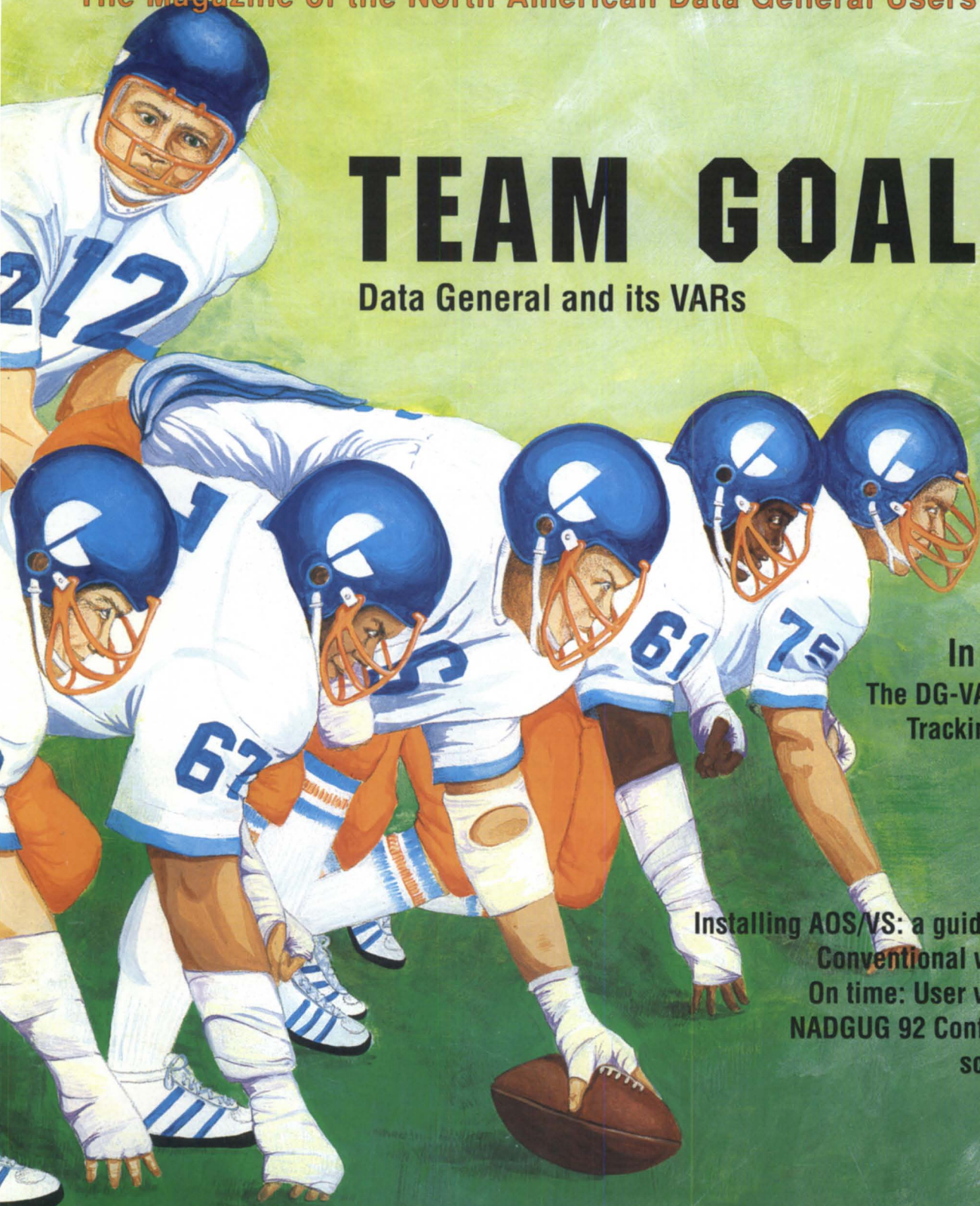


September 1992

FOCUS

The Magazine of the North American Data General Users Group



TEAM GOALS

Data General and its VARs

In Focus
The DG-VAR team
Tracking Mr. X

Plus
Installing AOS/VS: a guided tour
Conventional wisdom
On time: User vs. CPU
NADGUG 92 Conference
schedule

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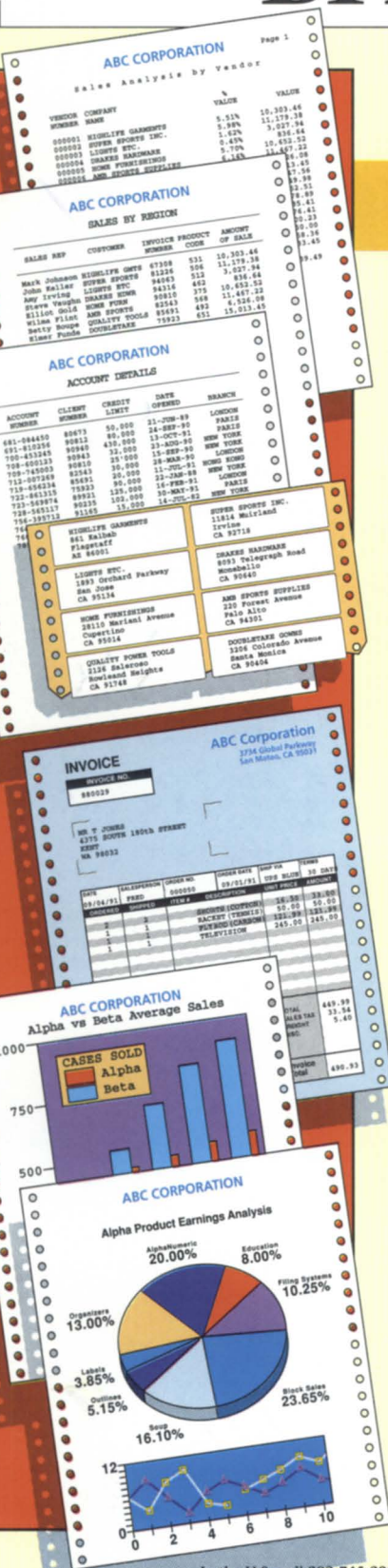
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NADGUG 92

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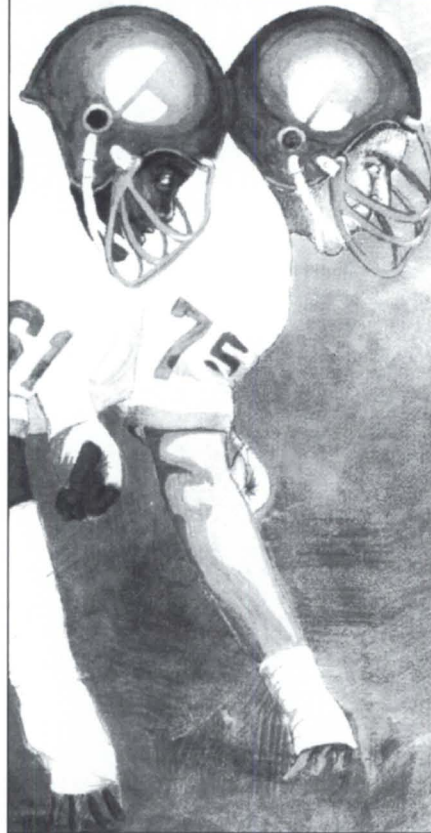
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Cover illustration by Eliz. Soto

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GET THE REPORTS YOU WANT WHEN YOU WANT THEM, WITH U/SQL

The screenshot displays the U/SQL interface. At the top, it says 'Rev 4.00 U/SQL STRUCTURED QUERY LANGUAGE'. Below this is a menu bar with 'Query', 'Menu', 'Run', 'View', 'Declare', and 'Interact'. A 'Create and Manipulate a Query' dialog box is open, showing options like 'Create', 'Check', 'Run', 'Save', 'Edit', and 'Delete'. Below that is a 'Create a Query' dialog with fields for 'Select', 'From', 'Where', 'Group_by', 'Sort_by', and 'Header'. The 'Select' field contains 'REPORT CUSTREP', 'From' contains 'CUST REPS', and 'Group_by' contains 'CREP'. At the bottom, a keyboard shortcut bar lists: F1=Run, F2=Edit, A=Append, I=Insert, D=Delete, <=Left, >=Right, F10=Exit.

On the right, a 'Customer Report' window shows a table with columns for 'Representative Name Customer', 'Outstanding Balance', and 'Opening Date'. The report lists various companies and their financial data.

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Anticipation

by Jan Grossman
NADGUG Vice President

How did Christopher Columbus feel in 1492 as he approached the New World?

Were there butterflies as he anticipated the new things he would discover?

Did he feel prepared for what was to come?

What were his options? What did he do to justify this exploration? And what is so different in 1992? How can we prepare for our New World and explore the Options available? Well, the answer is Kansas City and NADGUG 92.

The NADGUG Conference of October 12-16 is coming up fast, and many of the pieces of putting on a conference are coming together. Of course, the members of the Conference Committee are excited to see the results of all the planning, but more importantly, the excitement of renewing acquaintances from prior conference attendees is paramount. And since there is a New World out there, we are equally excited to meet the new attendees, those who use Unix and Pick.

Having problems getting approval to attend the conference? A seasoned conference attendee offers these tips for those of you needing assistance:

For the company president:

It provides the best networking opportunity with Data General's important people and others doing the same tasks as I do.

For the company controller:

Where else can you attend 79 seminars at \$7 each?

For the supporting staff:

This will be a golden opportunity for me to display skills and survive on my own abilities.

For the local DG office:

I'm going to learn the answers to all those simple questions I keep asking.

For third-party vendors:

The Exhibition Hall will have me captivated, and I'll be able to give full attention to new items and finally listen to you.

For significant others:

A great store to buy souvenir T-shirts is right around the corner from the hotel.

For your mother:

This is an educational trip spent with other serious professionals. Evenings are all spent only in technical discussions. There is no way to get in trouble ... *NOT!*

On a more serious note, NADGUG 92 is packed with topics addressing applications development, business and MIS management, communications and networked systems, system management, and performance issues. The SIG meetings and the Request for Enhancement (RFE) process with Data General will have impact on future developments.

In addition, NADGUG's annual Business Meeting provides a forum for members to submit concerns, discuss issues with NADGUG leaders, or volunteer for user group committee activities. Many of the committees need more volunteers. Let's not forget the exhibits and social activities, the places to meet and greet one another.

Kansas City is full of surprises, rich with opportunities to discover solutions. See you at NADGUG 92! Δ

Jan Grossman is chairperson of the NADGUG Conference Committee. She can be reached at H.A. Holden, Inc., 1208 Harmon Place, Minneapolis, MN 55403; 612/333-5353.

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Editor

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Contributing Editors

Tim Boyer, Brian Johnson,
Doug Kaye, Kim Medlin, David Novy

Contributors

Mason Grigsby, Jan Grossman,
George Henne, Andy T. Wilkes

Advertising Manager

Michelle Sentenne

Art Director

Pat McMurray

Production Artists

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Welcome to Kansas City!

by Doug Johnson
Focus staff

SYNOPSIS

Not a cowtown, but instead a cosmopolitan, modern, Middle American metropolis, Kansas City offers plenty to do and discover for NADGUG 92.

When you glance through the travel brochures, look for the slogan that challenges what you may think you know already about Kansas City:

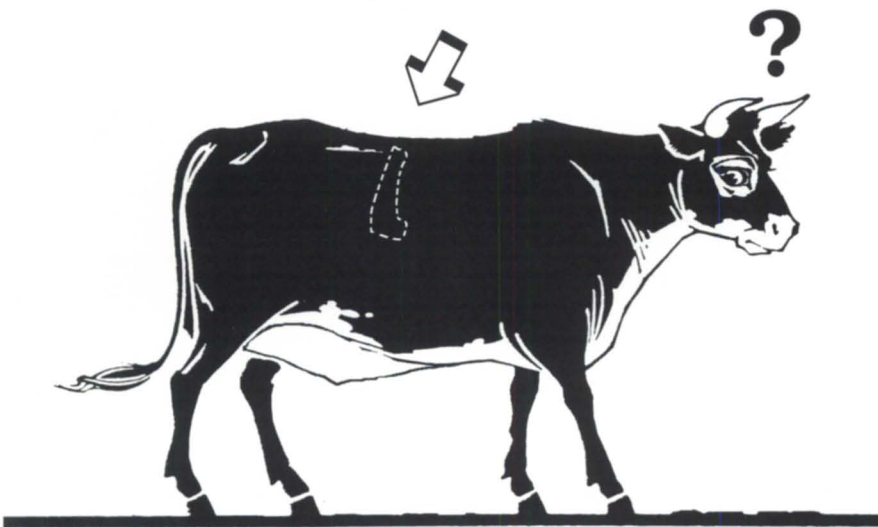
"We'll Take You By Surprise!" they promise.

A lot of first-time visitors arrive with their heads full of myths, misconceptions, and outdated notions about what this city located in Missouri *and* Kansas is all about. As the convention site of NADGUG 92, Kansas City likely will take the opportunity to change some minds.

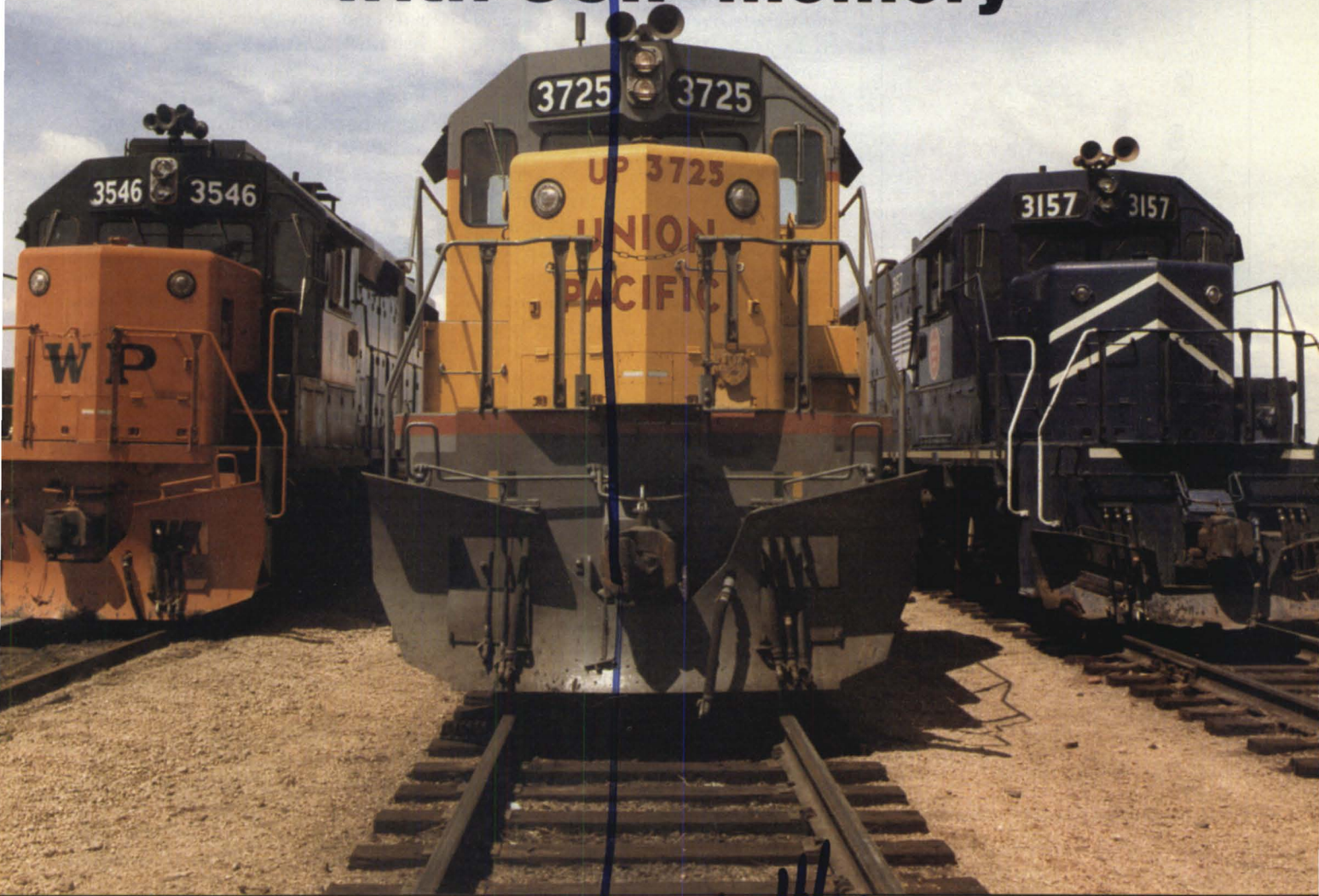
It's the biggest urban center near the populational and geographical centers of the United States, and Kansas City is a modern metropolis that wants in a big way to shed the image that it's just a shabby cowtown on the dusty plains. First of all, there are lots of trees to add greenery to the modern cityscape. And second, there are plenty of nicely rolling hills, so there.

Kansas City might never have made it at all. St. Louis was already the Gateway to the West and well-entrenched as Missouri's foremost city back in 1821, when the territory traversed by Lewis and Clark became the 24th state.

Pioneers heading west through Missouri in the 1830s stopped at John Calvin McCoy's post and supply station on their way to dreamy destinations like Oregon, California, and Santa Fe. The tiny settlement of Westport might have made a name for itself someday, had it not been for a nearby steamboat landing that sprang up about 1838 along the confluence of the Missouri



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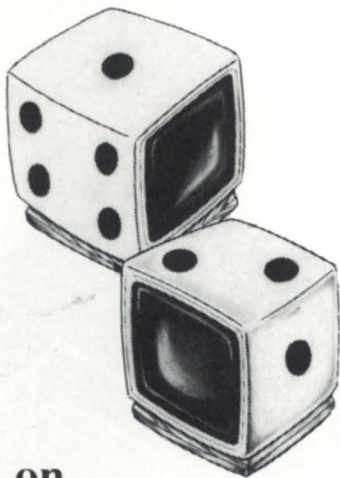
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NADGUG 92

and Kansas rivers. The upstart proceeded to grab attention and economic growth for itself.

Boom town

What began as a haphazard collection of warehouses, stores, and saloons, by 1851 had incorporated as the town that became Kansas City. Situated squarely on the state border, it grew up with twin identities and multiple facets.

The Civil War temporarily interrupted Santa Fe trade and prosperity for both Kansas City and Westport. But the arrival in 1865 of the Missouri-Pacific Railroad, and construction of the Hannibal Bridge in 1869 that spanned the Missouri River, signaled an era of new prosperity in which Kansas City could ship goods east and west, and thereby become a more important economic hub. A boom began in livestock trade and accompanying meat-packing centers (hence the cowtown epithets, no doubt). The town's population surged to 30,000 by 1870.

The 1890s featured development of the city's boulevards, parks, and residential neighborhoods. Business and manufacturing expanded and diversified. By 1900, Kansas City was a major city, with 163,000 inhabitants. Urban development in the 20th century pushed population to 507,000 by 1970. But the most recent several decades have seen the central city's growth eclipsed by that of its suburbs. At 435,000 in 1990, Kansas City itself was the 31st largest city in the nation. Its wider metropolitan area is now more than 1.5 million, ranking 25th.

What to do

Now, it may be nice to know that Kansas City today offers more miles of attractive boulevards than Paris and more fountains than any city aside from Rome, and that KC ranks first in the nation in greeting card publishing. But what is there to do when you're not attending NADGUG functions?

Visit or call the Convention and Visitors Bureau of Greater Kansas City for free brochures, maps, and other info: 100 Main (City Center Square), Suite 2550; 800/767-7700, or 221-5242 when in town.

Enjoy a leisurely riverboat cruise. Shop modern malls and the city's origi-

nal commercial district. Salute the city's cowtown past by ordering a famous Kansas City Strip steak at any one of a number of suitable such restaurants, or there's plenty of other dining fare to satisfy your taste. Visit the renovated historic district of Westport, containing some of Kansas City's oldest buildings. Even if the baseball Royals or NFL Chiefs don't happen to be playing, make a stop at the impressive Truman Sports Complex. For other recreational opportunities, there's a plethora of area parks and lakes. There's no shortage of stuff to do. Kansas City is a city of variety.

Weather

The weather will probably cooperate with its autumn visitors. Kansas City averages about 36 inches of rain per year, but October is only the sixth-rainiest month. Fall is generally agreeable, with an "Indian Summer" period characterized by mild, sunny days and cool nights. The season's first freeze usually doesn't occur until late in October.

Getting around

Kansas City's street grid employs a number pattern. East-west streets on the Missouri side start at the river and are numbered successively both north and south from the river. Most suburbs on both sides of the state line reflect this pattern, but numbered streets in Kansas City, Kansas, ascend parallel to the state line.

Main Street is the east-west dividing line for cross streets.

And a piece of driving info you might be glad to know: it is legal to make a right turn on a red light, in both states.

A fleet of bright red trolleys runs a circuit through Kansas City's main corridor every day of the week, serving downtown, Crown Center, Westport, and the Country Club Plaza, with stops at several hotels. The Metro, Kansas City's public bus system, goes just about everywhere, and offers a shuttle service between Kansas City International Airport and many hotels.

NADGUG 92

Now comes to Kansas City a teeming horde of ... not cattle, but lively NADGUG members. Get ready for Kansas City to take you by surprise. Δ

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NADGUG Conference 92—preliminary agenda

NADGUG 92 features a full slate of events, seminars, and activities. The following is a key to numbered categories appearing alongside event titles:

Conference at a glance:

- [1] General Sessions & Events
- [2] Applications & Case Studies
- [3] Applications Development
- [4] Business & MIS Management
- [5] Communications & Networked Systems
- [6] System Management & Performance

For further details, consult your NADGUG 92 registration kit, or call 800/932-6663 (or 508/443-3330 outside the U.S.).

MONDAY, October 12

- 7:30 a.m. - 7:00 p.m. [1] • *Registration*
- 8:00 a.m. - 9:00 a.m. [1] • *Educational Seminars & Office Automation Registration*
- 9:00 a.m. - 5:00 p.m. [1] • *Office Automation Workshop*
- 1:00 p.m. - 2:00 p.m. [1] • *Educational Seminars & Office Automation Registration*
- 1:00 p.m. - 5:00 p.m. [1] • *Unix Workshop*
- 2:00 p.m. - 5:00 p.m. [1] • *Educational Services Seminars*

- 7:00 p.m. - 10:00 p.m. [1] • *Special Combo Kickoff Reception*

TUESDAY, October 13

- 9:00 a.m. - 10:00 a.m. [1] • *Educational Seminars Registration*
- 9:00 a.m. - 7:00 p.m. [1] • *Registration*
- 10:00 a.m. - 1:00 p.m. [1] • *Educational Services Seminars*
- 2:00 p.m. - 3:30 p.m. [1] • *Special Combo General Session*
- 3:30 p.m. - 7:00 p.m. [1] • *Exhibit Hours*

3:30 p.m. [1] • *Welcome Reception*

WEDNESDAY, October 14

- 7:30 a.m. - 6:30 p.m. [1] • *Registration*
- 8:45 a.m. - 9:35 a.m. [1] • *NADGUG Opening Session*
- 9:30 a.m. - 2:00 p.m. [1] • *Exhibit Hours*
- 9:35 a.m. - 10:15 a.m. [1] • **Complimentary Coffee Break**
- 10:15 a.m. - 12:05 p.m. [3] • *Data Base Management Panel*
- 10:15 a.m. - 11:05 a.m. [2] • *Automating the Document Lifecycle: The Future of Electronic Publishing*
- [2] • *X-Windows for Beginners*
- 11:15 a.m. - 12:05 p.m. [4] • *Introduction to PICK*

[5] • *LAN Health Maintenance: Preventive Medicine for Your Network*

12:05 p.m. - 12:45 p.m. [1] • *Lions Gate SIG Meeting*

[1] • *Health SIG Meeting*

[1] • *AOS/VS SIG Meeting*

12:05 p.m. - 1:30 p.m. [1] • **Lunch**

1:45 p.m. - 2:35 p.m. [2] • *A Data General-Based Chemical/Clinical LIMS*

[3] • *AOS/VS II Futures*

[4] • *Open Systems Directions*

[6] • *Designing Performance into Your Infos Data Base*

[6] • *Redesigning TCP/IP for Performance*

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	[6]	• <i>H.A.D.A. Technology</i>
2:45 p.m. - 3:35 p.m.	[4]	• <i>AOS/VS or AOS/VS II: Making the Choice</i>
	[4]	• <i>DG/UX 5.4.2 Additional Support for Commercial Applications</i>
	[5]	• <i>OSI Interoperability & Conformance</i>
	[5]	• <i>Connecting to Infos</i>
	[6]	• <i>System Performance Management</i>
	[6]	• <i>The SMART Path Toward Enterprise-Wide Product Support Automation</i>
3:15 p.m. - 6:00 p.m.	[1]	• <i>Exhibit Hours</i>
3:35 p.m. - 4:30 p.m.	[1]	• Complimentary Coffee Break
4:30 p.m. - 5:20 p.m.	[2]	• <i>2.5 Years of Open Systems & Data General—A System Manager's Experience</i>
	[3]	• <i>Application Development Using Remote Procedure Calls</i>
	[3]	• <i>New Functionality in CLI32</i>
	[4]	• <i>Understanding the X/Open Common Applications Environment</i>
	[6]	• <i>Infos 6.10 Enhancements</i>
	[6]	• <i>Configuring Aviion Systems for High Performance</i>
5:30 p.m. - 6:20 p.m.	[1]	• <i>BBASIC SIG Meeting</i>
	[1]	• <i>PERF SIG</i>
	[1]	• <i>Infos SIG Meeting</i>
	[1]	• <i>Educators SIG Meeting</i>
	[1]	• <i>Guardian SIG Meeting</i>
	[1]	• <i>Publications Committee Meeting</i>

THURSDAY, October 15

8:00 a.m. - 5:30 p.m.	[1]	• <i>Registration</i>
8:30 a.m. - 9:20 a.m.	[3]	• <i>What's New With DG/SQL & DG/Ingres</i>
	[4]	• <i>Technology Roadmap: Data General's Implementation of the Motorola 88000 Chip</i>
	[4]	• <i>Update on Data General's Office Information Systems for the Aviion</i>
	[5]	• <i>Frame Relay in a LAN/Router Environment</i>
	[5]	• <i>Data General's GOSIP Strategy</i>
	[6]	• <i>The DG/UX Virtual Disk Manager: Still a Generation Ahead</i>
9:20 a.m. - 10:15 a.m.	[1]	• Complimentary Coffee Break
10:15 a.m. - 11:05 a.m.	[3]	• <i>Oracle Version 7 Features & Performance Tuning</i>
	[3]	• <i>ICobol Roundtable & SIG Meeting</i>
	[4]	• <i>Real-Time & Aviion</i>
	[4]	• <i>Office Automation Roundtable</i>
	[5]	• <i>Remote Workstation Connectivity</i>
	[5]	• <i>Networking PCs & Macs to Aviion Servers</i>
	[6]	• <i>DG/UX Security: Oxymoron or Reality?</i>
10:45 a.m. - 4:30 p.m.	[1]	• <i>Exhibit Hours</i>
11:05 a.m. - 11:45 a.m.	[1]	• <i>ICobol SIG Meeting</i>
	[1]	• <i>MRC SIG Meeting</i>
	[1]	• <i>Federal SIG Meeting</i>

- [1] • Oracle SIG Meeting
- [1] • CQCS SIG Meeting
- [1] • DG/UX SIG Meeting
- [1] • Office Automation SIG Meeting
- 11:05 a.m. - 12:45 p.m. [1] • **Lunch**
- 12:45 p.m. - 1:35 p.m. [3] • SQL & ICobol—When Worlds Collide
- [4] • Cooperative Processing
- [5] • Network Management in Multi-Vendor or Multi-Protocol Environments
- [5] • Introduction to OSI X.500 Directory Services
- [6] • Protecting Your DG/UX Systems from Viruses, Worms & Other Vermin
- [6] • Software Scaling: AOS/VS II & Applications on High-End Eclipse MV/Family Systems
- 1:45 p.m. - 2:35 p.m. [4] • The Application of Optical Disks for Computer Output Data Storage & Retrieval
- [5] • Choosing a PC Network for Your Environment
- [5] • Building Electronic Mail Infrastructure
- [6] • Don't Settle for Vanilla: Advanced AOS/VS Security Features
- [6] • The LADDIS NFS Server Benchmark
- [6] • Performance of Netware for Aviion Systems
- 2:35 p.m. - 3:30 p.m. [1] • **Complimentary Coffee Break**
- 3:30 p.m. - 4:20 p.m. [2] • Netmare on Elm Street—Proactive Measures to Avoid

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a Network Nightmare

- [3] • *Writing 88open Portable Code on the Aviion*
- [5] • *Connecting Non-Traditional Terminals to AOS/VS Systems*
- [5] • *Cross-Platform Office Communication*
- [6] • *Managing OSI & TCP/IP Networks*
- [6] • *Performance Profile of DG/UX 5.4.2*
- [2] • *GIS—Applications & Solutions*
- [3] • *Useful Features of Kornshell Command & Programming Language*
- [5] • *Networking in a*

4:30 p.m. - 5:20 p.m.

Heterogeneous Environment

- [5] • *AOS/VS Streams Overview*
- [6] • *Aviion Disk Subsystem Performance Profiles*
- [6] • *Performance Through Downsizing*
- [1] • **Cocktail Reception & Banquet**
- [1] • *Registration*
- [3] • *Downsizing With a 4GL*
- [3] • *LAN-Based Electronic Messaging: It's More Than Just E-Mail*
- [4] • *What are Secure Operating Systems, Networks, &*

7:00 p.m.

FRIDAY, October 16

8:30 a.m. - 1:30 p.m.

9:00 a.m. - 9:50 a.m.

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Processors:

MV40000 32MB	SAVE \$
MV30000 Model 1	Call
MV30000 Models 2,3,4 CPU upgrade	Call
MV20000 Model 1 16MB	.....	SAVE \$
MV20000 Model 2 16MB	.....	SAVE \$
MV20000 Model 1 to Model 2 upgrade	.....	SAVE \$
MV15000 Model 20 8MB	.....	SAVE \$
MV15000 Model 8 to Model 20 upgrade	.....	SAVE \$
MV15000 Model 10 to Model 20 upgrade	.....	SAVE \$
MV10000 4MB Meter high cabinet	.....	\$2,000
MV8000-II 8MB Meter high cabinet	900
MV9500 CPU w/32MB	30,000
MV9600 CPU w/32MB	36,000
Aviion All Models	SAVE \$
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MV7800 4MB 16 slot chassis	1,900
MV7800XP 4MB	2,900
MV4000 2MB	700
MV4000DC 2MB, 120MB, floppy	1,200
MV2000 Enhanced 4MB 160 MB disk	.....	3,200
MP100 8520-D	.....	350
S-140 256KB Floating point	.....	1,500
Desktops All Models	.....	SAVE \$
S-120 256K 16 slot	.....	550
S-280 2MB	.....	1,900

Processor Options:

8997 Expansion chassis MV15, 20	.....	\$4,600
8819 Second IOC for MV10000	.....	1,800
8762 Expansion chassis MV10,8,4,S280	.....	3,500
8749 Battery backup for MV10000	.....	500
8746-B Battery backup for 8762	.....
EXP Chassis	.....	900
8704 Floating point unit MV8000	.....	500
4543-B MCP1 8 Async 2 Sync DCH Ptr	.....	1,050

4463-ZT USAM-4	.....	\$275
4380 ISC-2 (Synch)	.....	450
4370 IAC-16 RS232, 20MA, W TCB	.....	950
4623 IAC-24 w/TCB-24	.....	4,400
4367 IAC-8 RS232, 20MA Modem Cnt	.....	850
4532-A ILC	.....	2,900
4560 LAC-12	.....	850
4608 10 Port term. serv	.....	2,800

Disk Storage Units:

6161 147MB Disk subsystem	.....	\$650
6236 354MB Disk subsystem	.....	850
6239 592MB Disk subsystem	.....	2,200
6329 120MB MV2000/MV1400	.....	650
6363 160MB MV2000/MV1400	.....	750
6491 322MB for MV2500 or CSS	.....	1,500
6554 662MB for MV2500 or CSS	.....	2,100
6581 500MB R.A.M.S. Disk	.....	Call
6720 CSS2 1.0GB Disk subsystem	.....	8,500
6685 1.0GB Disk Drive A/O	.....	3,200
2351 Fujitsu w/BMX3	2,900
6061/6122 Zebra Disks or Parts	Offer
Zetaco ARZ and SKS subsystems	Call
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6166-X D410 Monitor with keyboard	140
6169-X D211 Monitor with keyboard	125
6391-X D214 Monitor with keyboard	.....	145
6392-X D215 Monitor with keyboard	.....	145
6393-X D411 Monitor with keyboard	.....	165
6394-X D461 Monitor with keyboard	.....	300
6500 D216 Monitor with keyboard	.....	195
6682-A D217 Monitor with keyboard-new	.....	365
6567 D412 Monitor with keyboard	270
6568 D462 Monitor with keyboard-new	795

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6026 800/1600 BPI Brown, FCC compliant	1,250
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6341-A 1600 BPI Streaming Tape	3,500
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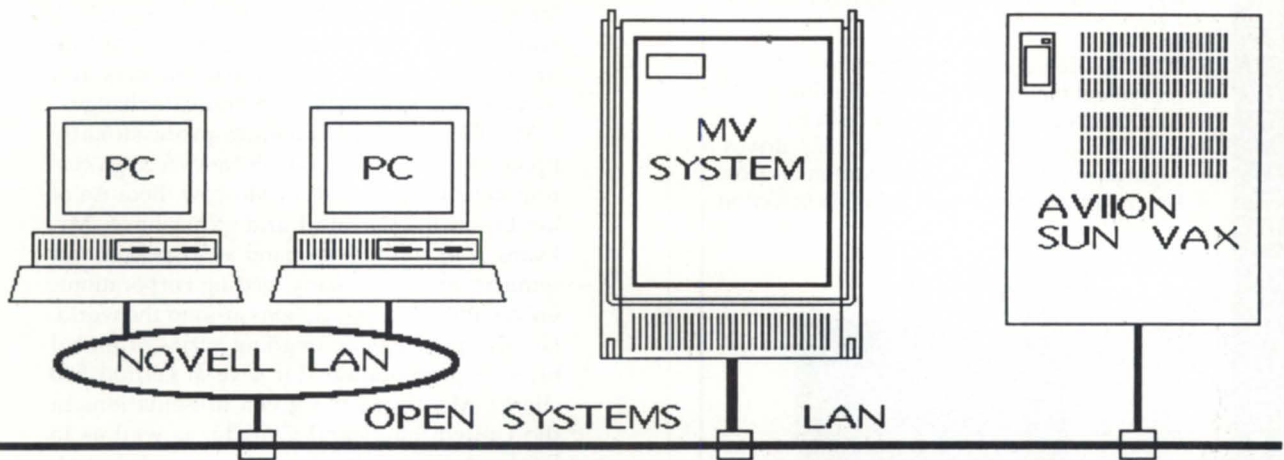
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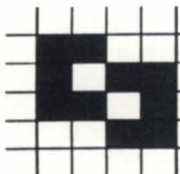
		<i>Systems?</i>			
	[4]	• <i>Using Integrators Successfully</i>		11:00 a.m. - 11:50 a.m.	[5] • <i>Integrating the Mainframe on AOS/VS Platforms</i>
	[6]	• <i>15 Ways to Improve the Performance of Your DG/SQL System</i>			[3] • <i>Radio Frequency/Data Collection</i>
	[6]	• <i>Disk Array Technology for Data General Systems</i>			[4] • <i>Achieving High System Quality</i>
9:00 a.m. - 1:30 p.m.	[1]	• <i>Exhibit Hours</i>			[5] • <i>Hot Site Connectivity in Aviiion Environments</i>
10:00 a.m. - 10:50 a.m.	[3]	• <i>Efficient Programming in an SMP Environment</i>			[5] • <i>Openmac Products: Getting Your Eclipse MV/Family System to Serve Your Macintosh</i>
	[4]	• <i>Disaster Prevention</i>		Noon - 1:30 p.m.	[5] • <i>Netware for Aviiion Discussion</i>
	[4]	• <i>Outsourcing</i>			[6] • <i>System Predictive Software</i>
	[5]	• <i>Aviiions in Multi-Vendor Environments</i>		1:30 p.m. - 3:00 p.m.	[1] • <i>Complimentary Pizza Party/Closing Ceremonies</i>
	[5]	• <i>Survey of Standard File Sharing Products Supported</i>			[3] • <i>Operating Systems</i>

INTEROPERATION



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D462 CRT	CALL
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United in the Nineties



Bob Evans

Special Combo General Session
Tuesday, October 13; 2:00 p.m. - 3:30 p.m.

A special session, "United In The Nineties," will bring together attendees from three separate meetings for the same purpose—to hear about Data General, the current trends and issues our industry faces, and the strategies planned to meet changing expectations.

Ronald Skates, president and CEO of Data General, will deliver the opening remarks, report on the state of Data General, and address key issues and future directions. Data General senior management will provide insights of DG's objectives, strategies, products, and performance within their respective divisions.

Bob Evans, an internationally recognized journalist and analyst of global trends, will deliver the keynote address, "Global 2000: The Effects of Change on Markets and Competition in This Decade." Mr. Evans' extensive career as foreign correspondent with CBS News, CNN, and the U.S. Information Agency give him unique perspectives on global markets and ways business can cope with dramatic change.

Mr. Evans began speaking professionally upon returning from his CBS News foreign correspondent assignment in Moscow. Because of his broad background and experience, Mr. Evans is in constant demand as a speaker and seminar leader for many leading corporations, universities, and associations around the world. He also provides an ongoing series of global briefing presentations for several Fortune 500 clients. Mr. Evans has given presentations in the United States and Canada, as well as in England, Switzerland, France, Israel, Egypt, and Saudi Arabia.

A member of the National Speakers Association, he was awarded the CPAE Award, considered the "Oscar" of professional speaking.

A former senior associate of Megatrends author John Naisbitt, Mr. Evans is a lawyer. a Rhodes Scholar, and is fluent in seven languages. △

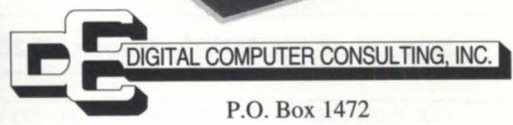
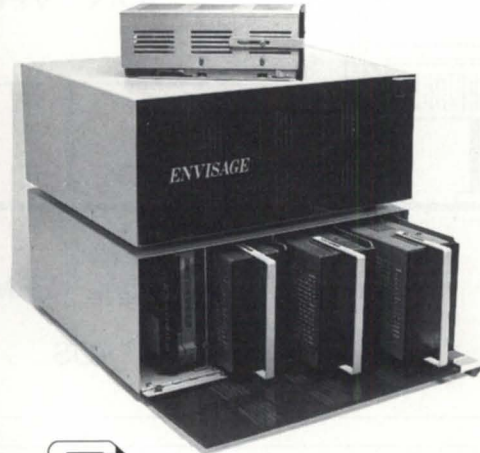
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THE DG-VAR TEAM



SYNOPSIS

In the highly competitive computer marketplace, there's plenty of incentive to ensure that the relationship between manufacturer and value-added reseller is as pleasant and profitable as possible.

by Doug Johnson
Focus staff

Pregame strategies determine plays called in the huddle, and the quarterback brings the team to the line of scrimmage. The offense, representing a variety of skills—pass-protecting linemen, fleet receivers, and shifty running backs—fires out with powerful precision to collide with the opponent and drive upfield to a touchdown.

The team changes its plays to take advantage of how the game develops, and to exploit the opposition's shortcomings. The team with the best pregame plan and the most skillful execution on game day usually wins. And it's on to the playoffs and possibly the Super Bowl if things go well.

A football team image is appropriate when considering Data General Corporation and its legions of value-added resellers. And this team is huge—some 500 VARs in North America selling in a vast variety of vertical markets: health care information systems, wholesale and retail distribution, manufacturing, government, and others. Serving the team is Data General's Reseller Sales Division. "We recognize first of all that about 50 percent of our business comes from alternate sales distribution," says Eric Taylor, director of the Reseller Sales Division. "So we are dedicated to them, and we offer our VARs and ISVs

(independent software vendors) a plethora of programs to help them generate leads."

DG's reseller program began way back with the company's own beginnings, in 1968. The package has evolved over a period of more than 20 years, like a software application, into a feature-rich environment.

There are some 25 VAR programs, divided into several broad categories. "And our objective is to help VARs succeed at running their businesses," says Ray Schwartz, DG's manager of VAR programs.

Startup programs include a direct VAR contract. All Data General systems are available to VARs, from single-user laptop PCs to the new high-end MV/60000 proprietary systems supporting 1,500 users, and as well the Unix-based Aviiion workstation family. Information packages are complemented by Data General VAR training courses to fill gaps in technical, business, and marketing knowledge.

Sales and marketing support programs include cooperative marketing. "They're designed to help VARs resell Data General products that are non-hardware products at high margin," says Schwartz, "things such as reselling service contracts, reselling supplies, and support-type activities."

Over time Data General's VAR programs have assumed a unique personality. "We have this history, or culture, at Data General," says Taylor, "where our VARs are critical to our success."

DG officials won't reveal specific statistics about the company's VAR team. But generally speaking, "our VARs track very closely to the reseller channel at-large," says Schwartz, "in the number of VARs, in the revenue driven by vertical markets." In surveys by companies that track the industry, "our VARs fit that curve very closely." Six of the

top 10 VARs in the country are Data General resellers, he adds.

Avenues of communication

Data General and its VARs develop the team through a number of communication channels. The annual Reseller Conference brings VARs and DG executives together to exchange ideas and information. The conference includes a trade show to display products. An annual VAR survey is recorded into DG's data base and analyzed for problems and trends. New VARs receive a free first-year membership to NADGUG.

The VAR Council, which meets twice yearly, is composed of 12 member VARs. Meetings include roundtable discussions, complemented by presentations from Data General management about upcoming programs and products.

Such communication avenues provided suggestions that led to DG's new Market Development Services program. "One of the things that all the major vendors, all of our competitors, including ourselves, got a ding on in 1990, or ranked lower in 1990 and 1991, was joint sales calls and lead generation," says Taylor.

Market Development Services required investment on Data General's part. "We put together a list of services that our VARs at the VAR Council had mentioned would be helpful and proactive," says Taylor. DG account executives generate tactical sales plans, including things like telemarketing, seminar support, direct mail, brochure support, "right down to advertising and VAR corporate image."

VAR Council

Bing Michael, president of Source Data, Inc., in Charlotte, North Carolina, is the VAR Council's new president, taking over from Forrest May of Admark in Memphis, Tennessee.

The Council's most recent meeting was last spring. The next is later this fall. Issues from the spring meeting included Data General profitability, organizational streamlining, the strong performance of Aviiion products, VAR marketing programs, and "what we call Data General's can-do attitude," says Michael.

According to Michael, the vendor-VAR generally is between "a billion-dollar-plus hardware vendor company, and a small, privately held entrepreneurial value-added reseller." In the course of that relationship "there should be some synergy," he says.

The VAR's key strength is in concentrating on a specialized marketplace. "They really know that little thing well," says Michael. By contrast, "a VAR's weakness, positionally, is that they're very single-focused, and they don't have a large support staff."

Source Data, for example, sells to banks a debt-recovery system. "Well, a little while ago," says Michael, "a DG rep bumped into an opportunity in the state of New Jersey, where they needed a debt-recovery system, too." So all of a sudden, we had a whole new marketplace: state and local governments."

But Source Data lacks the staff to pursue effective targeting of state and local governments. "So what will probably happen is that we will use some of DG's marketing services to assist us to penetrate that market," says Michael, adding: "And DG has what is called a VAR co-op fund, which of everything I sell, a little bit of it goes into this fund, and it pays for services of DG's that I use, like Market Development Services."

The future's challenge

As Michael sees it, "The big change over the last seven years has been this headlong rush away from proprietary systems to Unix-based and PC-network-based systems." Such change is "redefining the relationship between a hardware company and a VAR." In earlier days, a VAR might normally have sold only one line of proprietary equipment. "And that was pretty much it, everybody was married."

It's not that way today, Michael says. A typical VAR might have several hardware vendors, all running Unix. And in a wider range of VAR-vendor relationships, there will probably be a favorite.

"So I think the hardware vendors are going to have to really key in on wrapping their products with a very comprehensive set of services that help VARs run their businesses better," says Michael. "And I think that will result in payoff for both parties." Δ



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TRACKING MR. X

by Mason Grigsby
Special to Focus

SYNOPSIS

An optical-disk storage system developed by a Data General VAR and in use by the American Stock Exchange gives analysts a new tool to detect insider trading.

Our suspect is a well-known New York stock trader with a respectable Wall Street financial firm. Mr. X has been in the business more than 10 years. An acquaintance of his works as MIS manager for a Fortune 500 conglomerate that, as it happens, is planning to divest a subsidiary. Due to the nature of his job, this contact is privy to proprietary company information. He calls Mr. X to suggest that they get together. They meet, discuss what by law should be secret, and plan to buy a large number of the company's shares before it sells the subsidiary unit, and then sell the shares later for a tidy profit.

The *New York Times* front page next Sunday just might carry a story about our suspect fleeing the country with ill-gotten millions after his insider trading escapade is detected too late. But then again, maybe this time the story will be about illegal traders caught because stock exchange analysts now wield a new and powerful tracking tool.

Optical-disk technology

Since December 1991, the AMEX has used an optical-disk data management system to track trading activities. COINSERV (Computer Output Information SERVer), developed in 1988 by INSCI, a New York-based Data General value-added reseller, allows AMEX analysts to survey all trading activity for peculiar or dubious transactions. In a routine search of heavily traded issues, broker numbers, issue purchasers, and transaction dates, COINSERV could have provided the information needed to detect and confirm suspicious trading activity.

Key to the system is the ability to store up to 30 million output report pages on optical disks (47 GB), coupled

with search capabilities to analyze transactions. The integration of a Data General Aviion server with optical-disk technology, as well as COINSERV's retrieval software, provides mass storage and access to computer output for a wide range of organizations.

Trade monitoring

The AMEX relies on optical-disk data management for tracking illegal insider trading of stocks and options. The AMEX Security Transaction Archival System was designed as a computer output retrieval system for storing mountains of data for long periods of time. Output reports from the AMEX mainframe computer total some 1.7 million pages per month. Analysts monitor an average of 13 million stock shares and 20 million option shares each day. In the past, compiling this information was done manually. Now a personal computer from a single desktop acts as a gateway to information.

COINSERV itself replaces computer output microfiche (COM). The system automatically receives, stores, indexes, and displays or prints any electronic document created by the host system, indexing formatted pages on magnetic disk and storing them on removable optical-disk cartridges. Retrieving page data is done by keyword searches. Multiple index/search fields (e.g., account number, date, Social Security number), may be invoked within one query. The system displays a "hit list," from which the user requests specific documents on optical disk.

Because COINSERV supports a client/server model, user-defined indexes are stored on both magnetic disk and optical disk. The Aviion-based COINSERV client/server retrieval system searches reports stored on a Panasonic optical-disk jukebox library unit consisting of 50 platters. The system

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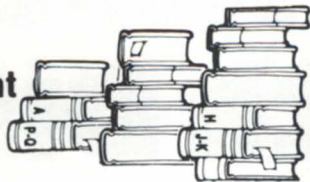
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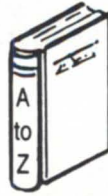
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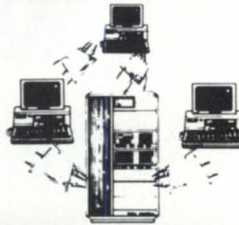
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allows data access by more than 50 personal computers on the stock exchange's local area networks.

Using the optical data system has increased productivity and reduced the AMEX's cost of doing market surveillance. Per-transaction analysis time, formerly one hour, was reduced to five minutes. On-line storage costs decreased from \$16 per megabyte using magnetic storage to 15 cents per megabyte using optical storage. The AMEX has realized an annual cost savings of some \$326,000 by eliminating paper printing and microfiche creation.

INSCI and Data General

Data General Corporation and INSCI teamed up to sell COINSERV, which INSCI developed on the Aviion platform. DG had installed a COINSERV system at its Westboro corporate headquarters for invoice history.

DG's invoice records before COINSERV were stored on microfiche—pulled manually when documents were requested. INSCI and Data General developers designed DG's system so that any device can access the optically stored data. This meant connecting the INSCI server to DG's existing network, allowing for use of DG's internal e-mail system for data and file transfers.

The DG Corporate Telecommunications Ethernet LAN/WAN allows DG users worldwide to access the data base. Each user is security coded, with data flow controlled on a need-to-know basis. More than 6,000 terminals in 150 Data General locations currently access data within seconds.

Future plans for COINSERV include optical-disk storage of accounting department computer-produced statements that currently are sent out for conversion to microfilm. Document image scanning (COINSERV IMAGE) will be added in 1992, to allow for placing paper-based case study file folders on optical disk. Data and image files will display simultaneously on workstation screens, moving a big step toward achieving that paperless office.Δ

Mason Grigsby is president of New York-based INSCI. He may be reached at 130 Cedar Street, New York, NY 10006; 212/962-1937.



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David Novy

Conventional wisdom

SYNOPSIS

When computer consultants make recommendations, be sure to ask why. And then check their reasoning.

I had a bit of writer's block this month. The end of the blockage came from my son's Boy Scout patrol, whose members I tested on Second Class first aid.

For just about every case of Tenderfoot and Second Class first aid for wounds or burns, the proper response seemed to be: wash the wound well with soap and water, cover it with a sterile dressing, and seek medical assistance. However, if you have a second-degree burn, the proper treatment is to soak it in cold water to numb the pain. After the pain subsides, *then* you cover it with a sterile dressing and seek medical assistance.

I could tell from the response of the Scouts that none of them had ever had a second-degree burn, or even a large first-degree burn. If they had, they would have known the value of cold water.

The experience with the Scouts reminded me of a recent experience at work. I attended the review of a proposal made by an outside consultant regarding a PC network for another department in my division. The consultant had done an excellent job of

designing the network wiring.

However, he concluded his report by asserting that the file server for the network ought to be a PC server running Novell Netware. He recommended the PC server even though he knew that two large Unix file servers would be installed in the same room.

The consultant said that he knew Unix well, but that he chose a PC server instead of a Unix server because Unix system management experience is difficult to find, and because Novell Netware had many user-friendly features, such as license control, which was lacking on such Unix file server software as Sun Microsystems PC NFS.

When asked how he could recommend a PC server because no Unix expertise was available—when two large Unix servers would be in the same room with a 24-hour support staff servicing them—the consultant mentioned all his other clients who had installed systems similar to the one he was recommending. Of course, none of his other clients had two large Unix file servers in the same room as the new PC servers.

At that moment, I knew I had encountered another case of conventional wisdom.

It seems that in every computer magazine you read today, the conventional wisdom regarding the correct machine and software for PC file serving is a PC server running Novell Netware. The solution is adequate, but it indicates also that the authors have little experience with powerful Unix servers running PC NFS or Novell Netware.

PC servers running Novell Netware are fine, up to a point. But if you're trying to support more than 50 users, or attempting to establish a network including more than one location, I think Unix and PC NFS would be a better solution. Unix servers have the power to service large user networks, and Unix servers can serve as both clients *and* servers. Novell Netware can function only as a file server.

Now, I'm sure that some readers will disagree with me, and that's all right. What's important is to prove me wrong about your particular environment. Never accept conventional wisdom or my wisdom at face value.

I know that Unix file servers and PC NFS work well in my environment because I have tested them myself. But most outside consultants work for very small companies—they simply do not have the resources to evaluate PC servers and Novell Netware versus Unix file servers and PC NFS, or Novell Netware.

As the Tenderfoot Scouts did with first aid, these consultants recommend solutions based on previous experience—which may or may not include Unix, large user counts, and multiple locations.

Therefore, the best strategy to determine if a recommendation makes sense is to require consultants to say *why* they made a specific recommendation, and then to check their reasons.

Such a strategy when applied to the consultant's recommendations in my example yielded some interesting results:

- 1) The consultant contended that Unix expertise was difficult to find, yet two Unix servers were in the same room.
- 2) He recommended a license server,

and yet most software vendors require only that enough licenses be purchased so that the number of licenses purchased equals or exceeds the number of concurrent users of at any time. From personal experience, I know that I've seen more lost time from the failure of license servers than I have from computer hardware failure.

3) The consultant also asserted that if you have a powerful Unix file server, people eventually realize that it can perform more than one task. There may be a danger that you can have a Unix file server taken away because it's needed for higher-priority work. However, there was little danger that a PC file server would be taken away.

4) Finally, although choosing Novell Netware might be defensible from a technical viewpoint, at *my* company it is not a good *political* decision. The corporate standards personnel at my company go ballistic anytime anyone suggests using Novell Netware.

Conventional wisdom is an excellent guide for helping a system manager make the right choice of hardware and software for a user community. But conventional wisdom may not be the proper choice for *your* environment. Also, you should keep in mind the advice of John Walker to Autodesk employees in his memorandum, "The Final Days":

"You cannot lead an industry by studying the actions of your competitors. To lead, you must understand the mission of your company, and take steps which, in time, will be studied by other, less successful companies trying to . . . emulate your success."

In these times, being a leader is not just fashionable. It might be the key to helping your customers retain their jobs, not to mention allowing you to keep yours. 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.



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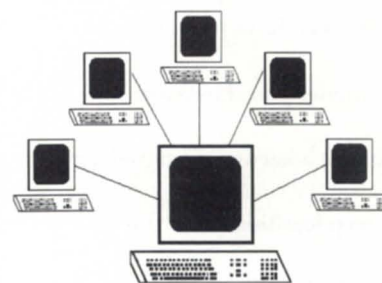
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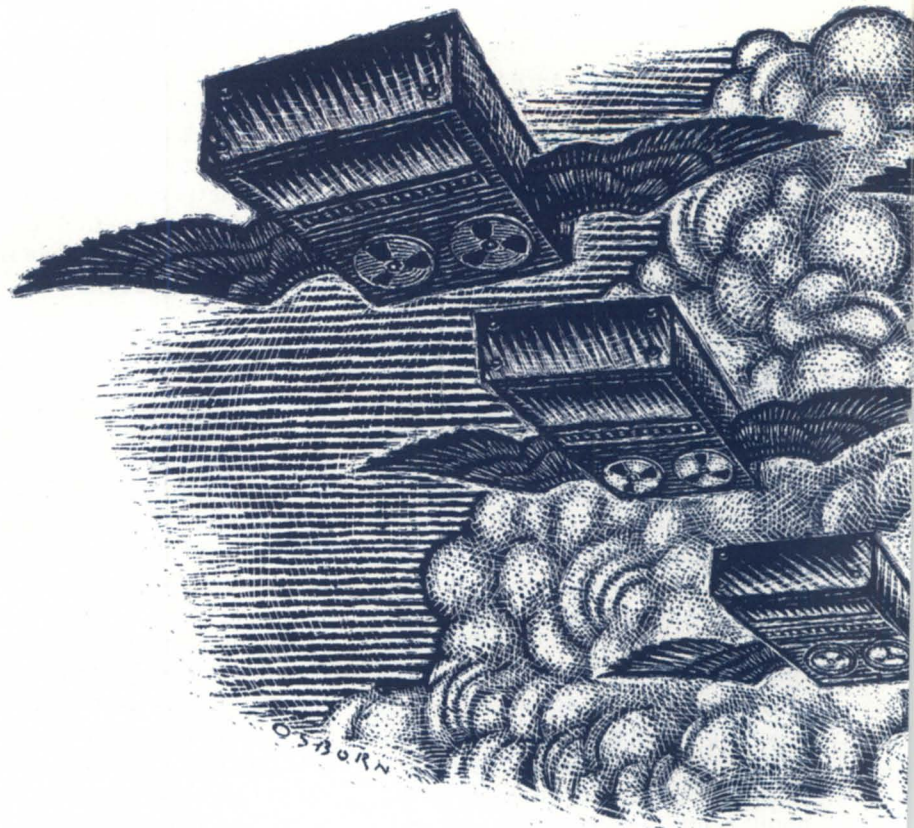
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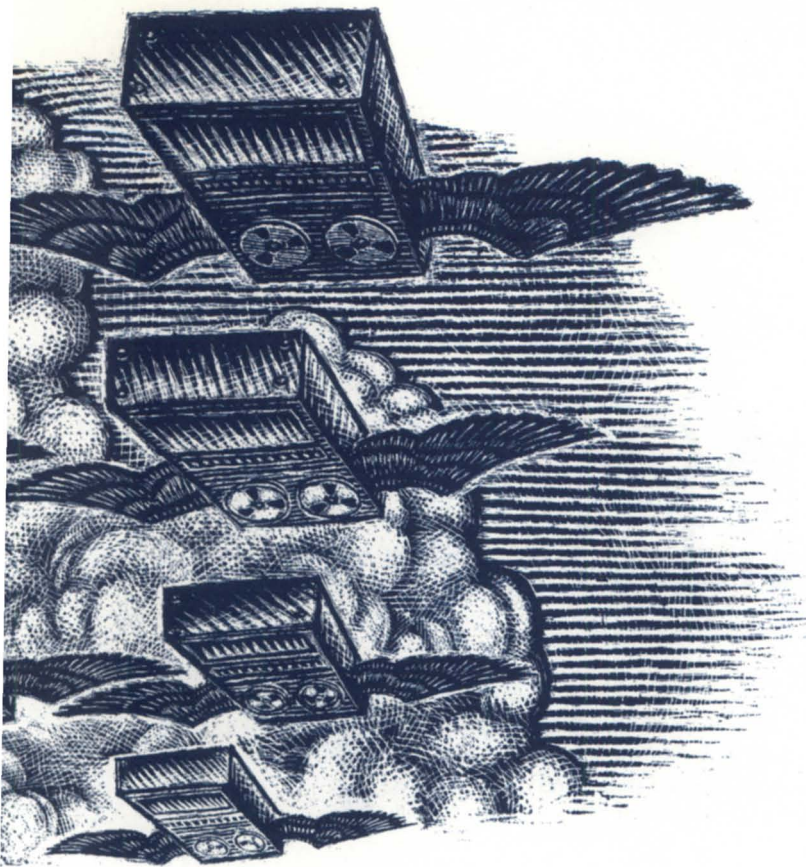
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We specialize in developing vertical market software for the MV. But when DG introduced the Aviion, a lot of our customers started moving into the Unix world. We had a choice: either develop new versions of our existing applications and support two platforms, or move to a 4GL.

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”

Tim Chu

President, Alpha Omega Systems



Brian Johnson

Installing AOS/VS: a guided tour

SYNOPSIS

On the itinerary for this month are smart tips for installing new software revisions, and a short tour of some of the general features of BJ's very own system.

:7.70

I had hoped to give you a preview of AOS/VS 7.70 this month, but DG's still ironing out a few last bugs. I'm a little reticent about starting to discuss 7.70 this early anyway, after I got snookered a bit on the 7.69 beta review when DG made some last-minute changes between the final beta release and the official release. Maybe next month...

:HOW_THE_PROS_DO_IT

While installing the first beta version of 7.70 a few months ago, it occurred to me that some of you might be interested to know how I install new software revs, and also you might find a short tour of some of the unique features of my system interesting. You might actually learn something. So, here goes.

Anything marked with "[BBS]" indicates that the files involved are available on the :SYSMGR BBS. As always, the preferred method for obtaining the latest copies of the macros shown in the figures is to get them from the BBS. Typesetting does funny things to macros.

:INSTALLING_AOSVS

The first order of business when a new rev of anything arrives is to load the tapes somewhere out of the way and indulge in a bit of tidying up before installing the stuff for real. In the case of 7.70, I created a directory called :7.70_ROOT and loaded the tapes into it so that I'd end up with a mini system disk under 7.70_ROOT.

For me, the phrase "tidying up" involves the following steps:

- Change the element sizes to be "optimal":
 - High activity files: contiguous
 - All .OL files
 - All continuously open or frequently executed .PR files contiguous (CLI+.PR, AGENT.PR, EXEC.PR, X<BAT,LPT,MNT>.PR)
 - Potentially shareable files: The lowest multiple of 4 that results in a single random index level:
 - Small files (less than 32 KB): contiguous with the element size set to the file size in blocks
 - Whatever's left: The lowest multiple of 4 that results in a single random index level.

- Change all text files to file type TXT and record format D-S. This is done so that neophyte users and some of our utility programs can avoid TYPEing non-text files by checking the file type first.

- Change the ACLs to something more reasonable than +,RE:
 - .PR files of type PRV or UNX: +,E
 - All other files, including .PR files of type UDF (e.g., IACRS8.PR): +,R
 - (SYSGEN,UPDATE,UPDATE:7.70) OP,WARE
 - SYSGEN:+.PR OP,E
 - SYSGEN:+\+.PR OP,R

- Change the hash frame sizes to be appropriate for the actual file counts (your values might not match mine):
 - 61 for HELP, 29 for UTIL, 17 for FORMS, 3 for SYSGEN, and 1 for COOP_TOOLKIT, LOGON_TOOLKIT, NEWFS_MIGRATION, OIS, and SYSTEM_CALL_SAMPLES

Okay, so some of the stuff I do is a bit anal-retentive and results in only a microscopic increase in system performance. My only defense is that all the steps above are done automatically by a couple of utilities I have, so the effort is minimal. And as a bonus, the element size change reduces the disk space consumed by nearly 20 percent.

In the old days I would have checked the UPDATE.CLI macro at this point to see if any files in :UPDATE needed to be moved to their final resting place. DG seems to have eliminated this way of installing updated files, at least for 7.70, so I didn't have to do anything. On old revs I did this manually just to avoid the hour it took to run the silly UPDATE.CLI macro in order to get the handful of files moved.

Next I create a new version of my official AOS/VS gang-patching macro and new versions of my BJ Inc. unofficial patch files. The macro is called BJI_PATCH_AOSVS_7.70.CLI. Each file patched first has a "virgin" copy preserved by the VIRGINIZE utility [BBS], then all applicable patches are installed. A copy of the macro is shown in Figure 1 (pg.30).

The macro references the official system .PR patch file, some of the optional DG patch files, and the inevitable BJ

Inc. unofficial patch files [BBS].


Next I check that my BJI_LINK_ERMES.CLI macro is still okay. A copy of the macro is shown in Figure 3 (pg. 31). This involves comparing the new +ERMES.OB files in :UTIL against the current copies of any product +ERMES.OB files I have that conflict.

Warning: you can't always depend on

the creation dates of the +ERMES.OB files in :UTIL. For example, all the ERMES.OB files that come with 7.70 have the same date, except for CERMES.OB and CLI32ERMES.OB (a mistake?). The CERMES.OB that comes with 7.70 has an earlier date than the one that came with the latest release of C (4.11). The LANG_RTERMES.OB that comes with 7.70 is for LANG_RT rev

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SYSTEM MANAGER'S LOG

Figure 1: BJINC_PATCH_AOSVS_7.70.CLI

```
[!EQUAL,%/I%.]
[!EQUAL,%1%.]
WRITE
WRITE Usage: %% system-name.PR
WRITE
WRITE E.g.: %% S1_7.70.PR
WRITE
WRITE This macro applies the applicable 7.70 patches.
WRITE
[!ELSE]

COMMENT Patch the operating system. Here's an analysis of the
COMMENT official DG optional patches:
COMMENT
COMMENT 7.70_AGENT.PR_GIGATAPE_OPAT n/a at BJInc.
COMMENT 7.70_AOSVS_DIR_TLM_OPAT n/a at BJInc.
COMMENT 7.70_AOSVS_DISCONNECT_OPAT n/a at BJInc.
COMMENT 7.70_AOSVS_MV40000.DPF_OPAT n/a at BJInc.
COMMENT 7.70_FILE_ELEMENT_SIZE_OPAT
Use BJ Inc's
COMMENT 7.70_FLUSH_BUFFERS_OPAT
Highly recommended
COMMENT 7.70_LPMGR.PR_NO_CON0LOG_OPAT n/a at BJInc.
COMMENT 7.70_LPMGR.PR_ORD_CR_OPAT n/a at BJInc.
COMMENT 7.70_ROOT_ACL_OPAT Harmless, so OK
COMMENT 7.70_SEA_BUFFERS_OPAT Inadvisable
COMMENT 7.70_SEA_ENTRIES_OPAT Inadvisable
COMMENT 7.70_SYSCALL_CHARGE_OPAT Highly recommended
COMMENT 7.70_TUNPBLK_OPAT
Use BJ Inc's
COMMENT 7.70_XLPT.PR_HEADER_OPAT Harmless, so OK
COMMENT
%%/I :SYSGEN:%1% &
:UPDATE:7.70:7.70_AOSVS_PAT &
:UPDATE:7.70:7.70_AOSVS_EXO_DIR_PAT &
:UPDATE:7.70:7.70_FLUSH_BUFFERS_OPAT &
:UPDATE:7.70:7.70_ROOT_ACL_OPAT &
:UPDATE:7.70:7.70_SYSCALL_CHARGE_OPAT &
:UPDATE:BJINC:7.70_BJS_FILE_ELEMENT_SIZE_OPAT &
:UPDATE:BJINC:7.70_BJS_TUNPBLK_OPAT &
:UPDATE:BJINC:7.70_AOSVS_DTS5500_PAT &
:SYSMGR:PERFMGR:PERFSCR_AOSVS_SCCNT_PAT &
:SYSMGR:PERFMGR:PERFSCR_AOSVS_SCTIM_PAT

%%/I :UTIL:EXEC.PR :UPDATE:BJINC:X.YZ_BJS_EXEC.PR_OPAT
%%/I :UTIL:PED.PR :UPDATE:7.70:7.70_PED.PR_PAT
%%/I :UTIL:XLPT.PR:UPDATE:7.70:7.70_XLPT.PR_HEADER_OPAT&
:UPDATE:BJINC:7.70_BJS_XLPT.PR_OPAT
%%/I :DUMP_II.PR :UPDATE:BJINC:7.70_DUMP_II.PR_NO_TLA_OPAT

[!END]

[!ELSE]

[!EQUAL,[!PATHNAME %1%.],]
WRITE I don't see %1%
[!ELSE]
[!EQ,([!READ Patch %1% [!ASCII 250]Y/[!ASCII 333]N[!ASCII 335 251] ? ),(Y))]
PUSH ; PROMPT POP
DIRECTORY [!DIRECTORY %1%.]
VIRGINIZE [!FILENAME %1%.]
DELETE/2=IGNORE/V [!FILENAME %1%.].PH
CREATE/DATASENSITIVE/TYPE=TXT [!FILENAME %1%.].PH
XEQ PATCH/T=%1%/P=(%2-%)/Y
POP
[!END]
[!END]
```


The UP macro itself is quite small and consists of invoking a series of other macros that do all the dirty work

Figure 2: UP.CLI

```
[IEQUAL,([IUNE,2,[IPID]]ERROR[IEND]%/%-%),()]
SUPERUSER ON
PRIORITY 2 2
DIRECTORY :
SEARCHLIST UDD:OP:MACROS MACROS UTIL
COMMENT This command allows "." to be removed from the SEARCHLIST.
CREATE/2=IGNORE/LINK :UTIL:CLI.PR :CLI.PR
SYSID BJ[ASCII 254] Inc. - [IHOST]
WRITE Initializing DPF10 thru DPF13...
INITIALIZE/1=WARNING/2=WARNING @DPF1(0,1,2,3)
ACL @MT- +,WARE
[IHOST_CREATE_DEVICE_LINKS
[IHOST_SET_PORT_CHARACTERISTICS
ERROR_LOG_UP :UDD:OP:ERROR_LOGS
SYSLOG_UP :UDD:OP:SYSLOGS
PUSH
PROMPT POP
CLASS(1,2) WARNING
EXEC_UP
INFOS_UP
GSMGR_UP
NETWORK_UP/NO_VCONS
[IHOST_PRINTERS_UP
WORDPERFECT_UP
PERFMRGR_UP/LOG
BATCH_UP
BBS_UP
CONSOLES_UP
POP
COMMENT Simulate a logon for the master console.
DIR :UDD:OP
CHAIN :CLI:SETUP
COMMENT NOTHING BEYOND THIS POINT GETS EXECUTED DUE TO THE
CHAIN ABOVE!
[IELSE]
WRITE "ERROR"
WRITE %0% IS VALID WHEN INVOKED BY THE ROOT CLI
WRITE REQUIRED ARGUMENTS: NONE
WRITE OPTIONAL SWITCHES:,,NONE
[IEND]
```

Figure 3: BJI_LINK_ERMES.CLI

```
PUSH ; PROMPT POP
DIR :MACROS
SUPERUSER ON
COMMENT Make it contiguous.
VAR0 [IUDIV,[IUADD,[ISIZE :ERMES],2047],2048]
LINK_ERMES/ELEMENTSIZE=[IVAR0] &
    COBERMES &
    <F5,Q>ERMES &
    INFOERMESVS &
    <MHS,NET,XTS_>ERMES &
    SLERMES &
    <SORT,QRV>ERMES &
    SWATERMES %-%
COMMENT Install it.
MOVE/V/DEL : ERMES
DELETE ERMES
WRITE The new ERMES file has been installed in the root.
WRITE You must log off and back on to get the new error messages.
WRITE You must reboot or use CHAIN :CLI in order for the master
WRITE console to get them.
POP
```

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3.50, whereas the latest release we have is 3.54. In every case I've ever seen, you can safely assume that the longer file is the more recent one, regardless of creation dates.

The BJI_LINK_ERMES.CLI macro goes to the :MACROS directory where links to all of the product +ERMES.OB files exist before invoking LINK_ERMES with the additional arguments

that correspond to the product +ERMES.OB files I have that don't occur in :UTIL. If there is a conflict, I either leave the link in :MACROS alone so that my copy overrides the one in :UTIL if mine is a more recent rev (as was the case with both CERMES.OB and LANG_RT.OB), or I delete the link if the file in :UTIL is a more recent rev.

The next step is dumping the fake

root directory to a tape in SYSTAPE format prior to shutting down and booting the tape for the actual installation. This tape then goes on the rack as the "massaged" version of the official update tape.

After the install from tape and the re-boot, I re-VSGEN my system using the previous rev as the default and specifying a new name with the rev number in the name. That way I don't destroy my old system file in case I need to beat a hasty retreat. After running BJINC_PATCH_AOSVS_7.70.CLI and BJINC_LINK_ERMES.CLI I'm ready for the final re-boot with a fast side trip through the Technical Maintenance Menu to set the new default system pathname.

Once the new system is booted, the last step is to delete any extraneous .PH and .VIR files from the previous rev, and then I delete obsolete (according to DG) files using this command:

```
Su) DIRECTORY :UPDATE: 7.70  
Su) DELETE/V [OBSOLETE_FILES]
```

:TOUR_DE_BJINC

In this part I'm just going to describe some of the general features of my system. Almost everything I'm going to describe is obvious how to implement, or is available on the :SYSMGR BBS.

The organization of the UP macro on my system was the subject of a previous column in October 1985. In case your cache of back issues doesn't go back that far, let me describe the general flow and organization.

The UP macro itself is quite small and consists of invoking a series of other macros that do all the dirty work. A copy of the UP macro is shown in Figure 2 (pg. 31). We have four identically configured systems, and all four use the same basic UP macro.

Unlike DG, we've adopted a standard naming convention for UP macros: thing_UP.CLI or hostname_thing_UP.CLI if the macro is host dependent.

In order to root directory hash table overflow, and to avoid having OP-specific macros visible to the world, all UP and DOWN macros and sub-macros are kept in :UDD:OP:MACROS (OP's private macros directory).

Note the PRIORITY 2 2 command at the top of the UP macro. It's critical.

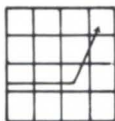
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This ensures that the master console and all global servers PROC'ed up subsequently will end up running swappable at priority 2 instead of 1. Failure to include this command can cause annoying response time problems when servers like EXEC or INFOS are running at priority 1 and they decide to go CPU-bound for more than a fraction of a second at a time.

The next order of business is to define the logical device names for parallel and serial printers and special purpose IAC ports using [!HOST]_CREATE_LOGICAL_NAMES.CLI. This involves creating links in :PER between the logical device name and the actual CON port. I used HSPx for High Speed Printers, where "x" is A,B,C,.. or 1,2,3,.. I also use LQPx for Letter Quality Printers, DMPx for Dot Matrix Printers, and DIMx and DOMx for Dial-In and Dial-Out Modems. Using logical device names means that I can reassign console ports whenever I want, and only have to edit and rerun this one macro. All other macros and the humans always refer to logical device names (e.g., CX PAUSE @HSPA). I do it only for special-purpose consoles, but you can even use logical names for all user consoles. For example, you might use FINn for Finance, ACT for Accounting, SWDn for SoftWare Development, etc., where "n" is 0,1,...,999. The console I'm on right now is @BMUX3 (BJ's statistical multiplexor port no. 3).

Next, the UP macro sets the default IAC port characteristics using [!HOST]_SET_PORT_CHARACTERISTICS.CLI. We always VSGEN our IACs using default values and wait until the UP macro before setting the actual port characteristics.

For macros involving queues, we have a special rule: the macro should detect when the queue does not exist, and be responsible for recreating and opening it. If you've ever tried to run your system UP macro after losing the :QUEUE directory only to see a zillion "queue does not exist" error messages, you'll appreciate the beauty of this rule.

The next order of business is to start SYSLOG and restart ERROR_LOG, renaming the existing files to include a date/time stamp in the name, and then MOVEing them to their archive directories under OP for later processing.

:BATCH

In addition to the standard four streams running as BATCH_INPUT, I have two other streams: SLOW_INPUT and FAST_INPUT, each with four streams. SLOW_INPUT is for long, low-priority jobs (like JANITOR), and FAST_INPUT is for short, high-priority jobs (like MIDNIGHT_CALLER).

The three batch streams all use the

same setup. The queue priorities are partitioned across the streams in equal intervals of 64 priorities, stream 1 runs at process priority 2, and the other three streams run at process priority 511.

I have two "permanent" batch jobs that run every night and resubmit themselves to run again the following night.

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Circle 38 on reader service card.

At midnight, the MIDNIGHT_CALLER job kicks in and runs the same ERROR_LOG_UP and SYSLOG_UP macros that UP.CLI uses. This starts new ERROR_LOG and SYSLOG files, renames the old ones with a time-stamp, and MOVEs copies of them to the ERROR_LOGS and SYSLOGS directories respectively in UDD:OP before deleting them.

Then at 5 a.m., the JANITOR job kicks in [BBS]. The JANITOR scans the entire file system looking for obsolete files to get rid of. It's the JANITOR that deletes old ERROR_LOG and SYSLOG files after 30 days, presumably after the field service engineer or system manager has scanned them for unusual errors and the billing software has been run against them.

:DIRECTORY_ORGANIZATION

Most system managers learn quickly that the default organization used by DG is pretty grim. I figured it out too, and here's how I do it.

UTIL is reserved for official AOS/VS stuff only. That way I can safely delete and reload it from the release tape with no problems. Any other products, like :PERFMGR, that add links to :UTIL always recreate them anytime the product UP macro is run.

All site-specific public macros and links to other software are kept in :MACROS (a misnomer, but a long-standing tradition).

All products are loaded into rev-specific directories in the root (or somewhere else with a link in the root). For example, the :C_4.11 is pointed to by link :C.

This allows me to go forward or backward a rev by simply switching a link, and it allows me to remove an obsolete rev with a single DELETE. Contrast this with the hassle involved when all products are loaded into UTIL per the standard DG instructions. If I had more than 10 or 12 product revs present at any time, I'd amend this scheme to put them all in a single :PRODUCTS directory, but so far this hasn't been an issue.

In order to avoid users needing to keep lots of product directories in their limited searchlists, I create links in :MACROS to point to all of the product components that a user might need access to.

Alternatively you can also; just put "decoy" macros in :MACROS (like CC.CLI and CCL.CLI) that simply save the environment, prefix the product directory to the searchlist, and then reinvoke themselves using the real macro. Whatever lights your fire.

:USER_STUFF

The default user searchlist is set to ":UTILS,:UTIL" by EXEC_UP.CLI. The idea is to keep the searchlist as small as possible. Note that ":" and ":PER" are missing. The only reason to have ":" in the searchlist is so that programs that can push to a CLI can be stupid enough to do XEQ CLI instead of the more proper XEQ :CLI. We get around the problem by using the UP macro to create a link in :UTIL to :CLI.PR.



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Why :PER is in the default UP macro's searchlist is a mystery, although some have speculated that it was so that early DG developers who couldn't type could refer to the tape drive as MTB0 instead of @MTB0. The former can be typed with one finger, the latter requires two.

All user profiles specify the initial IPC as :SETUP.CLI. This macro is a link to :MACROS:SETUP.CLI in order to keep it from getting clobbered when new revs are loaded. Because initial IPC files are limited to 255 characters, and our initial IPC is a bit big and very heavily commented, :SETUP.CLI's job is simply to invoke INITIAL_IPC.CLI in the :MACROS directory.

This macro does a bunch of things, some of which are beyond the scope of this short tour, but the important things are:

- It creates a MACRO directory in the user's directory, if it doesn't already exist, and prefixes it to the searchlist. This is where users are encouraged to put their private macros so that :MACROS doesn't become the system broom closet.

- It checks to see if a SETUP.CLI file exists in the user's directory; if not it displays a short new user "welcome" text file and copies DEFAULT_SETUP.CLI from :MACROS to SETUP.CLI in the user directory.

COPY:UDD:[!USERNAME]: SETUP.CLIDE-
FAULT_USER-SETUP.CLI

- It executes :the SETUP.CLI in the user's directory

Well, that's about it for the tour. Don't forget to stop by the gift shop on your way out. Δ

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The author (right) consults during a workshop with Felix Decsi, customer services manager of Transoft, Inc.

SYNOPSIS

Impressive product development updates and a hands-on approach to demonstrating its new products made Transoft's recent BBASIC conference a success.

Transoft hosted a conference in late May for Business BASIC users in Chicago, and the meeting was well attended by users and developers, not only of Transoft's UBB, but also B32, Data General, and Bluebird users. It was the largest single gathering of BBASIC users that I can recall.

The conference started with Transoft giving an update on product development. It's plain that the merger with B32 has not slowed down the company's ambitious plans a bit. Not only are they working to eliminate the last inconsistencies between UBB and B32, they are aggressively porting the product to still more platforms and adding

new features.

The new release, 3.10, probably widely available by the time you read this, will have a number of enhancements. Windowing, already the best in the business, gets further enhancement. Performance in opening files and locking is improved.

Index file routines reuse deleted

We've all been to too many presentations that speak about futures, directions, and intentions. It was refreshing to be actually able to use the stuff right away: it made it real

index blocks, something that should have been done 20 years ago. Shared memory libraries, allowing shared code, are beginning to be practical.

A Wordperfect-style editor has been added to the language. A great new front-end program for system administration has been added. Foreign terminal support is greatly enhanced. There are many other improvements, more than fit here.

These announcements were impressive, but they're not all Transoft has been working on. It's becoming clear that BBASIC development can be significantly enhanced when combined with a fourth generation language (see "The Swiss army knife of software development," August 1992, pg. 18).

To address this, Transoft is developing a family of products: U/SQL, a report writer; the report painter; and U/SWM, Universal Screen Window Manager.

U/SQL was first introduced in 1988. Since then, it's been considerably enhanced. The last rev, 3.10, added support for ICobol and C-ISAM files, as well as Business BASIC. Rev 4, announced at the conference, adds a lot

of new features as well as a report painter, a graphical interface for designing reports as opposed to the SQL style of report design.

The Universal Screen Window Manager is an ambitious effort to bring 4GL techniques to screen design, showcased for the first time in public at the conference. Bravely, Transoft allowed the attendees plenty of time to thrash it on

their own terminals.

To the developer's credit, most of the problems that appeared seem to be the easily corrected type: the product should look great at NADGUG 92 in October.

A unique feature of the conference was that it wasn't just talk.

Three rooms were set up with Avions, one running UBB 3.10, another

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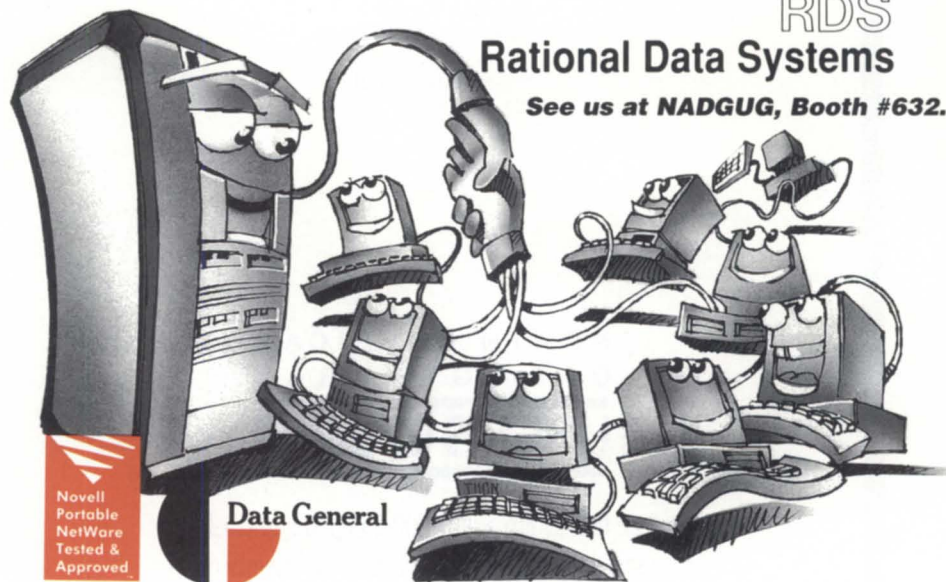
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U/SQL, and the last U/SWM. There were terminals enough for all, and session time was set up so everyone had a chance to actually use the new products.

It was this approach that made the conference a real success. We've all been to too many presentations that speak about futures, directions, and intentions. It was refreshing to be actu-

ally able to use the stuff right away: it made it *real*.

As a final teaser, Transoft made all agree to a nondisclosure, and talked in detail about future development plans. I can't tell you what they said (you'll just have to come next year), but I'm very excited about the future.

Reaction from the attendees was positive. As one of the other users told me

on the side, a session like this does more to promote good vendor/user relations than any other forum. He really felt that the Transoft people were on the side of the BBASIC development community, and had its best interests at heart.

My concerns—namely that B32 users would perhaps have a more difficult time, now that their product is being absorbed into UBB—were quieted. Sometime in the next year or so, B32 under Unix users should convert to UBB. Performance shouldn't suffer, and the new features will be great.

The Transoft people seem to be trying to make the transition as easy as possible: I'll be converting my sites soon, and hope to report to you on the results.

The B32 version will continue to be the official version for AOS/VS. UBB's features are being added into it right now. While new features will come out on the Unix version first, plans are that they will be incorporated into AOS/VS as well.

In this, Transoft has a policy similar to Data General's: Transoft's agreement with Murray Haszard, the developer of B32, includes his assistance in adding UBB features into AOS/VS B32.

For MS-DOS, only the UBB version officially exists right now. Too few copies of B32's DOS version were shipped for it to be viable, and so the product has been dropped.

In other news, Carl Delamar has moved to Data General's Desktop Publishing division. Carl has been in charge of DG's BBASIC development for about a decade now, and felt it was time to move on.

He leaves Mark Tau, who's been with BBASIC even longer, and a department of people well trained in Business BASIC development. I hope you'll all join me in wishing Carl all the best in his new position, and in thanking him for his significant accomplishments over the years. Δ

George Henne is president of The Eastwood Group, who specialize in converting AOS/VS users to Unix. You may reach him at 77 Hill Crescent, Toronto, Ontario, Canada M1M 1J3; 416/264-5777 phone or 416/264-2885 fax.

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On time: User vs. CPU

SYNOPSIS

This article examines the amount of CPU dedicated to managing the operating system environment—system CPU time.

by Andy T. Wilkes
Special to Focus

As a part of Data General's System Evaluation and Performance Analysis Center (SEPAC), I review AOS/VS, AOS/VS II, and DG/UX systems to isolate ways to optimize performance. A big question we get when evaluating system performance: *Why is system CPU time higher than user CPU time?*

There is no one reason. In fact, higher system time may *not* be indicative of a problem. Higher system CPU time may be necessary to handle normal application and operating system load. But there *are* times when higher system time is a result of limited resources, unnecessary faulting, memory management issues, additional processing load, or another problem. I have seen situations in which the user CPU percentage was less than 10, with the system CPU percentage above 90!

To evaluate causes of higher system CPU time, you need to understand where system CPU time is spent. System CPU time is charged to any processing occurring in the kernel of the operating system. System CPU time is what's required to manage the operating environment—coordinating system resources so user applications can get their work done.

In general, SEPAC recommends that user CPU time be higher than system CPU time. If system CPU time is higher for a period of time, there may not be a problem. To evaluate system CPU time fully, a performance analysis tool such as SEPAC's AOS/VS Performance Analysis Center (VSPAC and

VSPAC/One) or a real-time performance monitor (RPM) is required.

Process scheduling

System and user process scheduling to use CPU time is an essential part of getting work done under AOS/VS or AOS/VS II. The operating system must determine who gets CPU time, and for how long. It also performs round-robin and heuristic scheduling algorithms that are part of AOS/VS and AOS/VS II. Round-robin scheduling gives out equal amounts of CPU time at the same priority, making no adjustment for interactivity of the process. Heuristic scheduling favors interactive over CPU-intensive processes by adjusting the internal priority of running programs.

The Process Environment Display (PED utility) can display only those processes active over the last cycle. When looking at PED, focus on the CPU-related columns, such as cumulative CPU time (CPU) and CPU time per second (CPUS), reported in milliseconds/second. A runaway process may play havoc with scheduling (as well as other areas), and will have a higher-than-average CPUS value.

To reduce CPU time dedicated to scheduling, check what processes are running at any given time. Questions to ask: Can some processing be done when the system is not as "busy"? Does it make sense to limit some CPU-intensive processing by limiting programs to run in a restricted number of batch streams? Look also at the priority structure of your system environment. This hierarchy will show which processes take precedence over others wanting

CPU time. PED shows the assigned priority (PRI) and internal priority the operating system uses for scheduling (PNQ).

System call processing

The operating system also performs any system calls made by the application environment. In fact, the operating system may make calls of its own based on the type of user call made. For example, a user system call to open a new file may result in other calls being made to access the disk. When a user process makes a system call, that call is passed to an inner ring server called the Agent, which may in turn pass the call to the operating system kernel. To determine if high system call rates are causing high system CPU time, you need a monitoring package such as VSPAC/One to isolate system call rates.

To incorporate system call logging into a program, insert code into the program to make the ?LOGC system call log to a file. You need access to source code of the program in question. If you don't have source code and want to use LOGCALLS, SEPAC has a patch to log system call information to file.

What other steps can reduce system CPU time resulting from system call processing? If you reduce the number of calls made by application programs, system call processing time will reduce. Pay close attention to any calls made to the disk system—opens, closes, reads, and writes.

Communications

With recent revisions of AOS/VS II, communications servers such as the Server Virtual Terminal Agent (SVTA),

Telnet, and PC*IPC interface have been moved into the operating system kernel through soft controllers. As more communications protocols are moved to the kernel, CPU time taken by the "system" will increase, and CPU time taken by the "user" will decrease. In fact, AOS/VS II rev 2.10 puts terminal services into the kernel, making them more efficient, mostly by eliminating communications between server processes and the operating system. When analyzing post revision 2.00 AOS/VS II systems, SEPAC no longer emphasizes that USER CPU time should be greater than SYSTEM CPU time. We focus on CPU utilization or remaining CPU idle time. We still get concerned if system time is very high (greater than 65-70 percent) with user CPU time low.

Memory management

The operating system manages physical memory for operating and user processes that utilize the memory. The

operating system must ensure that various memory chains and associations are managed, as well as handle unshared and shared page usage. And when the memory resource is constrained, AOS/VS must manage memory for all competing processes. Once this happens, the system gets into memory contention. AOS/VS must then decide about freeing up memory so the system can continue processing.

If the system enters memory contention frequently, the effect on system CPU time is obvious. At the onset of contention and afterwards, system CPU time will rise correspondingly. To see this, an analysis package such as VSPAC/One is required. To detect indirectly if memory contention is occurring, analyze file activity and space utilization within the :PAGE and :SWAP directories. If your :SWAP directory and files have much activity, memory contention is likely a problem.

I look at several indications of contention. First are obvious values kept by

the operating system for the four levels of contention. If the system is never in memory contention, look at the number of least-recently-used (LRU) pages in comparison to the total amount of memory. In general, LRU pages should be 10 percent or greater of total physical memory. If not, how often are potentially useful pages being taken off the LRU? Look at the rate of page removals from the LRU. If it exceeds one per second, it needs a close watch.

Resolving memory contention issues involves monitoring the process environment and isolating programs requiring memory greater than other related processes.

Disk file management

Another area that demands operating system time is managing the disk filing system. The kernel must act as file manager, to allow system and user processes to get to desired files. The operating system must not only load the data or code from files, but the kernel must

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load any index or information about files when needed. The best way to improve or reduce CPU time is to reduce disk file usage. Look at disk file parameters, open rates, and access techniques. Several CLI commands can help examine the disk filing world. FILESTATUS switches will tell you the number of index levels, element sizes, number of files in a directory, and file length. Keep critical directories clear of unnecessary files. Finally, limiting CLI-CLI access prevents users from looking through the filing system.

Another area the operating system manages is buffers to access informational blocks about data on disk (metadata), and actually hold data (as in data cache under AOS/VS II). The metadata holds administrative information such as date and time of creation and last modification, as well as pointers to get to the actual data. The number of these buffers is a system generation parameter and is called "system buffers." Under AOS/VS II, data caching is also available through system parameters. With data caching, memory is allocated for managing actual data blocks read into memory. The purpose of these caches is to reduce disk I/O by keeping often-used metadata and data in memory. Optimum use of caches is to achieve a high hit rate (above 95 percent for the system buffers), with minimum memory reserved for the buffers.

Page faulting

As a process moves through its working set (those pages logically in use by a program), a reference may be made for a page outside the working set. This could be a program page or a data page. This page could be found in memory as a LRU page, in another process' working set (shared page), in the data cache, or on disk as a part of the .PR file or data base. Loading this page into the working set is called a fault. Faulting is done by the operating system, because the kernel knows where the page is. Loading the page from memory is called a logical fault (very low cost), and faulting from disk is called a physical fault.

High physical fault rates, above 10-20 per second (depending on processor speed and disk environment), can affect performance because of disk I/O

involved. The goal is to ensure that the minimum number of pages are loaded into memory to get the job done. With programs, this goal is met by maintaining some locality of reference within the program—using structured code without jumping around within the code. With data bases, structured searches and periodic rebuilds will reduce the number of pages loaded into memory.

In an Infos II environment, data base and index rebuilds can reduce sparse pages, resort records in an optimum order, and eliminate indirect records.


Interrupt processing

The operating system must service interrupts from hardware devices connected to the system, as these interrupts are normally of higher priority than

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user processes. The concerns I have here are with unnecessary interrupts from "chattering" asynchronous lines, or interrupts from undefined devices. As for the asynchronous world, spurious interrupts from devices normally show up as a high maximum character read or write length. As for undefined interrupts, I have found one system in eight years of examining systems that had

undefined interrupts. If you still want to see if you have undefined interrupts, look at the value UNCNT through a performance analysis tool such as VSPAC/One.

Device error logging

The operating system also handles device errors from any disk, tape, or other peripheral device. If the tape

media has many errors, they are handled and reported at higher priority than any user process. Disk units that report soft and (more troublesome) hard errors are not only handled at higher priority, but are an indication of other problems.

As for isolating device errors, pay attention (daily) to the ERROR_LOG. Device errors are reported here, and can indicate media problems. There must be many errors for a noticeable increase in the system CPU time. Look at other areas to determine why system CPU time is high.

System logging

Another responsibility of the operating system is the recording of the system log (SYSLOG) at the level determined when logging was started. At the minimum level, you won't be able to see a noticeable change in system CPU time. You probably won't be able to detect a change even with detailed logging turned on. You may want to turn on detailed logging for a brief period to analyze which files are being accessed on the system disks. There are also installations where security requirements force the use of detailed logging. In general, however, I suggest that detailed logging not be enabled. Its main cost is disk space and I/O.

Summary


As AOS/VS II moves toward putting more processing in the kernel, the generalization that user time should be more than system time comes into question. When system time is very high (above 65-70 percent), with user time very low (15-20 percent), are instances that should be evaluated further.

When looking at system CPU time and CPU usage in general, focus on areas within system CPU time where processing occurs. Optimizing those areas within the operating system and application can ensure that you get the most power out of your system. Δ

Andy T. Wilkes is consulting manager for Data General's systems Evaluation Performance Analysis Center 9SEPAC). He may be reached at 3617 Parkway Lane, Norcross, GA 30092; 404/448-6072.

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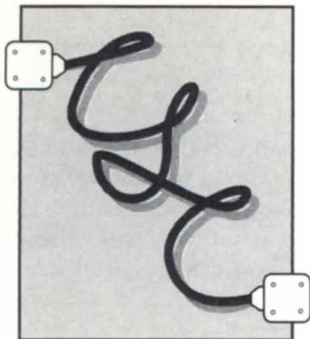
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DASH items

SYNOPSIS

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

Category: DG/UX

Author: Wendell Dingus

Subject: 525 MB tape

I've recently run into a problem and worked out a cure on my own. I'm just curious if the way I fixed the problem is correct, or if there is some other "proper" way to do this.

On an Aviion 4100 with 525 MB tape drive (Tandberg drive mechanism), a DC6525 tape cartridge would hold only 150 MB using tar. I noticed tar would say, "Volume ends at 149,999 K" at the

beginning of the archive creation. After reading the man pages on tar, I tried the command, "tar -cvfk /dev/rmt/0 525000 **", which displays, "Volume ends at 525,000 K", and does successfully archive over 300 MB on one tape. Taking off the f command-line option and removing /dev/rmt/0 didn't seem to work for some reason, and I didn't see why it would hurt anything. This command is working fine for a customer right now, and I'm not inclined to change it unless I find out there's something very wrong with it.

Reply by: Ned Sheppard

I had the same problem with 525 MB tapes on the same drive on an Aviion, and could only resolve it the way that you did. The DG field rep said that it should write the entire 525 MB without telling the tape the length; he is looking into it.

Reply: Wiley N. Johnson

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/etc/default. The tar default is 150000 KB, and that's what is being reported. The 525 MB tape mechanism will write about 300 MB to a standard length tape, and 525 MB to a long tape.

Author: Sean

Subject: **Down key not working with d470c in DG/UX**

I am upgrading DG/UX to version 5.4 on my Aviiion. After upgrading, all terminals using wy50 work fine. But other terminals, which are using 605x, d470c, and d211, have lost the key sequence for the down-arrow key. When you hit the down-arrow key, it seems that you hit nothing. The down-arrow key does not work in vi edit, either. CTRL-J works as the down-arrow key in vi.

Reply by: Wiley N. Johnson

Sean, check your TERM variable in DG/UX. It must be set correctly for the keys on a terminal to work. Which TERM variable to use will depend on what mode you're using on the termi-

nals. It's probably DG mode—if so: TERM=d470c-dg and TERM=d211=dg and TERM=dg6053. Then export TERM.

Reply by: DG Customer Support

DG/UX 5.4.1 uses the escape sequence for down-arrow as suspend now. You have to redefine the suspend key to something else.

Author: John Flynn

Subject: **Terminal: Remote echo changed to local echo**

I hope one of you gurus knows the answer to my frustrating problem. On our PCs, we're running various terminal emulators, and these are run in vt100 or the closest thing to it (like vt102, etc.). Certain escape sequences are sent by the Aviiion system when certain commands are in use (like when we're "vi-ing", or using the "more" command, etc.) It only seems to be when we use these commands, as well as when we use our Progress data base. These escape sequences are apparently resetting the

remote echo mode on the PC's emulator to local echo. This is frustrating, to say the least. Basically, the PC is unusable after this happens. By the way, it seems to be when you *leave* vi that it occurs, not while you are *in* it.

Reply by: Ned Sheppard

I'm also having some very strange responses when using vi with Procomm and Pereline set up to emulate vt100. When I'm using vi, characters sometimes appear and sometimes don't. It's impossible to use because you can never be sure what you've changed and what hasn't been changed.

Reply by: Tom Barron

Ned, two things:

1) Be sure that your DG/UX environment variable TERM is set appropriately ("setenv TERM vt100" if your shell is /bin/csh or "TERM=vt100; export TERM" if your shell is /bin/sh);

2) In vi, you can hit CTRL-L to redraw the screen. I know it's a pain to have to

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ask your editor to tell you what it's doing, but at least that's better than having *no* idea.

Reply by: DASH Development
You might also try adding

```
EXINIT="set redraw noslow";
export EXINIT
```

to your .profile. This sets some vi options telling it that it's okay to show changes right away, because you're not at a 110 baud teletype.

Author: David Woo
Subject: **sar -r on DG/UX**

Has anyone had a problem with the "sar -r" command?

I'm such a rookie that I don't know whether this is normal behavior or what. I run the command, "sar -r 5 100" on my customer's Aviiion 4120 with 40 MB of memory, and the first line shows that freemem has a value of 7,000 or so. The available swap is 50,000.

As I start up my Progress data base server, the 7,000 drops to 5,800 or so.

As I log more users into the data base, an additional 200 or 300 blocks of freemem drops off after every login—no problem. When I log users off or disconnect them from the data base server, the freemem increases appropriately.

However, I just noticed that when 19 users got on, the amount of freemem was 300 to 500 and the available swap was 20,000 to 30,000.

When I disconnect users from the data base (even log them entirely off the system), the freemem never goes above 800 and the available swap never gets past 40,000.

It doesn't appear to me that the system is swapping, and I'm not sure if the system is as fast as it should be. What gives with the "sar -r" command?

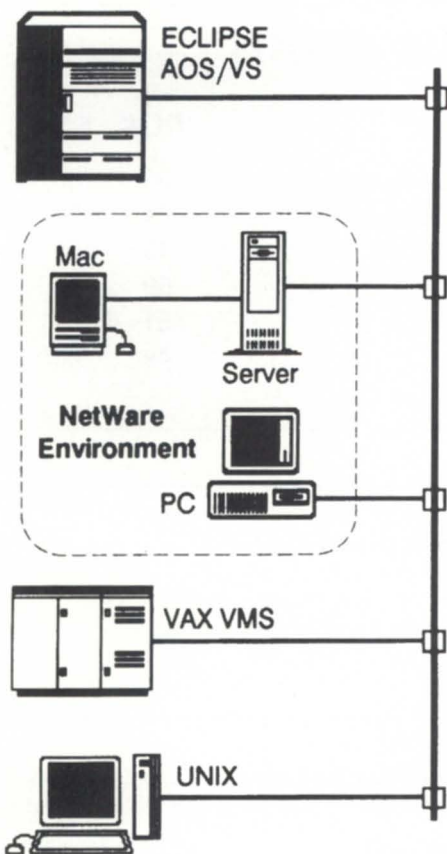
This is running on DG/UX v5.4.1, but I have seen the same thing happen on v4.3.0. How do I truly know if I'm running out of memory (to plan for expansion, etc.)?

Reply by: Wiley N. Johnson

You know that the freemem numbers are numbers of 4 KB pages, and the swapmem is in blocks. DG/UX does not do any real swapping. It is a fully virtual operating system, so it pages information to the swap file system. Some paging is inevitable (for unused sh's, etc.). It is not unusual for programs like Oracle or Progress to retail some of the memory. It is a known issue; DG and the vendors are working on it. The numbers you have are not really bad. When serious paging (swapping) occurs, the swapmem figure goes down to almost nothing. Ideally, you should collect sar data to a disk file and then report data from it. Use sar -q to see how your swapping/paging is going. Check the man page for the details about sar -q; basically, it shows jobs running and jobs that cannot run, and may require swapping.

Reply by: John Gareri

What you are seeing is a known fea-



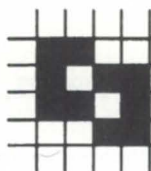
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ON-LINE HELP

Who to call for answers about NADGUG and FOCUS

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Sudbury, MA 01776
FAX: 508/443-4715

FOCUS Magazine address:
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DASH bulletin board (2400 bps modem) **800/DASH-CSC**
Data General Customer Support Center **800/344-3577**

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512/335-2286

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

Information about advertising.....Michelle Sentenne

FOCUS back issuesTurnkey Publishing staff

ture of sar. All it reports to you is the amount of memory marked as free. The DG/UX memory manager does not mark pages as free when they aren't in use. This scheme essentially caches all memory pages for you. This is also why the "sticky" bit is of little use. You should consider coming to the DG/UX tuning workshop to learn about this and all sorts of other neat things.

Reply by: David Woo

Thanks for the info on sar. When/where/how much is the workshop on tuning? Unfortunately, our business has not picked up as much as Uncle George in the White House said it should have; money is tight and cost justification is mandatory for all "items not deemed to be crucial to the operation of the company." I think it would probably be well worth the time and money—my boss may have another opinion.

Reply by: John Gareri

The DG Educational Services seminar, "SM610—DG/UX Tuning Workshop" is run in various cities on various dates. Call 800/343-8842 for the schedule, price, and enrollment information.

Category: Hardware

Author: Ned Sheppard

Subject: **Okidata 2410 printers**

We are trying to use an older model Okidata 2410 printer on our Avion 5225 running DG/UX 5.4.1. The first page or so prints out okay, but then it appears that the buffer is overflowing, since the rest of the data print in random order. These printers are set for X-On/X-Off, but for some reason they aren't sending the message to the print services.

The cable uses the same pin-outs that we use with our TI Micro Laser, which prints the same reports just fine.

Reply by: Glenn Cheatham

I can offer "the basics." First, verify that framing (data bits, stop bits, and parity) is the same at both ends. Second, drop the baud rate to 1200 (slower than the physical print speed), and see if the problem goes away. Third, review the printer manual for selecting when the printer should X-Off the computer. If it

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has a 1 KB buffer and X-Offs at 999 characters, you may lose data between X-Off and when the computer "reacts." Try for X-Off at 75-90 percent full buffer.

Reply by: Ned Sheppard

Thanks, Glenn. I was off on the wrong track because Okidata told me that this could be a problem with its older printers. The problem was finally traced to

an intermittent short in the wires in the wall.

Category: Windows

Author: John Flynn

Subject: **X11 performance on AV 300**

Recently I went to diskful on my AV 300. I have 8 MB of memory and 2 disks, but performance is inferior to what it

was when I ran diskless on the Aviiion 5010 server with 16 MB. I think it's doing a lot of swapping. Switching windows is painfully slow. Sar -u reports relatively low loads on the CPU, so I can only hope the problem is the way I'm handling memory.

Reply by: Tom Barron

This is just a guess, but you might look to see if your workstation is looking for something from the network that it's not finding. I know that can cause things to slow down significantly in X. I'm even more suspicious it might be something like that since you just put a disk on the workstation. I assume that before, it was booting across the network? Is your workstation an NIS (aka Yellow Pages) client? Is it trying to mount any remote file systems through NFS? Do you have references (e.g., in your PATH variable) to file systems that were once mounted remotely, but aren't there anymore?

Reply by: John Gareri

With only 8 MB of memory, you have barely the minimum. Both diskless and diskful, you were probably swapping each time you opened a window. The difference was probably that the diskless could swap faster to the server on the network than it can swap to its own disk. Use sar with a -p option. You will probably notice that the rclaim/s is high. We recommend that if it's over 20, it indicates that you don't have enough memory for what you're trying to do. The solution: either don't do as much, or get more memory.

Reply by: John Flynn

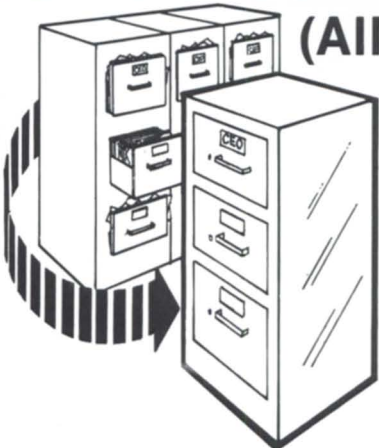
Thanks for your replies. I'll check it out and see how it goes. I was afraid memory was the problem. As to loading nonexistent file systems, I set the whole thing up new after going diskful, but I did copy my .profile file over, so I'll check that. Thanks again. Δ

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

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The latest products for DG systems

On-line disk optimization



Salina, KS—Eagle Software, Inc., and Expert Systems, Inc., announced release of Disk Pak Online! rev 2.00, now providing AOS/VS system managers with on-line disk defragmentation and optimization capabilities that have been available to AOS/VS II users for more than a year.

Managers of VS Classic and VS II systems can optimize disks without shutting down or releasing.

Optimization and defragmentation are transparent, and files that are exclusively opened and in use are safely reorganized.

The Automatic File Placement feature customizes optimization. Directories and other frequently accessed files are clustered automatically.

Disk Pak Online! supports mirrored disks (hardware and software mirroring) and MRC disks.

Rev 2.00 now features on-line file viewing to see how fragmented a file has become.

Prices range from \$950 to \$6,450 depending on CPU size.

Eagle Software, Inc., 123 Indiana Avenue, P.O. Box 16, Salina, KS 67402-0016; 913/823-7257.

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Flexible 4GL tools



Slough, England—Transoft Ltd. announced two new tools to boost BBA-SIC programmer productivity and end-user functionality.

U/SQL Universal Structured Query Language now offers Report Paint Module—users define the layout of a report (invoices on preprinted stationery, complex application reports, etc.). Report Painter has been incorporated in the Embedded U/SQL version of Transoft's UBB Universal Business BASIC, eliminating the need for UBB developers to write traditional report programs.

Report Painter is a free upgrade to all

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supported copies of U/SQL and UBB Embedded U/SQL. Both products are available under MS-DOS, PC networks, and some 36 Unix platforms, and may be used with ICobol, C-ISAM, Informix, Ingres, and Oracle files, as well as BBA-SIC ISAM. U/SQL also operates on Data General MVs under AOS/VS.

U/SWM Universal Screen Window Manager enables UBB developers to

design and develop screen layouts that are easier to maintain—faster, with less code. Programmers use the U/SWM Workbench, a self-contained development environment, to “paint” the screen and define processing rules.

U/SWM is available under Unix. MS-DOS and PC network versions are planned.

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8mm tape backup

MV

Newport News, VA—Contemporary Cybernetics Group introduced a complete family of 8mm tape backup subsystems that are fully compatible with Data General computer systems.

The CY8500 stores 5 GB on a single tape, up to 25 GB with data compression, at transfer rates of up to 90 MB per minute. The built-in, liquid crystal display eliminates guesswork in backup operations. Command under execution, transfer rate, tape remaining, compression ratio, and ECC rate are displayed on a bright, readable panel. The system is backward compatible with the 2.5 GB CY-8200.

Both the CY-8200 and the CY-8500 drives support a variety of optional features. Hardware data compression increases storage capacity by up to five times. High-speed search capability allows the user to search for a file 75 times faster than the normal speed.

For larger storage capacity, CCG offers two cartridge handling systems that provide random or sequential access. The CY-10CHS features one drive, holds ten 8 mm tapes, and provides between 25 GB and 250 GB. The CY-120CHS utilizes up to four 8 mm drives, 116 tapes, and can store between 300 GB and 3 TB of data. The subsystems adapt to most DG sites with a variety of rack mounting, cabling, and hard disk configuration options. CCG also provides controllers where needed.

Contemporary Cybernetics Group, Rock Landing Corporate Center, 11846 Rock Landing, Newport News, VA 23606; 804/873-9000.

Circle 60 on reader service card.

Imagine comes of age

AV

Atlanta, GA—ERDAS, Inc., announced the release of Imagine 8.0.1, offering increased functionality for its application-driven graphical information systems (GIS) and image-processing package. The new revision features an easy-to-use “point and click” graphical user

interface (GUI) under X-Windows with OSF/Motif or Openwindows.

ERDAS Imagine is being ported to a variety of open systems platforms, including Data General's Aviion 300/400 series.

Imagine enables users to integrate satellite imagery, aerial photographs, scanned or digitized data from hard copy maps and tabular information within a single system. Resulting data layers can be combined, analyzed, and output for use in forestry, natural resource management, oil and mineral exploration, urban and regional planning, defense, and academia.

ERDAS, Inc., 2801 Buford Highway, Suite 300, Atlanta, GA 30329; 404/248-9000.

Circle 63 on reader service card.

Removable SCSI subsystem



Marshfield, MA—Envisage RSS-4 from Digital Computer Consulting offers self-maintenance and security, accommodating large-capacity disks, tapes, and optical drives.

The Envisage may be configured with up to seven SCSI devices. It plugs directly into the external SCSI port on an Aviion, or runs off several third-party controllers for the MV series of minicomputers. Prices are \$4,200 for an enclosure with four cannisters, or the Envisage may be custom-configured with a choice of drives.

Digital Computer Consulting, P.O. Box 1472, Marshfield, MA 02050; 617/837-7255.

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Terramodel 8.0



Atlanta, GA—Terramodel version 8.0 from Plus III Software, Inc., includes a complete programming environment for the user, dynamic viewing capabilities, and expanded field traverse routines.

Terramodel version 8.0 is compatible with previous versions of Terramodel, and is binary compatible across supported PC and Unix workstation environments. New macro language features

enable users to construct automated procedures for highly complex or repetitive tasks without complicated programming. A new viewing capability, dubbed "Dynaviews," provides scaled print and view windows.

Terramodel may be purchased in various Solutionpaks including versions for engineering, surveying, photogrammetry, and mining. The MS-

DOS Solutionpak prices range from \$995 to \$6,995. The Unix Solutionpak prices range from \$1,295 to \$9,995. Terramodel runs on a variety of Unix workstations, including Data General.

Plus III Software, Inc., One Dunwoody Park, Suite 250, Atlanta, GA 30338; 800/235-4972. Δ

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Data Specific

ICobol products to merge

Data General Corporation and Egan Systems, Inc., of Hauppauge, New York, will merge their respective ICobol and ICHOST interactive Cobol compiler/runtime products into a single development environment.

The new product will be ANSI 1985 compliant, and will run on AOS/VS, AOS/VS II, DG/UX, I/Unix, and MS-DOS operating systems. DG will continue supporting its current ICobol product in addition to the combined compiler/runtime product.

Complete details on the Data General-Egan Systems agreement will be discussed at the ICobol Roundtable during the NADGUG 92 conference in Kansas City October 12-16.

Unix Workshop, NADGUG 1992

Here's a note at press time from Unix columnist **David Novy**:

The agenda for the first NADGUG **Unix Workshop** has been determined. Following are topics:

A speaker from **DMS Systems, Inc.**, will discuss tape backup hardware selection and backup strategies.

Gary Becker of **Zetaco, Inc.**, will talk about SCSI disk drives. If you ever wanted to know what's meant by fast-wide SCSI-2, disk mirroring, dual porting, and seek/latency overlap in a Unix environment, this discussion will give you answers.

John Clayton of **Clafin & Clayton, Inc.**, will discuss how to make the most of Unix networking standards TCP/IP and NFS.

A speaker from **Storage Computer Corporation** will discuss redundant

arrays of inexpensive disks (RAID). For those who burned the midnight oil learning all about RAID levels 0 to 5, this talk will introduce you to RAID level 7 (Yes Virginia, RAID 7 is a reality).

And don't miss the panel discussion. Make plans to attend this workshop. The sessions will be interesting, informative, and fun.

Expert Unix system managers will see new technologies and ideas. Unix newcomers will learn the buzzwords they'll need to hold their own in late-night Unix technical discussion that are sure to occur at NADGUG 92.

The workshop will be from 1 p.m. to 5 p.m. Monday, October 12, at the Kansas City convention center. Admission is \$50, which covers workshop expenses and provides a much-needed infusion of funds for the NADGUG Unix and AOS/VS special interest groups. Registration materials are available in the 1992 NADGUG conference packet, and at the door.

Unikix for Aviion

Integrus of Billerica, Massachusetts, announced expanded, multi-vendor support for its Unikix downsizing software through an agreement with Data General. Under the terms of the agreement, Integrus will port Unikix to DG's line of RISC-based, symmetric multiprocessing Aviion servers.

"As the downsizing market expands, our strategy is to partner with all the leading Unix and hardware vendors, and Data General is a key element in this plan," said **David Matthews**, Integrus vice president, downsizing solutions. "Data General is aggressively positioned in the overall downsizing market, thus Unikix and Aviion are a natural combination."

"The Unikix-Aviion solution provides a natural path for migrating mainframe applications to the open systems," said **John Masotta**, DG's director of downsizing solutions.

Integrus' Unikix enables existing IBM Cobol/VSAM CICS applications to run essentially unchanged on standard open systems. Through Integrus' XPU4

and XPU5 software products, Unikix also provides SNA network support and 3270 terminal connectivity.

In addition to DG's Aviion servers, Unikix software currently is available on nine other leading Unix platforms. Integrus provides systems integration solutions for enterprise re-engineering and downsizing for state and local government and the telecommunications, insurance, and healthcare industries. Integrus has regional offices in Los Angeles, Minneapolis, and Atlanta.

Point-of-sale

IPC America, the North American subsidiary of Singapore-based IPC Corporation, Ltd., has signed a national service agreement with Data General.

Under the terms of the agreement, DG field service engineers will provide on-site service for IPC America's specially designed, point-of-sale terminals, workstations, and servers for large retail organization customers. The IPC product line is built on standard PC microcomputer technology using MS-DOS, OS/2, Xenix, or Unix operating systems, with added features for point-of-sale computing environments.

IPC America will market Data General's service capabilities to its customers and handle all administrative functions. Data General's field service organization will provide remote troubleshooting support through DG's Customer Support Center and rapid on-site service as required to resolve end user service problems. DG has a network of more than 600 field service professionals in more than 200 locations across the nation.

"Data General's experience in servicing microcomputers and multiple operating systems is what attracted us to them," said **Tim Hall**, IPC America's director of customer service.

"We're pleased to be IPC America's service partner," said **Paul Lewko**, DG's manager of U.S. service/business development.

Based in Atlanta, IPC America's products are distributed in more than 40 countries in Europe and the Pacific Rim. Δ



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- We inform you of the latest in DG compatibles and offer alternatives that are faster and less expensive than DG hardware. (SCIP, Zetaco, Motorola, DataSouth)
- We are small enough to be attentive and responsive to your needs, providing emergency services, product delivery and direct personal contact.

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