justice Institute, and Georgetown University's Kennedy Institute.

Lineback says of the Nova and his DG service, "No problems." He has begun considering an upgrade to an MV/4000, and is quite sanguine about the conversion to AOS/VS. His applications are written with straightforward techniques in BASICX, an interpreted business BASIC marketed by Dacor, Inc., also of Bowling Green. After running a test of Dacor's conversion utilities, he says, "With any luck we could be up and running in a week."

Name: Brett Kaufman, president
Organization: Epsilon Management Systems Inc., Mineola, NY
Application: Magazine circulation/fulfillment, reader service, billing
System: CS/40, CS/60, CS/350 (upgrade planned to an MV/4000)

As a magazine service bureau, Epsilon addresses the subscription fulfillment and cir-

Waldman Graphics goes through 10 or more 150-foot rolls of photographic paper per shift

culation needs of magazine publishers. The company's systems maintain lists of readers, and provide expiration analyses, renewal notices, invoices, billing, demographic analyses, circulation auditing, and selective analyses such as merge/purge. An additional system processes reader service cards, including summary statistics by individual advertisers or ads. Epsilon sends reader service labels to each advertiser. All data is kept on-line for immediate access and problem-solving.

Epsilon also handles customer billing and accounts receivable—the publishers send invoices (which are keyed in to produce statements and sales analyses) or they send the ad charges and have Epsilon produce the invoices. The company's interactive software is sold as a turnkey system to publishers.

After 9 years of working with DG, Kaufman finds the system "quite a good machine—no complaints." He doesn't use DG's software engineering—Epsilon is an OEM and takes care of these needs in house. He has gone to third-party maintenance for his company's hardware needs—finding it generally cheaper, and the level of knowledge comparable to DG.

Name: Jordan Backler, director of editorial and text word processing
Organization: Cahners Publishing, Newton, MA
Application: Magazine publishing
System: MV/10000, MV/6000s, M/600, and C/150

Cahners publishing group produces 34 titles from three locations (Boston, New York, and Chicago). 325 editors and writers operate in standalone mode (using Televideo computers and PerfectWriter word processing software) to enter text and mnemonic codes for typesetting. The last person in the editing chain for each magazine, as well as operating in standalone mode, is connected through an Avatar CP/M converter to the DG host. This person gives all the copy a last check, then uploads it to the mainframe directory designated for that magazine.

All three locations have graphic production departments to code the text files for typesetting. Each production department is made up of a handful of people, on-line to the host, who use Rational Data System's SCRED screen editor package. After coding, the finished files from editorial are queued up, placed in another directory, then downloaded by communications line to be typeset by an outside supplier. "For all practical purposes, the mainframe is being used as a maildrop, an electronic pigeonhole," says Jordan Backler.

Cahners is considering bringing the typesetting functions in house, but it's an expensive proposition. Penta Systems is currently the frontrunner, because its typesetting software would mesh well with the current system. The actual output of typeset galleys would still be performed outside for a while, but purchasing Penta software would allow editors to see simulated typeset galleys without having to wait an extra day. A true front-end system would help economically, because less copy would have to be reset. Cahners is also looking at Intercon in Rochester, which has a typesetting system that interfaces with CEO.

Cahners reports no complaints with their system's performance, but admits text processing isn't "putting much of a load on it."

Radio Broadcast

Name: Jack Taylor, manager
Organization: TR Software Systems, Sharon, PA
Application: Radio broadcasting
System: 2 CS/100s, DG/20s

Jack Taylor developed an enhanced accounting software package modified for the special needs of commercial radio stations. The accounts payable and general ledger portions of his radio broadcast management system are relatively routine, but accounts receivable uses a special commercial schedule to perform billing. Billing also takes into account the multiple billing periods used in broadcasting. Inventory is based on parameters set up by the customer. Numerous reports, displays, and printouts provide facts and figures, for example, salesperson histories, client histories.

The company is "very satisfied with the way DG hardware works," though not always satisfied with the way DG treats people. Taylor thinks the MV/2000 DC will be a very good addition to DG's product line. He likes the speed, performance, and price of the smaller minis.

Typesetting

Name: Frank Diegel, systems manager
Organization: Waldman Graphics, Inc., Pennsauken, NJ
Application: Typesetting
System: MV/8000-II with 592 MB and two 354 MB disk drives, 800 bpi tape, and media conversion; running under AOS/VS

The customer list for Waldman Graphics sounds like a roll call from a booksellers' convention. Virtually every major East Coast publisher is represented, from Allyn Bacon to Random House. The company now keeps 28 terminal operators busy entering text into its Penta typesetting system. Most of the work is the production of typeset manuscripts for book and magazine publishers.

A few statistics help give a picture of the volume of typesetting work the company now does. It spends $129,000 per year just on the

Byrd Press' current system will be gradually phased out and replaced by Xyvision

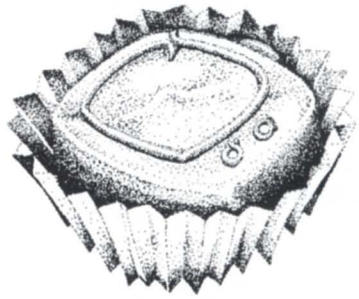
RC photographic paper on which the type is set. They often go through 10 or more 150-foot rolls of the paper per shift—and the company runs 3 shifts a day, sometimes 7 days a week.

Eight years ago Waldman Graphics did no typesetting at all. In 1977 they began looking around for a typesetting system to supplement their printing work. They became one of the early customers of Penta Systems, a DG OEM that is now a leader in the typesetting field (see page 12). They got started with Nova 3s, and have been upgrading ever since. Overall, they are quite pleased with the DG hardware; the current system has been available more than 99 percent of the time.

Name: Ian McLachlan, director and general manager, Santype Byrd
Organization: Byrd Press Inc., Richmond, VA
Application: Technical typesetting for academic journals and college textbooks
System: S/140

Byrd Press runs a math software package from England on DG hardware to produce math graphics for publishers of academic journals and college textbooks. Their current system will be gradually phased out and replaced by Xyvision, an on-screen graphics package with automatic pagination.

Clients include the University of Chicago Press, Prentice-Hall, McGraw Hill, Academic Press. Byrd switched to third-party maintenance because of its lower price.



Television Broadcast

Name: Stuart T. Martin, president and general manager
Organization: Mt. Mansfield Television, Inc., Burlington, VT
Application: Television ad scheduling, billing, accounting; photo and videotape archiving
System: Nova 4X, microNova MP100, DG/10s for personal computing

Stuart Martin brings a doctoral degree from MIT to his position, but he adds, "When I started my technical life, computers were still a bunch of relays." Even so, he personally designed and developed the software

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Circle 45 on reader service card

Dataworld's data base lists every authorized or pending radio or TV station in the United States

that handles virtually every aspect of broadcast operations at the television station he runs.

The station's inventory consists of "spots"—time slots for advertising that disappear if they are not used. A Nova system with six terminals tracks the inventory continuously. It confirms advertising orders, adjusts the inventory for schedule changes, produces operating schedules for station personnel, and then generates a broadcast log. After verification, the log becomes the billing file for the accounting department. The system also handles all customer files, accounts receivable, accounts payable, and payroll in what is essentially a paperless office.

All in all, the inventory and accounting system consists of about 600,000 lines of code, all in assembly language. It runs under RDOS, which Martin describes as "Stable and well put together—as steady as a rock."

The station got started with DG on the recommendation of a consultant who later went under. However, the station has been very satisfied with the hardware. In fact, they still have the intact Nova 830 system they started with.

They have also developed standalone applications for microNovas and Desktops. In the news department a microNova indexes news files before they are put on archive tapes. The system can later search the index on four keys to retrieve historical footage. A similar system on a Desktop tracks the "headline stills" that appear over the newscaster's shoulder. The stills are stored digitally on a $30,000 Abacus optical disk system. A newscast's stills are retrieved and saved to tape in the proper order for the news stories to be broadcast.

Martin keeps the systems on DG maintenance, and is pleased with the service he gets. He says his only complaint is with the DG salespeople—"Not very responsive," he explains.

Broadcast Engineering

Name: Henry W. Brandenburg, programmer
Organization: Dataworld, Inc., Washington, DC

Application: Broadcast engineering data base services
System: Two S/140s running under RDOS and Wild Hare's TSS

Broadcasting companies doing feasibility studies for new stations need specialized information about available channels, broadcast range, and market demographics. To get it, they could go to the Federal Communications Commission and pore through its records—or they could log on to the Dataworld, Inc. data base. Pretty much the same information would be available either way, but Dataworld has built a 15-year-old business by packaging the information to ease the drudgery of manual research.

The company's data base lists every authorized or pending radio or television station in the United States, plus "notified" stations in Canada, Mexico, and the Caribbean. It keeps track of call letters, broadcast frequency, power, latitude and longitude, antenna height, ownership, address, and other engineering and operating details for each station. The information is kept up-to-date by researchers who go daily to the FCC to collect new filings, then feed them into the system.

Clients who log on to the system can choose from nearly 30 standard report programs. For example, a client interested in starting a station in a certain location could type in the longitude and latitude, and the system would report back with a channel frequency that would not interfere with existing stations in the broadcast area. A terrain data base then allows a quick calculation of the range of coverage for the proposed station. Demographic data allow the size of the market area to be calculated, and channel studies would flag potential competitors. In short, the data base provides a quick feasibility study for only a few hundred dollars.

For its first 6 years, the company's data base was stored on a time-shared computer, but in 1977 Dataworld acquired a Nova 840 with 64 Kwords of core memory. In 1980 they added remote terminal access to let clients execute report programs on-line for faster results. Today they are seriously considering an MV/10000—but the conversion from RDOS is a concern. They would like to be able to keep the software they have developed over the years. Δ

Modest proposals

BBASIC is in pretty good shape, but could benefit from enhancements

by George Henne
Contributing Editor

It's not easy to decide what features should be incorporated into new releases of Business BASIC. Any language should be updated periodically to keep it abreast of current trends and emerging requirements. Some might think it difficult to add anything of value to a language that already has VAL, VALUE and VAL.SL, but not to make the attempt would be the height of folly.

After careful study of *Computerworld* and other important reference works, I've concluded there still is a lot to be done. In this month's column, I'll do my best to present some of the best ideas I've seen for making Business BASIC the computer language of the eighties.

Recently, a debate has been raging in the press as to what a relational data base really is. Apparently the term was coined many years ago by Codd, who published a list of 10 rules defining the term. Various products conform to differing numbers of the rules. Business BASIC currently implements none of them.

To rectify this, I suggest the addition of a KODD statement. This new statement would be compatible with the current KADD, KDEL, etc., but would implement at least 12 of Codd's rules, thereby restoring BBASIC's preeminence among languages.

Another hot button in the press lately is Reduced Instruction Set Computers (RISC). Recent announcements by IBM and HP indicate a growing trend towards computers with slimmer, sexier instruction sets with built-in health club memberships.

BBASIC over the years has certainly grown fat; it deserves a fitness program of its own. While the language is certainly in pretty good shape right now (the recent RDOS rev 8 and AOS/VS rev 4 workout programs have the product looking better than ever), it still hasn't been able to deliver the knockout punch to its old rival, ICOBOL.

I'm convinced a Reduced Variable Set Computing (RVSC) program is just the thing for Business BASIC. There are just too many variables kicking around. With up to six letters or numbers to work with, plus some special characters, programmers have had virtually unlimited license to create millions of variable names, all of them different. Think what this must do to performance! The status quo is clearly unacceptable, but fortunately there is a solution at hand. Restricting variables to perhaps just the six vowels would lead to a reduction in the number of possible variables by at least a factor of six! You can imagine the difference RVSC would make.

A frequent criticism of BBASIC is that it is unstructured. Proper block constructs do not exist, and GOTOs abound. The GOTO problem, though significant, is easy to fix: just keep all of them in a "filename.GOTO" file. This way, serious users' listings will be unencumbered by this statement, and consultants will never know the difference.

For block constructs, I suggest the use of DO WHILE . . . ELSE. Implemented properly, it would turn large, unworkable masses of code into short, unworkable masses of code. The ELSE clause is especially important: if not implemented, someone is sure to put in an STR demanding it.

Parenthetically, critics have claimed for some time that the more powerful features of BBASIC are like guns in the hands of children—should we be surprised, they ask, when users get shot in the foot? Shouldn't the developers be more careful about what they put in the language? On the contrary, I believe that this would be tantamount to censorship—it would restrict our right of free speech, or in this case, free programming. Let's make sure all the features we need are added right now!

For those who demand strictly structured programming, I suggest the use of the DO WHILE... OR ELSE! construct. The new strict structure discipline statements would add FETCH, ROLL OVER, and PLAY DEAD commands as well.

Release 4 of Business BASIC brought us new Boolean expressions, opening up the possibility of using the statement LET A=B=C, which anyone can understand. (If B and C are both 3, then A obviously becomes 1.) I'd like to suggest a couple of extensions. First, the relational assignment. Here, a statement such as LET A< >1 would set the value of A to be not equal to one. You could also use this concept to set a variable to be greater than or less than a given expression.

Second, the logical expression. The syntax would be LET A=1 OR 2, or perhaps even LET A=1 AND 2. This would allow variables to have more than one value at a time. (Coupled with RVSC, this creates a very powerful tool!) Not the least of its benefits would be the greatly enhanced challenge of debugging programs that allow a variable to take more than one arbitarary value. In combination, it would permit powerful statements like LET A<1 OR (2 AND 3). Those of you who took advanced university courses may have seen similar constructs in some of the experimental languages developed by graduate students. For the most part, they are used for research into artificial intelligence, where they allow more flexible logic systems for problem solving.

As you might also be aware, artificial intelligence languages have another characteristic: they use parentheses extensively. By supporting unlimited use of parentheses, a Business BASIC listing could look like most AI languages. It would add immeasurably to the prestige of BBASIC if it were the first DG-supported language for artificial intelligence.

Related to ongoing AI research is the study of so-called fuzzy logic systems. Researchers in this field have discovered a class of problems that are incapable of solution by computers because they do not lend themselves to deterministic solutions. However,

I've seen a number of systems where programmers went to a great deal of trouble to implement an illogical file system by using logical file statements

they may be solvable by looser, "fuzzier" methods.

Human beings are quite good at this. I checked with the guy in Westboro who is working on DG's application of this principle (he's just been reassigned from the CEO project). He said, "We expect, or do not expect to see (or not see) results in the indeterminate future, if we have not yet completed the project already, whether in fact there is a project, or not." I'd tell you what he had to say about Business BASIC, but most of it was over my head. Something about a "MAYBE" statement to replace the "LET" statement, which would yield MAYBE A=1 OR (2 AND 3).

A too common problem in Business BASIC application systems is index files getting clobbered when a WRITE FILE statement is done to the wrong address or wrong channel number, putting a chunk of your product file in the middle of an index file. The results are unpredictable, and never good. The only recovery is to rebuild the file completely. The hardest part is often to find the offending statement and condition in what might be hundreds of thousands of lines of code.

It would be easier to correct these types of problems if a new statement were created for this purpose. I suggest KRUPT for Keyed Random UPdate of Transaction. If programmers could learn to use the KRUPT statements in these cases, the statements could easily be removed later for debugging. A KAPUT statement might also be nice.

One of the questions that occurred to me when the logical file statements (LREAD, LWRITE, etc.) were introduced was, "As opposed to what?" The answer is, of course, illogical files. With our new fuzzy logic and relational assignment statements, illogical files would make sense. I've seen a number of systems where programmers went to a great deal of trouble to implement an illogical file system by using logical file statements. These systems always end up being impossible to maintain: the logical file statements were never designed for such use.

Are there good applications for illogical file systems? I think so. We've installed the first computer systems for many of our clients, where previously everything had been done manually. Automating a client's manual procedures is sometimes difficult, because our systems were designed logically. Our clients often go through a difficult conversion process from their old system, because the computer is inefficient at operations such as rounding off incorrectly in price calculations, or filing a new client under "N" for New. With a solid illogical file system, we would be able to install a computer system with a minimum of disruption in their established office procedures. This is, of course, the essence of a user-friendly system.

I'm convinced that implementing these changes will make Business BASIC one of the new "hot" languages. Since it will embody most of the current trends in the computer industry, it should gain far more management acceptance than plain old BASIC. By implementing these changes so the language itself retains its old features and functionality, we can all get on with our jobs: putting in systems that work, just as we always have.

Oh, and by the way: have a happy April Fool's Day! Δ

As vice president of MICOM Computer Systems, George Henne has worked with many Business BASIC users during the past 7 years. Send questions or comments to him at 575 Madison Avenue, Suite 1006, New York, NY 10022; 416/445-4823.

à la modem

Most modem problems are caused by poor quality or faulty configuration

by Brian Johnson
Contributing Editor

Recently a few of my clients have experienced a lot of problems with their dial-up modems. Their problems fall into two categories: quality and configuration.

Terminology is a bit of a problem in the discussion that follows. One company has become pretty much synonomous with the relatively inexpensive "smart" modems it pioneered, just as "Xerox" is often used as shorthand for photocopying. To keep the copyright attorneys at bay, I'm going to use "*hayes*" for any of the new breed of modems that support the AT command set or similar variants; "Hayes" will refer specifically to Hayes products.

:MODEMS:FIGHT_BACK

Recently one of my clients purchased a dozen *hayes* look-alike modems at a ridiculously low price, about $150 each. The brochure claims Hayes AT command set compatibility and points out that even the case looks like a Hayes. The implication is that the modem is a plug-compatible replacement for a Hayes.

Well, I ain't David Horowitz, but this is a classic case of "Ya get what ya pay for, often less but never more."

The first hint of trouble came when my client complained that lots of garbage characters were appearing on the screen during a session, especially on calls coming from outside the local calling area. A careful reading of the manual that came with the modem pinpointed the problem. The specifications said, "Line equalization: fixed." This is equivalent to buying a stereo set where the manufacturer has set the volume at the factory to a "reasonable" value instead of providing a volume control knob. Thanks a lot.

Fear of a lawsuit keeps me from mentioning the brand name, but recently I've noticed that a few of the more famous modem makers also make "cheapie" 1200-baud modems that create similar problems.

I use Racal-Vadic triple modems (103/212/3400) for all of my work, and I frequently dial cross-country, and even internationally, without seeing a garbage character for hours. The modems are not cheap (about $600), but they include every kind of automatic line equalization ever invented. I can always tell when I've dialed into a bargain modem. Garbage appears, and when I hit NEWLINE, AOS{/VS} says ERROR: ILLEGAL FILENAME CHARACTER. If the garbage is from my modem, hitting NEWLINE gives no error because AOS{/VS} doesn't see the garbage; it's on my end only.

Free advice: check the specs before you buy.

:MODEMS:CONFIGURATION

A properly cabled and configured modem on AOS{/VS} will exhibit the following behavior:

- If the console is not enabled the modem will not answer the phone.
- If the console is enabled the modem will answer the phone.
- TYPE NEWLINE TO LOGON appears after the modem answers the phone and is not preceded by any garbage characters.
- If the user hangs up the phone without logging off, AOS{/VS} terminates the user's process tree.
- If the user logs off or fails to log on (timeout or retries exceeded), AOS{/VS} causes the modem to hang up the phone.
- No subsequent call is answered until the modem indicates that it has hung up the phone (DSR goes away for at least a few seconds).

If your dial-ups behave in any other fashion, then chances are good that your cabling is wrong, or that you've misconfigured either the modem or the console port.

There is only one type of cable to use for dial-up modems: "straight-through" cables with pins 2-8 and 20. Avoid cables that have all 25 pins wired. I've seen cases where modems with things like speed select or remote test select on the unassigned pins go crazy when connected to a device that uses the same unassigned pins for something else (like Daylight Time select or Light Rye With Mustard select).

You should gen your modem ports to match the CRT type you're expecting, except you must add either /MOD or /MRI (never both!). /MRI is used on older modems (made before about 1975) which use DTR to control on/off hook. /MOD is used on newer modems which support "auto-answer" and use DTR to enable or disable "auto-answer." If you're not sure which kind your modem is, assume /MOD; I haven't seen a /MRI modem in ages.

The last step is to configure the modem. If it has an option to force DTR high, disable it. Set your modem so that CD follows DSR, and CTS follows DSR ("follows" typically means a few hundred milliseconds, enough time to allow the line to "settle," or for the equalization to get "trained"). Set your modem to disconnect automatically if the carrier is lost for more than a few seconds ("Loss of Carrier Disconnect" option enabled). Set your modem to disconnect automatically if carrier is not established within 30 seconds or so during an answer sequence ("Abort Timer" option enabled). If your modem supports "Disconnect on Received Space" or "Transmit Space Before Disconnect," disable them. "Space" is another term for what happens when you hit the BREAK key. The BREAK key is useful for getting out of binary I/O mode so you can hit ^C^A or ^C^B after inadvertently typing a .PR file. (You knew that trick, didn't you?)

If you don't plan on using a modem connected to AOS{/VS} for dial-out, then also disable any command recognition and command echoing on the modem (you should've bought a dumb modem). Otherwise something in the traffic might get recognized by the modem as a command, e.g., disconnect.

For history buffs: one of the reasons Racal-Vadic invented 3400 mode as an alternative to 212 mode for 1200 baud use was they discovered an interesting crock in the 212 design. It has a tendency to occasionally go into remote test mode out of a clear blue sky. Vadic's 3400 mode doesn't share that quirk. As a result, I usually option my 212-only modems to disable the "Respond to Remote Test" option. You should, too. If tests are

Every Tom, Dick, and Harry built RS-232 devices with total disregard for the Sacred RS-232 Specs—Hayes included

necessary, a human at the other end can force the modem into remote test mode, usually via a switch on the back of the modem.

:MODEMS:EXCEPTIONS

One of the problems with the microcomputer revolution is that every Tom, Dick, and Harry built RS-232 devices with total disregard for the Sacred RS-232 Specs—Hayes included.

One classic problem is that in order to use the Hayes AT command set, you must be able to talk to the *hayes* from AOS{VS} or from your CRT. If you followed the configuration instructions above, you won't be able to do this until a call has been answered (no CD/DSR/CTS means no conversation as far as AOS{/VS} and later model DG tubes are concerned). For the CRT-to-*hayes* connection, you can jumper CTS to RTS, and DTR to CD and DSR at the CRT connector. Use three-wire cable with pins 2, 3, and 7. At the modem end leave CD and DSR disconnected, and then select the "Force DTR" option. "Loss Of Carrier Disconnect" will take care of hanging up the phone when you log off.

The only drawback is that you may get some garbage characters on the screen before TYPE NEWLINE TO LOG ON, because CTS on the modem is always high, and garbage that shows up during the "training" period will appear on your screen.

For AOS{/VS} to *hayes* in dial-out mode, the best method is to gen the line without /MOD, and select the "CTS follows RTS" option in the modem, instead of "CTS follows CD." AOS{/VS} raises both DTR and RTS when the console is enabled or opened. The modem will reflect RTS back to AOS{/VS} as CTS, allowing the mux to send the dialing instructions to the modem.

Using a modem for both dial-up and dial-out is tricky. My best advice is to use the method I just described and have the operator add /MOD to the port at the master console before enabling the line. Then just learn to live with the garbage prior to TYPE NEWLINE TO LOG ON. Δ

Who needs Fortran?

Floating-point routines in COBOL may be just the trick

by Tim Boyer
Contributing Editor

Back in 1979, when Denman Rubber was deciding which minicomputer to buy, one of our main selection criteria was getting something that would run both Fortran and COBOL. All the programs we used to design tires were in Fortran, and we were using COBOL for accounting. Once a month or so, the lab would gather all the tire data they wanted to run, take the sheets to another company that had a Fortran machine, and then wait 2 or 3 weeks for the results. This was clearly unacceptable, but since I had no particular desire to write all of the accounting programs in Fortran, the only way to make everybody happy was to get a machine that would run both languages.

The CS/40 was one of the only machines that could do both, so we chose it. Of course I now realize that running these two languages on a CS/40 was probably completely illegal, but believe me, I was blissfully ignorant at the time. When our (now defunct) OEM had our check in his hand, he didn't explain any of the niceties.

The only drawback to running both languages was that we had to bring the ICOS system down every time we wanted to run Fortran. This quickly got to be a bit of a pain. Bunches of lab people started hanging around the terminals waiting for Betty to finish order entry so they could get a certain tire they needed "*right now.*" (I've always found it amazing that when you cut a 1-month turnaround down to 1 day, the people involved suddenly need it in 10 minutes.)

So we shelled out the money to go concurrent. This worked fine for a while until I realized that, instead of interrupting my keypunchers, the lab people were now interrupting *me*! Clearly unacceptable, but we couldn't afford to go to AOS even if I had wanted to. Suddenly, the obvious answer hit me—rewrite all their floating-point math routines in Interactive COBOL!

Trig functions and log/antilog in ICOBOL? Obviously, someone had slipped something into my pipe when I wasn't looking. But as I sat and thought about it, doing it this way—if it were possible—would save us a lot of time and money. Sure, we could do the work on a PC—but PCs don't come free. And if I wrote the routines in ICOBOL, we would be able to use the ISAM files that already contained the tire specifications, instead of retyping all the data each time.

So, reasoning that at one time *someone* had to work out these equations without benefit of a TI-30 calculator, I dug out my old trig and calculus books. Sure enough, most of the routines are not only possible in ICOBOL—they're easy!

Now for those of you who are shuddering in horror at the prospect of doing math routines in COBOL, I'm not going to pretend that this is an optimum solution. I wouldn't want to try Fast Fourier Transforms using this language (or Slow Fourier Transforms either). But for simple on-line applications, the routines are more than adequate. Wouldn't it be nice to be able to compile some statistics on some of the defect reports you're running? Well, for standard deviation you'll need the square root routine. Can't figure compound interest because COMPUTE will only work with whole number exponents? The log/antilog routines will solve that problem. I just love it when someone tells me, "You can't do *that* in COBOL"—somehow, the look on their faces when I do *that* in COBOL makes it all worthwhile.

Anyway, on to the trig functions. All of these call for a value in radians—if you need to input degrees, simply multiply the angle in degrees by .0174533.

Sine: the formula for the sine function is X—(X^3/3!) + (X^5/5!) and so on. In order to speed up the calculations, I inserted the value of the factorials (although for those of you who are gluttons for punishment, a factorial function is easy to write). The COBOL code looks like this:

```
COMPUTE SINE-OF-ANGLE ROUNDED =
    ANGLE-IN-RADIANS -
    ((ANGLE-IN-RADIANS ** 3) / 6) +
    ((ANGLE-IN-RADIANS ** 5) / 120) -
    ((ANGLE-IN-RADIANS ** 7) / 5040) +
    ((ANGLE-IN-RADIANS ** 9) / 362880).
```

This routine will complete 1,000 iterations in 14 seconds on an S/140. While that time probably wouldn't give a Cray XMP a run for its money, 14 seconds is 6 seconds faster than my PC ran its X=SIN(I) routine!

Ah, but what about accuracy? Table 1 compares the results on the S/140 to those on my TI-30. Not too shabby—3 millionths off on 90 degrees! Of course, if you want more accuracy, simply add

Table 1: Sine accuracy

Angle	Calculator	Computer
0	0.000000	0.000000
30	0.500000	0.500000
45	0.707107	0.707107
60	0.866205	0.866205
90	1.000000	1.000003

Table 2: Cosine accuracy

Angle	Calculator	Computer
0	1.000000	1.000000
30	0.866026	0.866025
45	0.707107	0.707106
60	0.500000	0.500000
90	0.000000	0.000000

If I wrote the routines in ICOBOL, we would be able to use the ISAM files that contained our specifications, instead of retyping all the data each time

Table 3: Tangent accuracy

Angle	Calculator	Computer
0	0.000000	0.000000
30	0.577350	0.577350
45	1.000000	1.000000
60	1.732051	1.732051
89	57.28612	57.219764
89.5	114.5727	114.29131
90	870790.7	878755.42

Table 4: Arcsine accuracy

Sine	Calculator	Computer
.1	5.739171	5.739175
.3	17.45760	17.45762
.5	30.00000	29.99872
.7	44.42700	44.41096
.9	64.15806	63.36520
1.0	90.00000	76.72275

```
    - ((ANGLE-IN-RADIANS ** 11) /
      39916800)
```

But then again, if you need more than five decimal point accuracy, you probably shouldn't be doing this in ICOBOL.

Quick and easy, eh? So much so that it's a wonder they didn't put this into the compiler (I know, "It's not ANSI standard"). One of these days, when I get *really* desperate for a column, I'll try rewriting these routines in assembler and see what this machine can do.

The cosine function is just as simple. The formula for cosines is 1—(X^2/2!) + (X^4/4!) and so on. Coded into COBOL, this becomes

```
COMPUTE COSINE-OF-
 ANGLE ROUNDED =
   1 -
   ((ANGLE-IN-RADIANS ** 2) / 2) +
   ((ANGLE-IN-RADIANS ** 4) / 24) -
   ((ANGLE-IN-RADIANS ** 6) / 720) +
   ((ANGLE-IN-RADIANS ** 8) / 40230).
```

The accuracy of these calculations is shown in Table 2. Once again, the machine's results match the calculator's up through five decimal places. Of course, my calculator could be wrong!

One thing to watch out for: the COMPUTE verb tends to be as accurate as the *least* accurate data name used. Be sure to give those data names plenty of decimal points. In the above examples, no answer will ever be greater than one, so you can give the result a PIC S9(1)V9(17) and be very safe.

Tangent. This one is almost trivial. For those of you who remember your high school trig, the tangent is simply the sine divided by the cosine. I put it in here because it is one of the frequently used functions, and also because I wanted to include the accuracy table (see Table 3). The code looks like this:

```
COMPUTE TANGENT-OF-
 ANGLE ROUNDED =
   (ANGLE-IN-RADIANS -
   ((ANGLE-IN-RADIANS ** 3) / 6) +
   ((ANGLE-IN-RADIANS ** 5) / 120) -
   ((ANGLE-IN-RADIANS ** 7) / 5040) +
   ((ANGLE-IN-RADIANS ** 9) / 362880)) /
   (1 -
   ((ANGLE-IN-RADIANS ** 2) / 2) +
   ((ANGLE-IN-RADIANS ** 4) / 24) -
   ((ANGLE-IN-RADIANS ** 6) / 720) +
   ((ANGLE-IN-RADIANS ** 8) / 40320)).
```

Note that as the angle approaches 90, the tangent approaches infinity—and the accuracy gets worse and worse. This may be one of those cases where you should add the extra term. Then again, this is one of those times when I *really* don't trust my calculator—it looks like it's using the same algorithm I am, and I don't know how many terms it's using. Adding the extra term changes the 89 degree answer to 57.293479, so you don't pick up that much more accuracy. If you're using this function for angles close to 90 degrees, pick up your math book and you'll find that TAN 2X = 2 TANX / (1 – TAN^2 X). Divide the angle that you're trying in half, find the tangent, and plug it into this equation. Your results will be much better.

Arcsine. You can now get the sine of an angle. What happens if you know the sine, and want to find out what angle it belongs to? That's where the arcsine functions come in.

I'd love to give you the formula for this one, but, true to form, I don't have it documented! Instead, you'll have to settle for the COBOL code. First, I check to make sure that the given sine is between -1 and 1. Then the code is

```
COMPUTE ARCSINE-OF-ANGLE
 ROUNDED =
   SINE-OF-ANGLE +
   ((SINE-OF-ANGLE ** 3) / 6) +
   ((SINE-OF-ANGLE ** 5) * 3 / 40 ) +
   ((SINE-OF-ANGLE ** 7) * 15 / 336) +
   ((SINE-OF-ANGLE ** 9) * 105 / 3456) +
   ((SINE-OF-ANGLE ** 11) * 945 / 42240).
```

The accuracy (see Table 4) is fairly decent up to about .7, but after that it goes rapidly downhill. At a sine of 1.0, this algorithm is off more than 13 degrees. This is clearly unacceptable.

It's also easy to fix. There's a formula that will keep all of your sine values below .5, and therefore will keep all your calculations accurate to within .002 degrees. The only catch is that this particular formula uses square roots—so it will have to wait until next month, when I cover square roots, logarithms, and antilogs. Δ

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Invisible servant

Understanding how INFOS II works can help make it work better

by Tom Duell
Special to Focus

This is the first in a three-part series on INFOS II.

Many users know their DG system has INFOS, but they may not be at all sure what INFOS does for them. Others may be using INFOS regularly without even knowing it. For example, CEO uses INFOS to manage documents, but most CEO users are probably unaware of what INFOS is and does. COBOL users rely heavily on INFOS; languages like PL/1, Fortran, and BASIC have specialized interfaces defined solely to make use of INFOS.

The main purpose of INFOS is to provide users with data base-oriented file management. It gives the user the ability to simply present a string of ASCII characters to INFOS (a "key") and get back the associated data record. This technique, called ISAM (for Indexed Sequential Access Method), is far superior to having to remember record numbers, as is required in RAM (Random Access Method) files.

In addition to being able to "read" records from an INFOS key, the user is able to modify and delete the records as necessary. INFOS also provides mechanisms that allow many different users to update a central file at the same time. Through the "LOCK" and "UNLOCK" features, one can ensure that no other users can access a record while it is in the process of being updated.

These operations are usually imbedded in commercial application programs written in COBOL, PL/1, or other languages; the user may never actually see INFOS in operation. Typically, the user makes application-oriented commands, which are translated into high-level language commands, which in turn execute the calls to INFOS.

The actual INFOS commands are very nearly identical in AOS and AOS/VS. However, the methods used to implement them are quite different for the two operating systems. In both cases, INFOS runs as a separate process that receives and executes instructions from the user program. AOS INFOS receives user commands from the IPC (Inter Process Communications) system call group, while AOS/VS users make inner ring calls to INFOS.

The AOS/VS method is faster and more accurate with respect to "billing" users for the amount of system resources they use. The AOS IPC facility is notoriously slow; AOS INFOS performance could be dramatically improved if the AOS group should find a breakthrough in IPC performance.

The AOS and AOS/VS directory/file structure INFOS creates can be a bit confusing. Instead of putting all the key and record information into a single file as one might expect, separate storage areas are used. The reason for this was to improve INFOS performance for large system and data base users, but unfortunately it makes things more complicated for smaller users.

On the positive side, INFOS' storage system has extremely good upward extensibility. This means that as your application grows, there are several things you can do through INFOS to improve performance. Initially, users may not appreciate the complexity for smaller files, but INFOS can place data in volumes on many separate disk devices, and can move records around according to frequency of access. More on this in a later article.

An INFOS "data base" consists of an index directory and a data base directory. These directories are control point directories (CPDs) within the standard AOS or AOS/VS directory tree structure. The index information (keys, partial records, status information, etc.) is contained in a "volume" (usually named "VOL01") within the index directory. The actual data base information (data records, status information, etc.) would be kept in a corresponding volume named "VOL01" in the data base directory.

For example, suppose you wanted to create an INFOS file to store information about Halley's comet based on the year of observation. The year would be the key, and the data record would contain information about who first sighted it, where, brightness, etc. The index might be named HALLEY and the data base HALLEY.DB. (This is the default naming convention of INFOS, but users could create names of their own choosing.) The index information would be contained in HALLEY:VOL01 and data base information in HALLEY.DB:VOL01.

The directories each have UDAs (User Data Areas) to store INFOS-related information about the index and data base. This can be observed with the CLI FILESTATUS/UDA command on the directories, as well as on the volumes. UDAs must be present for INFOS to open and process the data base.

INFOS provides a set of utilities to perform special operations on INFOS files. Some examples:

Every system should have a backup and recovery strategy, particularly with INFOS files that are continually updated

- ICREATE will allow users to create any number of complex INFOS files;
- INQUIRE will inspect or modify files;
- IFILE will display certain file status information;
- IVERIFY will verify internal consistency of INFOS data bases;
- IDELETE will perform all necessary checks to see if INFOS files can be deleted, and then delete them;
- IRENAME is used to rename files—it will ensure all INFOS index file names and status information are changed properly;
- DDUMP and DLOAD will dump and load INFOS files with proper checks to ensure that no other users are active in the data base;
- INDEXCALC can be used to roughly determine file space requirements for an INFOS file;
- IRECOVER will reprocess and recover INFOS files with logging enabled;
- IXLOAD is used for fast loading of INFOS records.

INFOS utilities DDUMP and DLOAD assist in file archival and incremental dumps. Incremental dumping means to offload to tape (or disk) only those pages of an INFOS file that have changed since a previous archival dump. If a user has a 500 MB data base but only a small fraction of it has changed, then a weekly archival dump and daily incremental dumps will greatly reduce the amount of tape required for backup.

A complete discussion of file backup and recovery is beyond the scope of this article, but I will return to this important topic in a future installment. However, let me emphasize here that every system should have a backup and recovery strategy, particularly with INFOS files that are continually updated.

Sort/Merge/Filter can also be used in conjunction with INFOS, as its syntax supports INFOS files. Data can be extracted from INFOS files and processed by Sort/Merge/Filter. Conversely, Sort/Merge/Filter can process data in non-INFOS files and insert that information into an INFOS file.

I hope this article has helped familiarize readers with INFOS, and build a better understanding of what INFOS is and does. Next month I will cover more details on INFOS and how it actually performs user commands. Δ

Tom Duell is the president of Eagle Software, Inc. Send questions or comments to him at P.O. Box 16, Salina KS 67402; 913/823-7257.

There's no easier way than LOGCALLS to get a feeling for the sequence of events in a multitasking environment

LOGCALLS/ALL

Use your system call logging utility to analyze disobedient programs

by Tim Maness
Contributing Editor

The system call logging utility (LOGCALLS) is one of several useful tools for analyzing what your programs are doing—especially when they're not doing what you'd like. Basically, this utility allows you to get a detailed log of all system calls issued either by or on behalf of a process. The utility prints a report from the log file produced by using the ?LOGC system call.

You may want to analyze system calls for several reasons. If you have a process that is CPU-bound, and histogramming the process showed no obvious bottlenecks *(see "Pleasant Surprises," page 21 in the March issue of Focus, for details on histogramming)*, the system calls may give some hints as to why the process is having problems. For an I/O-bound program, the report may reveal an unexpected source of I/O charges. Analyzing system calls is also helpful when you're working on concurrency problems, because the system calls are reported in chronological order as well as by task.

The ?LOGC system call is used to start or stop system call logging. You can specify the name of the file that will contain the log data, and whether or not AOS/VS should force each write to the disk before the system call is processed. Forcing the writes is useful if your program aborts or causes the system to crash, because otherwise you'll never know whether the last buffer of system calls was written to the log file. The following F77 routine illustrates how to use this system call:

```
SUBROUTINE LOGCALLS (NAME,ICC)
```

Figure 1

```
System Call Logger Report Utility -- Rev. 05. 21-Feb-86 8:20:57 AM

Process name:     TIM:012
Program pathname: :UDD:TIM:EXAMPLE.PR   ( 32-Bit Process )

Ring 7 Symbol File:           EXAMPLE.PR
Ring 6 Symbol File:           - not specified -
Ring 5 Symbol File:           - not specified -
Ring 4 Symbol File:           - not specified -
Ring 3 Symbol File:           AGENT.ST

Date/Time of ?LOGCALL initialization:     21-Feb-86   7:29:40 AM
```

Mnemonic	Call#	Ring3	Ring4	Ring5	Ring6	Ring7	Total
?MEM	3	0	0	0	0	3	3
?RDB	7	17	0	0	0	2	19
?WRB	11	2	0	0	0	57	69
?MEMI	14	0	0	0	0	3	3
?IREC	26	0	0	0	0	1	1
?GTOD	36	0	0	0	0	1	1
?GDAY	41	0	0	0	0	1	1
?GOPEN	56	203	0	0	0	470	673
?GCLOSE	57	202	0	0	0	466	668
?GPORT	64	12	0	0	0	0	12
?TPORT	65	4	0	0	0	0	4
?DIR	75	0	0	0	0	403	403
?FSTAT	77	0	0	0	0	8048	8048
?GCPN	112	4	0	0	0	0	4
?GACL	115	0	0	0	0	544	544
?GLINK	124	0	0	0	0	29	29
?GNFN	131	0	0	0	0	8250	8250
?RDUDA	133	0	0	0	0	1	1
?IS.R	142	4	0	0	0	0	4
?OPEN	300	1	0	0	0	202	203
?CLOSE	301	0	0	0	0	202	202
?READ	302	15	0	0	0	0	15
?WRITE	303	0	0	0	0	10	10
?ERMSG	311	0	0	0	0	5	5
?SEND	316	0	0	0	0	4	4
?UIDSTAT	333	0	0	0	0	3	3
?TASK	500	0	0	0	0	3	3
?KILAD	505	0	0	0	0	3	3
?XMT	523	0	0	0	0	2186	2186
?REC	525	0	0	0	0	2189	2189
?IFPU	542	0	0	0	0	3	3
Ring Totals:		474	0	0	0	23744	24218

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Large numbers of unaccounted system calls may give you ideas about where to look for problems

```
CHARACTER*256 NAME    ! log file name
INTEGER ICC

IAC0 = -1
IAC1 = 3    ! force output
IAC2 = BYTEADDR (NAME)
ILOGCALLS = 412K

ICC = ISYS (ILOGCALLS,IAC0,IAC1,IAC2)
RETURN
END
```

This routine should be called at whatever point in your program you want the system call logging to begin. Once the program finishes, the LOGCALLS utility can be used to read the log file and print a report. For example, assuming that SYSCALLS.LOG is the log file created by EXAMPLE.PR, LOGCALLS would be executed as follows:

```
X LOGCALLS/I=SYSCALLS.LOG/O=
 SYSC.OUT/ST=EXAMPLE.ST/R3ST
 =:AGENT.ST
```

The default report produced by LOGCALLS looks like Figure 1. Using the /ALL switch will produce, in addition to the summary report, a detailed report (see Figure 2) of all calls made by all tasks.

The detailed report indicates the ring from which the system calls are made. Ring 7 is where the user program executes, and the agent is in Ring 3. The symbol tables for both rings were specified in the example command line, so the routine names appear in the report. The system calls from Ring 7 were made from the user program, while the system calls from Ring 3 were made on behalf of the user. The Ring 3 calls are also indicated with an asterisk. For example, the ?ERMSG call (third line of the report) was issued from Ring 7. This request in turn required two system calls to be issued by the agent, the ?READ and ?RDB in the next two lines.

There aren't any hard and fast rules about what to look for in these reports, but definite patterns do emerge. From the above summary report you can see that this program was walking directories (?DIR) and collecting information about files (?GNFN, ?FSTAT). Knowing the type and number of system calls can be very suggestive when you're investigating the habits of your programs. If there are large numbers of system calls you can't account for—or even small numbers of system calls you don't expect—you may get some ideas about where to look for problems.

In addition to the other information it provides, the LOGCALLS report is a good way to produce a chronological list of the per-task activity of a multi-task program. In one case, when we were looking at the system calls for a multitasking process we realized that one task of a three-task process was essentially getting all of the action. The priority of that task turned out to be incorrect (a typo in the program); an easy change greatly increased the concurrency of the tasks. This problem had nothing to do with system calls, but I don't think we would have noticed it if it hadn't been for the system call log. There's really no easier way to get a feeling for the sequence of events in a multitasking environment.

I hope that by this time next month we'll have received a new MV/2000, and will be able to report some hands-on experiences.Δ

Figure 2

Mnemonic	Call#	Ac0	PC	TID	Ring	PC - Symbolic
?GNFN	131	34005513224	16002643412	1	(7)	RGNFN+41
?FSTAT	77	34002007730	16002642050	1	(7)	FSTAT1+13
?ERMSG	311	00000111002	16002641710	2	(7)	ERMSG+14
*READ	302	00000000010	06001113065	2	(3)	AERMSG+247
*RDB	7	00000000121	06001153335	2	(3)	MERGE+160
?GNFN	131	34005513224	16002643412	1	(7)	RGNFN+41
*READ	302	00000000004	06001113135	2	(3)	AERMSG+317
*RDB	7	00000000121	06001153335	2	(3)	MERGE+160
?FSTAT	77	34002007730	16002642050	1	(7)	FSTAT1+13
*READ	302	00000000004	06001113163	2	(3)	AERMSG+345
?GNFN	131	34005513224	16002643412	1	(7)	RGNFN+41
*RDB	7	00000000121	06001153335	2	(3)	MERGE+160
?FSTAT	77	34002007730	16002642050	1	(7)	FSTAT1+13
?SEND	316	00000000002	16002644001	2	(7)	SEND+13
*GCPN	112	00000000002	06001207331	2	(3)	ASEND+136
?GNFN	131	34005513224	06001207337	2	(3)	ASEND+144
*GPORT	64	00000000002	06001207353	2	(3)	ASEND+160
*IS.R	142	00000000002	06001207455	2	(3)	ASEND+262

(The columns for AC1 and AC2 were removed to make the output fit.)

Tim Maness is president of DMS Systems, Inc., a software development firm specializing in data base management. He can be reached at 740 East 3900 South, Salt Lake City, UT 84107; 801/268-6671.

Request completed. No errors.

Really? Then where's my printout?

by Charlene Kirian
Contributing Editor

Anyone who uses CEO to print documents has probably had this happen: you send a document to the printer, and see a "Request Completed" message on your screen, but when you go to pick up the documents, they aren't there. What happened to them? Being reasonably sure nobody stole them, I've had to conclude many times that they must have gone to "printer heaven." I don't have any better answers.

Sometimes a document doesn't print because it had the wrong forms type, but sometimes it just plain disappears. When other users can't understand what happened to their work, it gets very frustrating and time-consuming—both for them and for me, since I'm the one they come to for help. Assuming it wasn't one of the obvious mistakes people make when sending a print request, I try to get a clue from the Queue Information screen. It can be a useful tool, but be forewarned: Queue Information has a few quirks of its own.

If you have CEO Manager privileges, you might want to take a coffee break while waiting for queue information after you send a document to print. Every document that has been printed during the day will appear in the list. I'm not really sure why the display includes all this information. I might need it once in a while, but certainly not all the time. I would prefer to see just the status of the queue to which the document was directed, and not have to wade through all the extraneous information. If I need to know more, I can always go to the CLI to look it up.

When I access the Queue Information screen, it's usually because I'm in a hurry to cancel something I screwed up when I sent the print request. But no matter how quickly I get to that menu, I seldom seem to be quick enough. Usually it prints anyway. When I go into the Queue History menu, it says either "Request Completed. No Errors," or "Cancelled by User." Strange to say, when I go to the printer, I often find those "cancelled" jobs in their entirety—or still printing (depending on how long the document was).

Oddly enough, you can be in the Queue History menu, see a document status that says "Request Completed. No Errors," and still cancel it! After it is cancelled, it shows the same document as "Cancelled by User." Can anybody explain to me the purpose of allowing a user to cancel a document that has already printed? Users get understandably confused when they think they have cancelled a job, but still find the printed copy.

People are always telling me that if I find a problem and want it fixed, I should offer a suggestion or alternative. So here goes . . .

Here's what I'd like to see on the Queue Information screen: just give me back what we used to have. When in CLI under the versions before rev 2.0, typing QD/V/QUEUE =LQP# (# being the number of the queue) would show who sent the request, at what time, and the forms type attached. Now the same request will only say that CEO_MGR has a document going through the queue. It doesn't tell me which user made the request. I'd like to have the Queue Information screen show the same information that used to be displayed with the QD/V request. That would allow users to see the document on the trail to the printer. If it showed the document was still active, but just sitting there, it would point the finger at the physical device, not the system. This is admittedly more complicated, and would require more user education, but I think users would be willing to learn these things to make their lives easier.

As for the Queue History screen, I guess I use the information from this menu occasionally just to see if I did anything that day, but I don't find it very useful unless an error message is generated. Until rev 2.10+, we had a difficult time getting DG to give us a list of the error codes generated through this screen. When we finally got the list, some of the errors were not identified. How about an on-line HELP for error codes? That way, if a user checked Queue History and found an error, they could look it up, determine the problem and try to correct it. I'm not trying to put our CEO Help Desk out of business—just trying to lighten our load a bit. (We support almost 250 CEO users, and it keeps us busy just determining what caused the error. This is something the users could easily do for themselves if there were a HELP facility.)

However, it's not necessary to wait for DG to add these enhancements to improve the situation. One thing you can do right now is to reformat the Queue Information and Queue History screens to list only the information specific users really need. For example, the office manager, who gets a listing of all jobs submitted, may want the Queue Information screen to show whether a job is active, the document name, the time submitted, and who submitted it. However, a user may only want to see the active flag, the time submitted, and possibly the number of copies requested.

The system allows you to choose which columns you wish to see on your screen. The choices available for the Queue Information screen are: (1) sequence number, (2) active flag, (3) queue name, (4) path name, (5) drawer, (6) folder, (7) document, (8) time submitted, (9) submitted by, (10) printer, and (11) number of copies.

The Queue History screen gives a summary of what took place during the entire day. You could customize it so users would see the name of the document, the status, and the printer to which it was sent. The choices available for the Queue History screen are: (1) sequence number, (2) queue name, (3) path name, (4) drawer, (5) folder, (6) document, (7) submitted by, (8) time submitted, (9) time of completion, (10) status, and (11) printer.

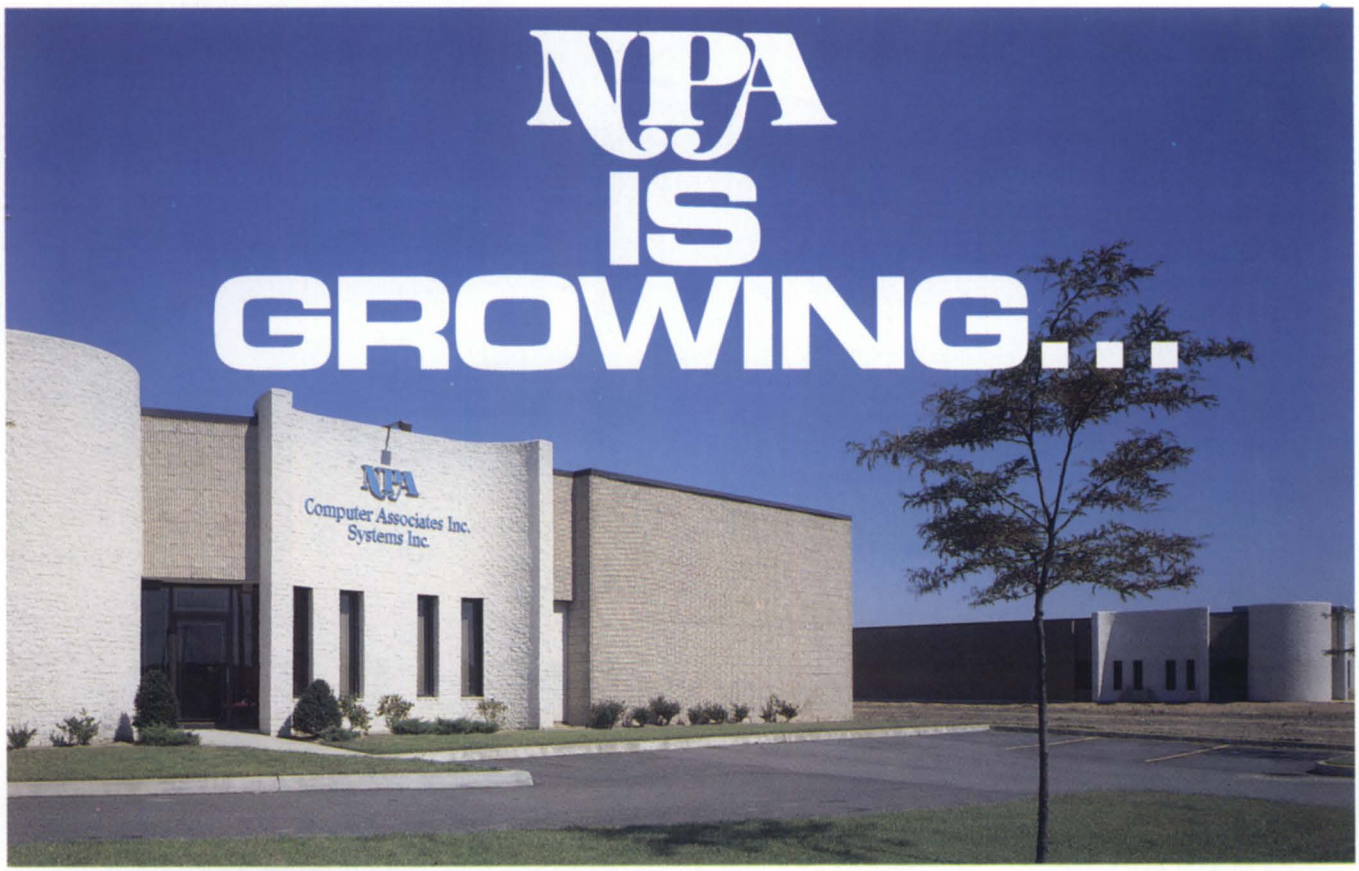
Can anybody explain to me the purpose of allowing a user to cancel a document that has already printed?

Remember, to keep these screens formatted the way you want, you must set them up in your personal profile. If you only change the formats within the menus, the changes will only hold as long as you're in the menus; as soon as you leave them, the default specifications go back into effect.

By the time you read this article, we'll have upgraded to rev 2.12 of CEO. I am told there were some changes in the 32-bit formatter, and that some of the functionality has changed. I'm anxious to find out whether any improvements were made to the Queue Information screens.

I also found a file in :UTIL:CEO__DIR called CEO.ERRORS.DOC. It will give a complete listing of all system errors including printing and formatter errors, calendar, etc. It's approximately 40 pages long, so you might want to print it at a time that will not interrupt regular work flow. I find it's handy to keep a hard copy available for quick access to the errors. Δ

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



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If you would like to join a particular group, notify the contact provided. If you do not see a regional group in your area or a special interest group that would serve you, notify the NADGUG staff in Westboro about your interest in seeing a new group start up. If you are aware of any changes or updates that should be made to listed contacts, please notify the NADGUG staff.

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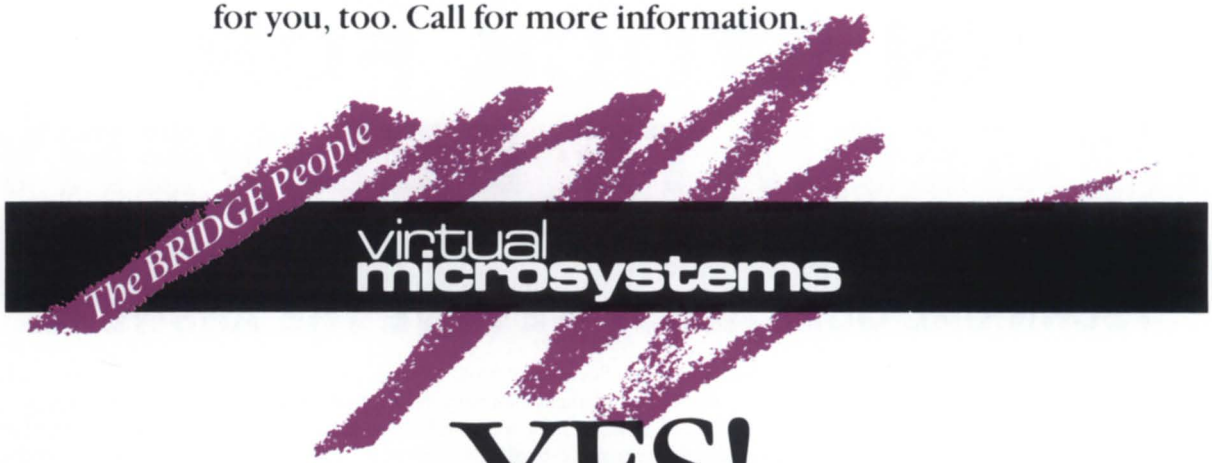

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New Zealand Data General Users Group
Status: N/A, starting
Contact: Doug Barr
Data General New Zealand, Ltd.
13th floor, Grand Arcade Building
Willis St., P.O. Box 9735
Wellington, New Zealand

Nippon Data General Users Group
Status: N/A, active
Contact: Shinichi Noda
Nippon Data General Corporation
6-12-20, Jingumae, Shibuya-ku
Tokyo 150 Japan

Portugal Data General Users
Status: N/A, active
Contact: A. Bras Gomes/A. Sendin
Data General Portugal
Cassel Data Computadores e Sistemas, LDA
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P.O. Box 1100
Amadora, Portugal

Data General Sweden
Status: N/A, starting
Contact: Lennart Johansson
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Data General United Kingdom Users
Status: N/A, active
Contact: Keith Bevis
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Hounslow House, 3rd floor
724-734 London Road
Hounslow, Middlesex
Middlesex, England
TW3 1PD

NYC OEM Council wins DG's support

On February 6, the Greater New York Data General OEM Council held its first Region 4 open forum at DG's New York City office. Good attendance, active participation, and common concerns indicate the group will probably be active and effective in the future.

OEMs who attended the Region 4 Council meeting seemed to agree that the best answer for the problems they face is "strength in unity." Since OEMs account for a large proportion of DG's annual sales, by working together they expect to establish better understandings with DG regarding common issues like credit, sales administration, distribution, etc.

There was a general understanding at the meeting that the OEMs are not competing with each other—or with DG—but should work to expand cooperation among themselves, and between OEMs and DG, so all parties can benefit.

The group invites all DG OEMs to send information about their products to The Greater NYOEM Council, c/o Data General Corporation, 633 Third Avenue—4th Floor, New York, NY 10019. Product information will be kept in the OEM software library at DG's offices, where it will be available to DG sales reps and participating OEMs. The object of the library is to assist in making sales by providing better information about available products.

The Greater NYOEM Council extended its thanks to DG's New York staff, especially Art Zuckerman, branch manager, Andy Belfi, sales manager, and Paul Rockwell, systems engineering manager.

Companies attending the open forum were Cube Equities (Jersey City, NJ), F.D. Dohnsco, Inc. (Great Neck, NY), GDA Computers, Inc. (Brooklyn), Global Turnkey Systems, Inc. (Waldwick, NJ), Joral Associates, Inc. (Saddlebrook, NJ), Kaz Business Systems, Inc. (New York), Logical Solutions, Inc. (Melville, NY), Madison Data Systems, Inc. (Pleasantville, NY), MIC Technology, Inc. (Woodside, NY), Standard Data Corp. (New York), Vantage Software, Inc. (New York), and Vista Computers, Inc. (Elmsford, NY).

For more information, contact Keith A. Gronsbell, MIC Technology, Inc., 718/803-1494 or Ken Anderson, Vantage Software, Inc., 212/302-7711.

—contributed by Keith A. Gronsbell

Δ

Southwest Virginia group is active

SWVDGUG, the Southwest Virginia Data General Users Group, reports good attendance at its monthly meetings. Recent topics included presentations on the MV/20000 and MV/2000 DC in January, and on Cognos Corporation's Powerhouse 4GL in February. The group's next meeting is scheduled for April 17.

For more information, contact Betsy Wolfe, Medeco Security Locks, 703/387-0481.

CADGUG elects officers

The Chicago Area Data General Users Group met to elect new officers at their February 11 meeting. The new president is Dave Angulo; John Eymann was elected to his fourth term as vice president. Ron Roller will serve as secretary, and Jim Siegman will take over as treasurer.

At the same meeting, CADGUG members learned about Data General's new products, including the MV/20000, MV/2000, AOS/DVS, laser printers, D555 terminals, and new CEO features.

Δ

BJ to address Southeastern New England group

Despite bad weather, 20 members of the Southeastern New England DG Users Group came to Roger Williams College in Bristol, RI to hear a presentation titled, "When You Need Something More." The speaker, Jerry Schiowitz of DG's Special Systems Division, described the "standard" and custom special products his division offers. Following the presentation was a tour of the college's data processing facility.

SNEDGUG President Frank Perry announced that Brian Johnson of BJ, Inc. will be the speaker at a program jointly sponsored with the Northern New England group, NNEDGUG, on April 1.

For more information, contact Frank Perry, Rhode Island Department of Transportation, 401/277-2558; or Brad Friedlander, Arthur D. Little Information Systems, 617/864-5770.

Δ

HADGUG gets product briefing

The Houston Area Data General Users Group gathered for a premeeting dinner on February 20, then convened at the Jungman Branch Library to hear Charles Turner of DG's Houston office describe new products from Data General. Turner has been a systems engineer with Data General since 1973. His presentation put special emphasis on the MV/20000, the MV/2000 DC, and AOS/DVS.

For more information about HADGUG, contact Lee Jones, Gulf Coast Systems, 713/681-2309.

Δ

PUDGE meetings scheduled

Potomac Users of Data General Equipment meet the second Wednesday of odd-numbered months at 1:00. The regular meeting place is the Quality Inn, 8040 13th Street, Silver Spring, MD. For more information, contact Jess Brown, Techno-Dynamics, 301/390-6331 or 202/692-2292.

Δ

Features added, prices lowered on Dasher CRTs

Westboro, MA—Two series of Data General terminals are now available with new features and lowered prices. The Dasher D400 series workstations include both alphanumeric and alphanumeric/graphics models, while the new Dasher D200 series workstations are general-purpose, alphanumeric display terminals. Technological advances and reduced manufacturing costs have made it possible for DG to offer additional features at a lower price.

New features include a screen saver and a soft setup menu. Designed to extend the life of the display by preventing image burn-in, the screen saver feature clears the display after a specified period of inactivity. The soft setup menu simplifies configuration by allowing variables such as terminal transmission speed, parity, and mode of operation to be set by keyboard responses to menu prompts rather than DIP switches.

The D461 is an alphanumeric/graphics display terminal; the D411 is an alphanumeric display terminal. According to the company, both are targeted for business automation, word processing, and interactive data entry applications. The D461 is priced at $1,495, 25 percent lower than its predecessor, the D460. The D411 is $1,195, 33 percent lower than its predecessor, the D410.

Both the D215 and D214 terminals are lower-cost, alphanumeric display terminals targeted for interactive data applications. The D215 is priced at $895, 25 percent lower than its predecessor, the D211. The D214 is $795, 31 percent lower than its predecessor, the D210.

All Dasher D400 and D200 series workstations are available 30 days ARO. Δ

Purchase order management system

Temple City, CA—Jacobsen & Associates' Purchase Order Management System is available for purchase, lease, or service bureau application.

The system includes the following:

- Purchase requisitions (generated from MRP)
- Part/vendor cross reference (with on-line inquiry)
- Automatic interface to accounts payable vendor file
- Handles blanket, service, contract labor, and outside processing purchase orders; both

inventory and noninventory items
- Multiple deliveries per line item; automatic or entry level parts comments, account distribution, and unit of measure conversion factor
- Purchase order document generation.

Two other products available from Jacobsen include the Jake Jr. Manufacturing/Financial Management System for most personal computers, and IBM/Apple interface software that allows PCs to emulate a DG terminal. Δ

Jacobsen & Associates, Inc., 10229 Lower Azusa Road, Temple City, CA 91780; 818/575-7504.

D200 terminal emulator for IBM and compatible PCs

Corte Madera, CA—PopTerm/200, a Data General D200 terminal emulator for IBM and compatible PCs, is now available from Rational Data Systems, Inc. There are two versions, one for normal asynchronous (RS-232) connections, and one for use over a local-area network.

According to RDS, PopTerm/200 is a memory-resident program with four distinguishing features. The first is hot-key activation. Once loaded, the program remains in the PC's memory, and can be activated at any time by pressing the hot-key. This means that a PC can double as a DG-compatible terminal at the same time it runs PC programs like word processing or spreadsheets.

A second feature is PopTerm/200's help window, which displays commands for quick reference.

The program's third feature is the PopGen utility for setting communications parameters. If a PC user communicates with more than one computer, PopGen can keep the specifications of each communications session, typically with a separate session file for each computer the user communicates with.

PopTerm's fourth feature is its ability to generate a log file for a particular work session (or any portion of the work session). A log file is used to capture text received from the DG computer—even an entire file—and direct it into a DOS disk file.

Doug Kaye, president of RDS, says "The on-line help and the hot-key make it easy to use, while our more sophisticated customers have some powerful utilities." Tom Rice, RDS' sales manager, said his company will offer site licenses for PopTerm/200.

The asynchronous version of PopTerm/200 sells for $150, and the LAN-based version sells for $100. Each version requires approximately 50 KB of memory while supporting IBM-compatible monochrome or color/graphics adapters.

The LAN-based version of PopTerm/200 is intended for users of RDS' PC/VS, a product that interfaces IBM and compatible PCs with DG's MV/ family of minicomputers. Δ

Rational Data Systems, 5725 Paradise Dr., Suite 410, Corte Madera, CA 94925; 415/924-0840.

CEO Document Exchange VI offers Teletex interface

Westboro, MA—CEO Document Exchange VI, the first Teletex interface to an integrated office automation system, has been announced by Data General. It allows Comprehensive Electronic Office (CEO) users to send messages, documents, or charts directly from their CEO workstations to other terminals throughout the world via Teletex public networks, without leaving the CEO environment.

Teletex message transfer systems send messages at faster speeds (240 cps) than Telex systems (10 cps), including the 309-character set of all upper- or lowercase and national language characters. The Teletex networks conform to the CCITT international standard governing the transfer of documents between word processors or editing terminals over a public Teletex network.

CEO Document Exchange VI is designed to reduce telephone expenses and improve communication productivity. Because it is fully integrated with CEO, it makes any CEO workstation a potential Teletex station, providing users with access to the communications networks of the major Teletex services.

The interface features message storage/forward capabilities that allow messages to be delivered during a lower tariff time period, and provides a directory for addressing individual CEO users. It provides usage accounting and billing control, as well as a private function that allows users to transmit items such as personal files and charts over the Teletex network in addition to documents.

Supported under DG's proprietary AOS/VS operating system, the program requires the DG/Teletex Adapter Unit Model 4554 ($5,000), which includes internal storage to allow documents to be received, even when the host system is unavailable. CEO Document Exchange VI, available 30 days ARO, is priced between $750 and $4,500 (AOS/VS). Δ

Program helps with Sort/Merge

Salina, KS—Eagle Software has released the Generator, a program designed to enhance the user friendliness of Data General's Sort/Merge utility. The Generator interactively creates syntactically correct command files for use with the Sort/Merge utility.

The user is asked a series of questions concerning the input and output files, keys, and message statements. The program automatically creates command files for use with Sort/Merge, saving the user from having to know Sort/Merge syntax or consulting the user's manual.

The Generator is also designed to save time by providing complete support of INFOS files with the Sort/Merge utility. It is available for $300 on AOS and AOS/VS. Δ

Eagle Software, Inc., P.O. Box 16, Salina, KS 67402-0016; 913/823-7257.

Package integrates XODIAC with IBM SNA networks

Westboro, MA—Data General has announced XTS/SNA Backbone, a communications software package for integration of DG-to-DG (XODIAC) networks with IBM SNA networks. DG Eclipse MV/ family minicomputers can use XTS/SNA Backbone to communicate with each other over an IBM SNA network.

XTS/SNA Backbone uses the current SNA network for XODIAC communications, and requires no rewiring or duplicate network for operation. Communications processing overhead on the IBM host is reduced because the XODIAC communications take place through the IBM front-end processor. XTS/SNA Backbone doesn't require DG software to be run on the IBM host, so network installation costs and communications line charges are reduced.

Except for configuring DG systems into the network, the package requires no changes to the SNA network. Users can run it at the same time they run any other DG software.

DG users can use XTS/SNA Backbone to run CEO software, XODIAC utilities, or other XODIAC applications on the current SNA network. They don't need to know they are communicating over an SNA network, since the user interface is the same as between two directly connected DG systems.

With DG's IBM-compatible software, users can also continue to communicate with IBM systems attached to the SNA network. They can perform terminal emulation, decision support, and office automation tasks; resources connected to the IBM systems are fully accessible to all users.

XODIAC network architecture adheres to all seven levels of the International Standard Organization's 1980 standard of Open Systems Interconnection.

A wide range of DG systems can communicate using XODIAC and XTS/SNA Backbone, from the DG/One to the Eclipse MV/20000.

XTS/SNA Backbone is available 60 days ARO, for prices ranging from $900 to $5,400, depending on CPU. Δ

Eagle adds to VS Toolbox

Salina, KS—Eagle Software, Inc. has announced a new software utility for its VS Toolbox. Called The Investigator, the new utility examines the data base organization of a specific subindex in an INFOS index.

The Investigator joins 10 other utilities in the VS Toolbox series; all are designed to improve INFOS file organization, monitor system performance, and improve AOS/VS file access.

Companies that have already licensed the VS Toolbox will receive The Investigator along with enhancements to The Rebuilder and The Terminator for no additional charge. Δ

Eagle Software, Inc., P.O. Box 16, Salina, KS 67402-0016; 913/823-7257.

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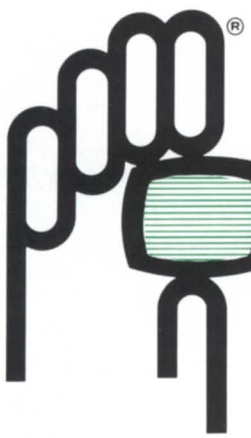

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DG 8656 ECL 256KB	1,200
DG 8687 NOVA 4 256KB	1600
DG 8343 NOVA 3 32KB	150
NOVA 3 256KB	1,450

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6060 96MB S/S	2,900
6061, 192MB S/S	5,300
6070 20MB S/S	1,000
6161 147MB S/S	11,995
6310 38MB Drive	3,800
CDC 9762 80MB Drive	1,095
CDC 9766 300MB Drive (round cable)	3,500
CDC 9766 300MB Drive (flat cable)	4,500
CDC 9771 825MB Drive (new)	9,500
CDC 9775 600MB disk drive	4,750
Fujitsu 2284 169MB Drive (complete)	2,200
Fujitsu M2312K, 84MB Drive	1,500
Fujitsu M2351A "Eagle" 474MB Drive	5,995
MSC 1300 SMD disk controller	950
DG SMD Interface for 6160/6161	1,950

TAPE DRIVES for DG

6021 800BPI Tape S/S (new style)	$1,500
6026 800/1600 BPI Tape S/S	7,300
6125 1600 BPI streaming tape S/S	2,495
CIPHER F880 Tape Drive	1,950
CIPHER 910 Tape Drive (800/1600 BPI)	1,950
TANBERG 800/1600BPI Tape, S/S (6026 Emul.)	3,000
SPEC 20 Disk/Tape Interface	2,000

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DG 4215 600LPM Drum	2,450
DG 4356 300CPS w/DCH ctrl.	2,495
DG 4433 150CPS w/MDM ctrl.	859
DG 4434 Multifunction Slade printer	395
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Okidata SL 160, 160LPM	795
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Printronix P600	3,000
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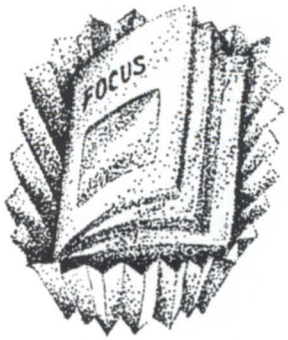

Jim Siegman was circulating a purported "Ethernet Dictionary" at the spring planning meeting of the NADGUG Executive Board, February 27-28. Sample entries: "Collision detector—Massachusetts State Trooper. . . . Ethernet—The item required to catch the Ether-bunny. . . . Links—The Ether-bunny's golf course." George Henne beat him to the punch for an April Fools' article this time (see page 22), but watch out next year. (And watch next month for a complete report on the spring board meeting.)

■

Congratulations to SSI for earning the top spot on *Softeam Journal*'s bestseller list with its WordPerfect word processor. SSI is working on a version of WordPerfect to run on Apple's Macintosh.

■

Congratulations also to Tom Rice. Formerly with Virtual Microsystems, Inc., Tom recently accepted a position as sales manager for Rational Data Systems. According to RDS President Doug Kaye, Rice's new position stems from the company's success with its network products.

■

Two more companies recently joined the ranks of DG's Authorized System Distributor (ASD) program. Health Data Sciences Corporation of San Bernardino, California, markets a medical information and patient care system for medium- to large-sized hospitals and hospital chains. Smyth Business Systems, Inc. of Canton, Ohio, markets golf and country club management systems and retail systems for independent retailers. The ASD program provides special benefits and assistance for companies that market their own industry-specific software with DG hardware.

■

The Department of Justice has awarded a $30 million contract to Tisoft Inc. to install an office automation system for the Department's Civil Division. Tisoft, based in Fairfax, Virginia, will install 35 MV/ family systems, 1,000 workstations, software, and telecommunications to support the Civil Division's 900 lawyers, professionals, and support staff nationwide. The new system, called Amicus II, will provide word processing, electronic mail, and decision support tools like case management and tracking. The system includes SSI's WordPerfect and MathPlan software, and Network Systems Corporation's Hyperbus local area network.

■

The smart money says the higher-contrast electroluminescent screen for the DG/1 will be released in May. People who have tried it say it's a big improvement on the present liquid crystal display. Current users will be able to upgrade to an improved LCD screen. Sources say a 5/10 MB hard disk option will also be available.

■

DG joined the Corporation for Open Systems as a senior research member in late February. COS is a nonprofit corporation chartered to promote products that permit open systems interconnection and interoperation. It currently has 23 computer and telecommunication companies as members. Robert C. Miller, senior vice president of DG's Business Group, will become a member of the COS board of directors.

■

Chihuahua City's Complejo Industrial Park is the site of DG's newest assembly, test, and repair facility. The 42,000 square foot facility, dedicated February 18, is DG's first such operation in the Western Hemisphere outside of the United States. Within 18 months more than 100 people are expected to be assembling and testing MV/4000s, electrical cables and harnesses, and printed circuit boards. When possible, DG will buy supplies and equipment for the facility locally; some local purchases will be for export to manufacturing facilities in the United States.

DG President Edson D. de Castro announced at the dedication that the company has donated an MV/4000 to the University of Monterrey, and will donate another system to the Instituto Technologico Regional de Chihuahua.

■

"TIME regrets the error," was all *Time* could say in reponse to New Hampshire Governor John H. Sununu's letter. The governor wrote: "While flattered by the story on our use of computers . . . I must point out one mistake in your report. The story identifies the lap-top computer that I use as a Hewlett-Packard product; it is not. I am the very satisfied user of a Data General/One portable computer, manufactured by Data General Corp., a company with a large and growing presence in New Hampshire."

■

"Ostrich" is the name for the chess-playing network of seven Novas and an Eclipse that McGill University entered in the North American Chess Championship. Written in assembler, Ostrich looks ahead six moves, and can evaluate 1,200 boards per second. That's not bad, but not good enough to win. See "Computer Recreations" in the February issue of *Scientific American* for details—but don't expect much information on Ostrich. The reporter was more interested in "Cray Blitz" and "Hitech," the eventual winner.

■

"Be prepared for significant changes to AOS/VS," says the envelope of the information package recently mailed by DG Educational Services. It's an announcement for a 2-day seminar on AOS/VS rev 7. According to an ed services staffer, many of the scheduled classes are already full, and additional courses are being added. Topics to be covered in the seminars include new and extended CLI commands, large PIDs, changes to EXEC, performance implications, user-defined scheduling, windowing, and system security.

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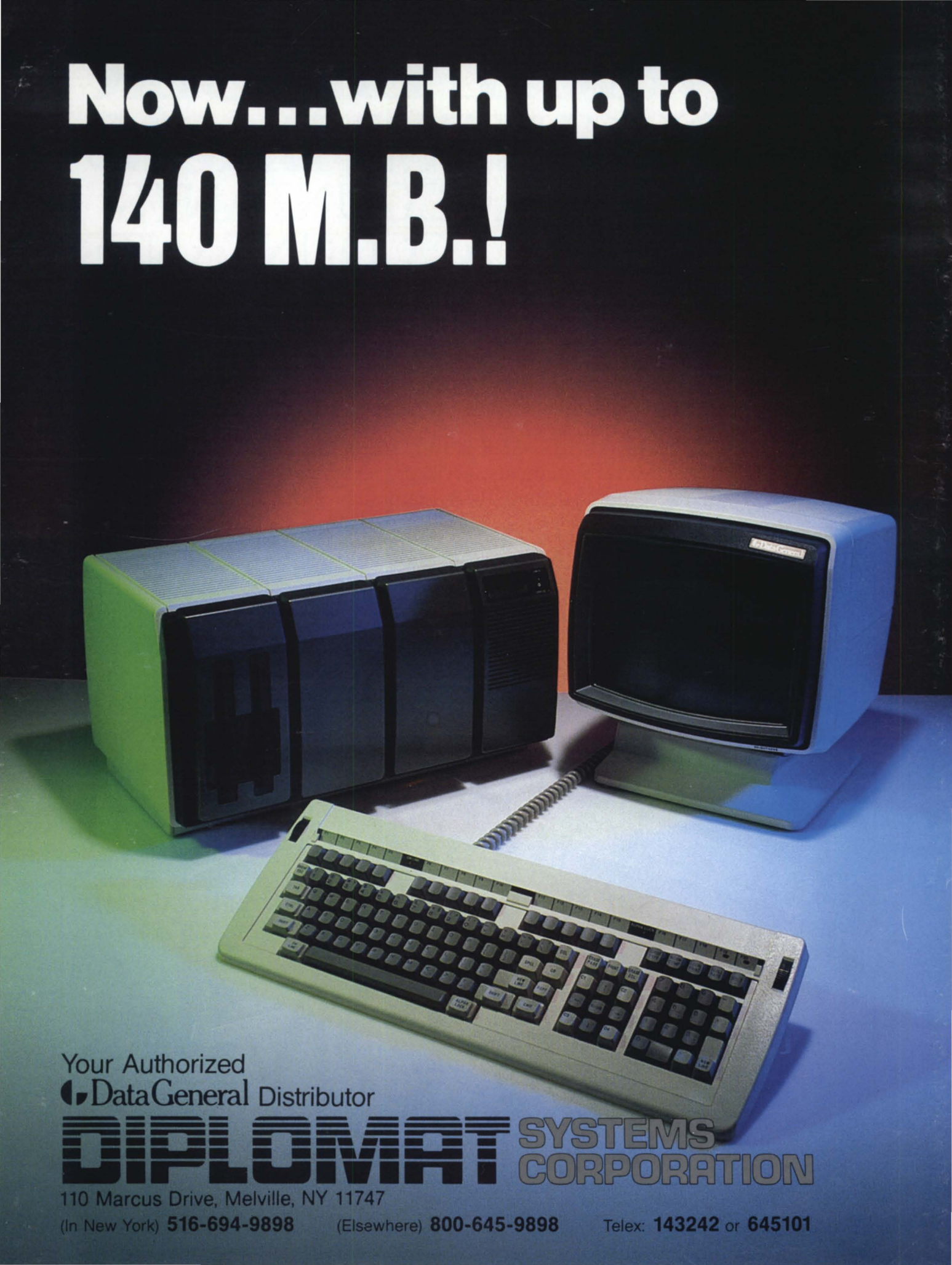

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