

October 1991

FOCUS

The Magazine of the North American Data General Users Group

Balancing act

Turning technical experience into managerial success

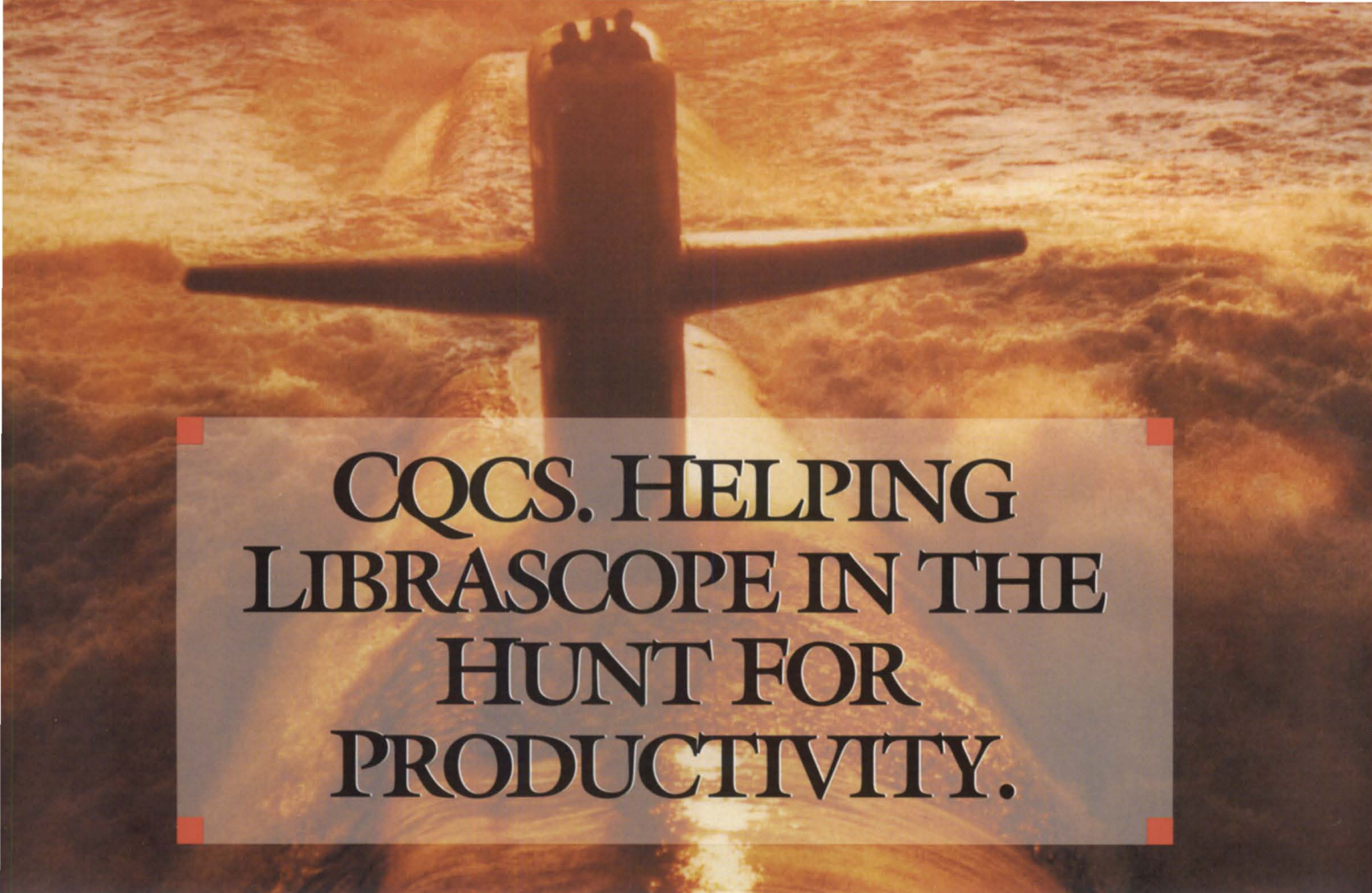
◆ Basic comparison

◆ A simple global server

◆ What's your negotiation style?

◆ Adventures in interoperability

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The Magazine of the North American Data General Users Group

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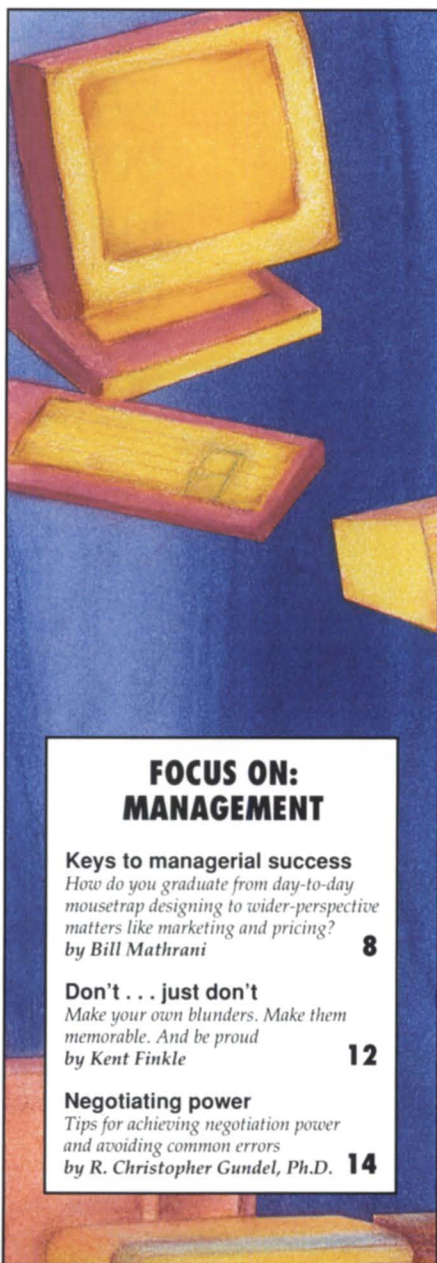
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EDITOR'S NOTE *by Robin Perry*



Life at the top

This month's special topic on management came about as a result of a survey taken at last year's NADGUG conference in Seattle. Many people wrote that they would like to see more articles that address the skills needed by managers in the computer profession. Thus the seed was planted for the three articles in this month's "Focus on: management."

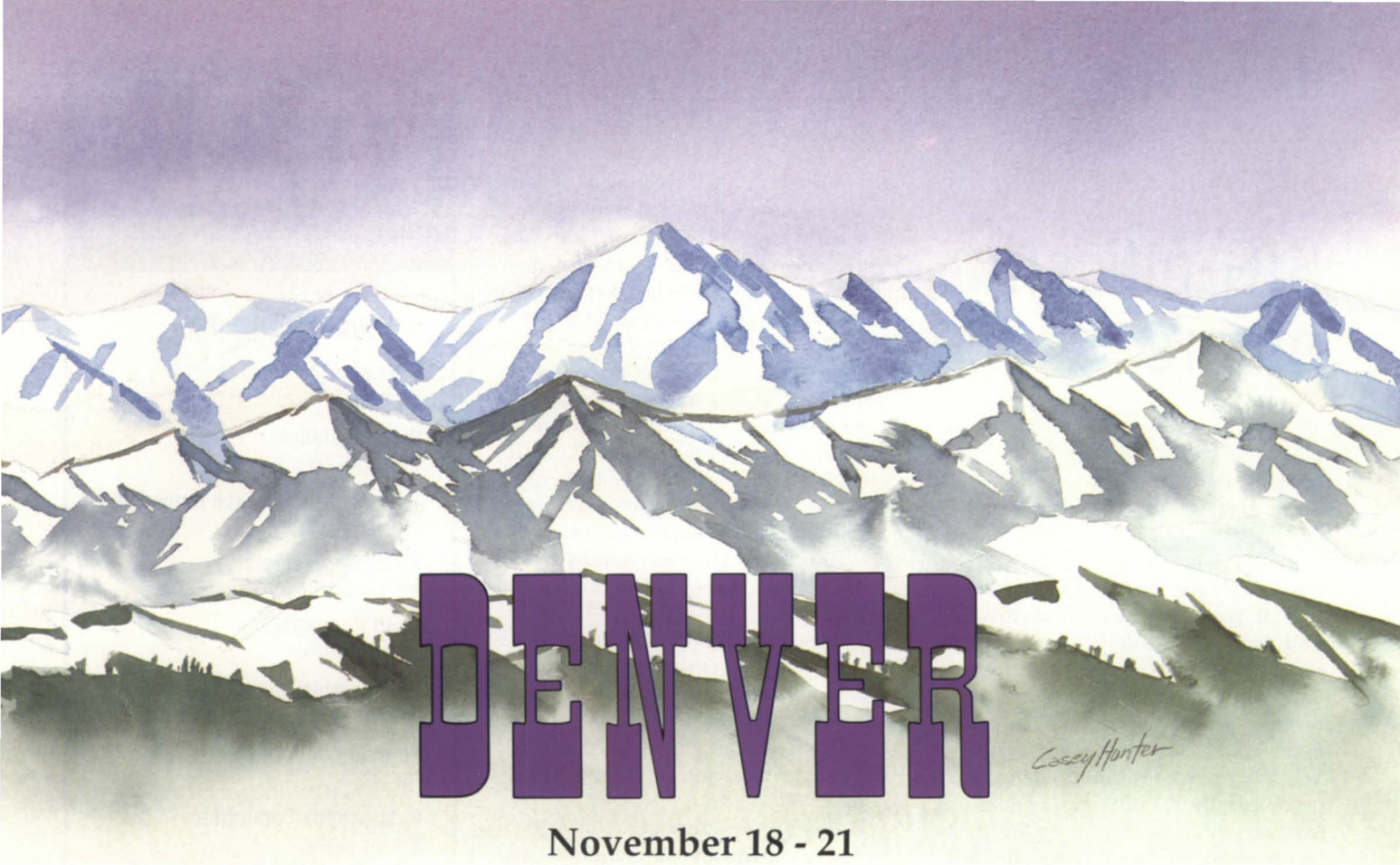
A data processing manager must know how to justify equipment purchases and upgrades, and often his or her department's very existence. When a decision is made at your organization, do you ever feel like you got the short end of the proverbial stick? Maybe your negotiation style is lacking. Data General's Dr. R. Christopher Gundel (page 14) makes a good case for improving your negotiation strategy.

After spending all those years "building better mousetraps," how does one learn not only to build mousetraps, but to sell them also? Based upon personal experience, Bill Mathrani (page 8), president of Hiperstor, describes the evolutionary process from technical whiz to managerial type.

My personal favorite this month is Kent Finkle's (page 12) letter to a counterpart who has just been promoted to system manager. "Dear Ximena" (that's pronounced "Zi mee na", not "exema") is a classic list of "Don'ts" that every system manager should copy and post in the computer room.

We had planned to write an article on time management . . . but we ran out of time.

Thank you, *Focus* readers, for your input on choosing editorial topics. We appreciate your original ideas and try to accommodate when we can. (However, I don't know if we can help the person who requested more articles on fishing and hunting.) We'll do more surveys, formal and informal, in the coming months so that you have the opportunity to tell us what you want to see in *Focus*. Our goal is to be your best resource for information on using your Data General equipment to its fullest advantage. △



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Cool off and network!

The "Mile High City" offers much to do and see, so come and enjoy yourself and gain valuable information in the process. Take advantage of the second year the NADGUG conference will be held concurrently with DG's reseller conference (SOURCE 91) and DG's annual sales and systems meeting. Browse through the exhibit hall which offers products and services from over 75 vendors. Network with other DG users and be part of the largest DG conference in the world!

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SIG-nificant others

by Robin Perry
Focus staff

So you've heard of the NADGUG conference. Maybe you've attended one or several. You know the value of attending. You go to the sessions, workshops, or educational services classes during the day. You learn a lot. You meet people. Between sessions, you visit the exhibit floor. You see product demonstrations. You talk to experts. You exchange business cards. By 5 p.m., your back is aching from carrying a bounty of product literature, session handouts, and demo disks, coffee cups, and other freebies you picked up at the different vendor booths. Your feet are tired and you're ready to return to your hotel room to rest. But wait, what's this item on your conference agenda about a SIG meeting? What's a SIG? Never mind, you're thinking about dinner.

Think again, friend. The NADGUG conference happens only once a year. A missed SIG meeting is a missed opportunity. NADGUG's Special Interest Groups bring together end users, product developers, and Data General support people. There is no better occasion to speak face-to-face with people who can make a difference in your equipment or software.

"The benefit you and your company will receive from the exchange of information with other Data General users is well worth the time and money spent on attending and participating in all of the NADGUG 91 activities," said Linda Klatt, president of OASIS (Office Automation Special Interest Subcommittee).

An obvious benefit of attending a SIG meeting is finding others with like interests. Ray Walther of the CQCS SIG said he looks forward to seeing "the innovative things that other people are doing. There are things I've learned that have saved lots of time and money."

Those who attend SIG meetings often find that group pressure gets results. At

the Lion's Gate SIG, "we ironed out some issues on how we wanted things to happen with the people who own Lions Gate [business accounting] software. We found that to be a great benefit because we've seen many changes happen to the software," said SIG leader Bart Bates.

Data General leaders recognize the importance of SIG meetings and usually send representatives. "The ICobol SIG is really exciting," said Dennis Doyle, SIG leader and NADGUG vice president, "because the Research Triangle Park developers attend and seek input, and as a result have actually upgraded the software as a result of the SIG meetings. What more can you ask for?"

Ed Lindberg, president of the AOS/VS SIG, recalled that "in one SIG meeting we found out that communications had broken down between a local office and the home office. Data General Corporate did not even know about a very serious problem."

Lindberg notes other advantages: identifying sites with similar equipment and software; locating resource people both within Data General and in the user community; learning about new programs; and getting first-hand product information.

"Life is opportunity," said David Novy, president of the SIG.UX and past president of the AOS/VS SIG, "When you get people in the proximity, things happen. [The NADGUG Conference] is the forum for exchange of information. If you want to get things done, that's the place for it."

And who knows, if you attend a SIG meeting, you may end up having dinner with a new set of friends, instead of ordering room service alone.

The following special interest groups will hold meetings at the NADGUG 91 conference in Denver, November 18-21. Please check the schedule in your registration packet for details. To receive a registration packet, call 800/932-6663 or 508/443-3330.

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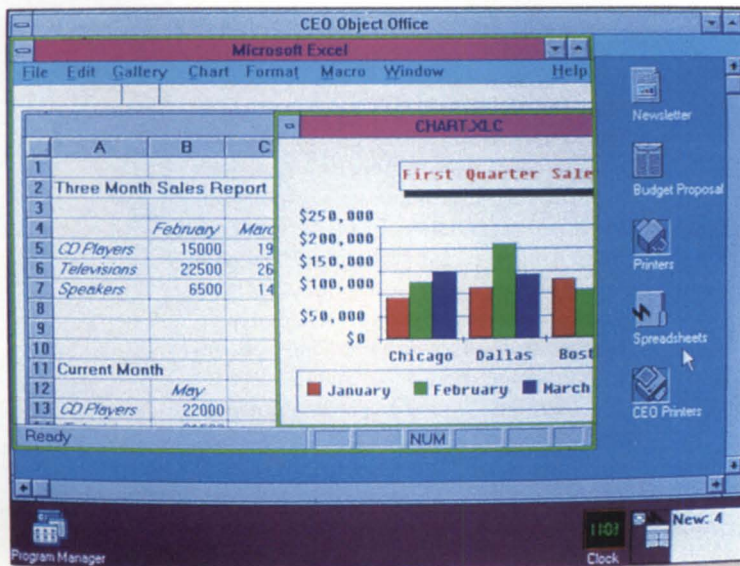
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Technically minded managers

SYNOPSIS

The new corporate manager with a technical background faces a potentially difficult transition. How do you graduate from day-to-day mousetrap designing to wider-perspective matters like marketing and pricing?

by Bill Mathrani
Special to Focus

Many successful technical minds have set out to capture dreams of managing their own corporations. Some achieve that ultimate goal. Others wish they had not ventured down this sometimes unforgiving path. Most have walked the fine line between success and failure. Whatever the result, all have been able to look back and reflect on decisions that will remain with them for a lifetime.

Many talented engineers designing tomorrow's new mousetrap believe that building the best technical product ensures success. I had to overcome the notion that a well-designed product would sell itself, and I learned that a technological advance is only one ingredient of a company's overall achievement. Success is not guaranteed solely to the team with the best mousetrap. It is won by the team with the best plan and the ability to implement plans effectively. Today's business managers must be able to hone the excellence of their engineers, transform that talent into a shippable product, and communicate the product's value to the world—all in a timely manner.

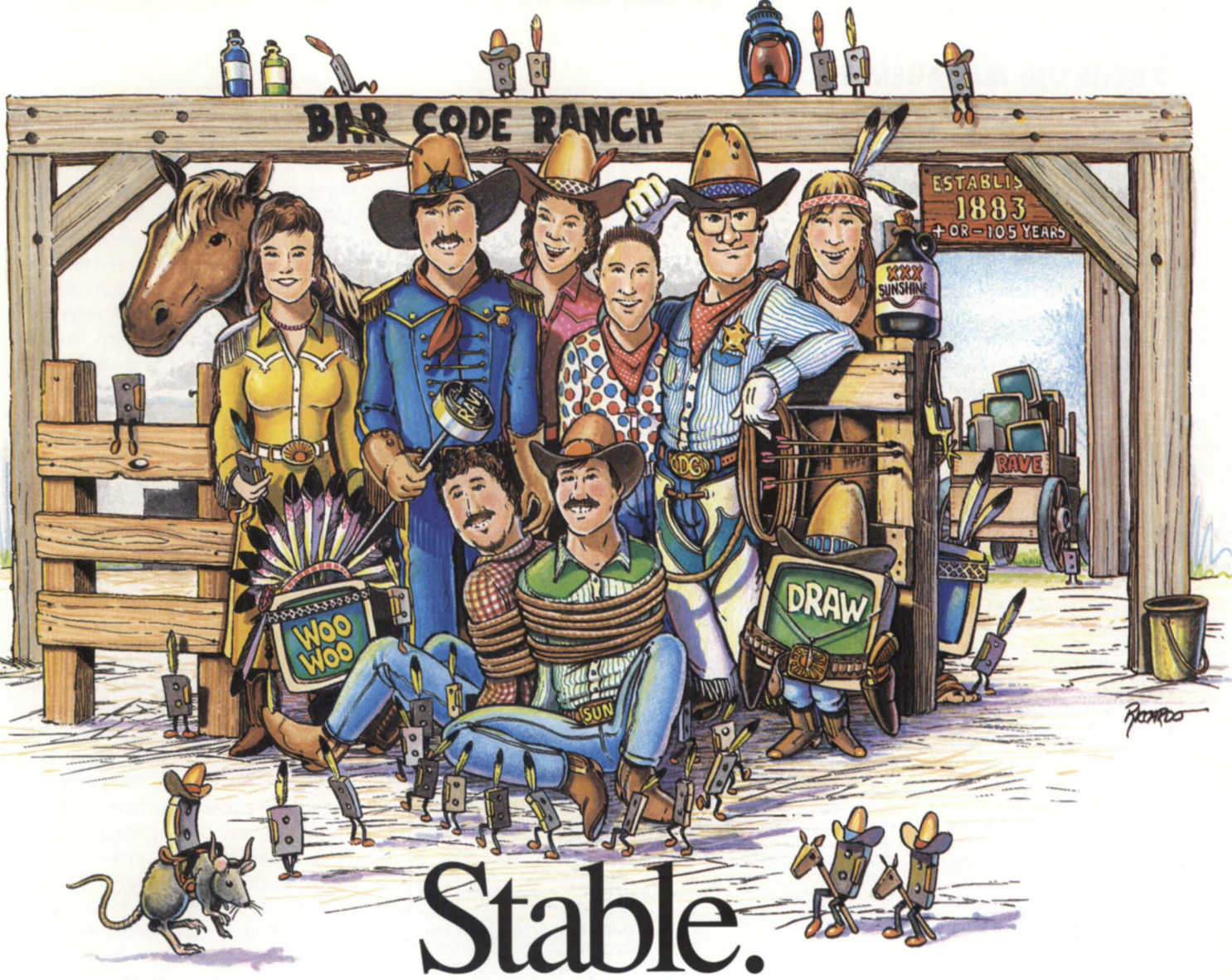
Former technical managers cast into the role of managing multiple companywide disciplines may find the opportunity in-

timidating. No longer may a senior staff member pass business-related decisions over the fence to organizations such as marketing, manufacturing, or quality control. Instead, non-engineering functions are now part of the manager's responsibility. A working relationship and confidence in each other's capabilities must be developed. Success goes to the manager who works well with all groups, setting realistic goals while allowing them the freedom to implement their departmental plans.

Additionally, new business managers from a technical upbringing often must shed many of their engineering-biased opinions about other departments. Favoring one group over another is reflected in management decisions and leads to distractions from corporate goals. Once removed from the engineering organization, I found I was better able to appreciate the importance of other departments from a more objective perspective.

Challenges

Creating a company offers a wide-ranging and ever-changing set of challenges, one of the earliest being financing. Researching financial alternatives and securing capital can be both humbling and rewarding. In my case, I was fortunate to be able to share my vision with another "engineer-turned-entrepreneur," who recognized the value of my engineering team.



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Whether establishing a new corporation or accepting a new management role, each manager must clearly define a strategy. Strategic decisions include objectives, resources, and implementation time frames. In the case of a new corporation, a

thorough marketing analysis must be made. What is the market? Where do our products fit? What are the product life cycles? Who is the competition and what are their strengths and weaknesses? Where will financing come from? Incomplete analysis can have lingering effects that are difficult to reverse.

The key to success in all departments often relates back to two important fac-

tors. First, hire the best people. Never compromise on talent. Just as an engineering manager would not hire a software engineer to design hardware, new business managers must understand the wide range of skills necessary within each department. Second, focus on the objectives identified in the business plan. Success comes most easily to the manager who identifies a specific objective and hires the best person to meet that requirement. When corporate goals are identified for all levels, the manager ensures that all team players know their respective roles. By hiring the best people and remaining focused, managers can delegate day-to-day decisions and can concentrate on the macro or more strategic issues. As companies increase in size, effective delegation and communication of the business plan is the only means of ensuring that goals are met.

Hiperstor faces challenges that range from meeting product deadlines to merging a 20-person subsidiary into a 300-person corporation. To share valuable resources between the two companies, senior staff must possess an understanding of priorities and time management for both companies. In any economy, managing resources correctly is vital; when shifting resources, it is important to gauge cost vs. opportunity. Reactionary planning can lead to slower time-to-market and lower-than-expected margins.

In engineering, most challenges can be alleviated by having a staff of talented engineers. For instance, each Hiperstor engineer has roots within Data General, and all are multidisciplined in varying specialties of mass storage design. The thrill of entrepreneurship inspires our engineers and enhances their desire to meet group objectives. The measurement of engineering's success is the timely completion of a final product that has a cohesive look and feel to the customer.

Today's rapid technology advances require a significant number of vendor relationships. If companies wish to produce the best product, they must understand the value of outsourcing specialized components within their product.

Managers must know when it is time to utilize a supplier's component, rather than getting stuck in the "invented here" syndrome. To Hiperstor and other suppliers in the DG market, vendors typically include disk- and tape-related OEMs, board and component manufacturers, and spe-

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Remaining technically competitive often means stimulating the minds of your engineers. Two overlapping factors to technical success are communication and knowledge. It is crucial for each engineer to remain current on industry technology directions, and to educate others. Hiperstor has put three practices into place to aid this process.

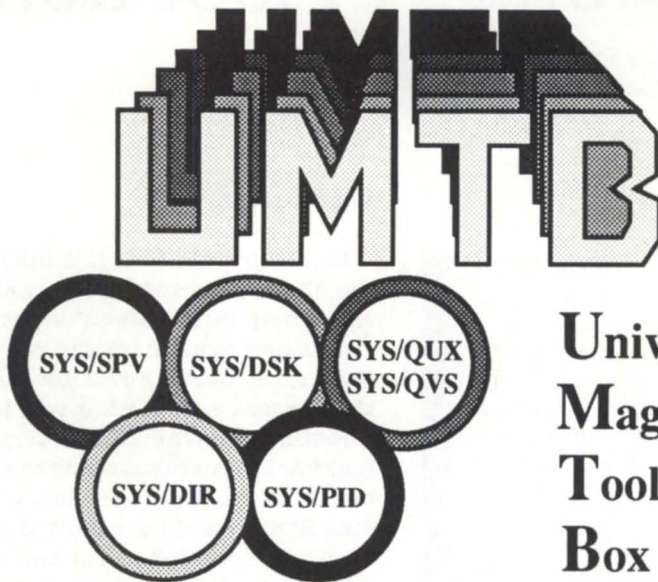
First, engineers are provided with the freedom to make decisions on their own. The only restriction is that all decisions involving the product or another department be communicated to group leaders immediately, prior to implementation.

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Bill Mathrani is president of Hiperstor, Inc., a wholly owned subsidiary of Clearpoint Research Corp. in Hopkinton, Massachusetts. He spent 21 years managing various mass storage engineering organizations at Digital Equipment Corp., Emulex Corp., and most recently Data General Corp.

And third, Hiperstor has two off-site meetings per year that allow engineering teams the opportunity to turn their new product ideas into formal proposals to executive management from varied departments. This addresses the engineers' desire to turn their engineering insight into real products. It also provides direct feedback to the engineers from the non-engineering departments.

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Don't . . . just don't

by Kent Finkle
Special to Focus

SYNOPSIS

Don't be like those unimaginative management types who persist in making the same mistakes with their computer systems and users that countless others have been making over and over and over from the very dawn of the universe. Strike out on your chosen path. Make your own blunders. Make them memorable. And be proud.

Dear Ximena,

So, congratulations (I think). You say they're asking you to "temporarily help out in a pinch" to get your firm's new system up and running. Good luck. That's how I got started three years ago. Well, it will be interesting, anyway. Of course, you'll make some mistakes along the way, but don't let it get you down. Thomas Edison said he wasn't discouraged when he failed for the thousandth time to build the electric light bulb because he now knew 1,000 things that did not work. Now, I haven't invented any light bulbs yet, but I do have a list of things that I now know don't work, from personal experience. I'm going to share this list with you so that you can make your own original errors rather than making errors merely derivative of my own.

To begin with,

WARNING!

Don't: say you'll "temporarily help out in a pinch" unless you want to marry the system and have kids with it

The line between "helping out for a little while" and becoming "the computer person" is fine indeed. For instance, my supposed job title is "Assistant Finance Director." I'm just "temporarily helping

out" on the computer system here in beautiful North Andover. However, "the pinch" has lasted three years. So far.

Don't: buy your system in "Phases"

My most important "Don't." People like to do things in phases because it sounds terribly official. However, in the case of buying computer systems, phases do not work very well. It is akin to having a tooth removed in phases. Between phases, everyone associated with the acquisition will quit, the technology will change, and you will end up with a hodgepodge of systems that Martin Luther King himself couldn't integrate.

Don't: skip backup

Most modern operating systems track whether or not backups have been done. Hardware failures are delayed until a backup is skipped, and then allowed to occur all at once.

Don't: forget how to speak English

You have an English degree. So do I. Even so, long exposure to computers tends to, shall we say, erode your ability to use the mother tongue. Try to avoid this. As a case in point, a user recently asked me what a disk cache was for. She grew increasingly bewildered as I baffled her with details about buffers, milliseconds, and background writes. Luckily, my student intern broke in and told her that a disk cache would make her hard disk go faster. The user's curiosity was completely satisfied.

Don't: assume they're getting it

On another occasion, working without the aid of my intern/translator, I was attempting to explain to a user the function of a compiler. After a few minutes, the user interrupted to ask how much one of these compiler guys gets paid.

Don't: buy important software from unstable companies, even if the program is really a babe

My predecessors purchased our only report writer, an admittedly powerful and flexible menu-driven product, from a rather precarious firm from the Deep South. The magnolias had not bloomed many times before I had reason to ring them up. When I called the number I found in the documentation, a young lady answering the phone greeted me with an

affable "Chicken Lickin'. May I help y'all?" I'm not sure, but I tend to doubt the current ownership's commitment to the product.

Don't: use the word "laser"

For some reason, the word "laser" apparently has unfavorable and expensive high-tech connotations in some circles, particularly those responsible for approving computer hardware purchases. This is not because of the price. If you say, "Oki Laser printer for \$850," they will say "no," but if you say "Oki 800 printer for \$950," they will say "yes." Strange but true.

Don't: use SED

SED is a beastly, old-fashioned, line-oriented text editor. You shouldn't try to make do. It is a false economy. Just as the cowboy who spends all day in the saddle needs a good horse, a computer system manager needs a solid editor. Get a modern, full-screen, programmable text editor. Allow me to recommend PEDIT from Wordperfect. It is clean, elegant, and very fast.

Don't: tell them you'll have it when you think you'll have it

Your natural optimism is your enemy. Upgrade all project completion estimates to the next larger unit of time measurement and multiply by two. If you think it will take an hour, tell them two days. If you think it will take three weeks, say six months. Four months translates into eight quarters or two years. You'll still be late, but you'll have more time to polish your excuses.

Don't: think one dollar is always worth as much as another

This paradoxical situation is pervasive. Our Department of Public Works wouldn't bat an eyelash at the purchase of \$1,200 worth of rock salt, but will hold meetings of high-level staff for six months over buying a \$1,200 PC for a secretary. Computer dollars are at least 10 times as costly as the usual variety.

Don't: believe spreadsheets

They are notorious liars. Remember, spreadsheets are computer programs written 99 times out of 100 by people with no training in programming, no debugger, no quality assurance procedure, and no auditing tools. Finally, if the spreadsheet

tries to prove a point, recall that the author probably has a rather substantial bias.

Don't: let AOS/VS set your process priorities itself

Our system came this close to getting pitched out the door because of sluggishness. In spite of dire warnings from my value-added reseller, I manually adjusted priorities using PREDITOR until the performance problem went away.

Don't: buy a system without a data base

This seems obvious, but our system was purchased without one (and still doesn't have one, by the way!). Tell those contemplating this error that it is similar to buying a car without a motor.

Don't: over-buy on the CPU and under-buy on the printer

Outside the Jet Propulsion Lab, most users compute for the purpose of printing out the result. This simple observation, which, as they say in the math books, should be intuitively obvious even to the most casual observer, seems to escape a surprising number of people. Users bring hard copy to meetings, give it to customers, and so on. Nothing looks sillier than a powerful machine with a 9-pin dot matrix printer hanging off it.

Don't: forget to check remaining disk space

That an integrated financial management system can rapidly fill a hard drive is not surprising. But so can a lone secretary knocking out a few memos. I don't know how. There seems to be a physical law involved, about data expanding to fill available space. At any rate, don't get complacent about disk space.

Don't: trade your service contract for a promise to buy new equipment when the old breaks down

This exchange, a favorite of sharp-penciled financial types, is not in your interest. The "let me keep my service contract" battle must be fought only at budget time. Case-by-case repair means wasting your time ramming each repair request through the system.

Don't: isolate yourself

Other system managers have already solved many of the problems you will encounter. Talk to other system managers, subscribe to the trade publications, go

to seminars.

Don't: ignore your users

They decide the fate of your system. In a Texas town, the disgusted users got together and tossed out the old mainframe. When they tried to sell it, the best offer was a few hundred dollars from a scrap dealer. The Town Council had a better idea. They put the old clunker out on the lawn in front of town hall and let citizens hit it with a sledgehammer for a dollar a whack. When you are tempted to ignore an unhappy user, call to mind the image of someone joyously slugging your MV with a sledgehammer in the dying light of a Texas summer afternoon.

Don't: yell at your terminal

From time to time, you and your system will have a failure to communicate. AOS/VS is a sophisticated, multi-user operating system, capable of printing, calculating, storing, retrieving, loading, dumping, and spooling simultaneously. But it can't read your mind, so be nice. Even if you lose your patience, it won't, and it doesn't hold a grudge.

Don't: yell at your users

A user is an extremely sophisticated, neural-net-based, pattern-recognition wetware, requiring eight hours of reorg for every 16 hours of operation, optimized for hunting small animals in varying terrain, but somewhat less than optimal for interacting with computer systems. In contrast to AOS/VS, the user's nearly limitless grudge-holding capacity is measured in gigabytes of Write-Once Read-Many (WORM) memory, so be patient.

Well, Ximena, that's it. I wish you luck and hope that you will have as much amusement with your system as I have had with mine. So, as the Texas sun sets, and the harsh clanging sound of metal striking metal fades in the distance, I remain

Your loving friend,

Kent

△

Kent Finkle is the computer system manager for the Town of North Andover, Massachusetts. He may be reached at 508/682-6483.

Negotiating power

OK, you're a manager now. You deal with people, not just computer systems. Negotiation is the key—problem-solving, shared interests, "yes"-able options, and closing the deal. Here are some tips for achieving negotiation power and avoiding common errors.

SYNOPSIS

by R. Christopher Gundel, Ph.D.
Special to Focus

The evolution from individual contributor to manager requires an acceptance of negotiation as a way of life. Like it or not, almost everything a manager does requires some form of negotiation. If you want to be a successful manager, you need to know how to be a successful negotiator.

This article will help you understand the mechanics of negotiations by answering the following questions:

1. What is my negotiation style?
2. What are the various approaches to negotiations, and which one is best for me?
3. What steps do I need to take to prepare for a negotiation?
4. How do I maintain negotiation power and avoid common errors in negotiation?

Negotiation style

Experience and research suggest that a distinguishing characteristic of negotiation style is the degree of competitiveness or cooperativeness displayed by the nego-

tiator. Competitive negotiators are aggressive. They attempt to dominate and outmaneuver the other party. Cooperative negotiators emphasize shared interests and seek an outcome that is mutually beneficial. To determine where you fit, review the behavioral tendencies listed in the competitive and cooperative clusters. If you do not clearly fit under either cluster, you are probably versatile enough to adapt either style in a negotiation.

Competitive cluster

- Makes high demands and few or small concessions
- Asserts superior position and emphasizes differences in positions, rather than similarities
- Perceived as dominating, tough, and aggressive
- Reluctant to share any information
- Unwilling to budge from original position
- Willing to use threats
- Distorts information
- Attempts to falsely lower other side's expectations.

Cooperative cluster

- Willing to share information
- Discovers and addresses interests on both sides of the negotiation
- Avoids using threats
- Willing to make changes to original position
- Probes other side's needs
- Perceived as courteous, personable, and friendly
- Wants a fair or mutually beneficial outcome
- Builds options based on shared interests.

Knowing where you fit on the competitive/cooperative continuum provides valuable insights into your potential strengths and weaknesses as a negotiator.

If your tendency is competitive, your strengths include the ability to dominate the interaction, hold your ground, and

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The first step is to stop buying terminals. A program like PopTerm/410 turns a PC into a terminal at a keystroke for as little as \$65 per desktop. It works over a direct connection, modem or LAN, and it's the most painless first step to integration. Other RDS offerings have more bells and whistles. They offer a simple upgrade path when your needs get more complex.

Stage two: file and print services

When your workload outgrows your mini, there's no reason to buy a larger one. You stave off the purchase by turning the one you have into a departmental processor, which manages the workload and offloads some processing to your PCs.

PC/Remote provides this next step. For an additional \$400 or so per workstation, the PC can now use MS-DOS programs to process the mini's data and the mini can back up whatever your PC does - all over inexpensive async connections.



Stage three: the integrated LAN

Again, you're feeling the squeeze. It's time for the LAN, and probably time to supplement your mini with a high-end 80386 or 80486-based Novell NetWare file server. Our PC/VS is the high-performance package that pulls it all together. If your mini has the capacity, PC/VS can do it all, but if you've already got a Novell LAN, it's that much easier. PC/VS and NetWare make terrific partners.

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run is already spoken for, but there are a few copies left. Get right back to us, and we'll send you one.

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potentially receive all the demands you request. Beware of raising too many obstacles, cutting off communication, or being perceived as irritating and quarrelsome.

If your tendency is cooperative, your strengths include the ability to uncover shared interests, to develop rapport, and to generate options that are both fair and mutually beneficial. Beware of trusting

the other side too much, making too many changes in a proposal for the purpose of gaining the approval of the other side, or presenting an initial proposal that is too low or asks for too little.

Keeping these strengths and weaknesses in mind allows you to leverage your strengths while avoiding your weaknesses. Given these competitive or cooperative tendencies, the next topic ad-

dresses the best negotiation approach.

Approaches to negotiation

The most common approach to negotiation is *positional bargaining*. A typical scenario involves negotiators taking and giving up a sequence of positions. Roger Fisher of the Harvard Negotiation Project uses the story of two sisters negotiating for an orange to illustrate the problem with positional bargaining:

Both sisters wanted the last remaining orange. Both took the position that they needed the entire orange. After a period of time they finally agreed to divide the orange in half. The first sister took her half, ate the fruit, and threw away the peel. The second sister, meanwhile, threw away the fruit and used the peel to bake a cake.

All too often negotiators "leave money on the table" by digging into a position and then eventually "splitting the difference." The key is to focus upon underlying interests or concerns, rather than taking a position. If the sisters had explored underlying interests up front, both would have received 100 percent of what they wanted, rather than just 50 percent.

Alternatively, the *problem-solving* approach to negotiation, advocated by the Harvard Negotiation Project, focuses on interests instead of positions. Other characteristics of this approach include seeking a mutually acceptable solution, being soft on the people and hard on the problem, inventing options for mutual gain, and trying to reach a result based upon external standards—*independent of wills*. Experience suggests that the problem-solving approach takes less time than positional bargaining, results in outcomes that better meet each party's needs, and preserves the long-term relationship of the parties. To implement this approach, you need to complete four steps:

- 1) Answer pre-negotiation questions
- 2) Define interests of both parties
- 3) Create options for discussion
- 4) Close the deal—review results.

Four-step problem solving approach

First: Engage in pre-negotiation planning by providing answers to this list of questions:

- What issues will be negotiated?

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- Who will be included in the negotiation?
- What are the relationships between the negotiating parties?
 - Trust levels?
 - Power balance/imbalance?
- What are the areas of overlap between the parties?
- On what terms will you walk away from the agreement?
- What are your minimum and maximum positions?
- What do you believe are the other party's min/max positions?
- How are you perceived by the other party?
- How would you like to be perceived by the other party?
- What external pressures exist?
 - Time?
 - Expectations?
 - Precedent? (i.e., you gave XYZ Corp. an X percent discount)
- What can they easily agree to?
- What do you have that is valuable to them?

Second: Define both your interests and the interests of the other party. This is accomplished most effectively by assembling a small group of your colleagues to identify the interests at stake, but the process is just as useful if you do it by yourself. Make sure you complete all of the following tasks.

- Brainstorm a list of your interests—write them down
- Brainstorm a list of their interests—write them down
- Play "Devil's Advocate" to understand interests. Ask the following questions and write down your responses:
 - If we say "Yes," we get . . .
 - If we say "No," we get . . .
 - If we say "Yes," they get . . .
 - If we say "No," they get . . .
- Ask why they are interested in each of their interests
- Ask what is the decision they think they are being asked to make
- Ask what interests of theirs stand in the way.

Third: Create a series of options to be negotiated. Similar to step number two, this can be accomplished on your own or in conjunction with a small group of your colleagues. Be sure to complete all of the

listed tasks.

- Brainstorm both general and specific options
- Identify shared interests—look for mutual gain
- Determine payoff by asking:
 - If we say "Yes" to this option, the payoff is . . .
 - If they say "Yes" to this option, the

payoff is . . .

—If we say "No" to this option, the payoff is . . .

—If they say "No" to this option, the payoff is . . .

- Ask how you can get them to say yes?
- Ask how do you build a "yes"-able proposition?
- Ask what are the obstacles to "Yes"?

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FOCUS ON: MANAGEMENT

- Make sure your chosen options maximize legitimacy.
 - Use external standards to legitimize
 - Ask if options pass test of reciprocity: are you asking them to accept a deal you would not accept?

Fourth: Close the deal by deciding on mutually acceptable options, establishing commitments, solidifying the long-term relationship, and following up. You should also evaluate the success of the negotiation outcome by determining if it meets the following criteria:

- Meets your bottom line
- Satisfies interests:
 - Yours, well
 - Theirs, acceptably
 - Others, tolerably
- No waste—a good option or “yes”-able proposition
- Legitimate—you do not feel taken
- Wise commitment:
 - Sufficient = Everything you need
 - Realistic = You can do it
- Negotiation process was efficient—good communication
- Negotiation process improved long-term relationship.

As a manager, you will find that this four-step process can be applied to all types of negotiations. Use it with other managers, subordinates, outside vendors, and your boss.

In addition to following the foregoing steps, you should maintain negotiation power throughout the negotiation process and avoid common negotiation errors. The next section addresses some of these pitfalls.

Avoiding common errors

You maintain negotiation power throughout a negotiation if you have the following:

- Know your bottom line
- Know when to walk away from a deal
- Have good information on interests
- Have good options—“yes-able” propositions
- Good communication
- Have a good working relationship
- Make wise commitments.

The common errors that you should avoid include:

- Ignoring alternatives
- Focusing on positions rather than interests
- Ignoring legitimacy and telling them what they should do
- One-way communication: talking at them
- Poor listening
- Assuming that you and the other party have similar assumptions and values
- Committing before listening.

Putting it all together

Always keep the strengths and weaknesses of your particular style in the back of your mind. Leverage your strengths, avoid your weaknesses. Adapt a problem-solving approach to negotiations that focuses on interests, rather than position. Follow the four-step process and make sure you write down interests, options, and answers to the questions raised, even if you end up doing it on the back of an envelope. Committing this information to writing will enhance your negotiating power and help you avoid common negotiation errors. If you need further instruction in negotiation skills, I suggest you consider the following:

Getting to Yes: Negotiating Agreement Without Giving In, by Roger Fisher and William Ury, New York, Penguin Books, 1981.

Negotiator Pro, an Expert System running under MS-DOS marketed by Beacon Expert Systems, Inc., 35 Gardner Road, Brookline, MA 02146.

Getting to Yes provides an excellent review of the problem-solving approach to negotiation developed by the Harvard Negotiation Project. *Negotiator Pro* enables you to assess your style and the other party's style, and provides detailed negotiating strategies and plans. Hopefully, this information will ease your transition into management and make you a more effective manager in the long run. Δ

R. Christopher Gundel is the manager of Educational Technologies for Data General's Educational Services Division. He is responsible for technical and sales training course development and has considerable experience negotiating contracts for Computer Based Training Authoring Software.

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

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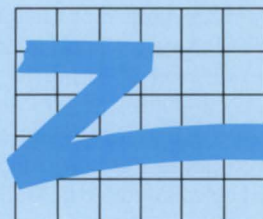
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Why SNMP?

by Dr. Katherine Jones
Special to Focus

SYNOPSIS

Anyone managing a network using TCP/IP can benefit from SNMP (simple network management protocol). In fact, you can't afford not knowing more about how it can chase away your system administration nightmares.
Part 1 of 2

Today's networks are becoming more heterogeneous—computers, PCs, and network devices may be from different vendors, and they may be very different in purpose. At the same time, networks are growing: local area networks (LANs) are being tied into large, international wide area networks (WANs). Managing networks in this increasingly complex and expanding environment can be a system administrator's nightmare.

Luckily, through the advent of international and *de facto* network management protocols, LAN and WAN management is becoming easier. The advantages of adhering to industry standards are several: ease in adding compatible equipment; retention in the value of the initial equipment because it does not need replacing to accommodate new equipment; and the flexibility to select products from a variety of vendors on the basis of cost or added features, rather than being locked into one vendor's management methods.

In environments with a variety of different vendors' computers and networking equipment, using adherence to standards as a selection criterion is virtually imperative.

Most of the current standards activity for network management is based on two protocol areas: the simple network management protocol (SNMP) for TCP/IP networks, and the common management information protocol and affiliated services, (CMIP and CMIS), part of the Open Systems Interconnection (OSI) Management Framework. The standards work involves not only the protocols to be used to communicate the network management information from point to point, but information that needs to be saved and communicated, and how that information is to be identified or structured.

Today, the most commonly used protocol in heterogeneous networks is the SNMP. Standardized in August 1988, SNMP now is defined in "recommended"

SNMP, continued on page 23.

SNMP architecture: a technical overview

The SNMP architecture comprises three key components: the structure of management information (SMI), the management information base (MIB), and the SNMP protocol.

The structure of management information

Network management information consists of objects that are organized in a tree-like structure. Each object in the tree has a name, syntax, and encoding. Objects are named by Object ID, which is the sequence of labels as one traverses the tree from the root to the object. Syntax and encoding for an object are defined using a subset of Abstract Syntax Notation 1 (ASN.1). Internet standard objects defined in RFCs fall under

the "mib" subtree (see Figure 1, page 22). Objects defined in Internet draft RFCs fall under the experimental subtree. The enterprises subtree is intended for proprietary object definition (for example, the MIB for a 'cisco router or a Data General terminal server).

The management information base (MIB)

The MIB is the repository of information necessary to manage devices across the network. This term is used in a variety of ways, which may cause confusion. It can refer to a collection of objects, and any parts of or all of the object tree. It is used as the name for the Internet RFC for their standard objects: as in MIB I and MIB II.

The MIB contains a list of network ob-

jects and their attributes, including the number of packets sent to a network interface, routing table entries, and protocol-specific variables for IP routing. The first MIB defined by the Internet community dealt primarily with IP routing variables for use between different networks. The second MIB, known as "MIB II," is generally implemented in products today. MIB II extended SNMP capabilities to a variety of media types and networked devices.

The SNMP MIB is often pictured as a tree with four branches, each branch representing a set of variables. The management branch contains both MIB I and MIB II objects and attributes. The private branch contains proprietary vendor-specific variables. Vendors often register

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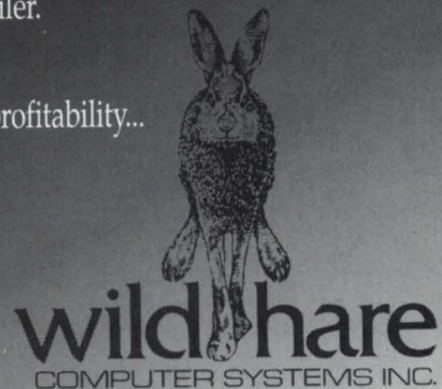
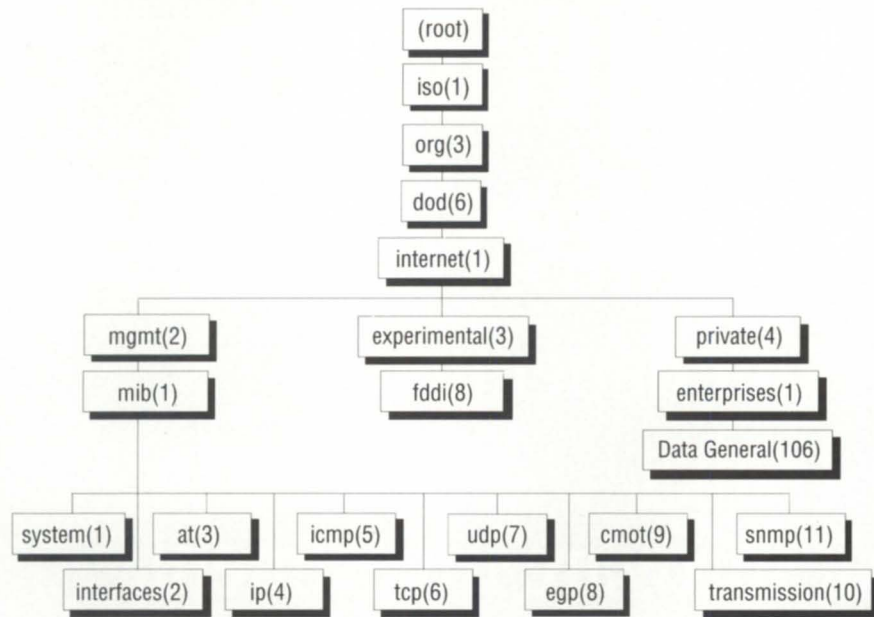


Figure 1: Object ID Tree



their proprietary MIBs in an easily accessed directory so creators and users of network management systems can incorporate the management of those devices into their specific product. The experimental branch contains object variables currently under test. The fourth branch, labeled directory, is reserved for future use.

The SNMP protocol

SNMP is a protocol that optimizes processing of a few simple operations. It supports transaction-based queries like "getrequest—getresponse; getnextrequest—getresponse;" and "setrequest—getresponse;" and supports "traps" that are alarms and alerts.

SNMP runs on top of TCP/IP's datagram protocol, or User Datagram Protocol (UDP). This is a transport protocol that offers a connectionless-mode service. It can also run on top of TCP or ethernet, but most vendors implement it on UDP.

Δ



SNMP, continued from page 20.

RFC 1157. (RFCs or "Request For Comments" are the Internet's version of approved standards. The "recommended" status is equivalent to an ISO "IS" or "International Standard.")

SNMP was originally intended to support the management of data communications over TCP/IP networks, and to serve the short-term needs of TCP/IP network users and vendors. The idea was that OSI communications and network management protocols would quickly make TCP/IP obsolete. The popularity and widespread use of SNMP, however, and its appropriateness for network devices that would be overburdened with a complete OSI stack, indicate that it has become far more than a short-term solution.

Keep it simple

SNMP growth stems to a great extent from its own key word: simplicity. Ease in implementing SNMP has led many network device makers, as well as vendors of workstations and servers that use TCP/IP, to adopt the protocol. It is through this

protocol that Eclipse MV and Aviiion computers, other vendors' computers, personal computers, and network devices can all be managed over a TCP/IP network.

What is SNMP?

As with other network management protocols, SNMP management can best be thought of as two roles. An SNMP manager controls and manages the network. An SNMP agent resides in a device, workstation, or server across the network. It waits to be managed or to send an alarm to the manager. That alarm, in SNMP terms, is called a "trap."

What an SNMP agent does

The SNMP agent is that portion of software residing on each device to be managed. It does two basic things. First, it generates traps (tells the manager when something is amiss, through sending an event or alarm message). Second, it responds to requests. For example, it allows a "Get" command to retrieve information from the remote device and, if it supports

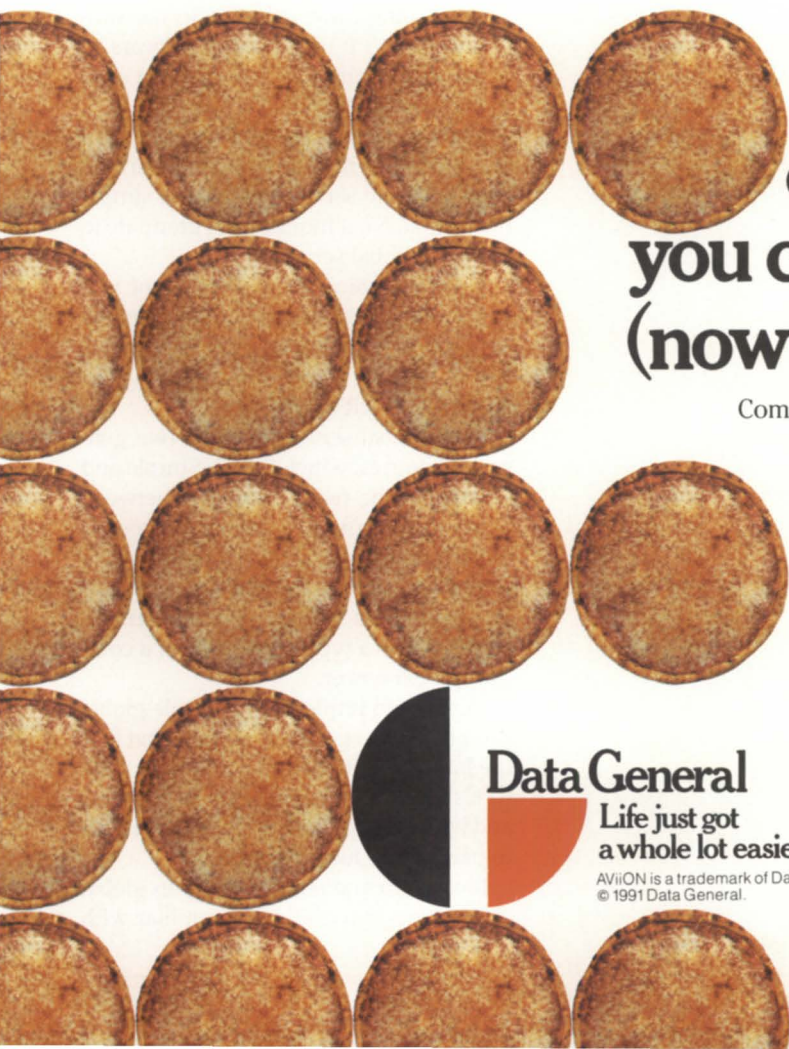
the "Set" command, as Data General does, allows the remote manager to control the device itself.

Data General provides SNMP agent support for both TCP/IP for Aviiion systems and AOS/VS II TCP/IP. The addition of this protocol allows Aviiion computers and AOS/VSII MVs running AOS/VS II TCP/IP to be managed by any standards-based SNMP network manager.

In addition, SNMP agent support is widespread in the various kinds of networking devices: bridges, routers, multiplexors, terminal servers, and the like. SNMP is included in the PC version of TCP/IP available from FTP Software, a product popular with many users of Data General's DOS-based computers. Δ

Next month: Managing your TCP/IP network.

Dr. Jones is the senior product manager responsible for network management and TCP/IP product lines at Data General Corporation.



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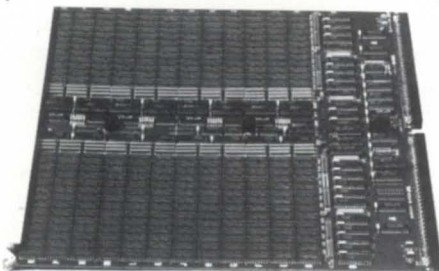
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A simple global server

:YES_MASTER

Over the years I've run into quite a few applications where a server of some sort makes sense. Proper implementation of servers can be a somewhat tricky piece of business, so I thought I'd get around to documenting the techniques once and for all. This is it and I figure we're looking at a minimum of three month's worth of columns to cover the subject completely.

A lot of third-party software that includes global servers do a poor job of implementing them, especially the ones that make use of Connection Management. If you've ever had "lost PIDs" when terminating processes that are customers of one of these servers, then you may want to pass along these columns to the supplier. A lost PID is one that appears to disappear, but the PID is not reused until after the next reboot.

There are two kinds of servers: global and local. This month we're going to look only at global servers, and just a simple one at that. Next month we'll graduate to complex global servers.

As a refreshing change for all of you neglected AOS users still out there, most of this month's column applies to you too.

:GLOBAL_SERVERS

Most global servers fall into two general categories, which I'll call Simple and Complex. The main difference between simple and complex global servers is whether they share access to common data with their clients. OP:XLPT is a typical example of a simple global server. OP:INFOS is a typical example of a complex global server.

In order to implement a simple global server, all you need to be well-versed in is the Inter-Process Communication facility (IPCs), simple (i.e., static) multitasking, and whatever system calls the server needs to perform its intended function.

In order to implement a complex global server, you also need to be familiar with

SYNOPSIS

BJ begins a campaign to demystify global and local servers, concentrating this month on the mechanics of building a simple global server. You'll get info not covered in the manuals, as well as tips on proper use of related facilities such as IPCs, multitasking, and system calls.

Figure 1: Simple server skeleton

```

#include <stdio.h>
#include <ctype.h>
#include <stdlib.h>
#include <string.h>
#include <dglib.h>
#include <multitask.h>
#include <sys_calls.h>
#include <packets:create.h>
#include <packets:ipc.h>

#define LPORT 1
#define DEF -1
#define OK 0
#define ERR -1
#define NUL '\0'
#define SPACE ' '
#define COMMA ','

int ignore; /* Bit bucket */
char myname[SMXPN]; /* My simple*/
/*process name */

/* Emulate CLI's [!FILENAME path]pseudo-op. */
int efilename(char *pathp) {
    int c;
    char *fromp;
    int len;
    char *top;

    len = 0;
    while (c = *top++ = *fromp++) {
        len++;
        if (strchr("@^:=",c)) {
            top = pathp;
            len = 0;
        }
    }
    return len;
}

/* Send a message to a PID. */
void send(int pid, char *strp) {
    int ier;
    char msg[512];

    if (myname[0] == NUL) {
        if (sys_name(myname,0,&ignore))
            exit(lasterror());
        efilename(myname,myname);
    }
    sprintf(msg,"%s %s\n",myname,strp);
    sys_send(pid,msg,strlen(msg));
}

void stub(int pid, char *cmdp) {
    send(pid,"Ok");
}

/* Parse an incoming command. */
int parse_cmd(int pid, char *cmdp) {
    char username[SMXUN];
    int privmap;
    char *strp,*tokp;
    int super;

    /* Get the sender's username. */
    if (sys_gunm(pid,0,username,
        &ignore,&privmap))
        exit(lasterror());

    /* Is he worthy? */
    super = privmap & ($PVSPISPVSMISPVSU);
    if (!super && strcmp(username,"OP"))
        return;

    /* Convert command to upper case*/
    /* and replace commas with spaces.*/
    strp = cmdp;
    while (c = *strp = toupper(*strp)) {
        if (c == COMMA) *strp = SPACE;
        strp++;
    }

    /* Get the command word. */
    tokp = strtok(cmdp,"");
    if (tokp == NULL) tokp = "?";

    /* Check against known commands. */
    if (strcmp(tokp,"STOP") == 0) {
        send(pid,"Bye-bye");
        exit(EXIT_SUCCESS);
    }

    else if (strcmp(tokp,"AUTHORIZE")==0)
        stub(pid,cmdp);
    else if (strcmp(tokp,"UNAUTHORIZE")==0)
        stub(pid,cmdp);
    else if (strcmp(tokp,"LIMIT") == 0)
        stub(pid,cmdp);
    else if (strcmp(tokp,"UNLIMIT") == 0)
        stub(pid,cmdp);
    else if (strcmp(tokp,"RESTRICT") == 0)
        stub(pid,cmdp);
    else if (strcmp(tokp,"UNRESTRICT")==0)
        stub(pid,cmdp);
    else
        send(pid,"Unknown command ignored");
}

/* Loop receiving IPCs. */
void ipc_task(void) {
    P_IREC irecpt;
    char msg[80];
    int pid;

    /* Setup the static packet stuff. */
    zero((char*)&irecpt,sizeof(irecpt));
    irecpt.idpn = LPORT;
    irecpt.iptr = (short*) msg;

    /* Loop endlessly. */
    for (;;) {
        /* Reset the packet. */
        irecpt.isfl = 0;
        irecpt.iufl = 0;
        irecpt.ioph = 0;
        irecpt.ilth = sizeof(msg)/sizeof(short);

        /* Listen for a command. */
        if (sys_irec(&irecpt))
            exit(lasterror());

        /* Get the sender's PID. */
        if (sys_gport(irecpt.ioph,&pid,&ignore))
            exit(lasterror());

        /* Deal with the command. */
        parse_cmd(pid,msg);
    }
}

/* The Bouncer. */
main() {
    P_CREATE_IPC crepkt;

    /* Superuser On. */
    if (sys_suser(-1,&ignore))
        exit(lasterror());

    /* Setup the create packet. */
    zero((char*)&crepkt,sizeof(crepkt));
    crepkt.cftyp_entry = $FIPC;
    crepkt.cpor = LPORT;
    crepkt.ctim = DEF;
    crepkt.cacp = DEF;
    if (sys_create("BOUNCER",&crepkt))
        exit(lasterror());

    /* Spawn the IPC task. */
    if (mtask(ipc_task,8192,2,0))
        exit(lasterror());

    /* Main loop. */
    for (;;) {
        sys_wdelay(60000);
        scan_pids();
    }
}

```

the Connection Management, Obituary IPC, and Shared Page I/O facilities.

All of these facilities are described in more or less detail in the AOS/VS [II] System Concepts and System Call Dictionary manuals (or in the AOS Programmer's Manual, if you're narrow-minded). In addition, I'll provide any of the missing info and some helpful hints on proper use of the necessary facilities.

One other technique is critical to any program involving multitasking, and that is the subject of lock strategies. Next month's column will begin with a detailed look at the two most common strategies.

:VEHICLES

Global servers can be implemented in just about any language, as long as it supports the ability to set, clear, and test bits within a word, provides access to the necessary system calls, and has the ability to use multitasking. That usually means assembly language, Fortran (IV, 5, or 77), Algol, PL/I, or C. Cobol is definitely out.

Have you ever wondered why most global servers are PROC'ed up with :PER as their initial directory, resulting in IPC pathnames that begin with '@'? The reason is simple: IPC files are created only in the process' initial directory (that's an O/S restriction) and they are automatically deleted only if the process dies (by suicide or murder), but not as a result of the Second Coming (a system crash)

I haven't the foggiest idea whether any of the Basics are capable of it.

For the code examples in this column, I'm going to use my favorite language du jour: C. Please excuse the terseness of the code fragments: magazine space is limited. That's also why the code uses two column tab stops instead of the traditional eight.

:BOUNCER.PR

Let's try a simple little global server just to get our feet wet. Here's the spec for it:

1) The server scans all PIDs every minute and makes a list of PIDs whose simple process name can be resolved to a console (CON, TCON, VCON, or whatever). Then it consults tables that tell it whether the username is allowed: a) to log onto multiple consoles at the same time, and b) whether it is logged onto consoles that are not in its approved list of consoles. Any offending PIDs are sent an obnoxious message and unceremoniously terminated.



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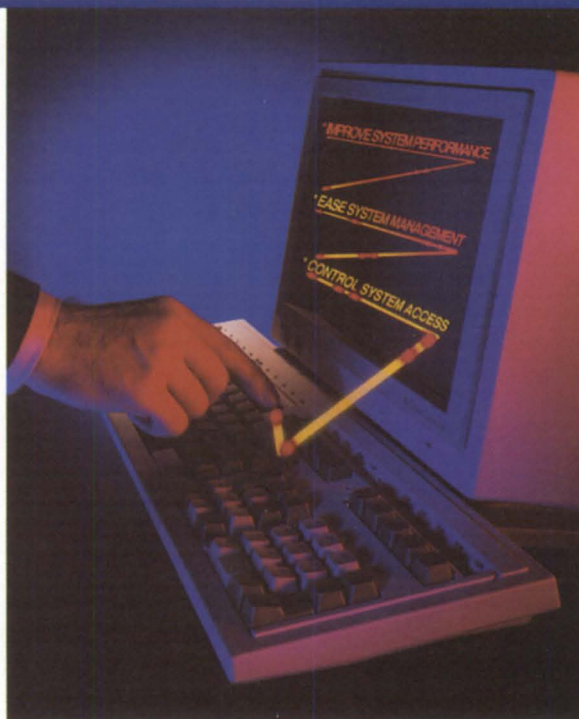
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2) The server's initial directory, :PER, creates an IPC file, @BOUNCER, through which it accepts commands from authorized users. The only authorized users initially are OP and users with SuperUser, SuperProcess, or SystemManager privilege, turned on or not.

3) The server supports the following commands:

```
AUTHORIZE username
UNAUTHORIZE username
LIMIT username n
UNLIMIT username
RESTRICT username {conname...|ALL}
UNRESTRICT username {@CONn...|ALL}
STOP
```

If a username has never been subjected to any command then it has unrestricted access.

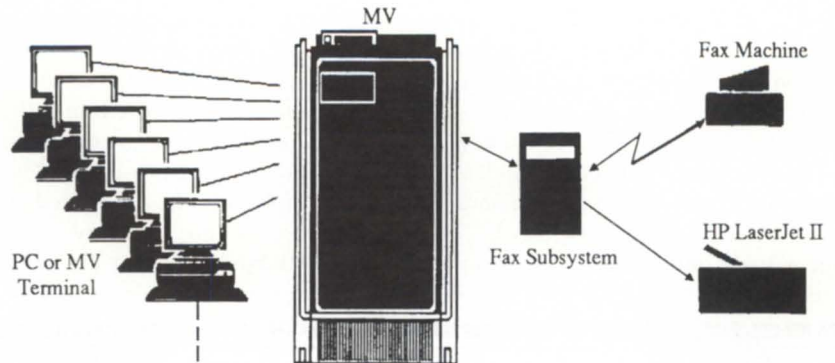
Because we're only interested in the mechanics of building servers, I'm going to gloss over the details associated with the actual work that this server performs and just describe the stuff related to the mechanics of the server. A complete working copy of the BOUNCER server, including C source, is available on the :SYSMGR BBS as item SMLOGS:SML9110X. For now, you need to scurry over to the photocopy machine and make a copy of Figure 1 (page 25) so that you can follow along as I describe the skeleton server code.

Starting with the main() function, the first order of business during server initialization is to turn on Superuser in order to be able to create the IPC file in the :PER directory, in spite of its restrictive ACL.

The next order of business is to create the IPC file. We need the IPC file because servers are typically PROC'ed up under PID 2 as unblocked sons, and don't have a console associated with them. The IPC file provides a way for us to communicate with the server once it's up and running. IPC files provide a bidirectional communication path between the owner of the IPC file and one or more other processes. CLI supports sending messages to IPC files through its CONTROL command. Application programs can also send messages to IPC files using the ?ISEND or ?IS.R system calls (requires the Use IPC user privilege), or via ?EXEC calls, or even via normal I/O calls like ?OPEN/?READ/?WRITE. In these latter two cases, you

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don't even need the Use IPC user privilege.

A simple ?CREATE system call is all that's required for us to create our IPC file, specifying ?FIPC as the file type and selecting a local port number. Any nonzero local port number between 1 and 127 (documented only in the AOS manual) will do nicely, so we'll just use 1. The number used only needs to be unique

within our process. Note that when creating IPC files, you can create them only in your initial directory.

Have you ever wondered why most global servers are PROC'ed up with :PER as their initial directory, resulting in IPC pathnames that begin with '@'? The reason is simple: IPC files are created only in the process' initial directory (that's an O/S restriction) and they are automati-

cally deleted only if the process dies (by suicide or murder), but not as a result of the Second Coming (a system crash). Because the :PER and :PROC directories are always deleted and recreated each time you reboot your system, they're the perfect place to put IPC files so that you don't have to remember to delete the IPC after a system failure. Of the two, :PER is more convenient because it has an official abbreviation, '@', that's easier to type than ":PROC". That's why :PER is traditionally the home of all global servers.

Once the IPC file is created, the server spawns an IPC listener task that simply sits in a loop listening for and processing incoming messages. The main task in the program is then free to do the actual work associated with the server (scanning PIDs once a minute in this case).

The IPC task issues a pended receive (?IFNBK not set in ?ISFL) of up to 40 words using global origin port 0 (i.e., from anybody) and local destination port 1 (i.e., @BOUNCER). Note that in the code I use a character buffer for the message, but the ?IREC call packet uses a word address ((short*)msg) for the buffer and a word count (sizeof(msg)/sizeof(short)) for the buffer size.

The CLI CONTROL logic always pads the message with one or two NULs, depending on whether the message was an odd or even number of bytes long, so the received message is guaranteed to end with at least one NUL. That's nice, because that makes it a string in the C sense. CLI also converts all occurrences of one or more adjacent spaces or tabs within the message to a comma. For example, the command "CONTROL@BOUNCER.This is a test" will cause the program to receive the eight-word message "This ,is,a,test" with the eighth word containing two NULs.

The first order of business after receiving a message is to attempt to get the PID of the sender using ?GPORT. If ?GPORT returns an error, presumably because the sender terminated immediately after sending the message, then the message is simply ignored.

Parsing and acting on the message, including sending any reply, is done by parse_cmd() and the command-specific functions that it calls. The first step is to make sure that the PID sending the message is a privileged user. Luckily, the ?GUNM command that returns the

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username for a PID also returns the process privilege mask that can be checked easily for the process' ability to become SuperUser, SuperProcess, or System Manager. Messages from processes without Super privileges and failed attempts to get the sender's username are simply ignored by returning to the IPC task.

Now that we know the sender is a privileged user, we can check for the supported commands. To make string comparisons easier the message is translated to upper case at this point and commas are replaced with spaces.

In the skeleton version, only the STOP command is supported and results in a reply of "Bye-Bye" to the sender via ?SEND and a call to the exit() function to terminate the server. All other messages result in a reply of "OK" and are otherwise ignored.

:EPILOGUE

The skeleton version of the server shown in Figure 1 is necessarily terse due to the mechanics of publication, but the following list of changes is recommended if you're in a hurry and you attempt to use the published skeleton as the basis for a real global server.

- Servers should always be immune to malicious user input. This server will abort if a message longer than 80 characters is sent to it. Ideally it should be reported and ignored.

- Blatantly ignoring system call errors, as I do with ?GPORT, ?GUNM, and ?SEND, is always inadvisable. If expected, the error code should be checked against a list of expected error codes before being ignored; or reported to the master console or output/error file and ignored if unexpected.

BJ is the president of B.J. Inc., a San Francisco based consultancy specializing in system auditing, system management, and performance analysis. :SYSMGR is a division of B.J. Inc. BJ can be reached at 109 Minna St., Suite 215, San Francisco, CA 94105, 415/550-1444 (voice) or 415/550-1072 (fax). The :SYSMGR bulletin board number is 415/391-6531 (300/1200/2400 with optional MNP class 5, CHAR/605X/CHARLEN=8/PARITY=NONE/AUTOBAUD) or 415/550-1454 (voice).

- Servers should allow commands to originate from console and batch users via the CLI CONTROL command, and from programs via the ?EXEC and ?ISEND or ?IS.R system calls. One way to do this is to use ?IUFL in the ?IREC packet to pass a command code instead of a command verb in the message in the case of commands sent directly from a program. In this case, the response is made via ?ISEND instead of

via ?SEND. The ?ISEND typically returns an error code in ?IUFL and a zero-length message.

:TO_BE_CONTINUED

Now that we have the basic structure of a server in place, next month we'll be able to tackle a rudimentary complex global server that uses connection management and shared page I/O. Δ



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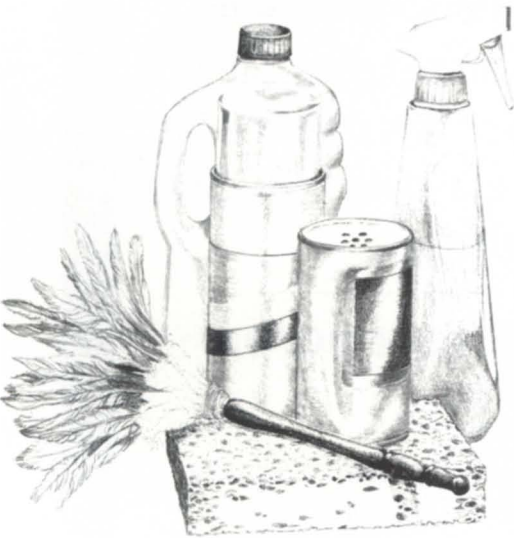
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Maid for CEO

SYNOPSIS

People with huge, cluttered systems take heart, new utilities from Eagle Software will help you identify and recover unused blocks of data, while improving the maintenance interface between CEO and AOS/VS.

by James Ruby
Special to Focus



Although CEO is among the best integrated office automation software I've ever seen, one of its major shortcomings has always been the limited and sometimes confusing correlation between what the CEO users "see" and what is visible at the system level.

System managers don't usually need to know about the drawer President, folder Speeches, and document Gettysburg, but are instead more concerned about how much disk space is being used by the directory :CEO_FILES:ABE, and whether or not the file LINCOLN.12345.DOC is actually still a valid CEO document.

Even though various packages have provided different tools to help manage CEO systems beyond the level provided by Data General, all of these have been special-use tools with limited flexibility. Eagle Software is attempting to break new ground with Maid for CEO, an open-ended set of tools that provides an improved maintenance interface between CEO and AOS/VS.

At Fannie Mae, we have had a continually growing CEO user population that peaked at approximately 3,000 users on 14 systems. These users are spread across 11 MV/10000s, one MV/9500, one MV/20000, and one MV/2000. Because of staff affiliations, these users could not be split equally among all systems, so some of

these systems were heavily loaded. Compounding this load was the disastrous decision made years ago (before I had even heard of DG or Fannie Mae) to allow users access to the default amounts of CEO space—75,000 blocks for CEO files and 5,000 blocks for CEO mail. Through co-owned drawers, some CEO profiles indirectly control hundreds of thousands of blocks of disk space and tens of thousands of documents.

It pretty much goes without saying that this many users with this many documents has emphasized the problems pre-3.00 CEO had deleting documents when the person doing the deletions was not the person who originally created the drawer. Early CEO also did not relocate drawers when the original owner was deleted from the system. Co-owners were still accessing these drawers, which created even more complications in environments with dynamic CEO user populations. All of this seems to have been taken into account by Eagle Software when designing Maid for CEO.

At its most basic level, Maid has a program called FLATFILER that retrieves filing information from the CEO_INDEX data base and stores it in flat ASCII files that can be printed or used as input to other programs. Eagle did an excellent job of providing flexibility for the output of this information, although the user-defined record layout file controlling the output is incomprehensible without the manual. All information that is stored in the CEO_INDEX is available to FLATFILER and can be output in a user-specified format.

FLATFILER alone is a powerful tool that can generate data for use by in-house programs, but Eagle fortunately went on to provide a more complete set of utilities. POSTER scans the CEO_INDEX and verifies that the AOS/VS pathname stored in the index is actually a file on disk. This is useful in the event that a superuser gets

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carried away with the delete command. Rather than recovering all files off a backup tape, only those files that are missing can be identified by POSTER and recovered individually.

RELOCATOR takes care of a problem I mentioned earlier, where the original creator of a drawer has been deleted off the system, but the drawer is still valid for other users. RELOCATOR will identify

the first user on the co-ownership list and move the drawer and its contents into that user's CEO_FILES directory. A nice feature added here is the ability to run RELOCATOR and specify that the drawers that would have been relocated are just identified instead of moved. This allows system managers a chance to make sure there is enough space in the target directory to hold the complete drawer.

The last (and in my view the best) of the utilities dealing with CLI pathnames is SWEEPER. I can't take credit for giving the idea for the program to Eagle, but it is the fulfillment of an item that has been on the top of my wish list ever since I took over the duties of CEO system manager. What is it about SWEEPER that makes it such a gold mine? According to Eagle's documentation, "SWEEPER finds extraneous or unnecessary files in the subdirectories of CEO's filing directory, :CEO_FILES."

I give this an award for being the understatement of the year. Eagle claims that in a large system these files can waste up to 50,000 blocks. People with huge, cluttered systems like ours can take heart—although we have not had a chance to run SWEEPER on the entire index of our most heavily loaded MV/10000, it appears that 100,000 blocks of data were recoverable in the first one-third of the users processed. SWEEPER's major problem is the time required for a full run, but considering the task involved, this is an issue that can be lived with. SWEEPER builds lists of directories and documents that are not in the CEO_INDEX, along with miscellaneous "garbage" files like leftover filed messages (+.MSG), edit files (+.FMS, +.CHG, +.FME, etc.) and inbox print files (DOCUMENT+ and MESSAGE+).

SWEEPER doesn't actually delete these files, but compiles lists in the directories in which they occur. An extra step is required to delete (or not delete) these extraneous files. It is necessary to run a macro called CLEAN_UP.CLI to delete or manipulate these files after SWEEPER has identified them. CLEAN_UP allows a number of options, including specifying a command to be performed on these files before they are deleted, such as dumping them to tape. If necessary, CLEAN_UP can be used to perform actions on these files without deleting them off disk.

The last three programs included in Maid have varying uses and usefulness. New in the latest release of Maid is ACCELERATOR, a CEO_INDEX rebuilder. This is similar to REBUILDER from VS_TOOLBOX, and has been customized to work explicitly with CEO_INDEX. Because we have already used REBUILDER on our CEO_INDEX prior to getting Maid, I can't provide any true benchmark information on ACCELERATOR. But it is an excellent way to improve response times

Attention NADGUG Members

Notice of NADGUG Executive Board Nominations

The following is the report of the Nominating Committee for the November 1991 meeting.

Those recommended for election at the 1991 Annual Meeting of the North American Data General Users Group are as follows:

Officers

Vice President: Jan Grossman
Information Services Manager
H.A. Holden, Inc.
Minneapolis, MN

Treasurer: Steve Pounds
Controller
Security Forces, Inc.
Charlotte, NC

Nominating Committee:
Dennis Doyle
Vice President

General Business Meeting Announcement and Proxy

The next General Business Meeting of the North American Data General Users group will be held in conjunction with the NADGUG annual conference in Denver, November 20, 1991 at 9:45 am. All members in good standing are eligible to vote on items brought before the meeting, which will include the election of the above officers.

In accordance with NADGUG's By-laws, any member in good standing may, by written proxy, authorize any other member to vote in their behalf. If you do not plan to attend, the Executive Board urges you to exercise your right to vote by filling out and returning the proxy information below. To be eligible, return the coupon no later than November 8, 1991 to: Recording Secretary, PO Box 951, Warren, OH 44482.

Select only one of the following proxy options:

I authorize _____, a member in good standing, to vote in my behalf at the 1991 NADGUG General Business Meeting.

-or-

I authorize the NADGUG Recording Secretary to exercise my vote in accordance with the instructions of the Board of Directors.

-or-

I authorize the NADGUG Recording Secretary to record my votes as follows:

1. Election to office of Vice President

Jan Grossman

2. Election to office of Treasurer

Steve Pounds

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for users moving through the filing system if you have systems where there have been a lot of user, drawer, folder, and document deletions.

CVERIFY scans the CEO_INDEX and reports on possibly corrupted areas at the user, drawer, folder, and document levels. Although the documentation isn't clear on what all CVERIFY will identify, it generally provides a reasonable English message when it finds a discrepancy under CEO.

The last program, MESSENGER, is more of novelty use at our site, but other sites will make good use of it. MESSENGER provides notification of new mail messages and current reminders to users who are logged on the system but not actively running CEO_CP. On our systems, only five systems programmers and a handful of application programmers don't log on directly into CEO. The systems programmers are seldom logged onto their home CEO systems long enough for MESSENGER to be effective, and applications programmers don't generally like to be interrupted by CEO notices!

I have emphasized the good points of Maid, but there is always room for improvement. One much-needed feature isn't a shortcoming of Maid, but is a change that DG should make. DG's insistence on having CEO_FSA exclusively open the CEO_INDEX means either CEO must be down for Maid to work, or a backup copy of the index must be loaded on disk. This can be a real problem for systems low on disk space (and desperately needing Maid!).

A couple of the programs (SWEEPER and ACCELERATOR) cannot be run on anything but :CEO_FILES:CEO_INDEX, which means CEO users will have to be excluded from the system until the programs finish. There are good reasons why users shouldn't be accessing CEO_INDEX while these two programs are running, but there are times when it would be helpful to generate statistics by running these programs on backup copies of the CEO_INDEX.

One final improvement Eagle could

Jim Ruby was senior systems programmer and CEO manager at the Federal National Mortgage Association (FNMA, or Fannie Mae), but he will probably have moved on to smaller and better things by the time of publication.

make is to expand its documentation. Instructions on how to run the different programs are quite complete, with clear examples, but in a few cases this doesn't go far enough. It would be nice to have an explanation about the information returned by CVERIFY. What does it mean that a drawer has an incorrect archived document count? What will this do to CEO? And what can be done to correct

the situation?

For next year, I have put a new item on my wish list: a menu system that will allow access to all VS_TOOLBOX programs and all Maid programs (as well as whatever else Eagle comes up with in the future). It wouldn't be hard to develop this using CLI macros, but Eagle has done such a good job of anticipating me so far that I'll give them first shot at it. Δ

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Head-to-head

In benchmark sessions running on an AV 5220, Data General, Transoft, and B32 prove that Unix is the platform of the future for Business Basic. Although Data General posted record times, the real winners are the users.

SYNOPSIS

by George Henne
Special to Focus

In 1975, in the early days of Business Basic, A Ferrari Dino 246GT drove coast-to-coast across the United States in 35 hours and 53 minutes. If cars had improved as much as Business Basic has since then, the crossing would take one hour and 16 minutes.

In July this year, for the first time, head-to-head benchmark sessions were run with the full participation of Data General, B32, and Transoft. All three companies have been marketing BBasic products for several years and were competing for the fastest times in a set of test programs. The winner? The users, by far!

Before getting into the results, let's describe the testing procedure—a key to understanding the results. The sessions were officially supervised by the Business Basic Special Interest Group (BBSIG) and held at Data General's Research Triangle Park facility.

All tests were carried out on a Data General AV 5220 with 112 MB of memory. The 5220 is a dual-processor machine, each processor running at 25 MHz. The operating system was DG/UX 4.32. The purpose of a large memory was to remove it as a factor in comparing results. At current memory prices, 112 MB is not an unreasonable amount to have. Performance of the packages on systems with less memory could show considerable variation.

While it should be noted that the results

Figure 1: Benchmarks						
Elapsed time (lower is better)						
	Original results			Subsequent*		
	DG	B32	Transoft	DG	B32	Transoft
	1.10	2.108	3.00			
SBTEST	75	118	110	68	98	na
GMTEST highlights:						
Screen I/O	174	179	193	na	na	183
String + Math	75	25	24	27	na	na
Locking	11	45	53	8	7	26
* Subsequent results obtained using unreleased versions of software and are unaudited.						
SP Richards: Transactions per second (higher is better)						
	Original results			Subsequent*		
	DG	B32	Transoft	DG	B32	Transoft
	1.10	2.108	3.00			
1	300.0	287.4	210.9			302.6
16	174.4	128.9	98.7			111.9
32	86.9	57.8	51.7			58.4
64	34.6	21.8	20.4			22.8
96	22.7	12.6	12.0			13.7
128	16.1	8.4	7.8			8.8
* Subsequent results obtained using unreleased versions of software and are unaudited. By comparison, an MV/2500 has been measured at 17 tps at 30 users (B32).						

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are specific to the Aviiion and do not necessarily translate to other platforms, they also show this to be a coming-out party for Business Basic under Unix; it's now clearly the best way to run BBasic.

Four tests were run, all of which should be familiar if you've been following BBasic benchmarks over the years. They are:

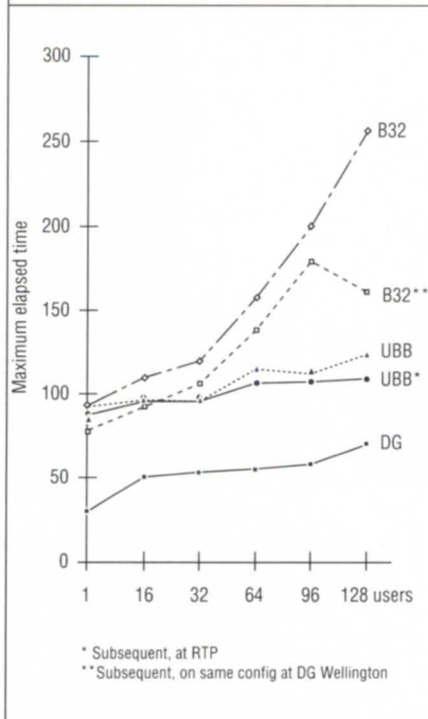
SBTEST: A straight test of disk I/O, heavily index file oriented.

GMTEST: A variety of operations, including file and screen I/O, locking, and string and arithmetic manipulation.

K5TEST: A test of index file operations. This is a multi-user test.

SPRICHARDS: Developed by SP Richards in Atlanta, this is a real-life application system that simulates simultaneously the entry of orders from many terminals. It has heavy screen and disk I/O, and over the years has been a pretty reliable performance indicator. Unlike the other tests in

Figure 2: K5TEST results (lower is better)



which elapsed time is measured, these test results are measured in transactions per minute.

The multiuser tests were performed in an extremely interesting way: 128 terminal ports on the AV 5220. The second machine was running Prevue software from Performance Awareness Corporation, which simulates the operation of real users on the terminals. If you've ever tried to measure system performance with more than a few human operators, you'll appreciate what a difference this made.

The procedure was to have each vendor run the tests without first seeing the results of the others. They were then shown the other results, and allowed to tune their programs and rerun the tests. This attempted to ensure that the software tested was the same as actual customers might use, not unrealistically tuned programs. The later results are unaudited, as they were run without supervision. Furthermore, in most cases the subsequent tests were obtained using

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unreleased software that has not yet passed the developer's usual internal and beta testing procedures.

There isn't space here to print the complete results. They are published in the BBSIG newsletter, available to all members of the BBSIG. To join, see information at the end of this article.

Data General

Data General was the first team to run the tests. Version 1.10, available in mid-July, was tested. Very early on, from the grins on the developers' faces, it was clear that they were about to pull a remarkable coup. After years of trailing in performance, DG really had something to boast about. It was the clear overall winner in the tests with DG's Business Basic turning in times better than any seen on any other machine using any other product. For example, the previous record for the 16 user K5TEST was 88 seconds, using B32 on an IBM RS/6000 model 540. The DG BBasic/Aviion combo did it in just 51 seconds.

How did they do it? There were three main enhancements:

1. **Better locking.** The locking tests showed that BB 1.10 was locking four times faster than in its old version, four times faster than B32, and five times faster than Transoft.

2. **Better Screen I/O.** DG BBasic used to do many more system calls on PRINT statements. Each system call forces the Unix rescheduler to step in. By buffering output, the system calls are much reduced. They have done this for DG terminals only, yielding a doubling of performance in the SP RICHARDS test. DG plans to implement this for other terminal types. Transoft and B32 have used this method for quite some time already.

3. **Disk Caching:** An AOS/VS feature that Unix does not have is the ability to do shared file I/O. In multiuser systems, there are considerable performance increases to be realized if users can share the pages of

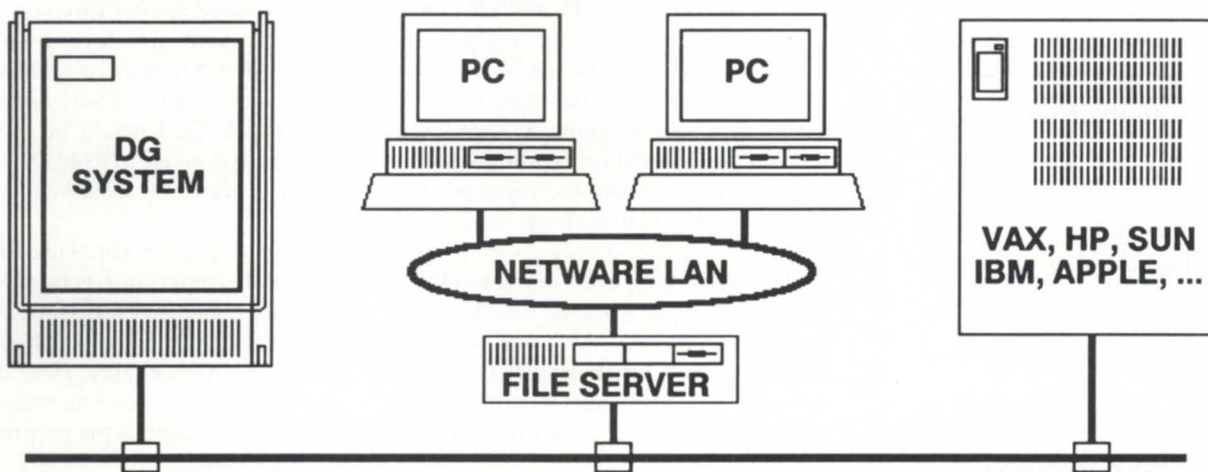
data being read and written in memory. AOS/VS does this to good effect. Data General implemented the same feature within Unix Business Basic. For the tests, they allocated an area in memory 4 MB in size for the disk cache.

The results were dramatic. The number of system calls dropped considerably. In the K5TEST, DG made about one-ninth the number of system calls of the other two vendors. While K5TEST takes full advantage of this feature, it's clear most software will realize some benefit.

B32 has duplicated this feature since the tests, and it's expected that Transoft will as well. How effective it is on other machines remains to be seen. Each platform has a different set of processor and I/O performance characteristics.

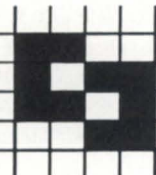
Overall, Data General is to be applauded. Once the doormat of the league, now the company has earned considerable respect from its competitors. To improve, DG can continue work on its string and arithmetic manipulation. Both B32

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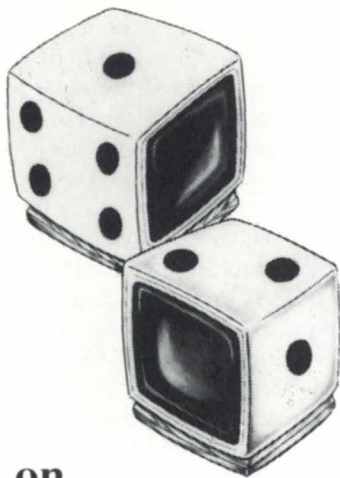
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BASIC

and Transoft are much faster in these areas. In the lab, DG test software runs in a time of 27 seconds in the string + math test, a big improvement. Locking also improved. These tests were run on a machine identical to the test configuration, but with 96 MB of memory.

Transoft

Transoft also performed surprisingly well in the tests. The company's marketing thrust has always been oriented more on features than on performance. Version 3.00 (available August 15) was tested. Performance turned out to be quite creditable. In the first set of results, it was not much different from B32.

After mulling the results over and sending faxes back and forth to England overnight, Transoft came back and improved its numbers by about 20 percent. After the tests, further work continued in England. While no numbers are available, the company believes it has made up the difference in the locking test.

B32

B32 has always had a reputation for high performance. It's given Data General and Transoft a very visible target to shoot for, and it's clear on these tests that they caught up. Version 2.108, available since spring of 1991, was tested. Hinting that it has more tricks up its sleeve, B32 has already implemented the ideas that DG used for its own big gains. B32 ran some tests on an identical configuration in the Wellington DG office, and reported that locking is more than six times faster than before.

The disk caching had a dramatic effect, the company said. Running on a different machine (an Aviiion 300) it was reported that on K5TEST for 16 users, B32 ran 3.8 times faster. If the results were rerun, the results should be drastically improved.

Conclusions

There's little point in drawing conclusions from the results that one vendor is faster than another. All will have done more work by the time you read this, and I expect better results from all three vendors. A clear benefit of these tests is that each vendor saw its own strengths and weaknesses, and could respond.

The real benefit goes to users, who will get much faster software no matter which vendor they use.

Figure 3: A history of GMTTEST results 1983-1991

(Elapsed time in seconds)			
S/140	RDOS	BB 6.0	5814
S/140	RDOS	BB 7.0	4793
S/140	RDOS	BB 8.0	2144
MV/4000	AOS/VS	BB 3.00	3336
MV/4000	AOS/VS	BB 4.20	1766
MV/2500	AOS/VS	BB 5.00	1127
MV/15-20	AOS/VS II	BB 5.00	672
MV/40000	AOS/VS II	BB 5.20	507
AV 5110	DG/UX	BB 1.00	819
AV 5220	DG/UX	BB 1.02	434
AV 5220	DG/UX	BB 1.10	246
AV 5220	DG/UX	B32 2.108	194

Results without screen I/O, which is baud rate dependent.

Consider the effects of three years of BusinessBasic performance improvement. Figure 3 shows results back to 1983. In some cases, I had to work with the data to extrapolate values, but they show a 30-fold improvement. The results are even more dramatic if costs are considered.

Notice there are three generations: RDOS, AOS/VS, and Unix. Each started out slow, then moved way out in front. That an AV 5220 would be more than twice as fast as an MV/40000 certainly wasn't expected by most just two years ago.

All of the tested products produce stunning results under Unix, enough that performance really isn't the issue any more. It's now necessary to look further, toward underlying functionality. How do these products provide users a more up-to-date environment? How is the programmer's job made easier?

This all sounds like a tremendous topic for another article. See you next time! Δ

George Henne is president of the Eastwood Group, specializing in assisting Data General users in converting to Unix. He is also president of the BBSIG, which can be joined by sending \$10 U.S. to Calvin Durdin, Tractor & Equipment Co., Inc. 5336 Airport Highway, Birmingham, AL 35212. George Henne may be contacted at 416/694-5777.

Bits and bytes from the bulletin board

Unexpected runtime error

From: Olav Torvund

Upon issuing the command CX SPOOLS from the operator console, the following message appeared:

UNEXPECTED RUNTIME ERROR OCCURRED.

Hardware protection violation. Inward address reference. Memory dump is :UTIL:?EXEC.29_JUL_91.14 etc. Further, the system tells us to have all users log off and terminate EXEC. We have never seen this before. We can enter any other CX command without any problems, but CX SPOOLS terminates EXEC every time. Otherwise, we have not detected any problems with the system (AOS/V5 rev 7.67, MV/2500DC). Does anyone have any idea what might cause this error?

From: Fred Lang

I am currently running 7.67 on MV/2000s and MV/2000s. The CX SPOOLS command does not cause EXEC to crash on any of these systems. Do you have the current release of microcode loaded? It's also possible that the copy of EXEC you are running is somehow corrupted, or your queue file is corrupted. I would

check for microcode first, then rebuild the queues from scratch by deleting the existing queue file after reloading EXEC from the release tape.

From: Olav Torvund

Yes that's a good idea. I have not loaded microcode 6.00, which I received a couple of months ago, so I'll do that first to see if that helps. If not, I will delete and recreate the queues after having replaced EXEC.PR from the tape. Thanks for the advice.

From: Olav Torvund

The problem was the EXEC program itself. Replacing EXEC.<PR ST> took care of the problem. Δ

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Adventures in interoperability

SYNOPSIS

There is no single operating system command to transfer data automatically between AOS/VS II and Unix. But don't let that spoil your day—or your work. The author explains a solution using remote shell and NFS.

I had an opportunity recently to test the interoperability of Unix and AOS/VS II. The work went well, but there were enough minor irritations to keep my grey cells well exercised.

The test involved a system accounting program. At present, the monthly usage accounting is done on an MV/10000. It uses data from both an AOS/VS II and a Unix environment. The Unix data for accounting is transferred to the AOS/VS II machine by means of FTP. I decided that it was time to transfer as much of the accounting program as possible to the Unix environment, and to fully automate all data transfers. The new system is possible because of the remote shell and NFS capabilities of AOS/VS II. These functions are also the foundation of AOS/VS II and Unix interoperability.

In order to develop a methodology for completing this task, you must first realize the following: in an AOS/VS II environment, it is easy to transfer data automatically between machines using Xodiac and the RMA agent. In a Unix environment, you can readily transfer data between machines using the remote copy command—`rcp`. However, there is no single operating system command to transfer data automatically between AOS/VS II and Unix (Dear DG development—why not?). Although there is no direct command for data transfer between the two environments, data transfer is easily accomplished by using either the FTP agent of TCP/IP and an input driver program, or by using the NFS protocol to establish a common directory between the two environments.

Here are the restraints I had to deal with to complete this assignment:

- 1) Although most of the system accounting calculations could take place in the Unix environment, I needed to do some work in the AOS/VS II environment and transfer this data to the Unix environment. I decided to use a common NFS directory to share information between the two environments. This allowed me to use one set of common data tables, and not need a complete set of common data tables in each environment. However, the decision to use NFS required that the common data tables be located in the

AOS/VS II environment and that the Unix environment access them as required. In NFS jargon, the AOS/VS II environment had to be the NFS server and the Unix environment had to be an NFS client. To the casual user, it might seem a bit ridiculous that a 2 MIPS machine act as server for a 25 MIPS machine, but one must realize that NFS for AOS/VS II is a server-only implementation. It is a server-only implementation because the AOS/VS architecture makes it impractical for AOS/VS II to act as an NFS client. The power of NFS is such that having NFS in any form is immeasurably better than not having NFS.

- 2) The AOS/VS II implementation of NFS is very slow. If you want to learn why it is slow, read the "Managing AOS/VS II ONC/NFS Services" manual. (093-000667-00) and see for yourself the computer architecture gymnastics required to implement NFS in AOS/VS II. It also describes the limitations of using NFS between systems. However, even though AOS/VS II NFS is slow and limited compared to Unix NFS, it makes file transfers between an AOS/VS II and a Unix environment transparent to a user.

- 3) The syntax to mount a Unix directory on an AOS/VS II environment was not what I expected. The mount command is:

```
mount aosvsii:/export_directory /unix_directory
```

Because "/" is not a valid AOS/VS II character, I did not expect the "/" between `aosvii:` and `export_directory`. However, because "/" is the root directory designator in Unix, a "/" is always required when mounting NFS directories in a Unix environment.

- 4) A Unix sort is capable of using the same file name for both input and output. However, using a Unix sort on a file in an AOS/VS II mounted directory with the same name for both input and output gave me ASCII puree. I solved this problem by using a temporary file name as the output file for the sort and then renaming the temporary file to the name of the input file.

5) I observed that after completion of a file sort in an AOS/VS II mounted directory, I could not run AOS/VS II SED on the sorted file. The error message was "file is already open." The only workarounds I found were: 1) to make a copy of the opened file and delete the original file, or 2) to unmount the NFS directory on the Unix side and then mount it again. I also observed that on the Unix side, I was able to edit the sorted file.

6) The logic flow of the new system was such that a batch Unix program was initiated by cron, and it deposited its accounting data in a common NFS directory. Later, an AOS/VS program was run to collect accounting data and deposit it in the common NFS directory. After the accounting data collection was completed, I started an AOS/VS program that processed the AOS/VS II accounting data. When the AOS/VS program was completed, it started a remote shell process (rsh) in the Unix environment that completed the data preparation and printed the output reports. Starting the remote shell was easy to do since the syntax was the same as that of Unix:

```
rsh unix_machine /my_directory/unix_program
```

7) Although starting the remote shell was easy, getting it to do what I wanted was another matter. This is because I was using the Bourne shell in the Unix environment. When you log into the Bourne shell on a Unix machine, it executes a program called

.profile. This .profile program is used to set the user environment similar to LOGON.CLI in AOS/VS II. Unfortunately, when one remote shells into a Bourne shell environment, .profile is not executed. I found that I could execute a program using RSH, but I could not directly give it a default environment. I solved this problem by setting the environmental variables in the remote shell program itself. I later learned from a colleague that if I had used the Unix c-shell, I would not have had to set the environmental variables in my remote shell initial program because when you remote shell into a c-shell environment, the c-shell still runs the c-shell startup programs .login and .cshrc.

Once the remote shell environment was properly established and I overcame the restrictions of sorting files over the network, the program performed flawlessly. Of course, it helped that the NFS environment was properly set up in the AOS/VS II and Unix environments. How to properly set up an NFS environment will be the subject of a future article. In the meantime, it is good to know that unless you are dealing with Infos, program interoperability between AOS/VS II and Unix environments is almost as easy as running in each environment separately. Δ

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

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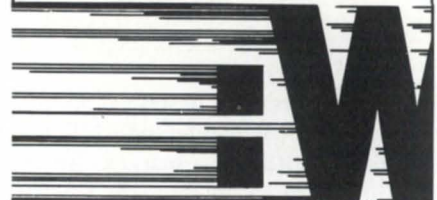
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Strange bedfellows

The big players in the desktop workstation game are making deals, forming alliances, and generally gearing up for what promises to be some rugged competition. Who will win? It could be Microsoft and Intel. In any case, enjoy the spectacle.

SYNOPSIS

Two months ago I described an interesting situation with Intel and AMD in the 80386 and 80486 chip market. But that little tiff is insignificant compared to what's heating up for ultimate control of the desktop workstation market.

ACE in the hole

It started in spring, with the announcement of the ACE consortium. ACE is a collection of mostly "second tier" companies looking for both RISC and platform-independent environments they can use to compete with IBM and Sun.

The theory is that the 80x86 architecture won't continue to cut it into the second half of the decade, and that we'll all be buying 40 MIPS boxes for our desktops by 1995. While it may be true that some of us need that kind of horsepower, I think most of us will still be running on Intel derivatives for many years to come.

Although companies like Sun make a lot of noise for their size, the fact is that Intel-based systems (PCs) pretty much control the desktop today. I don't have the exact number handy, but it's got to be

somewhere near the 90 percent mark. The remaining 10 percent are split between Apple, Sun, HP (which bought Apollo), and other lesser Unix workstation vendors, DG included. For example, Sun has only about 1 percent of the current desktop market. So whether those PCs and clones are running MS-DOS, OS/2, or Unix, it's an Intel world out there.

The IBM/Apple counterpunch

A few months after ACE came the surprise announcement that IBM and Apple were teaming up to develop hardware and software based upon a single-chip version of IBM's RISC/6000. Also of interest in this deal was that Motorola will be making the chip. Despite Data General's success with the Avion, the Motorola 88000 has so far been a flop in gaining substantial market penetration.

It's hard to tell what will really come of the IBM/Apple alliance. IBM is a very smart company, very good at hedging its bets. It is certainly possible that two or three years down the road we'll see that nothing has come out of this relationship.

On the other hand, here at RDS we have already seen a rise in interest in Apple-to-IBM connectivity from major corporations. Apparently, there has been a pent-up demand for Macintoshes in the workplace that MIS and DP departments repressed until IBM acknowledged the Mac.

There's one interesting side note to the IBM/Apple alliance. For a few years now, Microsoft and Apple have been battling in the courts over legal rights to icon-based graphical user interfaces. In reality, all of these GUIs—including the Mac and Microsoft Windows—can be clearly traced back to the research at Xerox's Palo Alto Research Center, and none of the players have paid Xerox a dime for this. None, that is, except for Metaphor, a small workstation company in Silicon Valley. A few years ago, IBM bought a 20 percent share in Metaphor, and created the "Patriot Partners." This summer, IBM bought the remaining 80 percent. That means IBM now owns the only uncontested GUI in the industry. These guys ain't dumb.

HP and Sun

It's been sort of like the National Football League. Nearly everyone was signed to one of the big teams, but a few holdouts didn't show up for spring training. Finally came the announcement that Hewlett-Packard and Sun were forming yet a third team to develop platform-independent, object-oriented software. No surprise, of course, but the first platforms on which this software will run are SPARC and HP's RISC chips.

Software calls the shots

OK, that takes care of the hardware alliances, but what about the operating



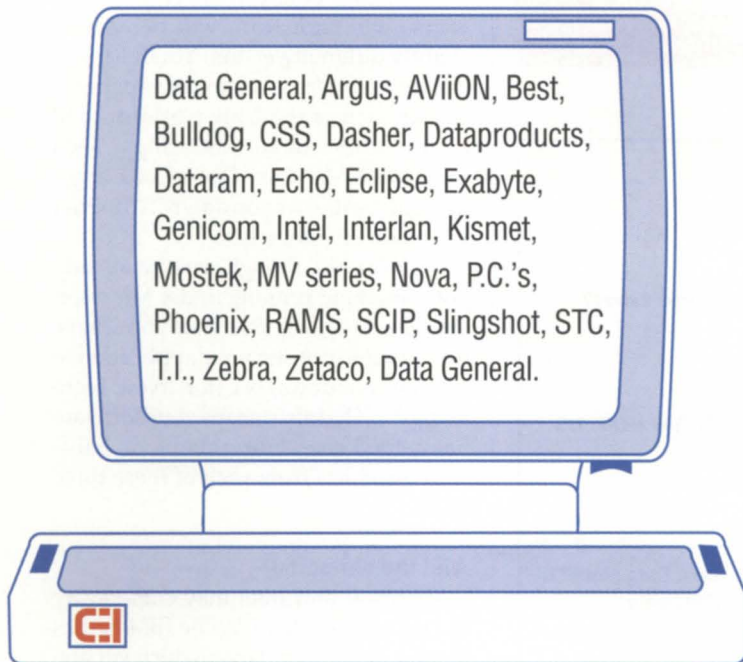
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Figure 1: Operating system software

Software	IBM/Apple	ACE	HP/Sun
Unix	AIX	SCO	SVR4
Windows	NT	NT	NT
OS/2	3.0	?	?
Macintosh	yes	no	yes
Hardware			
RISC	IBM RS/6000	MIPS	SPARC
Other	Intel	Intel	Intel

system software? Take a look at Figure 1. Do you see anything common across *all* platforms? Imagine you are a software developer and you'd like to take advantage of the largest market share with the least amount of effort. There's Unix, of course, but each team will be using a slightly different version. You'll have to develop a different version of your product for each of the Unix platforms and each of these three RISC chips. Then there's the Motif vs. Open Look argument that will slow you down if it doesn't scare you off altogether.

Chances are, though, you've already got something running under Microsoft Windows 3.0 on 80386s. If so, you'll have little trouble porting your application to the new Windows/NT (for "New Technology"). That also means your software has a good chance of running on hardware products from each of these three teams.

And the winner(s)?

Microsoft and Intel may come away the big winners here. While IBM battles the rest of the world over which version of OS/2 to support, and everyone fights for their share of the hardware market, the volume of Intel-based boxes is not likely to drop. Volume will always attract software vendors before anything else. This means that applications typically will be developed first for Windows/NT. The three teams will have to fight over where developers' resources are spent next, but in any case, they'll all take a backseat to Microsoft/Intel.



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The other winner may still be Unix, and SCO in particular. All three groups will support some flavor of Unix, but SCO is now and will remain the clear market leader in Unix for the Intel architecture.

Microsoft is pulling out of the OS/2 business, it appears. The company has clearly left 3.0 to IBM, with all sorts of public threats aimed at IBM. While Microsoft will continue to enhance OS/2.2.x, its real plans appear to be for Windows/NT. In fact, NT and OS/2.2.x may become one and the same. Microsoft is also doing what it can to make sure that IBM cannot develop an independent, Windows-like product for IBM's OS/2, one of IBM's stated goals. The Federal Trade Commission may be looking into unfair trade practices by Microsoft, but there's one competitor with which Microsoft can play as rough as it wants, and that's IBM, which itself still must be careful in the antitrust arena.

And it doesn't stop

When I started this article, the IBM/

Apple announcement had just been made. The HP/Sun alliance didn't exist. It doesn't usually take me long to write my *Focus* column, but by the time I was done, two more newsworthy items appeared, both in the software arena.

First, Borland bought Ashton-Tate. This is a smooth move. A-T has been falling by the wayside. The company created the whole dBase market, then sat back and watched more innovative companies walk away with the business. Borland is a technological leader that, in picking up the Ashton-Tate customer base and product line and adding it to an already excellent data base product, is poised to become a major force in the data base market.

Not to be outdone, our new buddies at Novell then announced they would buy our old buddies, Digital Research. DRI is best known as the inventor of CP/M, and now DR-DOS. The rumors are that Novell wants to have its own operating system that isn't tied to Microsoft. This could be a good plan, since Microsoft is still trying to compete with Novell via LAN Manager.

And if this isn't enough, let's not forget about AT&T and NCR. Yes, AT&T is back in the computer business for a third time, but this time the company did it right by buying up NCR, a company that already knows how to build computers. (There was a time when many of us hoped AT&T would buy Data General.) It's hard to tell where AT&T falls into this matrix, but remember that AT&T still owns Unix, and that NCR recently announced plans to abandon its Motorola-based product line in favor of Intel-based processors.

So, did this put everything in order for you? No? You say you're no better off than before you started reading this stuff? At least you now have a scorecard to help you tell the players from one another. Now sit back and watch the game begin. Δ

Doug Kaye is president of Rational Data Systems, Inc., and may be reached at 1050 Northgate Dr., San Rafael, CA 94903; 800/743-3054.

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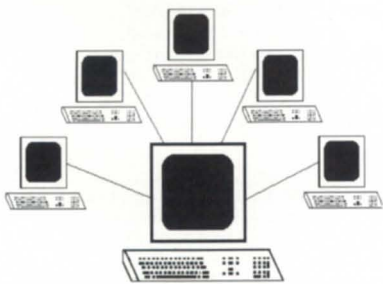


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PRODUCTS AND SERVICES

WP 5.0 for Aviion arrives

Orem, UT—Wordperfect 5.0 for Data General's Aviion facilitates cross-platform file compatibility. Files created on the Aviion may be brought into Wordperfect 5.0 on PC, VMS, Apple Macintosh, AOS/VS, and Unix platforms. The new release is also tailored to a multiuser environment. Print spooling control allows users to follow print jobs to completion, reordering the queue if necessary. As many as nine documents may be opened simultaneously.

Features include desktop publishing capabilities and high-end word processing functions. Text-integrated graphics may be scaled, rotated, and sized with captions or borders. An enhanced preview mode takes advantage of the terminal's highest resolution. On nongraphics terminals, graphics are displayed in mosaic form, using soft characters, or in a line-draw representation. A styles feature files a collection of often-used formatting codes for easy use. These may be edited for individual documents. An enhanced macro editor includes programming commands and a comprehensive list of predefined macros.

Wordperfect 5.0 for Aviion also adds word processing functions such as a new soft keyboard, allowing the user to change the keyboard layout, along with a master document feature that combines files to generate indexes, footnotes, references, and page numbers.

Release 5.0 for Aviion requires DG/UX version 4.32 or higher, 2.4 MB memory for the first user, and 550 K for each additional user. Retail pricing is \$495 for a

single-user version. Multiuser versions start at \$995 for a five-user license.

Wordperfect Corporation, 1555 N. Technology Way, Orem, UT 84057; 801/228-5006.

Circle 61 on reader service card.

RDS releases enhanced Popterm

San Rafael, CA—A new release of Popterm/410 that now supports third-party protocol stacks such as TCP/IP, Novell NACS, and 3Com's Etherterm and BAPI is available from Rational Data Systems, Inc.

Popterm/410 is a D410 emulator for IBM PCs and compatibles running MS-DOS, and is small enough to be loaded as a memory-resident program. It can even be loaded into "high memory," thus leaving the lower 640 KB available for other applications.

In addition to support for standard async COM ports, Popterm/410 may be used with so-called "INT14" interfaces to popular third-party protocols. Using TCP/IP, for example, Popterm/410 operates with Data General's TCP/IP Telnet or directly with ITC and LTC controllers. It operates also with DG Termserver for connection to standard IACs.

An additional Popterm/410 version for users of Novell Netware local area networks (LANs) supports communications directly to an ITC, LTC, or Termserver, using only the existing Netware IPX protocol stack, requiring no third-party protocol modules.

The async version of Popterm/410 (including the new INT14 support) is priced at \$150. Demo diskettes are available.

Rational Data Systems, Inc., 1050 Northgate Drive, San Rafael, CA 94903; 800/743-3054 or 415/499-3354.

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McIntyre's, DG Second Source Leader Signs with Motorola

After several months of negotiations with Motorola, McIntyre's Mini Computer Sales Group, Inc. of Auburn Hills, MI, signed a Master VAR agreement on 22 July 1991.

Unlike other computer resellers and software vendors that have become Motorola VAR's McIntyre's Mini Computer is unique, in that they have been a Data General reseller since 1978, and are known worldwide as the "Second Source Leader" in Data General hardware sales.

With many of our customers and computer users worldwide moving to open systems using UNIX, we recognize that with Motorola we can now offer a very viable alternative and cost effective solution to companies moving to a UNIX based machine, "said Michael McIntyre, President of McIntyre's Mini Computer. Motorola has been the leader in RISC technology for a number of years and supplies all the major computer manufacturers, including Data General, with the 88000 RISC chip. As a result we see a strong growth opportunity with the Motorola MPC (Multi Personal Computer)."

"All of us at Motorola are excited to have signed McIntyre's Mini Computer as a Master VAR," stated Mike Hensley, Regional Manager of the Midwest Division. "McIntyre's is a very aggressive computer reseller and has an outstanding reputation for both their high integrity and marketing skills."

McIntyre's Mini Computer will be primarily targeting vertical market VAR's, however they will soon be marketing their own sophisticated inventory and distribution software package. The software will include such features as cost control, automated faxing, buy/sell comparisons, inventory and more.

"Our initial plans call for an aggressive marketing plan targeted at the existing Data General VAR's, systems houses and consultants we presently do business with," stated Scott McIntyre, Vice President of Marketing. "In the very near future we will be kicking off an extensive telemarketing and direct mail campaign, targeting companies that can benefit the most from our relationships with Motorola, those being vertical market VAR's. At this time we anticipate reaching over 900 VAR's systems houses, and consultants."

McIntyre's Mini Computer will assist their vertical market VAR's in reaching customers that can best benefit from the solution that their vertical software package offers users, with direct leads telemarketing and co-op direct mail campaigns. They have an existing data base of over 30,000 computer users and 17,000 Data General customers.

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Program security with Proguard

San Diego, CA—Datallynx, Inc., announces Proguard, a comprehensive program security system for AOS/VS and AOS/VS II. Proguard features the ability to create a program usage profile that will specify when the program can be run, where it can or cannot be run from, and what privileges and login groups to which a user must belong in order to execute the program.

A record is kept for each program execution, identifying who ran it, where, when, on what version, and for how long. If program access was denied, Proguard keeps a similar record that identifies the reason for denial. No changes to any source code are required, and Proguard may be run with any program. The security system is priced from \$1,100 to \$1,800 depending upon CPU type. Software support services are available.

Datallynx, Inc., 6659 Convoy Court, San Diego, CA 92111; 619/560-8112. Or contact Le Software Man Ltd. in London at +44-71-354-8414.

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New Acucobol release aids programming

San Diego, CA—Version 2.0 of Acucobol-85 offers enhancements for increased programming productivity. The new release, which runs on both the Data General MV and Aviiion series of computers, represents a complete rewrite of the former release (V1.5.5) and provides 86 new features and performance enhancements to the ANSI-85 approved Cobol compiler.

Vision, the indexed file system, is now completely machine independent, allowing users to move files between machines without conversions, making data files as

portable as code files. Vision features a user-specifiable collating sequence for indexed file keys, facilitating properly alphabetized European character sets or mixed lower and upper case letters. Segmented indexed file keys allow greater flexibility for file structure.

Users may now replace Vision with another file system, including Btrieve, C-ISAM, or Minisam. Support for relational data base management systems will be added in the near future, including Informix, Ingres, Oracle, Progress, and others.

Several enhancements to the terminal manager have been added to V2.0. These include hot keys that may be defined to run with an associated program, enhancements to the terminal managers' configuration options, and shadows and titles for windowing. A C interface has been incorporated into V2.0 that allows users to call Cobol routines from C, as well as C routines from Cobol.

Acucobol-85 V2.0's price range is from \$1,313 for an AV 100-D up to \$6,300 for

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Acucobol, Inc., 7950 Silverton Avenue, Suite 201, San Diego, CA 92126; 619/689-7220.

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QMS enhanced

Lancashire, England—QMS rev 3.01 from Snowflake Analysis Limited, written in CQCS code, is portable across a range of hardware platforms, from single-user PCs through to the largest Data General MV/40000-HA4.

Enhancements over QMS rev 2.30 include: improved user ergonomics; end user reporting; on-line performance analysis by staff, job type, or department; and intelligent job scheduling. The optional software module has been improved to include full revision history of all source codes, including copy files, comprehensive quality assurance procedures, and

end user computing support.

Snowflake Analysis Limited, Suite 13, 18/20 Queen Street, Blackpool FY1 1PD, Lancashire, England; +44 253 295602.

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Basic compiler from Bluebird eases AIX port

Carlsbad, CA—Basix for AIX, a new software language product for the Data General Business Basic community, is now available from Bluebird Systems. Developers, resellers, and end users will be able to port their DG and Bluebird Business Basic compatible applications to the AIX operating system running under IBM's RS/6000 platform.

The Basix family of products is designed to provide transparent portability of Basic code through multiple operating platforms. The AIX implementation is the first to be released; versions are in devel-

opment for MS-DOS, Netware, SCO Unix, ATT Unix, SuperDOS, and other platforms.

Basix for AIX is source code compatible with DG Business Basic 4.0, and with SuperDOS Business Basic 5.2. As a full implementation of the Business Basic language, Basix offers a built-in interactive debugger, among other major features.

Basix executes large programs: up to 1 MB object files, up to 2 GB data files. The index file structure is compatible with Bluebird Business Basic. Basix has conditional compilation, enabling programmers to maintain a single set of source code and select the platform at compile time.

Basix provides a debugger with Basic interpreter commands, and a profiler feature, which identifies the part of the program in execution, helps to locate program bottlenecks, and is also used to evaluate test coverage.

Bluebird Systems, 5900 La Place Court, Carlsbad, CA 92008; 619/438-2220. Δ

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Data Specific

DAC expands

Data Assurance Corporation (DAC) acquired the assets of the disaster recovery business element of TC Financial Services, a subsidiary of the T & C Credit Union located near Detroit, Michigan. DAC, a provider of disaster recovery hot site services for Data General computer users, increased its customer base to more than 220 with the purchase. The Detroit area facility will become the third facility operated by DAC.

DAC also signed a joint marketing agreement with Bank Up Disaster Recovery Services, under which each organization will market the other's services. Bank Up provides item-processing recovery centers on the West Coast for financial institutions.

Addington seals Envelope deal

Data General's Avion system licked a host of competitors in a bid to provide a computer system for Business Envelope, Inc., of Deer Park, New York. The 96-user AV 5220-based system features Universe, a data base management and application development system compatible with Pick and Prime Information applications. The system, which will replace a Prime computer system, was provided by Addington Business Systems, Inc., a value-added integrator based in Long Island. According to Addington, key to the sale was their ability to easily convert thousands of existing programs to the new system.

Technology integration

Digital Analysis Corporation and Data General will provide sophisticated network management capabilities over both

TCP/IP and OSI communications networks. Under the agreement, the two companies will design and develop a single product to meet the needs of both network environments. Data General and Digital Analysis have a long and successful partnership. Digital Analysis manufactures Eye*node, a Simple Network Management Protocol-based network management system that is distributed by DG for the administration of its TCP/IP customer networks.

Hiperstor distributors named

Hiperstor, Inc., manufacturer of the DGMS-SC family of tape and disk controller subsystems for Data General systems, put in place a nationwide distributor network that includes TLC, Grumman Systems Support, Rave Computer Associates, Interscience Computer Corporation, and NPA West. Hiperstor is a wholly owned subsidiary of Clearpoint Research Corporation.

Class credits

Data General's Educational Services group offers a new training credit program. With the purchase of any Eclipse MV/40000 or MV/40000 HA computer, customers receive two free training credits. Educational Services offers more than 100 different courses on a wide range of hardware and software topics. The credits may also be applied to on-site courses or technical seminars.

Sales in Wales

Two Wales-based companies recently made significant purchases of DG equipment. Welsh Water PLC bought nearly \$1 million worth of Avion computers to serve its Integrated Business Information Systems (IBIS) program, which will manage an investment planning strategy. The Welsh Health Common Services Authority's Health Intelligence unit purchased three Avion computers worth approximately \$900,000. Δ

RIG/SIG gigs

OCTOBER/NOVEMBER

October 16, 1991

Southeastern Users Group
Time Management Seminar

Time: 5 p.m.

Location: Bryant College, Rhode Island

Cost: Members, \$28; Nonmembers, \$33.

Contact: Richard Wind; 508/587-6900 (ext. 265)

Description: The invitation reads, "As a data processing professional, managing your time effectively has significant bearing on your ability to complete tasks in a timely manner and, just as important, reduce the amount of stress in your life."

If you never seem to have enough time to do what you need to do, then this seminar could be time well spent. David Stern, president of a consulting firm specializing in time management training, will conduct the seminar. The price includes dinner.

October 28, 1991

Deadline to preregister for the NADGUG 91 conference

Description: See NADGUG 91 below

November 18-21

NADGUG 91

Location: Denver Marriott City Center and Colorado Convention Center

Contact: NADGUG; 800/932-6663 or 508/443-3330 outside the U.S.

Description: The annual conference of the North American Data General Users Group is the largest gathering of DG users in the world! There will be sessions, workshops, educational seminars, exhibits, roundtables, special interest group meetings, and social activities to suit every flavor of DG user.

November 18, 1991

OASIS Workshop

Location: Colorado Convention Center

Contact: Linda Klatt; 414/299-6053

Description: The Office Automation Special Interest Subcommittee-sponsored workshop takes place during the NADGUG conference. See conference registration packet for details.

This calendar is for notices of regional interest groups (RIGS), special interest groups (SIGS), and NADGUG events. If you would like your group's meetings posted here, please send a notice to Focus magazine, Livingston Building, Suite 250, 3420 Executive Center Dr., Austin, TX 78731; fax 512/343-7633. We must receive your notice by the 5th of the month, two months prior to the actual event.

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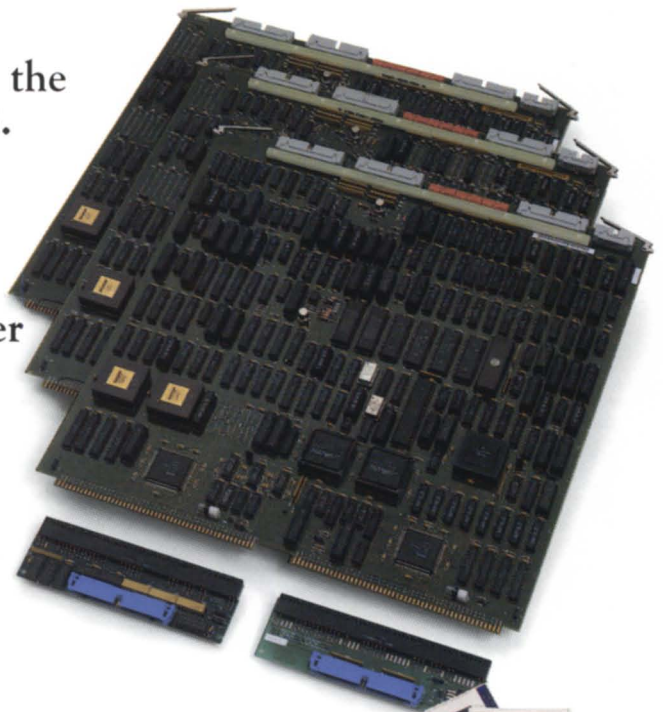


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