

December 1992

# FOCUS

The Magazine of the North American Data General Users Group

## In Focus

Graphical front-end tools  
The world ends in 7 years  
Hordes of hot buttons

## Plus

Slurping into memory  
A fearless forecast  
Photos from NADGUG 92



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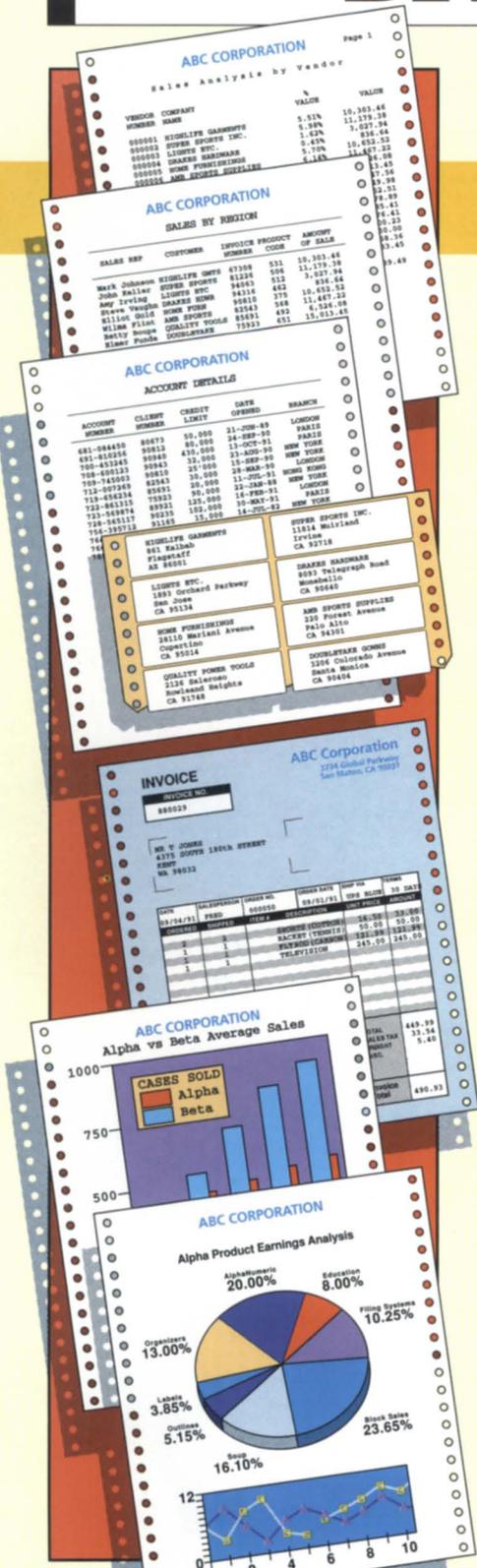
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**NORTH AMERICAN  
DATA GENERAL  
USERS GROUP**

# Get involved

by Jan Grossman  
NADGUG President

Having just returned from NADGUG 92 in Kansas City, I've been thinking often about how the conference theme, "New World, New Options," really hit the target this year.

The theme carried through on the exhibit floor where vendors displayed hardware and software options that will provide businesses with tools they need to be competitive in the new world of open systems, and for merging old and new systems. A Next workstation provided a NADGUG welcome with its "Lip Service"—attendees could hear and record their own messages. Data General's powerful Clarion was another attention-getter, with its redundant-disk technology—go ahead, pull out a disk and see what happens!

Social activities gave us opportunities to meet in a relaxed, fun atmosphere. Highlights included the Ice Breaker party given by Data General, the welcome reception at the exhibit opening, and of course the banquet, where comedians Mack and Jamie provided a "global" peak at the world of human communication! The final-day Pizza Party is always fun, and congratulations to the prize drawing winners.

Many of us enjoyed the opportunity to network with international representatives from the United Kingdom, Germany, Australia, Czechoslovakia, Sweden, France, and Canada, to name a few. User communities worldwide are facing many of the same problems we are—adapting to open systems, downsizings, and recessions. It is truly a small world after all.

For those of you who missed the NADGUG booth, you can still pur-

chase a NADGUG bag, T-shirt, or one of those nice black bags from NADGUG 91. Watch for the NADGUG advertisement in *Focus* for ordering information.

A great need exists in the Data General user community for more education and training in the open systems arena. Most of us want to learn how to integrate all this stuff together. How do we justify its existence, make it work, manage it, link it, keep it secure, and optimize it for the best performance?

The NADGUG 93 Conference Committee will strive to incorporate those needs into the session planned for next October 25-28 in Atlanta, Georgia. Conference Chair Calvin Durden and I will work together to plan for these needs. The Conference Track Chair Committee, whose responsibility it is to fit everything together, is composed of Brad Friedlander as Track Chair Leader, along with Ron Branom of Texaco, David Novy of 3M, Roger Casey of John Deere Insurance, and Steve Pounds of Security Forces.

It will be an exciting conference—a special celebration of 25 years for Data General and 20 years for NADGUG. Call for Session papers are available for presenting at NADGUG 93. The deadline is early February. Call Danieli & O'Keefe Associates at 800/253-3902 for information.

As of November 1, the new leadership for NADGUG began working to meet our changing membership needs. New leadership includes: Vice President Tim Boyer of Denman Tire, Recording Secretary Bart Bates of Gibson Petroleum, Treasurer Steve Pounds, and Past President Dennis Doyle of Doyle and Associates. It is important that we hear from you members. Please call with your concerns and ideas. Get involved. Everyone is welcome.  $\Delta$

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*Jan Grossman is project manager/consultant with Data Systems Management in Minneapolis, Minnesota. She may be reached at 612/638-9110.*

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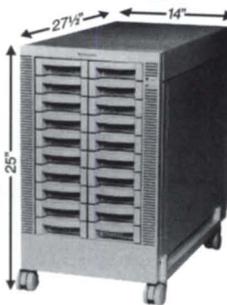
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# Graphical front-end tools

## SYNOPSIS

Step through the terminology and techniques of a tool used in developing graphical data base front-end software.

same flair and intuitive interface.

The time is upon us! Such software development tools are becoming more readily available all the time. Already, many projects undertaken by Data General Systems Integration Services use one or another. This article will step you through the terminology and techniques of a tool used for the development of graphical data base front-end software.

For the sake of example, I've arbitrarily selected one such tool, called Oracle Card from Oracle Corporation. Generally speaking, Oracle Card offers the same functionality and features as Hypercard on the Apple Macintosh. Even though it will work on a stand-alone PC, Oracle Card is primarily targeted toward the client-server model, with the PC acting as the client and a powerful data base server (such as a Data General Aviiion) acting as the server.

Oracle Card runs under two GUIs—Microsoft Windows and Apple Macintosh—and incorporates the look and feel of its local GUI rather transparently. There are no functional differences between the Windows and Macintosh versions. The data however, can reside locally on the PC or on virtually any server on the market. This provides a high degree of portability and flexibility.

Dealing with this new software development medium means learning a half-dozen or so new terms:

- card
- stack
- background
- field
- button
- graphics object
- Oracle Card Toolbox
- Oracle Talk

### Card

The card is the fundamental element of an Oracle Card application. In its simplest form, a card is roughly equivalent to a screen or input form. For example, you may have one card for employee entry and another for project entry. Each card can stand independently or can be related to another card. The relationship between cards is established by passing common data values between them, similar to the way a relational data base works.

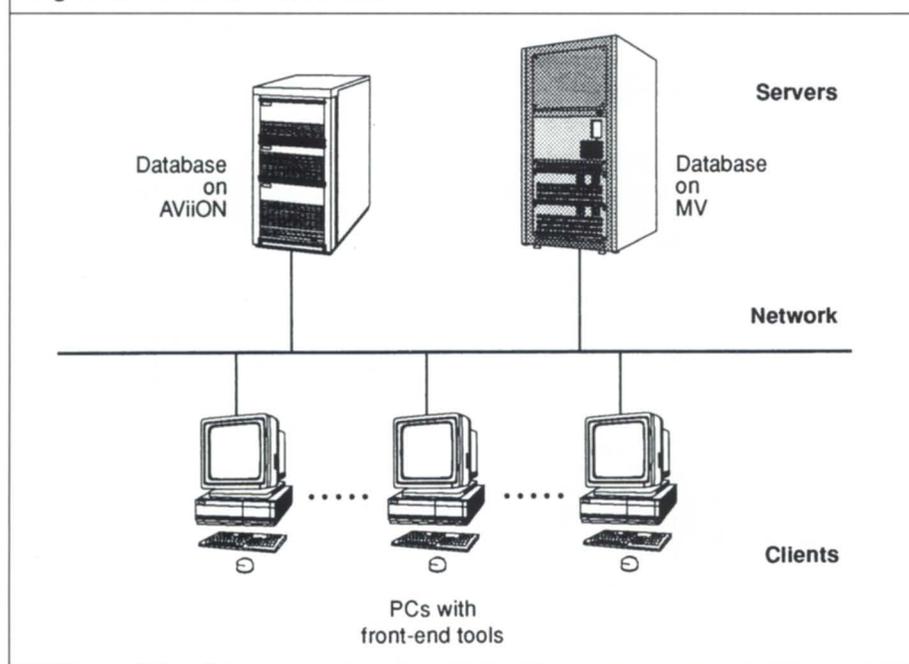
### Stack

A stack is . . . you guessed it . . . a group of (related) cards. Therefore, each stack of cards essentially represents an application. A stack physically exists as an operating system file. This one file can be moved to all client machines to facilitate a distributed application. This one-file-per-stack approach makes client-server applications easy to administer.

by Kim Medlin  
Special to Focus

I'm sure you've seen those really snazzy software packages that incorporate the look and feel of standard graphical user interfaces (GUIs), such as Microsoft Windows, or Motif from the Open Software Foundation. In such applications, windows are opening and closing. Icons are scattered about the screen. And sometimes stunning graphical images incorporate pizzazz and an amiable atmosphere. Perhaps you've wondered when such tools will finally be available so you can create commercial applications that incorporate the

**Figure 1: Client-server network**



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Circle 12 on reader service card.

## Background

From a cosmetic point of view, each card can have its own background and foreground. To make life simpler and more consistent, a single background can be used by default for an entire stack. Alternatively, the background can contain virtually any graphical representation, meaning that you can customize it as much as you like. You can scan in an image, or use a paint/draw program, or both. With your imagination, the sky is the limit.

## Fields

The concept of fields in Oracle Card is similar to fields in the 3GL world. A field physically resides on a card and may potentially be associated with a data base field. In Oracle Card, however, a field can contain graphical information as easily as it can store numbers or characters. Incorporating graphic images in the application has become an easy matter.

## Buttons

Buttons are conceptually similar to function keys, but are implemented on the screen, rather than with physical keystrokes. Depending on the application, this can be a first-rate improvement because you'd need to display only the function keys (buttons) that made sense for each card, and each button could be labeled (perhaps with an icon), allowing the operators to throw away their function-key templates. Yeah!

Buttons come in many shapes, sizes, and forms. For example, buttons may be defined as transparent, opaque, shadow, radio button, check box, and so forth.

## Graphic objects

Graphic objects open new vistas for creative application interface design. A graphic object can act similarly to a button in that clicking with a mouse on the object causes a pre-defined action to occur. This can greatly enhance the ease

of use. For example, assume your application contains data that are logically segregated by geographical boundaries. In this case, you could have one card displaying a map of the United States. Clicking on an individual state—say Idaho for example—would cause the next card to appear, displaying a map of Idaho showing all its counties. Yet another click on an individual county and . . . you get the idea. This graphical interface is logical for the user because it incorporates the concept of “a picture is worth a thousand words”—or at least a thousand lines of code.

## Oracle Card Toolbox

On occasion, I receive compliments on the articles that appear in *Focus*. I always reply by taking only partial credit. The writing procedure I use is generally to scribble some ideas in the CEO word processor and then pass them along to Gail Federer, a Data General technical writer. Gail ensures that

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my babbling uses appropriate words, edited into complete sentences that form conscious streams of thought. In essence, Gail acts as an amplifier for my ideas.

And so it is with the Oracle Card Toolbox. The Toolbox is a set of facilities that takes your simple development requirement (say, a button in a specific style) and performs the potentially complex development needed to produce it. For example, the browse tool is used for looking at the contents of a stack. You can quickly activate buttons, modify their contents and parameters, and access dialog boxes. In general, the Toolbox provides simple-to-use methods for implementing features that require complex development, essentially expanding your "ideas" into executable code.

**Oracle Talk**

Oracle Card doesn't work magic in all areas of development. For those

times when Oracle Card's automatic features aren't sufficient, additional functionality can be incorporated by using Oracle Talk, which is very similar to Apple Hypertalk. I know what you may be thinking. "Oh, great. Another language to learn." Not to worry. I believe that in the near future, you probably won't need to know Oracle Talk. Read on more details.

**Future directions**

Oracle Card works best in a client-server environment when it is run on at least a 386 PC. If the data base will be local, a 486 is more appropriate. By reading between the lines of Oracle Corporation's statements regarding the company's products, I believe Oracle Card's future will be targeted for executive applications, flashy demonstration situations, and pen computing. For mission-critical applications, the future still belongs to Oracle's SQL\*Forms.

SQL\*Forms version 4.0 will take full

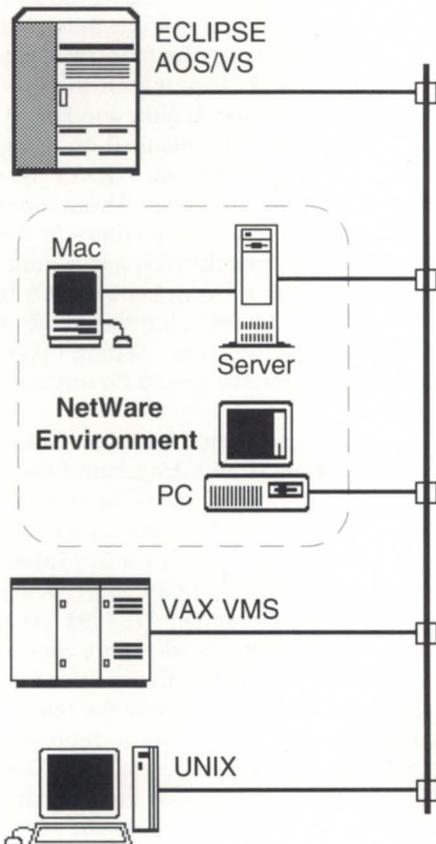
advantage of virtually all popular GUIs (including Motif and MS Windows). For those who have already invested in the SQL\*Forms learning curve, mission-critical graphical applications are right around the corner.

Here at Systems Integration Services, we are really excited about the new tools. They make our projects not only more challenging in a variety of ways, but more fun, too. If you'd like to discuss this subject further, feel free to give me a call or drop me a line. Δ

---

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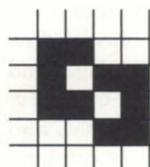


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# The world ends in 7 years . . .

The turn of the century approaches, and it will play havoc with your computer system if you don't do something about how your programs handle dates.

## SYNOPSIS

by Randall O. Berndt  
Special to Focus

In just seven years, the comfortable data processing world we inhabit will cease to exist. It won't end with fire or flood, but with an enraged mob of users storming our castle walls and tossing us in the moat. And the cause of all this? In seven years, the date will be 01/01/00. And that simple, 8-character date spells doom for many programs.

Honesty check: How many of you have written programs that do year checking by testing for "greater than 75" or whatever year you thought of as "far enough back"? Math check: How many days are between 12/31/99 and 01/01/00? Use your accounts receivable aging logic to compute that, and you will probably have a very unpleasant surprise.

When working on a solution to this

problem, I placed a restriction on how I would solve it. All my current date fields are PIC 9(6), and I wanted to avoid having to change the record layout of the files. Writing a program to convert the dates and changing the date logic in other programs is one thing, but rebuilding all those files to increase the record size and changing all the programs that use them is quite another.

I had originally planned on using the AOS/VS ?FDAY and ?GDAY system calls to handle dates. These function calls convert between dates in the forms of day/month/year, and a number of days since December 31, 1967. It fit easily in a PIC 9(6), but the cutoff of 1967 was just too recent. Setting up an employee birthday would be impossible.

Okay, next plan: Use Julian Dates. A Julian Date is an astronomical measurement of time, counting from noon, Greenwich Mean Time on a date in the far past (January 1, 4713 B.C.). Julian Date 2,540,083.0 is noon, Greenwich Mean Time, December 31, 1995. At 6 p.m. Greenwich on the same day is 2,540,083.25. For my (strictly calendar) purposes, I plan to use only the integer portion of the Julian Date to represent the day. The problem here is that a true Julian Date has 7 digits, so I would have to subtract a constant from the JD to reduce it to 6 digits or less.

**Figure 1: Fortran function to compute Julian Date**

JD is Julian Date, I is year, J is month, and K is day

$$JD(I, J, K) = K - 32075 + 1461 * (I + 4800 + (J - 14) / 12) / 4 + 367 * (J - 2 - (J - 14) / 12 * 12) / 12 - 3 * ((I + 4900 + (J - 14) / 12) / 100) / 4$$

This led to . . .

Next plan (version 2): In 1989, the ANSI standard committee for Cobol added the concept of intrinsic functions, which are used in COMPUTE statements. The two functions of interest here are DATE-OF-INTEGGER and INTEGGER-OF-DATE. The 'INTEGGER' part of these functions is a "Gregorian Date," another "Number of days since' date, but based on January 1, 1601. In this date style, December 31, 1995 is GD 144,270.

So, in order to keep as close to ANSI standard as possible (you *are* planning your Unix move, aren't you?), I needed to implement a routine that would return Gregorian Date values. I don't know of an easy method to compute a Gregorian Date, but I do have one for Julian Dates, so all I needed to do was get the Julian Date and subtract an offset (2,395,813) to get the Gregorian Date.

This method is from a letter to the editor by Henry F. Fliegel and Thomas C. Van Flandern in the *Communications of the Association for Computing Machinery*, Volume 11, Number 10, October 1968. In this letter are shown a single line Fortran function to compute

**Figure 2: Fortran subroutine to compute Calendar Date**

```
SUBROUTINE DATE (JD, I, J, K)
L = JD + 68569
N = 4*L/146097
L = L - (146097*N+3)/4
I = 4000*(L + 1)/1461001
L = L - 1461*I/4 + 31
J = 80+L/2447
K = L-2447*J/80
L = J/11
J = J + 2 - 12*L
I = 100*(N-49) + I + L
```

a Julian Date and a short Fortran subroutine to compute calendar date (see figures 1 and 2). Both routines use integer-only arithmetic.

To implement this system in ICobol, you only need to create two COPY files, one for WORKING STORAGE, and one for the PROCEDURE DIVISION. Dates are handled in either 6 (MMDDYY or YYMMDD) or 8 (MMDDYYYY or YYYYMMDD) digit form. A 6-digit date is assumed to be 19xx if the year is greater than 50 and is 20xx if 50 or below. For those times when you need to enter a date earlier than 1951 or later than 2050, you can use the 8-digit entry method. Separate routines are called for converting MDY and YMD format dates, but the same routines handle both 6- and 8-digit dates.

By using this method of date storage and computation, you accomplish several things: the turn of the century is just another day, aging type calculations become trivial, and verification of date entry can be easily implemented.

The time to start dealing with this problem is *now!* Seven years may seem like a long time, but it can slip by very quickly. Being ready and letting your superiors know you are ready is much preferred to getting that call in the middle of the night letting you know the computer stopped working.

The ICobol source code for this routine is much too long to reproduce here. If you send me a self-addressed, stamped envelope, I will send you a copy of the listings.  $\Delta$

*Randall O. Berndt is systems manager for N-E Thing Supply Co., Inc., a Houston-based distributor of commercial property maintenance supplies. He can be reached by mail at 5300 North Braeswood, #4-321, Houston, Texas, 77096-3317.*

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## SYNOPSIS

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by Doug Johnson  
Focus staff

This month's feature is titled "Hot buttons" to suggest the excitement of leading-edge topics in the fast-changing computer industry. Yes, so-called hot topics (you know they're hot because all the industry magazines are doing cover stories) can be trendy and overhyped. But they are a reason to emerge from the cave of your day-to-day routine. And hot buttons constitute a powerful incentive for attending a user group conference like NADGUG 92.

### OOP

Object-oriented programming (OOP) may do for computer applications what autofocus 35 mm point-and-shoot cameras did for photography. On the one hand you could say "idiot" cameras led to a proliferation of mediocre snapshots—tops of people's heads chopped off, eyes half closed. But at the same time, good results did become more accessible to the average individual.

And so it may end up being with computer programming and OOP. I have to believe that future programmers now in kindergarten will grow naturally into using graphical user

interfaces (GUIs) for application building and everything else.

There's a welcome element of playfulness in OOP, and NADGUG 92 provided an interesting twist on the topic related to the newest addition to Data General's open systems strategy: DG's business alliance with Steve Jobs' Next Computer, Inc.

"Developing Really Cool Applications with Nextstep," was the title of a fascinating presentation conducted by Christine Wallis of Data General's Aviiion marketing arm. Her demonstration (with overhead projector transparencies during the seminar, but you could also go upstairs to the exhibit floor and see it on a real Next workstation) offered a richly graphical point-and-click approach to building useful items such as data base queries.

Coming from a journalistic background myself—I'm a nontechnical end user, not a programmer—I'm naturally reluctant to accept that application building could seem anything remotely like something I could tackle, but there it is. Menu choices, drawing lines to connect function icons called "buttons," pointing and clicking like nobody's business—programming has evolved into a higher form.

### More about Next and DG

With Data General and Next teaming up to offer a combination of Next workstations and Aviiion servers, it's natural to speculate how the two companies will go about making their arrangement work. The same question can be applied to NADGUG and existing Next user groups. What can their respective memberships offer each other? How will they work together

and adapt to change?

At NADGUG 92 I had the opportunity to meet Conrad Geiger, Next Computer's international user group manager. (Huge coincidence: we both attended the same elementary school in Austin, Texas). He will be working on these issues in 1993, so check upcoming *Focus* issues for more information.

### Next-generation photography

A Swedish company called Pics demonstrated a new service that furnishes the browsing user with a huge online inventory of stunning color photos. Marketing Director Hans Gawelin demonstrated on an Apple Macintosh hooked to an Aviiion server how to select a picture from an array of proofs, to retrieve an original high-resolution version, and copy it to your hard disk.

Gawelin apologized politely for the quality of the small Mac screen's color; some of Pics' equipment had been held up in customs, including a high-resolution monitor as well as the English version of the software. As it was, I thought it novel and intriguing to see familiar pulldown menus converted to Swedish.

### Lots of stuff

There were hordes of hot buttons glowing on the exhibit floor there in Kansas City. They popped and sizzled everywhere you happened to look during a wide variety of conference sessions. If you're part of the Data General community, they were there waiting for you.

If you didn't attend this year (shame, shame), call up somebody who did, and make plans to go to Atlanta in October for NADGUG 93. Δ

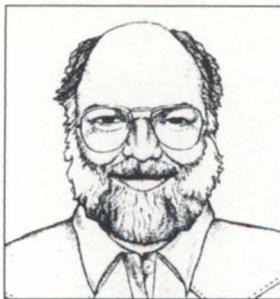
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Brian Johnson

# Slurping into memory

## SYNOPSIS

Ask yourself, "Could I get away with using indexed tables in memory instead of disk files?" and you'll be surprised at how often the answer is yes. BJ shows the way.

## QUESTION AUTHORITY

A few months back I was rereading an old school text intended as an introduction to programming, and a very simple paragraph resulted in a flash of brilliance. The paragraph had to do with disk data files, and part of it went like this:

"You can only read them a record at a time because the size of your data files is typically much larger than the size of main memory."

The question that popped into my head was: Is that really still true? The answer 10 years ago was, "Usually, yes." The answer today is, "Frequently, no."

A teensie bit of back-of-the-envelope analysis will show you why. How have data files grown in the past 20 years?

Well, back in Dark Ages of Computing (1967), when I wrote my first data base program, typical commercial application data bases were on the order of 10 to 20 megabytes. That dovetailed well with the disk technology at the time; IBM was shipping truckloads of 2311 and 2314 disk drives. At the

same time, typical main memory sizes were 16 KB or 32 KB (IBM 360/30) to one megabyte (IBM 360/50).

Now, in the New Age of Computing, data bases have grown a bit for several reasons; companies are somewhat bigger, more data are stored within each record (thank you IRS, EEOC, OSHA, and whoever else), much less attention is paid to economical data record design, and there's a regrettable trend toward overindexed files and overhead-heavy DBMS and RDBMS index schemes. But still, the amount of growth is relatively modest; typical commercial application data bases are now on the order of 10 to 500 MB, or a growth in size of only one to two orders of magnitude at the high end and very little growth at the low end.

But what of main memory? It's not uncommon now, given current memory prices, to have 256 or 512 MB on a mini-computer and nearly a gigabyte on a mainframe. That's three to four orders of magnitude more than 20 years ago.

Is there an opportunity here? You betcha.

Consider this: At nights and on week-

ends when you run those disk I/O intensive batch programs, what's the memory situation? You've pretty much got the machine and most of its memory to yourself.

Anyway, here's the scam. Suppose we could figure out a way to have entire data bases memory resident during the batch run. Wouldn't things run a lot quicker? Well, it depends on a couple of things.

Obviously, reading an entire data base into memory if you intend to access only a small fraction of the records is a losing proposition. So, nix any data bases that are just sampled.

Okay, so you use the entire data base during the batch job. Isn't reading an indexed data base all into memory one record at a time, and then having to write all the modified records out when you're done, just as bad as doing things one record at a time? Yep. But there are exceptions (DBMS and RDBMS users can skip to the next paragraph at this point). If you use Infos, then there's a way to slurp the entire data base into memory much more efficiently (up to 100 times faster) than by reading all the records sequentially by key. It's a shame that newer data base systems don't provide a similar capability, but that's the way it goes. Score one more for good old Infos. Anyway, here's how it's done. You use the old POOH program (source available on the :SYSMGR BBS), or third-party utility of your choice (only :SYSMGR & Eagle currently, as far as I'm aware), to read all of the data records into an array in memory. They typically arrive in no particular order. As you read them, you construct whatever index structures you need using the algorithm *du jour* (binary search of an ordered key list, or balanced, AVL,

or Red-Black trees; whatever you have handy). From there on out it's simply a matter of accessing the records at lightning speed directly from the memory arrays using the index structures. When you're all done, you simply discard everything if your accesses were read-only, or you'll need to write any modified records back to the data base.

So far, I've assumed that what you're working with is an indexed data base, which is updated on-line during the day, but a lot of you also have either flat or indexed files that are primarily read-only (i.e., updated only once a week or once a month), which in actuality are just disk-based tables. How about moving some of these guys into memory, even during the on-line work? Yep again; a very reasonable thing to do as long as the impact on memory is manageable.

And once again, good old proprietary AOS/VS [III] comes to the rescue to help you out. Most DG-compiled languages allow you to declare a data structure as shared memory, either read-only or read/write. All each application program has to do is read the data file into that table and everybody shares the same copy.

So for a 20 MB data base used by everybody, you'd only need to ensure that there was at least 20 MB of physical memory available over and above what was otherwise needed for the on-line users. These days I frequently run into systems with 30 MB or more of LRU and Free memory laying around, so this isn't unreasonable. If need be, you could even add whatever amount of memory was needed for the shared table(s).

With a little clever programming, there is even a way to have a memory-resident shared table that can be updated in real-time. The only trick involves protecting against multiple processes doing arithmetic on the same field at the same time. Compiled languages typically update a variable in memory using a load/operate/store sequence that is interruptible. By design, the MV instruction set contains some nice instructions for managing atomic updates, and all it takes is a tiny "keystone" subroutine to accomplish atomic updates. In the case of C, this subroutine doesn't even have to be written in

assembler; the instruction primitives are available as library functions.

The basic concept described here is pretty straightforward, but some of the implementation details (such as atomic updating) are a little tricky, so you may want to get some advice or help from a professional for the "keystone" subroutines.

Other than the slight increase in com-

plexity, there has to be some down side to this, right? Yeah, a little. This scheme is not currently what I would call "slam-dunk" portable. For example, you can do the same thing under Unix, but you have to be a bit more careful about losing the updated copy in memory in the event of a system crash. Under Unix, shared memory files don't get flushed to disk automatically like



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they do under AOS/VS when the last user closes the file or when Emergency Shutdown (ESD) is run after a crash. In the latter case, Unix doesn't even have an ESD facility.

Advice: next time you're designing a program that you can guarantee will be run in a memory-rich environment, take a look at the data bases and work files involved and ask yourself, "Could

I get away with using indexed tables in memory instead of disk files?" You'll be surprised how often the answer is now yes.

#### :POTPOURRI

A couple of small items have ended up impaled on (i.e., pushed onto) my topic spike recently, so let's pop them off so I can get back to having a nice

shiny naked spike.

#### :RUNAWAY\_PORTS

AOS/VS II 2.20 has hit the bricks, and seems to be a lot more sensitive to runaway ports than in the past. As longtime fans of this column are no doubt aware, runaway ports are an extremely common problem that can result in lots of your CPU time being wasted unnecessarily by PMGR and EXEC. The real question is why can't this problem be fixed once and for all? After all, it's SMOP, isn't it? If not, then how 'bout some DG development types enlightening me once and for all on why not?

#### :MODEMS:AGAIN

The level of sleaze in the modem market has now reached epidemic proportions, especially with the new data/fax combination modems. The most common things to look out for currently are the new V.42bis scam, and split speed fax scam.

V.42bis is a standard that describes how data are compressed for transmission purposes. Quality modems use hardware to do this because it's relatively CPU-intensive, but there are a whole bunch of cheap modems out there now claiming "9600 baud V.42bis," but a careful reading of the box shows that it's actually a simple 2400 baud V.22 modem and that the 9600 baud is the estimated throughput using V.42bis compress. And oh, by the way, the V.42bis is done in software and happens only if you use the incredibly sleazy throwaway-ware (Copyright © BJ 1992) terminal emulator package that comes on a diskette in the modem box. If you're planning on hooking the modem up to a real computer, or hooking it up to a PC and using a real terminal emulator package, then what you've just bought yourself is a cheap 2400 baud modem. And even if you do use the sleazy emulator to get the V.42bis capability, don't expect to see 9600 baud when transferring files that are already compressed (e.g., any BBS, CompuServe, Prodigy, or whatever files); V.42bis cannot compress what is already compressed, so you're back to 2400 baud.

The split speed fax scam refers to the fact that 9600 baud fax transmission

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and reception is currently accomplished using 2400 baud modem connections. The international Group III FAX standard includes Modified Huffman data compression, making the net raster dot throughput supposedly around 9600 baud, although the actual speed is obviously a function of the document. There is a new international fax standard that actually uses V.32/V.32bis 9600/14400 baud modem connections, but few fax machines on the planet can handle it yet, and they simply force any high-speed callers to downshift to 2400 baud. The difference between the 2400 baud nature of fax modem connections versus the 9600 baud assumed throughput is not exactly common knowledge, but at least all the fax manufacturers have been consistent up to now using the terms. What's new is a sneaky trend of selling modems intended for PCs, but which are designed to transmit at a net throughput of 9600 baud, but only receive at 4800 baud. The reason for the lower speed on the receive side is that the low-end PCs, like 286s and 16 MHz or slower 386-SXs, have their hands full receiving the compressed rasters at 9600 baud continuously, and simultaneously decompressing them and writing them to disk. Under Windows, it's nearly impossible to keep up, so the trend is to sell fax modems now that have crippled receive speeds. Neat, huh? You might say, "Hey, why do I care? It's the caller who foots the extra phone bill." Yep, that is true at least until all the people you send faxes to get equipped with these turkey modems. See, I knew I could get a Thanksgiving reference into this column.

Moral: Read the modem box carefully and get a modem that specifically states "9600 baud send/receive," not "9600 baud send/4800 baud receive," or the even sneakier "9600 baud send" with no mention of the receive speed. As long as you've got something faster than a 16 MHz 386-SX, your fax software will be able to keep up.

#### :PCS:SORRY\_STATE\_OF

The state of the documentation for PC-based products has always been a sorry state of affairs, even approaching that benchmark for terrible documentation—modem manuals. But now a disturbing trend is emerging. I happened

to be perusing a book entitled *Windows 3.1 Secrets* the other day, and I counted the number of times it said something along the lines of "... try setting this option to X and then see if your software runs okay. If not, then remove the X option." I love the part about, "... and see if your software runs okay." What exactly does that mean?

And how many hours does it take to

determine that?

Until now, I thought the worst offenders when it came to this "just try it" school of configuring were the memory management vendors (QEMM, 386MAX, et al) and disk-caching utilities (HyperDsk, SmartDrv, et al), but now it seems that Windows 3.1 has joined the group. A check of my trusty copy of the *Windows 3.1 Resource Guide*

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turned up hundreds of "just try it" recommendations. The final straw was the section in *Windows 3.1 Secrets* regarding Super VGA cards. It recommends repeated boots using a binary search technique to determine the minimum memory range needed in the EMM-Exclude= option in WIN.INI in order to avoid having Windows inadvertently try to take control of the upper memory areas used by the SVGA BIOS code and extended mode buffers.

Am I just stupid, or is there some reason why I shouldn't just open the little pamphlet that came with the SVGA card and look up the address range of its BIOS and extended mode buffers and EMMExclude it? Duh, I guess not.

By the way, I recently surveyed a bunch of name-brand systems (Dell, Packard Bell, and Acer to name just a few) on display at a big local computer store, and every system I looked at that had a SuperVGA card installed did not have its WIN.INI file set up to exclude

the extended mode VGA buffers.

You know why? Every one of them simply had the Windows video screen type set to standard VGA. That works just dandy, but then why shell out the extra bucks for a Windows box with a Super VGA if it's not set up to use the higher resolution and 256 colors instead of a measly 16? And what about those SVGA boards with 32 KB or 64 KB or even 1.6 million colors? Sorry guys, the Windows Paint program only supports a maximum of 256 colors, although you may be able to get some extra colors in a few other software packages by installing a special Windows video driver from the card manufacturer that supports the higher number of colors.

Oh, by the way, if you *do* install that third-party video driver, don't forget to "... see if all your software runs okay. If not, just remove it."

### :NEW\_YEAR

I've got a new prediction for the New

Year. I used to say that the world as we know it would end on the day when the number of different payroll programs in existence exceeded the number of employees who receive paychecks. I've changed my mind. The End will now arrive on the day that the first MS-DOS TSR is released that advises, "Install this TSR before any other TSRs."

Have a Happy +.

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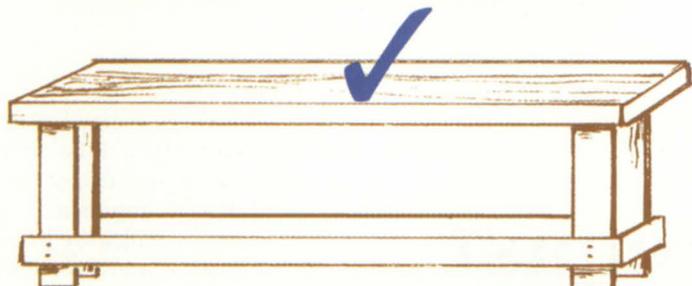


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| S/140 w/512KB, 16 slot.....        | 595      |

### CRTs

|                             |       |
|-----------------------------|-------|
| D217, D413, D463 (New)..... | Call  |
| 6501 D412 w/KB .....        | \$325 |
| 6500 D216 w/KB .....        | 245   |
| 6566 D216+ w/KB.....        | 295   |
| 6308 D470 Color w/KB .....  | 450   |
| 6394 D461 w/KB .....        | 350   |
| 6393 D411 w/KB .....        | 225   |
| 6392 D215 w/KB .....        | 175   |
| 6391 D214 w/KB .....        | 165   |
| 6167 D460 w/KB .....        | 175   |
| 6166 D410 w/KB .....        | 155   |
| 6169 D211 w/KB.....         | 145   |

### MEMORY

|   |          |
|---|----------|
| 80108 MV/9500-9600 32MB Memory.....       | \$11,500 |
| 80107 MV/9500-9600 8MB Memory.....        | 2,850    |
| 8990-E MV/15000-MV/20000 32MB Memory..... | 5,950    |
| 8990-D MV/15000-MV/20000 16MB Memory..... | 2,450    |
| 8990-C MV/15000-MV/20000 8MB Memory.....  | 750      |
| 8939 MV/7800XP 4MB Memory .....           | 600      |
| 8901 MV/7800 4MB Memory .....             | 400      |
| 8765/8708 MV/4, 6, 8, 10 2MB Memory.....  | 75       |
| 8754 S/140 512KB Memory .....             | 195      |
| 8387 Nova 4 256KB Memory .....            | 175      |
| 8923-A Desktop 20 1MB Memory.....         | 495      |
| AViiON/MV Compatible Memory .....         | SAVE     |

### COMM. GEAR

|  |       |
|--|-------|
| 4460 Network Bus Adapter w/Box.....      | \$500 |
| 4623 IAC-24 w/TCB.....                   | 3,750 |
| 4532-A Ethernet LAN Controller.....      | 1,995 |
| 4586 ITC-128 .....                       | 4,950 |
| 4010-A Interlan Ethernet Controller..... | 600   |
| 4370 IAC-16 w/TCB-16 .....               | 595   |
| 4369 IAC-8 w/TCB-8 .....                 | 300   |
| 4463-ZT USAM-4 for Desktop.....          | 70    |
| 4074 SLA .....                           | 495   |
| 4340 AMI-8 .....                         | 50    |
| 4380 ISC-2 .....                         | 250   |
| 4817 Termserver 2000.....                | Call  |

### DISKS

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|-----------------------------------|--------|
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| 005-17820 HDA for 354MB Disk..... | 375    |
| 6239 592MB Disk S/S.....          | 2,100  |
| 6685 1.0GB SCSI Disk A/O.....     | 3,750  |
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| 6491 322MB SCSI Disk A/O.....     | 995    |
| 6161 147MB Disk S/S.....          | 475    |
| 6160 73MB Disk S/S.....           | 225    |
| 6336 71MB Disk/Desktop.....       | 495    |
| 6581-A 500MB RAMS Disk A/O.....   | 4,000  |
| 6621 1.2GB RAMS Disk A/O .....    | 11,900 |
| 6237 1.062 GB Disk S/S .....      | 1,195  |

### MV/DC

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|--|-------|
| MV/2000 w/4MB, CTD, LAC-12.....            | \$895 |
| MV/1400 w/4MB, CTD, 160MB, .....           | 1995  |
| MV/2500 w/8MB, 130MB CTD, 322MB Disk ..... | SAVE  |
| 005-30768 MV/2000 Enhanced CPU w/4MB.....  | 1,295 |
| 6363 160MB Disk.....                       | 795   |
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| 6309 737KB Floppy .....                    | 150   |
| 6351 24MB Cartridge Tape .....             | 295   |
| 4562 LAN Controller.....                   | 400   |
| 4627 LAC-32 .....                          | 2,995 |
| 4560 LAC-12 .....                          | 275   |

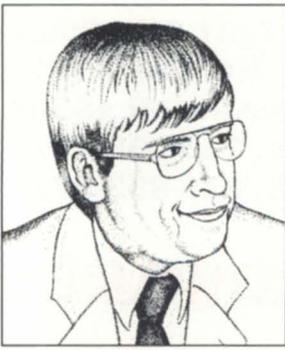
### TAPES

|  |         |
|--|---------|
| 92185 CDC 6250 BPI Tape w/BMX-2.....         | \$1,200 |
| 6590 2GB Cart. Tape w/CSS Chassis .....      | 7,250   |
| 6299 1600/6250 BPI Tape S/S.....             | 1,995   |
| 6300 1600/6250 BPI Tape S/S.....             | 2,695   |
| 6125 1600 BPI Streaming Tape S/S.....        | 195     |
| 6123 1600 BPI Streaming Tape/Desktop .....   | 395     |
| 6026 800/1600 BPI Tape S/S.....              | 395     |
| 6270-B 15MB Cart. Tape/Desktop .....         | 225     |
| 6637 525MB Cart. Tape A/O.....               | 2,395   |
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| 005-8584 Tape Controller for 6026.....       | 95      |
| BMX-2 Zetaco Tape Controller .....           | 575     |

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|---|---------|
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| 005-15633 S/140 ERCC/BMC.....                 | 1,000   |
| 8991 MV/15000-MV/20000 F.P.U.....             | 725     |
| 8819 MV/10000 IOC-2 .....                     | 300     |
| 8997 MV/15000-MV/20000 Expansion Chassis..... | 1,500   |
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| 8772 S/280 BMC (w/ trade in).....             | 475     |
| 8883 MV/7800 Chassis, 16 Slot.....            | 895     |
| 8395 Nova 4 Chassis, 16 Slot .....            | 425     |
| MV/15000 Chassis .....                        | 2,495   |
| 8745 MV Style BBU .....                       | 795     |
| AViiON Processor Boards - Various .....       | Call    |

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David Novy

# A fearless forecast

## SYNOPSIS

Operating systems, "brain dead" ease of use, Unix servers and networking, RAID technology, CD-ROM, the possible end of squabbling among major Unix groups, and the awesome power of 200 MIPS workstations—there's a lot to look forward to in the computer industry, and that's just in 1993.

This is the final issue of *Focus* for 1992. So, in the spirit of the holidays and in an attempt to bring a little sunshine into the dark, cold winter days that lie ahead, I thought I would make some fearless predictions regarding the computer industry for 1993:

1) Microsoft Corporation's new operating system, Windows NT, will enter the marketplace, and will enjoy a rather impressive market penetration. Its impact on the open systems market and the Unix market in particular will be major topics of discussion when next we gather at the NADGUG 93 conference. But one should realize that Windows NT does not offer the functionality of Unix. It is a single-user, multitasking operating system. Unix, by contrast, is a multiuser, multitasking operating system. Also, Windows NT is a *proprietary* operating system. Its development will be controlled by a single corporation and to a large extent by a single individual—Bill Gates. And if Windows NT is as successful as many people are

predicting, Bill Gates (named recently the richest American) will be well on his way to becoming the richest person in the world. It is an interesting comment on the times in which we live that someone can become a multibillionaire by selling a product that possesses no physical form. One hundred years from now there will be no tangible artifacts of Windows NT. But the indirect effects of Windows NT and of other computer operating systems will shape future societies in ways we cannot even begin to imagine today.

2) Technical leadership will *not* guarantee success in 1993's computer marketplace. What *will* be important is ease of use, low cost, and software availability. By ease of use, I do *not* mean user friendly. I mean "brain dead" ease of use. Version 7 of the Apple Macintosh operating system is beginning to approach this "brain dead" ease of use. All you do is point and click; the computer does the rest. Because of the weaknesses of the underlying MS-DOS operating system, Microsoft Windows is still too complex for many users. And what keeps Microsoft Windows competitive is the unbelievably low cost of PC hardware. You can now purchase a 486 DX-based PC for less than \$2,000. A comparable Apple Macintosh costs at least \$3,000. For many Macintosh users, \$1,000 is a small enough price to pay for being able to avoid dealing with MS-DOS and its frustrating limitations.

(Note: Lest people get the wrong idea that I am a Macintosh bigot, my favorite machine is the Amiga. It is easy to use, offers a powerful, true multitasking operating system, and it costs a lot less than a Macintosh. Unfortunately for the Amiga, it is not "brain dead" easy to use, so the Macintosh appeals more to users who value ease of use

most. Also, the Amiga costs more than a PC, so it is less desirable to users who consider cost to be most important.)

3) The use of Unix servers to support file serving for PC and Mac networks will increase greatly during 1993. Novell Netware and Microsoft LAN Manager running on Unix file servers will become widely used in order to provide this file serving capability. The increased utilization of Netware and LAN Manager is being driven by the PC and Mac user communities who now have an urgent need to share data and use electronic mail. A person with a strong Unix background would probably prefer to use Sun NFS to provide file-serving capability for PCs and Macs, but demand is not being driven by system managers. To an experienced Unix system manager, Sun NFS is a lot easier to manage, but many companies hire outside consultants to advise them on how to do PC and Mac networking. These consultants generally have had little exposure to NFS, Unix, or large file serving operations. They generally do have a great deal of experience using Netware and LAN Manager on PCs. The consultants recommend either Netware or LAN Manager. The Unix systems managers recommend Unix file servers. Company management ends up deciding that a good compromise is Netware or LAN Manager on a Unix file server.

4) RAID technology will become very important in 1993. RAID (redundant arrays of inexpensive disks) is a means of greatly increasing disk-drive reliability without incurring the high cost of full duplication of disk resources. RAID's acceptance will begin to slow as people begin realizing that most RAID systems currently on the market demand nearly a 40 percent performance penalty for their use. However, more advanced RAID technologies are emerging that will overcome these performance limitations. RAID developers will learn how to achieve full asynchronicity between the host and the drive array, and combine this with disk caching. This can be achieved only by using a real-time operating system as an interface between the host and disk drives.

5) By the end of 1993, all major computer hardware vendors will distribute their software and documentation on CD-ROM. This is a rather easy prediction to make, since Data General is one of the few computer hardware vendors that does not primarily distribute software and documentation on CD-ROM. DG is currently installing the infrastructure required to support CD-ROM distribution. CD-ROM will offer two major advantages to system managers. First, it is significantly faster and easier to use than tape. Second, it greatly reduces the need for shelf space in the computer operations room, space that is currently required for paper-based documentation.

6) The two Unix groups—the Unix Systems Laboratory and the Open Systems Foundation—will work to overcome their differences. If they do not, Windows NT from Microsoft (and multi-multibillionaire Bill Gates) will eventually blow them away. Users no longer will tolerate vendors who cannot work together, especially if those vendors claim to support open systems and open standards.

7) During 1993, workstations will achieve capabilities of 200 MIPS (million instructions per second). File servers will hit speeds in excess of 700 MIPS. But at the same time the MIPS are going up, MIPS ratings themselves will greatly decrease in importance. What will be important is transactions per second performance. User demands will force the adoption of common benchmarks. At present, there is no common benchmarking standard, but you can expect that the throughput of new computer systems announced during 1993 will be two to three times faster than today's systems.

Have a pleasant holiday season, and best wishes for the coming year. Δ

*David Novy is a technical computing specialist at 3M in St. Paul, Minnesota. He is past chairman of the AOS/VS special interest group and current chairman of NADGUG's SIG/UX.*

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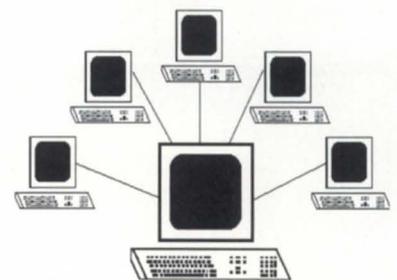
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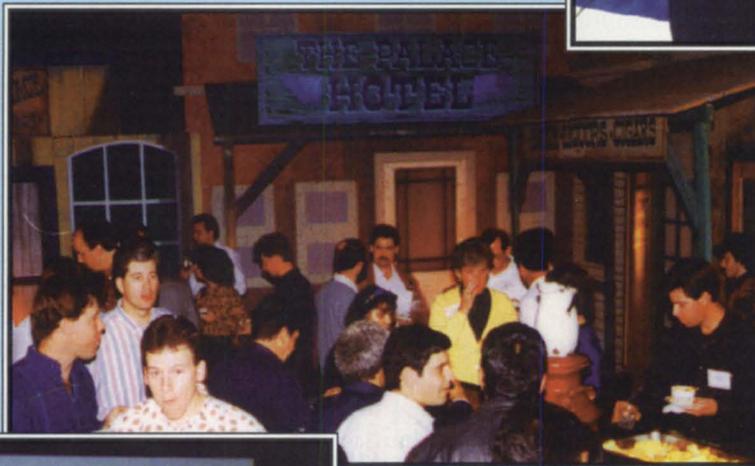
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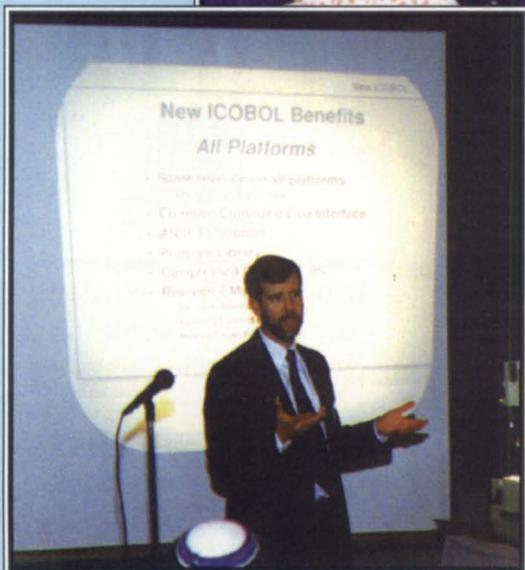
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# Bits and bytes

## ABCs of EBCDC

From: Jim Rosenfield

I am looking for a program to help me take EBCDC files off of labeled tape 1600 bpi using LOAD or DBRLOAD onto my disk. I need some coaching on how to use DMP files. (I keep getting the wrong file type). Can anyone help?

From: Arlene Blouch

Jim, don't use LOAD. Load is a DG dump/load program that is not in the format you need. Look in your sort/merge manual and do a filter or sort to read in the file on file number 1 (0 is the IBM label) and do a translate (also in the sort manual).

## AOS/VS transfers

From: Barry Marks

I am looking for a good transfer program for AOS/VS and AOS/VS II that



supports Xmodem, Ymodem, Zmodem, Kermit or any significant portion thereof. We have Tex and it works fine until we try to transfer over TCP/IP. I've heard about DG/Blast, but I don't know where to locate it.

From: Tim Boyer

Blast is made by Communications Research Group in Baton Rouge. Also look into Breakthrough by Applied Computer Solutions, 503/434-0206.

From: Rick Marnell

ACK is a terminal emulator for AOS[/VS] and will do ASCII, Xmodem, Xmodem-k and Ymodem file transfers. It supports filename templates. Also has a dialing directory and setup file. It doesn't support scripts. An evaluation version, ACKE203.DMP, is in the COM SIG.

## Softrans

From: Jim Rosenfield

What is Softrans on this BBS?

From: Spencer Field

Softrans is a proprietary protocol used to upload/download files to a PC using the Softerm PC comm package on the PC side. It works very well, but as far as I know, only to and from a PC.

From: Kevin Danzig

Softrans is freeware, and there is a copy of both source and F77 AOS/VS code here on the BBS. It works on an MV only as a server. You need it on a PC (or whatever else runs it) to control the MV side.

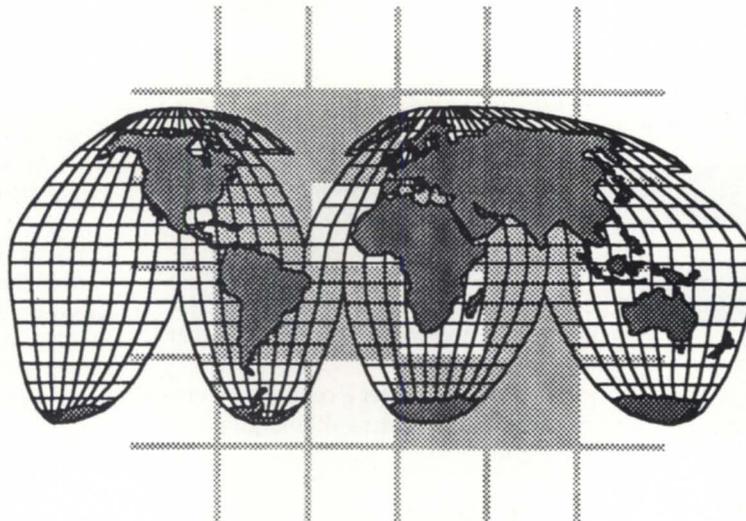
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*The NADGUG/RDS electronic bulletin board number is 415/499-7628.*

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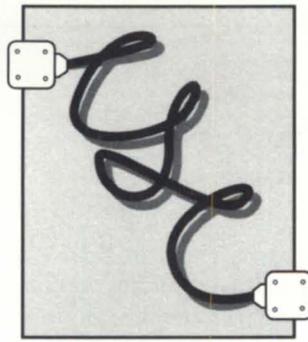
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## Category: DG/UX

Author: Bernie Gaider  
Subject: **Telebit modems**

We just purchased some T3000 Telebit modems, and are having difficulties making them work properly on our Aviiion 4600. We hooked up a measly 1200 baud Hayes Smartmodem, and it work no problem with M1200. When a Telebit modem is hooked up, calls coming in cause the port to lock up, and DTR is never raised.

If there are any other DG users out there who have successfully hooked up a T3000, we would appreciate hearing your modem configuration (at&v). We are using M19200, which is just M9600 copied and changed in the appropriate baud rate places.

The modems are being used for both dial-in and dial-out; we have been successful with dialing out.

Reply by: Tom Levandusky

Read section 5.9.7 in the release notice on the "Wait-read count"; this is probably the problem. I've gotten modems to work under 5.4 by:

1) Ensure that the proper cable is being used for the port; 2) Disable all responses from the modem to the system; 3) Set the wait-read count for that line to 2.

Then when you get a connection, one or two carriage returns should give you the login.

Reply by: Bernie Gaider

I phoned the Software Support people in Atlanta, and managed to get the modems working. I think the most significant change was similar to your point #2; I had to go into the `ttydefs` file and disable the first three echoes during the initialization phase. It worked fine after that.

CSC FORUM

# DASH items

## SYNOPSIS

Notices and queries posted on the Direct Access to Support Help bulletin board.

Author: Michael Keck  
Subject: **Building a kernel**

I am attempting to auto-build a kernel (DG/UX 5.4 on an Aviiion 5220), but it fails due to lack of space in `/var`; our root file system is at the size recommended by DG/UX, and it is at 80 percent capacity. The only files residing in the root are those that were put there by DG/UX. Can anyone give me any suggestions on how to successfully rebuild the kernel without reloading DG/UX and increasing the size of the root? Does anyone know of any junk that DG/UX puts in the root that I can get rid of?

Reply by: Ephraim Nussbaum

Look in mail and see if there are old or large files. Look for `cron/log`. How big is the log? If you are using system accounting and don't clean it out now and then, you can have lots of old junk there. Look for the `lpsystem` logfiles. Also, `uucp` builds logfiles that can get very large if you don't have `cron` clean them up regularly. Try the command, `last | tail -10`. If you get some very old logins, that file needs to be truncated.

Reply by: Wiley N. Johnson

Also check `/etc` for the size of `wtmp`. It keeps track of process starts and terminations. A relatively clean root should be 60 to 70 percent free (depending upon how many printers and async lines you have). Δ

*DASH runs on an Aviiion 5200 server located at the Customer Support Center in Norcross, GA. The bulletin board is available 24 hours per day, 7 days per week, free of charge. Call 800/DASH-CSC (1-800-327-4272) for the modem rotary.*

# The latest products for DG systems

## DG's network controller family



Westboro—Data General Corporation expanded its standards-based, high-speed, high-performance network communications product family for Aviiion systems by introducing new controllers for fiber distributed data interface (FDDI) networks, local area networks (LANs), and wide area networks (WANs). The new controllers provide Aviiion network users with increased connectivity options, high network availability, and configuration flexibility for today's enterprisewide communications infrastructure.

Data General's VFC is a RISC-based, high-performance node process that provides a new avenue for connectivity

with high-speed FDDI networks. The VFC allows Aviiion servers and the Aviiion 530 workstation to connect directly with FDDI LANs or to concentrators connected to the FDDI ring. The VFC supports all DG VME block mode systems.

Data General offers the VSC/3i as the industry's only VME synchronous controller to share X.25 and SDLC protocols, saving users the expense of adding a second synchronous controller when both protocols are required. Users can configure the VSC/3i to run different synchronous protocols simultaneously, allowing any mix of required X.25 and SNA/SDLC connections.

The VLCi is a single-line IEEE 802.3 Ethernet LAN controller that supports all popular industry protocols, including TCP/IP, ISO TP/IP, DECnet (DNI),

Novell IPX/SPX, LAN Manager Net-beui, and Appletalk (Openmac), which are all supported by Data General. All DG-supported protocols can run simultaneously on the host and, in most cases, share the use of the Ethernet VLCi LAN. The VLCi is a size 6U VME adapter, but is available also with an adapter kit for 9U chassis.

The VFC VME FDDI controller is priced at \$10,500. The VSC/3i is priced at \$2,995. The VLCi VME LAN controller is priced at \$2,995. The new suite of communications controllers became available in November.

*Data General Corporation, 3400 Computer Drive, Westboro, MA 01580; 508/898-4056.*

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**Dasher-compatible terminal printer**



Northboro, MA—Claflin & Clayton, Inc., introduced the PS-10 DEC/DG-compatible terminal printer. The PS-10 is a plug-compatible replacement for DEC DECwriter/printer and Data General Dasher, serial-interfaced, terminal printer applications.

Using low-cost PC components, the PS-10 eliminates the maintenance problems associated with older terminal printer technology. The PS-10 consists of a Panasonic KX-P2624 printer, an IBM PC-style keyboard, and a QX-30 Micro PC, all mounted on a stand that supports a full box of wide paper. The QS-30 Micro PC provides character buffering and translation, printer control, and configuration control.

Benefits of the PS-10 include faster, quieter printing with many character fonts, styles, and sizes, as well as a

“view” feature that moves the print head to allow viewing print during pauses in output. The PS-10 prints at a maximum of 300 characters per second, up to 10 times faster than the DECwriter/printer, and Dasher printers.

The PS-10's list price is \$1,425, including a one-year warranty.

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

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**DG CPI-C**



Westboro—Data General announced significant enhancements to its IBM communications products for Unix-based Aviiion systems, including the industry's first open implementation of IBM's Systems Applications Architecture (SAA) Common Program Interface—Communications (CPI-C).

DG's version of CPI-C ensures that

programs running on Aviiion systems can communicate with applications developed for IBM's strategic SAA environments. CPI-C is a protocol-independent application program interface that allows developers to write applications that can be driven over multiple networks such as SNA, TCP/IP, OSI, and others. Data General's IBM Communications product suite is designed to make Aviiion systems compatible and fully interoperable in IBM networked environments.

Also announced is the ability of SDLC and X.25 to share the same synchronous controller. IBM communications for Aviiion include SNA/SDLC, QLLC, and Token Ring environments, PU 2.1 peer-to-peer networking, and Logical Unit 6.2 advanced program-to-program communications (APPC). DG also supports bisynchronous protocols such as 2780/3780, Bisynch 3270, and HASP.

*continued on page 38*

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# Wild Hare Announces The Future of ICOBOL... Again.

## Who's on first?

A major announcement has shaken the ICOBOL community. Data General has stated that it will no longer actively continue its ICOBOL product development. Instead, they will turn that responsibility over to a third party vendor and claim they will bring "new features" to ICOBOL in about a year. While we applaud their effort, you should know that Wild Hare already introduced those features — and a lot more — years ago.

## Promises or products?

While others have been wondering what to add to ICOBOL, Wild Hare already has delivered. New features, new technology and new products. All bit-for-bit compatible with your current ICOBOL programs and data files. All compatible with any popular platform and operating system, from PCs to mainframes. All giving you the latest open system technology and benefits. Today. And for your future.

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*Feckless.* BJ expounds on one of his favorite after-dinner topics: useless (or commonly thought to be useless) AOS[VS] commands (reprinted from February 1986). Brian Johnson, System Manager's Log. Apr 92, pg. 25.

*Audit without overload.* Determining who did what to whom is of paramount importance for security minded system managers. The SYSLOG facility has always been a help in this endeavor, but now there are convenient filtering features and Superuser logging. Tom Gutnick, Apr 92, pg. 16.

*It ain't necessarily so.* Idle time on your CPU always means the operating system has nothing to do. That can be good or bad. You must be the judge. Don Thomas, Jun 92, pg. 6.

*On time: User vs. CPU.* This article examines the amount of CPU dedicated to managing the operating system environment—system CPU time. Andy T. Wilkes, Sep 92, pg. 39.

*Installing AOS/VS: a guided tour.* Smart tips for installing new software revisions, and a short tour of some of the general features of BJ's very own system. Brian Johnson, System Manager's Log. Sep 92, pg. 28.

*Eagles return to roots.* BJ assesses AOS/VS 7.70, muses a moment about Unix kernels, and fulfills a promise made earlier for a Grey Eagles update complete with gossipy details. Brian Johnson, System Manager's Log. Oct 92, pg. 18.

*Is your CPU cookin'?* MIPS Meter tells all. Are MIPS really just a Meaningless Indicator of Processor Speed? Or do they represent something useful? How can we see MIPS on a system? Tom Gutnick, Oct 92, pg. 47.

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*Consider Data General.* Ultimate success for the Avilion could be merely a question of visibility, of getting past the "Who is Data General?" question. Rick Havourd, Oct 92, pg. 12.

*A multitude of choices.* Introduced just three years ago as Data General expanded into open systems, the Avilion has developed into a powerful platform for third-party data base products. Doug Johnson, Nov 92, pg. 6.

#### Backups

*How not to have a wild weekend.* How many ways can it be said? Back up your system; make sure your backup procedure works. Or else you may see your problems at work intruding most distressingly into your leisure time. David Novy, Unix Notebook. Jul 92, pg. 28.

#### Benchmarks

*Benchmarking and open systems performance.* Freedom of choice in open systems means doing a little comparison shopping—and that leads us directly to benchmarks. The authors discuss Whetstones, Dhrystones, MFLOPS, and other concepts. Thomas E. Soukup and Edward A. Sepich III, Jun 92, pg. 10.

#### BBASIC

*The Swiss army knife of software development.* There isn't any one language that does all things well. But Business Basic comes about as close as you can get. George Henne, Aug 92, pg. 18.

*Promoting good relations.* Impressive product development updates and a hands-on approach to demonstrating its new products made Transoft's recent BBASIC conference a success. George Henne, Sep 92, pg. 36.

#### Cobol/ICobol

*Inside ICobol again.* ICobol is becoming one of Data General's most popular languages, and it's constantly being improved upon. Tim Boyer, Screen Test. Feb 92, pg. 32.

*Not a bad trade at all.* As with most things in life, you have to give up something to get something. With Acucobol, conceding some file speed gives you multiple-Cobol compatibility, multi-platform capabilities, windowing, and the rich features of ANSI '85 Cobol. Tim Boyer, Screen Test. Apr

92, pg. 28.

**Cobol lacunae.** Cobol programmers may be so used to their beloved language's shortcomings that they don't even realize what they're missing. Ephraim Nussbaum, Oct 92, pg. 40.

**The future of ICobol.** Data General's recent agreement with Egan Systems to merge ICobol and ICHOST represents big change and promising possibilities. But it also raises questions. Those attending the ICobol Roundtable at NADGUG 92 will hear the very latest info. Tim Boyer, Screen Test. Oct 92, pg. 22.

### Computer-aided software engineering (CASE)

**Building a case for CASE.** "Give me one good reason to change my ways and use computer aided software engineering tools," you might say. The author gives you three. Kim Medlin, Ahead with RAD. Feb 92, pg. 26.

### Computer industry

**Here's variety for you.** Unix schizophrenia, Slease Tour glory, pay-as-you-update software, truly crazy stuff from the trade rags, and a burning question for the "style over substance" 90s. Brian Johnson, System Manager's Log. Oct 92, pg. 18.

**Happy Virtual New Year!** BJ ponders weirdness, and in the process

extrudes a variety of sagacious observations about whither is headed the computer industry. Brian Johnson, System Manager's Log. Jan 92, pg. 16.

**The clipping file.** Turning to the computer trade press this month, BJ pulls together a cacophony of voices for your perusal. Brian Johnson, System Manager's Log. May 92, pg. 16.

**Changes in computing.** Excerpts from a presentation given during the Business Symposium DG hosted at Harvard Law School on April 8. Joel Schwartz, Jul 92, pg. 30.

**Conventional wisdom.** When computer consultants make recommendations, be sure to ask why. And then check their reasoning. David Novy, Unix Notebook. Sep 92, pg. 24.

**Eagles return to roots.** BJ gives his assessment of AOS/V5 7.70, muses a moment about Unix kernels, and fulfills a promise made earlier for a Grey Eagles update complete with gossip details. Brian Johnson, System Manager's Log. Oct 92, pg. 18.

**That vision thing.** Squinting into the far-out future of computing is something you should be doing right alongside the prognosticators. Doug Johnson, Oct 92, pg. 8.

**Consider Data General.** Ultimate success for the Avion could be merely a question of visibility, of getting past

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**Why paper won't make it.** Snapping at the heels of every new technology are the authoritative pundits who say it'll never work. It has ever been thus. Kent Finkle, Oct 92, 26.

**Hordes of hot buttons.** NADGUG 92 in Kansas City was a technophile's dream. Doug Johnson, Dec 92, pg. 10.

**A fearless forecast.** Operating systems, "brain-dead" ease of use, Unix servers and networking, RAID technology, CD-ROM, the possible end of squabbling among major Unix groups, and the awesome power of 200 MIPS workstations—there's a lot to look forward to in the computer industry, and that's just in 1993. David Novy, Unix Notebook, Dec 92, pg. 18.

### CPU

**It ain't necessarily so.** Idle time on your CPU always means the operating system has nothing to do. That can be good or bad. You must be the judge. Don Thomas, Jun 92, pg. 6.

**On time: User vs. CPU.** This article examines the amount of CPU dedicated to managing the operating system environment—system CPU time. Andy T. Wilkes, Sep 92, pg. 39.

**Is your CPU cookin'?** MIPS Meter tells all. Are MIPS really just a Mean-

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### Customer Support Center (CSC)

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**CSC and the STR process.** The CSC, with NADGUG's help, has implemented steps to further trim the STR backlog, and prevent it from getting out of hand. Bryan Scoggins, Jan 92, pg. 44.

### Data bases

**A multitude of choices.** Introduced just three years ago as Data General expanded into open systems, the Avion has developed into a powerful platform for third-party data base products. Doug Johnson, Nov 92, pg. 6.

**Old dog, new tricks.** The author outlines a data base system that will make the jump from an older MV platform to Informix on a RISC-based system. Part 1 of 2. John Huddleston, Nov 92, pg. 10.

**Graphical front-end tools.** Step through the terminology and techniques of a tool used in developing graphical data base front-end soft-

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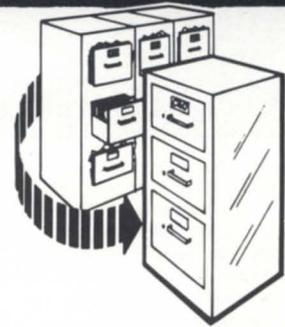
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ware. Kim Medlin, Dec 92, pg. 5.  
*Slurping into memory.* Ask yourself, "Could I get away with using indexed tables in memory instead of disk files?" and you'll be surprised at how often the answer is yes. BJ shows the way. Brian Johnson, System Manager's Log, Dec 92, pg. 12.

## Data General

*DG ends drought.* Revenues are stable, but this year there are fewer expenses. Robin Perry, Jan 92, pg. 8.  
*Eagles return to roots.* BJ gives his assessment of AOS/VS 7.70, muses a moment about Unix kernels, and fulfills a promise made earlier for a Grey Eagles update complete with gossip details. Brian Johnson, System Manager's Log, Oct 92, pg. 18.

## DG/UX

*Yes, sar.* Although DG/UX system performance measuring tools are not spectacular, they are adequate. David Novy, Unix Notebook, Jun 92, pg. 26.  
*The Land of Milk and Honey.* DG/UX 5.4.1 is one of the best versions of Unix on the market today, but do be sure to read the installation notes carefully. David Novy, Unix Notebook, Aug 92, pg. 30.  
*DG/UX: The least you should know about it.* This article is intended for Unix newcomers. The main goal:

to point you in the right direction without getting into too much detail. Alan Braxton, Oct 92, pg. 44.

## Disk performance

*Wasted SPACE.* This month BJ covers issues related to disk file organization, disk space consumption, and disk performance. Brian Johnson, System Manager's Log, Nov 92, pg. 12.

## Downsizing

*Downsizing to PC LANs.* Why downsize? It's really quite simple: to get a better return on your computing investment. The key is to plan short-term tactical changes as techniques to realize your long-term strategy. Doug Kaye, The Workstation, May 92, pg. 4.  
*Downsizing with a 4GL.* This article examines using a fourth-generation language (4GL) as a choice for implementing your computer system's downsizing strategy and migrating to open systems. Billy S. Hollis, May 92, pg. 8.  
*Resizing for the 90s.* You need a downsizing strategy, a methodology for making sure you consider the important things—and those elusive details. Michael H. Drucker, May 92, pg. 14.

## Electronic mail

*Mind your e-manners.* If your office

does its "talking" through e-mail, you need to know the basics of electronic etiquette. John Coan, May 92, pg. 24.

## Environment

*Environmental snapshots.* From cleaning up toxic dumps to re-searching groundwater in Texas, Data General Avions are in use at government agencies that monitor and protect our environment. Robin Perry, Apr 92, pg. 6.

*Recycling: your computer's next life.* Computer equipment fares rather better than humans when it comes to recycling. Your battered castoff can go on to another career as someone else's reconditioned workhorse. Doug Johnson, Apr 92, pg. 10.

## Fourth-generation languages (4GLs)

*Downsizing with a 4GL.* This article examines using a fourth-generation language (4GL) as a choice for implementing your computer system's downsizing strategy and migrating to open systems. Billy S. Hollis, May 92, pg. 8.

*DRAW! . . . on the 4GL of your choice.* The beauty of a 4GL is that the programmer can concentrate on the application's functional objectives, not on the technical details of its implementation. Kim Medlin, Aug 92, pg. 12.  
*Shootout rebuttal.* The author con-

tinues our August issue's "Language shootout" feature, rebutting points made about fourth-generation languages (4GLs). Kim Medlin, Ahead with RAD, Oct 92, pg. 36.

## Frame relay

*Frame relay: PDNs for WANs.* Part 2 of a two-part series—Frame relay is a major step forward over X.25 packet switched networks for wide area networks of LANs. Doug Kaye, The Workstation, Aug 92, pg. 26.

## Graphical user interfaces (GUIs)

*The heart of the GUI.* The author begins a demonstration of some helpful X-Windows utilities. First of two parts. Pete Szaban, Nov 92, pg. 22.  
**Graphic Information Systems (GIS)**  
*MIS and GIS merge.* Its price made the Avion the low-bid winner to run a sophisticated Geographic Information System for the state of Minnesota's Forestry Division. Jack Shea, Feb 92, pg. 10.

*What's the big deal about GIS?* Robin Perry, Feb 92, pg. 14.  
*Monitoring Louisiana's wetlands.* The ability to compare complex map characteristics quickly and efficiently is the key to future decision-making for environmentally sensitive areas. Christine C. Smith and John A. Baras, Feb 92, pg. 15.

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## Humor

*Mind your e-manners.* If your office does its "talking" through e-mail, you need to know the basics of electronic etiquette. John Coan, May 92, pg. 24.

*Why paper won't make it.* Snapping at the heels of every new technology are the authoritative pundits who say it'll never work. It has ever been thus. Kent Finkle, Oct 92, 26.

## ICobol

*Cogito, Ergo ICobol.* For business programming and to make the best use of system resources—to write efficient code if your code is going to have to execute a zillion times in its life cycle—Cobol is the only choice. Tim Boyer, Aug 92, pg. 9.

*The future of ICobol.* Data General's recent agreement with Egan Systems to merge ICobol and ICHOST represents big change and promising possibilities. But it also raises questions. Those attending the ICobol Roundtable at NADGUG 92 will hear the very latest info. Tim Boyer, Screen Test. Oct 92, pg. 22.

## Image processing

*A really neat thing.* Setting up your own simple image display and conversion lab with off-the-shelf programs and data files. Rick Havourd, Apr 92, pg. 12.

## Julian Dates

*The world ends in 7 years . . .* The turn of the century approaches, and it will play havoc with your computer system if you don't do something about how your programs handle dates. Randall O. Berndt, Dec 92, pg. 8.

## LANs

*LAN tidal wave.* If you have a homogeneous computer environment, proprietary LAN packages may make sense. But if you're heterogeneous instead with PCs, Macs, and Unix workstations, NFS client software may be a better choice for today and the future. David Novy, Unix Notebook. May 92, pg. 20.

*Downsizing to PC LANs.* Why downsize? It's really quite simple: to get a better return on your computing investment. Doug Kaye, The Workstation. May 92, pg. 4.

## Languages

*Inside ICobol again.* ICobol is becoming one of Data General's most popular languages, and it's constantly being improved upon. Tim Boyer, Screen Test. Feb 92, pg. 32.

*Cogito, Ergo ICobol.* For business programming and to make the best use of system resources—to write efficient code if your code is going to

have to execute a zillion times in its life cycle—Cobol is the only choice. Tim Boyer, Aug 92, pg. 9

*DRAW! . . . on the 4GL of your choice.* The beauty of a 4GL is that the programmer can concentrate on the application's functional objectives, not on the technical details of its implementation. Kim Medlin, Aug 92, pg. 12.

*The Swiss army knife of software development.* There isn't any one language that does all things well. But Business Basic comes about as close as you can get. George Henne, Aug 92, pg. 18.

*Twisting the knife one more time.* What language you use depends on what you need to do. Sometimes the best vehicle is a CLI macro, and sometimes it's a 4GL. What's clear is that these days you have to be multilingual. Brian Johnson, Aug 92, pg. 22.

*Shootout rebuttal.* The author continues our August issue's "Language shootout" feature, rebutting points made about fourth-generation languages (4GLs). Kim Medlin, Ahead with RAD. Oct 92, pg. 36.

## Macros

*Fill in the blank.* Wordperfect's macros and merges make short work of laborious forms fill-in tasks. Here's a step-by-step example of how to build a

fax cover sheet. Kent Finkle, Jan 92, pg. 22

## Management

*How to spot a good engineer.* And how to keep one once you find one (Hint: Stock up on Jolt Cola and Cheetos). Reprinted from Jul 1989. Brian Johnson, System Manager's Log. Apr 92, pg. 24.

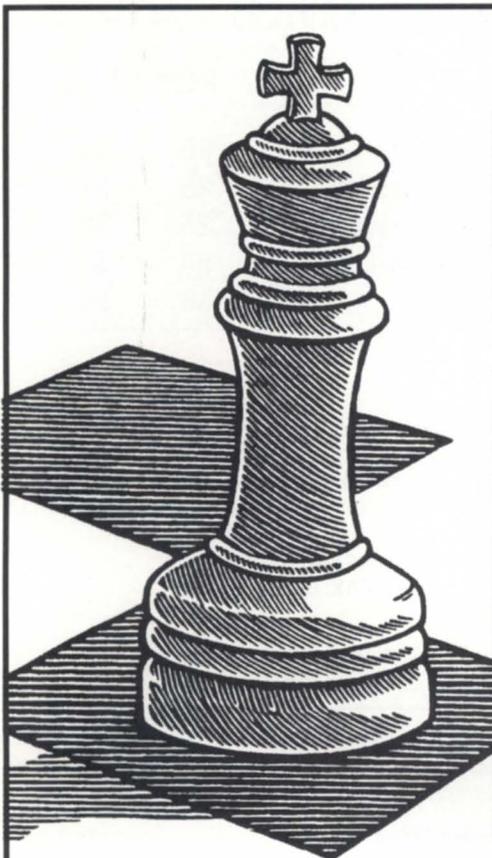
## Miscellaneous

*Here's variety for you.* Unix schizophrasia, Sleaze Tour glory, pay-as-you-update software, truly crazy stuff from the trade rags, and a burning question for the "style over substance" 90s. Brian Johnson, System Manager's Log. Feb 92, pg. 18.

*Best of BJ.* Focus gives BJ the month off this time around and reprints excerpts of two previous "System Manager's Log" columns. Both are a bit on the lighter side, but timeless, so relax and have a chuckle (articles titled "How to spot a good engineer," originally from Jul 1989; and "Feckless," from February 1986). Brian Johnson, System Manager's Log. Apr 92, pg. 22.

## MV

*New family members.* Six generations of anything is quite an accomplishment. *continued on page 35*



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plishment. For Data General and its recently announced mid-range and high-end MV minicomputers, six generations represent a commitment to a product line and a long-range strategy. Doug Johnson, Jun 92, pg. 33.

**MV Data Center Manager.** The MV Data Center Manager addresses two fundamental problems: DG customers need better system management tools, and they need tools that work across hosts in a network. Diane Curry and Shawn O'Reilly, Jul 92, pg. 13.

**Old dog, new tricks.** The author outlines a data base system that will make the jump from an older MV platform to Informix on a RISC-based system. Part 1 of 2. John Huddleston, Nov 92, pg. 10.

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#### Networking

**WANs: Networks of networks.** This first article of a two-part series explores the issues of connecting PC LANs together by wide area networks, or WANs. While wide area networks of minicomputers have existed for many years, mini-to-mini technologies may not be suitable for LAN-to-LAN communication. Doug Kaye, Jul 92, pg. 9.

**MV Data Center Manager.** The MV

Data Center Manager addresses two fundamental problems: DG customers need better system management tools, and they need tools that work across hosts in a network. Diane Curry and Shawn O'Reilly, Jul 92, pg. 13.

**Misusing your network.** Used appropriately, networks are probably the most significant technological leap forward in the last 20 years. But they aren't the slam-dunk answer to all your prayers. Brian Johnson, System Manager's Log, Jul 92, pg. 22.

**Frame relay: PDNs for WANs.** Part 2 of a two-part series—Frame relay is a major step forward over X.25 packet switched networks for wide area networks of LANs. Doug Kaye, The Workstation, Aug 92, pg. 26.

#### Open systems

**Catching waves.** Which companies will take the best ride on computing's incoming Fourth Wave? Donald Lewine, Jan 92, pg. 10.

**Translators, go-betweens, mediators, and builders.** The standards are coming together for open systems and object technologies. Next comes the software that will attempt to make it all succeed. Doug Johnson, Jan 92, pg. 14.

#### Optical-disk technology

**Tracking Mr. X.** An optical-disk

storage system developed by a Data General VAR and in use by the American Stock Exchange gives analysts a new tool to detect insider trading. Mason Grigsby, Sep 92, pg. 20.

#### PC Integration

**More about Netware for AOS/VS.** Our columnist continues his question-and-answer format in examining the PC-integration product Netware for AOS/VS. Doug Kaye, The Workstation, Jan 92, pg. 36.

#### Product reviews

**Tactician Plus—a spreadsheet for Unix.** Possessing all of the basic spreadsheet functionality you would expect, Tactician Plus integrates well into an Avion office environment. Joe Cannata, Jan 92, pg. 26.

**Not a bad trade at all.** As with most things in life, you have to give up something to get something. With Acucobol, conceding some file speed gives you multiple-Cobol compatibility, multi-platform capabilities, windowing, and the rich features of ANSI '85 Cobol. Tim Boyer, Screen Test, Apr 92, pg. 28.

#### Programming

**Cobol lacunae.** Cobol programmers may be so used to their beloved language's shortcomings that they don't

even realize what they're missing. So contends the author, who suggests some enhancements. Ephraim Nussbaum, Oct 92, pg. 40.

#### RAID technology

**Debugged on the Fourth of July.** RAID technology should see explosive growth as more companies recognize the importance of keeping system downtime to a minimum. David Novy, Unix Notebook, Oct 92, pg. 30.

**Breaking the unbreakable.** RAID systems are no longer technology toys, but serious tools for reducing downtime disk hardware failure to almost zero. David Novy, Unix Notebook, Nov 92, pg. 18.

#### Random numbers

**Random thoughts.** How do you come up with a set of random numbers, and how do you prove that they're truly random? Well, the answer to that is you don't, but don't let that stop you. Tim Boyer, Screen Test, Jul 92, pg. 17.

#### Rapid application development (RAD)

**Building a case for CASE.** "Give me one good reason to change my ways and use computer aided software engineering tools," you might say. The author gives you three. Kim Medlin,



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Ahead with RAD. Feb 92, pg. 26.

**Using RAD tools.** This article is the fifth in a series that follows a logical progression through a software development project using RAD tools and techniques. Kim Medlin, Ahead with RAD. May 92, pg. 28.

**Real-world report writing.** This article is the sixth in a series, examining a software development project using RAD tools and techniques. Kim Medlin, Ahead with RAD. Jun 92, pg. 28.

## Security

**Audit without overload.** Determining who did what to whom is of paramount importance for security minded system managers. The SYSLOG facility has always been a help in this endeavor, but now there are convenient filtering features and Superuser logging. Tom Gutnick, Apr 92, pg. 16.

## Software development

**The making of a software revision.** No, they don't drop new operating system release tapes off a building to see if they bounce high enough, but there is a bit of the care and diligence of the cranberry industry in Data General's software qualification process. Joe Cannata, Apr 92, pg. 36.

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**Real-world report writing.** This article is the sixth in a series, examining a software development project using RAD tools and techniques. Kim Medlin, Ahead with RAD. Jun 92, pg. 28.

## Software revisions

**Installing AOS/VS: a guided tour.** On the itinerary for this month are smart tips for installing new software revisions, and a short tour of some of the general features of BJ's very own system. Brian Johnson, System Manager's Log. Sep 92, pg. 28.

## Software support

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## System performance and tuning

**It ain't necessarily so.** Idle time on your CPU always means the operating system has nothing to do. That can be good or bad. You must be the judge. Don Thomas, Jun 92, pg. 6.

**Benchmarking and open systems performance.** Freedom of choice in open systems means doing a little comparison shopping—and that leads us directly to benchmarks. The authors discuss Whetstones, Dhrystones, MFLOPS, and other concepts. Thomas E. Soukup and Edward A. Sepich III, Jun 92, pg. 10.

**Well-fed and humming along.** Don't forsake common sense when it comes to tuning your computer system. And when common sense is lacking—throw more memory at it. Rick Havourd, Jun 92, pg. 14.

**Happy tuning.** BJ returns to system performance analysis and tuning, because it's one subject that bears repeating. Brian Johnson, System Manager's Log. Jun 92, pg. 18.

**Yes, sar.** Although DG/UX system performance measuring tools are not spectacular, they are adequate. David Novy, Unix Notebook. Jun 92, pg. 26.

**On time: User vs. CPU.** This article examines the amount of CPU dedicated to managing the operating system environment—system CPU time. Andy T. Wilkes, Sep 92, pg. 39.

**Wasted SPACE.** This month BJ covers issues related to disk file organization, disk space consumption, and disk performance. Brian Johnson, System Manager's Log. Nov 92, pg. 12.

**Is your CPU cookin'? MIPS Meter tells all.** Are MIPS really just a Meaningless Indicator of Processor Speed? Or do they represent something useful? How can we see MIPS on a system? Tom Gutnick, Oct 92, pg. 47.

**Slurping into memory.** Ask yourself, "Could I get away with using indexed tables in memory instead of disk files?" and you'll be surprised at how often the answer is yes. BJ shows the way. Brian Johnson, System Manager's Log, Dec 92, pg. 12.

## Uninterruptible power supplies

**Solving power glitches.** Brownouts and power surges can really ruin your day. Uninterruptible power supplies have become a necessity. The big question remaining is: how much UPS do you need? David Novy, Unix Notebook. Apr 92, pg. 22.

## Unix

**Unfinished business.** More about AOS/VS sort emulation, as well as a checklist of the advantages to be gained and the exhilarating speed and personal fulfillment in store for you with new Unix workstations and X

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technology. David Novy, Unix Notebook. Jan 92, pg. 32.

**The Land of Milk and Honey.** DG/UX 5.4.1 is one of the best versions of Unix on the market today, but do be sure to read the installation notes carefully. David Novy, Unix Notebook. Aug 92, pg. 30.

**Debugged on the Fourth of July.** RAID technology should see explosive growth as more companies recognize the importance of keeping system downtime to a minimum. David Novy, Unix Notebook. Oct 92, pg. 30.

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**The NADGUG connection.** Semi-annual NADGUG roster for 1992, listing the board of directors, standing committee chairpersons, RIG/SIG

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**Welcome to Kansas City!** Not a cowtown, but instead a cosmopolitan, modern, Middle American metropolis, Kansas City offers plenty to do and discover for NADGUG 92. Doug Johnson, Sept 92, pg. 6.

**NADGUG 92 Conference schedule.** New World, New Options: a preliminary agenda. Sept 92, pg. 9.

**Conference 1992: New World, New Options.** Brad Friedlander, Oct 92, pg. 6.

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**Tracking Mr. X.** An optical-disk storage system developed by a Data General VAR and in use by the American Stock Exchange gives analysts a new tool to detect insider trading. Mason Grigsby, Sep 92, pg. 20.

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**The heart of the GUI.** The author begins a demonstration of some helpful X-Windows utilities. First of two parts. Pete Szaban, Nov 92, pg. 22.

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| MV15000 Model 8 to Model 20 upgrade  | ..... | SAVE \$ |
| MV15000 Model 10 to Model 20 upgrade | ..... | SAVE \$ |
| MV10000 4MB Meter high cabinet       | ..... | \$2,000 |
| MV8000-II 8MB Meter high cabinet     | ..... | 900     |
| MV9500 CPU w/32MB                    | ..... | 25,000  |
| MV9600 CPU w/32MB                    | ..... | 36,000  |
| AViON All Models                     | ..... | SAVE \$ |
| MV8000 Model 9300                    | ..... | 800     |
| MV7800 4MB 16 slot chassis           | ..... | 1,900   |
| MV7800XP 4MB                         | ..... | 2,900   |
| MV4000 2MB                           | ..... | 700     |
| MV4000DC 2MB, 120MB, floppy          | ..... | 1,200   |
| MV2000 Enhanced 4MB 160 MB disk      | ..... | 3,200   |
| MP100 8520-D                         | ..... | 350     |
| S-140 256KB Floating point           | ..... | 1,500   |
| Desktops All Models                  | ..... | SAVE \$ |
| S-120 256K 16 slot                   | ..... | 550     |
| S-280 2MB                            | ..... | 1,900   |

### Processor Options:

|                                      |       |         |
|--------------------------------------|-------|---------|
| 8997 Expansion chassis MV15, 20      | ..... | \$3,900 |
| 8819 Second IOC for MV10000          | ..... | 900     |
| 8762 Expansion chassis MV10,8,4,S280 | ..... | 3,000   |
| 8749 Battery backup for MV10000      | ..... | 250     |
| 8746-B Battery backup for 8762       | ..... |         |
| EXP Chassis                          | ..... | 900     |
| 8704 Floating point unit MV8000      | ..... | 500     |
| 4543-B MCP1 8 Async 2 Sync DCH Ptr   | ..... | 950     |

|                                  |       |       |
|----------------------------------|-------|-------|
| 4463-ZT USAM-4                   | ..... | \$200 |
| 4380 ISC-2 (Synch)               | ..... | 400   |
| 4370 IAC-16 RS232, 20MA, W TCB   | ..... | 750   |
| 4623 IAC-24 w/TCB-24             | ..... | 3,900 |
| 4367 IAC-8 RS232, 20MA Modem Cnt | ..... | 500   |
| 4532-A ILC                       | ..... | 2,500 |
| 4560 LAC-12                      | ..... | 650   |
| 4608 10 Port term. serv          | ..... | 2,800 |

### Disk Storage Units:

|                                |       |       |
|--------------------------------|-------|-------|
| 6161 147MB Disk subsystem      | ..... | \$650 |
| 6236 354MB Disk subsystem      | ..... | 850   |
| 6239 592MB Disk subsystem      | ..... | 2,100 |
| 6329 120MB MV2000/MV1400       | ..... | 650   |
| 6363 160MB MV2000/MV1400       | ..... | 750   |
| 6491 322MB for MV2500 or CSS   | ..... | 1,500 |
| 6554 662MB for MV2500 or CSS   | ..... | 2,100 |
| 6581 500MB R.A.M.S. Disk       | ..... | Call  |
| 6720 CSS2 1.0GB Disk subsystem | ..... | 8,500 |
| 6685 1.0GB Disk Drive A/O      | ..... | 2,700 |
| 2351 Fujitsu w/BMX3            | ..... | 2,700 |
| 6061/6122 Zebra Disks or Parts | ..... | Offer |
| Zetaco ARZ and SKS subsystems  | ..... | Call  |
| Zetaco Laser Disk subsystem    | ..... | Call  |

### Specials

|                                   |       |       |
|-----------------------------------|-------|-------|
| D 411 Terminal                    | ..... | \$165 |
| CSS (SCSI) Disk & Tape Subsystems | ..... | Call  |

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|                                       |       |       |
|---------------------------------------|-------|-------|
| 6165 D460 Monitor with keyboard       | ..... | \$145 |
| 6166-X D410 Monitor with keyboard     | ..... | 125   |
| 6169-X D211 Monitor with keyboard     | ..... | 125   |
| 6391-X D214 Monitor with keyboard     | ..... | 140   |
| 6392-X D215 Monitor with keyboard     | ..... | 145   |
| 6393-X D411 Monitor with keyboard     | ..... | 165   |
| 6394-X D461 Monitor with keyboard     | ..... | 300   |
| 6500 D216 Monitor with keyboard       | ..... | 195   |
| 6682-A D217 Monitor with keyboard-new | ..... | 365   |
| 6567 D412 Monitor with keyboard       | ..... | 270   |
| 6568 D462 Monitor with keyboard-new   | ..... | Call  |

### Tapes:

|  |       |       |
|--|-------|-------|
| 6021 800 BPI new style                 | ..... | \$400 |
| 6026 800/1600 BPI Brown, FCC compliant | ..... | 750   |
| 6125 1600 BPI Streamer, FCC compliant  | ..... | 500   |
| 6311 15MB Cartridge MV4 DC/7800DC      | ..... | 650   |
| 6341-A 1600 BPI Streaming Tape         | ..... | 3,500 |
| 6270 15MB Cartridge for Desktop        | ..... | 650   |
| 6299/6300 1600/6250 BPI Subsystems     | ..... | 2,100 |
| 6586-A Galaxy Tape                     | ..... | 3,500 |
| 6587-A 1600 BPI Tabletop               | ..... | 3,900 |
| 6590M 2GB Tape Backup add-on for CSS   | ..... | 3,300 |
| Megatape 2GB Subsystem                 | ..... | Call  |

### Memories:

|                     |       |
|---------------------|-------|
| MV40000, All sizes  | ..... |
| MV30000, All sizes  | ..... |
| MV20000, All sizes  | ..... |
| MV15000, All sizes  | ..... |
| MV10000, All sizes  | ..... |
| MV9500, All sizes   | ..... |
| MV7800XP, All sizes | ..... |
| MV7800, All sizes   | ..... |
| MV4000, All sizes   | ..... |
| MV2000, All sizes   | ..... |

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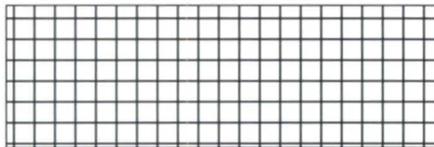
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*Products and Services  
 continued from page 26*

All IBM communications products for Aviiion are priced from \$750 to \$3,000 depending on CPU type.

*Data General Corporation, 3400 Computer Drive, Westboro, MA 01580; 508/898-4056.*

Circle 52 on reader service card.

**Network 3.11**   
**for Aviiion**

Westboro—Data General announced Network 3.11 for Aviiion systems with enhanced performance and print server functionality. The new print server capability eliminates the need for a dedicated print server by allowing Aviiion to handle print server functionality. In addition, a DG-added utility allows Unix users to access any Network printer on the user's network, increasing LAN printing options.

Network 3.11 for Aviiion system is Data General's DG/UX-hosted version of Novell's Network for Unix LAN server operating system. Network 3.11 for Aviiion provides a powerful, standards-based solution for integrating Aviiion hosts and heterogeneous workstations in a unified Network infrastructure. Users can also support Macintosh, Unix, MS-DOS, and OS/2 workstation clients through Aviiion servers.

Pricing for Network 3.11 for Aviiion starts at \$3,500.

*Data General Corporation, 3400 Computer Drive, Westboro, MA 01580; 508/898-4056.*

Circle 53 on reader service card.

**Radley-EDI** 

Southfield, MI—Radley Corporation's Radley-EDI, a user-definable EDI software product that handles communications, translation, and application mapping, will expand its Unix availability to include DG/UX. The product has been available since 1983 for VAX VMS, and most recently the company announced its availability for SCO-Unix. Pricing is \$2,000 and up.

*Radley Corporation, 23077 Greenfield, Suite 440, Southfield, MI 48075; 800/EDI-9934.* △

Circle 54 on reader service card.

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# Data Specific

## DG-Informix partnership

**Informix Software** and **Data General** announced the signing of a new distributed and strategic partnership agreement to provide worldwide availability of Informix projects on DG's Aviiion family of Unix systems and servers. In addition, DG and Informix will be cooperating in the developing of future releases of the Informix Online data base server.

**Tim Shetler**, vice president of servers and connectivity for Informix, said Data General's experience in operating systems and data management, "particularly in the use of threads and multiprocessors with Unix SVR4, will allow us to provide the best technology for the future."

Under the terms of the agreement, the current Informix product suite on Aviiion will be expanded to include new Informix products such as Informix-4GL/GX, Informix-TPToolkit, and Informix-TP/XA interface, as well as the Informix-Online/optical disk drive storage extensions. In addition, DG will be providing on-site engineers at Informix's U.S. development center.

## DMS Systems and Transoft

**DMS Systems, Inc.**, of Salt Lake City, Utah, announced that **Transoft Ltd.** of Slough, England, has joined its family of distributors of the Disk Backup & Recovery System (DBR) for Unix machines.

"There is considerable synergy between DMS and Transoft, and we are delighted to incorporate DBR into our product line," says Transoft Chairman Mike Edwards.

DBR features media error handling, speed improvements over built-in Unix utilities, multi-volume backups, and multiple backups per volume. Transoft Ltd. will have non-exclusive rights to market DBR worldwide, as well as exclusive rights to sell DBR to its installed customer base.

## CDRS acquisition

**Comdisco Disaster Recovery Services (CDRS)** of Rosemont, Illinois, has acquired 100-percent ownership of its Paris-based joint venture, **Ageris International**. With nearly 100 customers, Ageris is France's leading provider of disaster recovery services.

Ageris International is headquartered in a 58,000-square-foot facility in Marne-La-Valle, a Paris suburb. Its computer recovery center includes three Digital Equipment configurations, an IBM 3090-400E center, an IBM AS/400 model B60, and a Data General configuration.

## Weather Service

**Claflin & Clayton, Inc.**, of Northboro, Massachusetts, has received an award by the U.S. Department of Commerce, NOAA National Weather Service (NWS) for its PS-10 DEC/DG-compatible terminal printers. The PS-10 equipment will be used to upgrade National Weather Service 16-bit Eclipse systems deployed in offices throughout the United States. The total value of the contract is \$120,000.

## Hispanic 500

**NPA West** of Fairfield, California, provider of computer services, maintenance and disaster recovery to the Data General marketplace, has been named to the "Hispanic Business 500," a yearly national ranking of Hispanic-owned businesses, published by *Hispanic Business* magazine.

"Our inclusion in the Hispanic 500 is another barometer of our continuing

growth and acceptance by significant customers," said **Alan Rees**, NPA West president.

Formerly NPA Systems of California, Inc., as the company was founded in 1985, NPA West service facilities in California include Berkeley, Irwindale, and Sacramento; also Phoenix, Arizona; Portland, Oregon; and Seattle, Washington.

## Howells joins Granada

**Granada Computer Services International**, a leading European provider of third-party maintenance, has appointed **Robert H. Howells** as president of its United States operation. The company plans to move more aggressively to increase its business across the USA in a strategic initiative promoting the concept of total availability management.

Howells joins Granada at the time of the planned departure of **Jim Clements** and **Dick Hertle**, who together built the U.S. company from its origins as a Unisys hardware brokerage into the largest Unisys TPM in the country, with a turnover last year of \$14 million. Their company, REACT, was acquired by Granada in July 1990, and Clements and Hertle had the task of operationally integrating Granada's U.S. subsidiaries—DPCE and Essex Computer Service, Inc., the Data General TPM.

## Preserving Sierra Nevadas

The **Sierran Biodiversity Institute (SBI)** used geographic information system (GIS) and image-processing software from **Erdas, Inc.**, of Atlanta, Georgia, to construct the most comprehensive GIS data base to date of the Sierra Nevada Mountains. The maps show locations of old-growth forests, watersheds, endangered species habitats, and other features of environmental concern, and they reveal the extent of damage to the area's fragile ecosystem. Δ

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The screenshot displays the U/SQL interface. At the top, it says 'Rev 4.00 U/SQL STRUCTURED QUERY LANGUAGE'. Below this is a menu with options: 'Query', 'Menu', 'Run', 'View', 'Declare', and 'Interact'. A sub-menu 'Create and Manipulate a Query' is open, showing options: 'Create', 'Check', 'Run', 'Save', 'Edit', and 'Delete'. Another sub-menu 'Create a Query' is open, showing options: 'Select', 'From', 'Where', 'Group\_by', 'Sort\_by', and 'Fx'. Below these is a 'Select Report Items' section. At the bottom, there is a keyboard shortcut bar: 'F1=Run F2=Edit A=Append I=Insert D=Delete <=Left >=Right F10=Exit'.

The report output on the right is titled 'Customer Report' and 'Page 1'. It shows a table with columns: 'Date: 25-Jul-1992', 'Representative Name', 'Customer', 'Outstanding Balance', and 'Opening Date'. The data is grouped by representative name, including A. B. Havens, A. J. Cook, B. A. Maier, C. P. James, and J. E. Bailey. Each group lists several companies with their respective outstanding balances and opening dates.

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