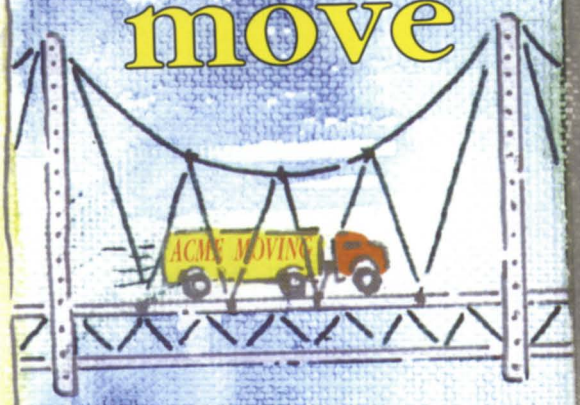
February 1994

FOCUS

The Magazine of the North American Data General Users Group

Making the move



In Focus

Migration: Real-world pains and gains

Finding a simple, safe option

Automated Infos migration

Plus

CLI macro: CD change directory

Checkpoint points

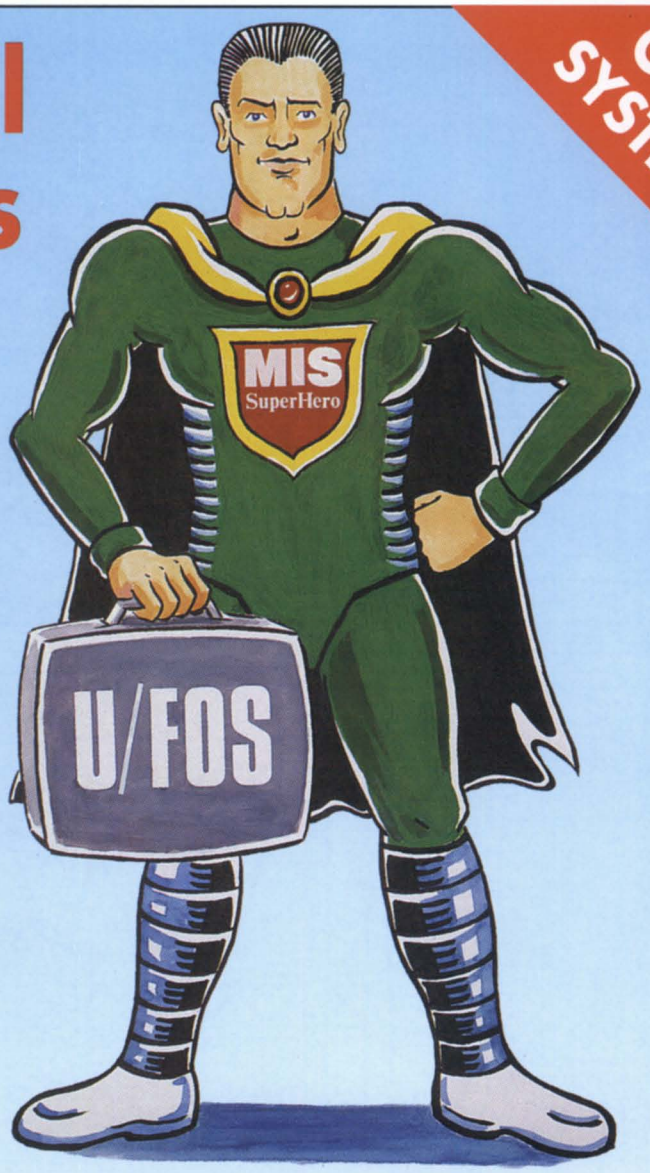
Unix Notebook: All dressed up and nowhere to migrate

Bulk Rate
U.S. Postage
Paid
Permit No. 38
Fulton, MO

Attention all INFOS® users

OPEN SYSTEMS

Become an MIS SuperHero with AIM™ Automated INFOS Migration



Based on U/FOS™, the first UNIX implementation of INFOS, the Transoft AIM products and supporting consultancy give you – for the first time ever – a smooth, rapid and cost-effective migration route to a choice of major Open Systems platforms.

The AIM product set

U/FOS: INFOS on UNIX:
- full INFOS functionality
- automatic data migration
- added functionality and better utilities.

UAC: U/FOS Access Converter:
- converts INFOS I/O statements to U/FOS I/O calls.

UCC: Universal COBOL Converter:
- converts other AOS/VS COBOL code
- to ANSI-standard ACUCOBOL or Micro Focus COBOL.

APIs for Fortan and C

The same – only much better

Better database management, better reporting, better COBOL development environment... U/FOS gives you powerful additional features, including improved data compression and checkpointing. We are also adding RDBMS-level data integrity and recovery, plus SQL reporting using our proven U/SQL technology. COBOL users also benefit from the modern, more powerful development environments of ACUCOBOL and Micro Focus COBOL.

Transoft – the low risk option

Ours is the low risk solution, in terms of both the company and the technology. Transoft is an established, profitable, growth company. It commenced trading in 1987 and revenue and profits have increased every year since. With seven years' experience, Transoft has unrivalled migration expertise and is a leading international supplier of Open Systems tools to the Data General community. With our products and methodology you eleminate the enormous risks, as well as the costs, of re-engineering.

Largest team

Transoft has the largest team in the world dedicated full time to migrating *your* INFOS applications to *a choice* of Open Systems.

Benefits and savings – now

Why wait? Get the financial and operational benefits of this Open Systems solution now.

Don't delay, contact us today:
TRANSOFT INC, 1899 Powers Ferry Road, Suite 420, Marietta, GA 30067, USA.
Tel: (404) 933 1965 Fax: (404) 933 3464
TRANSOFT LTD, Nash House, Datchet Road, Slough, SL3 7LR, England.
Tel: 0753 692332 (Int + 44 753 692332)
Fax: 0753 694251 (Int + 44 753 694251)

TRANSOFT™

Portability & Productivity

INFOS is a registered trademark of Data General Corporation.
UNIX is a registered trademark of UNIX System Laboratories Inc. U/FOS, UBB and U/SQL are Transoft trademarks. All other trademarks are acknowledged.

Circle 48 on reader service card.

MV TO UNIX MIGRATION

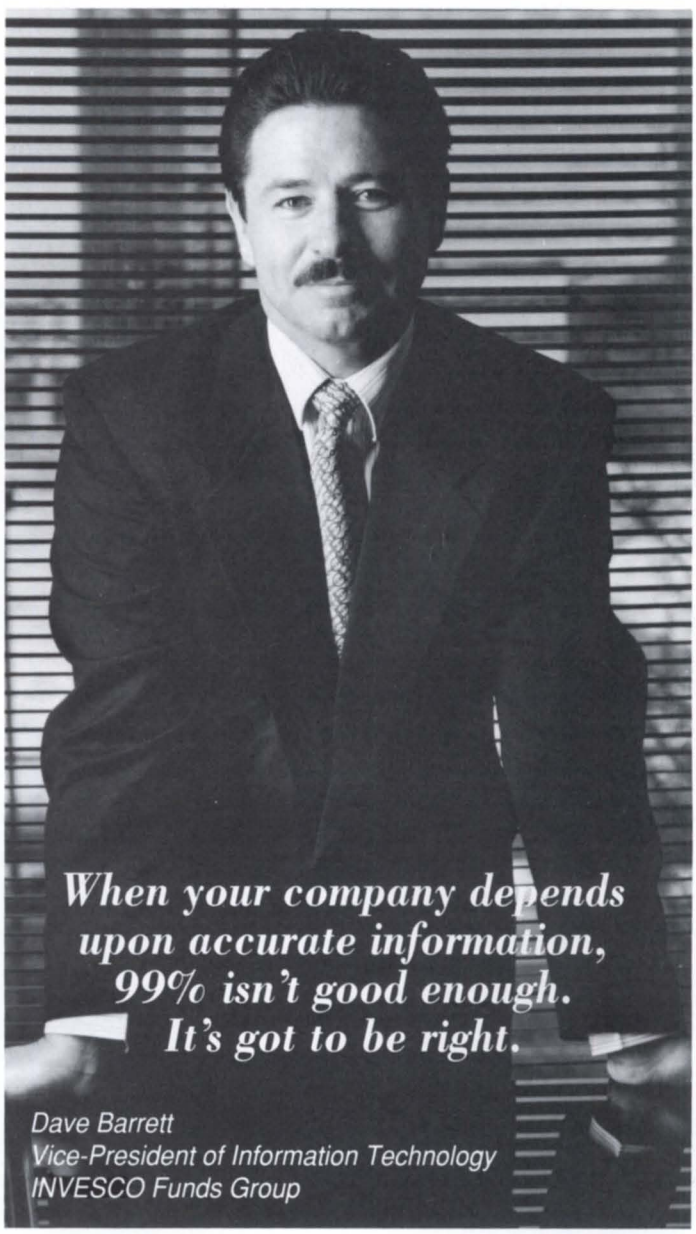
"With $10 billion in assets, 560 users, and thousands of transactions per hour on the line... It's got to be right."

As one of America's highest rated and fastest growing mutual fund groups, INVESCO Funds Group manages more than $10 billion in assets for its customers. The company processes thousands of customer transactions every hour. With strict regulatory oversight, it's got to be right.

"Our proprietary MV system couldn't keep pace with our growth. We needed a scalable UNIX system," said Dave Barrett, Vice President of Information Technology. To provide the quickest, most cost-effective migration, INVESCO chose Wild Hare Computer Systems. "Wild Hare's software allowed us to run existing applications as-is under UNIX on a six-processor symmetric multiprocessor. Our system performance improved dramatically. Our night processing, which previously took eight to twelve hours, now takes only two to three."

A Total Project Approach

"Wild Hare's project approach gave us confidence that the migration would be successful. The company's staff worked closely with ours every step of the way – in the planning, migration, and testing. When you're dealing with other people's money and stringent regulatory rules, testing must be rigorous. I would characterize the project as very successful, and I think the whole INVESCO organization would agree."



wild hare
COMPUTER SYSTEMS INC

P.O. Box 3581
6595 O'Dell Place, Suite M
Boulder, CO 80301
303/530-2221
Fax: 303/530-9637

To find out how Wild Hare can help you to get DG COBOL migrations right, call us at (303)530-2221.

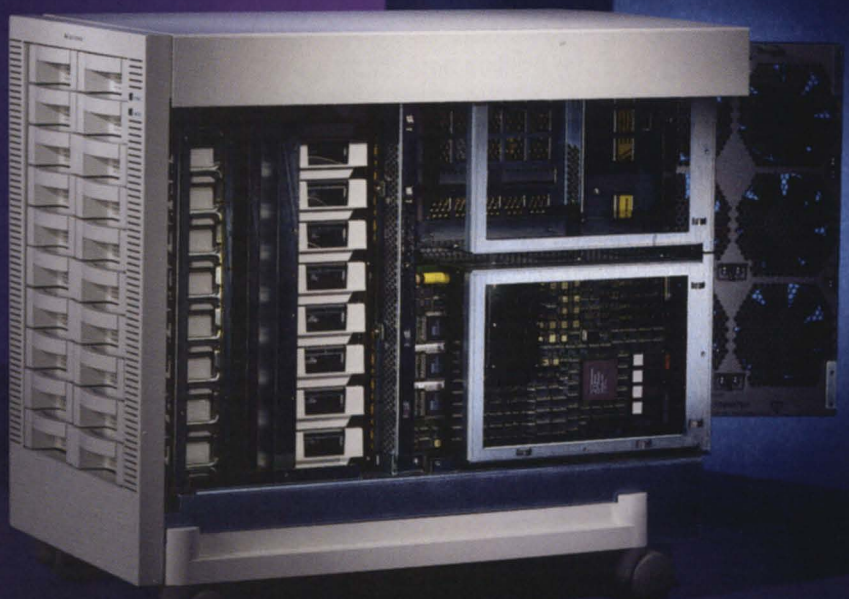
Circle 16 on reader service card.

Have you heard what CLARiiON storage does for NetWare servers?

The same thing it does for SUN and IBM servers. The CLARiiON family of disk and tape arrays has made SUN, IBM and now, Novell, servers better by protecting their data.

CLARiiON systems deliver unmatched data integrity, continuous access to applications and data, expansion to 40 GBs, high I/O performance and outstanding configurability. And the unattended backup and recovery capabilities of the CLARiiON tape array extend the value of the CLARiiON solution.

CLARiiON systems provide reliable, economical, flexible RAID storage (0,1,3,5 simultaneously)–proven with more than two million hours of customer satisfaction in more than 2,000 sites worldwide.



CLARiiON systems, the unique, contemporary storage solution for SUN, IBM... and now Novell NetWare servers. For more information on CLARiiON systems, the advanced storage solution for NetWare, call 800-328-2436.

CLARiiON–delivering advanced storage solutions for the open enterprise.

CLARiiON

A Business Unit of Data General

yes NetWare Tested and Approved

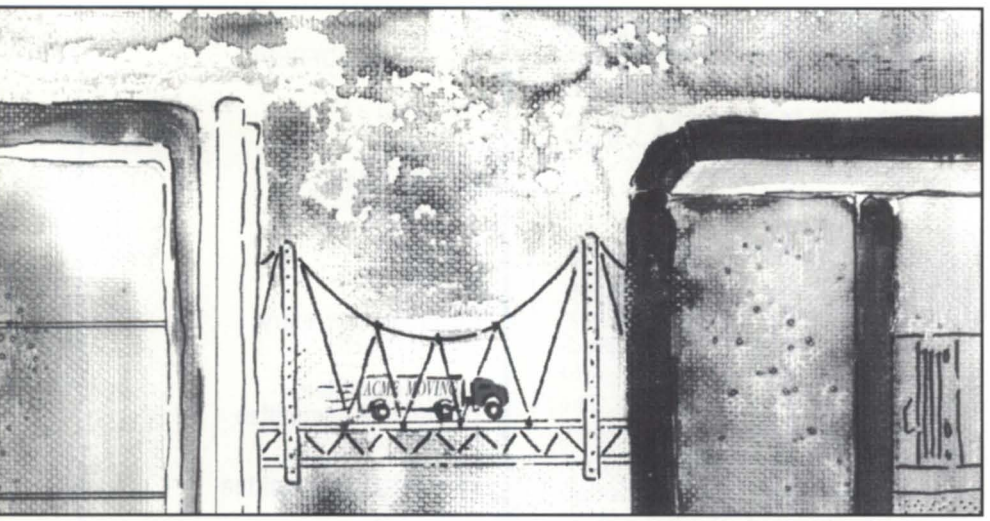
Circle 13 on reader service card.

Ask your CLARiiON distributor about Novell-certified systems.

© 1993 Data General Corporation
CLARiiON is a trademark of Data General Corporation.
All brand and product names appearing in this ad are trademarks and/or registered marks of their respective vendors.

FOCUS

The Magazine of the North American Data General Users Group



FOCUS ON: MIGRATION
Real-world pains and gains
For migration to open systems to make sense for your company, it must increase your capabilities, provide tangible bottom-line economic benefits, or both
by Vibeke H. Arentz **7**

Finding a simple, safe option
Custom document-conversion software can help make the switch from the MV to the Aviion safer, more efficient, and less expensive
by Serese Mattek **14**

Infos migration now a reality
Organizations can migrate to Unix and industry-standard Cobols without lengthy manual conversions
by Leigh Hebblethwaite and Mark Whitworth **26**

EXECUTIVE MESSAGE
Being the Superman or Superwoman your boss expects
by Thomas Bounds **4**

IN GENERAL
News and notes from the greater Data General community **6**

UNIX NOTEBOOK
All dressed up and nowhere to migrate
Our columnist wishes Data General would establish a presence known in the rapidly-expanding product information management (PIM) market
by David Novy **16**

CLI MACRO
CD Change Directory
In an effort to standardize on a set of shell commands, the author recently created a CD macro for AOS/VS systems
by Rick Holmes **18**

INFOS
Some points to check on checkpointing
The author begins a discussion of the effects on checkpoint performance when using a new version of the Infos product, Infos IIFC Part 1 of 2
by Tony Coor **22**

PRODUCTS AND SERVICES
The latest products for Data General systems **30**

BULLETIN BOARDS
DASH items from the Data General Customer Support Center; and Bits and Bytes from the Rational Data Systems NADGUG bulletin board **36**

Cover illustration by Ann Soto

FOCUS, the Magazine of the North American Data General Users Group (ISSN 0883-8194) is the official publication of the North American Data General Users Group (NADGUG) in cooperation with Turnkey Publishing.

Editorial and business offices are at P.O. Box 200549, Austin, TX 78720, phone 512/335-2286. NADGUG headquarters are located at NADGUG, c/o Danieli & O'Keefe Associates, Inc., Chiswick Park, 490 Boston Post Rd., Sudbury, MA 01776, phone 508/443-3330.

FOCUS, the Magazine of the North American Data General Users Group is distributed to members of the North American Data General Users Group. Membership fees are $60 per person ($110 outside North America). A one-year (12 issues) subscription to *FOCUS, the Magazine of the North American Data General Users Group*, costs $48. For memberships and subscriptions outside the U.S., add $50 to defray the cost of mailing.

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

NADGUG is an independent association of computer users; it is not affiliated with Data General Corporation, nor does it represent the policies or opinions of Data General Corporation. The views expressed herein are the opinions of the authors, and do not necessarily represent the policies or opinions of NADGUG or of Turnkey Publishing, Inc.

Advertisements in *FOCUS, the Magazine of the North American Data General Users Group* do not constitute an endorsement of the advertised products by NADGUG or Turnkey Publishing, Inc.

Copyright © 1994 by the North American Data General Users Group. All rights reserved. Reproduction or transmission of contents in whole or in part is prohibited without written permission of the Publisher. The Publisher assumes no responsibility for the care and return of unsolicited materials. Return postage must accompany all material if it is to be returned. In no event shall receipt of unsolicited material subject this magazine to any claim for holding fees or similar charges.

Volume 10, Issue 2.

NORTH AMERICAN DATA GENERAL USERS GROUP

Being the Superman or Superwoman your boss expects

by Thomas Bounds
NADGUG Recording Secretary

Open systems, downsizing, networking migration issues, application development, performance, cooperative processing, wide-area networks (WANs), local-area networks (LANs), operating systems, distributed processing, security, client/server environments—and the list goes on.

Does this sound familiar? What's a person to do to keep abreast of a world in which technology is changing faster than a speeding bullet? Do you ever feel like your boss expects Superman performance from you?

If you work with Data General equipment, I have the answer for you. Become a member of NADGUG and attend the conference every year. Every one of these topics and many more were covered at the NADGUG 93 conference held last October in Atlanta, Georgia. This year's October conference in Nashville, Tennessee, promises to be just as exciting and informative as last year's. Plan now to attend, and you'll be able to bring back a wealth of information to your company.

Being director of MIS in 1994 is a lot different than it was in 1970. That's the length of time I've been involved in the computer workplace. When I started work with my current employer in 1981, the company had a C-150 Data General computer with 10 MB fixed disk and 256 KB of RAM. We had three CRTs in-house and 10 remote users connected through 1200-baud leased data lines.

Today we have an Eclipse MV/40000HA2, an MV7800XP, and an Aviion AV 4625 with approximately 370 users and printers connected over a T1 network. Our processing plants use a scale management system that we developed in-house to monitor and control product being weighed. A bar-coded label is generated once the product is within an acceptable weight range, and inventory is updated. The bar-coded label is then scanned when the product is shipped, and inventory, accounts receivable, sales, and other systems are updated. We have more than 3,500 programs that include everything from financials to processing reports.

The decisions that had to be made in 1981 pale in comparison to the magnitude and multitude of decisions made today. One of the smartest decisions I made in the early 1980s was to join NADGUG. The network of Data General users that I've been fortunate enough to develop and the help they have provided with problems, concerns, and questions has been invaluable.

As we move into the 21st century, the complexity of the computer industry will continue to intensify. Data General is well-positioned to continue supporting its MV customers and, at the same time, provide a migration path to those wishing to take advantage of open systems with the Aviion platform.

NADGUG will be here to provide the user community with the contacts, the latest information, and the conferences to help you be the Superman or Superwoman your boss expects. If you're not already a member, join now. Just call 800/253-3902 (or 508/443-3330 outside the U.S.) for information on how to join. Δ

Thomas Bounds is NADGUG recording secretary. He is director of MIS at McCarty Farms, Inc., a vertically integrated broiler producer. He can be reached at P.O. Box 366, Magee, MS 39111; 601/849-3351.

FOCUS
The Magazine of the North American Data General Users Group

NADGUG LEADERSHIP

President
Tim Boyer

Vice President
Steve Pounds

Treasurer
Al Devitt

Recording Secretary
Thomas Bounds

Audit Committee/ Conference Committee
Calvin Durden

Membership Committee
Frank Perry

Planning Committee
Jan Grossman

Publications Committee
Ron Branom

RIG/SIG Committee
Ed Lindberg

By-Laws Committee
Brad Friedlander

FOCUS MAGAZINE

Publisher
Greg Farman, Ph.D.

Associate Publisher
Robin Perry

Editor
Doug Johnson

Contributing Editors
Tim Boyer, Kim Medlin, David Novy

Contributors
Vibeke H. Arentz, Thomas Bounds, Tony Coor, Leigh Hebblethwaite, Rick Holmes, Serese Mattek, Mark Whitworth

Advertising Manager
Susan de Blanc

Art Direction & Layout
John Houser, Ann Soto

Office Manager
Geri Farman

Accounting
Pam Sicking

Assistants
Tammy Agnew, Dana Marruffo

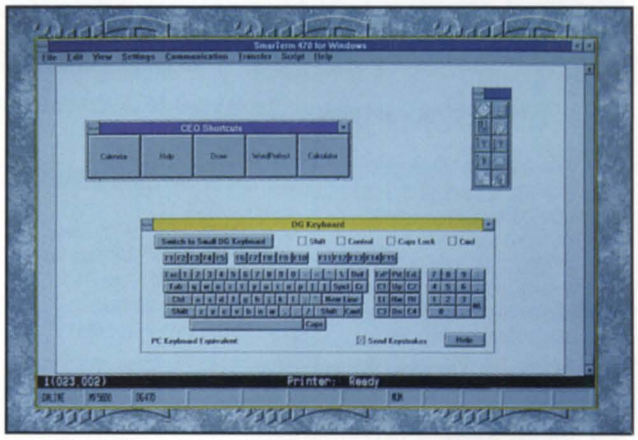
Discover the basic principle of connectivity ...

Defy the gravity of your connectivity problems.

It's a basic principle worthy of Newton:
When the complexities of multiple platforms weigh you down, discover superior PC-to-host connectivity with new SmarTerm®470 for Windows.

Take emulation to new highs.
SmarTerm 470 for Windows provides PC users with the only full-featured, precise Dasher 470C terminal emulation software for Windows with connectivity to MV and AViiON hosts. Whether you need emulation for text or graphics, SmarTerm connects on the highest levels.

Break free under your own power.
Escape from high internal support costs with the ease of Windows and SmarTerm's pioneering corporate support tools and utilities, including simplified graphical keyboard remapping, a pop-up virtual DG keyboard, an on-screen toolbox, user-definable button palettes, powerful scripting, scrollback, and a customizable help system. You'll reduce calls to the help desk and standardize your site's connectivity.



New SmarTerm 470 for Windows corporate support tools.

Discover SmarTerm.

SmarTerm 470 for Windows is the only emulation software that includes SmarTerm TCP/IP FREE. Get Windows Sockets TCP/IP and more, at no extra cost! Plus get drag-and-drop FTP, XMODEM, YMODEM, ZMODEM, and Kermit file transfer protocols. Discover the basic principle of connectivity today. Call **1-800-EMULATE.**

Persoft U.S.A. 465 Science Dr. • Box 44953 Madison, WI 53744-4953 • Phone (608) 273-6000 • Fax (608) 273-8227

Persoft Europe World Trade Center • Beursplein 37 • Box 30237 • 3001 DE Rotterdam, The Netherlands
Phone +31 10 405.3560 • Fax +31 10 405.5073

persoft®
CONNECTIVITY SOLUTIONS
DOS • Windows • Ethernet • Token Ring

©1993 Persoft, Inc. All rights reserved. Persoft and SmarTerm are registered trademarks of Persoft, Inc. All other trademarks mentioned are properties of their respective owners.

Circle 34 on reader service card.

News and notes from the greater Data General community

DG support service Datatek branches out

When **Data General Corp.** started outsourcing support services for its proprietary products, three Data General employees seized the opportunity to start their own company. **Daniel Horn, Robert "Chip" Sands,** and **Kendra Horn** formed **Datatek, Inc.**, and won the contract to service three of Data General's proprietary data base products.

Datatek provides technical support to Data General's field personnel and fixes problems in DG/SQL, DG.DBMS, and TPMS. The Datatek personnel currently work at Data General's Research Triangle Park, North Carolina facility, where the support services were formerly performed. Data General will continue to market the products and support services.

Datatek's long-term strategy is to produce its own data management products. The first product is a transaction-based ISAM (indexed sequential access method) with the Infos API, which **Monarch Software** markets as Open File Manager (OFM). OFM is also the file manager used by Monarch's Open Electronic Office (OEO), an office automation product with a user interface compatible with Data General's CEO office automation product. Datatek and Monarch demonstrated pre-released versions of OFM and OEO the week of October 25 at the NADGUG conference at the Inforum in Atlanta, Georgia.

Home loaner improvement

Those who have lived through a construction project can understand why **CINFED Employees Credit Union** in Cincinnati, Ohio, activated its disaster recovery plan one weekend last November. Although it was not a run-of-the-mill disaster like fire or earthquake, the credit union was remodeling its facility, including replacing the walls of the computer room. The remodeling involved asbestos abatement

"Our Data General MV/9600 had to be covered during the asbestos removal process and no one was allowed in the computer room," said **Lori Burfitt**, CINFED's data processing manager. By activating pre-arranged hot site service through **Data Assurance Corporation**, CINFED was able to continue service to its 26,000 customers without a hitch. Δ

DATA GENERAL HARDWARE

WE WILL BEAT ANY LEGITIMATE QUOTE, CALL US WITH YOUR BEST OFFER!

PROCESSORS/OPTIONS

AV4605,32MB,525MB,520MB,New	$9,500
AV 4020, 32MB, 520MB, 150MB	$5,900
MV2500 Rack Mount w/8MB	$2,000
MV18000-SX w/8MB	$3,500
AV4300, 16MB New	$3,500
AV4320, 16MB, 525, 520 New	$7,500
MV7800XP 10MB Addon Mem	$1,300
Aviion 7000 4MB Memory	$450
AV 7023 2nd CPU AV4300 New	$1,900
AV 7006-K 2nd CPU AV4000	$1,200
AV 7430-K SCSI-2 Ctrl AV4000	$1,200
MV15000-8 w/8MB	$1,500
AV 7402-K VME8 AV4000	$400
AV 7401 VME 128	$650

COMM EQUIP.

4626 LAC 32 w/TCB	$2,000
4713 LAC 16 RS232	$1,600
4712 LAC 16 RS422	$800
4819 Termserver New	$1,500
ISC/2 RS422 w/Cable	$350
ISC/2 RS232 w/Cable	$200
4610 Term Server RS422	$800
CSS/1 Chassis	$800

TAPE DRIVES

6591 2 G/B 8MM Tape New	$1,800
6677-F 320/525MB Tape New	$1,100
6299 6250 BPI Tape S/S	$1,200
Sparks Tape Controller	$1,000
Zetaco BMX-2 Tape Ctrl	$500
6026 Tape S/S	$500
6341 R/R SCSI Drive in Cab.	$800
6125 Streamer Tape S/S	$300

UPS SYSTEMS

18876 2KVA UPS	$800
10221 1200 VA UPS	$650
10432-DD 10KVA UPS w/(3) Battery Cabinets	$3,000
Clary 10KVA 3 Phase	$4,000

DISPLAYS

6502 D/462 w/KYBD	$250
6500 D/216 w/KYBD	$165
6500/2 D/216-2 w/KYBD	$165
D/578-A w/KYBD	$225
D/413-A w/KYBD New	$450
D/217-G w/KYBD New	$380
D/217-A w/KYBD New	$380
D/217-A w/KYBD Used	$290
D/216+ w/Barcode New	$250
D/462+ w/KYBD	$325
D/210, D/214 w/KYBD	$110
D/211, D/215 w/KYBD	$135
D/216+ w/KYBD	$195
D/410-D/460 w/KYBD	$120
D/230 Color w/KYBD	$325
D/461 Graphics w/KYBD	$250

PRINTERS

4596 LB615 Triple I/O	$2,500
4595 LB315 Triple I/O	$1,500
4364 600LPM Band	$900
4327 300LPM	$500
B/610 Serial I/O Grey	$1,500
6215 Serial Jalapino	$550
6647 Okidata 320 New	$350
6425 Demand Doc Refurb.	$1,750
6618 800LPM New	$5,950
D/P BP1515 Power Stacker	$350

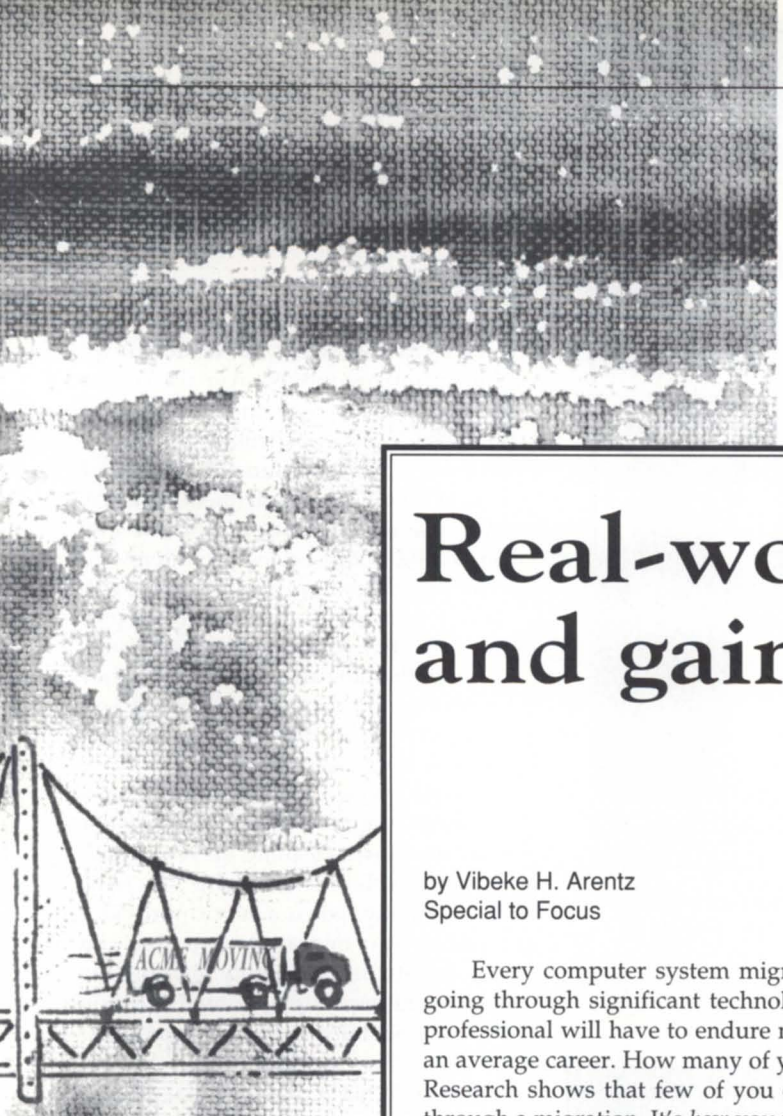
DISK

6541-A 1 G/B SMD Disk	$1,200
6796-F 520MB SCSI S/E New	$1,400
DG 6363 160MB Disk	$650
6239 592MB S/S	$1,000
6236 354MB S/S	$300
DG 6328 71MB Disk	$350
DG 7430-K SCSI2 Ctrl AV4	$1,200
HRMC-2 737MB Disk Ctrl	$1,000
Seagate 500MB SCSI Disk	$900

ASSET REMARKETING CORPORATION

1103 S. Cedar Ridge Drive
Duncanville, Texas 75137
(214) 296-9898 (800) ARC-9993
FAX (214) 296-9651

Circle 3 on reader service card.



Real-world pains and gains

SYNOPSIS

For migration to open systems to make sense for your company, it must increase your capabilities, provide tangible bottom-line economic benefits, or both.

by Vibeke H. Arentz
Special to Focus

Every computer system migration has its pains and gains. With the computer industry going through significant technology cycles about every five years, it's inevitable that a DP professional will have to endure migrations—possibly as many as *eight*—during the course of an average career. How many of you expect to be on the same platform five years from today? Research shows that few of you do. As a result, the issue is no longer *if* you're going to go through a migration. It's *how* you will manage the pains of a migration *when* it happens.

"Any migration involves some pain. Change always involves pain," said Peter Malkin, vice president of systems and technology at Prentice Hall Legal and Financial Services in New York. Mr. Malkin recently orchestrated Prentice Hall's data center's VS Cobol/Infos migration from a Data General MV system to a Unix platform.

Prentice Hall had been using proprietary equipment for at least 10 years, and had invested eight years of development time in its VS Cobol applications. "Our applications are not well-documented, and the staff that did most of the application development is no longer with the company," said Bob Partak, Prentice Hall's data center director. "I was sure the migration would be a long, difficult process," he added.

Does this sound familiar to anyone?

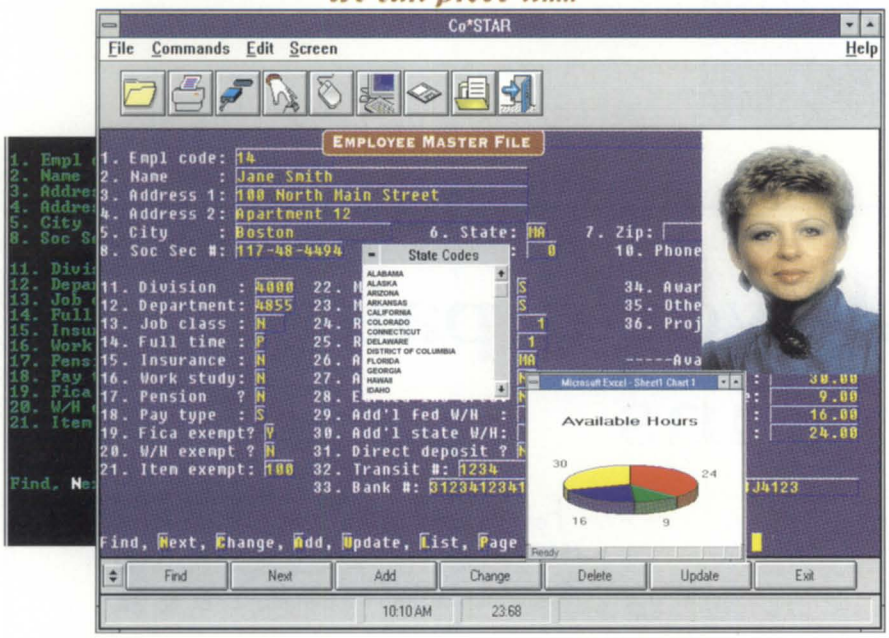
Pains

During the migration process, all those skeletons from code patches and "short cuts" from the past will come clattering out of the closet into a jumbled pile on the floor. At times you'll swear that Murphy was a staff programmer.

You have two choices of how to deal with a migration and the inevitable pains that go along with it—either do the work in-house, or hire a third-party migration specialist to handle it for you. The decision you make will depend on the level of your company's in-house knowledge of the existing system and the new one, your available resources, your budget, and your time frame. If your company has excess in-house programming capacity, if you have expertise in the new system or the time to learn it, if you're willing to take full responsibility for the migration's cost, *and* if the migration is of no real urgency, it may be worth doing it in-house. Time, however, is actually one of the biggest contributors to migration cost. If a project drags out, you will end up paying support on two systems and incurring additional staff costs—and further delaying work on your programming backlog. This quickly erodes the savings you

Finally, a product to "WINDOWIZE" character-based applications

and when we say..... "No Programming Necessary" we can prove it.....



Co*STAR **CLEARVIEW Software** **FAX: (603) 472-8421**
326 Chestnut Hill Rd, Amherst, NH 03031, (603) 472-7115

Circle 45 on reader service card.

Finally, the right **TCP/IP** solution for connecting DOS users to **DG/UX** and **AOS/VS.**

TERMview/*PC*™

*Multi-Window **TCP/IP** Connectivity Software for DOS.*

D470C, SCO ANSI, 3270, and **VT320** terminal emulation with **TCP/IP** at one low price.

Compatible with Data General's **CEO** and **DG/UX** Software.

Graphical User Interface allows multi-session viewing under DOS.

Includes:

TELNET, FTP, RLOGIN, TN3270, PING, DOMAIN NAME, SLIP, and NETSTAT

TCP/IP Protocol Stack for NDIS, ODI, and PACKET driver environments. Dynamically unloads to conserve memory. Coexists with NetWare or LAN MANAGER.

D470C, VT320, SCO ANSI, and IBM 3270 Terminal Emulation with full color support.

Macro facility for creating point-and-click host connections for running applications or transferring files.

Easy-to-use configuration panels for simple set-up. Installs in minutes.

Call For Free DEMO DISK!

ASYNC SYSTEMS, INC. 203 Middlesex Turnpike Burlington, MA 01803 **617.270.3530**

Circle 4 on reader service card.

hoped to gain by doing the work in-house.

Outside experts

Working with a company that specializes in migrations can actually save your company money over the course of the project. The main reason is knowledge. An experienced third party has seen the problems before and knows how to overcome them, whereas in-house staff must learn on the job. Some migration service providers will offer you a fixed price and bear the risk of cost overruns. But if you do the project in-house, you are fully responsible for both the time and cost. Because they aren't operating on trial and error, service providers often can get the job done months ahead of an in-house schedule—which is money in the bank for your company. A service provider can take care of cleaning up your applications' skeletons and help you start fresh. Finally, when a service provider handles your migration your staff can concentrate on thoroughly learning the new operating system, instead of trying to figure out how to do the migration.

Both Prentice Hall's Peter Malkin and Bob Partak recognized that migrating VS Cobol applications to a new Unix platform was far outside Prentice Hall's expertise. They selected a third-party migration service provider to handle their migration for them.

"We wanted to work with a company that could provide us with a turnkey solution to our VS Cobol migration," said Mr. Malkin. "We wanted an inexpensive migration solution. And we wanted our applications to work on the Unix platform exactly as they had on the MV, to make the migration as transparent to the users as possible."

Business needs analysis

A migration service provider must take some vitally important steps to understand each client's individual issues. These steps must take place even before the migration begins. First, the service provider must develop a deep understanding of the client's specific business needs. Few companies' VS Cobol applications are isolated—normally they are integrated with other applications. A migration service provider must do a

COMPUTER ENGINEERING INT'L. INC.
2231 STAR COURT P.O. • BOX 81755
ROCHESTER, MI 48308 • FAX (313) 853-0775

MILLION DOLLAR INVENTORY TO SUPPLY ALL YOUR NEEDS FOR:

- MV SERIES UPGRADES
- UNIX & PC BASED SOLUTIONS
- NOVA/ECLIPSE SPARES
- COMPATIBLE PERIPHERALS
- MONITOR & PRINTER REPAIR
- ADD-ON COMM. GEAR, DISKS, TAPES, MEMORY, PROCESSORS

WE STOCK THOSE ODD PIECES THAT OTHERS DON'T CARRY.

CALL 800 462 CEII (2344)

IN MICHIGAN (313) 853-0770
OUR COMMITMENT TO SERVICE WILL MAKE IT SEEM THAT WE ARE RIGHT NEXT DOOR

BUY **SELL** **TRADE**

COMPUTER ENGINEERING INT'L. INC.
2231 STAR COURT P.O. • BOX 81755
ROCHESTER, MI 48308 • FAX (313) 853-0775

VISA

MasterCard

Circle 8 on reader service card.

VS Cobol migration within the context of a company's entire system. As a result, the VS Cobol migration goes far beyond translating the code—it's as much a business issue as a technical issue.

Getting to know a client's specific needs helps the service provider develop a customized migration plan for each client that addresses organizational, operational, and technical requirements.

One of Prentice Hall's major business requirements was that its VS Cobol/Infos applications interact with its Business BASIC applications via common files on its new Unix system. However, Business BASIC does not recognize Infos files in the same way that Cobol recognizes Infos file structures on a Unix platform. As a result, Prentice Hall's migration service provider had to translate the Infos DBAM file structures into something that both Business BASIC and VS Cobol could understand. The service provider designed many of Prentice Hall's important files so both the Cobol program logic and the Business BASIC program logic would remain intact. At the same time, the service provider ensured that there were minimal changes to either system. This demonstrates how a service provider must look at each client's individual business and system needs, and take a total-project approach to each individual migration. This is also an example of a situation where an automated filter approach would not have achieved the desired results. In Prentice Hall's case, a filter would not have embedded the necessary options to allow the Cobol applications to recognize external applications such as BBASIC.

Application analysis

In order for the migration to go as smoothly as possible, the migration service provider must also analyze its client's applications thoroughly. This allows the service provider to understand the applications' complexities before the migration begins. The service provider can thus customize a migration plan for its client that includes careful planning for any migration difficulties due to system complexities.

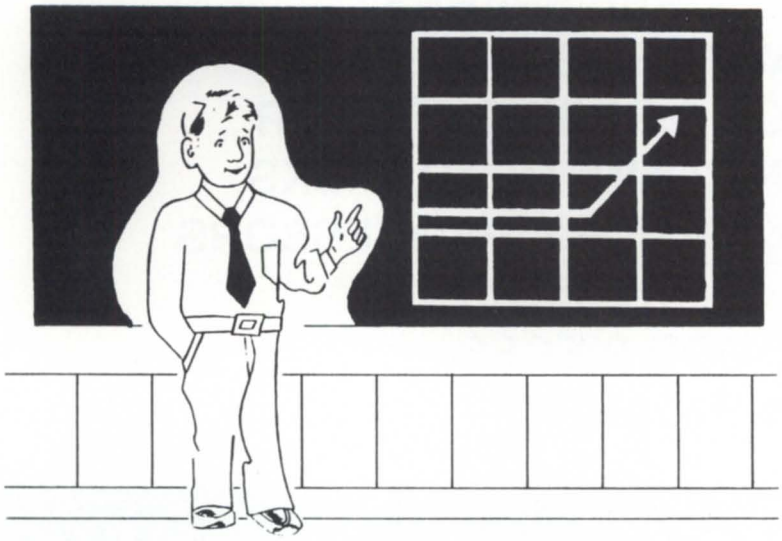
Prentice Hall's migration service provider analyzed the company's applications:

1) DBAM file structure, for inverted keys, number of alternate keys, and the number of DBAM levels used.
2) CLI calls, for internal Cobol program functionality and external procedures.
3) Programs, for VS Cobol-specific syntax, AOS system-specific features, Infos-specific file handling, and ANSI-compliance issues.

Non-ANSI constructs

In most cases, code analysis will uncover many non-ANSI and even "illegal" constructs throughout VS Cobol applications. This is not uncommon; VS Cobol's compiler is very

Look Sharp with DataGen!



DataGen gives you the edge with split-second coding of file maintenance programs in Cobol.

Cut The Backlog!

- **Conversions to Open Systems**
- **New Applications**
- **Relational File Designs**
- **Maintenance (Enhancements)**

Productivity Systems Development Corporation
P.O. Box 1931, Summerville, SC 29484
803-851-6577

Circle 38 on reader service card.

D470C D463 D430C D413 W460 VT320 VT100 TEK4010

SVGA XGA VGA MCGA EGA CGA MDA COMPATIBLES PS/2 AT PC

TEXT BINARY XMODEM YMODEM KERMIT DOS OS/2 WINDOWS DESQVIEW

Check out EMU/470 Version 5.0!

Rhintek now provides complete emulation for all current DG Dasher Terminals.

NEW! ❑ Complete D463 Emulation, including: Double high / double wide characters; Selectable 25th line; Downloadable function keys; Tektronix emulation; UNIX mode.

NEW! ❑ D430C Emulation

❑ VT Emulation for DEC, UNIX, and AViiON

❑ PC/TCP Kernel Interface

❑ Scroll back buffer

❑ Network Support

❑ 190+ Macro Keys

❑ Compressed Mode

❑ Built-In Diagnostics

❑ Command Language

❑ Script Files

❑ International Keyboards

❑ Code Pages 850, 437

❑ File Transfers

❑ Complete Printer Support

❑ Auto Dial, Logon & Logoff

Very, Very fast!

EMU/470
DG Color Graphics Terminal Emulation for IBM Micros

Then call 1-800-234-4546 to get your own copy of Rhintek's EMU/470, Version 5.0.

Rhintek offers products spanning the entire Dasher Terminal Line, priced from $95 to $249. We offer volume discounts and unlimited free technical support. Call us and we'll FAX the Facts! Your complete satisfaction is always guaranteed.

Rhintek, Inc.
Computer Engineering
P.O. Box 220, Columbia, Maryland 21045

Visit us on CompuServe (GO PCVENC); Tech Support 410-730-2575; VISA and MC Accepted

PC/TCP INT14 NACS NASI BAPI NETBIOS TCP/IP NOVELL

Circle 37 on reader service card.

forgiving and allows illegal programming constructs to slip by. The migration service provider must work with each individual non-ANSI or illegal construct in a client's VS Cobol applications to make them meet ANSI standards whenever possible, enabling them to run on a Unix platform.

Testing

"Testing was probably the hardest part of our migration," said Mr. Malkin of Prentice Hall. "Our test plan spanned an entire month to ensure that all the migrated code worked on the Unix system. We had to make sure that the efficacy of the system stood up, and that all the code was converted accurately."

The migration service provider should test the company's code several times to verify its integrity after migration. Prentice Hall's service provider first tested Prentice Hall's migrated code at the service provider's site.

Second, the service provider tested the code at Prentice Hall's facilities. At this stage the service provider taught Prentice Hall's programmers how to run, change, and recompile their programs, and how to get through errors. The service provider also converted Prentice Hall's data files at this stage, to prepare for the crossover to Unix.

Third, Prentice Hall's migration service provider conducted user testing after the company's data were transferred to the Unix system.

During this stage, Prentice Hall users ran their applications on the Unix system to make sure the applications ran just the same as they did on the MV. This stage was designed to uncover any user-specific problems. Only after the three-stage process was complete and

More gains

When companies choose to migrate their current VS Cobol/Infos applications to open systems platforms instead of rewriting their applications in a different language, they enjoy additional gains:

1) Preserving their existing investment in their Cobol applications.
2) Preserving the functionality that they have developed into their applications during the years.
3) No need to retrain end users on new applications.
4) A migration takes less time than rewriting applications.
5) Migrations typically cost less than rewrites.
6) Specialists are available to handle the migration issues for you.

Memory Solution for AViiONs
DDS
Get the most from your computer!
AV100 to AV4625
Memory upgrades increase performance and capabilities.
Adding memory is a sure way to make time count!

DDS DIGITAL DATA SYSTEMS, Inc.
Memory Specialists since 1976
1551 NW 65 Ave.
Ft. Laud., FL 33313
(305) 792-3290
Dealer inquiries welcome
AVION is a trademark of Data General.

Circle 18 on reader service card.

DG TERMINAL SWAPOUT/REPAIR
SERVICING ALL DATA GENERAL TERMINALS
From $59
LESS TURNAROUND TIME...WE'LL SHIP YOUR ADVANCE TERMINAL TODAY!
Call for all of your self-maintenance requirements.
DIGITAL COMPUTER CONSULTING, INC.
Boston
Tel: (617) 837-7255
Fax: (617) 837-9641
Baltimore
Tel: (410) 750-7200
Fax: (410) 750-7202

Circle 17 on reader service card.

NCD CORPORATION
YOUR DATA GENERAL MARKETPLACE!
BUY • SELL • LEASE • TRADE
AViiON New/Used
MV / Eclipse
Upgrades/Add-Ons
Large Inventory
DG Compatible Equip.
Depot Maintenance
CALL TODAY
(216) 953-4488
Fax Equipment Lists
(216) 953-9361
CDLA MEMBER
NATIONAL COMPUTER DYNAMICS
7650 Tyler Boulevard
Mentor, Ohio 44060-5286

Circle 31 on reader service card.

Prentice Hall was completely satisfied did the system go live.

Testing is critical. Usually these applications are system- or company-critical. The migration service provider must make sure all applications work perfectly in their new environment. Going live with a flawed system could be disastrous.

The biggest pain

One of the biggest potential migration pains stems from the simple fact that no one ever believes a VS Cobol migration is going to be as involved as it actually is. This makes a good case for bringing in experts to do the job.

Gains

Many VS Cobol users recognize that the gains achieved from a migration from a proprietary platform to open systems far outweigh the pains. The gains most frequently cited include:

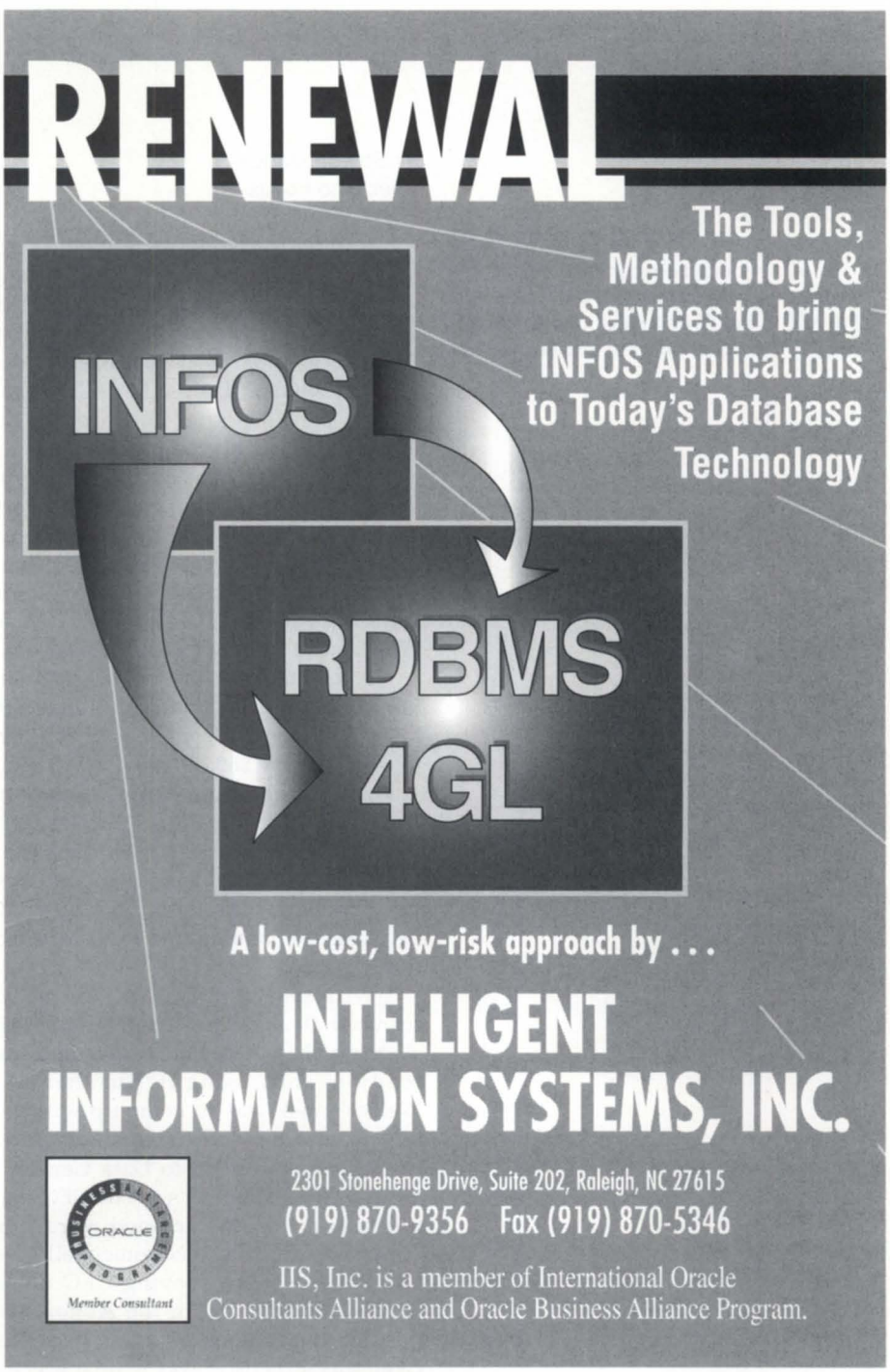
1) Third-party software capabilities.
2) Portability—the ability to move from one open-systems platform to another.
3) Processing power of open-systems platforms.
4) Lower maintenance costs.
5) System integration.
6) More development tools.
7) Expandability.
8) Open systems industry standards.

The bottom line

For an open-systems migration to make sense for your company, it must increase your capabilities, provide tangible bottom-line economic benefits, or both. The most cost-effective way to gain open-systems benefits is to migrate your existing applications. By working with a third-party migration service provider, you can move to a new platform in minimum time and with minimum pain. The right service provider will preserve your personnel resources, disclose all costs, and guarantee the results.

To maximize the gains a company that provides migration services offers, select your service provider carefully. Find a company that has a track record of successful migrations, and that understands all of the Data General VS Cobol, Infos, Unix, and business issues. Find a company that understands that migrations are more difficult than they initially appear, but can be successfully navigated with a comprehensive plan. Find a company that will guarantee its work. If you select carefully, you will minimize the pains and make the most of the gains of your VS Cobol-to-Unix migration. Δ

Vibeke H. Arentz is marketing specialist for Wild Hare Computer Systems, Inc., of Boulder, Colorado. Wild Hare has provided productivity solutions to Data General users for more than 20 years and offers full-service VS Cobol-to-open-systems migration services. The company may be reached at 303/530-2221.



Circle 25 on reader service card.

Finding a simple, safe option

by Serese Mattek
Special to Focus

SYNOPSIS
Custom document-conversion software can help make the switch from the MV to the Aviion safer, more efficient, and less expensive.

Robert Welser, system engineer for Madison Data Systems, was working with a key client preparing to change a company's computer operating system from AOS/VS to Unix. The client had decided to move from an Eclipse MV/4000 to an Aviion AV 4300 after considering the many benefits to his company.

Unix is a flexible operating system. Software and hardware cost less and are widely available. Training is simpler, maintenance less complicated. The client wanted also to be able to use modern, industry-standard software such as Wordperfect for Windows and Lotus 1-2-3.

A maintenance issue was the driving force behind the final decision. To keep its MV operational the company would have to spend nearly $60,000 on a new cooling system for the computer room. Mr. Welser thought it made a lot more sense to purchase a new system rather than spend more money to keep the old system functional. As with most business decisions, the bottom line was cost-effectiveness.

With that in mind, Mr. Welser researched all aspects of the migration; his client purchased the new system and was ready to start using it. But then Mr. Welser's task was to come up with the best way to move the company's documents from AOS/VS to Data General's DG/UX. The company's 10,000 CEO documents on the MV included word-processing documents, electronic-mail files, and spreadsheets. Moving CEO documents from the MV to the Aviion was possible, but finding the safest, most efficient, least-expensive way to do it was the question keeping Mr. Welser awake at night.

Before making a recommendation to his client, Mr. Welser carefully considered available CEO file-conversion options, looking at how to make the smoothest transition.

Conversion options

Recreating documents in the new environment was one idea. With this method the company would use a current employee or hire someone temporarily to print out all of the CEO documents from the MV and then retype them into the new system. This would be both time-consuming and costly. With 10,000 documents, the company would need to pay someone to work at least 500 hours to complete the conversion. Company files also may include confidential information not meant for others to read, and this option could result in typing errors and new mistakes.

Another option was to have the system manager and/or users transfer individual documents from AOS/VS to Unix using a tool like CEO Object Office. The client would have to purchase networking hardware and software to pursue this method, but it would allow an individual user to review each file and to decide whether to convert or delete it. Mr. Welser's client had already told him he did not want to spend any time looking at individual documents. Plus, this option would involve a time-consuming process with several steps: 1) converting documents; 2) transferring new documents to the Unix machine; and 3) giving the documents names during the transfer. Other risks included lost document-summary information, the inability to do keyword searches, lost messages, and non-functional spreadsheets.

Mr. Welser was not really satisfied with either of these strategies, but knew he needed to move ahead with some plan. However, just about the time he was ready to get the project started, he learned about a product from Eagle Software, Inc., "CABINET_CONVERTER," designed to automate conversion

of CEO drawers, folders, and documents to other platforms: MS-DOS, Apple Macintosh, and Unix. Now Mr. Welser had one more option to consider—software that automates CEO document conversion and makes migration less of a headache.

There are three basic steps to complete document conversion under CABINET_CONVERTER. First, when the program is executed, it creates a CPIO dump file that contains selected user IDs, drawers, folders, and documents. During this process the software converts the CEO documents to the new file format, at the same time maintaining many of the CEO attributes associated with the files, and automatically creating target system-compatible filenames and handling shared drawers.

The second step involves transferring the CPIO dump file to the target operating system. The user decides how to make the transfer, choosing options such as an asynchronous line, network, tape, disk, etc. After the CPIO dump file is on the target operating system, the third step is to execute CPIO to load the CEO files. The directory structure created directly parallels the CEO filing structure.

Automated conversion software did not guarantee Mr. Welser's client zero conversion troubles, but after looking at the pros and cons of each option, Mr. Welser decided it offered the most benefits. So he urged his client to use it for converting his company's CEO documents to Unix. The company could have implemented the conversion onsite, or it could have loaded its CEO documents on backup tapes and had the software company do the conversion.

Conversion software makes it easier for the company's computer users to retrieve, update, and use documents converted to Unix from the CEO environment. Custom conversion software can help make the switch from the MV to the Aviion safer, more efficient, and less expensive. Mr. Welser is sleeping better now, knowing his client has a way to get his company's new computer system online and running smoothly.

Companies looking to the future

Many companies are migrating from the AOS/VS operating system to a Unix environment, or are looking at making the change in the future. This process takes some serious consideration and planning. Because many companies use CEO on their MVs, Mr. Welser is not alone in his efforts to find the best method of converting those documents to other formats. Mr. Welser explored each option to find while each has its own set of problems, each can work. Calculating cost and time, he determined the best choice for his client. Companies of all sizes can benefit from the same plan of action. Δ

Serese Mattek is marketing director for Eagle Software, Inc. She may be reached at 123 Indiana Avenue, P.O. Box 16, Salina, KS 67402-0016; 913/823-7257.

Your Source For Re-Marketed Computer Hardware

Data General Computer Hardware Specialists

Thousands Of Items In Stock

- AVIION
- BUY
- CPU
- MV
- SELL
- DISK/TAPE
- NOVA
- LEASE
- COMM/CONT
- "S" SERIES
- RENT
- MEMORY

In addition to Data General hardware check out our selection of after market and O.E.M. products from 3-Com, Kyocera, Micom, Data Products, SCIP, Best, Wyse, Genicom, Codex and many more!

Let us handle all of your Data General needs, from terminal cables through your next major upgrade...at competitive prices.

Call today for up-to-date pricing.

Park Place International

7209 Chagrin Road, Chagrin Falls, Ohio 44023

Tel: (216) 247-2650 ▪ Fax: (216) 247-2604

Circle 33 on reader service card.

David Novy

All dressed up and nowhere to migrate

SYNOPSIS

Our columnist wishes Data General would establish a presence known in the rapidly-expanding product information management (PIM) market. And: If you want to run a large network and still want time to see your family, then Unix and NFS is still the best way to go.

For most people, system migration seems to mean moving from host-based systems to a client/server architecture. This is often called downsizing or, the more politically correct term, "rightsizing." For me, system migration is not an issue of downsizing or rightsizing. It is an issue of *WHERE*sizing. I already have decided what applications I want to run to migration from host-based systems. My issue is where to run them. Unfortunately, the issue of wheresizing takes me farther away from Data General, because the applications I need do not run on Data General platforms.

Regular readers of this column know that the primary application I am involved with now is product information management (PIM). Product information management deals with the issue of bringing high-quality products to market faster than ever before, generally 50 percent faster than in 1990. The method used to do this is to form an electronic document library and store all the documents required to bring a new product to market in this library under formal change-control procedures.

This market is already very big, and it is growing. Major corporations are spending millions of dollars installing such systems, and they are having positive impact on the bottom lines of the companies that install them. Several companies have seen 15-percent increases in gross product revenue over the life cycles of products controlled by product information management systems.

Unfortunately, although product data management is a major computer application for most large manufacturing companies, Data General has no presence in this market. What is especially troubling is that these products run on just about every platform except Data General Sherpa, the market leader PIM software recently announced support for Silicon Graphics and Digital Alpha. This is in addition to support for Digital VAX, Digital Ultrix, Sun Solaris, Hewlett-Packard RISC machines, Apollo, and IBM RISC.

The December 1993 issue of *UNIX REVIEW* presented some more troubling news. The front end to Sherpa is Visix Software's Galaxy 1.2. Galaxy 1.2 received the Unix Review 1993 Outstanding Product Aware for being the best software development front-end. The magazine said in presenting the award: "Galaxy is such a fine product that it sends writers scrambling to the word box, searching for abandoned superlatives to polish up for reuse. It is a product that screams excellence in every aspect of its implementation. It leaves you staring at the screen in disbelief, even after you have used it for weeks."

The article went on to state that: 1) Galaxy is a development environment for applications that are graphical, multiplatform, and, if necessary, distributed; 2) Galaxy code is portable; by recompiling. one can run on most Unix RISC platforms, Open VMS, Windows 3.1, Windows NT, OS/2, and Apple Macintosh.

After reading the article I was quite excited about the potential for using Galaxy. The article stated that Galaxy ran on most Unix RISC platforms, and I knew that Data General and Visix had a business arrangement whereby Visix Looking Glass software was provided on Data General's Aviion workstations. So I called my favorite Data General information source, expecting to hear some good news regarding a software application that I wanted to run on a DG Aviion platform.

Instead, it appears that Data General has decided to replace Looking Glass on its Aviion workstation Line. Also, Galaxy does not currently run on the Aviion, but Visix would consider porting it to the Aviion if there were enough demand. So not only does Galaxy not run on the Aviion, but the relationship between Visix and Data General is very weak. This is unfortunate because it appears that Galaxy seems like the ideal solution for a software developer looking to port applications to many platforms with the least amount of effort.

As far as I can determine, Data General is only a minimal player in the Unix server/Unix workstation or Unix server/PC client, client/server applications market. Data General Aviions are being used as direct host replacements for terminal-based minicomputer and host-based applications. Aviions perform this task very well, but as computer applications become more and more distributed and graphical user interfaces increase in importance, I think Data General will be at a distinct competitive advantage.

Gulliver and the Lilliputians revisited

One of the more interesting books I read during my youth was *Gulliver's Travels* by Jonathan Swift. In one of the adventures, Gulliver visits the land of the Lilliputians. Compared to the

Lilluputians, Gulliver is a giant. The Liliputians react to Gulliver's visit by drugging him and, while he's asleep they tie him to the ground. Gulliver has a very difficult time escaping because he was so tied up dealing with so many small "problem."

I learned last week about the modern version of Gulliver and the Liliputians. I was talking to the operations manager in charge of maintaining the mainframes at a large company. This manager has also been given responsibility for the corporate Microsoft LAN Manager servers as well. He now has more than 60 LAN Manager servers and he can barely get his work done. The 60 LAN Manager servers require more work than the mainframes and the use of LAN Manager servers is still in pilot mode. He told me that as far as he was concerned, it was time to get a couple of Unix file servers and to quit playing around.

The problem with LAN Manager is that it is still not a mature system. The servers tend to lose access to resources for no apparent reason, and it requires too much human support to keep a LAN Manager server online. Things have reached the point where the manager is on call 24 hours a day. So if you are looking for job security, it might be time to recommend that your company install a LAN Manager system.

But be careful, or you may get too much job security. I heard that at one LAN Manager site, the support personnel could not go on vacation, because the LAN Manager software so unreliable. If you want to run a large network and still want time to see your family, then Unix and NFS is still the best way to go. Δ

David Novy is a technical computer 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.

Peach of a Deal Worldwide — Everyday on Data General Hardware

CPU	
AV 300 work station 332 MB, PHU, 150 ct	2,200
MV15 mod 20 "complete system" with 8MB	$2,400
MEMORY	
Aviion 64MB memory	$7,900
Aviion 8MB memory	$950
MV95/9600 32MB memory	$5,500
MV15/20 32MB memory	$2,900
MV3500 16MB memory	$950
DISK AND TAPES	
6685 1.0 GB disk drive	$1,800
6796 520MB disk drive	$990
6662 332MB disk drive	$850
6621 1.2 GB RAMS Disk	$3,900
6239 592MB Argus Disk Drive	$990
6299 1600/6250 BPI tape S/S	$950
CRTs	
6501 D412 with keyboard	$225
6308 D470C color with keyboard	$250
6394 D461 with keyboard	$225
6256 D460/D410/D210 with keyboard	$99
COMMUNICATIONS/OTHER	
7419 VDC-16	$1,690
4626 LAC 32 with TCB	$1,900
7430 SCSI II Controller	$990
7425 VTC VME Controller	$2,700
7036 Aviion 7400/8400 Quad Proc.	$14,500

1-800-229-2897

CW COMPUTER WHOLESALERS INC.
3246 Marjan Drive 404-455-4542
Doraville, Georgia 30340 FAX 404-457-5841

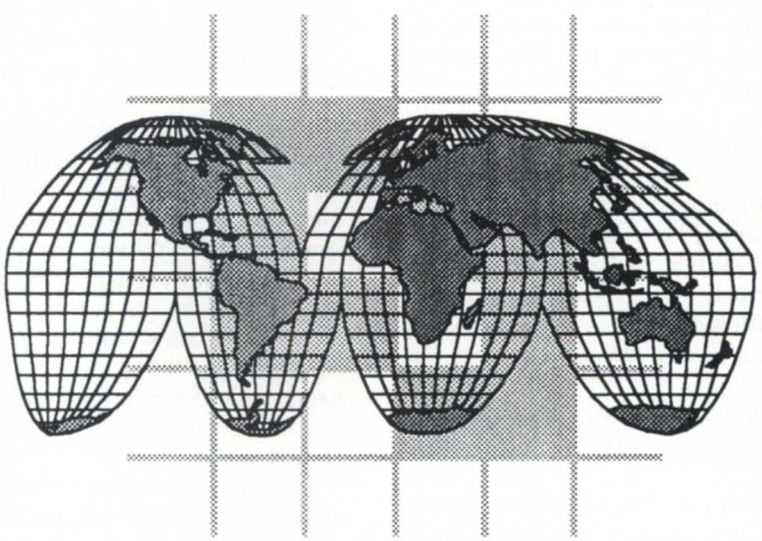
Circle 9 on reader service card.

LIFE TIME HARDWARE WARRANTY !!

Claflin & Clayton, Inc.

24 HOUR TECHNICAL HOTLINE !!

- AOS/VS to Unix Integration
- AOS/VS to NetWare Integration
- NFS & TCP Networking Software
- Ethernet Networking Hardware
- High Performance, Low Cost



- File Sharing
- Remote Login
- Command Execution
- Electronic Mail
- Printing
- Backup
- AOS/VS I & II
- RDOS, AOS
- MV, NOVA, ECLIPSE, DESKTOP

Industry Standard Networking Solutions

203 Southwest Cutoff, Northboro, MA 01532 Telephone 508-393-7979 FAX 508-393-8788

Circle 7 on reader service card.

CD Change Directory

SYNOPSIS

In an effort to standardize on a set of shell commands, the author recently created a CD macro for AOS/VS systems.

by Rick Holmes
Special to Focus

The CD macro on AOS/VS is a front end for the DIR command. It differs from DIR in that it accepts wildcard characters in the directory specification. It may involve the searchlist in resolving the target directory. It also recognizes certain special calls to try to keep some compatibility with other systems. First let's get the special calls out of the way.

CD by itself, with no argument, returns you to your initial directory. It does a "dir/i" command. I chose this over having it show you your working directory because I always run with my prompt set to show me the directory on each prompt. I also show the hostname using the PREFIX command.

CD used with an argument of two dots, i.e., "cd ..", with a space between CD and the dots, moves you up one directory in your current hierarchy. Thus if you are in ":udd:rick:foo" and do a "cd ..", you end up in ":udd:rick". This is similar to both Unix and MS-DOS.

The form "cd.." (no embedded spaces), which is allowed in MS-DOS, is also allowable on AOS/VS. It uses a second macro named "cd...cli", which simply does a "dir ^".

CD used with an argument of "\", i.e., "cd \", is recognized and moves you to the system root directory. This is similar to MS-DOS. Unfortunately, "cd\" is a syntax error to the AOS/VS CLI and is not allowed.

CD used with a "/" argument or switch tries to move you to the system root directory.

CD used with a switch of "/i", i.e., "cd/i", is recognized and treated as a "dir/i", returning you to your initial directory.

Any other parameter passed to CD becomes the specification of the directory to move to. It needs to be a unique directory name or a file specification that can be resolved to a unique directory name. It may use the wildcard characters "#+-*" as part of the filespec. If the filespec does not resolve to exactly one directory name, then it will tell you what matches it found. You may want to use it again, being more specific by providing more matching characters. Thus, if there are two directories in your searchlist named "graphics_package" and "graphics_spooler", then :"cd gra+" will complain about non-uniqueness, whereas "cd gra+r" will move you to the "graphics_spooler" directory.

The macro tries to match a directory by using your searchlist. If it finds candidate directories in more than one place, it will complain of conflicts and show you which files it found. Thus if you try to move to a "foo" directory and it is found in more than one directory on your searchlist, you might see something like:

```
) search :udd:rick,:foo,mydir
) cd foo
      foo is not unique.
      Your choices are :UDD:RICK:FOO :FOO=MYDIR:FOO
```

In this case, you must be more specific. For example, if you want the "mydir:foo" directory, try "cd m+:foo" or "cd +yd+:foo". I try to use as few characters as possible.

You must have read permission for each directory in which you specify a wildcarded filename. Thus if you want to use something like

```
) cd :ut+
```

to move to ":util", you will need to be superuser. This is because the root directory has an ACL of "+,E". Otherwise you will get a "Warning: File access denied, File :" message followed by a complaint from CD that you need to be more specific.

Method

The macro is complicated by the fact that the CLI "!FILE" pseudomacro does not expand links. The first version of this macro was fairly straightforward. It basically did a DIR to the "!FILE" of the supplied argument. Then I tried it on a pathname with a link in it, and the macro started becoming interesting.

To solve this problem, I tried expanding the supplied filespec using a "!PATH" pseudomacro and then calling the macro again. The real trick to the macro is where it splits the filespec into the prefixing directory portion and the trailing simple filename portion. It expands the directory portion and then possibly tries again. If the expansion of the directory portion did not change the name being evaluated, then we need more information from the user. If the expansion actually changed something, then it tries again with the expanded name. It never recalls itself more than once or twice.

How it works

The macro is listed with line numbers at the end of this article. A line-by-line discussion of it follows:

Line 1 determines if we are on a "recycle" call or not. If we are, skip down to lines 44-65. (More on recycle calls later.)
Lines 2-4 recognize "cd .." and generate a "dir ^".
Lines 5-7 recognize "cd \" and generate a "dir :".
Lines 8-10 recognize "cd/" and generate a "dir :".
Lines 11-13 recognize "cd /" and generate a "dir :".

CD.CLI: Change Directory

```
Comment CD.CLI - Change Directory.
Comment Richard A. Holmes, November, 1993.
Comment
Comment This macro will change the current working
Comment directory.  It allows
Comment wildcard characters in the provided name.  If
Comment necessary, it uses the
Comment searchlist to find matching names.
Comment
Comment Usage:
Comment
Comment   cd             goes to your initial
Comment directory (often in :udd)
Comment   cd name        goes to wherever "name"
Comment matches, with wildcards.
Comment   cd ..          goes to directory above.
Comment   cd \           goes to the root directory
Comment   cd/i           goes to the initial directory
Comment   cd/            goes to the root directory
Comment   cd /           goes to the root directory
Comment
Comment Of course things like cd ^ work .
Comment
Comment Use a /trace switch to see it calling itself.
Comment
Comment As CD may recall itself with a /recycle switch,
Comment you probably should not use this switch.

01  [!eq,%/recycle%,]
02   [!eq,%1%,..]
03     dir ^
04    [!else]
05     [!eq,%1%,\]
06      dir :
07     [!else]
08      [!eq,%0/%,/]
09       dir :
10      [!else]
11       [!eq,%1%,/]
12        dir :
13       [!else]
14        [!eq,%1%,]
15         dir/i
16        [!else]
17         string/name=count [!file/count,%1%]
18         [!eq,[!string/name=count],0]
19          [!ne,%/trace%,]write Recycling on %1%.[!end]
20          cd/recycle%/trace% %1%
21         [!else]
22           [!eq,[!string/name=count],1]
```


NEW REVISION NOW AVAILABLE!

Screen Demon

Something for everyone!

The user: Faster displays, electronic mail, screen print, redraw screen, hot keys

The developer: Easy windows, pop-up menus, dialog boxes, line drawing

The system manager: View and control other terminals, inactive terminal auto-logoff

Threshold, Inc.
118 N. Ross Street
Auburn, AL 36830

(205) 821-0075
Fax (205) 821-0122

Circle 47 on reader service card.

SYSGEN DATA Ltd. MARKETING

Data General COMPUTERS & PERIPHERALS WORLDWIDE

MV 15000 MOD 10, CPU Complete	$2,000	6299 S/S	$1,000
MV 15000 MOD 10, CPU Board	1,500	6300 S/S	1,000
MV 15000 MID Board	750	LAC 12	200
MV 2000 4MB, Flpy	700	DG 70MB Drive (2000 Format)	300
MV 20000 Model 2 Upgrade	2,000	DG 160 MB Disk	400
MV 20000 Loaded	CALL	MV 7800XP System Configured	1,000
MV 15000/20000 Floating Point	750	B600 LPM Printer	350
6239 S/S 592MB	850	B1000	750
Term Server 4817	1,000	MV 3500, 8MB, LAC16, 662	6,500
AViiON 4625 Fully Configured	17,000	MV 5600, LAC 32, 16MB, 1GIG, 150 Meg Tape	20,500
AViiON 5100 Fully Configured	8,500	6321 Printer	100
AViiON 3200 Fully Configured	2,850	MV 5 500, LAC32, 662, 322, 2GIG	9,000
LAN BOARD (2000 Style)	300	D411 175 D211	135
MV 4 & 10 Memory 2MB	100	D214 135 D215	150
STARLAN	350	D216 New 365 D412	325
IAC 16 (RS 232) w/TCB 16	150	D462+ 400 D463	425
IAC 16 (RS 422)	150	DG Desktop 10, 20, 30	CALL
IAC 8-2	100	Dataram 16MB (MV 15000)	450
VDA 255	1850	Call For Unlisted Equipment	

SYSGEN SPECIAL DG 6321 Printer $125 · DG 500 MB Shadow $1,350 · AViiON 4300 System Complete $6,500 · AViiON 5220 Call

DATARAM AUTHORIZED DISTRIBUTOR

SCIP

BUY • SELL • TRADE • LEASE
PRICING SUBJECT TO CHANGE WITHOUT NOTICE
ALL EQUIPMENT SOLD IS WARRANTED FOR 30 DAYS

Authorized WordPerfect
Motorola VAR

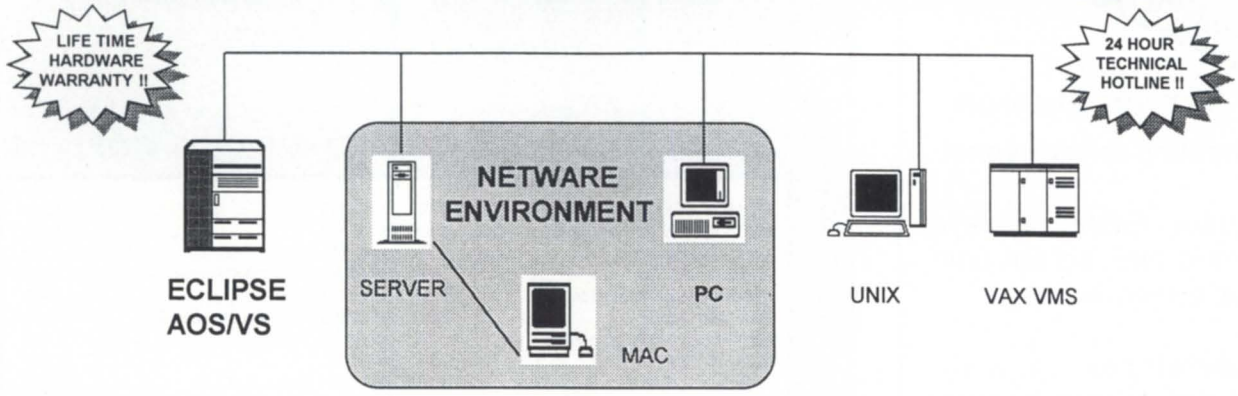
12 ELKLAND ROAD, MELVILLE, NY 11747 (516)491-1100 fax: (516)491-1559

Circle 43 on reader service card.

```
23          [!eq,[!file/type=cpd/type=ldu/type=dir,%1%],]
24             [!eq,[!file/type=lnk,%1%],]
25            Write ,,,,,[!file,%1%] is not a directory.
26             [!else]
27   [!ne,%/trace%,]write Recycling on [!file,%1%]. [!end]
28              cd/recycle%/trace% [!file,%1%]
29             [!end]
30            [!else]
31             dir [!file,%1%]
32            [!end]
33          [!else]
34            write  ,,,,,%1% is not unique.
35            write  ,,,,,Your choices are [!file,%1%]
36          [!end]
37        [!end]
38       [!end]
39      [!end]
40     [!end]
41    [!end]
42   [!end]
43  [!else]
44  Comment Recycle processing follows.
45   string/name=path [!path %1%]
46   [!eq,[!string/name=path],]
47    string/name=xpath [!path,[!edir,%1%]]
48    [!eq,[!string/name=xpath],]
49     write ,,,,,You need to be more specific than %1%.
50    [!else]
51     [!ne,[!string/name=xpath],[!edir,%1%]]
52       [!ne,%/trace%,]
53  write Retrying on [!string/name=xpath]:[!efile,%1%].
54        [!end]
55        cd%/trace% [!string/name=xpath]:[!efile,%1%]
56     [!else]
57     write ,,,,,Could not find %1%.  Be more specific.
58     [!end]
59    [!end]
60   [!else]
61 [!ne,%/trace%,]write Trying [!string/name=path].[!end]
62    cd%/trace% [!string/name=path]
63   [!end]
64   Comment Now that wasn't so bad, was it?
65  [!end]
```

The "CD.CLI: Change Directory" is available on the NADGUG/Rational Data Systems bulletin board, 415/499-7628.

AOS/VS to NETWARE INTEGRATION



NOVELL Brings NetWare into Open Systems networking with support for industry standard NFS (Network File System) and TCP/IP networking protocols. Your NetWare servers already have the foundation for an enterprise-wide Open Systems integration strategy.

C&C brings AOS/VS into Open Systems networking by providing NFS and TCP/IP networking solutions for AOS/VS systems. You get network terminal access, file transfer, file sharing, backup, printing, electronic mail, and much more. This high performance, cost-effective software will allow you to utilize industry standard protocols.

This Open Systems networking architecture also provides integration from AOS/VS to other systems such as DEC, UNIX, HP, IBM, and many others.

Claflin & Clayton, Inc.

INDUSTRY STANDARD NETWORKING SOLUTIONS

203 SOUTHWEST CUTOFF
NORTHBORO, MA 01532

PHONE: (508) 393-7979
FAX: (508) 393-8788

Circle 6 on reader service card.

Related macros

cd...cli	used to handle "cd.." as in MS-DOS. Macro contents: "dir ^"
pushd.cli	pushes the current environment and then does a "cd" on the argument. Macro contents: "push;cd %1%"
popd.cli	does a "pop". Exists for consistency with "pushd". Macro contents: "pop"

Lines 14-16 recognize "cd" (with no argument) and generate a "dir/i".

Lines 17-21 recognize that no file matches and recycle to see if a link can be resolved to find a unique entry.

Lines 22-33 recognize that one file matches. If it is not a directory type of file, and it is a link, then it is recycled. If it is a directory type, it is used as the directory to change to. If it is not a directory type, then an error message is issued.

Lines 34-36 issue an error message if there is more than one file which matches.

Lines 37-43 close out the open conditionals for "non-recycled" processing.

Lines 44-65 handle recycled calls. This is where the provided filespec did not cleanly match something.

Line 45 gets a full pathname for the filespec.

Line 46 tests if there was a pathname.

Line 47 (there was no pathname) gets the full pathname of the directory portion of the filespec.

Lines 48-50 test if the directory portion pathname is known. If not, an error message is written.

Line 51 tests if the pathname from the directory portion differs from the directory portion. It will differ if there is a link in it.

Lines 52-54 are handy to see what is happening.

Line 55 tries all over (but not recycle) with the directory portion expanded, using that to prefix the simple filename provided.

Lines 56-58 execute if nothing else works.

Lines 61-63 execute if the pathname found on line 35 is not null. It tries all over (but does not recycle) with the expanded pathname for the original filespec.

Lines 64-65 terminate all remaining open conditionals.

Thus the rules (loosely stated) are:

1) If nothing matches, try expanding links and try again.
2) If the filespec is unique and a directory, go to it.
3) If the filespec is unique and a link, expand it and try again.
4) If the directory portion of the filespec contains a link, expand it and try again.
5) Otherwise, issue an error message and give up. Δ

Rick Holmes is employed by Computer Sciences Corporation. He uses Data General MV systems for some of his work on contract to the Weather Service Nuclear Support Office in Las Vegas, NV. He has worked with AOS and AOS/VS for more than 10 years. He may be reached at 2801 S. Westwood Avenue, Las Vegas, NV 89109; 702/295-1252.

BUSINESS BASIC UNDER MS-DOS!

With

MOUSE SUPPORT...

Pop-Up WINDOWS...

KPREV Index Support...

(*and of course*)

a ROYALTY-FREE RIGHT to reproduce and distribute executable files!

PCBB is an easy to use product which allows you to convert your existing double and triple precision D.G. Business BASIC applications and data over into a single or multi-user MS-DOS environment. Binary compatibility allows data and index files to be moved and utilized without modification.

PCBB features include on-line help, debugger, an editor which offers the look and feel of an interpretive environment and Compiler Driver which expedites the process of compiling source code without the creation of batch files. Special features such as support for extended or expanded memory, 128 user channels, pop-up window support, KPREV index support, an allowance for labels to be utilized instead of line numbers, and a Block Common area that can range in size from 512 bytes to 10K in size are standard. Utilities to maintain Data General compatible screen files, param, logical database and index file structures are also included.

Purchase of **PCBB** includes a royalty-free right to reproduce and distribute executable files.

Write, call or fax now for more information

MAS®

MarcAlan Software, Inc.

22096 North Pet Lane
Lincolnshire, Illinois 60069-4113
Voice: 1-800-728-7387
Fax : 1-708-634-9460

PCBB is a registered trademark of MarcAlan Software, Inc. All other product names and logos are trademarks or registered trademarks of their respective owners.
© MarcAlan Software, Inc. 1990

Circle 10 on reader service card.

Some points to check on checkpointing

by Tony Coor
Special to Focus

SYNOPSIS
The author begins a discussion of the effects on checkpoint performance when using a new version of the Infos product, Infos IIFC. Part 1 of 2.

The Infos IIFC product in its original incarnation, Infos II revision 6.00, was released some time ago (May 1991), and most have forgotten much about the features it introduced and how to make use of them. And even though the name of the product implies "fast checkpointing," this is not something that happens automatically once the product is loaded onto your system.

This article assumes that the reader is an Infos customer who currently uses or plans to use one of the differential file modes of operation. And based on that assumption, has experience or enough background to understand the file architecture that the Infos product uses to support this mode of operation. If you have experience or at least a basic understanding of how Infos files function in differential file mode, then you may skip on to the section entitled, "How are checkpoints performed?" If not, a review of the following section will provide a basic understanding of the underlying structure used by Infos in differential file mode.

Infos differential file mode

The basic AOS/VS file structure to support an Infos file consists of at least two control point directories (CPDs) and a number of sequential files within each CPD. The CPDs define the index and data base portions of an Infos file, where key and record information is kept, respectively. The actual data for keys and records are kept within each of the sequential files underneath the CPDs. These sequential files are called volume files and by default their filenames are "VOLnn," where ***nn*** is a sequentially assigned number. When creating an Infos file for the first time, users have the option of giving the volume files non-default names; otherwise, the naming convention described here is used.

When differential file mode is selected for an Infos file, a new convention is put in place. During the time that the file is active, a duplicate volume file will be created for each of the standard volume files in use. This duplicate file is called the differential volume and will bear the name of "DVLnn." Once again, ***nn*** is a sequentially assigned number, one for each of the standard volume files. Infos supports a maximum of 32 volume files for each CPD. This maximum includes the count of differential volume files as well. Therefore, in standard file mode an Infos file can have up to 32 volume files under each CPD; but when differential file mode is planned, a limit of 16 is necessary.

The structure of a differential volume is slightly different from its standard volume counterpart. Each differential volume file contains a bitmap at the beginning, but from that point on they are structurally the same. The bitmap contains a bit for each logical Infos page in the standard volume file. When a bit is set or turned on, it is an ordinal representation that *that* page in the standard volume has been modified. And in fact, these modified Infos pages are the only ones that are contained in the differential volume. Then at some point these modified pages are transferred back to the standard volume files. This operation is called a checkpoint.

This is a very high-level explanation of how differential file mode operates within the Infos product. If a more detailed understanding is necessary, then I recommend a review of chapter 7 of the *INFOS II SYSTEM USER'S GUIDE* on "Data Protection and Recovery," before continuing.

How are checkpoints performed?

To appreciate fully a comparison of checkpoint performance between Infos II and Infos IIFC, it will help to begin with a basic understanding of how a checkpoint is accomplished in each product design. Then we can address some areas where Infos IIFC features can be of use in many application environments.

The operation of checkpointing is basically a two-step process. The first step is to get the modified data in one place, preferably on disk and in the respective differential volume. This involves the flushing of modified data in memory back to disk. The second step is to transfer the modified data from the active location in the differential volumes to a more stable location in the standard volumes. This two-step process is commonly referred to by developers as "Flush" and "Stuff".

Infos II checkpoints

Although the basic principle behind the process is the same, the underlying methods involved to complete this task are quite different for each product. In Infos II, checkpointing (like most of the I/O) is performed through the operating system. The Infos data are brought into memory by an Infos II request that results in a *?SPAGE* call to the operating system. Initially, the operating system will bring the data from their disk location into a memory location.

It helps to understand as much as possible about how updates to your Infos files are occurring.

Subsequent requests for the same logical Infos page may pull the data from the system's least recently used (LRU) pool or disk. The dependency here is whether memory contention has forced the data back to disk, or they have never been touched by a previous request since the file was opened.

Since all Infos II data are accessed by an operating system call, it serves to reason that an operating system call would be used to do the flush, also. In this case, a *?ESFF* is used to force the modified in memory data into the

Data General • Buy • Sell • Trade

Processors:
MV40000 HA2 ..... SAVE $
MV40000 32MB ..... SAVE $
MV30000 Model 1, and MOD 2,3,4 Upgrades ..... Call
MV20000 16MB Models 1&2 ..... SAVE $
MV20000 Model 1 to Model 2 upgrade ..... SAVE $
MV 15000-20 upgrade from any system ..... SAVE $
MV10000 4MB $800
MV8000-II 8MB 500
MV9500 CPU w/32MB 14,000
MV9600 CPU w/32MB 25,000
MV8000 Model 9300 500
MV 7800/MV7800XP 4MB 16 Slot 1900/2900
MV4000 2MB 700
MV2000 Enhanced 4MB 160 MB disk 1,400
4380 ISC-2 (Synch) 150
AViiON All Models ..... SAVE$
AViiON 5225+ ..... Call
AViiON 4100 ..... Call
AViiON 4625 ..... Call
AViiON 6240 ..... Call

THOUSANDS of Parts For DG Machines

Processor Options:
4380 ISC-2 (Synch) $300
8997 Expansion chassis MV15, 20 1,000
8819 Second IOC for MV10000 300
8762 Expansion chassis 600
4543-B MCP1 8 Async 2 Sync DCH Ptr 450
4370 IAC-16 RS232, 20MA, W TCB $600
4623 IAC-24 w/TCB-24 2,900
ANY TERMSERVER OR TRANCEIVER .....
4532-A ILC 1,500
4560 LAC-12 350
4586 ITC-128 terminal controller 4,950
Aviion Comm Equipment ..... Call

Disk Storage Units:
6236 354MB Disk subsystem 250
6239 592MB Disk subsystem 1,150
6329 120MB MV2000/MV1400 400
6363 160MB MV2000/MV1400 600
6491 322MB for MV2500 or CSS 900
6554 662MB for MV2500 or CSS 1,000
6581 500MB R.A.M.S. Disk ..... Call
6720 CSS2 1.0GB Disk subsystem 3,500
6685 1.0GB Disk Drive A/O 1,500
6621 1.2GB Ram Disk 4,000
6061/6122 Zebra Disks or Parts ..... Offer
Zetaco ARZ, SKS and Laser Disk subsystems ..... Call

Specials
RAID 0 Thru 10
HiPerStor disk arrays used on MV, AViiON , SUN, HP, NOVELL, & More!

Terminals:
6165 D460 Monitor with keyboard $150
6166-X D410 Monitor with keyboard 130
6169-X D211 Monitor with keyboard 125
6391-X D214 Monitor with keyboard 140
6392-X D215 Monitor with keyboard 150
6393-X D411 Monitor with keyboard 160
6394-X D461 Monitor with keyboard 250
6500 D216 Monitor with keyboard 210
6682 D217 Monitor with keyboard 275
6567 D412 + Monitor with keyboard 275
6683-X D413 Monitor with keyboard 350
6568 D462 + Monitor with keyboard 500
6693G-X D1400i Monitor with keyboard 375
Wyse and Sherwood Terminals ..... Call

Tapes:
6026 800/1600 BPI Brown, FCC compliant 550
6341-A 1600 BPI Streaming Tape (SCSI) 1,100
6299/6300 1600/6250 BPI 950
6586-A Galaxy Tape (SCSI) 3,200
6587-A 1600 BPI Tabletop (SCSI) 3,900
Megatape GT - 88 -2 ..... Call
6590M 2GB Subsystem (SCSI) 2,500
6588/6589 6250BPI Tape (SCSI) 7,500/7,700

Printers
Genicom
Data prodcucts
Data South
Mannesman Tally

Memories
Data General and Third party memories available for all systems

International Computing Systems
P.O. Box 343 • Hopkins, MN 55343
1-800-522-ICSC (4272)
(612) 935-8112
FAX 612/935-2580

Call for our low prices!

Circle 24 on reader service card.

differential volumes. A *?ESFF* request is made for each differential volume, so if the file being checkpointed has 16 volumes (the maximum when using any of the differential file modes), then there will be 16 flush requests. An Infos file with at least one index and a data base CPD will result in a total of 32 *?ESFF* requests, 16 for the index differential volumes and 16 for the data base differential volumes.

The completion of the "Flush' phase means that all modified data have been written to disk and marks the point at which the checkpoint becomes restartable.

In other words, should a system crash occur after this point, you can restart the checkpoint process by using the *IRECOVER/RESTART* command.

Next is the "Stuff" phase. In Infos II this involves opening each differential volume and checking which logical Infos II pages have been modified using a bitmap. For each bit set, a logical page of Infos data has to be *?SPAGE*d into memory from both the differential volume and the standard volume. Once in memory, the modified data can be copied over the old data and the process moves on to the next modified page.

When all modified pages have been read and copied over the original pages, each of the standard volumes have to be flushed. This again is by use of a *?ESFF* system call. After this final flush is complete, the task of getting everything ready for future modified pages has to be performed. This process involves the disposal of the current set of differential volumes and replacing them with new ones. Each differential volume has to be deleted, created, and an initial allocation done so that a clean bitmap may be written. This process in itself involves notable impacts due to the extensive interaction with the AOS/VS filing system for active files.

This completes the "Stuff" phase, however, there still is a time-consuming task left to complete. Each active local server has to recognize the new differential volumes. This is accomplished by each one having to close and reopen any of the differential volume files they currently have open with the next Infos request they process.

DATA INVESTORS CORPORATION

247 Huyler Street
So. Hackensack, NJ 07606
(201) 343-8875
FAX# (201) 489-5633

COMMUNICATIONS

4623 IAC-24 W/TCB	$2,400
4370 IAC-16 RS-232 W/TCB-16	75
4368 IAC-8 RS-232 W/TCB-8	75
4370-A IAC-16 RS-422 W/TCB-16	75
4368-A IAC-8 RS-422 W/TCB-8	75
4380 ISC-2	75
4560 LAC-12	125
4561 LSC MV/2000	75
4626 LAC-32 W/TCB-32	900
4532 ILC W/ACCESSORIES	1,150

SYSTEMS & PROCESSORS

MV/20000 MOD1 8MB	$5,500
MV/15000 MOD-20	4,500
MV/15000 MOD-10	1,000
MV/15000 MOD-8	500
MV/15000 EXPANSION CHASSIS	600
8991 MV/15000 FPU	450
10766 PRIMARY EXP. CHASSIS	6,000
4812 ADD ON IOC MV35000	4,000
11224 GRAY CPU CABINET	1,900
MOD-20 CPU BOARD UPGRADE REV.79	2,400
8994 IOC-2/3 MV20000	600
91547 MV/2000 4MB 160 DISK TAPE NEW STYLE	1,200
8770 S/280 2MB W/BMC	500
DESKTOP SYSTEMS & PERIPHERALS	CALL
Exide 3 KVA UPS	300

DISK DRIVES & MAG. TAPE

6239 592MB ARGUS S/S	$800
6581 500MB RAMS DISK S/S	1,900
6581-A 500MB RAMS DISK ADD ON	1,200
6461 CSS 130MB TAPE AND 322 DISK	1,950
6161 147MB WINCHESTER S/S	700
6554 662MB FOR CSS	1,600
6491 322MB FOR CSS	700
6446 234 MB FOR CSS	350
6621 1.2GB RAMS ADD-ON	2,800
6363 160MB MV/2000	375
6100 25MB WINCHESTER W1/28	800
6300/6299 1600/6250 MAG TAPE S/S	850
6026 DUAL MAG TAPE S/S BROWN	750
6123 MICRO STREAMER BROWN	400
6270 DESKTOP CARTRIDGE TAPE	275
GT-88 2.3GB TARE BACK-UP	1,500
SPARC TAPE CONTROLLER	700
005-2169/6299/6300 CONTROLLER	200

MEMORIES

80108 32MB MV/9500/9600	$5,700
8990-E 32MB MV15000	2,750
8990-D 16MB MV/20000/15000	800
8990-C 8MB MV/20000/15000	300
8939 MV/7800XP 4MB	250
8871 8MB MV/4000/10000	800
8927 4MB MV/2000 NEW STYLE	400
8870 4MB MV/4000/10000	200
80076 MV/7800XP 12MB	1,600
80130 16MB MV/30000	3,900
8754 512KB S/140	200
8687 256KB S/140	150
8387 256KB NOVA/4	200
8656 256KB ECLIPSE	100
DESKTOP MEMORY	CALL

TERMINALS & PRINTERS

D-216, D-412, D-462, D-470C	Start at $140
D-214, D-215, D-411, D-461, D-220C	Start at 110
D-210, D-211, D-410, D-460	Start at 90
B-1000 1000LPM BAND S/S	1,400
4364 600 LPM BAND S/S	900
4590 240 CPS	125
6215 180 CPS PRINTER	450
P-300 PRINTER	450
4434 160 CPS PRINTER	500
6475 12 PPM GRAPHICS LASER	700

Data Investors is a worldwide specialist is Data General Equipment. We have been buying and selling pre-owned Data General Equipment for 16 years. All equipment is shipped from our facilities, thoroughly tested and guaranteed eligible for Data General Maintenance.

Circle 15 on reader service card.

Infos IIFC checkpoints

Infos IIFC has specified "Flush" and "Stuff" phases, but the underlying methods differ. The design of Infos IIFC limits the number of logical and physical faults that may occur on Infos data due to other system activities. Infos IIFC controls this by creating its own buffers for managing Infos data and handling its own I/O by using read and write block I/O system calls, *?RDB* and *?WRB*, respectively.

Infos IIFC data are tracked by use of a hashing algorithm and chains, or lists, or memory addresses. One such chain is a "file chain" where all data associated with a particular file are managed or linked together. The "Flush" phase moves through the file chain for the Infos file being checkpointed and, using block I/O calls, writes the modified pages to the differential volumes. Like Infos II, this is an exercise that has to be performed on each differential volume. And like Infos II, once the "Flush" phase is complete the checkpoint is restartable should anything happen to the system from this point on.

The "Stuff" phase is where the design of Infos IIFC can make a difference. This process of transferring the modified data to the standard volumes is again performed by use of *?RDB* and *?WRB* system calls. However, it's the amount of data that can be processed in each call that makes the difference.

The differential and standard volumes are opened and a bitmap is still used to determine which pages have been modified. When there is a series of contiguous modified pages, they are grouped together in a single transfer. This group of data is read from the differential volume in a single *?RDB* request and then written to the standard volume in a single *?WRB* request. This method of transfer can handle up to 252 contiguous blocks of information.

For large page Infos files (4,096-byte page size) that results in 31 logical Infos pages of data moved with just two system calls, and for small page Infos files (2,048-byte page size) that's 63 logical pages. So the performance of the checkpoint process in Infos IIFC is directly related to how sparse the modifications are in the differential volumes.

For example, suppose a program modifies 1,000 logical Infos pages of data in a 1-million-page Infos file. If all these pages are added to the end of the file, there would be 1,000 contiguous modified pages—a best case for Infos IIFC. But suppose another program modifies 100 pages in a 200-page Infos file, but in this case every other page is modified. The net result is that no two modified pages are contiguous to each other—a worst case for Infos IIFC. Assuming that both involve small page Infos files, the 1,000-page case will take only 16 *?RDB*/*?WRB* system calls, but the 1000-page case will take 100 *?RDB*/*?WRB* calls.

So as you can see, it helps to understand as much as possible about how updates to your Infos files are occurring. In many cases, the larger the number of modified pages, the greater the likelihood that they will occur in contiguous groups, but there are no guarantees.

Once the "Stuff" phase is complete, the differential volumes are of no use, but by default in Infos IIFC they are reused. The bitmap is cleared and the rest of the file will remain intact. The existing pages are overwritten as requests once again begin to be processed. This is a considerable saving in processing time, as there is no longer the interaction with the AOS/VS filing system to delete, re-create, and reallocate this space. Also, there is a time saving for each local server because they no longer have to close and reopen each of their active differential volumes with their next request.

There is an option for those who have been dependent on this space for other uses. Infos IIFC includes a special extension to the current differential files modes, called "Delete Volumes" (DV) mode. DV mode will cause the differential volumes to be truncated to just the bitmap. Although this is more efficient than deleting and recreating the differential volumes, subsequent Infos requests still incur the overhead of reallocating space as data are modified. Δ

Tony Coor is a principal software engineer with Intelligent Information Systems, Inc. He may be reached at 62 T.W. Alexander Drive, Research Triangle Park, NC 27709; phone 919/248-6104 or fax 919/248-5989.

More GO For Your DOUGH With SCIP Memory

Ample main memory will increase the productivity and options of your users, and we make it affordable.

We design and manufacture value-priced memory for DG workstations and systems . . . .

MV2500
MV3200, 3500, 3600
MV5500 & 5600
MV7800 XP
MV9300, 9500, 9600
MV15000, MV18000
AViiON Servers and Workstations

Bottom line . . .

- ✓ a fraction of the cost
- ✓ 100% compatible
- ✓ lifetime warranty
- ✓ accepted by DG service
- ✓ trial evaluation

. . . so give us or your dealer a call for value . . .

(310) 282-8700

FAX (310) 839-4464

SCIP

441 S. Beverly Dr. #2
Beverly Hills, CA 90212

Circle 39 on reader service card.

Infos migration now a reality

SYNOPSIS

Automated Infos migration means organizations can rapidly and smoothly migrate their entire applications and data to Unix and industry-standard Cobols without the need to re-engineer or undertake lengthy manual conversions.

by Leigh Hebblethwaite
and Mark Whitworth
Special to Focus

How many times do you hear of an organization re-engineering (the currently fashionable term for re-developing) its proprietary applications to take advantage of an open systems development environment or relational data base management system (RDBMS)? And how often are you told later that the project is taking a lot longer and costing a lot more than was originally predicted?

Promises of quick development cycles and improved functionality from RDBMS and 4GL vendors helped to make application re-engineering one of the fads of recent years. The desire of many organizations to move to such environments in open systems was so strong that they would endure almost any pain, including totally rewriting their software, to achieve this goal.

But as we all know, there are two major downsides to re-development. Firstly, it requires organizations to write off their substantial investment in existing software, which has usually been developed over many years—at considerable cost—to deliver a high level of functionality and performance. Secondly, the risk in re-development is high; there is no guarantee of success. Numerous examples illustrate that the re-development may have to be abandoned because of massive time/cost overruns or poor performance. At best, the organization will have to wait months, and probably years, to see the first tangible benefits from its new development platform.

Now, most of us have seen enough of these projects go wrong to conclude—and quite rightly—that re-engineering is not the migration panacea for proprietary applications. In these times

Phone (313) 285-2644 Fax (313) 285 2119

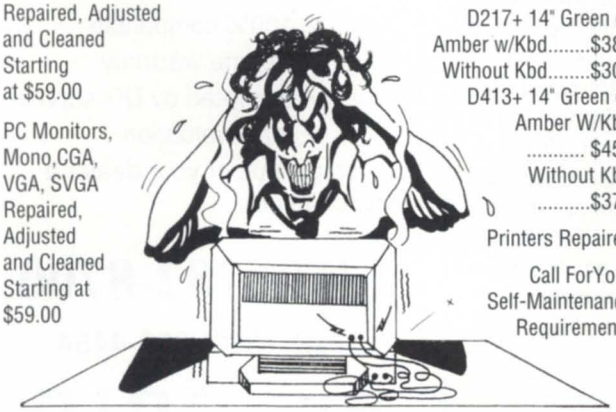
BLUEMOON

Terminal Downtime Driving You Mad?

Fast Turnaround
90 Day Warranty

All Data General Monitors Repaired, Adjusted and Cleaned Starting at $59.00

PC Monitors, Mono,CGA, VGA, SVGA Repaired, Adjusted and Cleaned Starting at $59.00



★ New Terminals ★
D217+ 14" Green or Amber w/Kbd.....$388
Without Kbd.....$305
D413+ 14" Green or Amber W/Kbd $459
Without Kbd $376

Printers Repaired

Call ForYour Self-Maintenance Requirements

BLUEMOON Computer Sales & Support
2947 First St. Wyandotte, MI 48192
Phone (313) 285-2644 Fax (313) 285 2119

Circle 44 on reader service card.

YOU NEED DATA GENERAL EQUIPMENT.
YOU NEED IT NOW. YOU NEED IT PRICED RIGHT.
AND IT HAS TO MEET YOUR SPECIFICATIONS.

CPU's		MV4 & MV10 8MB	$400
MV 20000	$3,900	MV4 & MV10 4MB	$300
MV 15000 Mod 20	$3,500	MV4 & MV10 2MB	$200
MV 10000	$1,900	Memory For All Other DG Processors IN STOCK	
MV 7800 XP w/4 MB	$2,300	**CRT's & PRINTERS**	
MV 7800 w/4 MB	$1,700	BP1500 Printer	$3,500
MV 4000	$500	4374 Printer	$3,900
MV 2500	$2,900	B1000 Printer	$2,900
MV 2000	$1,500	B600 Printer	$1,500
S280	$1,500	B300 Printer	$975
S/140	$900	D461 CRT	$350
Nova 4X	$750	D460 CRT	$220
Desktop Systems & Peripherals	CALL	D411 CRT	$225
DISK & TAPE		D410 CRT	$175
MV 2000 Disks and Tapes	CALL	D462 CRT	CALL
6239 592MB S/S	$1,500	D216 CRT	CALL
6236 354MB S/S	$600	**COMMUNICATIONS**	
6161 147MB S/S	$700	IAC/16	$400
6299 6250 BPI Tape	$1,300	IAC/8	$200
6125 Tape S/S	$595	ATI/16	$150
6026 Tape S/S	$595	AMI/8	$150
MEMORY		LAN Controller	$2,000
MV 9600 32MB	$5,000	LAC-12	$400
MV15 & MV20 32MB	$3,500	IAT/128	$4500
MV15 & MV20 16MB	$2,300	IAC/24	$2,500
MV15 & MV20 8MB	$500		

"THE SOLUTION"

SECURITY COMPUTER SALES

Phone: (612) 227-5683
FAX: (612) 223-5524
622 Rossmor Building
500 N. Robert Street
St. Paul, MN 55101

Circle 41 on reader service card.

of tightened budgets and more realistic assessments, the fundamental objective of the vast majority of MIS professionals is the delivery of cost-effective solutions to meet users' real needs, and that is now governing their systems decisions.

So if re-engineering is not the solution people once thought it to be, what other options are available for open systems migration? The most attractive scenario is often to make the existing application run in the new environment. But surely, you say, if the application is not compatible with the open systems environment, then the sheer effort of altering the code and data negates the whole process? You might as well throw your software away and start again. Until recently, that has indeed usually been the case, but in the last few months the picture has changed dramatically.

The issues

There are essentially two problems with moving a proprietary legacy system to Unix—migrating the data base and migrating the application code. Let's take, as an example, a typical MV-based application written in AOS/VS Cobol using Infos as its data base manager. What are the issues? Well, for a start, Infos has a hierarchical data structure, which is virtually impossible to replicate under any other DBMS. Not only is conversion a complicated process, it also demands changes to the design and function of the application, because the Infos data structure is an integral part of any Infos-based application.

Then there's the question of the application code. AOS/VS Cobol partially conforms to ANSI standards, but its Infos and other DG-specific features make it incompatible with its Unix successors, such as Acucobol or Micro Focus Cobol. For the application to compile under Unix, therefore, the AOS/VS code must be modified substantially.

Solving the problems

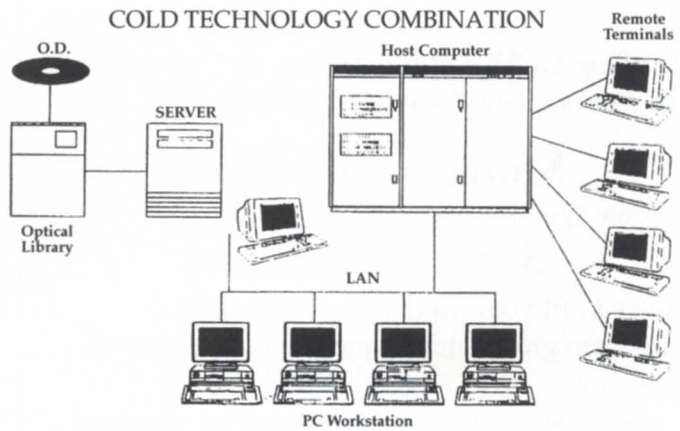
How can these two major migration hurdles be overcome? As for the Infos problem, one answer is to support the DG data base management product on Unix. For marketing reasons, Data General has not ported Infos to DG/UX, but alternative options are now available with the introduction of Infos Unix clones. Transoft's U/FOS product, announced in June 1993, is the first such offering. By providing complete functional compatibility with Infos on an open systems platform, such clones circumvent the data-conversion issue altogether. It is important to retain the indexed hierarchical data structure of Infos, along with familiar utilities such as ICREATE, IVERIFY, INQUIRE, and DDUMP. U/FOS also offers improved data compression and improved checkpointing.

This leaves the problem of converting AOS/VS Cobol into a form a Unix compiler can understand. Historically this has been a laborious, semi-manual

Coinserv™

Storing and Retrieving Formatted Computer Data

- A Client/Server Solution System Utilizing Optical Disk Technology for On-Line Storage, Retrieval and Distribution of Computer Output Data.
- Eliminates the Need for Multiple Copies of Computer Printouts and/or Microfilm and Microfiche.
- Dramatically Reduces Retrieval Time For Page Data Such as Statements, Invoices, Internal Reports and Transaction Detail.



INSCI
AN INFORMATION SOLUTION COMPANY

One North Lexington Avenue
White Plains NY10601
914/428-7766

Circle 51 on reader service card.

The Best Products
The Best Service
The Best Price

ARC

Data Compression & Library Software for **UNIX, AOS/VS**, DOS, and OS/2 .

Now has ***Data Encryption*** and ZARC Freeware!

From one platform to another,
.... its all the same to ARC !

AIM - Version 3.0!

Compress CEO Documents with *IMMEDIATE* On-Line Restoration , ***-by the user!***

Automatic ARChiving of Documents that are not in use.

FREE AIM Survey of your CEO Documents. Find out the real status of your CEO system.

TurboTran

Xmodem/Ymodem File Transfer

Supports Speeds Up To 38.4KB

Integration with SmarTerm, EMU, and Others

MV *to* UNIX or LAN Conversions

Including **CEO, Applications, & Operations**
Also, - Complete Turnkey Conversions to:

Motorola 900 Series

The Only System with a Full

5 Year Warranty

Grows to fit your needs, 1 to 1,000 users.
As system grows, new components "snap on" for expansion.

Data Bank Associates, Inc.
20010 Century Blvd., Suite 104
Germantown, MD 20874
1-800-289-3224
Fax 301-540-8105

Circle 11 on reader service card.

task, which only a small group of specialist consultants were capable of undertaking. However, by using compiler technology, Transoft has developed products that largely automate the conversion of AOS/VS Cobol code to other forms, such as Acucobol or Micro Focus Cobol-compliant code. High-level interfaces are also available for AOS/VS Fortran and C applications.

Automated Infos migration

Automated Infos Migration (AIM), a term coined by Transoft, means that for the first time, organizations can rapidly and smoothly migrate their entire applications and data to Unix and industry-standard Cobols without the need to re-engineer or undertake lengthy manual conversions. The benefits go beyond dramatic reductions in time and cost. The virtual elimination of risk is an enormous benefit, and because they are less dependent on external specialist expertise, users have greater control and can make full use of internal resources.

But automated Infos migration is not just about migrating a "static" application. Acucobol and Micro Focus Cobol provide modern, more powerful development environments; planned U/FOS developments include new RDBMS-type features. New COMMIT and ROLLBACK functions will provide RDBMS-level data integrity and recovery, and maximum uptime in critical applications. SQL reporting is also under development, using Transoft's U/SQL technology.

Now a reality

By the end of 1993, Transoft had converted, on a test basis, six sets of Infos-based code and/or data from different organizations in the United States and Europe, and its automated Infos migration products were installed at two customer sites. Lloyds's of London insurance syndicate R.J. Wallace & Others in November 1993 used U/FOS and the other Transoft products to convert a pilot project subset of its MV-based AOS/VS Cobol applications—60,000 lines in all—to Micro Focus Cobol running on a loaned Aviion. The pilot was so successful that the company now plans to purchase a dual processor Aviion 8500 and use automated Infos migration software and move all its AOS/VS applications. The strategy is estimated to save the company more than $1.5 million in redevelopment and retraining costs.

Jim Davis, director of systems and administration with R.J. Wallace, explained: "We decided some time ago that our strategic direction was in open systems, but a sister company had spent several years and a lot of money on a rewrite, and we were looking for a better way. The U/FOS concept exactly met our needs and Transoft's pilot-project approach eliminated the enormous risk associated with conventional redevelopment." Δ

Leigh Hebblethwaite and Mark Whitworth, both formerly with Data General Corporation, are Transoft AIM migration consultants. Leigh joined Transoft from DG UK Professional Services and Mark was formerly with DG Customer Support in Atlanta. Leigh is at Transoft, Slough, England +44 753 692332 and Mark may be contacted at Transoft, Atlanta, 404/933-1965.

Shop Our Million Dollar Data General Inventory And Get "Right-On-Time" Delivery.

• Million dollar inventory of systems, peripherals, parts and equipment • From Nova to MV -- you get "Right-On-Time" delivery • Highly skilled engineers • Valuable assistance, consulting, training and installation • Customer service reps with broad product knowledge • Problem solving advice • All backed by RAVE's 60-day warranty

• Sensible business solutions with significant bottom line value •

SELL • BUY
LEASE • RENT
Data General & Compatibles

We Also Sell Sun Microsystems

Sun Microsystems Computer Corporation
Authorized Refurbishment Reseller

Announcing -
RAVE FINANCIAL SERVICES, INC.

- Complete In-House Financing
- Custom Leasing Packages
- Long or Short Term Programs
- Rentals Available

Rave Computer Association, Inc.

36960 Metro Court
Sterling Heights, MI 48312
(313) 939-8230 / Fax: (313) 939-7431
International office
(516) 929-5000 / Fax: (516) 929-5007
1-800-966-7283

Circle 36 on reader service card.

The latest products for Data General systems

Support for Informix-Online Dynamic Server 6.0

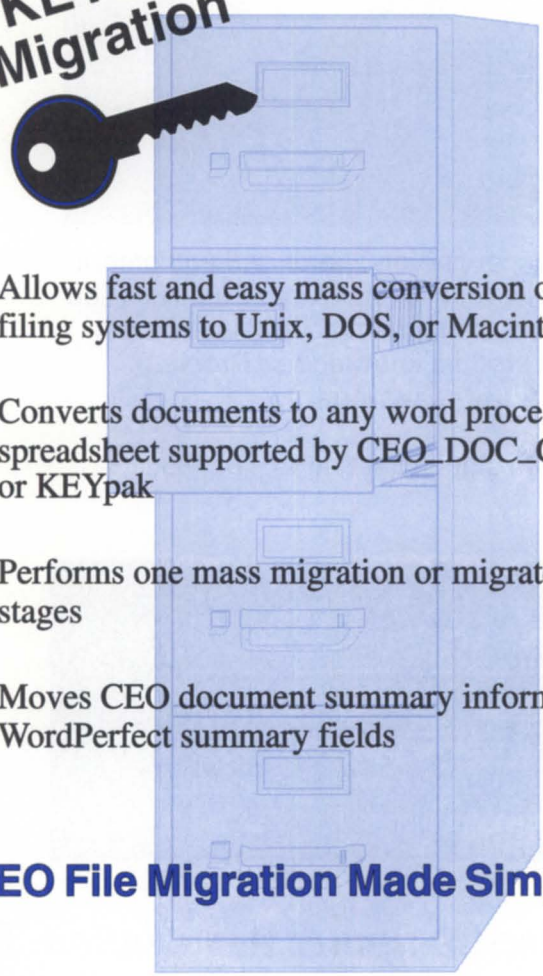
Westboro, MA—The new Informix-Online Dynamic Server 6.0 will be available on Data General's Aviion family of servers. Informix and DG are working on a joint project to enhance performance of the product on DG's symmetric multiprocessing (SMP) platform.

Informix-Online Dynamic Server is a next-generation data base server that incorporates Informix's first implementation of its new parallel processing data base technology—the Informix Dynamic Scalable Architecture (DSA), which utilizes an internal parallel processing approach to allow data base tasks to be broken into subtasks and processed in parallel. This dramatically improves performance on tasks requiring large amounts of data: complex queries, batch jobs and reports, backups and restores, index builds, and bulk loads and unloads.

Data General Corporation, *4400 Computer Drive, Westboro, MA 01580; 508/898-6392.*

CABINET_CONVERTER™

The KEY to CEO Migration



- Allows fast and easy mass conversion of CEO filing systems to Unix, DOS, or Macintosh
- Converts documents to any word processor or spreadsheet supported by CEO_DOC_CONVERT or KEYpak
- Performs one mass migration or migrates in stages
- Moves CEO document summary information to WordPerfect summary fields

CEO File Migration Made Simple!

EAGLE SOFTWARE, INC.

EAGLE Software, Inc.
123 Indiana Avenue
Salina, KS 67401
Phone: 913-823-7257
FAX: 913-823-6185

Call Today
1-800-477-5432

CABINET_CONVERTER is a trademark of EAGLE Software. Other product names, symbols, or trademarks shown herein are the property of other companies.

Circle 20 on reader service card.

Another RAID

Minneapolis, MN—Zetaco, Inc., a supplier of data-storage solutions, announced a new series of high-performance, high-availability RAID (redundant array of inexpensive disk subsystems for the Data General Aviion platform, as well as a new series of high-performance, multi-function data-storage subsystems.

The Series 7700 disk-array products support RAID levels 0, 1, 3, or 5 and offer integral capability to connect to other platforms. Available in both tabletop and deskside configurations, the Series 7700 can be repaired under power ("hot swap"), allowing continuous uptime. Scalable capacities provide storage ranging from 5 GB to more than 21 GB per enclosure.

The Series 9900 subsystems include magnetic disk, optical disk, and helical scan tape subsystems in a variety of configurations designed for multiple applications and requirements.

Available in rackmount, tabletop, and deskside enclosures, some Series 9900 configurations provide RAID level 1 (mirroring) and can be repaired under power to provide continuous uptime.

Zetaco, Inc., *11440 Rupp Drive, Burnsville, MN 55337; 612/890-5135 or 800/328-2719.*

List management

La Crosse, WI—Merge/Purge Custom from Postalsoft, Inc., is software designed for companies specializing in sophisticated list management and direct mailing, enabling them to customize merge/purge processing and results.

ENJOY

The Benefits of Belonging.

As a NADGUG member, an entire world of benefits becomes available to you.

FOCUS MAGAZINE NADGUG's monthly publication is devoted exclusively to users of Data General equipment. FOCUS is full of technical articles, product reviews, user profiles, and announcements of the latest products — no matter what kinds of systems you're running, FOCUS has the information you need!

ANNUAL CONFERENCE AND EXPOSITION NADGUG's Conference and Exposition is part of the largest annual Data General gathering in the world. In conjunction with DG's Sales and Systems Engineers meeting and SOURCE, the annual VAR conference, NADGUG provides Data General users the ultimate forum to confer with everyone who is anyone in the Data General community. Join us in Atlanta, October 25–28, 1993, for NADGUG's 20th Anniversary celebration!

ELECTRONIC BULLETIN BOARDS NADGUG's member bulletin board system is run by Rational Data Systems, with US Robotics modems for service from 1200 to 9600 baud. Dial 415-499-7628 to communicate with other users and to download/upload programs and utilities!

NADGUG members can also access Data General's DASH, or Direct Access for Support Help, Bulletin Board. Dial 800-327-4272 for on-line sign up today!

SOFTWARE LIBRARY NADGUG now has two software collections available for members. Both the AOS/VS and UNIX library tapes are full of programs, utilities, and macros — for any Data General system!

NADGUG MEMBER DIRECTORY The annual directory provides members with a personal guide to users with similar hardware, software, and system needs. This year's directory will present for the first time a Product/Service section.

REQUEST FOR ENHANCEMENT PROCESS Through NADGUG's Special Interest Groups, members have the opportunity to review and prioritize specific product Requests for Enhancements (RFEs). In addition, at NADGUG's annual conference, SIG forums review product enhancements and present them to the development teams with their recommendation for inclusion in the standard product or for follow-up.

REGIONAL AND SPECIAL INTEREST GROUPS RIGs and SIGs are two of the most effective ways that NADGUG promotes the free-flowing interchange of valuable information. RIGs are organized by people who are interested in getting together on special occasions or on a regular basis. SIGs are put together by people who want to share information about common products, technologies, or applications. Join one today!

NORTH AMERICAN
DATA GENERAL
USERS GROUP

Join the Group. Call 1-800-253-3902 (ext. 1234), and ask for more information about NADGUG membership benefits.

Circle 29 on reader service card.

Merge/Purge Custom is a programmable extension of Postalsoft's current Merge/Purge Plus product. It allows users to perform specialized merge/purge operations by writing their own routines in the C programming language. The software lets users exit normal processing, run a routine they've written, and re-enter normal processing with the results from that routine. This can be done at a number of different times during processing.

Merge/Purge Custom allows users to add to, override, or match criteria for duplicate detection. It will overlook name, address, or other information if the user says the Social Security number is always a match. The software can also be used to precisely target direct mailings.

After duplicates have been removed, it will limit the number of mail pieces sent to a specific geographic area. The system allows users to access additional data for customized client reports and to help with list evaluation, determining where the largest share of duplicates are coming from.

The system runs on several Unix computers, including Data General's Aviion series.

Postalsoft, Inc., *4439 Mormon Coulee Road, La Crosse, WI 54601-8231; 608/788-8700.*

Image-processing

Plano, TX—Mentalix, Inc., has ported "Pixel!FX 2.5," the newest version of its family of image-processing software, to all major Unix platforms, including Data General's Aviion.

Version 2.5 adds several enhancements to the input, processing, and storage of image-based data, including:

- User-transparent links to Framemaker and Interleaf publishing programs.
- Support for additional input, output, and image-compression file formats.
- Enhanced optical character recognition (OCR) capabilities such as support for European languages and multiple-page OCR scans.
- Integration with earth science image-processing application ER Mapper.

"Pixel!FX 2.5" integrates three standalone software modules, including: "Pixel!SCAN," which serves as a high-performance interface to a variety of scanners; "Pixel!VIEW," which enables users to display and translate images in a variety of file formats; and "Pixel!EDIT," a comprehensive image enhancement and photo-retouching application. Also available is "Pixel!OCR," an optional package that enables scanned line art to be accurately converted to text and imported into virtually any publishing or word-processing program for text editing.

The U.S. suggested list price for "Pixel!FX" is $1,599.

Mentalix, Inc., *1700 Alma Drive, Suite 110, Plano, TX 75075; 214/423-9377.*

DG, SUN
& MOTOROLA
BUY & SELL • NEW & USED

CPU's
SUN ELC, SLC, IPC, IPX
SUN S/10-GX SYSTEMS
SUN 4/75-GX SYSTEMS
Motorola 3, 4, 8000 SYS
AViiON SYSTEMS
MV/15000, 20000
MV/10000, 18000
MV/8000, 7800, 78XP
MV/4000, 4000DC
MV/2000, 2500

MEMORY
MV, ECLIPSE, AViiON
NOVA & MICRO NOVA

PRINTERS
6215, 6216
GENICOM
Data Prod B300,B600
Printronics P-300
HP LASER JET I, II, III, IV

DESKTOP
DG/10, 20, 30 PKG
15, 38, 71 MB DISK
USAM-4, USAM -1
CARTRIDGE TAPE
MEMORY

COMMUNICATIONS
IAC-8, 16, 24
VME ASYNC/SYNC
COM BASIC I/O
ATI-16, AMI-8
ALM-8, ALM-16
LAC-12,16,32

DISK / TAPE
ALL SUN DRIVES
322, 332, 662MB
500MB, 1.2GB 1.4GB
354, 592 MB
10, 12.5, 25, 50MB
6231 CART N/E
6026, 6123, 6125
6299, 6300, 6021

CRT'S
WYSE (All Models)
D-210, 211, 410, 460
D-214, 215, 411, 461
D-216, 412, 462, 470
D-217, 413, 463

SUN MONITORS
NCD -15,16 X-TERM
365 - 1112 HR Color
365 - 1160 HR Color

WANTED ★★★★ AViiON, SUN WYSE - 60's

AMES SCIENCES, INC.
1787 Chancellor Point Rd., Trappe, MD 21673
410-476-3200 • Fax 410-476-3396

Circle 1 on reader service card

Do you have any idea how fast you're going?

❑ System Calls ❑ ❑ Networking ❑ ❑ Processes ❑ ❑ Memory ❑ ❑ History ❑

❑ Character I/O ❑ ❑ Scheduling ❑ ❑ CPU Usage ❑ ❑ Overview ❑ ❑ Disk I/O ❑

DG/UX Real-time Performance Monitor

❑ Highlights key performance statistics on a single DG/UX system
❑ Helps to quickly identify performance bottlenecks
❑ Displays data over short or long periods of time
❑ Shows maximum and minimum values with the times they occurred
❑ Displays process information - sorted by CPU, Memory, Priority...
❑ Saves screen images to disk for later evaluation

Now with Logging and Playback!

This is the DG/UX performance tool you've waited for!

Data General Systems Evaluation and Performance Analysis Center (SEPAC)
4170 Ashford-Dunwoody Road, Suite 300
Atlanta, GA 30319
(404) 705-2520
FAX (404) 705-2660

Data General
Where the World is going!

Circle 14 on reader service card.

New editing interface

Bedford, NH—Version 4.0 of the customizable text editor "nu/TPU" from a/Soft Development, Inc., introduces a new and improved interface—a more polished editor and development tool for MS-DOS, Windows NT, OS/2, and Unix.

The product's interface has been rewritten, translating into faster performance and easier-to-create extensions. Nu/TPU's interface, dubbed ***si*** for ***s***imple ***i***nterface, gives end users more flexibility when customizing the editor. The v4.0 windowing system provides programmability with X-Windows and MS Windows environments. Nu/TPU's windowed environments are now completely user-definable; the status line buttons, menu bar, pull-downs and popups, color, fonts, and scrollbars can all be customized from within the editor to the user's personal preferences.

Memory management now allows large files to be edited without contiguous memory allocation, which in turn speeds character manipulation in these files. Version 4.0 has added multiple scrollbars for each window, making cursor movement quicker and easier to toggle. Buffer names are now case-sensitive. Unlimited "undo" allows users to retrace their commands as far back as they would like.

Pricing for nu/TPU for Unix starts at $499, and at $199 for MS-DOS.

a/Soft Development, Inc, *One Executive Park Drive, Bedford, NH 03110-6913; 603/666-6699.*

Network connectivity

Madison, WI—Persoft, Inc., announced that it is adding support of Novell's Netware for LAT to its line of Smarterm for Windows terminal emulation and network connectivity products. The combination of Netware for LAT and Smarterm for Windows is intended to allow easier connectivity to networks using IPX/SPX protocols and Novell software. Smarterm for Windows includes Smarterm TCP/IP as a Windows Sockets DLL, LAT, support for most third-party TCP/IP software, and NDIS and ODI drivers for ethernet and token ring networks.

Netware for LAT support will be included in Smarterm 470 for Windows version 3.0, which includes Data General terminal emulation.

Persoft, Inc., *465 Science Drive, P.O. Box 44953, Madison, WI 53744-4953; 608/273-6000.*

Continued on page 35

Spellchecking Autocad

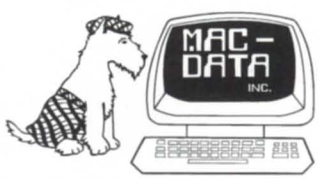
Waterbury, CT—"CADmagic SpellCheck" version 2 for Autocad DOS or Autocad Windows is a quality-assurance tool for use in professional CAD (computer-assisted design) environments. It provides a rapid and thorough check and correction of the entire

L.A.M.P.™ will light the way for an effortless migration path.

*Your **migration** from Cobol/Infos need not be arduous if you use **L.A.M.P.**™ (**L**ow-cost **a**pplication **m**igration **p**ackage) from Monarch Software, MAC Data & Acucobol.*

We have teamed up to provide the users of Data General's Cobol/Infos, executed on AOS/VS platforms, the ability to port their application to the more cost effective DG/UX on an AViiON. Monarch's OFM™ provides D.G.'s INFOS functionality while dramatically improving performance. Acucobol's ACUCOBOL/85™ conforms to the ANSI'85 standard, with far more features and enhancements than are available from D.G.'s 32 bit Cobol product. MAC Data, brings these two powerful products together with our Infosout™ interface and source code conversion utility.

*Cobol users who eventually plan to redesign their application for a 4GL will be pleased to know that Acucobol has anticipated their desires by developing a utility called Acu4GL™ that provides a seamless interface from Cobol to several RDBMS products. So, if you want to get from where you are to where you want to be, call MAC Data **(1-800-878-8783)**.*



MAC Data, Inc.
429 Main St.
Watertown, CT 06795
Fax number 1-203-274-7593

Circle 26 on reader service card.

AD INDEX

Company	PG#	RS#
Ames Sciences, Inc.	32	1
Asset Remarketing	6	3
Async Systems, Inc.	8	4
Bluemoon Computer	26	44
Claflin & Clayton, Inc.	17	7
Claflin & Clayton, Inc.	20	6
Clearview Software	8	45
Computer Engineering International, Inc.	9	8
Computer Wholesalers, Inc.	17	9
Data Bank Associates, Inc.	28	11
Data General Corporation	2	13
Data General Professional Services	32	14
Data Investors Corporation	24	15
Digital Computer Consulting, Inc.	12	17
Digital Data Systems	12	18
Eagle Software, Inc.	30	20
Gerry Manning & Associates	35	22
INSCI	27	51
Intelligent Information Systems, Inc.	13	25
International Computing Systems	23	24
Mac Data, Inc.	33	26
MarcAlan Software, Inc.	21	10
Monarch Software	C4	28
NADGUG	31	29
National Computer Dynamics	12	31
Park Place International	15	33
PereLine Data Systems	35	-
Persoft, Inc.	5	34
Productivity Systems Development Corporation	10	38
R&D Computers	35	35
RAVE Computer Association	29	36
Rhintek, Inc.	11	37
SCIP	25	39
Scott McIntyre & Associates	C3	40
Security Computer Sales, Inc.	26	41
Sysgen Data Ltd.	19	43
Threshold, Inc.	19	47
Transoft Ltd.	C2	48
Wild Hare Computer Systems, Inc.	1	16

PRODUCTS AND SERVICES

Company	PG#
a/Soft Development, Inc.	33
Data General Corporation	30
Eden Systems Corporation	35
Haestad Methods, Inc.	35
Mentalix, Inc.	32
Persoft, Inc.	33
Postalsoft, Inc.	32
Zetaco, Inc.	30

ON-LINE HELP

***Who to call for answers about* NADGUG *and* FOCUS**

NADGUG address:
c/o Danieli & O'Keefe Associates, Inc.
Chiswick Park, 490 Boston Post Rd.
Sudbury, MA 01776
FAX: 508/443-4715

FOCUS Magazine address:
c/o Turnkey Publishing, Inc.
P.O. Box 200549
Austin, TX 78720
FAX: 512/335-3083

NADGUG

Membership, RIGs, SIGs
NADGUG staff **800/253-3902**
(Outside the U.S and Canada.) **508/443-3330**

Electronic bulletin boards
(300,1200, 2400, or 9600 baud modem)
Rational Data Systems **415/499-7628**
DASH bulletin board (2400 bps modem) **800/DASH-CSC**
Data General Customer Support Center **800/344-3577**

FOCUS Magazine

512/335-2286

Editorial comments, article suggestions.....Doug Johnson
(please send product announcements to the address listed above)

Information about advertising.....Susan de Blanc

FOCUS back issues .....Turnkey Publishing staff

NOW AVAILABLE--ICHOST MS-DOS NETWORK VERSION
NO EXTRA CHARGE--CALL FOR DETAILS

ICHOST™
TOTAL ICOBOL SOLUTION

Recognize these names? You should!
They represent the state of the art in computing today. Combine **ICHOST™** with one of these big names and get the best ICOBOL runtime and development system money can buy!

If you are developing and running ICOBOL applications with anything but **ICHOST™**, or you want to know more about the advantages of running ICOBOL with **ICHOST™** give us a call. Dealer discounts available.

Make **ICHOST™** your total ICOBOL solution

Gerry Manning & Associates
3311 Candelaria Road, Suite E
Albuquerque, NM 87107
Phone: (505) 888-5011
Fax: (505) 883-7708

Our U.K./Europe Distributor:
Broadnet Ltd., Falcon House
North Feltham Trading Estate
Feltham, Middlesex, TW14 OUQ
Phone: 081 893 1515
FAX: 081 893 2183
Contact: Roland Eckert

DGCOBOL Compiler AS LOW AS $595.00!
Compile ICOBOL in DOS & UNIX environments
Enhanced error documentation & compile times

Circle 22 on reader service card.

Continued from page 33

Autocad drawing. All of the drawing's words are checked for spelling accuracy. Any suspect words are brought to your immediate attention, along with recommended spelling alternatives. You can accept, revise, skip, or add the word to the dictionary.

"CADmagic SpellCheck" runs entirely within Autocad. Words can be contained in blocks, attributes, text entities, ***attdefs***, dimensions, and ***xrefs***. The program contains a built-in, 100-000-plus word dictionary that is easily customizable.

Pricing is $95 for MS-DOS or MS Windows.

Haestad Methods, Inc., *37 Brookside Road, Waterbury, CT 06708-1499; 800/727-6555 or 203/755-1666.*

Better meetings

Indianapolis, IN—Eden Systems Corporation announced the shipping of its newest software product, "The Meeting Room." Users can hold meetings that are faster, cheaper, more convenient, and which provide better decisions than getting together face-to-face. Meetings are held electronically on the PCs and networks that a company already has in place.

Meetings can be conducted in The Meeting Room from start to finish—from setting an agenda and inviting participants, through discussing issues, making decisions, and assigning tasks, to distributing meeting minutes, communicating results, and thanking participants for their contributions.

The Meeting Room runs on IBM or compatible PCs under MS-DOS or Microsoft Windows. A 386 or higher machine is recommended running at least DOS 3.1, Windows 3.1, or OS/2 2.1. The Meeting Room supports any Novell or NetBIOS-compatible network, and is compatible with LAN, WAN, or peer-to-peer LANs with or without a dedicated server. Pricing starts at $895 for a 10-user package.

Eden Systems Corporation, *9302 N. Meridian Street, Suite 350, Indianapolis, IN 46260-1820; 317/848-9600.* Δ

DATA GENERAL
COMPUTERS & PERIPHERALS

MONTHLY SPECIALS

6685 1.0GB DISK 1,750
6492 727MB DISK.....1,200
4626 LAC 32 W/TCB.....1,900
6239 SUBSYSTEM 1,150
CS 2100 TERMSERVER.....1,600
MV 1400 160MB, 21MB TAPE.....1,350
CSS III RM W/6760E 10GB TAPE...8,000

Phone 404-416-0103
Fax 404-416-0155

6990 Peachtree Industrial Blvd,
Suite E, Atlanta GA 30071

R & D COMPUTERS INC.

Circle 35 on reader service card.

CLASSIFIEDS

SOFTWARE

DG410 Emulation/Modem Communication Software

Background file transfers, over 180 modem definitions, extensive script language plus additional terminal emulations. Security features. Only ~~$89.95~~. 60 day money back guarantee. Also, DEC, IBM, WYSE, Televideo.

VALENTINE'S SPECIAL $19.95

PereLine Data Systems

(408) 364-2770

DASH Items...

Category: DG/UX

Author: ERIC VATERLAUS
Subject: *LP entry numbers*

I understand that the spool entry numbers will continue to grow and will never roll over back to 1. We are now at 46000 and would like to reset it back to 1. I have not been able to find how to do this from the documentation that we have. Could someone tell me the secret?

Reply by: DG CUSTOMER SUPPORT

The file:
/var/spool/lp/tmp/<local_hostname>/.SEQF

contains four fields. The values are set by ***lpsched*** when the file is created. The default values are hard coded in ***lpsched.*** After the file has been created, the values can be changed with ***vi.*** The default file looks like this:

```
# cat .SEQF
1:999999:1:4
Field one   = The starting request-id number
Field two   = The ending request-id number
Field three = The request-id increment value
Field four  = The next request-id number
```

When the next ***request-id*** is greater than the ending ***request-id,*** the next ***request-id*** is reset to the beginning ***request-id.*** Note: Before editing this file you must:

1. Make sure there are no print requests queued for printing on any printer.
2. Stop lpsched via sysadm.

Author: JOHN USEDOM
Subject: ***Block size***

Is there a way to modify the ***mkfs*** on the DG/UX file system? We would like to change it from a 512 block to a 1024 block for a 1-to-1 request ratio.

Reply by: EARLE MACHARDY

I think you misunderstand what the block size means. ***Mkfs*** uses a default element size of 8192 bytes, which means that disk blocks are read in in that size, and the file is grouped in units of at least that size. If you are doing 1024 byte I/O, setting the data element size to 1024 bytes is not the answer, because DG/UX will buffer up 4096 bytes at a time. By default, the system will buffer 8192 for each request. If you have a highly random access pattern in your application to a file whose size exceeds main memory, then you might achieve some success by setting the data element size to 4096, but don't try to set it lower; it reduces your performance.

DASH runs on an Aviion 5200 server at the Customer Support Center in Norcross, GA—24 hours per day, 7 days per week, free of charge. Accessible via Internet address 128.222.159.141, or by calling 1-800-DASH-CSC (1-800-327-4272) for the modem rotary.

Bits and bytes

Category: AOS/VS

From: ROGER DOMKE
Subject: ***Losing disk space***

My disk that stores the system's log files is filling up even though files older than 3 days are being deleted. Why is AOS/VS not seeing the space available when files are deleted? This just started occurring in the last couple of months.

From: TIM BOYER

Are they *really* being released so the system can delete them? For instance, if you try to ***QPRINT*** a file, and while it's printing, delete the file, ***FILESTATUS*** will show no file—but ***SPACE*** will see it, until the file's through printing.

From: DAVE LOVELACE
Subject: ***utime() in AOS/VS C***

In trying to port some Unix freeware to AOS/VS, I found relatively few problems, and most of them made pretty obvious sense given the different environment. One, though, makes none that I can see. The program sets the ***mtime*** of a file using the ***utime()*** function, and this doesn't seem to work. It always returns failure no matter what I do, and the ***errno*** setting indicates bad parameter. Now I'm using rev 4.10 of the compiler, which is pretty old, but I honestly doubt that this is the problem as such. ***Utime()*** isn't in fact documented, but is in the library, and in ***SYS:TIMES.H*** there's a struct ***utimbuf*** with the comment that this is for ***utime()***. Nonetheless, I'm inclined to suspect that something about the parameters, probably the struct ***utimbuf***, is nonstandard. We don't use C in this environment often enough to want to upgrade to a newer rev. Does anyone know how to set the TLM of a file? I'd be quite happy to replace the ***utime()*** call with a call to a custom function if this is necessary.

From: DELL SETZER

We've run into this one also. There's no way under AOS/VS to change the TLM (or TCR, etc., for that matter) of a file. If you think about it, allowing the changing of these times on a file is really a sort of security breech, which is (I assume) why VS doesn't allow it. The only way to specify the TLM or TCR of a file is at ***?CREATE*** time. Once the file is created, these times can't be changed. You can change the TLM by modifying it, but the TLM will only be changed to the current system date.

From DAVE LOVELACE

Setting the time when the file is being created (something earlier than the current time) should suffice. How do I do that?

From: DELL SETZER

Look in the AOS/VS system call manual(s) under ***?CREATE.*** There is an optional field in the ***?CREATE*** parameter packet which you set to the address of a time block, which contains the values to be used for the file's TCR, TLA, and TLM. You can access the ***?CREATE*** system call directly by using the C runtime routine ***sys_create()***.. Δ

Call the NADGUG/Rational Data Systems electronic bulletin board, available to all NADGUG members. The phone number is 415/499-7628. There are no fees other than telephone charges.

Plug And Play And Rock All Day!

***NOW PLAYING from* Monarch Software** ♪♫
Here's what you've been waiting for! The first indisputably easy migration path to DG/UX® for INFOS® and CEO® users.

OPEN ELECTRONIC OFFICE ™ (OEO ™)

Open Electronic Office is the only easy migration path for **CEO** users moving to DG/UX. **OEO** is keystroke-for-keystroke compatible with **CEO** and provides a familiar setting that ensures users will maintain, and even improve, their productivity. **OEO** also provides multiple choices in PC integration and MV interoperability.

OPEN FILE MANAGER ™ (OFM ™)

Open File Manager is the only high performance, high reliability migration path to DG/UX for **INFOS** applications. **OFM** uses the **INFOS** API so your programs won't have to change to take advantage of the improved performance and greater recoverability features designed into **OFM**. We also offer a VS COBOL-compatible run-time system and a sort/merge, all in one cost-effective bundle.

For More Information about easy migration to open systems call: 1-800-MIGRATE

Monarch Software™

4904 Waters Edge Dr. • Raleigh, NC 27606
Phone: (919) 851-5408
Fax: (919) 851-9508
E-Mail: info @ monarch.com

Open Electronic Office and Open File Manager are trademarks of Monarch Software, Inc. CEO, INFOS, and DG/UX are registered trademarks of Data General Corporation.

©1993 Monarch Software, Inc.

Circle 28 on reader service card.

SCOTT McINTYRE & ASSOCIATES, INC.

"YOUR GLOBAL SOLUTION FOR D.G. & MOTOROLA"

810-299-0040

*** BUY * SELL * TRADE * DATA GENERAL & MOTOROLA ***

PRICE!

"In all my dealings with Scott McIntyre & Associates, Inc., you have always displayed a high degree of professionalism and integrity. I have always felt that your company treated me fairly. When I checked your prices against other companies, I found you to be well within the proper range of pricing. The quality of products purchased from Scott McIntyre & Associates has been very acceptable!"

Woody Woodard
Director of Operations
Home Depot

PERFORMANCE!

"Not only have you been able to help us control our costs, but have been beneficial in providing alternatives and all the equipment has easily met or exceeded our high standards. In closing I would like to thank you for the services you have provided in the past and I look forward to continuing our business relationship which will allow us both to grow in these tough economic times."

Thomas J. Kerns
Senior Vice President
Oaktree Health Plan

QUALITY!

"Those who are third party service companies must always have a supplier who understands that quality and supply of parts are the main thing for success. I would like to take this opportunity to say that Scott McIntyre & Associates has always fulfilled our expectations to the fullest!"

Torbjorn Eriksson
Manager Technical Services
Combinator Service

DELIVERY!

"We have had a number of business dealings with Scott McIntyre & Associates, Inc. and have always found you to be honest and thorough in your business dealing. Your prices and delivery time have always been as you promised, excellent!"

Amr Allouba
Managing Director
T.E.A. Computers

VISA MasterCard AMERICAN EXPRESS

"Valentine's Specials!"

D210 CRT W/KB ONLY $99

MV2000 II W/6MB, 21MB CTD & 71MB DISK ONLY $850

D410 CRT W/KB IS ONLY $120

4626-C LAC-32 W/TCB FOR MV55/5600 ONLY $1,995

4623 IAC-24 ONLY $1,500

"NEW!" D413 CRT W/KB ONLY $350

"NEW!" 2GB 3 1/2" SCSI DISK FOR AVIION ONLY $3,750

7425-L VME TERM CONT FOR AVIION ONLY $3,250

FOR A SWEETHEART OF A DEAL CALL SCOTT MCINTYRE & ASSOCIATES, INC. TODAY AND SAY, "I WANT A SWEETHEART OF A DEAL!", AND YOU'LL RECEIVE $10 OFF ANY PURCHASE OR $50 OFF ANY PURCHASE OF $1,000 OR MORE!

*Scott McIntyre *Terry Smith*
*Robert McIntyre * Michael Nowacki *
* Lorraine LaCroix

"OVER $1,000,000 OF EQUIPMENT IN STOCK!"
"CALL TODAY FOR WINTER 1994 PRICE CATALOG!"

810-299-0040

FAX: 810-299-0041

P.O. BOX 82115 • 1856 STAR-BATT DR.
ROCHESTER, MI 48308-2115

Circle 40 on reader service card.