

December 1990

FOCUS

The Magazine of the North American Data General Users Group

The background of the cover is a painting. The upper portion shows a city skyline at night, with various skyscrapers and buildings illuminated with lights. The lights are rendered in a painterly style, with some appearing as bright, starburst-like points of light. The colors are primarily dark blues, purples, and greys, with highlights of yellow, orange, and green. The lower portion of the painting shows a dark, reflective surface, likely water, which mirrors the city skyline above. In the bottom left corner, there is a computer monitor and a keyboard, also rendered in a painterly style. The overall mood is one of a digital cityscape at night, reflecting the theme of the magazine.

Reflections on the workplace

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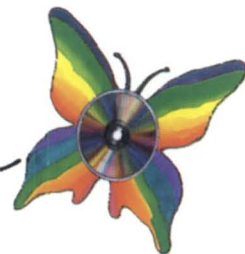
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FOCUS, the Magazine of the North American Data General Users Group (ISSN 0883-8194) is the official monthly publication of the North American Data General Users Group (NADGUG) in cooperation with Turnkey Publishing, Inc. NADGUG offices are located at Stillhouse Canyon Office Park, 4807 Spicewood Springs Road, Suite 3150, Austin, Texas 78759, phone 512/345-5316.

FOCUS, the Magazine of the North American Data General Users Group, is distributed to members of the North American Data General Users Group. Membership fees are \$40, of which \$36 is allocated to a subscription for FOCUS, the Magazine of the North American Data General Users Group. A one-year subscription (12 issues) to FOCUS, the Magazine of the North American Data General Users Group, costs \$36. For all memberships and subscriptions outside North America, add \$50 to defray costs of mailing. For information on NADGUG membership, call 1-800/877-4787. Address all other correspondence to FOCUS, the Magazine of the North American Data General Users Group, c/o Turnkey Publishing, Inc., Stillhouse Canyon Office Park, 4807 Spicewood Springs Road, Suite 3150, Austin, Texas 78759.

Application to mail at Second Class Postage Rates is Pending at Austin, Texas and additional mailing offices. POSTMASTER: Send address changes to: FOCUS, the Magazine of the North American Data General Users Group, Subscription Department, c/o Turnkey Publishing, Inc., Stillhouse Canyon Office Park, 4807 Spicewood Springs Road, Suite 3150, Austin, Texas 78759.

The cost of single copies is \$4. Requests to replace missing issues free of charge are honored only up to six months after date of issue. Send request to FOCUS, the Magazine of the North American Data General Users Group, c/o Turnkey Publishing.

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Afterglow

As I look at the assortment of press releases, brochures, and notes that I gathered at the conference, I find it difficult to describe in a few words what NADGUG 90 was like for me. My thoughts are as cluttered as the papers on my desk. (This is only a temporary condition; a part of my post-conference recovery.)

There were lots of high points: record attendance, a stunning exhibit hall, meeting many of the people who write for *Focus* or participate on our bulletin board, seeing Ed de Castro himself at the welcome reception. But the obvious niceties were but the trimming on the big picture.

There was an air of excitement at the conference, something that has been missing for a long time at both DG itself and in the user community. DG's layoffs and financial losses have been difficult on everyone in the DG community. Morale is low in Westboro, for obvious reasons. In the user community, system managers are tired of having to justify to management why they should continue to invest in DG equipment. The layoff of over 100 SEs in October was especially distressing.

There was a notion among the user community that this was going to be a "make or break" conference for many people in the DG market. That could be one reason behind the high attendance. People wanted to see for themselves just what was going on with DG.

DG executives sensed this crisis of confidence. In a speech to users, DG President Ron Skates presented the series of losses and cutbacks as a set of deliberate, though painful steps. At the same time that DG cut expenses, he explained, it continued research and development efforts, producing a new line of computer systems, the Aviiion, and continuing support of the MV line. With the recent reorganization and streamlining of resources, DG is now poised for recovery. Despite the losses, "DG is not in trouble economically," he said.

In contrast to Skates' calculating image is Marketing Vice President Stephen P. Baxter. Baxter talked about DG's recent successes, like the awarding of a \$45 million OEM agreement with Sprint International and the reinstatement of DG's contract with the Department of Interior. He spoke proudly of DG's newest products, the MV/30000 and the AV/100. Joel Schwartz, head of the new Eclipse Business Unit, talking about a five-year plan for the Eclipse/MV line, said that the largest single new product in development at DG is a high-end MV product.

Throughout the week, there were many signs that DG had changed. DG executives were accessible, and made themselves available for one-on-one interviews with users.

My conversations with one person seem to sum it up. The person is a longtime supporter of Data General, and has both personal and financial interests in the success of the company. On the first day of the conference, I asked how the show was going for him.

"Same old stuff," he said. "Same old people saying the same old things."

I asked him the same question on the last day of the conference.

"It's great!" he said.

Surprised, I reminded him of his earlier response.

"That was before I talked to the folks at DG. I got some problems worked out here that I've been trying to straighten out for a long time," he said.

It seems that Data General really is trying. One executive quipped that DG is lately referred to in print as TDG (Troubled Data General). The company, troubled or not, wants to shake that image. The NADGUG 90 conference was a good start. Let's hope the enthusiasm can be sustained as DG continues its difficult task of regaining prestige and profitability. Δ

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The Magazine of the North American Data General Users Group

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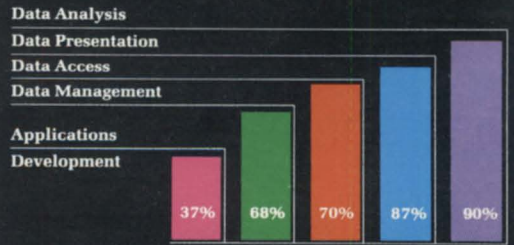
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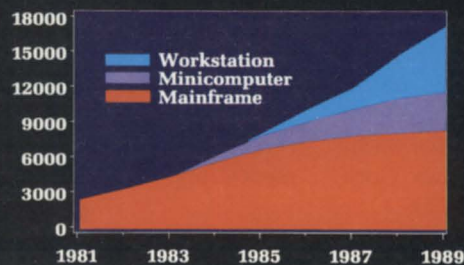
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Close encounters of the RIG/SIG kind

The Data General offices in Schaumburg, Illinois hosted **Chicago Area Data General Users Group's (CADGUG's)** September meeting. Evening discussions featured the second of a continuing series on the "Advantages and Pitfalls of Data Base Management."

DG's **Keith Gunderson**, systems engineer, presented the various data base systems available for DG computers.

Due to the NADGUG Conference, CADGUG made no plans for an October meeting. They will resume in November with a dinner meeting, keynote speaker, and election of officers. "Ask DG" is the theme of their December meeting, which will feature an open forum between members and DG representatives. For additional information, contact **Chuck Goes** of Datamark Corp. at 708/673-1700.

CQCS Special Interest Group has tentatively scheduled a meeting for February 7-8, 1991, in Denver.

The program will include a discussion of Cyberscience products, training, user shareware period, business meeting, and an open forum. The user shareware portion will cover various applications (not necessarily in CQCS) that users have developed. These shareware packages will be available to participants to download from the Cyberscience bulletin board. During the open forum, users may submit suggestions or enhancements to Cyberscience products.

For additional information on this meeting or on the CQCS interest group, contact **Ray A. Walther** of AIM Management Group, Inc. at 713/626-1919.

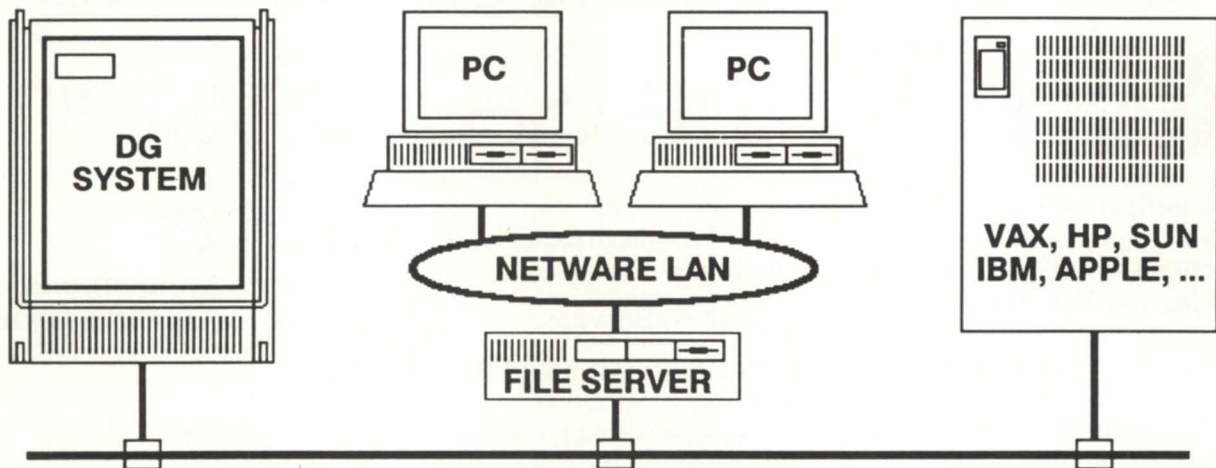
Plans are underway for the revival of

the Israeli Data General Users Group, with TPM Computers and Systems, LTD., President **Solly Tamari** leading the effort. Upon returning to Israel after two years in the U.S., Tamari stated that he is "aware of the important work that NADGUG performs for North American Users," and commented that "the Israeli Users are entitled to have such an organization."

Anyone interested in the Israeli Data General Users Group is encouraged to contact Solly Tamari at 03-533-7655 or by fax at 03-533-7665. Δ

Greg D. Goss is the RIG/SIG coordinator for NADGUG. He may be reached at Focus magazine, 4807 Spicewood Springs Rd., Suite 3150, Austin, TX 78759; 1-512/345-5316 or 1-800/USR-GRUP.

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Finally! Wordperfect 5.0 for DG

SYNOPSIS

Features of the popular PC word processor—like styles, spreadsheet import, and graphics—are now available on your DG terminal.

by Stephanie Pianka
Special to Focus

Data General users no longer have to ask the question "When is 5.0 (five 'oh') coming out?" That's because it's just about here! Wordperfect Corporation began beta testing its 5.0 product for AOS/VS machines in October. Release is slated for late fall.

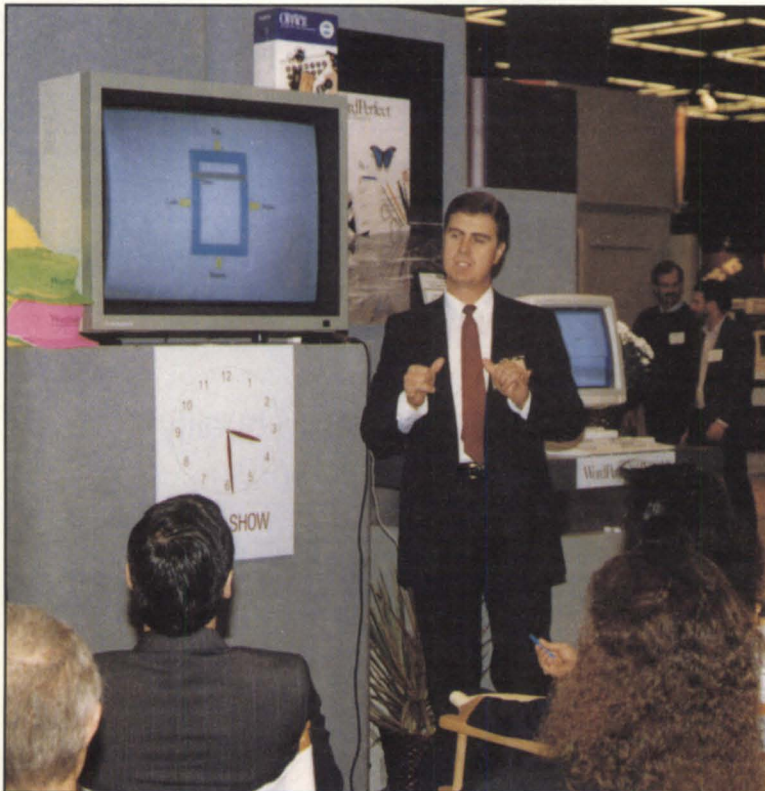
Having previewed the product myself, I can say that it's well worth the wait. Features and functionality that were previously only available to the PC user, or to those brave enough to face a "user friendly" desktop publishing package, come now to your Dxxx terminal.

If you are familiar with the MS-DOS version of Wordperfect 5.0, then you should find no surprises in DG 5.0. Wordperfect has transferred the features from its popular personal computer software package to the Data General platform. The most significant difference is that you will be running under an AOS/VS operating system instead of MS-DOS, so some things (file retrieve, save, and printing options, for example) have changed.

New features

New features available to the end user include: user setup, styles, spreadsheet import, and graphics. Don't use graphics? Don't worry. There are plenty of new features to entice even the non-graphics user.

Printing has been made easier, and font changes are a breeze compared to 4.2. Users no longer have to remember where printer "1" is, or what font "3" looks like.



Kim Cooper of Wordperfect demonstrates 5.0 at the NADGUG conference.

A Programmer Calls His Dog.

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

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ZIP, a utility of System Z, allows you to develop queries, menus and reports with no programming knowledge. However, for the more experienced user, the source code generated by ZIP can be enhanced or modified for more complex applications.

Eliminate Machine Dependence

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

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new paper size/type feature that allows the user to choose from several standard paper sizes, or enter their own specifications.

For the power user who desires challenges, there is the new macro programming language and macro editor. These powerful features allow users to automate some of their day-to-day office functions. For instance, by using the new macro

commands, together with the merge and sort features, you could automate the way your office processes mailing information. By storing address information in Wordperfect merge format, and bundling macros and menus around the functions, end users can simply enter a few keystrokes to produce custom envelopes, letters, and product information.

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Figure 1: Graphics formats supported by Wordperfect 5.0

CGM	Computer Graphics Metafile
DHP	Dr. Halo PIC format
DXF	Auto CAD Format
EPS	Encapsulated Postscript
HPGL	Hewlett Packard Graphics Language Plotter File
IMG	GEM Paint Format
MSP	Microsoft Windows Paint Format
PCX	PC Paintbrush Format
PIC	Lotus 1-2-3 PIC Format
PNTG	Macintosh Paint Format
PPIC	PC Paint Brush Plus Format
TIFF	Tagged Image File Format
WPG	Wordperfect Graphics Format

Users will also be able to modify their own setup features including screen display characteristics, backup options, document initial codes, print options, and location of auxiliary files (backup directory, style library filename, keyboard/macro files, etc.). For example, if you don't like the way your keyboard is configured, you can now create your own keyboard definition using the keyboard layout feature. (CEO users can change their cancel key from F1 to F11, and the interrupt feature from Ctrl-F1 to F5.) Of course, 5.0 comes with a new template. This one slides into the top of your keyboard (instead of "sitting" on your keys), has bolder colors, 15 function keys, and a complete listing of cursor control keys. (For example, Reveal Codes can now be accessed with the C3 key.)

For the desktop publisher, or any user who works with graphics applications, Wordperfect's new graphics features allow professional output with a minimum of effort. Features such as kerning, graphics boxes, and style sheets provide tools needed to create newsletters, flyers, and presentation material. Since 5.0 is not a true WYSIWYG product, you

will not see the graphics immediately displayed on your screen.

Wordperfect, however, introduces the DG user to true print preview capabilities, dependent on monitor type. The enhanced print preview feature allows you to view the document in a number of ways: full page, 100 percent, 200 percent, or as facing pages. WP 5.0 will use graphics drivers to communicate with your terminal. Different drivers are available for different terminal types. Users can select their own graphics screen type by using the Setup feature.

In addition, 5.0 supports just about all of the popular graphics formats. (For a complete listing see Figure 1.) For Drawing Board or Trendview users, the CGM file format will allow you to bring charts /graphics directly into Wordperfect 5.0 documents.

Wordperfect Corp. has also included an array of new utilities for the system manager. Most management utilities can now be executed from a menu. Tasks such as loading the software, setting up a printer port, and changing directory ACLs have been automated. Menu options are available for system manager utilities, Wordperfect 5.0 utilities, and Wordperfect Office utilities. No time is wasted trying to remember how to run a utility or program. Directory structures have been changed as well to accommodate both Wordperfect 5.0 and other WP products that you may have, or may add in the future. The new management features of 5.0 are easy to learn and seem to give more control to the system manager.

System requirements

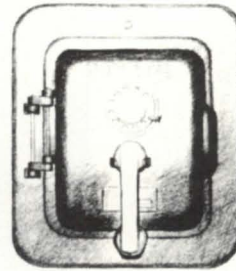
At this writing, Wordperfect 5.0 takes up about 9 MB of disk space without the printer drivers. There are about 35 printer files in all, about 10 MB. However, disk space is saved since only *required* printer files need to be loaded on your system. As for memory consumption, I do not have

Stephanie Pianka is president of New England Systems and Software Inc., a computer consulting firm specializing in Data General applications. She has been working with Wordperfect for several years, and is a Certified Wordperfect Resource and Reseller. She can be reached at New England Systems and Software Inc., 1870 Hamburg Street, Schenectady, New York 12304; 518/377-4057.

current figures. Wordperfect Corp. does not have any special memory requirements for 5.0. Memory needed will depend upon the number of users and features used. Features that require additional memory include: executing a single large macro, using a customized keyboard layout, hyphenation, multiple graphics boxes, and keeping many documents active at once.

I feel that this product is worthwhile for many different types of Data General users. Wordperfect has enhanced many features for end users and power typists alike. They have also added new features to attract the power users, desktop publishing enthusiasts, and system managers. Both experienced Wordperfect users, and new Data General customers should take a look at this product. △

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Circle 20 on reader service card.

by Lori Rhea DiSorbo
Focus staff

If you are reading this article, it is unlikely that you are one of the growing number of blind computer users. Chances are, you aren't deaf either, or motor-disabled. But you might know someone in your office who is.

One unexpected offshoot of the computer revolution has been the opportunity for more disabled professionals to work in fields they are qualified for. The saga of unemployed or overqualified employed disabled workers is not over, however. Their search for independence and fulfillment often halts when they are unable to use their trained minds in a stimulating environment. Highly trained graduates express frustration over not being allowed to use their skills to do interesting work.

Advances in computer technology increase the chance for disabled professionals to work in their designated fields—at least in the computer industry. From programming to word processing, data entry, and spreadsheets, handicapped professionals are more often performing work that meets their capability levels.

What's your handicap?

Adaptive computer technology allows all types of disabled people including the visually, motor-, and hearing-impaired to use computers. However, the two most developed areas are technology for the visually and motor-impaired. Computer barriers for the hearing-impaired consist mainly of job training, and the various beeps that emanate from the computer. Designers remedy the "beep" problem easily by coding visual images to appear in place of the beep. Training is a little more difficult, but can also occur visually.

Combatting blindness

Pretend that you were up all night racking your brain for a solution to a program. You come to work early the next morning ready to input the solution, and all that is sitting on your desk is a keyboard. Could you finish the program by your 10 a.m. deadline? How would you know if you made a mistake typing in the program? Or, how could you check if you were typing on the right line, or even in the right directory?

Adaptive technology

SYNOPSIS

Advances in computer technology allow disabled people to work in the fields for which they are qualified.
Part I of a two-part series.



The Optacon print-reading aid from Telesensory Systems, Inc. makes printed material accessible to blind people. A small hand-held camera in one hand scans text and converts it to shapes of characters recognizable by a finger on the other hand.

A similar situation faced DG user Dan Simpson. Simpson is blind from birth. After attending a vocational school for the handicapped, he was hired as a programmer by General Instrument Corp. He was assigned to program on a PC connected to two Data General MV/10000s and an MV/20000.

Fortunately for Simpson, his new company agreed to split the cost of some adaptive equipment with a vocational rehabilitation center. Simpson was able to accomplish his work with a little more than just a keyboard. But he remembers back to the beginning when he programmed without one piece of equipment invaluable to him today—a braille printer. He states that with the braille printer "I don't have to jump around on the system, then try to remember where I jumped out of. Doing *everything* on the computer was time-consuming, plus I was already fighting a learning curve with new

languages and other things."

Equipment for the blind

Several advances have been made in the area of adaptive technology since Simpson started as a programmer. The past five years have seen an abundance of new adaptive equipment enter the marketplace. Depending on specific needs, a number of different devices exist to help the handicapped computer user.

There are two ways for a blind person to make use of printed or on-screen information: auditory stimulation (hearing it) and tactile stimulation (feeling it). The majority of auditory equipment is based on synthesized voice output. Tactile equipment is developed around the notion of braille communication.

Auditory devices

The optical character reader (OCR) paved the way to quick referencing and reading for the blind. With the OCR, a



tough. How do they know what the graphics are? They can hear the words, but not the design. Today, packages are available that tell colors, for instance, "dark blue on a grey background." According to Simpson though, "there's still a long way to go. There's no real easy way yet to describe complex graphics."

Tactile devices

Tactile-based equipment has also created ways for the disabled to access computers. As mentioned before, braille printers have considerably advanced the ability of blind users to work with computers. Dr. Bud Rizer, director of the Technology Resource Office (TRO) of the Maryland Rehabilitation Center, explains that one of the most useful pieces of equipment for programmers is a braille printer. By using thick paper and a special striking drum, on-screen information can be outputted in a form understandable by the blind.

Braille keyboards also exist. Many blind users are familiar with a regular keyboard, but for those who aren't, a special one is available. A braille keyboard has a row of 40 eight-dot cells. The top six dots display standard braille symbols; the bottom two display character attributes, and tell whether or not the cursor is on the right symbol. Users feel the braille with their right hand, and manipulate the cursor with their left.

The Optacon (Optical Tactile Converter) is another tactile device similar to the OCR. It consists of a piece of equipment the size of a tape recorder, and an attached handheld camera the size of a cigarette lighter. As you scan the camera across a line of text, the Optacon sends a letter electronically, causing vibrating pins to recreate the scanned image.

Your left hand rests on the main body of the Optacon, with your index finger in a little trough on the box. As you scan with your right hand, pins corresponding to the character scanned vibrate, and you feel the letter under your left index finger. For instance, for "H", you would feel a long vertical line, a small horizontal line, and another long vertical line. Special training is required to distinguish the letters. The Optacon is most useful when looking up short references, or reading two or three pages of text, but not as useful for longer material since it is so time-consuming.

Both hearing and feeling

Many devices for the blind make use of both auditory and tactile stimulation. The Braille 'n Speak is just such an instrument. It is a portable device small enough to fit into a large coat pocket. It has a speech synthesizer and translator inside of it, so users can type in notes or write up a small file with primitive word processing. The user presses a combination of keys (dots) that produce standard braille characters. Because Braille characters are made with combinations of six or fewer dots, the keyboard only needs six keys plus the space key. The Braille 'n Speak is perfect for working at home, or taking notes at a meeting. Work from the office can be downloaded and used at home, and new information inputted into the Braille 'n Speak can be uploaded to a standard PC. The Braille 'n Speak can also act as a computer input device.

Refreshable braille is similar to the Optacon but involves braille. It looks like a regular keyboard, but right below the space bar is another strip about the size of the space bar. On that strip are hundreds of tiny holes in patterns. As the computer reads over a line of text, the braille character for each letter is sent to the bottom bar. Under the bar are little pins that will pop up to create the braille character. Your fingers move across the bar and feel the braille, and when you get to the end of the line, you indicate to the computer to feed more information.

Accommodating with computers

"The more oriented we are to print, and away from [spoken] words, the tougher it is for the blind person," Simpson relates. By adapting technology to meet special user needs, computers can make communicating with the seeing world a little easier.

Simpson reports that Data General has accommodated his special needs. By making documentation of programming reference manuals and operating systems manuals available to Simpson in magnetic or tape format, DG has allowed Simpson to access this much needed information.

Rizer tells us that to the visually impaired, computer technology can mean everything: "Once information goes from being on paper to being electronic, anything can happen." Δ

blind person can scan a book, memo, or other printed material, and the words will be translated into synthesized voice. This tool consists of a box from which the voice is outputted, and a small wand-like device that the user manipulates to scan text.

Designers have also incorporated synthesized voice into computer systems. As users type, information is converted into synthesized voice so they can hear their input out loud. Users can control the speed, volume, pitch, and timbre of the output. If users want to take a second look at the input, they can jump into a "review mode." In review mode, the screen freezes—the computer thinking the user has paused—and the user can move anywhere on the screen, to listen to whatever character the cursor rests on. Users can read the whole screen, one line, or one character, then return to what is called "applications tracking mode" when ready to continue.

For a blind programmer using graphics, lack of vision becomes particularly



SYNOPSIS

Mail order company follows the "Rules of Rush" to produce customized systems for billing and credit approval, thus speeding up order processing.

by Michael H. Drucker
Special to Focus

During the summer of 1989, I began to look for a way to set up a corporatwide fax network for my company. Global Computer Supply/Equipment is in the mail order business and distributes computer, office and industrial supplies, furniture, and occupational safety equipment from regional warehouses. We have one MV/20000 and six MV/10000s.

Not finding an acceptable PC-based solution, I decided to look for a DG alternative at the NADGUG 89 meeting in New Orleans. I returned with a fax evaluation unit from the Massachusetts company Biscom and a software package called Rush from its distributor Concept Automation.

Rush allows multiple users (AOS/VS or CEO) to send cover letters, comments, documents, or text files to any Group III fax machine. Rush will run from CLI, as an integrated CEO public user application, or as a Wordperfect integrated program. It can also process Postscript files. The fax unit called Faxcom comes as a send-and-receive unit, using an HP laser as the output device, or as a receive-only device.

The unit is an RS-232 device that quickly connects to your DG with the supplied cable. A supplied RJ11 cable connects the unit to a PBX or outside phone line. The

software is loaded into a :RUSH directory from the release tape with the following structure:

```
File 0   Macro for loading Rush
File 1   Initial installation copy of Rush
File 2   Update release of Rush
File 3   Validation file for Rush
```

The rules

Configuring the software is simple, as long as you follow the Rules of Rush.

Rule #1: No alias, no fax

Each fax request starts by comparing the user's destination input to a list of names in an ALIAS_TABLE. You can create a text file called:RUSH:TABLES:ALIAS_TABLE. This phonebook file contains the following fields:

```
ALIAS           6 CHARS
PHONE NUMBER    35 CHARS
COMPANY         30 CHARS
CONTACT         25 CHARS
```

Each field must be separated either by a tab or with two spaces. The first entry to this file should be an alias called "#" to indicate a wildcard entry. This will allow the entry of any fax number during an interactive fax session.

Rule #2: No line, no fax

The fax server process needs the console line number to find the Faxcom box. The Faxcom box needs the "code" for access to a dial tone. Create a text file called :RUSH:TABLES:LINE_TABLE. A sample entry would look like: @CON15/9*D#.

The Faxcom is assigned to CON15. Our PBX requires a 9* to get a dial tone. The D# will wait for a dial tone and take the phone number from the ALIAS_TABLE.

Rule #3: No gen, no fax

After you create or change any table, you must execute :RUSH:RUSHGEN.PR. This procedure will check your tables for any errors and update your table changes.

Rule #4: Serve yourself

Use the supplied RUSH_UP.CLI to bring up :RUSH:RUSH_SERVER.PR. Edit this macro to customize your system.

Rule #5: Rush to send a fax

Execute :RUSH:RUSH.PR to send a fax. Rush can be an interactive process or can be used as a batch operation using a script

file to send many faxes.

Each fax request can be stored in a log. Using :RUSH:SHOWLOG.PR, you can customize your status reports. The following tables are available:

```
ACCOUNT_TABLE  Used to create a charge-back system
GROUP_TABLE    Used to create a broadcast system
TIME_TABLE     Used to control delivery times
Rush_DEFAULTS  A three-level system manager parameter file
```

Rush allows the system manager to control how each error is handled. Each status code can be set to either redial (you determine the number of redials) or fail. This feature is very important. You can control your costs by not redialing known errors.

Customized fax

Concept Automation will supply a free logo file (the better the art work, the better the logo) for each fax unit you purchase. For a fee, they will digitize any form. You can create an impressive form fill-in routine using batch mode.

Once I had the basic fax system, I was swamped with end-user requests. The following customized systems have been installed at our company.

Credit department: From our credit approval and credit card authorization screens, we can fax credit applications and create letters to our customers with credit card problems.

Accounting department: We can create a letter or statement of accounts related to specific problems while we are on the phone with a customer.

Purchasing department: We now fax stock and drop-ship purchase orders to our vendors. We fax inter-branch orders, stock transfers, and must-ship orders.

Every day, new requests for our fax switch arrive by fax. But my end-user community has found one negative aspect of our corporate fax switch. They can't use the "I have to send a fax" excuse to make a lunchroom stop. Δ

Michael H. Drucker is the MIS director of Global Equipment, a mail order company in Port Washington, New York. He has been involved in the computer industry for 25 years.

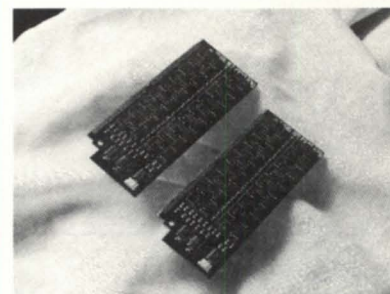
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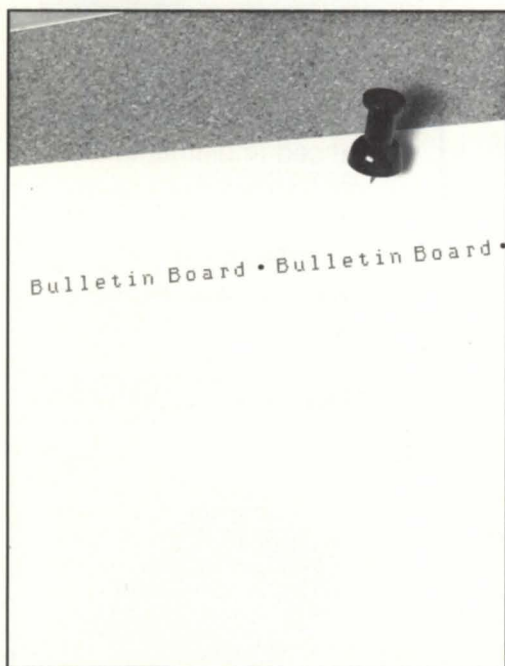


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Bits and bytes from the bulletin board



TEX—ASCII upload

From: Ted Barila

I'm trying to ASCII upload a file to easylink with Tex. I'm using a command file to automate the transfer. My problem is with the ASCII upload portion of the command file. When I issue a "SEND," Tex seems to try to use Xmodem. I'm executing Tex with the following switches: -hefmp.

From: Randy Berndt

To perform an ASCII upload, precede the name of the file with an apostrophe for normal upload, or a quote (") for upload with a half second delay between lines.

Macs to MV/7800XP

From: Kent Finkle

I have a Mac here and I'm trying to get it to act as a dumb terminal to our

MV/7800XP via Macblast. It connects OK and we can log on to the MV, but I get a double echo whenever I type a character. I type one "A" and I get "AA". Everybody tells me to make sure local echo is off. Well, it is off. If I turn it on, I get "AAA". Any Mac connectivity gurus out there?

We are also open to different Mac software if that would help.

From: Phil Horvitz

I use an emulator called Versaterm. Highly recommended. You also should check to make sure that you've wired your Mac serial port correctly. Remember, the Mac uses RS-422, and most cables rig up a quasi-RS-232 by using only the negative half of the transmit /receive pairs.

File transfers

From: Mike Maurer

I am having a communications problem that someone may be able to help me with. I am not a system manager, but I am somewhat familiar with console characteristics, etc. The problem is calling into our MV/40000 from home. I have a PC at home with a 2400 baud modem. I dial into a 2400 baud modem on our MV and log on. I then execute GATE.PR and access an outbound 2400 baud modem from the MV,

and dial into a remote BBS system.

Using the Ymodem protocol I can download files from the BBS, through the MV, and to my PC at home without any problems. But when I try to upload files from my PC to the BBS, the data packets never seem to make it through. I'm suspecting some sort of flow control problem somewhere in the line, but am not able to figure it out. Has anyone experienced similar problems or have any suggestions for me?

From: Kevin Danzig

While I don't have an answer myself, the ring buffer isn't it, otherwise the transfers the other way wouldn't work, and more important, you need a pretty busy system to overrun a ring buffer at 2400 baud. The problem might be flow control. Kermit running at seven bits would probably work though, because it

is either a timing or data problem.

From: Rick Marnell

Sounds like you don't have Extended Pass Thru turned on in DG/Gate. That would cause everything you send to be masked to seven bits.

Bar code wedge

From: John O'Keefe

Anyone out there using bar code pens /wedges attached to DG terminals? If so, please leave a message with the company name and contact names of vendors. I am also looking for a good (read that cheap) bar code printer for labels, or a program that would run on AOS/VS to print bar codes on dot matrix printers. Any help is appreciated. Thanks.

From: Ephraim Nussbaum

We use bar code readers that look like a hand gun. This type is relatively expensive, but very fast to use. We have four of them connected to DG terminals. They are transparent to the hardware and software and the system thinks that the information is being typed at the keyboard.

From: John O'Keefe

What kind of gun are you using? Also, what kind of software prints the bar codes? Does it run under VS? Thanks for the info.

From: Ephraim Nussbaum

The gun we use is manufactured by Symbol Technology. It isn't connected between the keyboard and the screen. The RS-232 cable to the terminal is instead plugged into the reader's controller box and a second cable runs from the box to the screen. To print the bar codes, I simply use an ICobol program to send the proper codes to the printer. It should certainly run under VS. I do not program the individual bars and spaces. The intelligent printer does that for me. I just send a code that the next string is a bar code and the printer does the rest. Δ

Do you have an answer, comment, or question? Call the NADGUG/RDS electronic bulletin board, available to all NADGUG members. The phone number is 415/499-7628. There are no fees for use other than the telephone charges.

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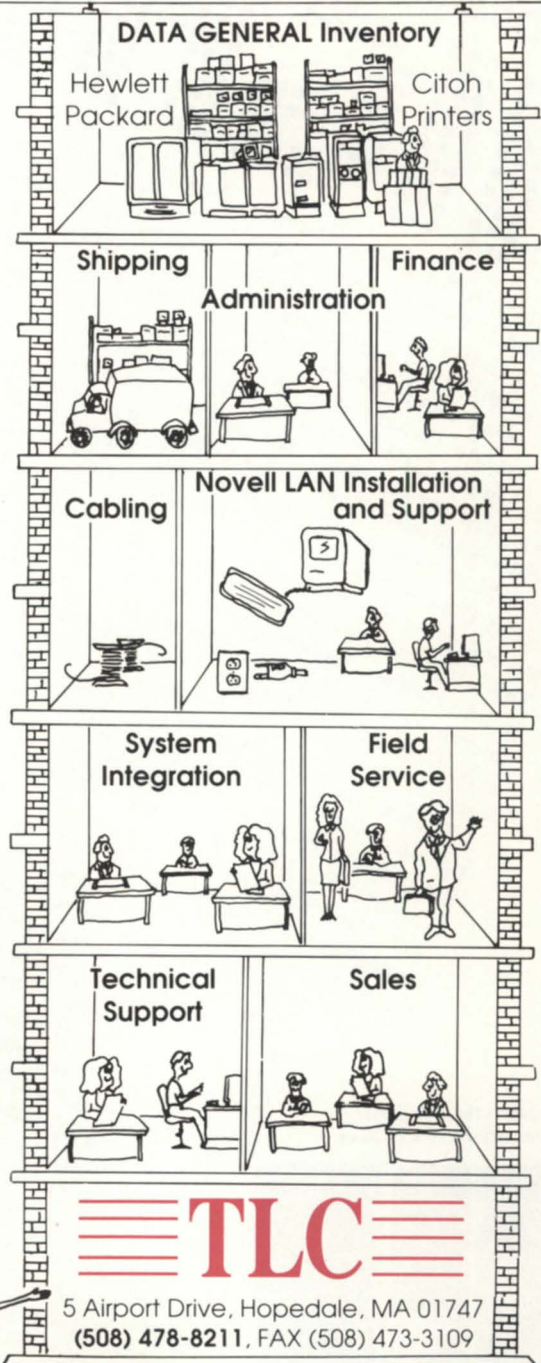
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Circle 39 on reader service card.

1990 Seattle Conference

WORLDWIDE

At the NADGUG 90 conference held in October, Data General executives came face-to-face with the user community to answer tough questions like "Is Data General economically sound?" and "Is Data General committed to its proprietary systems?" Data General executives answered "yes" to both questions. Moreover, in spite of losses and layoffs, Data General said it will do a better job of serving its customers than before. This is high talk for a struggling company in an extremely competitive market. In interviews at the Seattle conference, DG executives were candid about user concerns.

The keeper of the MV line, with over 300 people dedicated to MV development, is the Eclipse Business Unit headed by Joel Schwartz. The EBU works under a five-year plan, Schwartz said. The current strategy is to release a new low- or mid-range MV every two years, and to release a high-end machine every three years. The biggest development project at Data General today is a high-end MV machine. "No one should ever feel that this is going to be the last [MV] machine we're going to build," Schwartz said. In addition to MV product development, the EBU is responsible for MV sales. The restructured business unit will operate more efficiently and allow DG to be more responsive to customer needs, Schwartz said. "The restructuring was not simply a re-

duction," he said. "If you are an MV customer, you're going to have a salesperson heavily trained on all MV products like you haven't seen in a long time." The EBU has a sales team dedicated to DG's largest installed sites. This select accounts group will focus strictly on the installed base. Another part of the organization focuses on new business and the installed base, excluding the named select accounts.

The marketing branch of the EBU will promote MVs to target markets and VARs. Schwartz admits that DG has not done a good job of communicating the value of some of its products, like CEO. Therefore, all Washi-based MVs will come bundled with a free 30-user CEO license. The goal is to double the number of users and capacity every two years. CEO supports 750 users today. PC and Macintosh connectivity are other parts of the strategy. Schwartz said DG's reduction in workforce is not an obstacle in reaching these goals. "The reality is, it takes less people today to build and service products. You can do more with less if you just put your mindset to it."

The MV/30000

The newest member of the MV line was announced at the conference. The MV/30000 is based on the CMOS microprocessor designed by Data General and produced by Hitachi. The Washi chip, also used in the MV/5500 DC and MV/9500, implements the Eclipse family architecture on a single integrated circuit. "The twist is, this is a multiprocessing machine," said Dave Ellenberger, division vice president of Eclipse marketing. DG's mid-range is at the high end of MIPS, and runs on the AOS/VS II operating system. It can be expanded with up to

three Burst Multiplexor Channel/Data Channel I/O channels; up to 256 MB of error checking and correcting (ERCC) memory available in 16, 32, and 64 MB increments; a diagnostics processor; and up to 2,472 direct asynchronous connections. The system can grow incrementally. The base price of the MV/30000 with 16 MB of memory is \$120,000. Its gray cabinet has "more usable space" and "increased thermal capacities," according to DG, but it still looks like a large refrigerator.

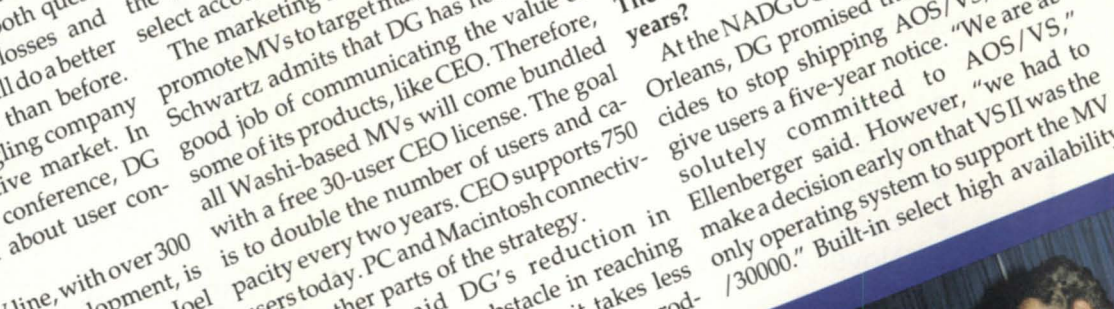
The MV is forever, AOS/VS is for five years?

At the NADGUG 89 conference in New Orleans, DG promised that if it ever decides to stop shipping AOS/VS, it will give users a five-year notice. "We are absolutely committed to AOS/VS," Ellenberger said. However, "we had to make a decision early on that VS II was the only operating system to support the MV/30000." Built-in select high availability

Joel Brown explains the finer points of Cyberscience software to Rick Bean.

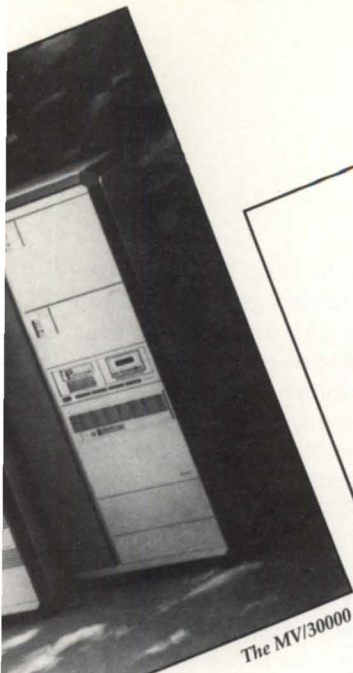


Conference-goers like Ch... enjoyed a feast of Salmo... delicacies at the openin...



Conference-goers like Ch... enjoyed a feast of Salmo... delicacies at the openin...

18



The MV/30000

and other desirable features are not available under AOS/VS. AOS/VS will not receive further major enhancements, Ellenberger said, although users with software support will automatically get new versions as they are released.

AV/100

The AV/100 graphics workstation was also announced at the 1990 conference. It is an alternative to an x-terminal or PC as a graphics-based interface to Unix applications, DG says. The AV/100 includes 8 MB of memory, a 20-inch monochrome monitor, SCSI interface, ethernet interface, and two serial ports. It can support a maximum of 16 MB of memory and up to 4.0 GB of external hard disk. Its base price of \$3,995 is \$1,000 less than its closest rival, Sun Microsystems' SLC. The AV/100 runs at 17 MIPS and the SLC runs at 12.5 MIPS. Unfortunately, Data General doesn't have the reputation and resources of its Sun counterpart. Bill Zastrow, DG's vice president of the Open Systems Division, is overhauling the Avion marketing campaign. We will no longer see the "Fiction vs. Fact", "Smoke vs. Fire", etc. advertisements. He will not pursue the Unix workstation market, he said. Instead, look for DG to promote Avion servers, as opposed to workstations, and to build on its image as a manufacturer of servers and provider of systems integration. △

Crain of Oracle and other Northwest reception.

Meet the presidents

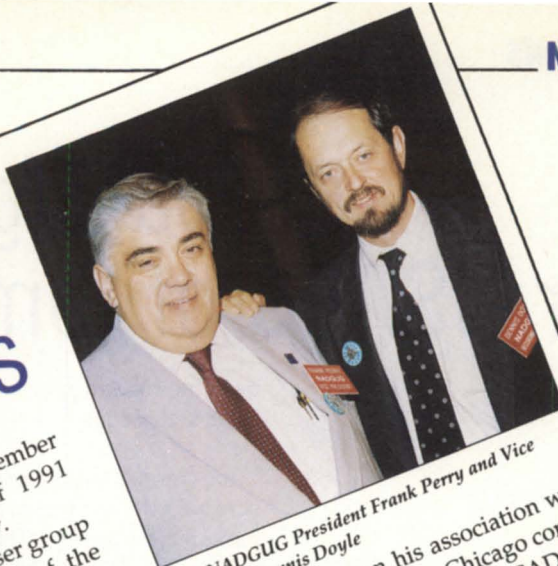
Exploring new ways to expand member benefits is a primary goal of 1991 NADGUG President Frank Perry.

Perry has been active in the user group since 1985, when, as president of the Southeast New England regional interest group, he attended his first Spring board meeting in Boston. He served for two years as Audit Committee chair, two years as treasurer, and spent last year as vice president under 1990 President Lee Jones.

"In the past, we've spent time building a quality magazine and a quality conference," Perry says. This year's challenge will be to determine "what else can we do for our members?"

In addition to Focus magazine and the annual conference, NADGUG member benefits include an electronic bulletin board, software tape library, and other services. Perry plans to review these benefits to see how they can better serve members, and look at new areas of member benefits. "I see the user group as an organization that does things for the users," Perry says.

This year's vice president is Dennis



1991 NADGUG President Frank Perry and Vice President Dennis Doyle

Doyle began his association with NADGUG in 1981 at the Chicago conference. "It was at that meeting that CADGUG (Chicago area Data General users group) was 'reborn,' going from three members to over 100 in two years," Doyle says. Doyle served as CADGUG president for two years and formed the IRDOS SIG (Interactive Cobol and RDOS), now known as the ICobol SIG. He served as chair of the ICobol SIG from 1982 to present. In 1988, he was elected to the NADGUG Board of Directors to serve as recording secretary. Outside of NADGUG, Doyle operates a consulting business specializing in ICobol that is based in Beaverton, Oregon. Perry is busier than ever after his recent retirement after 30 years at the Rhode Island Department of Transportation. △

Henry Bayard of Upper Saddle River, New Jersey, gets a free ride.



Preparing today for NSAPs of tomorrow

by Mark Wlodarczyk
Special to Focus

Last month I asked the question, "what is an NSAP?" and I told some useful lies in pursuit of the answer. The lie (model) I left you with was that an NSAP is the name of the network layer in an ISO/OSI protocol stack. One of the characteristics of a well layered product (such as DG/PC*I) is that a layer created for one environment can find itself in the middle of a brand new product targeted for different surroundings. This aspect of layering is where we continue our investigation of what NSAPs are today and what they will be in the future.

/PC*I stack in the DG/OCA (OSI Communications Architecture). DG/OCA can be used over a wide area network (e.g., using DG/FTAM to get files from a remote non-DG computer). In such a configuration, the transport and network layers from DG/PC*I find themselves in a new environment.

For DG/PC*I, an NSAP must be unique among the CPUs directly attached to a local centralized router. On a public data network, NSAPs must be unique among any computer with access to the network. It's like the difference between assigning your own extension numbers in an office phone system or living with whatever number your local phone company has to sell you. To go worldwide, you have to conform to the access scheme of a worldwide authority.

SYNOPSIS
Navigating OSI layers requires understanding of Network Service Access Points. Part 2 of a 2-part discussion.

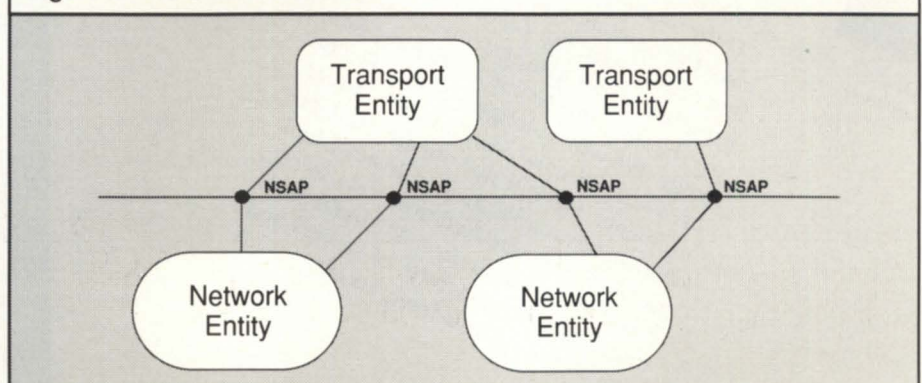
Old faces in new places

Data General uses the middle of the DG

Figure 1: ISO NSAP formats

Authority & Formal Identifier	Initial Domain Specifier	Domain Specific Part
Local Formats	5 0	19 ASCII characters
	4 9	30 HEX digits
	4 8	38 decimal digits
Assigned by ISO	4 7	26 HEX digits
	4 6	34 decimal digits
	3 9	28 HEX digits
	3 8	35 decimal digits

Figure 2: The official OSI NSAP



NSAP type 50 is a "local format" individual network that managers can create at will. NETGENs on MVs that support DG/OCA (i.e., XTS II machines) suggest using a type 39 NSAP. These new NSAPs look like telephone numbers. They start with 39, then a country code (840 for the U.S.), and then a Domain-specific hex number. The first seven of the Domain hex digits specify a vendor. Up to 21 more digits can be used to specify each computer. NETGEN suggests using "F01BB78" (the DG vendor number) followed by the hex version of the ASCII characters in your HOST NAME. For example, 3998401BB78414243 is the default NSAP for a DG MV host called ABC. See Figure 1.

Basically, default NSAPs on MVs are longer and scarier under XTS II 2.0 than they were before. The payoff is that they will be unique for worldwide networks (if all the other guys follow the rules too).

The DG/OCA environment also changes the network layer's assumptions about how to build routing tables. DG/OCA is designed to interoperate with any network stack that implements the same standard protocols as DG/OCA. Remember that the "end system hello" method of building routing tables is optional in the ISO network layer standard. This means that we need a way to tell DG/OCA stacks about NSAPs of network layers that don't know how to introduce themselves.

A new utility called NSAP GEN is included in DG/OCA. System managers run NSAP GEN to tell DG/OCA network layers about the NSAPs and controller addresses of systems that don't generate "end system hellos." In this form of "static routing," the system manager builds the initial routing tables. Later, the network layers will add dynamic information as needed.

NSAP GEN is also useful for MV-to-MV communications over a wide area network (WAN). Dynamic routing is attractive when the ES-IS messages are free, but every packet costs money on a WAN. Forcing managers to build routing tables that point to CPUs on the other side of the world is much less expensive than paying for all the administrative traffic of long distance dynamic routing.

DG/PC*I and DG/OCA coexist—they don't interoperate. That means that DG/PC*I can't talk to that faraway MV, but

DG/PC*I does have to use the new NSAPs if it is running on the same machine as DG/OCA. DG/PC*I applications talk only to other DG/PC*I applications. DG/OCA applications talk only to other stacks of exactly matching ISO standard layers. These two Data General products use exactly the same network layer with the same NSAP, but their upper layers speak in different protocols. The DG/OCA up-

per layers would be bothered and bewildered if they unwrapped a message and found a DG/PC*I structure. How can we prevent this?

So far, we've focused on identifying the network layer on a destination computer, but we also need to point to specific upper layers on that target machine. In this case, it's the job of the transport layer to sort out DG/PC*I messages from DG/OCA traf-

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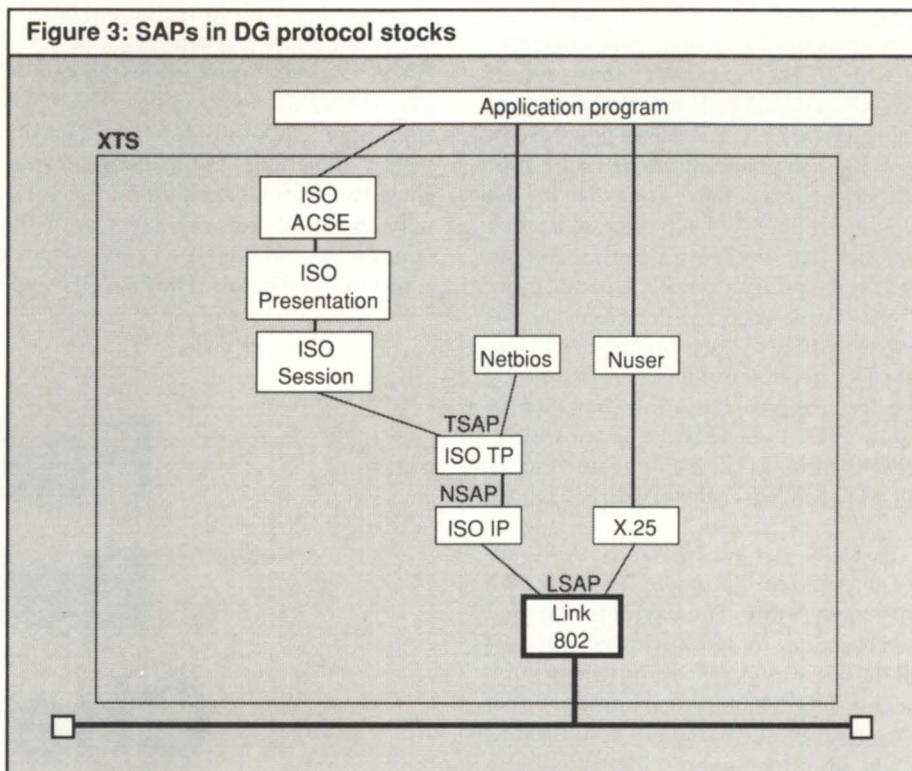
fic. Every message that the network passes to transport contains a transport header. Every transport header contains a destination transport service access point (that's right, a TSAP!). The TSAPs for DG/PC*1 are distinct from the TSAPs for DG/OCA. Although both products use the same transport layer, they use different TSAPs. This is our first clue that SAPs identify not just a target layer, but also which upper layer it passes messages to.

What's an NSAP? tomorrow's answer

An NSAP is the point at which network services are provided by a network entity to a transport entity. (Absolutely the truth!) See Figure 2 (page 20). The OSI model document is 40 pages long. The first 20 pages are a series of definitions that have to be digested before the remaining 20 pages make any sense. The ISO folks tried to be very precise in creating this jargon so that all standards based on "the model" would use consistent terminology.

For instance, an NSAP is really a memory location of inter-layer interface

Figure 3: SAPs in DG protocol stacks



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software in a network product. All the previous discussion has been about what OSI calls an "NSAP address" (i.e., an identifier that tells where an NSAP may be found). Quoting OSI clauses is good for winning bar bets and starting fights, but I'll just paraphrase from here on.

An entity is the software that actually implements an OSI layer. Network service is the constant forwarding of messages until they reach their final destinations.

Note that the "real" definition of NSAP involves both a particular network layer and the transport layer that uses network services. If we view transport as network's boss, an NSAP is the door that the boss yells through to get some work out of the staff. This implies that if an existing network layer gets an additional boss (mix-and-match) it may need another NSAP! (Two doors through which two different bosses give orders.) Right now, ISO TP4 is the only boss that Data General's ISO network layer (ISO IP) has in either DG/PC*I or DG/OCA. This means that each

ISO IP only needs one NSAP because it interacts with only one transport layer.

We've seen that one transport layer needs more than one TSAP so it can differentiate messages for DG/PC*I from those for DG/OCA. We haven't seen it, but there are other layers that can have more than one SAP. Both DG/PC*I and X.25 network layers can share the services of a single 802.2 data link layer. 802.2 uses LSAPs in its header to sort out X.25 packets from ISO IP packets that share a LAN. See Figure 3. If Data General ever makes ISO IP services available to other transport layers, you may have to make up a separate NSAP for each of network's bosses.

In other words

Every layer has at least two things to worry about when it gets a message from the network:

- 1) Is this message for me?
- 2) Who do I pass the message to?

The OSI model uses service access points

between adjacent layers to answer these generic questions. In particular, the network layer uses the destination NSAP in the network header to route messages. If the destination NSAP doesn't match one of the local layer's NSAPs, it uses the routing table to forward the message. If there is a match, the NSAP will dictate which local transport layer to deliver the message to. Network managers must create and maintain unique NSAPs for each possible transport "boss" of every network layer in OSI-compliant networks.

In the past, managers of Data General networks were only concerned with the administration of local NSAPs. Current and future products will require the understanding and use of a more rigorously defined and globally regulated form of NSAP. Δ

Mark Wlodarczyk has been telling useful lies for 11 years for Data General Educational Services.



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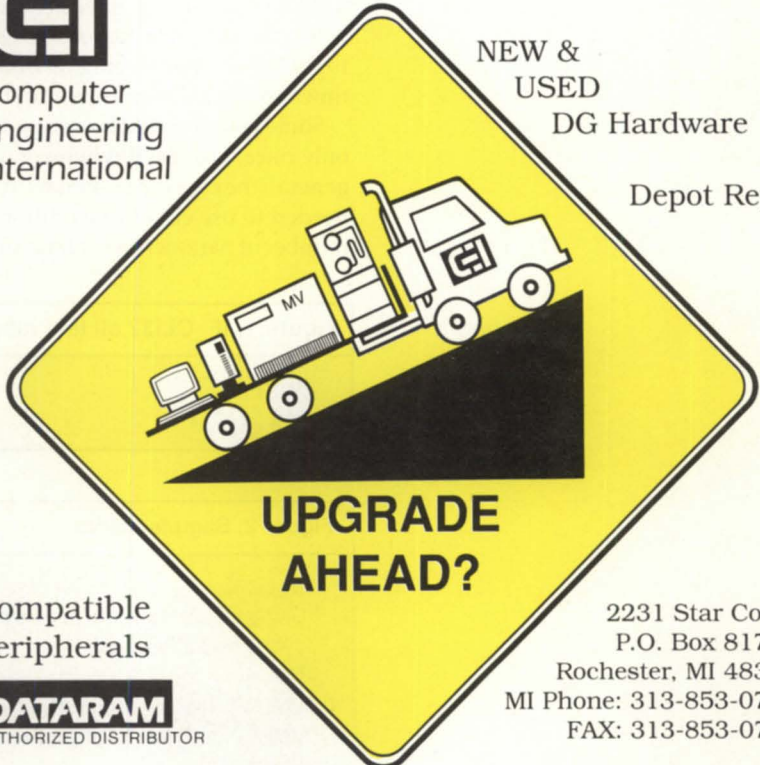
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A brief encyclopedia on OOPs

SYNOPSIS

Entire volumes are being written about Object Oriented Programming systems. The author condenses a few of them for your reading pleasure.

Volume 1: Article to Classification

Well, I am a little flattered by the coverage. As you might know, there is a two-month lead between the time that I submit an article to this magazine, and the time that it is delivered to you. So, I was a little surprised when the October issue of *BYTE* magazine arrived, and its focus was on object oriented programming (OOP). I guess they had a peek at the galley copies of my November article, and decided to follow suit. Seriously, it is not just a coincidence, but an indication of what is the imminent software technology.

Last month, I had just enough space and time to cover the elementary concepts of polymorphism and inheritance. This month, I'll look at hierarchy and classification.

Volume 2: Conjuring code to Controversy

Structured programming has, for many years, been touted as a way of developing software systems. But experience shows that any software development projects based upon hierarchical design strategies and top-down analysis tend to go bottoms-up when it comes to actually writing the code.

Some of the program is bound to be written around the constraints of the operating environment. It is also true that not all of the programs that are written care about their operating environment. But, there are programs that center about some critical details. Examples of this are multi-tasking, inter-process communications, hardware-specific implementations, or interfaces with other software systems.

Where does all of this lead? OOP can help by letting us have the program communicate to the data, while freeing us from the drudgery of low-level manipulation, *most* of the time. The stipulation is required because we usually code the method at least once.

Some people might be saying "That's the purpose of a subroutine; to write something only once, but use it wherever and whenever I feel like it. What's the difference?" In general, the concept is similar. In practice, I would like to ask how many times you have needed to use either two or more slightly variant subroutines, or added an inordinate number of parameters (or flags or globals) to your subroutine because of dissimilarities?

Figure 1: IF_CLI32.cli test macro

```
[!eq,1\\&  
.1]&
```

Figure 2: Sample macro

```
IF_CLI32  
  \\ this is a commented portion of a 32 bit CLI macro  
  \\ do here as you wish  
[!else]  
COMMENT This is a commented portion of a 16 bit macro  
COMMENT put your 16 bit stuff here.  
[!end]
```

Volume 3: Darwin to Dewey decimal

In the physical world, we usually do not have to teach ourselves many different ways of doing things to different objects. We do not program ourselves with a plethora of "sub-routines" to eat a fruit. It is true that we do not handle all fruit in the same way. Just as in real life, in C++ we use a general rule (or method), and program different rules for the odd cases. You probably would not pick up a coconut or pineapple and bite through its rind, as you

would an apple, even though there are many things that you would do (or not do) with a pineapple that you would do with an apple. When we eat a fruit, we do not naturally process it by saying "If this is not an orange, and if this is not a kiwi, and if this is not . . ."

What we do is treat the various foods as different classes of objects. We naturally apply a hierarchy to the objects. By applying a hierarchy and classifying the objects, we can apply general rules to each branch of the hierarchical tree. Cases that do not conform to the general behavior of the branch are handled only when it is determined that the object is of the specified type.

Volume 4: Encapsulation to Inheritance

The same treatment is used for handling C++ objects. The data types are classified. Many data types that we deal with in everyday programs can be derived from another class of data. As an example, an invoice is derived from various entities like customers and sold goods. The customer item possesses phone numbers, names, and addresses. A customer address is the same kind of beast as a supplier's address.

If a data type is, in some way, radically different from the other items in the branch, then it is easy to specify the differences. Let us consider an example using the invoice mentioned above.

Volume 5: Invoices to NADGUG

If the invoice was to be printed for a nameless, walk-in, cash-paying customer, the chances of not having an address to put on the invoice would be very high. Since we know that computers enjoy their roles of being very orderly, we can envision all kinds of fun in programming around null or empty address fields. In OOP, we would see that the invoice ship-to address is derived from the general address class, and we could, within a few lines, be able to specify that an empty ship-to address is valid, and then ask the invoice item to print itself (which would probably invoke the print methods of each of its component pieces). When a ship-to address object is asked to print itself, an empty one could print "Thank you for shopping at NADGUG. Please come again," while others would print more mundane details, like post office box numbers.

Volume 6: Operating systems to Panic

Most of my writing in this column has been related to AOS/VS. For all of you faithful AOS/VS users out there, my advise is to follow the two words of wisdom that are on a button that I have. The two simple words of wisdom are "DON'T PANIC." Now, since I have not received any suggestions of AOS/VS topics that you would like explained in further detail, I am forced to write about AOS/VS II (the "other" operating system.)

Volume 7: Procedure to Understanding

There is a short procedure that I have been meaning to pass on to you for a while. This trick was demonstrated to me by another old-time DG employee who was playing with the CLI32, and he wanted a way to have a macro determine if it was running on "the new stuff" or not. In actual fact, the macro is extremely short, so simple, that the solution is elegant. See Figure 1.

Understanding the macro lies in following a trick or two. As we can see, the first argument to the equality test is a 1 followed by a pair of backslashes. The second argument is simply a 1. Don't let the ampersand ("&") fool you. Old hands know that this means that this macro line continues on the next line. Now, for all the 16-biters reading the macro, we know that the macro will fail, because we know that "1\\" is not the same as "1". But wait! In the 32 bit CLI, a pair of backslashes denotes the beginning of a comment. Since there is nothing before the backslashes, other than the "1", the macro resolves to testing "1" against "1", which is obviously true. In practical use, we would write our own macro as shown in Figure 2.

Volume 8: Volumes to Zymurgy

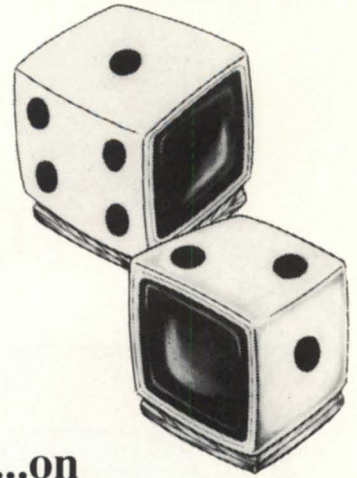
I hope that you have enjoyed this month's article. Even though I wrote Volumes 1 through 8, it still seems short!

By the way, have I mentioned another button I have? "No, I have not lost my mind . . . it is backed up on tape somewhere."

Have a safe and happy holiday season. △

Michael Dupras was a senior consultant for the Software Products and Services Division of DG Canada until he was laid off on October 4, 1990.

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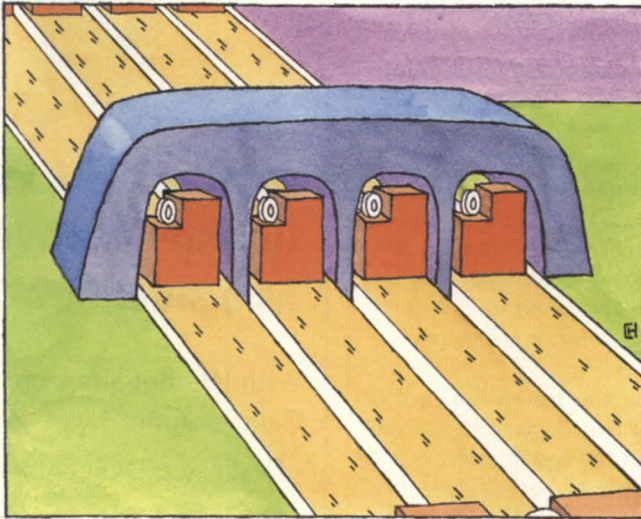
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Flick my BIC



If you're among the masses who want to analyze block types that occur in a DUMP file, the following BIC program is just what you need.

SYNOPSIS

:QUO_DUMPIS?

Several months ago, a few callers to the NADGUG BBS inquired as to where they might find a description of the file format used by the 16 bit CLI's built-in DUMP/LOAD commands and the DUMP_II/LOAD_II utility programs. I initially ignored the requests because I was sure that the format was documented in an Appendix to the CLI manual.

The requests kept coming and nobody seemed to be able to find anything in the current documentation, so I finally broke down and rummaged through my old manuals to find the elusive Appendix. No luck, so I left a message on the BBS for the original requestor to call me so that I could send him a copy of a program that documents DUMP format. I've written numerous "BIC" programs over the years to salvage stuff from damaged DUMP files, and this program was one of them.

To my surprise, the phone rang off the hook with people who saw the message on the NADGUG BBS and wanted to take me up on my offer. To save wear and tear on the fax machine, I decided to make the program and minimal documentation available on the :SYSMGR BBS for anyone who wants it. It's on the BBS as item AOSVS16:UTILS:CLIDUMP and includes the C source code for a simple program that analyzes the block types that occur in a DUMP file.

After watching how often this item got downloaded, I figured that there are probably a few of you out there who might also want access to this information, so I'm going to describe DUMP format in detail this month with a few bits of LOAD/DUMP lore thrown in for good measure.

In the meantime, if any of you AOS types out there run across an early CLI manual with a blue cover, please check to see if it has an appendix that describes DUMP format and let me know so I can cancel my upcoming test for Alzheimer's.

There are several third-party DUMP/LOAD utilities available, and there is also DG's DUMP_III/LOAD_III. I don't use any of them, and I don't know what changes, if any, they make in the DUMP file format used by DUMP and DUMP_II. As a result, this column is based solely on the DUMP and DUMP_II file format that is used by the majority of us.

:DUMP_BLOCKS

DUMP format files consist of a series of "blocks," not to be confused with disk blocks. The format of the first word of each block, referred to here as word 0, is the same regardless of the block type. It looks like this:

Bits 0-5 Block type
Bits 6-15 Block length

Figure 1: DUMP file block summary

Type	Name	Size	Description
0	Header	14	DUMP rev, time, date
1	Filestatus	46	AOS ?FSTAT packet
2	Filename	2->?MXFN	Simple filename, NUL terminated
3	UDA	?LNUD*2	User Data Area
4	ACL	3->?MXACL	Access Control List, w/o NUL
5	Link	1->?MXPN-1	Link resolution, w/o NUL
6	Start	0	Open/DIR into current file/dir
7	Data header	10	Data position/size and pad size
8	End-of-file	0	Close/DIR out of current file/dir
9	End-of-dump	0	Logical end of DUMP file

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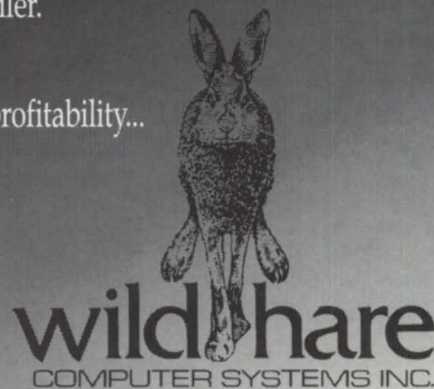
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This word is referred to as the "flag" word. The block type value determines the format of the rest of the block. The block length is the length of the block in bytes, not counting the two byte flag word.

The designers of the DUMP format were a bit pessimistic; they allowed for a maximum of 64 block types, although only 9 are used by the current revision of DUMP format.

The maximum block length is 8,191 bytes, and as we'll see shortly, that allows plenty of space because the largest block type currently defined is 256 bytes.

:BLOCK_TYPE:HEADER

Block type 0, a fixed length "header" block, is 14 bytes long. It occurs only once during a DUMP file, and is always the first block in the DUMP file. The header block

is used to convey the revision of the DUMP file format and the date and time at which the DUMP file was created. The format of the header block is:

Word	Contents
1	Format rev no.
2-4	Secs, mins, hours
5-7	Day, month, year

When you do a LOAD or LOAD_II on the DUMP file, the first thing reported is the information in the start block.

The current DUMP file format revision number depends on which rev of CLI.PR or DUMP_II.PR that you use, and which operating system: AOS or AOS/V.S. Under AOS/V.S 7.67, both CLI16.PR and DUMP_II.PR produce rev 15 DUMP file formats.

:BLOCK_TYPE:END_OF_DUMP

Block type 9 is a fixed length "end-of-dump" block, and is zero bytes long. It occurs only once during a DUMP file, and it is always the last block in the DUMP file. The end-of-dump block is used to signal the end of the DUMP file, and that any bytes following the block should be ignored.

:NULL_DUMP_FILE

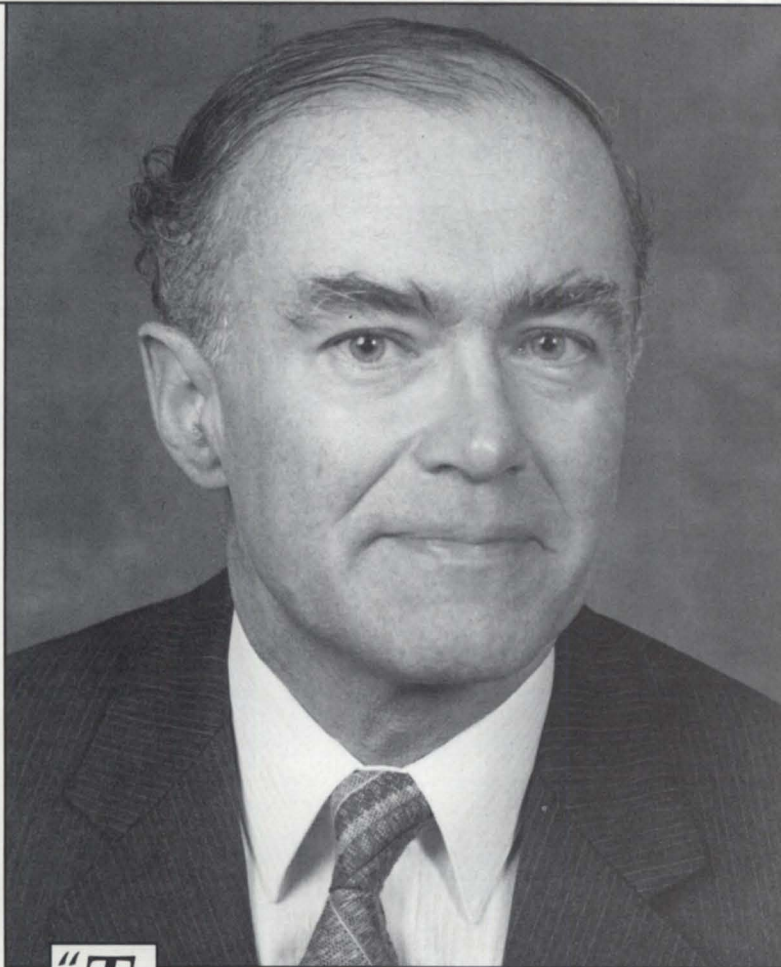
To check out what we know so far, let's create a "null" DUMP file that contains only a header block and an end-of-dump block, and then we'll take a look at it. This is accomplished by DUMPing a non-existent file to FOO.DMP, and then DISPLAYing it.

Here's what we get (modified to fit in column format):

Word	Value
0	000016
1	000017
2	000007
3	000021
4	000011
5	000030
6	000011
7	000132
10	022000

Words 0 through 7 are the header block. Word 10 is the end-of-dump block.

The display shows a rev 15 format DUMP file created at 09:17:07 on 9/24/90.



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BLOCK_TYPES:FILESTATUS

Block type 1 is a fixed length "filestatus" block, and is 46 bytes long. It occurs once for each file and directory DUMPed.

The filestatus block contains a copy of the AOS ?FSTAT packet for the next file to be processed. This packet is described in the AOS (not AOS/VS!) Programmers Manual, 093-000120, and in the PARU.16.SR file supplied with AOS/VS [III].

The information in the ?FSTAT packet is used by the LOADER to recreate the file.

Use of the AOS ?FSTAT packet has no inherent disadvantage on AOS/VS because the only difference between the AOS and AOS/VS versions of the packet is the file size field; the AOS/VS packet reserves two extra words for the file size (64 bits vs. 32 bits).

There is a disadvantage to the use of the AOS ?FSTAT packet under AOS/VS II because its New File System has a lot of additional file options like primary and secondary element sizes that don't get recorded, but we won't worry about that for now. We can always just default the extra stuff when LOADING under VS II.

:BLOCK_TYPES:FILENAME

Block type 2 is a variable length "filename" block, and is 2 to 32 (?MXFN) bytes long. It occurs once for each file and directory DUMPed. The block consists simply of a filename followed by a NUL terminator byte.

:BLOCK_TYPES:UDA

Block type 3 is a fixed length "User Data Area" block, and is 256 (?LNUD*2) bytes long. It only occurs if the current file or directory has a UDA. The most common uses of UDAs are to hold VFU format data and to hold Infos directory and volume control information, but they can also be used for other things. For example, some third-party software suppliers use them as part of their copy protection scheme.

For a complete description of the use of UDAs, see the description of the ?CRUDA/?RDUDA/?WRUDA calls in the System Call Dictionary manual.

:BLOCK_TYPES:ACL

Block type 4 is a variable length "Access Control List" block, and is 4 to 255 (?MXACL-1) bytes long. It occurs if the current file or directory has an ACL. Yes,

Virginia, you can create a file with no ACL at all.

The format of the ACL string is described in detail in the System Call Dictionary under the ?GACL/?SACL system calls, but note that the NUL terminator is not included and must be added before the ?SACL system call is done.


When the ACL block is encountered, the ACL string is remembered but not

applied. It won't be applied until the end-of-file block is encountered and the file is closed.

:BLOCK_TYPES:LINK

Block type 5 is a variable length "link" block, and is 1 to 255 (?MXP-1) bytes long. It occurs once for each link entry DUMPed.

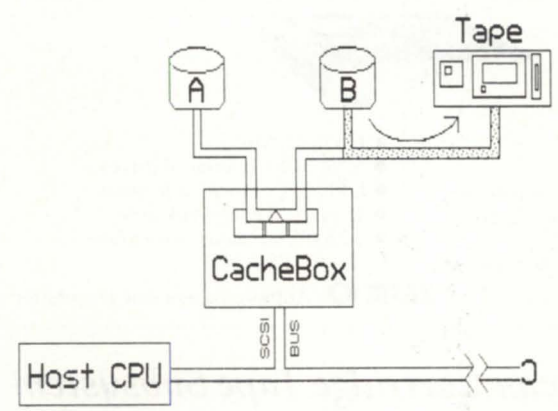
The format of the link resolution string




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is described in detail in the System Call Dictionary under the ?CREATE system call, but note that the NUL terminator is not included and must be added before the ?CREATE system call is done.

When a link block is encountered, the current filename is created with the resolution provided in the link block.

:BLOCK_TYPES:START

Block type 6 is a fixed length "filestatus" block, and is zero bytes long. It occurs once for each file and directory DUMPed.

The start block is used to signal that the file or directory should now be created and "opened". The meaning of "opened" depends on the file type (the right byte of offset ?STYP) of the most recent filestatus block.

If the file was a directory type, then it should be created if it doesn't already exist (LOAD doesn't complain, LOAD_II does) and DIR'ed into, unless the /FLAT switch is present on the command line. Note also that if the file type is ?FLDU, it should be changed to ?FDIR before the ?CREATE.

If the file is anything else, it should be created and opened.

If a file or directory is successfully created and the filestatus block indicates that the file or directory is permanent (bit ?SPRM at offset ?SSTS), the PERMANENCE is turned on at this point using the ?SATR system call.

Note that certain file types are never DUMPed, so you need not concern yourself with them on a LOAD. Some examples are device files in :PER, IPC, and pipe files, and the network-specific files in :NET (e.g., HST, NPN, RMA, etc.).

:BLOCK_TYPE:DATA_HEADER

Block type 7 is a fixed length "data header" block, and is 10 bytes long. It occurs once for each block of file data DUMPed. The format of a data header block is:

Bytes	Contents
0-3	File position
4-7	Data chunk size in bytes
8-9	No. of pad bytes

The term "block" is already a source of some confusion here (i.e., DUMP file blocks vs. disk file blocks), so I've called the data blocks that follow the data headers "chunks" in order to avoid even more confusion.

The data header is immediately followed by the indicated number of pad bytes, if any, and then the actual data to be written to the file at the indicated position (i.e., the data chunk).

The history of the pad bytes is interesting. They were added to allow alignment of the actual chunk to a word boundary in memory. This allows use of the fast ?RDB /?WRB system calls to transfer the data to/from disk instead of the slower ?READ/?WRITE calls. ?RDB/?WRB require a buffer address, whereas ?READ /?WRITE accept a buffer byte pointer. This means that data chunks must be word-aligned in order to use the faster ?RDB /?WRB system calls.

You might wonder why a full 16 bits is

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allowed for the pad length when obviously only one byte maximum is needed to force word alignment. I wonder why too. I've never seen a pad length other than 0 or 1.

Whoever did the pad logic in LOAD_II appears to have been *unclear on the concept* regarding pad bytes; LOAD_II unconditionally generates one pad byte for each data block, resulting in random alignment of the data instead of word alignment. Weird.

You might also wonder why a full 32 bits are allowed for file position and data size if ?RDB/?WRB is being used; these calls only read/write multiples of disk blocks, and only at block boundaries. That means that the file position and data size should always be multiples of 512 bytes, and, in fact, they always are. The only exception is the last block of the file that has a data size that reflects the bytes in the last block so that the file size can be set exactly. ?WRB allows specifying the bytes in the last block on the final write so that files written don't always end up being a multiple of 512 bytes long.

:BLOCK_TYPE:END_OF_FILE

Block type 8 is a fixed length "end-of-file" block, and is zero bytes long. It occurs once for each file and directory DUMPed.

The end-of-file block signifies that the current file is to be "closed".

If the current file is a directory, then "closed" means to DIR to the parent directory, unless /FLAT was specified on the command line.

If the current file is a data file, then "closed" means to close it.

If the file or directory corresponding to this end-of-file block was created, then the ACL is set after the close using the ?SACL system call. This solves the problem of

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loading files whose ACL would preclude the username doing the LOAD from writing the file's data and/or creating and writing its UDA.

Note that end-of-file blocks are paired with filestatus and filename blocks. As each filestatus and filename block is encountered it is stacked. As each end-of-file block is encountered the most recent filestatus and filename should be popped

off the stack and discarded, exposing the previous pair.

It is quite possible to encounter several successive end-of-file blocks, usually as a result of climbing out of a deeply nested sub-directory structure.

I've run out of room this month. If you can't wait until next month's installment in *Focus*, you can preview the second half of this article on the SYSMGR BBS. Δ

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BILLING.LOG	532000	Crunched	94%	36087	31-May-89	11:41 p	3E91
EMPLOYMENT AGR aka EMPLOYME..00	5793	Crunched	45%	3221	15-Jan-89	3:55 p	1D1C
TOTAL	3	587984	(91%)	56407			

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Netware for AOS/VS: what it means

SYNOPSIS

*Netware for AOS/VS will be delivered in two products, depending on your needs. It breaks away from PC/VS and DG/PC*I with an expansive list of clients and connectivity options.*

Last month, we introduced Netware for AOS/VS by comparing it to the old guard of PC integration products, DG/PC*I and PC/VS. We'll continue our examination of Netware for AOS/VS (NW/VS for short) in more detail, starting this month with an overview of the product.

Portable Netware

Netware for AOS/VS is an implementation of Novell's Portable Netware

(PNW), but you can't just run out to your local computer retailer and buy a copy of Portable Netware like you can buy Netware/286 or Netware/386. Portable Netware is licensed by Novell directly to hardware OEMs such as NCR, Prime, Wang, Hewlett Packard, MIPS, and Data General. It is the OEMs' responsibility to "port" Portable Netware to their native operating systems. In the case of a Unix-based system, implementing PNW can be a nearly trivial task. Here at Rational Data Systems (a Novell-authorized porting house), we have brought up PNW on two different Unix systems in a matter of hours. In the case of a non-Unix or so-called "proprietary" operating system, such as AOS/VS, it can take months. Or longer.

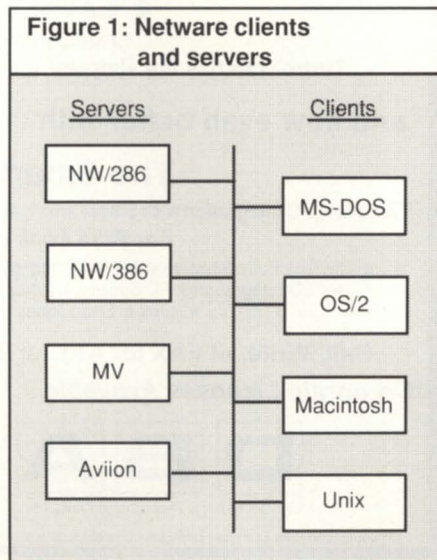
Netware for AOS/VS is a major development project involving the integration of software from four different companies: Data General, Novell, Mentat, and Rational Data Systems. The resulting product is owned jointly by DG and RDS and will be available from both companies.

Transports and services

Netware for AOS/VS will be delivered as two separate products.

"Netware Transports for AOS/VS" will include all the software from the device

Figure 1: Netware clients and servers



drivers up through IPX and Netbios on the MV. Data General and RDS are assuming that many customers will, in fact, only require the transports, hence the reason for unbundling the file and print services.

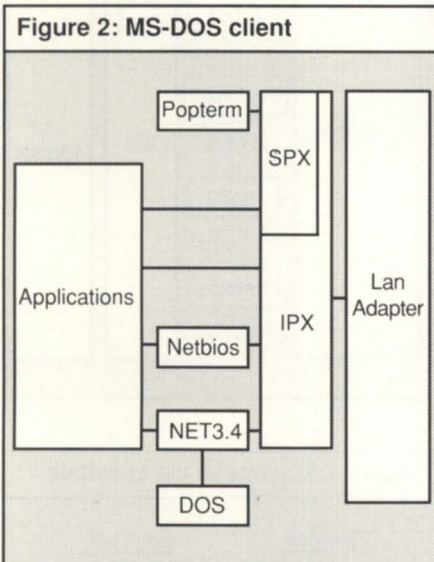
"Netware Services for AOS/VS" are the actual file, print, and bindery services that sit on top of the transports. These services are conceptually simple. Filing allows workstations to access and share AOS/VS files, while printing allows

Netware shell. The shell intercepts applications' calls to DOS and redirects filing and printing requests to the appropriate Netware server. The LAN version of RDS's Popterm D410 terminal emulator may also be loaded into the PC. Popterm communicates via IPX and SPX to a Data General ITC, LTC, or Termserver.

OS/2 already includes support for re-direction to a network server, so on an

OS/2 workstation one installs the Netware Requester and the various protocol and driver modules as shown in Figure 3 (page 34).

Support for the Macintosh does not require any software on the Mac other than Apple's own Appleshare. Through an arrangement between Apple and Novell, Netware supports this native flavor of Macintosh networking. To a Mac work-



workstations to use the printers attached to your MV. The bindery (and other Netware services) allow the MV to appear to various workstations exactly like any other Netware (/286 or /386) server.

OK, but haven't these services been available for years with PC/VS and DG /PC*I? Yes, but not in quite the same way.

Clients

One major difference is the breadth of clients that are supported by Netware (see Figure 1). Whereas PC*I and PC/VS support only MS-DOS clients, the possible NW/VS clients include not only PCs, but also OS/2 workstations, Macintoshes, and eventually, Unix workstations.

PCs are connected using any of the dozens of LAN adapters available on the market. Specific to each controller, but also highly standardized, is a memory resident program (IPX.COM) that acts as the LAN adaptor device driver and supports the network and transport protocols (see Figure 2). On top of that you load either NET3.COM (for DOS 3.x) or NET4.COM (for DOS 4.x), which is the

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station, the Netware environment looks just like a Macintosh server.

A Netware/286 bridge or file server is required in order to support Macintoshes. If Appletalk twisted pair wiring is used (see Figure 4), it will obviously be necessary to bridge to ethernet to reach your MV, but even if the Mac is on an ethernet (Figure 5), the requests for file and print service coming from the Mac cannot be

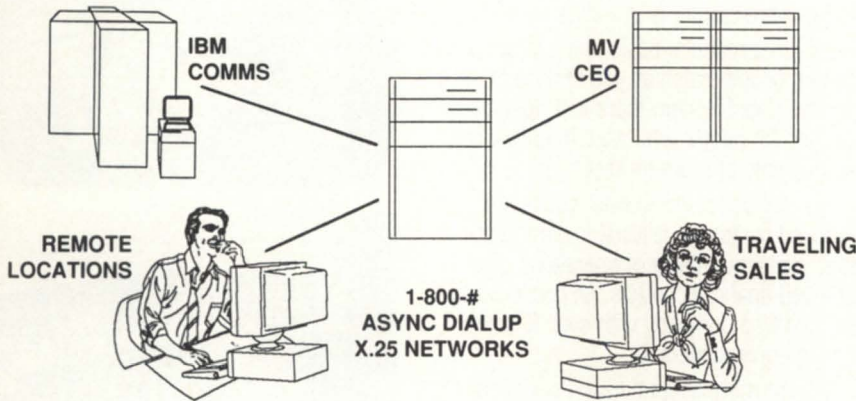
interpreted by the current version of Portable Network. The Macs use a protocol known as the Apple Filing Protocol (AFP) whereas Netware servers support only the Netware Core Protocol (NCP).

There is an elegant solution in the form of a service protocol gateway (SPG) that runs as a value added process (VAP) on any Netware/286 file server or bridge. The SPG VAP converts SFP requests into

NCP requests and forwards them to the Netware server. (Sorry for all the three-letter words.) This technique is used for Netware/386 and Netware/286 as well as Netware for AOS/VS, and works quite well.

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Figure 3: OS/2 client

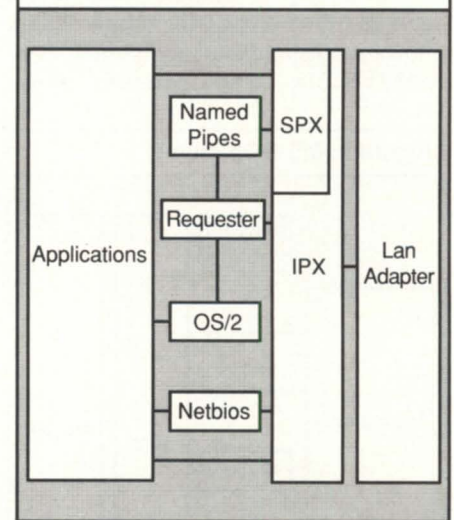
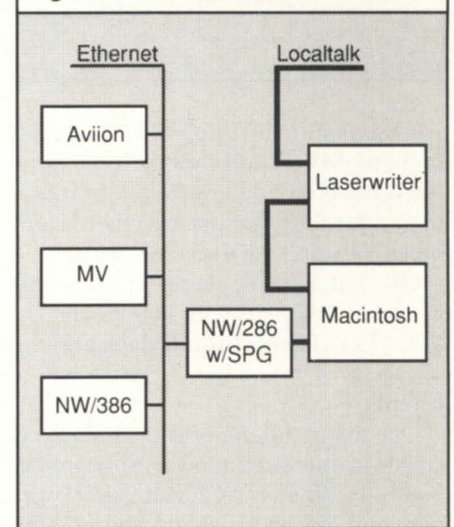


Figure 4: Macintosh via Localtalk



Which LAN topologies are supported

When a LAN adaptor vendor designs a new board, the first thing he or she does is develop an IPX.COM driver for that board. Given Novell's 70 percent market share in PC LANs, compatibility with Netware is a prerequisite for any LAN adaptor. To the user, this means virtually any LAN topology may be used with Netware.

When it comes time to connect to your MV, however, your choices are limited to ethernet or (coming soon) token ring. If

your PCs are connected to arcnet, for example, you can bridge from arcnet to ethernet using any Netware/386 server or Netware/286 server or bridge (see Figure 6). The same thing is often done even without Netware for AOS/VS, just to connect PCs on varying topologies to standard Netware servers. The routing is transparent to the user and in most cases there is no noticeable

performance degradation.

Are transports enough?

Most users of NW/VS will want file and print services in addition to the transport protocols. For some users, however, Netware Transport for AOS/VS will be all they need. CEO Object Office, for example, will not require anything more than the transports. The same

will be true for many of the third-party distributed data base products that typically use the SPX and IPX protocols to communicate between servers and workstations.

In future columns, we'll investigate further the components of Netware for AOS/VS including the transport protocols, file service, print service, and terminal emulation. Δ

Figure 5: Macintosh via ethernet

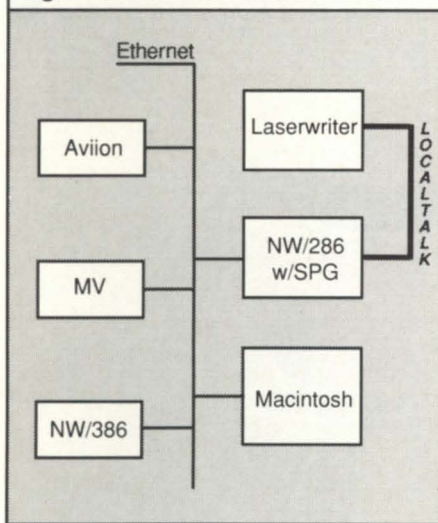
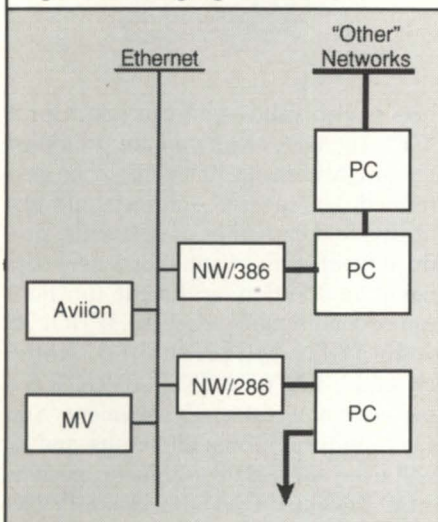


Figure 6: Bridging via Netware



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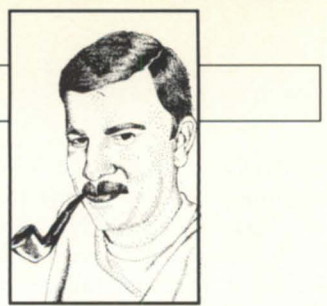


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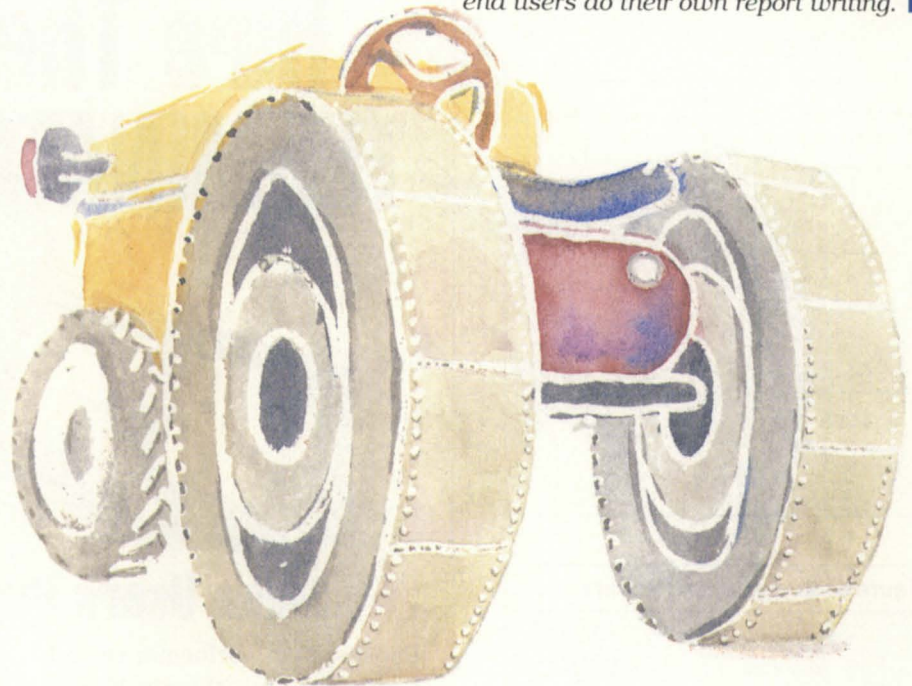
As the DP manager/head programmer/ chief systems analyst/computer operator at a small company, it seems that I don't spend nearly the time that I'd like to on productive work. Instead, much of the time I'm designing small, ad hoc reports for management—how many tires built by left-handed tire builders in 1984, the average quantity of rear tractor tires sold by month since 1982—that sort of thing.

I've become pretty good at it, especially since the advent of micros. Now, instead of doing the sorts and formatting print files on the MV, I usually just dump the whole thing in ASCII format to the micro, use Quattro or Lotus to do the sort and format, dump the print file back to the MV, and print it on the Linewriter.

This works, and it works well enough that I haven't started killing anyone walking into my office, but it's hardly an optimal solution. What I'd like is a quick report writer that's easy to use. What I'd really like is a report writer that's easy enough to use that the end users can run it.

Intelligent Query from Programmed Intelligence Corporation may just be that report writer—eventually. It isn't there yet. This is an ICobol report generator that's easy to use and powerful, with a number of output options that make it perfect for downloading reports to micros or formatting them to print directly. Unfortunately, it's what Jerry Pournelle calls a "maddeningly good" program, one with the potential to be a winner, but with enough pitfalls that it needs to be reworked first.

In order for IQ to be able to access your files, you first must set up a data dictionary showing the program where to find data. This is a simple procedure accomplished by running SETUPIQ.PR. The program prompts you for the data file name, file type (indexed, relative, or sequential), FD name, and file key. Although IQ will use the whole file if you wish, automatic generation can also be tailored



to your specific needs—eliminating fields not needed, or renaming data fields to make them more meaningful to end users.

Once your dictionary is set up, typing "X IQ" gets you into the program itself. There, you first choose which data base you would like to access. The data base itself can be a combination of files, or a single file, depending on what you do in SETUPIQ. From there, IQ is menu-driven and will prompt you through the whole report. Any of the following steps can be skipped when unnecessary—for instance, if you don't want the report sorted.

First, you will be allowed to select values to consider. This can be as simple as CUSTOMER-SALES > 100, or a compound statement such as CUSTOMER-SALES > CUSTOMER-COST OR CUSTOMER-NAME = 'GENERAL MOTORS'. The DOS wildcard characters are supported, so you can select when CUSTOMER-NAME = '*MOT*'. A range of characters or num-

bers is also valid—you can select for = 'GE*' TO 'GI*'. Next, you are prompted for any arithmetic functions to be performed. You can add, subtract, multiply, or divide data names or constants, producing either an existing, or a new data name. In addition, arithmetic functions can be conditionally executed. IF HOURS > 40 THEN MULTIPLY 1.5 TIMES HOURLY-RATE GIVING OT-RATE is a perfectly acceptable IQ statement. You can round and format the results, and IQ will even allow date arithmetic, such as ADD INVOICE-DATE PLUS 30 GIVING DUE-DATE.

Now that you have the data you want, IQ needs to know what to do with the output. Obviously, the program will let you print or display data. In addition, IQ will automatically graph data in XY or histogram form, or output the data for use in Lotus 123, Multimate, as a .DIF file, or plain ASCII.

SYNOPSIS

With an increase in speed and several bug fixes, Intelligent Query could become the software that lets end users do their own report writing.

Besides those outputs, IQ contains a report writer that's as slick as anything I've seen. The report writer is a screen-based writer that lets you see what you're doing. You can format the output, print page numbers, titles, footers, multiple levels of totals and subtotals, and more. Using it, instead of dumping my reports to Lotus and formatting them there, I can actually write the whole report on the MV.

Sorting data can be done in either ascending or descending order, with signed numeric handled automatically—something that I desperately wish ICobol would do. Any number of subcategories may be specified:

```
SORT ASCENDING JOB-TITLE, DESCENDING
HOURLY-RATE, DESCENDING YEARS-HERE.
```

For your final options, IQ offers the ability to total, average, and print the minimum and maximum of any of the available data names. Once you have saved all of these specifications, you can store them for later retrieval, or execute them immediately.

Sounds pretty good, right? Then what was I griping about in the beginning? Well, there aren't a lot of gripes, but there are enough for a marginal thumbs down.

There are some bugs. Now, I know that bugs are to be expected in any commercial release, but these are Data General type bugs—the kind that make you sit back and ask "How did anybody miss that?" The Lotus transfer program, for instance, outputs ail numeric items as zero. This won't work.

Another sore point involves error messages. I am vehemently opposed to programs that give you obscure numbers that must be looked up in a manual, and that's exactly what IQ does. I was removing a data base definition using SETUPIQ when the following occurred:

```
Message: Previous interface being removed.
Please wait.
Abort: Write access denied. File ddmaster.dat
copy, ddmaster.dat, ?00010.cfile.aaa.tmp
AOS/VS CLI32      Terminating
4                Oct 90   10:41:48
```

An internal error has occurred. Please make note of what you have asked the product to do, and what it was doing at the time of the error in as much detail as possible. Check the reference manual using the following 2 error codes for

```
assistance. Code 1: 804, Code 2: 2
Program 'exit'ed with a status of 01
Warning: From program
:IQ
```

I wouldn't want an end user confronted with an error message like that. I looked up the code in the appendix, and it's a non-existent code anyway. It's an ACL problem, of course, even though I have

Superuser on. The people at Programmed Intelligence don't seem to be too comfortable with ACLs. A note in the documentation file that comes with IQ advises you to change the files in the IQ directory to IQ_OWARE,+RE, which leads me to wonder why they didn't just do that and avoid the note completely. Anyway, that's not enough—the file is routinely created and deleted, so you also must have write

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access to the IQ directory itself.

The things that make IQ "maddeningly good" are the small, annoying problems like the one above. Choosing a data name is another example. Data names appear in the middle of the screen, four high and three across. To choose a name, you move to it using the cursor keys. Unfortunately, unlike Lotus, a control right arrow won't move you over one whole screen of names.

Since a screen will hold only 12 names, and my item file has 355, I spent a lot of time taking naps while leaning on the arrow keys. This can be solved in a number of ways. Either pop up a window more than four high, and then collapse it after a choice is made, or enable the control arrow keys. IQ chose a third way, which is to narrow down your choices as you're typing. For example, with the following items:

ITEM-NUMBER
POSITION-IN-WAREHOUSE
PRICE-1
PRODUCT-CATEGORY

Typing the initial "P" moves you to POSITION-IN-WAREHOUSE. Keying "R" moves the display to PRICE-1, and finally "O" positions you on PRODUCT-CATEGORY.

There are a number of problems with this method, number one being that it wouldn't always work. Besides that, though, if this is designed for end users, they won't always know what a field is called. Are 1989 sales in SALES-LAST-YEAR or LAST-YEAR-SALES or 1989-SALES?

Finally, there needs to be some speed improvement. I tried as simple a procedure as possible—I took all of the records in the customer file and output the account balance of each to an ASCII file, with no sorting or filtering involved. ICobol ran at about 100 records per second, IQ at about 11. For sorts on large files, this execution time could quickly become unacceptable. As I've said, this program is maddeningly good. With some work on the interface and a few bug fixes, it could be a winner. I don't normally review programs that I don't like, but this one has enough potential that I wanted to write about it. Maybe in a rev or two . . .

Odds and ends dept.

Just got back from Orlando and Disney World. For those of you contemplating going, the early fall is wonderful—no lines at all.

Anyway, I went on the backstage computer tour at EPCOT, something I last did when the NADGUG conference was there. I had a specific reason to do so. Sure enough, in the left-hand corner is still that 16 bit Eclipse with the two tape drives and two LP 2 printers.

Does anyone know what they're doing there? I have this suspicion that all of the pretty Unisys machines are doing billings and general ledger, and that one Eclipse is running the whole animation show. Δ

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

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A complete listing of the NADGUG software library

ACK • Updated version 1.70. Terminal emulator/file transfer program for both AOS/VS and AOS machines. 365 blocks.

Big Brother • Automatic log-off program written in Fortran 77. Donated by the U.S. Forest Service. 169 blocks.

B.J.'s BBS contributions • About 20 items, including various programs, documentation, and macros. Some of the more interesting items include the :SYSMGR benchmark suite, a continuous incremental backup, a clean-up file maintenance program, a program to find strings in files, and a type-backward program. 6,761 blocks.

CRREDIT • The old RDOS screen editor ported over to VS. 49 blocks.

DBCHECK • Checks the open status of an

Infos file and examines the checkpointing status of a file. 187 blocks.

DUMLOAD • A Macintosh program to dump and load AOS/VS-compatible dumps on a Macintosh. 137 blocks.

ERP • A process-termination program developed by NASA and modified by Manville. In Fortran 77. 454 blocks.

FILEMNGR • With this new version, you can move, copy, delete, view, and perform several other options faster. This is distributed as shareware. If you try it and continue to use it, you are requested to pay a registration fee. From Kim Geiger. 654 blocks.

Focus • *Focus* magazine articles. 1,774 blocks.

FTNCVT • A Fortran 5 to Fortran 77 transla-

tor. 232 blocks.

Games • A collection from various places. Enjoy. 19,216 blocks.

IMSLUTIL • A collection of CLI macros, Cobol routines, and assembly routines callable from Cobol. By IMSL of Houston. 4,893 blocks.

JAG_UTIL • JAG_UTIL by John Grant consists of several programs: Filecount, User-space, Scan, Glossary, Laminate, and Qhelp. 4,325 blocks.

Kermit • A file-transfer protocol developed at Columbia University. 9,697 blocks.

Logout • Another auto log-out system. 178 blocks.

Look • Used to view text files, Look allows you to move forward and backward in a



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file. Donated by Data General. 202 blocks.

Macros • A collection of macros from various sources. 441 blocks.

MENUDIR • An initial user menu that can chain to other applications and features a password-control system. From the Fed SIG. 486 blocks.

Misc Kerm • An expanded version of AOS Kerm, this now includes other versions of Kermit including DG/One Kermit. 6,709 blocks.

MS-DOS • A VS program that lets you read and write MS-DOS diskettes on an MV system with a 5.25-inch floppy disk drive. 984 blocks.

Notify and Prior • Two contributions from Concept Automation. Notify tells you when a process has terminated. Prior lists the priorities of processes. 162 blocks.

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

Softrans • A file-transfer protocol written in Fortran 77 used to communicate with proprietary PC communications packages. 462 blocks.

Spell • Checks the spelling of a word or spell-checks documents. Submitted by Richard Kouzes. 5,108 blocks.

TEX • Version 2.26a is now available. TEX (Terminal Emulator with Xmodem) is a terminal-emulation program written by David Down. He has revised the TEX software to include a command language. TEX is distributed as shareware. At the

end of 30 days, either remove it from your system or send the author a \$45 fee. 463 blocks.

VT100KER • VT100 emulator from John Grant. 1,043 blocks.

Xfer • A tape-conversion utility. 607 blocks. △

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Thanks to Brian Johnson and :WFFCA, the library is now able to provide 1200 ft. copies to AOS/VS rev 6 users. Thanks to Kevin Danzig for duplicating MV/2000 tapes. To leave a question regarding non-standard library distribution call 713/988-5342.

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

1990 Subject index to Focus Magazine

Accounting

see Applications—accounting

AOS/VS, AOS/VS II

Pipe realities. AOS/VS offers a limited, but still useful, level of pipe-file functionality. Michael Dupras. Jan 90, pg. 37.

Normal quirks. Advice du jour on a number of topics: the unobtrusive CLI32, the AOS/VS II decision, and more. Brian Johnson. Feb 90, pg. 36.

Poolside manners. The future of MVs and AOS/VS laid forth in Miami. Greg Farman. Mar 90, pg. 8.

Don't Panic! With dynamic bad block remapping, AOS/VS's high availability provisions take AOS/VS disk-mirroring capabilities a step further. Tom Gutnick. May 90, pg. 26.

Performance comparison pitfalls. To make valid comparisons between AOS/VS Classic and AOS/VS II, you must look not only at the data that is displayed, but also at the way it is gathered. In other words, what do you do with a used tick? John R. Gilgus. May 90, pg. 26.

How well do you know AOS/VS? A test for people who said they were FEs. Michael Dupras. May 90, pg. 48.

A call for action. If the MV cash cow dries up before DG's Unix business becomes profitable, then DG has effectively bet the company on Unix and lost. Brian Johnson. Jun 90, pg. 38.

Smooth operation. With careful planning, the process of migrating from AOS/VS to AOS/VS II goes smoothly. It also provides a great excuse for cleaning out and reorganizing your files. Chuck Goes. Sep 90, pg. 24.

Audit without overload. The addition of full-detail logging to AOS/VS provides enhanced auditing abilities and meets C2 security requirements. However, it can overtax your system. SYSLOG filtering relieves this problem. Tom Gutnick. Nov 90, pg. 54.

Netware for AOS/VS. Independent or tightly integrated? PC/VS, PC*I, and Netware offer you three choices in PC integration. Doug Kaye. Nov 90, pg. 69.

Netware for AOS/VS: what it means. Netware for AOS/VS will be delivered in two products, depending on your needs. It breaks away from PC/VS and DG/PC*I with an expansive list of clients and connectivity options. Doug Kaye. Dec 90, pg. 32.

Applications—accounting

Tracking CEO. New CEO accounting software (AAS) allows system managers to track CEO activity and generate reports on an individual or system-wide basis. Joe Cannata. May 90, pg. 54.

Applications—entertainment/sports

DG up to bat. Using custom software and MV computers, the seat selection process at Veterans Stadium is less like a game of musical chairs . . . and more of a science. Lori Rhea DiSorbo. Jul 90, pg. 28.

Applications—government

A watershed decision for the Aviiion. Open systems make a winning strategy for government contracts. Robin Perry. Mar 90, pg. 14.

Coming soon to your home town? Data General aggressively seeks local and state government clients, building on an established base of successful installations. In Louisiana, Aviiions track exploding pipelines. Lori Rhea DiSorbo. Sep 90, pg. 12.

Data General at the grassroots. The nuts and bolts of city government take the form of permits and appraisals, mills and bills. Michael E. Marotta. Sep 90, pg. 16.

No chickens here. E-mail can help bridge the gap between geographically separated government agencies, and help speed up the approval process for new projects . . . like a house of chicken on the town common. Kent Finkle. Sep 90, pg. 19.

Applications—health care

Searching for a perfect match. Like compatible donors, DG's open systems approach and the healthcare industry's need to control costs through distributed processing are near perfect matches. But success of the Aviiion is key to DG's strategy. Seemee Ali. Feb 90, pg. 12.

Anatomy lesson. A Colorado veterinary hospital automates its services using an MV/10000, AOS/VS, and fourth generation language. Cathy Kipp. Feb 90, pg. 16.

Healthcare tonic. Hospital chain uses remote hook-ups and on-line inquiries to improve efficiency. Jennifer Woodhall. Feb 90, pg. 20.

Hope in the mailbox. Project HOPE, a Virginia-based health education organization, uses e-mail to reach China and other countries in need of medical training. Maggie Wolff Peterson. Apr 90, pg. 18.

It never met a form it didn't like. Scissors and paste check out of Memorial Medical Center, where installation of Office/Publisher has improved productivity and profitability of the public relations department. Terri Lee Stauffer. Jun 90, pg. 22.

Applications—legal

It's the law. Bolstering its image with new marketing strategies, DG builds a

case for itself in the legal market. Robin Perry. Jul 90, pg. 10.

Expert witness. Pacific Bell integrates MVs and PCs using Contract Creator, and brings legal document assembly out of the twilight zone. Linda Stadler. Jul 90, pg. 12.

"American-style" litigation. The legal process can be hampered by voluminous research requirements. Using a 4GL and specialized software, a British law firm gains the edge over competitors. Lori Rhea DiSorbo. Jul 90, pg. 14.

Legal review. The latest PC integration strategies found in law offices include highly severable wiring, wide area networks, and fractional T1 technology. Doug Kaye. Jul 90, pg. 22.

Victims fight back. Grassroots movements call for strengthening the rights of crime victims. A DG-based victim notification program in Arizona serves as a model for other government agencies. Lori Rhea DiSorbo. Oct 90, pg. 40.

Fax to the max. Mail order company follows the "Rules of Rush" to produce customized systems for billing and credit approval, thus speeding up order processing. Michael H. Drucker. Dec 90, pg. 14.

Applications—manufacturing

The road to efficiency. Automark avoids traffic jams by linking 400 Parts Plus stores with an X.25 network. Efficient movement of parts, cost savings, and growth potential are the results. Etta McCarthy. Nov 90, pg. 14.

Applications—real estate

Connectivity 101. Using smart cards and a "YAK" bulletin board, a Boston real estate company solves its connectivity problems. Craig Ellison. May 90, pg. 67.

Applications—scientific

The heat's on. Researchers race to establish scientific standards, while solar radiation exceeds known scales. Seemee Ali. May 90, pg. 10.

Data capture in the American desert. With automated data in a specialized geographic information system (GIS), San Bernadino County collects, analyzes, and maps information on land usage, crime statistics, and traffic patterns. Dan Lewis. May 90, pg. 14.

Building a better tree. The US Forest Service uses statistical package from SYSTAT to analyze the variables that affect tree growth. Lucy Saunders. May 90, pg. 18.

Aviion

A porting profile. Transoft UBB

takes BBasic to the Aviiion and demonstrates its power. Mike Edwards. Jan 90, pg. 22.

More than lip service. The primary BBasic platform of the future is on the Aviiion. DG's diligence in supporting standards will win new customers. George Henne. Jan 90, pg. 46.

Searching for a perfect match. Like compatible donors, DG's open systems approach and the healthcare industry's need to control costs through distributed processing are near perfect matches. But success of the Aviiion is key to DG's strategy. Seemee Ali. Feb 90, pg. 12.

Eclipse-Aviiion interoperability. DG offers solutions (some new) like AOS/VS II TCP/IP, virtual terminal connections, Telnet, and NFS that build bridges between MVs and Aviiions. Richard Benyo and Gary Davis. Mar 90, pg. 10.

A watershed decision for the Aviiion. Open systems make a winning strategy for government contracts. Robin Perry. Mar 90, pg. 14.

Framemaker looks at the big picture. This document processing software is no dream, but it runs like one. Robin Perry and Lori Rhea DiSorbo. Jun 90, pg. 18.

CAD

The changing face of software design. The time-consuming and error-prone aspects of manually extracting requirements for design usage are reduced by using an automated design processor. George Marschalk. Nov 90, pg. 64.

CEO

C-E-oooooh. New office automation products for PCs provide options for CEO users. Doug Kaye. Feb 90, pg. 44.

Style watch. Multiple columns and text break options, improved handling of tables, and underline capability (gasp!) mark new release of desktop publishing software for CEO users. Joe Cannata. Apr 90, pg. 60.

Tracking CEO. New CEO accounting software (AAS) allows system managers to track CEO activity and generate reports on an individual or system-wide basis. Joe Cannata. May 90, pg. 54.

CEO gateways. CEO 3.0 provides the tools to link your e-mail network to the world. Stan Gula. Nov 90, pg. 18.

Fontastic changes to CEO 3.20. Data General presents an improved CEO package. Rev 3.20 boasts of easier font manipulation, support of three new terminals, an envelope

feeder, and much more. Joe Cannata. Nov 90, pg. 46.

CLI

Auld lang CLI. The long-awaited CLI32 makes its debut, and it is packed with new features for AOS/VS and AOS/VS II users. Joe Cannata. Jan 90, pg. 32.

Normal quirks. Advice du jour on a number of topics: the unobtrusive CLI32, the AOS/VS II decision, and more. Brian Johnson. Feb 90, pg. 36.

Command performance: CLI and Unix compared. A preliminary study of what Unix and CLI commands have in common, as well as what they don't. John Huddleston. Apr 90, pg. 42.

Reconstructing a CLI. A guide to macro-making for recent Unix converts. John Huddleston. May 90, pg. 42.

Anatomy of a macro. In both Unix and CLI, arguments must "find themselves" before they can proceed with their basic functions—in this case, displaying a menu. John Huddleston. Jun 90, pg. 44.

Logjam. Tracking a leak in system performance can be a tedious task. Here are some tips for diagnosing excessive system call activity using CLI's ?LOGCALLS. Brian Johnson. Nov 90, pg. 58.

Communication

Forecast for the nineties. With the removal of technical barriers, communication across various networks will become easy. Doug Kaye. Jan 90, pg. 54.

Hope in the mailbox. Project HOPE, a Virginia-based health education organization, uses e-mail to reach China and other countries in need of medical training. Maggie Wolff Peterson. Apr 90, pg. 18.

Pick two: good, fast, or cheap. The shortest path between two computers is not necessarily the cheapest. Michael E. Marotta. Apr 90, pg. 20.

A better API. While it might be reasonable to move an application and even an application programmer from AOS/VS to MS-DOS, there is still a big hole: "comms" stuff. Doug Kaye. Jun 90, pg. 54.

Breaking into open systems. How do you make your Eclipse talk to your Unix systems? The three options—interoperability, compatibility, and porting—are discussed in the first of a series. Mike Normile. Jul 90, pg. 16.

Legal review. The latest PC integration strategies found in law offices include highly severable wiring, wide area networks, and fractional T1 technology. Doug Kaye. Jul 90, pg. 22.

Computer industry

Farewell to the Class of '90. As hardware vendors sit out a semester, new talent is lost to competitors. An MIT career services director suggests that recruiters do their homework before returning to campus. Seemee Ali. Jun 90, pg. 30.

A call for action. If the MV cash cow dries up before DG's Unix business becomes profitable, then DG has effectively bet the company on Unix and lost. Brian Johnson. Jun 90, pg. 38.

Computer languages—BBasic

A porting profile. Transoft UBB takes BBasic to the Avion and demonstrates its power. Mike Edwards. Jan 90, pg. 22.

More than lip service. The primary BBasic platform of the future is on the Avion. DG's diligence in supporting standards will win new customers. George Henne. Jan 90, pg. 46.

Computer languages—Cobol, ICobol

Micro Cobols. Our reviewer trends new ground with the help of RM/Cobol 85 rev 4.0, Micro Focus' Cobol/2 rev 1.1.17, and SBTEST. Tim Boyer. Jan 90, pg. 48.

Hot box on a pedestal. ICobol 1.60 on the Avion is an incredible package: easy hook-up, a familiar X Window

system, excellent compile speed, and a terrific debugger. Tim Boyer. Oct 90, pg. 55.

Connectivity

see Networking

Data base management

Data bust. Shared memory pages effectively bypass a data roadblock set up in AOS/VS. Michael Dupras. Feb 90, pg. 28.

Reconcilable differences. 4GLs and data base management systems differ considerably. Jim Siegman. Feb 90, pg. 50.

Data General corporate information

Organizational chart. Recent changes in Data General corporate structure. Jan 90, pg. 12.

More losses reported. Robin Perry. Oct 90, pg. 14.

Data General marketing

Credit where (and when) it's due. Responding to customer criticism, Data General revamped its invoicing system. Timely, understandable, correct, and useful bills are the goals of this recent overhaul. Robin Perry. May 90, pg. 22.

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upgrade marketing manager for Data General, explains how DG can guide you through the endless sea of upgrade options. Aug 90, pg. 12.

Open door policy. DG adds to its list of devices covered under the Compatible Products Program. G. Bruce MacDonald. Oct 90, pg. 50.

Standard connections. DG announces new connectivity products for MV and Aviiion systems. Lori Rhea DiSorbo. Nov 90, pg. 28.

Data identification

Deciphering bar codes. Standards for symbology and the mechanics of bar coding are explained in the first of a two-part article. Mike Leathers. Feb 90, pg. 22.

Bar code strategies. The finer points of bar code implementation—from choosing a printer to justifying costs—are covered in the second installment of a two-part series on deciphering bar codes. Mike Leathers. Mar 90, pg. 32.

Data transfer

Pipe realities. AOS/VS offers a limited, but still useful, level of pipe-file functionality. Michael Dupras. Jan 90, pg. 37.

The DUMP/LOAD shuffle. Streamline DUMP/LOAD operations with pipe

files and the MOVE_II macro. Michael Dupras. Mar 90, pg. 48.

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Netware for AOS/VS: what it means. Netware for AOS/VS will be delivered in two products, depending on your needs. It breaks away from PC/VS and DG/PC*I with an expansive list of clients and connectivity options. Doug Kaye. Dec 90, pg. 32.

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Aud lang CLI. The long-awaited CLI32 makes its debut, and it is packed with new features for AOS/VS and AOS/VS II users. Joe Cannata. Jan 90, pg. 32.

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An ounce of prevention. Glen Barrett, upgrade marketing manager for Data General, explains how DG can guide you through the endless sea of upgrade options. Aug 90, pg. 12.

The joy of upgrades, or, nothing's ever as simple as it seems. Before launching an upgrade to your system, pause for a moment to review this navigator's chart. Without a thorough plan, you could end up operating in a Bermuda Triangle. Don Thomas and Bill Means. Aug 90, pg. 16.

Prescription for an overworked MV. With expanded memory, increased user capacity, and the right price, the MV /9500 proved to be the cure for a sluggish system. Wendell C. Putney. Aug 90, pg. 16.

An MV is an MV is an MV. Purchasing previously owned Data General equipment is a viable alternative, despite how you feel about used cars. Alan Rees. Aug 90, pg. 22.

Downsizing. Upgrading may be the easy way out, but is it inevitable? Looking at the problem from a different angle, there are ways to postpone an upgrade. Doug Kaye. Aug 90, pg. 46.

FONTastic changes to CEO 3.20. Data General presents an improved

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CEO package. Rev 3.20 boasts of easier font manipulation, support of three new terminals, an envelope feeder, and much more. Joe Cannata. Nov 90, pg. 46.

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Space—the final frontier. WFFCA allows users to view, test, extract, and add to compressed groups of files. Is there anything it can't do? Kevin Danzig. Mar 90, pg. 22.

A user's guide to FIXUP. Recently

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Curtain up on 3-D spreadsheets. In today's episode, our protagonist suffers from an acute case of "Spreadsheet Envy." Will Mathplan provide the cure? Kent Finkle. Mar 90, pg. 45.

Unrestricted Axis. "Tweaked" code, intelligence, and special options make Wild Hare's product a winner in the compiler sweepstakes. Tim Boyer. Apr 90, pg. 38.

Space savers. Utilizing Infos options like space management, record and key compression can save time and disk space, at nominal costs. Jim Siegman. Jun 90, pg. 4

EXEC Cooperative Toolkit. A new EXEC utility provides an object module library for linking, and user command functions to easily write your own programs. Michael Dupras. Sep 90, pg. 28.

Designing with Indexcalc. When the time comes to design and Icreate a file, don't forget an old friend—the Indexcalc utility. Simple to use, this powerful Infos modeling tool should be part of all your design and brainstorming sessions. Joe Cannata. Oct 90, pg. 59. Δ

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Dasher /486-25 features Intel processor



The Dasher/486-25

Westboro—Data General announces the Dasher/486-25, expanding its line of PC products to include the Intel 80486 microprocessor. The design of the system is extremely flexible, DG says.

Users may configure the new Dasher as a server or central station. It accommodates up to five half-height 5.25-inch drives. The Dasher/486-25 uses an SMT (Surface-Mount Technology) CPU board, with a variety of optional peripherals. It offers 32-bit memory expansion for CPU-intensive operations.

The standard configuration includes 4 MB memory on a 32-bit controller that runs at 25 MHz. For memory above 16 MB, another memory controller can be added to raise memory to 32 MB. The Dasher/486-25 also incorporates an 8 KB cache plus floating point processor.

The new Dasher offers eight expansion slots in a chassis that can be placed either horizontally or vertically. The base system includes a dual-floppy disk control-

ler, 16-bit VGA controller card, two RS-232C serial ports, and a standard ISA 16-bit AT bus running at 8 MHz.

Shipped with the product is an enhanced AT-style keyboard, MS-DOS4.01, QEMM-386, and menu-driven diagnostics. Base system list price is \$7,995. Shipment is 30 days ARO.

Data General Corporation, 3400 Computer Drive, Westboro, MA 01580; 508/898-4050.

Circle 51 on reader service card.

DG/UX interchange utilities

Westboro—Data General announces the DG/UX Tape Interchange Utilities. Tape Load, Tape Import/Export, and Tape Copy are a set of three utilities that extend the interchangeability between DG/UX and other systems including AOS/VS.

The Tape Load utility allows DG/UX users with libraries of Dump tapes to retain these archives. The Tape Import/Export and Tape Copy utilities support the transfer of ANSI-standard labeled tapes of unknown format on a system with one tape drive. Users may read and write ANSI tapes at greater than 1 GB per hour. The Tape Copy utility is able to duplicate the tapes of unknown format.

DG/UX Tape Interchange Utilities are supported on Aviiion servers and workstations under DG/UX rev 4.20 or greater. The product is available immediately for \$1,200.

Data General Software Products and Services Division, MS 9-S, 3400 Computer Drive, Westboro, MA 01580; 508/898-4183.

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Memory expansion for Aviiion

Beverly Hills, CA—System Controllers and Interface Products (SCIP) announces memory expansion modules for the Aviiion. The 4 MB or 16 MB add-in main memory board, called the Maw34, is 100 percent compatible with Aviiion workstations and servers.

The Maw34 memory is a double-sided surface mount constructed SIMM (Single Inline Memory Module). The SCIP Maw34 will install into the available 4 or 7 SIMM

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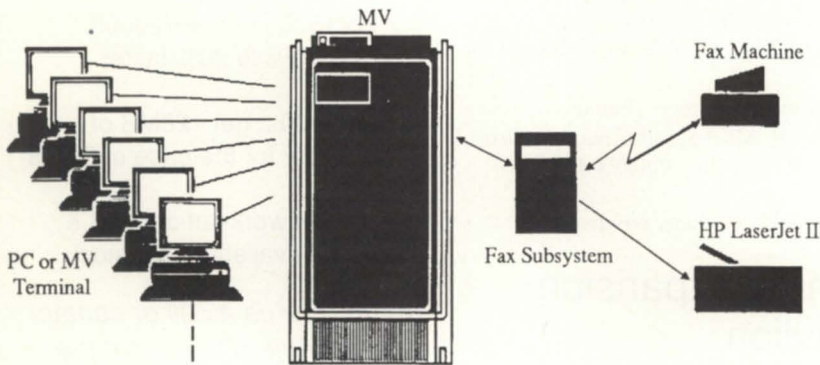
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sockets on the Aviiion main board, raising the workstation or server to 64 or 112 MB. The module is user installable with no switches or jumpers, and can be mixed with DG modules.

The quantity one price for the Maw34 with 4 MB is \$1,000, and \$4,000 with 10 MB. VAR, OEM, and volume discounts are available, as well as a 30-day full refund satisfaction guarantee, and a lifetime exchange warranty. Delivery varies from stock to 10 days.

SCIP, 441 S. Beverly Drive, Suite 2, Beverly Hills, CA 90212; 213/282-8700.

Circle 54 on reader service card.

EC-10 ethernet controller

Northboro, MA—Claflin & Clayton, Inc. (C&C) announces the EC-10 ethernet controller for DG Eclipse, MV, and Nova computers. This 15-inch ethernet controller board interfaces the DG data channel I/O bus to the ethernet/IEEE 802.3 local area network.

The EC-10 is supported by all C&C TCP/IP networking software. It features a 64 KB data buffer, and 5 MB per second data link throughput. EC-10 can also function as a plug-compatible replacement for the Interlan NI4010A controller.

The EC-10 is priced at \$2,450 for a single unit, and is available immediately.

Claflin & Clayton, Inc., 203 Southwest Cutoff, Northboro, MA 01532; 508/393-7979.

Circle 50 on reader service card.

Ada technology for C design

Claremont, CA—Software Systems Design announces a design and reverse engineering tool for C programs. CDADL uses the same technology as ADADL, an industry standard for Ada program design languages.

CDADL analyzes C comments (the pseudo-code) and executable C code to detect logic errors and produce a "pretty printed" output report that simplifies understanding the design. Overly complex program units are identified early in the life cycle.

Twenty additional reports result to describe the design at any phase of development. The user can create up to 10 customized "project management" reports to identify such things as requirements traceability, or completion dates of design, coding, or testing. The design quality report shows areas of potentially questionable quality.

CDADL is available on 80386 systems including DG's Aviion. It ranges in price from \$600 for 80386 systems, to \$5,500 for large mainframes.

Software Systems Design, 3627 Padua Ave., Claremont, CA 91711; 714/625-6147.

Circle 55 on reader service card.

Serial box connects conventional keyboard to laptop

Irvine, CA—Genovation, Inc. announces the Serial Box for users who want to use their familiar keyboard when

working on a laptop, including DG laptops. The Serial Box accepts the connector of any standard keyboard and interfaces to the computer through the serial port.

The Serial Box measures 5 inches by 4 inches by 1.5 inches. It provides a conventional keyboard port on one end, and a serial cable and connector on the other. The Serial Box is priced at \$99.95, and is available immediately.

Genovation, Inc., 17741 Mitchell North, Irvine, CA 92714; 714/833-3355.

Circle 53 on reader service card.

Multi-function controller from Zetaco

Minneapolis, MA—Zetaco announces the SCZ-5, a new multi-function controller. The SCZ-5 supports up to seven SCSI-based peripherals including magnetic disk

drives, rewriteable optical disk drives, reel-to-reel tape transports, and helical scan tape drives.

SCZ-5 is compatible with the following DG processors: the MV/40000, MV/20000, MV/15000, MV/8000, MV/7800, MV/4000, and MV/9500. The controller interfaces the MV's high-speed BMC (burst multiplexor channel) and is transparently compatible with AOS/VS[III].

The SCZ-5 utilizes two microprocessors, one to manage the peripheral interface, and one to manage the CPU interface. The controller's firmware is programmed in C. For easy installation, SCZ-5 contains features such as self-test on power-up, device address switches on the board edge, complete configuration software, and controller and peripheral verification tests.

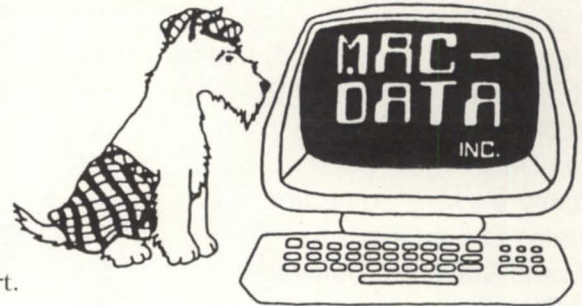
Pricing is \$8,661 quantity one, with OEM volume discounts available. Delivery is 30 days, ARO.

Zetaco, 6850 Shady Oak Road, Eden Prairie, MN 55344; 1-800/423-3020.

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ON-LINE HELP

Who to call for answers about NADGUG and FOCUS

NADGUG

Membership, address changes

Jennifer Foye 800/877-4787
 (Outside the U.S.) 512/345-5316

Information on RIGs or SIGs

Greg D. Goss 800/877-4787
 (Outside the U.S.) 512/345-5316

Electronic bulletin board

(300 or 1200 baud modem)
 Rational Data Systems 415/499-7628

NADGUG staff and Focus Magazine address:

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 Stillhouse Canyon Office Park
 4807 Spicewood Springs Road, Suite 3150
 Austin, TX 78759
FAX: 512/343-7633

FOCUS Magazine

512/345-5316

Editorial comments, article suggestions Robin Perry
 (please send product announcements to the address listed above)

Information about advertising Michelle Sentenne

FOCUS back issues Turnkey Publishing staff

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- AOS/VS
- Business BASIC
- CQCS
- Educators
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- INFOS II
- ICOBOL
- Law Enforcement
- Lions Gate
- Music & Recording Industry
- OASIS (Office Automation)
- :PERFSIG (performance and capacity planning)
- SIG/UX (Unix)
- SMBASIC

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

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

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Sprint International will resell Aviiion servers and high-resolution color graphic workstations to enhance its private network and messaging system. DG expects worldwide Aviiion shipments to Sprint customers to exceed \$45 million over the five-year term of the contract. The servers and workstations will use the DG/UX operating system and DG's X.25 networking software for wide-area communications. Sprint International is the global telecommunications, private networks, and value-added services arm of **U.S. Sprint**.

Data General was given the green light to proceed with installing a nationwide network of Aviiion systems for the **Department of Interior's Water Resources Division**. Data General won the contract with a procurement value of \$127 million in December 1989, but was held up when a competitor protested the awarding of the contract. In October, the Court of Appeals for the Federal Circuit in Washington ruled in Data General's favor and reversed a ruling that supported the protest.

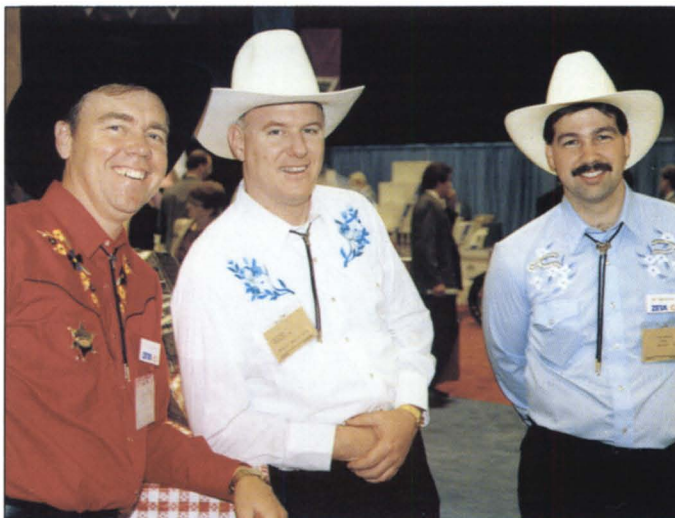
The network will include over 6,000 Aviiion workstations and servers. The contract length is seven years, and includes all hardware, software, training, documentation, support, and service. As prime contractor, Data General will integrate the work of a number of hardware and software companies, including **Ingres Corporation** and **Frame Technology Corporation**.

New York City Health and Hospitals Corporation (NYCHHC), the largest municipal healthcare system in the U.S., selected a DG-based system designed by **Health Data Sciences Corporation (HDS)** to provide an integrated clinical management system. The system will connect 11 acute care hospitals and several clinics.

The \$60 million project will provide state-of-the-art access to clinical information. Using HDS's Ulticare product, all patient care records will be connected via a computer network operating on MV hardware. The system reduces manual record keeping tasks and duplication of documents. The selection was made after an extensive vendor search by NYCHHC that spanned nearly five years.

California DG users have a new alternative for their hardware maintenance, **Innovative Systems Group, Inc. (ISG)**. ISG's management team includes **Brian Neal, Karen Flynn, and Steve Kiergaard**, all formerly with **Xyrtin Xolutions, Inc.** ISG offers individual service programs and markets DG and compatible equipment. ISG offices are in Long Beach, California; phone number 213/522-0410.

The award for the most creative booth at the NADGUG 90 conference goes to **Zetaco**. Marketing Director **Julie Stevens** designed the Western style booth, which featured a chuck wagon, cacti, and rough cedar paneling. The Zetaco staff was decked out in Western duds of cowboy shirts and hats.



The Zetaco dudes: Gary Becker, Bob McGowan, and Bill Bartholow

Soft Switch, Inc., developer of the Soft Switch Central electronic mail switching system, entered into a strategic relationship with Data General for the development of Soft Switch Central for the Aviiion platform. The resulting product will be owned, marketed, and supported by Soft Switch, Inc. Soft Switch Central provides gateways to IBM MVS and VM environments. It provides numerous network mail management and administrative services. The Unix-based version will be configurable to act as an X.400 MTA, a SNADS switch, or as a multi-protocol switching system.

Focus, a fourth generation language for application development and decision support from **Information Builders, Inc. (IBI)**, is now available on DG Aviiion systems. IBI and Data General will jointly market the product. Data and applications are portable between Focus for DG/UX and most hardware platforms. There are more than 600,000 Focus users worldwide.

First-day orders show that the MV/30000 will be used in a variety of applications.

Citicorp Information Services purchased an MV/30000 Model 4 for its research and development facility in San Diego, where it will be used for development and testing of the Galaxy 2000 credit union system.

Jacobsen and Associates, a DG VAR specializing in manufacturing software, purchased an MV/30000 Model 1 for Wood-Mizer, Inc. of Indianapolis.

Entrecañales Y Tavora, one of Spain's largest construction companies, purchased an MV/30000 for office automation, accounting, and other internal functions. And the **City of Adelaide**, Australia, is using an MV/30000 for city management chores. ▽

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