KGB Report

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OPERATOR.LOG

So much for schedules and good intentions.

For the balance of the summer, it looks like ***KGB Report*** will be distributed around the 15th of the month instead of the first.

This month's expanded issue contains features from the May DECUS Symposium in Atlanta, a special section on changes and enhancements to the BBS system, and the usual collection of arcane minutiae. A busy consulting and training schedule as well as problems with incoming mail delivery and the latest version of desktop publishing software consumed far more time than I anticipated.

Moving the publication date back to the 15th will also better accomodate our planned family trip to Disney World at the end of July. My first real vacation in about ten years, the missus has made it quite clear that nothing, with a capital N, will be permitted to interfere with the event. I'm surreptitiously arranging methods of getting my messages, but let's keep it quiet, okay?

As if I don't have enough trouble, I'm planning a quarterly mini-newsletter for callers to the BBS system. If you're an "old-timer" who frequented the board when we were running the Opus software package, be certain to complete the on-line questionnaire to get on the mailing list. The first "edition" is included in this issue of ***KGB Report***. The next issue is tentatively slated for a September mailing.

Thanks for your support and subscriptions. Enjoy.

Kevin G. Barker

Better days ahead for DEC

A funny thing happened to users who attended the DECUS Symposium in New Orleans last month.

They complained to DEC about poor sales support. They complained about receiving mounds of essentially useless product information. They voiced their disapproval over having to spend hours searching for software bugs known by DEC but not announced to the user community. They complained that DEC is losing its credibility among purchasers of its equipment.

The griping wasn't unusual. It's become a fact of life over the past few years. What was remarkable was that the DEC people listened, asked questions, took notes, followed up after the seminar, and promised to do something about the deficiencies. The change in attitude was startling.

These actions, coupled with measures aimed at placating the investment community, are signaling the potential beginning of another "good times" era at Digital.

Lots of the bad press generated against DEC has come from Wall Street. Some of the complaints are valid, but others are somewhat absurd. For example, the furor surrounding the delays in shipping the VAX 9000 would lead one to believe it's the only computer DEC sells. Little has been said about the new 4000 series, which promises to be a monumental success and perhaps the major source of short-term income for the company.

Wall Street is correct about DEC's bloated payroll, but the company has been successfully trimming itself down to fighting weight. The naming of Jack Smith as heir apparent to Ken Olsen's throne has lessened fears that a DEC without Olsen would be a ship without a captain. And announcement of imminent dividend payouts has made a lot of financial moguls happy. Next month's DECWorld promises to be a source of more positive news for the investment community.

Accommodating Wall Street is fine, but what about the users? Relations have been strained over the past few years, with torrents of confusing product announcements, an even more confused sales force, and the seeming insulation of the users from the powers that be at DEC. Things are looking up there as well.

The company has again reorganized its sales force, this time along business lines that have profit responsibility. Established accounts which require higher-level technical expertise when selecting upgrade products won't be stuck with a salesbeing interested only in pushing a major cpu installation. You may actually get someone who knows about your business.

The announcement that DEC is considering a commission-like structure doesn't necessarily mean you'll have a rep trying to oversell you. It does mean the days of getting absurd quotes which come in at double the competition's prices are numbered.

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(Better days, continued.)

DEC gave a clear indication at DECUS that it will replace its torrent of publications containing "puff pieces" with newsletters, bulletins, and magazines containing the kind of useful information that will make locating products and their features a less tortuous experience. The recent introduction of DSNlink is a giant step forward in keeping the user base up to date with software problems.

Recent product announcements, such as DEC/EDI, an electronic document interchange product which has already garnered the support of a number of third-party vendors, has further brightened DEC's outlook. Even more encouraging was the selection by the Canadian government of VAX systems featuring POSIX-compliant VMS over several Unix-based bids for a multi-million dollar installation.

And Ken Olsen's announcement of a "RISCy VMS" is even more tantalizing.

DEC still faces major challenges, but the company is exhibiting the creativity and flexibility responsible for its original success. The malaise of the past few years appears to be lifting.

Let's hope DEC can maintain the momentum.

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File fragmentation and performance: A persistent myth?

Everyone knows file fragmentation is a major cause of poor performance on VMS systems.

Or is it?

The issue was raised at the latest DECUS Symposium during a session sponsored by Digital to explain its view on the defragmentation issue. DEC also announced that while it has its own defragmentation product under development, it won't be available anytime soon.

Ralph Weber of DEC's VMS Development team revealed the DEC-designed defragger "is making all kinds of mistakes" and that Digital will not release it until all the bugs are squashed. "The reality of the situation is... I'm not able to give you a confident prediction," he said. "We're best advised to take our time and fix our mistakes."

Speaking at the May DECUS symposium in New Orleans, Weber noted one of the reasons a DEC defragger has been a long time in coming is due to the belief of many within the VMS Engineering group that defragmentation is a non-issue. "VMS (engineering) doesn't defrag its own disks," Weber revealed, noting the drives holding the team's VMS source files and mail files are not regularly reorganized. "There is a contingent within the group that is sincerely convinced that there is no significant performance increase (from defragmentation) on typical time-sharing systems," Weber said. "That's why it's taken so long (for DEC to develop its own product)."

Fragmentation is a "feature" of VMS and is inherent in the design of the file system. VMS sees a disk drive as a contiguous range of logical block numbers ordered in sequence from 0 to the highest block on the disk.

The logical block approach allows the file system to operate independently from the physical characteristics of the drive. When writing to disk, the file system maps "virtual blocks" onto the logical blocks using whatever method seems most appropriate. Fragmentation is a "natural" part of the dynamic operation of the file system, as files are created, deleted and extended, Weber said.

VMS' file system was designed under the presumption that files are written and read once, so little emphasis was placed on contiguity. The file system allocates space noncontiguously, on a first available space lookup into the file extent cache.

Weber noted there are five reasons to perform disk defragmentation: to minimize head seeks, to lower thrashing within an indexed file, to reduce split I/O requests, to speed up file allocation and to perform backups more quickly.

"The first three are real reasons," Weber said. "The last two are not reasons for defragmentation because of the design of the file system."

A fragmented file can have segments scattered across a disk, a situation which requires multiple seeks of the drive head to recover the data. A contiguous file can be read without the need to perform a series of time-consuming seek operations.

Similarly, defragmentation can eliminate thrashing in an indexed file, where the index is physically located at the beginning of a file, preceding the actual data. Since accesses require a lookup in the index portion of the file prior to actually reading or writing into the data portion, a badly-fragmented indexed file can result in the heads thrashing about between the index and the file data fragments.

A contiguous disk also eliminates split I/Os, multiple operations which occur when a virtual block is mapped into fragmented logical blocks.

Despite claims to the contrary, Weber noted that defragmentation does not improve new file allocation contiguity. The VMS file system allocates space from its in-memory extent cache of unused logical blocks. Contiguous areas available on disk are not checked prior to allocation. A work-around, suggested by a DEC engineer following the session, was to use a COPY /ALLOCATE command to flush the extent cache prior to actually writing a large contiguous file.

Defragging does not decrease back-up time on systems running current ver-

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(Fragmentation, continued.)

sions of VMS, Weber noted. The "upgraded" backup utility uses processor memory to cache file data, improving performance by about 35% or so (excluding problems due to outstanding bugs in the software). Weber said the difference in backup times between contiguous and fragmented disks with the new utility is negligible, provided the account running backup has the proper UAF quotas.

Fragmentation can be identified using DEC's SPM and VPA performance analyzers, by using the MONITOR utility or by dumping the headers of suspect files to determine if excessive retrieval pointers are being used.

Those with fragmented disks have several options. If sufficient free space exists on the drive, new copies of fragmented files can be created with the COPY/CONTIGUOUS command. If processor memory is plentiful, the RMS window size value can be increased so the file system caches more information, reducing the window turn rate, permitting greater in-memory translations of virtual to logical blocks (although the split I/O problem will still exist).

The final options? Do a backup/ restore of the disk or purchase an online disk defragmentation product.

The backup/restore method is the one still recommended by VMS Development. "It completely defragments the disk," Weber said. "It places all the files in alpha order and completely consolidates free space. And if you use the disk at all, it doesn't last very long."

The alternative, online defragmentation, is a intricate procedure. The software must determine the initial state of the disk, find free space, and build a policy for moving logical blocks. The file to be moved must be "frozen" so that no one can access it during the repositioning. Its size must be determined and free space allocated in a suitable location, assuming, of course, sufficient space is available to hold another copy of the file. The file's original logical blocks are then moved to contiguous logical blocks, the file system is informed of the new location, file mapping is updated, the file is unlocked, and the original fragmented file is deleted.

Weber observed the best defragmenter should be the file system itself. "It is the one entity that has the information and knowledge to guarantee the safe movement of files," he said. "And the

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(File fragmentation, continued.)

file system could be made smarter about how it allocates space so that it doesn't fragment files."

In the future, DEC plans to improve the allocation algorithms and design a safe defragmenter which will be incorporated into the file system. But doing so is a major chore, and, as mentioned earlier, Digital's engineers are having difficulty accomplishing the complex task in such a manner that file integrity is totally insured to DEC's satisfaction.

And therein lies the rub. Weber told the crowd "I cannot in good conscience recommend any (third-party) defragmenters", restating the oft-repeated official DEC line. "This is not a decision DEC made lightly. It's serious. We are concerned about the safety of the products in the overall sense. We're working as diligently as we can to provide defrag support."

Weber noted that DEC has open channels of communication with the third party vendors of defrag software, but that the firms often use "undocumented interfaces within the executive that break with new versions of VMS". As a matter of safety, sites using third-party utilities should confirm with the defrag vendor that its product will work with a specific version of VMS prior to performing an upgrade to the operating system.

Weber also recommended that if defrag software is in use, proper precautions should be taken to insure data integrity. Reliable, timely backups are a must. If a problem is perceived, the defrag software should be shut down and the disk "frozen" to limit further damage. The vendor and/or DEC's Customer Support Center (CSC) should be called for further assistance. Although DEC does not officially endorse defrag products, Weber revealed CSC is familiar with defraggers and will assist customers whose disks have been corrupted by errant software.

"It is the intent and practice of DEC to work with third party vendors," Weber said. "We have talked to them all at one time or another, and they will be made aware of the (defragmentation) file system primitives when the file system primitives work." As for ongoing support and assistance to the third party developers, Weber frankly stated, in response to a user question, that DEC would expend more effort "supporting our own product than supporting theirs."

In the question and answer session which followed the presentation, several users noted that systems containing relatively small files do not experience noticeable performance gains from defragmentation. Only systems with large data files which are frequently modified would benefit, they claimed. "If you're working in an environment where only a few big files are being hit by one process, then you'd notice an improvement," a user commented. "But on a disk connected to a cluster, doing a ton of I/O, the heads are seeking so much that there's no way the drive is going to get a chance to read a contiguous file in one swipe anyway. Performance hinges primarily on how well the disk controller queues its accesses to the drive."

Another complication cited by users with on-line defragmenters is that many times the files which most require defragmentation are "ineligible" because they are always open. A defragger won't be of help if it can never get clear access to a file. This situation occurs at sites which run 24 hours a day, seven days a week, and never close their data files. Some sites get around this problem by scheduling a clear period when the target files are closed and user access is prohibited. In this situation, the defragger can do its job uninterrupted. Others wait for low usage weekend periods. But some poor souls aren't even aware their disks are just as fragmented as they were before they bought the software. DEC's defragger, when it finally appears, will also be unable to deal with open files. "It's not a near-term direction," Weber said.

Defragmentation is also difficult to perform on nearly-saturated disks, where sufficient free space does not exist to create a contiguous copy of the file. Some products analyze the available space and perform copy operations which create a new version which, while still fragmented, contains less extents than the original.

Another thorny problem, especially to real-time users where disk access time is critical, is how VMS handles bad block revectoring. Normally, this process is totally invisible to the user; Weber acknowledged that the design of DSA (Digital Storage Architecture) disks is such that it will become more difficult to notice when a revector occurs. No consideration is being made by DEC to handle "contiguous" files which contain undetectable revectored blocks, and Weber recommended considering

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the new disk striping methodology for high-bandwith disk access. He also noted that since efforts are made to have "spare" blocks contained within the same physical track on the disk, any deleterious effects should not be that pronounced.

The existence of revectored bad blocks and the placement of system files explains why a disk may still appear to be fragmented even after a backup/restore operation.

Additional copies of the home block, which contains critical information about the volume itself, are located at geometrically calculated positions independent of the file structure. The result can be "islands" of contiguous free blocks, instead of one large area of available space.

The algorithm BACKUP uses for scanning the disk bitmap file during a restore operation can also cause fragmentation of the available free space and, in some cases, of files.

During a restore, BACKUP scans forward through the bitmap file for contiguous free space. Following the replacement operation, BACKUP does not return to the beginning of the bitmap for its next scan; it continues from its present location. Assume BACKUP needs to restore a 10,000 block file; it finds a 9,999 block free space area right before a system file, so it skips to the next entry in the bitmap, leaving a 9,999 block "hole" in the disk. That "hole" won't be considered for use again unless BACKUP reaches the end of the bitmap and begins scanning from the beginning again.

But the biggest cause of free space fragmentation is actually designed into VMS.

By default, the disk's index file, INDEXF.SYS, is placed in the center of the drive. The location optimizes disk head movement; after a lookup is performed, a seek operation to a file with "worst case" positioning will require moving a maximum of half the radius of the disk. However, this positioning also has the effect of erecting a barrier that inherently limits a file's contiguity to half the total free space on the drive. In actuality, the contiguous free space is probably even less due to the "invisible" placement of revectored blocks and redundant system files.

It is possible to initialize a drive and specify the placement of the INDEXF.SYS file to be at the beginning or end of the volume, or at a specific block number, but users on the Internet have reported the /BEGINNING and /END location qualifiers of the INITIALIZE command to be broken under most recent versions of VMS. In any event, most experts advise leaving INDEXF.SYS in its mid-disk position for typical systems.

There is a more important issue surrounding INDEXF.SYS, specifically its own fragmentation and the inability to pre-extend the file due to current VMS limitations.

At the time a disk is initialized, INDEXF.SYS is created using either default values built into VMS, or information from an image backup saveset. As the disk is placed in operation and new files are created, INDEXF.SYS will become fragmented as it is extended interactively to contain additional information.

Prior to VMS 4.0, it was possible to preallocate additional space in INDEXF.SYS by initializing a drive, supplying large values to the /HEADERS and /FILES qualifiers, then performing an image backup with the /NOINITIALIZE qualifier. By using /NOINITIALIZE, BACKUP did not change the size of INDEXF.SYS, thereby preserving it in its pre-extended state.

Since VMS 4.0, BACKUP no longer saves the pre-extended file, instead creating it at a size its own algorithms consider sufficient to hold the entries on the original volume. Some users "fool" BACKUP by creating a directory that contains a large number of null files. When the image restore is completed, the INDEXF.SYS is "extended" by the entries of the empty files, which are deleted following the operation.

Since it appears obvious that "pure" contiguity of VMS disks is an unattainable goal, why has it become almost an obsession?

"This is really a marketing issue, rather than a performance issue," an anonymous DEC engineer said following the session. "In most instances, on most typical systems, disk fragmentation has no serious effect on performance. A couple years ago DEC started to respond to performance complaints by telling people their disks were fragmented and that they should do a backup/restore. It gave the users something to do, made them feel like they were accomplishing something, and had the added benefit of making certain good backups were being made.

"Well, backup/restores take a lot of time. So the third-party defrag people jumped in to supply a solution to a problem that wasn't really recognized as a problem until DEC created it.

"There are a lot of undersized systems out there, and managers have to squeeze every ounce of performance they can from them. Products like defragmenters and load balancers are seen by a lot of people to be "magic bullets" that can miraculously solve problems. Usually what happens is a site buys a defragger, then a load balancer, then buys a bigger VAX or faster disks, which is what they should have done in the first place. But they use the defraggers and performance software to "prove" to management they need a bigger system."

Then why is DEC working to create its own defragger?

"About 2000 people attended the session, right?" the anonymous techie pointed out. "There's a big market for a product out there, and DEC would be stupid to ignore it, especially since they invented the fragmentation issue. Whether the benefits are real or imaginary is a moot point. People want defraggers, and they want DEC to buy one from DEC. So we'll give them one."

Only in New Orleans...

New Orleans is a marvelous town, but for a parochial Pittsburgher, the culture shock can be significant.

I know some people here who are doing hard time for what passes as routine entertainment on Bourbon Street. I can't begin to imagine what the town must be like during Mardi Gras...

A great deal of the credit for the success of the city's tourist industry must go to the police force, which maintains order in an environment that would cause most moderate Methodists like myself to collapse in a fetal position.

But sometimes even New Orleans' finest make a mistake.

On Wednesday night there was a guy wandering around Bourbon Street wearing a sign that said, "Have pity. Still on VMS 3.7." Naturally, the DECUS folk were in hysterics, and the fellow attracted a great deal of attention, including that of two police officers.

"What's that sign mean, fella?" one officer asked, hand poised nonchalantly on his nightstick.

"Uh, well, it's kind of technical, officer" the gentleman replied. "It has to do with computers."

"You think I'm stupid, boy?" came the testy reply.

Fortunately, the DECUS attendees who had gathered around to watch the spectacle came to the guy's defense, and everything worked out fine. When the incident was mentioned to a DEC rep the next day, he replied, "Now you know why we tell you to stay current with the latest release."

WRITE SYS$OUTPUT

(WRITE SYS$OUTPUT will be a sporadically published mini-newsletter for registered users of the BBS system. We're including it in KGB Report because of the increased distribution of this issue, thereby killing the proverbial two birds with the equally proverbial one stone.)

The big news this month is that SYS$OUTPUT has switched from the Opus BBS system back to Fido BBS software.

When SYS$OUTPUT began back in 1986, it used Fido on a Sanyo floppy-based PC. We switched to a dedicated PC with 60 MB of disk space and the Opus software later that year in order to maintain continuous high-speed electronic mail capability with the other nodes in the local PittNet network.

Recent upgrades to Fido now make it possible to return to it without impeding the flow of electronic mail to and from the local mail hub. So, even though an upgraded version of Opus is now available with even more bells and whistles, we've taken a giant leap backward to Fido.

Why the change? Quite frankly, the users who frequent SYS$OUTPUT are not typical PC BBS callers. Most dial in from their VAXes using Kermit or some other limited-capability communications software. Opus and the newer BBS systems were designed to exploit the graphics capabilities of PC systems and the wealth of software utilities available in the MS-DOS world. Most of these features were useless to my VAX callers and only served to confuse new dial-ins and frustrate the "old-timers".

SYS$OUTPUT callers don't want to play games or view fancy graphics displays. They're usually calling long-distance from work and just want to read their messages and download a few files. The fancy graphics and other accoutrements often made things more difficult.

However, the biggest reason for the change was Opus' problems with Kermit. While Kermit remains the king of file transfer protocols (ftps) on VAX systems, it has fallen out of favor in the PC world. Other protocols may be faster and more efficient, but Kermit is the only ftp than can reliably transfer VMS .EXE files without the need of using additional conversion programs at the receiver's end. Kermit can also transfer files over a 7-bit data path; all other ftps need a full 8-bit path, which is not always available at certain VAX sites. Most importantly, over 90 percent of the file transfers on SYS$OUTPUT use Kermit.

Kermit isn't built into Opus, nor is it present in most PC-based BBS software. The Kermit we ran under Opus was actually a program external to the main software, and it had a rather nasty tendency to lock up the system after awhile. And we mean lock up; a power-off reboot was necessary to free the system. The PC would go brain dead and drool at least two or three times a week, requiring a panic call to someone in my household to go into my office and hit the big red switch. When attending DECUS or some other long-term out of town event, I had to disable Kermit to prevent the system from freezing. This was a major inconvenience to regular callers.

The Kermit built into Fido is a rock-solid implementation of the original Kermit specs. It doesn't support some of the new features of later versions, such as large packets and sliding windows. It does, however, work without a hitch. There is one slight bug in Fido in relation to Kermit; it woefully overestimates the amount of time necessary to download files. The actual transfer time is about half that calculated.

Another "feature" of Fido is its plain ASCII-text based interface. Most PC BBS packages use ANSI escape codes that sometimes wreaked havoc with callers dialing in with plain ol' dumb terminals. Fido just displays plain text, with no fancy graphics.

Hints on using Fido. Your best bet when you log in is to go to the General Information file area and download GUIDE.ASC. It's a 68K file which explains how to use the Fido software. A printout of the file is also available for $3 from KGB.

All users, including "old-timers", should look at the Bulletins section (available from the main menu). The Bulletins are constantly updated, contain important announcements about the system, and also contain the answers to the most frequently-asked questions about the system's operation.

Old-timers should also note that while command stacking is supported in Fido, it's implemented a bit differently than on the Opus system. System bulletins and the login screen explain the differences.

When logging in to SYS$OUTPUT, you must use your real name; handles are not permitted.

If you're a new caller, you will be given the option of completing a questionnaire in order to receive increased access to the BBS by becoming a "registered user". Unregistered users are limited to 60 minutes on line per day, cannot enter messages in national echomail areas, and cannot upload files. Registered users get 120 minutes on line and can participate in the echomail forums. In addition, registered users receive "WRITE SYS$OUTPUT", a sporadically published mini-newsletter containing news and hints about using the system.

Old-timers who want to receive WRITE SYS$OUTPUT should answer the questionnaire in the main menu section in order to get on the mailing list.

Why register users? Registration accomplishes two things. First, it limits full access to persons who work with VAX/VMS systems. This eliminates the preteens with Commodore 64s and 300 baud modems who are looking for the latest MS-DOS game software. Secondly, it provides the sysop with a way of verifying the identity of callers. This is necessary to insure the integrity of uploaded software intended for widespread distribution.

More about SYS$OUTPUT. SYS$OUTPUT is a member of the FidoNet amateur electronic mail network, with over 7,000 member nodes around the world.

A large number of DEC-related programs and text files are available for downloading. New uploads from registered users are welcomed.

SYS$OUTPUT also has several "EchoMail" areas. Messages entered in these areas are retransmitted to other BBS systems around the world. The question you enter in a message area here may be answered tomorrow by someone in Australia! The National EchoMail areas maintained on SYS$OUTPUT are VAX, PDP-11, Rainbow, and Dr. Debug's Laboratory (a general computing conference). Private messages to the sysop or messages to other users on the board should be restricted to the sysop and general message areas. Private messages and off-topic messages should not be placed in EchoMail.

SYS$OUTPUT also carries the Usenet INFO.VAX (COMP.OS.VMS) Conference. Messages entered in INFO.VAX are sent through a special gateway into Internet. People on Internet are extremely sensitive to off-topic and "stupid" questions (i.e., "What programs are available on a VAX"), so discretion should be used when posting. If you're new to BBSing, it's a good idea to be a "lurker" for a week or two; read the messages without entering your own, to get a feel for the general flavor of the area.

Under Opus, INFO.VAX was a read-only area. With Fido, "write access" is now available to a limited number of users. If you're interested in responding to messages in INFO.VAX, leave the sysop a message when you log out.

Because of the large number of messages which are posted daily in INFO. VAX, it can take a considerable amount of time to read the postings on-line. A "short cut" is available... each day, all new INFO.VAX messages are copied into a downloadable file and posted in a special file area. To further speed downloading, a compressed version of the file, created with the ZOO archiver, is also posted daily. To decompress the file, you need the ZOO utility. VMS and MS-DOS versions of ZOO can be obtained from SYS$OUTPUT.

Commonly-asked questions.

Q: What does "Fido processing mail, call back later" mean?

A: It means pretty much exactly what it says. Fido is attempting to send electronic mail to another system, and you called in the middle of the mail event. Unless it's between 4 and 6 a.m. in the morning, just call back in 5 minutes or so. The BBS should be available again.

Q: How can I get a complete listing of the files available for downloading?

A: The complete file list is contained in Bulletin 20, which is updated automatically on a daily basis. Smart users capture this area, read it off-line, then call back to download the files they want. It saves a considerable amount of time.

Q: My long-distance telephone bills are getting outrageous. Are there any VAX-related BBS systems closer to me?

A: The Bulletin section contains a listing of all known DEC-related BBS systems connected to FidoNet.

Q. I read in the VAX area about a program I'd like to use, but it isn't on SYS$OUTPUT. How can I get it without calling the other system?

A: Ask the sysop to file-request the program for you. Fido will automatically call the other BBS and transfer the files. File requests are generally processed within a day or two.

Q: What's the best file transfer protocol to use on SYS$OUTPUT?

A: Without a doubt, Kermit. Other protocols may be faster, but Kermit transfers are most compatible with VAXen. Just remember-- when downloading a VAX .EXE or .TLB file, be certain to issue the command SET FILE TYPE FIXED to your local Kermit. This preserves the 512-byte fixed-length records needed for VMS images and library files. When downloading text, enter SET FILE TYPE ASCII. When downloading PC executable files, enter SET FILE TYPE BINARY. Also remember that SYS$OUTPUT's Kermit doesn't support server mode. Use the RECEIVE command, not the GET command.

Q: Why doesn't my Kermit work with this BBS' Kermit?

All Kermits are equal, but some Kermits are more equal than others. Some versions have quirks that prevent reliable operation. The versions of Kermit available in the file areas are all guaranteed to run with Fido. You may have one of the "point" versions which isn't completely up to spec.

Q: Does this BBS run on a VAX?

A: No. SYS$OUTPUT is running on a ProServe PC-XT clone with 640K memory, two Seagate ST-238 32 megabyte RLL hard drives and an Incomm 2400 baud modem. PC bulletin board software is generally cheaper, easier to run, and more robust than the few VAX BBS packages available.

Q: How can I get access to the FidoNet mail area so I can send private messages to persons on other BBS systems?

A: FidoNet nodes support electronic mail; if you have a friend who frequents another system, you can exchange electronic mail by asking me to enable a FidoNet mail account for you. FidoNet mail is extremely cheap; I only charge 25 cents a message for calls outside the Pittsburgh, PA PittNet (129) network. However, it is a bother to maintain and accounts are established at the discretion of the sysop. If you're an "old-timer", I'll be more than happy to set you up quickly. Otherwise, become familiar with the operation of this BBS before you ask.

Q: How private are private messages on SYS$OUTPUT?

A: A message marked private is generally accessible only to you and the recipient of your message. However, privacy of messages is not guaranteed. All files and messages entered on this BBS, even those marked "PRIVATE", are subject to the inspection of the sysop. The sysop retains the indisputable right to modify, redirect, or delete any material placed on the system.

Q: SYS$OUTPUT is always busy. When's the best time to call?

A: According to three year's worth of statistical data, the best times to call are (in order of peak availability):

All day Sunday

All day Saturday

National holidays

Weekdays from midnight to 4 a.m.

Weekdays from 9 p.m. to midnight

Weekdays from 7 a.m. to 9 a.m.

Weekdays from 6 p.m. to 8 p.m.

Q: When is the BBS unavailable?

A: As a participating FidoNet node, SYS$OUTPUT observes National Mail Hour, which is 4 to 5 a.m. when the east coast is on Daylight Savings Time or 5 to 6 a.m. when the east coast is on Standard Time. Otherwise, SYS$OUTPUT is available 23 hours a day, 7 days a week, except when the system is transmitting electronic mail to other BBSes or performing routine housekeeping functions. Daily housekeeping occurs between 6:30 - 7 a.m.

Q: What about busy signals and no-answers?

A: A busy signal means one of two things... someone else is using the BBS, or the system is currently unavailable due to maintenance. If you get a busy signal when you call, wait three minutes and call right back. You may have called while Fido was sending or receiving mail, which is a relatively speedy operation. When the BBS doesn't answer, it's because you called immediately prior to a housekeeping or mail event. Wait 10 minutes or so and call back. If the phone doesn't answer for an extended period of time, then the BBS is down. If you encounter this, please call the sysop via voice line at 412-[redacted] Call collect; if you get my answering service, tell them you're reporting a serious technical problem.

Q: I uploaded a file to the VAX area but I can't find it. Where do new uploads go?

A: When you upload a file to an area other than New Uploads, you won't see the file when you do a F)ile list command. Files uploaded to SYS$OUTPUT are not placed in the same file area. They are redirected to the new uploads section. Still, this area is accessible to all users. Files are "quarantined" in the upload directory until the sysop has a chance to review them and move them to the proper area. Hopefully, this will eliminate the possibility of an infected file being transmitted to you. Remember, the sysop assumes no responsibility for the contents of the file areas; you download at your own risk. This goes double for new uploads.

Q: Why do I only have nn (some odd number) of time when I log in?

A: The Fido BBS system requires routine maintenance and must process electronic mail from other systems. If you log on and find you have, say, only 16 minutes available, it's because you've called immediately prior to some system maintenance event. Just call back later. Add 10 minutes or so to the "time available" message. Bear in mind that Fido tracks how many calls you make and how much time you use in a 24-hour period. Each call subtracts from the total time available to you for each day.

Reverse engineering: DEC's double standard?

"Purchaser shall not decompile or reverse assemble the Software, or analyze or otherwise examine the Software, including any hardware or firmware implementation of the Software for the purpose of reverse engineering."

That sentence, from DEC's U.S. Standard Terms and Conditions contract, poses some weighty problems for both Digital and its users.

Questions concerning DEC's intellectual property rights have been making news lately, and the company frequently finds itself between a rock and a hard place determining when it should play the tough guy or look the other way. On the one hand, it can't alienate its users. On the other, it can't permit wholesale dissemination of its proprietary systems and software.

Sometimes it's an easy call. Take the fella who strolled through the New Orleans Convention Center at the last DECUS with a rather unique t-shirt. On the front was emblazoned "Screw the LMF". The back of the shirt contained the DCL commands necessary to disable the License Management Facility. The shirt soon became an exceedingly rare collector's item, and the next day the DECUS newletter contained a fitting editorial on "Professionalism, Ethics and DECUS".

Then there are handy utilities like those published in magazines like the VAX Pro or distributed on BBS systems like SYS$OUTPUT. Many of them use tricks and features found not by poring through the documentation set, but by using DUMP/BYTE/HEX and some inspired bit twiddling. Digital condones these activities by its silence, even though these programs are obviously the result of decompilation. Some DEC employees have even contributed to the cause by casually dropping prescient hints in the DECUS campgrounds. In my last DECUS session I joked that a new release of VMS would alert Digital if the DUMP utility was used on an executable more than six times. It would accumulate points, and after six points your VMS license would be revoked. A DECcie in the audience took the floor and categorically denied it. "You've got the story wrong," he protested. "We'd never use six as a limitation; it's not a power of two. The limit will be eight."

So it would appear DEC has a healthy attitude about "benign" reverse engineering, at least in the good ol' U.S. of A.

But what about the European user who released to the public domain a program that permitted Bookreader files to be displayed on plain vanilla ASCII character cell terminals instead of pricey workstations? DEC was all over this poor guy like timeout errors on a TU-58. Digital demanded all copies of the program be destroyed since it infringed on its copyrights and license agreements. Could it be this person aroused the Wrath of Ken because his Bookreader interpreter, like the LMF patch, had the potential of endangering DEC's cash flow?

This raises a touchy issue. Technically speaking, while reverse engineering is a violation of DEC's Standard Terms and Conditions, it isn't necessarily a crime that will have you spending your days in a place where mice and bugs have an entirely different function. Several rather large and successful companies have flourished quite well, thank you, from figuring out how someone else's operating system bios or peripheral controller functions. But it should also be noted that some law firms haven't done too badly representing both sides in the extended court cases these arrangements sometimes create.

Perhaps the Bookreader episode was more closely related to the current controversy broiling in Europe over new copyright regulations. The European Committee for Interoperable Systems (ECIS), which includes several smaller computer firms, wants the laws changed to exclude software interfaces from copyright protection and to permit direct analysis of software products to extract interfacing data for interconnectivity between vendor applications. SAGE, the Software Action Group for Europe (which includes DEC and IBM as charter members) claims the proposed definition of the term "interface" is so broad it would essentially open the doors to wholesale software piracy. Given the present climate in Europe, DEC couldn't afford not to enforce its licensing agreements to the letter.

The U.S. DECUS Board of Directors is expected to adopt formal policies which should, because of the user group's close ties to Digital, give some much-needed definition to this rather grey area.

Looks like the Tech Tips and Techniques column will continue. But I'm preparing a special European edition of ***KGB Report***, just to be on the safe side.

Legal Notes...

Hyperplexed. An Italian firm is seeking to obtain a U.S. trademark for "HyperText", a stylized version of the term hypertext. Dr. Dobb's Journal reports a number of firms which market hypertextual tools have filed protests. The term was "invented" in 1963 by Ted Nelson, currently at Autodesk.

Xerox to appeal. The firm will appeal the recent dismissal of its charges that Apple violated its copyrights in the design of the graphic interfaces of the Lisa and Mac computers.

Training outfit nailed. A SWAT team from the Software Publishers Association raided three National Business Academy centers in California and seized allegedly pirated software worth $250,000. The SPA claims NBA illegally duplicated over $2.5 million worth of MS-DOS programs since 1986 while training 4,000 students.

Refac rebuffed. Refac is a Canadian company that makes its money by buying old, obscure, broadly-stated patents and suing firms for allegedly infringing on them. They've sued about 2,000 companies so far, threatened to take another 1,000 or so to court, and most recently attempted to pinch Lotus, Microsoft, Ashton-Tate and several other large firms for violating a patent it held supposedly covering spreadsheet software. The judge threw out the case, citing a New York law prohibiting transfer of a right for the purpose of initiating a court action.

Caller ID derailed. Pennsylvania, the wonderful state that brings you the Liquor Control Board and PennDOT, has decided the service is an invasion of privacy and a violation of wiretapping statutes. What hasn't been generally recognized is that the decision also makes the number id function of ISDN networks illegal as well. Bell Atlantic is considering appealing to the state supreme court.

Don't Panic!

If you couldn't make this month's DCL Utilities and Commands class, don't worry. KGB Consulting and [redacted] have several courses in the planning stages, including a class on VMS System Management.

In addition to "generic" classes, we can design a course to fit your specific needs. And if you have to train your entire department, we'll be happy to conduct classes at your place of business.

For additional information, [redacted]

Tech Tips and Techniques

PKUNZIP for VMS. A more-or-less functional version of PKUNZIP for VMS has been making the rounds. (It's available for download from SYS$OUTPUT.) Like many of the MS-DOS archivers ported to VMS, it has some problems with the various RMS file types. .EXEs unload ok for the most part. Text files work fine as well, but have an extra carriage return at the end of each line. It blows up from time to time for no apparent reason, though; it appears the best way to handle things is to place only one file in each archive. Also, when transferring a .ZIP or .ARC file from a PC to a VAX, make certain the Kermit on the VAX end is set to FILE TYPE FIXED.

VS3100 mod 38/SPX problems? Performance problems with DEC's VAXstation 3100 model 38 with SPX graphics have been reported by users on info.vax. Other unspecified bugs were reported as well.

QBUS bugchecks. If you're getting mysterious ILLQBUSCFG bugchecks that bring down your MicroVAX, check the order of the boards in the backplane. The cards have to be positioned in descending order of hardware interrupt priority level.

More backup blues. If you have a 7xx or 86xx model VAX that's been taking a lot more time to perform backup since you've upgraded to VMS 5.2 or higher, it's due to yet another bug in the utility. One of my clients reported significant performance improvements after obtaining a new backup image from the customer support center. DECcies at DECUS were telling everyone to get the latest backup image, which reportedly solves a lot of problems.

Unsupported, but an improvement. The new DSNlink service from DEC can work with the Hayes modem command set with an "unsupported" script file available from the CSC. Expect future versions of DSNlink to officially support the feature, according to folks at the DSNlink display at DECUS. UPS just delivered my copy of DSNlink last week; as soon as the authorization letter with the cryptic glyphs and decoder ring arrives, I'll install it and give you a report.

Update follies. Things you hear in the halls at DECUS: The installation procedure for 5.3-1 mistakenly puts the new STABACKIT.COM file in SYS$MANAGER instead of SYS$UPDATE. Make certain you copy it explicitly to the SYS$COMMON:[SYSUPD] directory and not SYS$UPDATE. If you use a variation of Hunter Goatley's LOGIN.MAR program to speed up symbol and logical assignments at login, you're going to have to change references to SYS$COMMAND to SYS$OUTPUT if you're running the program under the new DECwindows. The program hangs without the switch. Also, if you skip the upgrade to VMS 5.2 and go directly to VMS 5.3, watch for the CAPTIVE and RESTRICTED account flags being set on certain accounts, including SYSTEM.

Sorry, MOM. A user on the Internet reports that MOM.EXE has a bug in VMS 5.3 and 5.3-1. If you have Ethernet terminal servers (the old DECSAs), you may find them crashing whenever you do an NCP CONNECT NODE to them. The workaround is to restore MOM.EXE from VMS 5.2.

File system insight. An upcoming issue of the *VAX Professional* will contain several articles explaining the structure of Files 11 disks, for those of you who've wondered about all those .SYS files in your top level directories. Also, a new book from Digital Press, **"VMS File System Internals"**, will be released next month and is garnering good reviews from many on the Internet.

Scheduler tricks. More and more users are reporting cpu utilization problems due to changes in the VMS scheduling algorithm under VMS 5.n. Under the new algorithm, (read the following aloud, slowly) a process can only be pre-empted by a higher-priority process if that higher-priority process' priority is three greater than the lower-priority process' priority. (I can't believe I actually wrote that, but it is correct.) The most common manifestation of this is "feature" is that batch jobs have a greater tendency to hog the system. As we reported previously, one suggested workaround is to change the batch queue priority to 1. This means, unfortunately, that while the queue won't hog the cpu, it will get virtually no time when interactive users are active. Another suggestion is to make the default interactive priority 5 or 6, and set up a "high-priority" batch queue with a priority of 4 and a job limit of 1 or 2.

It would have been nice if DEC had made a point of emphasizing this change in the basic operation of VMS. Lots of sites complaining of poor VMS performance under 5.2 are actually being bitten by this "feature".

MS-DOS 5.0 rumors. According to conversations of various electronic forums, the new operating system will be highly configurable, still support 8088, single-floppy systems, and will be able to exploit the capabilities of faster processors with more memory.

And VMS 5.4 rumblings. The new release of our favorite operating system will reportedly contain a new $GETJPI item to return a process' rightslist. 5.4 should ship in July or August.

A commented VMSINSTAL. The command file VMSINSTAL.COM is arguably one of the most complicated pieces of DCL ever written. In VMS 5.3, it's 2,602 lines of almost incomprehensible code. Independent consultant Ray Kaplan (who publishes the Views on VAX newsletter) noted in an Internet message that folks on DECUServe discovered the VMS 5.1-1 CD-ROM distribution kit contains a commented version of VMSINSTAL in the VMS050.B saveset. Ray also said there's an uncommented "D" (debug) option that permits verification of the procedure.

CD-ROM compatibility. A user on Internet claims that an ISO (PC- standard) driver is available from DEC for its CD-ROM player. The "default" DEC CD-ROM standard is the Phillips format. On the subject of CD technology, a new solid state laser in the testing stages features a scanning grid area instead of a spot, eliminating the need for moving parts.

Toshiba troubles. The Japanese laptop maker has reported problems with a flaky diskette drive cable on early models of its T1000SE notebook portable. Call 800-999-4CSD for free repair information.

A bug by any other name. Take comfort in knowing Ashton-Tate software does not have bugs. It has "anomalies". Feel better?

Random I/O and the Null Device

Security Issues:

Password hashing. An interesting discussion on Internet revealed a peculiar quirk of the VMS password hashing algorithm. A user reported he was able to log into his system using either his "real" password, LOGICAL_DESIGNS, or his old one, DESIGNS_LOGICAL. Passwords are hashed down to 64 bits, or eight characters, now matter how long the actual password string is, so that it is possible, although extremely unlikely, for different passwords to generate the same hashed result. I was able to duplicate this on my VAXstation 3100 running VMS 5.3-1, although another Internet user was unable to do so on a MicroVAX 3400. So when changing your password, it may not be a bad idea to choose a new string that is totally different from the old one, even though this particular situation appears to be an incredibly rare statistical coincidence.

Morris guilty, will appeal. Internet worm creator Robert T. Morris, Jr. received three years' probation, 400 hours of community service, and a $10,000 fine from U.S. District Judge Howard Munson. Judge Munson said he received numbers of letters on both sides of the case, but all urged that Morris not be incarcerated. Morris' dad called the sentence "a reasonable end", but young Morris' attorney plans an appeal to remove the felony stigma. Morris still faces civil suits from companies seeking damages for lost computer time. The U.S. Justice Dept. has decided not to appeal the light sentence, satisfied the conviction would serve as a suitable deterrent to would-be hackers.

But would you hire him? A West Virginia judge is asking Federal authorities to assign Morris to develop a faster child support payment tracking system for his state as part of the convicted felon's community service sentence. Morris is reportedly interested.

Truth stranger than fiction? In a fascinating article in the June issue of *PC Computing*, author Jonathan Littman asserts that Robert Morris' unleashing of the Internet worm was inspired by John Brunner's 1976 sci-fi masterpiece *The Shockwave Rider*. Consider this quote from the book: "This is indeed the father and mother of a tapeworm. You'll have noticed how much use it makes of terminology derived from the study of living animals. And with reason. Not for nothing is a tapeworm called a tapeworm. It can be made to breed...my newest - my masterpiece - breeds by itself."

PKZIP 1.2 a trojan. Users are warned that a trojan version of the popular PK archiving utility has been making the rounds of BBS systems. The bogus program is version 1.2. Phil Katz of PK said there is no "real" release 1.2, and that he will not use the number 1.2 for any valid releases. He's also offering a reward for anyone who can provide information leading to the arrest and prosecution of the culprits.

Canadian government epidemic? Rumors persist on various BBS systems of major viral infections on various systems in the Great White North's bureaucracy. The Canadian feds are trying hard to eradicate the bugs while keeping a lid on the problem. The GAO reports computer-based invasions of another type; the system used by U.S. Customs to screen those entering the country has major deficiencies and can let known criminals in.

US computer security lacking. Congressmen Robert Torricelli and Dan Glickman are seeking sanctions against U.S. government agencies who fail to adequately protect the security of their computer systems. Their action was prompted by a General Accounting Office study that revealed security measures are for the most part ignored; only 55 of 145 planned security controls had been implemented by the affected agencies, which include the FAA and IRS. The Congressmen are considering enacting legislation that would prevent lax agencies from acquiring additional systems until current security is up to snuff.

Cure worse than the disease. The recent raids on alleged computer hackers have a rather nasty downside; innocent system operators are getting nailed as well. A responsible bulletin board sysop noticed a hacker had posted credit card access numbers on his system. The sysop did the ethical thing, and notified authorities. The authorities responded by seizing all of his computer equipment as "part of the investigation". And you wonder why your friendly local sysop has such a paranoid bent as of late.

And speaking of seizures, 42 systems and thousands of floppies in 16 cities across the nation were appropriated by the Secret Service as part of "Operation Sun Devil" last month. An 18-month crackdown on computer breakin and telecommunications fraud, the May sweep also resulted in three arrests, including one in Pittsburgh, for unrelated offenses such as weapons violations. Under new federal laws, the Secret Service has the power to investigate electronic fraud. Mitch Kapor, the founder of Lotus, is considering funding a legal defense fund for those arrested, claiming the undertaking was a "witch hunt" and that innocent persons were unjustly affected. Industry leaders and law enforcement officials are not pleased with Kapor's actions. Also considering aiding the cause is Grateful Dead lyricist John Barlow.

International headaches. Another concern for BBS sysops is the increasing number of international users. Federal trade law prohibits the exportation of several software technologies that are routinely built into shareware programs, such as the DES encryption standard. Currently, there is nothing prohibiting a foreign user's dialing into any of the thousands of public BBS systems in the US and downloading software that contains "sensitive" material.

Clip art thieves clipped. Computer Support Corp., which sells the popular Diagraph and Arts & Letters draw programs, is offering a $10,000 reward for persons who unlawfully duplicate and distribute its clip art software. Clip art is frequently pirated because of its lack of integral copyright notice.

Marijuana virus in US. The Marijuana Virus, which reportedly displays a pro-pot message on PC screens, surfaced in Oregon last month at the Oregon Institute of Technology. Originally seen in the China, the virus apparently does no other damage.

Sharp target of Japan infection. About 15,000 Sharp Corp. X68000 pc systems were infected by the Namba I and Namba II virii in Japan last month. The vector appears to have been a game program which was infected at the point of manufacture on Friday April 13.

According to Japanese news reports, the game maker has distributed a vaccine to all registered users of the program. The Namba virii appear to be of the ubiquitous "Friday the 13th" variety, and are coded to destroy data on Friday, July 13. An interesting twist is the infection mechanism; the virus attaches itself to the battery backed-up area of the X68000's static RAM memory, which means it can be removed from the disk and still damage the system. No one knows why the Sharp machine was targeted.

C-Brain virus in India. Officials in India have reported the C-Brain virus has infected an undisclosed number of systems there. The virus, similar to the Pakistan Brain strain, does no serious damage but slows system response time by increasing the size of executable programs.

New Garfield virus hits Macs. Users at Cornell are reporting a new virus that replaces the system file's native MDEF resource with one named Garfield, which propagates to application files, any new System files, and the Finder. Following an undetermined trigger mechanism, Garfield deletes itself, along with all menus generated by the system. The Vaccine program will successfully block an infection, but the current Disinfectant program won't find it. Systems using the Virus Detective DA should search for resource MDEF and Name "Garfield", Resource MDEF & ID = 5378.

New York hacker nabbed. A 17-year-old Island Park boy faces up to four years in prison on various computer tampering charges for illegally accessing and changing data files on a Massachusetts manufacturing firm's system in April. Authorities seized the kid's equipment. (It would appear local governments are considering raising money by selling used computer equipment.)

Commercial package infected? A user on FidoNet reported a system infected with the Jerusalem B PC virus from a software update disk provided from AccPak or Quick-Invoice. Making things even more pleasant was the fact the infected system was connected to a Novell network.

Bookers booked. Two California travel agents were arrested by the FBI in California for setting up phony frequent flyer accounts on the Sabre reservation system, crediting other passengers' flights to the accounts, and selling the award coupons for cash.

Microsoft:

Windows 3.0 premiers. So what? Judging from all the hype, you'd think it was the biggest thing to hit the computer industry since silicon. InfoWorld went so far as to say it would "legitimize graphic user interfaces". Even the people at Apple, not precisely big Windows boosters, claim the product will herald "the death of the command-line interface" and that "the days of the $500 clone are gone." And the latest Microsoft Windows ad shows a C> prompt with the words "Kiss it goodbye".

Baloney.

Windows will probably end up being one of the most successful "shelfware" packages ever marketed. People will buy it because of the hype, try to use it a few times, then put it back on the shelf and limit their Windowing endeavors to applications which require the GUI. While Microsoft has already shipped 200,000 packages (you can get it for under $100 at the local discount software shop), 50,000 were upgrades and a good part of the balance were review copies and purchases by those users who must always have the latest widget. Microsoft says it plans to sell a million units by next May, but most analysts feel a more accurate count would be 500,000 or so.

Corporate users are far more suspicious of the product, and many say they plan to pass on it in favor of full-blown OS/2. A Byte review suggested Microsoft has committed corporate fratricide.

The general consensus of command line curmudgeons is Windows will be used by persons who desire a GUI for their PC. No one will seriously use it for multi-tasking because of the cpu cycles needed to manage the GUI overhead.

Still, Windows is doing far better than OS/2, which was badly trounced in a poll conducted by Byte Magazine at the recent Atlanta Comdex show. DOS and DOS/Windows came out on top, with OS/2 sinking to less than half the vote it received two years ago. Only 13% of those polled said they expected to be using OS/2 by 1995. About 55% went to DOS and its extensions, 21% to Unix with the balance going to the Macintosh OS and others. Nearly 6,500 persons took part in the balloting. In keeping with its customers' sentiments, Wordperfect is acelerating development of the Windows version of its word processor and is putting OS/2 Presentation Manager development on the back burner.

A user on the Dr. Debug echo on FidoNet reported that Windows on a 386 machine running in protected mode can trash hard disks if they have been partitioned - such as with Vfeature or SpeedStor. Microsoft allegedly responded that one should move to DOS 4.0 if one wants to run in this mode and partition disks. Such a user-friendly attitude. Information Week said Microsoft was aware of the problem and notified disk drive manufacturers, but not vendors who sell formatting software.

Personally, I'm sticking with DesqView. And on the subject of DesqView,

DesqView/X debuts. Quarterdeck's new GUI for the DesqView environment provides a bridge between Unix and DOS systems, permitting users to run DOS sessions and X sessions on the same machine. This nifty trick is accomplished by intercepting DOS I/O and translating the data to X operations. Reverse translation from X to DOS is also provided. Users have a choice of an enhanced standard DesqView interface, Open Look or OSF/Motif. Pricing for the product, scheduled to ship at the end of the year, was not announced. DesqView/X was about the only interesting product displayed at the sparsely-attended Xhibition conference in San Jose last month.

A rose by any other name... Microsoft is calling OS/2 "Windows plus", to avoid confusion between OS/2 and Windows 3.0 which began shipping last month.

An upgrade to OS/2, version 1.21, is scheduled for shipment this month. The release supposedly addresses the software's paucity of reliable printer drivers.

As reported last month, Microsoft is touting its new Software Migration Kit as the perfect bridge between Windows and OS/2. The software package, currently available only to select developers, supposedly maps Windows program references to equivalent OS/2 routines.

Microsoft also said that whenever OS/2 2.0 arrives, it may include the ability to run Windows binary code so that Windows applications appear to be Presentation Manager applications. The code currently exists, but has to be optimized for acceptable performance, which is why it may not make the first cut of OS/2 2.0.

Lotus, which until very recently has favored OS/2 over Windows, has announced a third-quarter ship date for 1-2-3 version 3.1, which will operate under Windows but not fully exploit the GUI. Lotus will develop a full-blown Windows version of 1-2-3 for later release. 1-2-3 is currently available on six different platforms, including VMS. 1-2-3 3.1 will include an interactive graphical environment, improved memory management and better performance. It's currently in beta test and uses technology acquired from Aleph 2, a French software house Lotus bought to integrate its Impress package into 3.1.

WordPerfect also said it plans to support Windows in an upcoming release of its word processing software.

Hewlett-Packard has an upgrade to its NewWave GUI, which is based on Windows.

In a departure from its normal OEM-only distribution pattern, Microsoft said it will sell its LAN Manager networking software via retail distribution channels. The move is seen as a way to bolster sales for the product, which runs under OS/2 and is badly lagging behind MS-DOS networking solutions.

An alternative to DOS. Digital Research has announced a new version of DR DOS 5.0, an OS that is totally MS-DOS compatible but boasts many additional features, such as a graphical DOS shell, a laptop communications program, command-line history, and password protection. The software costs $200 and comes with unlimited customer support, which might be needed. Jerry Pournelle reported in a recent InfoWorld column that 639K of memory was available with DR DOS 5.0 installed, but that extended memory problems and quirky disk formatting characteristics have forced him to wait for the next release. You'd better, too.

NewerWave due in August. Hewlett-Packard will release NewWave 3, an enhanced version of its popular GUI for $195. The upgrade, which is layered on top of Microsoft's Windows, will exploit the new features of that package and add a few twists of its own, including network support. Memory requirements have dropped from 3MB to 2MB.

Apple:

MAC OS 7.0 delayed. As we reported last month, version 7.0 of the Macintosh operating system has been delayed until the end of the year. The official announcement came at a recent developers' seminar. Apple said 7.0 is for the most part complete, but requires intensive bug squashing, performance boosts and code shrinkage. Alpha testers report the software runs abysmally slow on any machine except the Mac II and requires 4 MB of memory, although the final version will probably need "only" 2 MB. Key software vendors have received an alpha developers' version of the prototype OS on CD-ROM, and some are mimicking 7.0 functions in their 6.0 software to prepare users for the shift. A strategic part of Apple's long-range Mac plans, the delay could further erode the Mac share of the PC market. Analysts are already touting Microsoft Windows 3.0, released on May 22, as a sound alternative to the Mac. Intel PCs running Windows are far less expensive than comparable Macintosh systems. The delay also means developers and Apple will miss the Christmas season market, traditionally the high point of Mac sales efforts. Resellers stock up on hardware and software in advance of the rush, meaning Apple's missed the boat for this year. Some good news: a new version of HyperCard is planned for a summer roll out, including multiple, simultaneous sessions and color, a script editor, debugger, and quasi-compiler for scripts. The new version will cost $49.95 for existing Mac owners.

Cheaper Macs coming? At the same Worldwide Developers Conference, Apple CEO John Sculley said the company is developing lower-cost Macs, is considering lowering profit margins on other machines, and will build in sound i/o (electronic microphone) capability on future modular Macintosh-based systems. Rumors abound that Apple will announce an under-$2000 color modular Mac system by late summer in an effort to prevent mass defections to lower-cost solutions from other vendors. Sculley also said he will personally head Apple's R&D efforts for the next two years, apparently discounting gossip the CEO was thinking of leaving.

School discounts sweetened. Reports say Apple is considering discounting Mac sales to schools another 20% over the current 40%. According to Reuters, Apple controls 42% of the elementary/high school market. But IBM chief John Akers promised shareholders at the company's annual meeting Big Blue would pass Apple in the K-12 school market by the end of the year.

A/UX this month. Apple is accepting orders for version 2.0 of its Unix variant, which runs on the Mac SE/30 and assorted Mac II systems. The operating system requires at least 4 MB of memory. The software costs $995 on a floppy disk or tape, $795 on CD-ROM, and $2395 on an 80MB hard disk. The system can also be purchased pre-installed on IIcx, IIci or IIfx machines. The applications currently available for A/UX are standalone programs that really don't need the pricey OS to run.

Making up with Japan. When Apple arrived in Japan in 1983, it was with high prices, poor support and its typical arrogant attitude. The market responded by pretty much ignoring the Mac, an irony because the machine was ideal for Japanese language applications. A somewhat chastened Apple, now with 3% of the market, is offering academic discounts, developer deals, slashing its internal costs and building a management team composed mainly of experienced Japanese computer executives. Twenty new Apple stores are scheduled to open (there are only two at present).

Miscellany...

IC Inventor dead at 62. Robert Noyce, the co-inventor of the integrated circuit, died of a heart attack following a morning swim at his Texas home last month. Noyce, who was highly respected and earned the unofficial title of "Mayor of Silicon Valley", founded or co-founded Shockley Semiconductor Labs, Fairchild Semiconductor and Intel. He came out of retirement in 1988 to head Sematech, the government/industry venture which attempted to fight the Japanese incursion into the semiconductor market.

Where are they now? A bit of trivia... the first VAX 11/780 ever shipped resides in the Physics Department at Carnegie-Mellon University in Pittsburgh, where it is still in use.

So what's the alternative? Reuter News Service released a report by two Australian scientists who claim that computer technology is not reliable enough for use in life-critical operations. Scheduled for publication in next month's Futures magazine, a British academic journal, the pair cite 36 instances where computer malfunctions have resulted in deaths or major property damage in the last 20 years. "In July 1989 there were 104 failures in a single day of the Los Angeles air traffic control computer and a full-scale nuclear alert in the United States was triggered by a faulty chip in a communications computer," the two stated.

Business Notes:

Lotus/Novell merger bombs. The proposed merger between Lotus and Novell collapsed when the network leader made a last-minute demand for equal representation on Lotus' board of directors. Further merger talks will not be undertaken, but cooperative ventures will probably be explored. Most customers either didn't care, or were relieved at the news. The merger talk began during negotiations to co-market Lotus Notes and NetWare. ComputerWorld reported Novell approached Microsoft prior to Lotus, and that AT&T is a possible purchaser for the networking firm. CW also said Lotus may buy Ashton-Tate.

Kodak sells Verbatim. Mitsubishi Kasei Corp. has purchased the diskette subsidiary, and will maintain the company's plant in North Carolina.

SCO buys Canadian Unix firm. The Santa Cruz Operation, Inc. has acquired privately-held Unix developer HCR Corp. of Toronto. The move puts SCO into the Canadian market, will permit the firm to develop custom packages, and will boost SCO's bottom line for an as-yet unscheduled public offering. DEC is marketing SCO Unix on its Tandy-made 386 DECsystems.

Fires hit DEC plants. A gas explosion at a fumes incinerator and an acid-caused fire at a component assembly area at two Digital sites in Cupertino last month caused about $300,000 in damage. No injuries were reported, but the incidents delayed manufacturing on some VAX 9000 components.

New York abandons Software/ Consultant tax. A proposed 10% tax on custom software, management consulting and computer consulting services is effectively dead, the victim of almost unanimous opposition by the business community. Foes of the tentative levy, including the New York Chamber of Commerce and Industry, called the proposal "obnoxious". Professional services taxes are a growing trend, however. Most consulting firms (KGB included) protect themselves with a standard contract clause requiring the client to pay for any local, state, or federal levies on services performed.

But Taxachusetts forges ahead with a plan to tax all services, excluding only medical services, advertising, personal services, advertising and auto repairs. A particularly nasty provision requires the tax be paid immediately to the state at the time the service is performed, which will hurt small businesses which frequently receive delayed payments from their clients.

Hold jockeys ease wait. Instead of Muzak, WordPerfect is using "hold jockeys", live performers who play music, talk to those on hold, provide info about WP products and give estimates for the delay in reaching product support. There is no truth to the rumor Oracle has secured the services of Howard Stern for its version.

Get Buffaloed. Canon is sort of like Gillette. Profit margins on its laser printer engines aren't that spectacular, but the company cleans up on supplies, like toner cartridges. Nolan Bushnell, founder of Atari and Chuck E. Cheese, has formed Buffalo Inc. with former ATD head M.M. Zuckerman. Buffalo buys laser printers from businesses, then leases them back on a per-copy basis. Depending on usage, the duo claims businesses can save 20% on laser printer operation costs.

Peter Norton Computing (PNC), Symantec Merge. A stock exchange gives Peter Norton a seat on Symantec's board of directors and 30 percent of the larger firm's shares, valued at about $70 million, nearly three times PNC's sales. Last month, PNC announced a deal with Interactive Systems to produce a version of the Norton Utilities for Unix systems. While Norton's name is attached to product, the Unix version of the utilities was actually developed by Interactive spinoff Segue Software.

Go ahead and dump. The heads of about a dozen computer manufacturers asked leaders on Capitol Hill last month to ease dumping penalties on firms who produce semiconductor products which are not manufactured in the US or are in short supply. IBM is also seeking a change in national procurement rules which require systems sold to U.S. government agencies to contain more than 50% U.S.-made components.

dBASE IV for VAX/VMS was displayed at DECUS last month. The character-based version of the software is compatible with the MS-DOS flavor, and files can be exchanged between both systems.

1-2-3 for Unix runs on machines using System V Release 3.2. The single user price is $695; multi-user costs $1295.

Domestic hardware sales lag. The country's top 20 computer firms sold more systems abroad than at home last year, the first time that's happened. Foreign deals accounted for 50.1% of sales in 1989, up from 48.4% in 1988.

But the pay ain't bad. Fortune Magazine says computer executives rank 14th in its list of the top 20 best-paid bosses. The average computer or communications CEO made $939,000 last year. The highest paid were health care execs, who averaged $1.4 million. Come to think of it, my Blue Cross/Blue Shield does cost more than monthly VMS support. But not by much.

And software sales are good. The Software Publishers Association said about $993 million in retail sales were recorded for the first quarter of 1990, a 25% increase over the same period last year. Mac software sales jumped 37%, while MS-DOS software were up 24.3%.

Word processing software continues to be the main reason people use PCs, it seems... wp sales leaped 80%.

MCA clone sales non-existent. While IBM PS/2s account for about a quarter of all PCs sold, clone machines from Olivetti, Tandy and Dell which use the Micro Channel architecture are barely moving. Still, other manufacturers continue to jump on the bandwagon. NCR announced a series of 486, MCA based machines early last month.

VGA standards set. The Video Electronics Standards Association, a trade group consisting of leading monitor manufacturers, adopted new Super VGA guidelines that will permit wider support for the scheme by the industry.

Lotus buys AlphaWorks from Alpha Software. The integrated package, featuring spreadsheet, graphics, database, communications and word processing, will be renamed LotusWorks. About 300,000 copies of the software have been sold since its introduction in 1983. The package will go for $149.

This has nothing to do with computers, but you might be interesting in knowing that Wyndham Food, the San Francisco company that makes Girl Scout cookies, was bought out by a Taiwanese conglomerate.

Publishing:

While Adobe took a beating in the market (see below), it received two important boosts with the announcement that it has licensed its PostScript page description language to Kodak and, more significantly, Xerox.

The Xerox deal, along with the company's announcement that it plans to market products using PostScript technology, is a tacit concession that its own Interpress language is hitting too small a niche market. (PostScript was created by the same persons who created Interpress at Xerox, John Warnock and Charles Geschke.)

Pagemaker 4.0 available. Aldus is shipping the latest version of its desktop publishing software for the Mac. Featuring new word processing capabilities, typographic controls, and large document handling features, the package will sell for $795. The upgrade price is $150. Pagemaker 3.01 for the PC under Windows 3 was also announced.

Linotype gets Hell. German graphics giants Linotype and Hell are discussing the possibility of a fall merger, continuing the consolidation trend in the industry. Under the proposal, Linotype would acquire Hell in exchange for about 30% of Linotype's

stock.

Label monopoly? Avery International has announced merger plans with Dennison Manufacturing.

Bad month for Adobe. The PostScript house saw its stock prices plummet over 30% when it announced less than anticipated profits due primarily to lower sales to Apple. But the kicker was Adobe erred in its calculations; sales weren't really as bad as they thought. Nonetheless, the firm was hit by the inevitable shareholder class action suits.

On the upside, PostScript Level 2, the first major upgrade to the page description language since its introduction five years ago, is on schedule. Adobe says L2 will be faster, easier to use, and more functional. The new version will include the extensions hobbled onto the original spec, better handling of forms, pattern manipulation features and color support. Kodak assisted Adobe in developing the color device driver features.

The promised performance increase comes from an optimized interpreter featuring enhanced graphics and text operators as well as improved file transmission methods. Adobe is creating specific drivers for Windows, Mac and OS/2 platforms which will support printer-specific features such as two-sided printing and multiple paper trays on laser printers. Coupled with its newer RISC-based controllers (including a new Intel i960K unit), PostScript Level 2 should be significantly faster and more versatile than its predecessor. Adobe is also slated to release Adobe Type Manager for Windows 3.0 soon.

Unix:

Hope springs eternal. A group of companies has started a petition drive to force the Open Systems Foundation and Unix International to reconsider a merger. The firms, including DuPont, GE, Fidelity Investments and K-Mart, are hoping to have a third party mediate the disagreements between the organizations. And Robert Kavner, chief of AT&T Data Systems, told the press he was willing to reopen merger negotiations with the Open Software Foundation. Kavner also reported at the Comdex show that AT&T still plans to begin a private placement to sell equity in the Unix software operation which was spun off from the firm's Computer Systems business last year.

OSF snubs Sun. Despite a large installed user base, the Open Systems Foundation has selected Hewlett-Packard's remote procedure call protocol and Transarc Corp.'s AFS host file tracking system over Sun's NFS. OSF previously adopted Motif over Open Look. And Unix International, the OSF's AT&T/Sun backed organization, is on the verge of blessing Motif as an "approved GUI".

Catch the wave. Hewlett-Packard has announced plans to port its NewWave GUI to Unix systems.

DEC, IBM join Portability Lab. The big two have signed on to the Open Software Foundation's service, which provides support to firms porting OSF applications to their platforms.

You can be sure if it's X-rated. The X/Open Consortium now has an official branding program to mark products which conform to the X/Open Portability Guide Specs.

What a giveaway. 88 Open, which backs the binary standard for Unix machines running on the Motorola 88000 RISC platform, will give away about $14 million worth of hardware to the first 500 qualifying Independent Software Vendors who agree to port their products. Unix International announced a similar "loaner" program.

Products:

Not dead yet. On the 20th anniversary of the PDP-11, DEC announced two new additions to the venerable line: the 11/93 and 11/94, which are intended to replace older machines. The new PDPs are about 40% faster than current models; prices start at about $14,000. The machines are the first new PDP systems in about 6 years. Despite eons of neglect, the PDP market was over $1 billion in sales and service last year and accounted for about eight percent of DEC's total revenue. Another boost for the PDP line came when the U.S. lifted export restrictions on the machines to eastern Europe. Ironically, DEC discontinued its version of Ultrix for the PDP line earlier this year. Unix was "invented" on a PDP.

Canon engine for DEClaser 2000. As we reported last month, problems with the Ricoh engine prompted DEC to use the Canon unit in its new LaserJet compatible printer, which was announced last week. The new printer has both serial and PC parallel ports, and plug-in HP emulation cartridges.

Sun fires another shot in price/ performance wars with its new 20 MHz, 12 MIP diskless SPARCstation SLC. Priced at under $5,000, the RISC-based SLC features 8 MB of memory and a 1152 x 900 pixel 17" monochrome monitor. The entire 1 megaflop cpu is built into the monitor unit; there's no external chassis to house the 80 watt power supply, system board, frame buffer and speaker. The unit features an Ethernet port, audio and keyboard/mouse ports, multiplexed serial port and SCSI connector; it lacks expansion slots, the high-speed SBus and floppy disk controller. While a floppy can't be connected to the SLC, the unit can talk to hard disks, tape drives and CD-ROMs over its 1.5 MB/sec SCSI port. Targeted at the burgeoning X terminals market, the SLC offers local processing power at a small additional cost. Sun also introduced its SPARCstation 1+, an upgraded SPARCstation with 20% more performance at the same $8,995 price point for a diskless system.

DEC and Corollary get symmetrical. The two firms announced an agreement wherein Digital will use Corollary Inc.'s symmetrical multi-processing technology for new hardware and software systems based on Intel 386/486 processors. Compaq's SystemPro and the new ALR Multi-Access machines currently use the technology, an extension to SCO Xenix sold by SCO under the name SCO MPX. Whether this technology will be bundled in to the recently announced Tandy-made systems being sold by DEC was not specified.

CD-ROM distribution of software has also been announced by Sun. To induce transition to the new medium, Sun is selling its CD-ROM drive for only $995 and is offering users a free copy of the SunOS 4.1 operating system through August 31. Are you listening, DEC?

More Sun news. The firm has cut add-on costs significantly; an additional 4MB of memory is priced at only $1,000, half the original price. A 327 MB SCSI hard drive is now selling for $3,500, down from $5,600, and a 669 MB drive has been reduced from $7,000 to $4,900.

Toshiba SPARCs laptop market. The Japanese firm is expected to market in December its first machine based on Sun's SPARC architecture. The machine is rated at 13.2 MIPs, has 8 MB of memory, a 3.5 inch 180 MB hard drive and a 3.5 inch floppy. The Japanese version, which will ship next month, will cost about $13,200 US.

86ing through 2001. Okay, Intel fans: here's the scoop on the x86 family. A 50Mhz 80486 should be available by the end of the year; a four million transistor 586 by 1993; a 22 million transistor 686 by 1996; and a 100 million transistor 786 chip by 2000. Which is what you'll need to run the then-current version of OS/2.

C++ Compiler from Borland. Beating Microsoft to the punch, Borland International has announced its Turbo C++ compiler, which meets ANSI standards and is compatible with AT&T's C++ 2.0. Hoping to secure the market with its early entry, Borland is sweetening the pot by selling the compiler, programmer tools and debugger for only $179.95 through July 31.

68040 NeXT. Steve Jobs says new version of his NeXT computer sporting Motorola's 68040 cpu will ship in the fourth quarter, along with a $1495 upgrade for owners of the original system.

More MIPs from MIPS. A new 66.7

MHz processor has been developed by MIPS, with an 80 MHz version of the new R6000 available at the end of the year. Expect DEC, which uses MIPS technology in its RISC DECstations and owns stock in the smaller firm, to incorporate the chip in its product line.

No baloney. And by using technology licensed from MIPS, Sony has developed a processor chip which runs at 150 million instructions per second. It won't be commercially marketed until 1992, however; engineers feel that 225 mips is attainable, and Sony wants its own workstation to wrap around it.

Smarter cache. The new Power Cache Plus from Intelligent Devices Corp. promises major i/o performance boosts for PCs. The software uses the "dynamic read ahead" technique, in which the software anticipates the data to be read next by a program and scans it from the disk prior to use. Most current disk caching software stores data that is most frequently or recently read from disk. The package supposedly is device independent, meaning it can support newer IDE and SCSI drives, and can create caches up to 16MB using both extended and expanded memory.

Tricorder, Mr. Spock? Sony is developing a "Readman", a palm-sized electronic book which can store up to 100,000 pages of text on a single 3.5 inch disk. Scheduled to debut in Japan this summer, the under $400 Data Discman should hit the States next year, following completion of arrangements with U.S. publishers. Electronic books should sell for about $25, and Sony will license the technology to other vendors. For those lacking a literary bent, the unit will also play 3" CD audio disks.

165 Gigabytes on one tape. Ampex, the inventor of commercial video tape, has teamed with E-Systems of Dallas to announce a new digital recorder using broadcast cassettes. The new system, which can transfer 15MB per second, has a capacity of 165 gigabytes per tape. Scheduled for a 1992 release, the as yet unpriced unit, when integrated into a robotically-controlled storage system, can access up to 6.4 terabytes of data. (All the books in the Library of Congress total 25 terabytes.) A terabyte is one trillion bytes of data.

Crayette unveiled. Cray will begin shipping its low-cost Y-MP2E supercomputer in April of next year, at bargain prices ranging from $2 to $5 million.

Seagate gets export okay. The U.S. Department of Commerce has given Seagate Technology its first official ok to sell some of its products to certain East Bloc nations. Seagate is no stranger to export sales; as we reported last month, the IRS is claiming the disk maker owes taxes, penalties and interest for underreporting foreign sales.

Mach ports growing. Carnegie Mellon's Mach uniprocessing Unix kernel, the operating system on the NeXT machine, is getting around. A version which can run on the Mac has been developed, and an MS-DOS port is also planned. A VAX version has also been in the works for some time.

Lasers gain. Laser printers accounted for 20 percent of all printer sales last year, and sales hit 24 percent in the last quarter.

Informix bailing out of VMS? Unsubstantiated trade reports quote a manager of the Menlo Park, CA firm stating the company will phase itself out of the VMS market over the next three years and instead concentrate its efforts on DEC's RISC-based systems. A user on Internet also reported a rumor that after the next major release from Auto-trol, VMS will no longer be a supported platform. This was confirmed by Garry Howard, Senior Project Manager R&D at Auto-trol who told the net "VMS is not strategic. We will be phasing out Auto-trol support of the VMS environment over time." The firm is porting its software to Ultrix and other Unix-variant systems.

Raxco scores again. The utility vendor, which last month announced merger plans with England's UIS, revealed it has acquired tiny Edison Software Systems' product line of tape management and copying utilities.

Depreciation follies. You'll undoubtedly be thrilled to hear that most VAX 8000 systems are currently worth only about 20% of their original selling price and will decline to 0% by 1993. The exception? The 8600, which will bottom out in the middle of next year. The 8000 series machines are available in the used market at extraordinarily good prices, but caveat emptor... maintenance costs are three times higher than the new 6000 series. One possible way to make a buck is to buy an 8000 and trade it in on a 9000. DEC is paying more than current market value for such upgrades. Another approach is to acquire Nemonix accelerator boards, which boost processor speeds at relatively modest costs.

Mouse alternative. If you don't care for mice, how about insects? The Now New Idea Electronic Co. is selling a mouse, colored and shaped like a beetle. Decorum prevents further comment.

A 20 Meg, 3.5" floppy was announced by Citizen Watch Co. at the recent Atlanta Comdex. The new drive can also read standard DOS-formatted disks. The OEM price will be $200, and the unit should be available this summer. Citizen claims a 50ms access time and a 3.5-MB/sec data transfer rate.

Say What?

"Some people who break security should be taken out and shot. Others should be hired as consultants. If you don't know which to do, shoot them. It's safer that way, though messier." Internet user's opinions on intellectual property issues.

"These hackers are explorers, not criminals or vandals. They're exploring a new information frontier." Grateful Dead lyricist John Barlow, in defense of those arrested by federal agents in "Operation Sun Devil."

"I'm not a salesperson. Trust me." DEC employee responding to a technical question.

"Security requires eternal vigilance, and who the hell wants to be eternally vigilant?" - Clifford Stoll in Information Week interview.

"My computer has a built-in anti-theft design. It's a Rainbow." Rainbow user at DECUS.

"It's taken ISVs too long to get more OS/2 applications out." Microsoft chief Bill Gates, explaining to Datamation why OS/2 hasn't caught on as he had hoped.

"Unix is multi-user TECO." Richard Gilbert, CompuServe VAXSIG co-sysop.

"What people have to realize is that we are not the newcomers to this (graphical interface) game. Microsoft is. We have been offering graphically oriented computers since 1984." Jim Davis, of Apple, in InfoWorld.

"Scratch the elegantly polished surface (of Windows 3.0), and you'll still find creaky old DOS." Jon Udell, Microbytes Daily News Service.

"We have a problem here that could become a major national catastrophe unless our government gives the issue a high enough priority." Congressman Dan Glickman commenting on the general lack of security in Federal computer systems.

"They'd probably have to drag me out of here screaming and kicking." DEC President Ken Olsen on the likelihood of his retiring.

"If we put a cheese toaster on our machine, they would put a hamburger griller on theirs." Sun CEO Scott McNealy complaining about OSF's tendency to ignore Sun-developed technologies. (McNealy said OSF should stand for "Oppose Sun Forever".)

"CISC, RISC, fine-grain parallel processing and probably a lot more of those kind of acronyms and buzzwords." Intel Australia Managing Director Bruce Patterson, responding to a ComputerWorld question about the content of future cpus.

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