Tandem triumph

US COMPUTER manufacturer Tandem has been named London's best firm in terms of staff relations, in a competition run by the Industrial Society and radio station LBC. The company's 40-strong Northolt office beat 100 entrants to the prize of a pint of Fosters lager for each employee. The judges pointed especially to Tandem's open-door management policy, the way it ensures staff are kept fully informed of company matters and its share options for employees.

Technical Reports available from the Corporate Information Center,
Tandem Computers Inc
19333 Vallco Parkway
Cupertino, CA 95014

last update: 5/23/85

TR81.1 Approach to End-User Application Design by Jim Gray

TR81.2 Transaction Monitoring in ENCOMPASS by Andrea Borr

TR81.3 Transaction Concept: Virtues and Limitations
        by Jim Gray

TR81.4 A NonStop Kernel by Joel F Bartlett

TR81.5 Relational Data Base Management for On-line Transaction
        Processing by Stewart A Schuster

TR84.1 A Technical Overview of the Tandem TXP Processor by
        Robert Horst and Sandy Metz

TR85.1 One Thousand Transactions Per Second by Jim Gray,
        Bob Good, Dieter Gawlick, Pete Homan, Harald Sammer

TR85.2 A Measure of Transaction Processing Power by Anon Et Al

TR85.3 Hardware Architecture and Linear Expansion of Tandem
        NonStop Systems by Robert Horst and Tim Chou

TR85.4 An Approach to Decentralized Data Management Systems
        by Jim Gray

Beyond the workstation

From running paths to weight rooms, some corporate employers are making life better for people trapped in offices.

By JUDY PACKER

An executive office is like five minutes of 55 miles-per-hour during a slow morning rush-hour commute: nice, but not totally satisfying.

This is the conclusion of various Santa Clara Valley corporations as they go beyond pleasant office decor to offer employees extra on-site amenities.

From outdoor recreational parks to indoor weight rooms, corporate employers are seeking a better overall environment for people trapped within offices for the better part of their lives.

Rolm Corp. is an acknowledged big spender in employee facilities. The company has spent more than a million dollars to provide its workers with: an indoor basketball/gym area; two racketball courts; a weight room; steam and sauna facilities in each locker room; a jacuzzi for both men and women; an indoor-outdoor lap swimming pool; an outdoor recreational pool; tennis courts; a sand volleyball court; a par cours (a jogging trail with exercise stations); horseshoe pits; an indoor lounge area; a table tennis room; and a pro shop.

Recreation Supervisor David Brewer says the five-year old facilities were built 11 years after the Santa Clara-based company was established in order to fulfill the corporate philosophy of making Rolm "a great place to work" for existing employees and newcomers.

Brewer says the company established flex-time after building the facilities to offer employees greater opportunities for their use.

Another company that more recently has invested big money into the employee amenities concept is Santa Clara-based National Semiconductor Corporation.

Excluding land costs for the 14-acre recreational on-site park, improvements cost "in excess of $2 million," says John Loiacono, corporate and financial public relations representative.

"National needed something to attract and maintain key employees—more than pay, some additional coaxing," Loiacono says.

He says the on-site facilities offer "one of the key areas where we can attract and
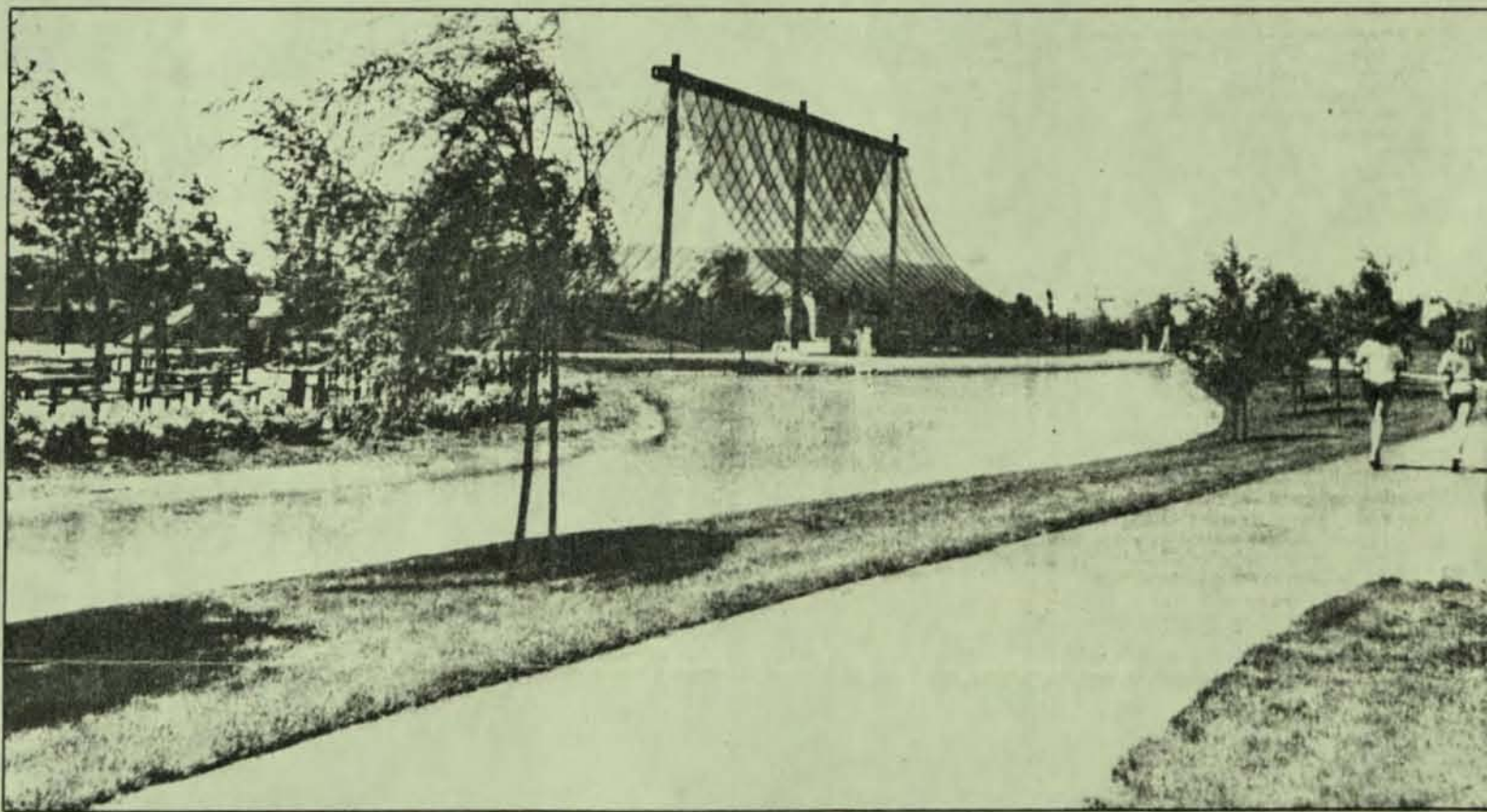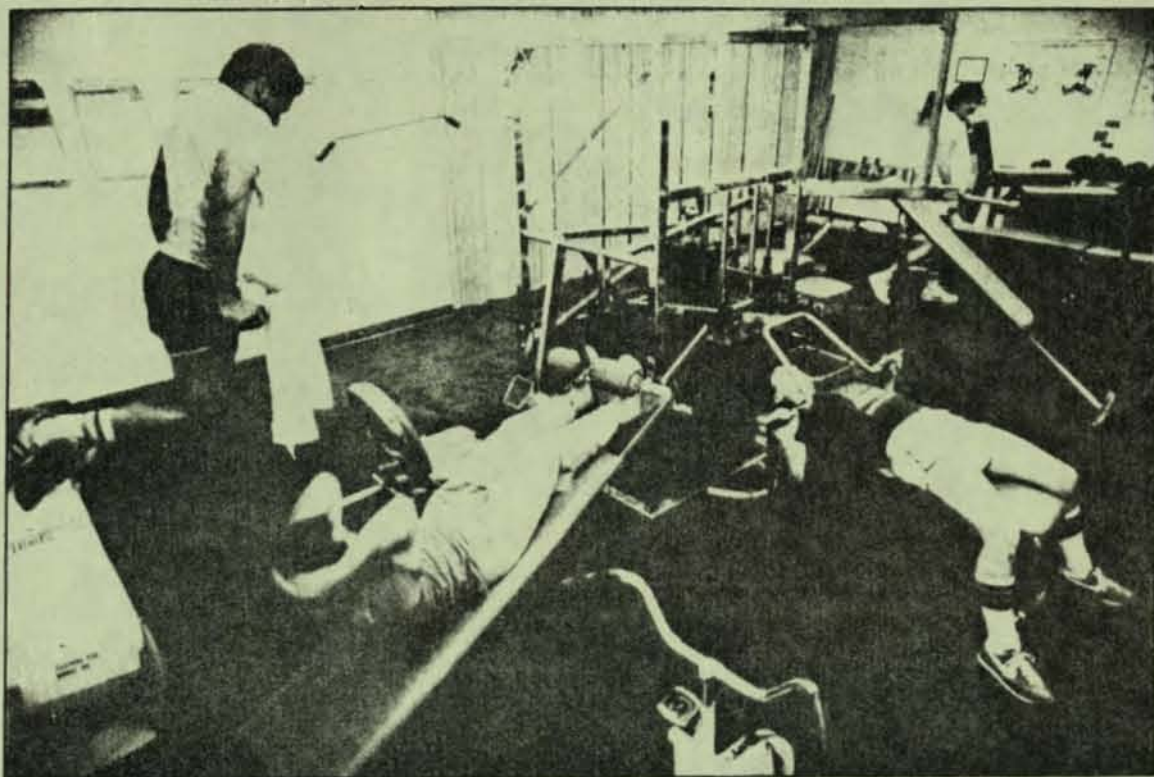
maintain employees. People are looking for side benefits aside from cash; otherwise, why build a park instead of two more fab lines?"

About 10,000 National Semiconductor employees in the Santa Clara Valley have coded access to the park, which offers: a one-mile, 10-station Health Beat course designed for people in offices and enclosed areas; a 1.3-acre lake with fountain; a regulation softball field; an amphitheatre; a regulation sandlot volleyball court; three picnic areas complete with barbecues; a large multi-use grass field;

and a playground for employees with children.

A prominent feature of the park is a 60-foot high screen sun filter draped over one of the picnic areas.

Loiacono says the park, which opened last September 29, is in the third phase of a four-phase development plan. The third phase will involve the design of locker rooms with showers—to replace the current portable shower units; racketball courts and basketball courts; a weight room; and several offices for the park manager, he says. Phase four will be actual construction.

Corporate management is interested in more than fitness, Loiacono says. "People are thrilled to be able to enjoy the park, be it exercising or sitting in the sun when it is warm. You can walk 200 yards from the office to a bright green area where you can enjoy the sun."

He says the company did not build the park "to build healthier employees. It is just a serene area to get away from the office without driving anywhere."

Loiacono says it "is not necessary to come here to sweat. It lets employees get away in a high pressure industry that demands creativity."

About three years ago, company management decided to do something for the employees, and the idea of a recreational park was agreed upon. Company president Charles E. Sporck is an avid runner, Loiacono says.

The company surveyed the offerings of other companies in the area to find out what they felt were successful facilities, he says. "It was a marketing decision."

For example, he says tennis courts take up a lot of space, do not accommodate many people at one time, and demand a lot of upkeep. The park has no tennis courts.

In a little over a year, a large field was converted into the recreational park, Loiacono says. He points out the built-up hillsides which block out the neighboring streets, expressway and office buildings.

"We wanted to give the impression we were not in the middle of Silicon Valley," he says. "Now all you can see is green. You don't have the impression that you are in the middle of a big cement valley."

The park is used for business as well as pleasure, Loiacono says. The quarterly meeting is now held in the outdoor amphitheatre which seats about 1,000, and staff meetings are sometimes held in the picnic areas.

Loiacono says if the sun is shining, the park gets "pretty crowded," with several hundred employees using it. "If it's cold, we just have the diehards," he says.

National Semiconductor Corp. has a very active club roster, Loiacono says. Over 600 employees participate in softball alone. The field is fully lighted, and has an electronic scoreboard and seating for about 500.

On a more modest scale, San Jose-based Dataquest used a $20,000 recreational budget to set up weights and equipment for an indoor exercise area for its 330 Santa Clara Valley employees.

In addition to a large carpeted room divided between an aerobics/exercise room with dance bar and full-length mirror on one side and, behind a sliding door, a Universal gym, the company has two racketball courts—one glass-walled—and locker rooms with showers.

The weight room includes a Universal gym, two stationary bicycles, a rowing machine, small trampoline and rack of barbells.

When Dataquest moved into its new building in 1983, the indoor facilities were already installed, says Jewel Peyton,

director of corporate communications.

Although an adjacent open field is now used by employees for kite-flying and softball games, she says the company plans to break ground on this site for a new addition in 18 months.

Another Santa Clara Valley company with on-site employee amenities is Tandem Computers Inc. in Cupertino. The company has: an outdoor swimming pool; a sports court for either basketball or volleyball; a par cours around the corporate facility; one tennis court; a weight room with Universal gym; shower facilities in both buildings that house sports facilities; and a grassy barbecue area.

Pat Becker, director of public relations, says the facilities are for about 2,000 Tandem employees in six buildings in the general area.

She says the pool and sports court were completed in 1980, the par course in 1981, and the tennis court and weight room in 1983.

"The main reason was to provide a better working environment for our employees," Becker says. "Employees are our greatest resource, and it is important to provide them with things to make work pleasant."

She says that "better fitness, while good for the company, was not the primary reason. It was for environmental reasons."

Other companies have called to ask about the Tandem facilities, she says. "We were probably one of the first companies in the area to do this."

Becker puts the employee amenities in context. "I don't believe people come to Tandem because of recreational facilities. They come here to work."

She adds: "We want people interested in working very hard, not people whose main reason for coming is recreation. But it is a nice, attractive environment." □

A pair of National Semiconductor workers jog around the company's running path. Above: Employees at Dataquest work out during office hours.

HOW TO

TV, computers keep Tandem employees talking

Workers prove more aggressive on computer keyboard than telephone

By NICK ARNETT

At Tandem Computers Inc. of Cupertino, "accessing a work group" has replaced sending memoranda, and "multiplexing relationships" is sometimes the term for getting together with other employees.

The electronics jargon is a result of Tandem's varied efforts to foster productivity, employee satisfaction, and rapid growth via open communication.

If growth is the measure of success, Tandem has outshone the electronics industry, joining the Fortune 500 list just 10 years after its formation in 1974. It reported revenue of $533 million in the year ending Sept. 30, 1984. Net income was $42.9 million, or $1.04 a share.

Tandem has 5,200 employees in nearly 150 locations worldwide. Its own products —computer/telecommunications networks—have helped it create channels of communication that would be available to others only at very high cost. It has invested about $1 million in a video conferencing system that links all of its North American sites, which it uses weekly. Traditional employee communication means are also used, such as a corporate magazine, newsletter and suggestion box. The last two are done electronically at Tandem.

Greg Dougherty, Tandem's director of human resources, says the firm tries to create structured and unstructured situations that foster communication among all employees, from the executive team to stock clerks.

"From the beginning, the goal was that people could get together and talk issues," says Dougherty. "We found that it was tremendously effective as a means of solving problems.

"It became a tradition for employees to gather casually and share concerns and interests."

Casual gatherings aren't unique to Tandem. They're better known as Friday afternoon beer busts. Somewhat unique is the presence of Tandem's top officials, including President Jimmy Treybig, who has been known to hoist a brew or two.

Asked why he shows up at the beer busts, Treybig's short answer is, "I like beer and popcorn."

He says people sometimes think he's at the parties to gather information. Not so, he says: "I go to relate."

Dougherty says the "open door" policy at many companies is a means of resolving grievances. Open doors at Tandem clear the way for "access to information," he says.

"Jimmy Treybig has a saying: 'The open door policy works as long as there are open managers behind them'," says Dougherty.

Tandem goes to extremes to let people know what is expected of them, he says.

"In a high-growth environment, employees have to think independently, make independent decisions," he explains. "They have to be deluged with information in order to make the right decisions."

Thus the many opportunities for two-way communication—Tandem's computer network, linking all employees worldwide by electronic mail; employee briefings on the five-year corporate plan, in groups of 100 or fewer; weekly teleconferences hosted by Treybig or another senior staffer, followed by live questions and answers; various ad-hoc teleconferences for things such as product introductions.

Tandem also brings together its top performers yearly—7 percent of the employees, elected within their departments. The TOPs group, Tandem's Outstanding Performers, is sent on a company trip with top executives. This June, they will travel to the island of Kauai, Hawaii. Spouses or other mates are invited as well.

"To understand TOPs, you have to think of the opportunity of sharing an adventure in a delightful setting with people who are recognized as top performers," says Dougherty. "It's an up group of people. Taking those people in that kind of environment, a very interesting thing happens, a development of relationships."

The impact of a TOPs meeting doesn't stop when it breaks up, he says.

"What we find happens is that a lot of networking continues. It results in some very interesting contributions to the company.

"Imagine what happens when field sales people are friends with the engineers who are designing the next products," he says. Instead of just complaining, "'Gee, if it could only do this, or that,' the salesman may tell the engineer."

The TOPs meeting is an unstructured setting for communication, says Dougherty. Teleconferences usually have a highly structured presentation followed by an informal question-and-answer session.

Tandem Talk, a monthly program originating from Tandem's Cupertino headquarters, is hosted by Treybig or Robert C. Marshall, senior vice president and chief operating officer. It usually starts with a formal presentation—last month, Tandem's new V-8 disk drive was introduced. Then, in what Dougherty calls a more "folksy" part, employees can phone in questions live, or, if one is shy, the question can be sent as an electronic message and handed to the emcee.

A year ago, Dougherty used the teleconferencing system to introduce a 401(k) benefit plan to the entire company. After-
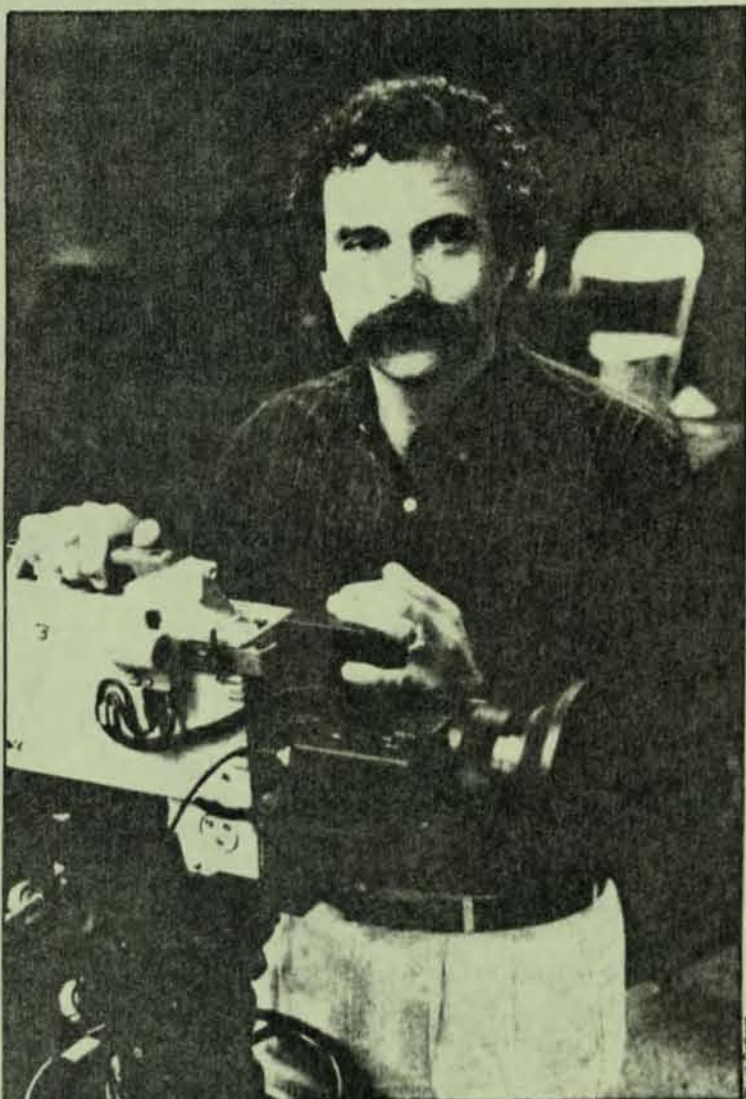
Greg Dougherty, Tandem's director of human resources, fosters employee communication

Tandem. Its electronic mail network is, and it creates communication channels that don't exist at other companies of its size.

"Tandem is totally connected through work stations," says Treybig. "Every employee has access to one. We don't use external mail. People develop relation-

problem for a company operating in many time zones.

Says Dougherty, "It's not okay to say, 'I couldn't get you by phone.' The answer is, 'Why didn't you send me a message?'"

The system has also led Tandem people such as Dougherty to describe communication in electronics terms: "It gives me rapid access to my work group," and "It's a way of multiplexing relationships."

He says Tandem's commitment to openness has paid off in measurable ways —a 12 percent turnover rate last year— nearly half of the electronics industry average, and active recruiting of new employees by present ones.

More than 50 percent of Tandem's new hires are referred by employees, says Dougherty. At a recent open house for experienced hardware and software professionals, 800 showed up, he says.

Behind Tandem's efforts is a basic assumption that a high-growth company depends on communication, Dougherty says.

An open atmosphere "leads to high productivity and spawns creativity and innovation," he says.

"It's like we're all in one room," says Treybig.

> *If growth is a measure of success, Tandem, has outshone the electronics industry, joining the Fortune 500 list just 10 years after its formation in 1974.*

ward, employees could phone benefits coordinators for clarification.

Tandem's variable costs for teleconferencing are little more than rental time for the satellite time it uses. In addition to the million-dollar studio that's the envy of many a small television station, Tandem has its own satellite transmitter in Cupertino and receivers at each of its sites in the United States and Canada.

It offers internships for video production students from area colleges.

Beer busts, meetings for top performers and teleconferencing aren't unique to ships, very strong relationships and feelings across geography, in a very different way than the telephone."

He says people are more aggressive, more verbal at the keyboard than on the phone, and they're hooked on it: "People would fight if you tried to take it away."

The only thing prohibited on the system is commercial enterprise, but employees can buy and sell things. There are three classes of mail: personal, normal business, and classified ads, arranged in sections.

The mail system also eliminates a lot of missed telephone calls, which can be a big

NEWS IN PERSPECTIVE

NRM put its first 1012 job into production in February. "It's a small job with fewer than 12 users, engineering people who run production," says Pohrte.

Britton-Lee users are more numerous and more experienced. There even exists a user group of some 450 members. Bob Thompson, a branch chief of Reynolds Electric and Engineering, Las Vegas, recalls that when he got his Britton-Lee IDB 500 (intelligent database machine) two years ago, "they had a user group that had no meetings. For the last year and half we've been meeting every six months."

Thompson says he's used the Britton-Lee machine to bring together three databases, all in different formats. "Software packages we could have used would have required us to go to a large host." He has a VAX 750. "At the time we thought we would have to go to a 780, which would have cost us $200,000 more than the $395,000 we paid for the IDB. As it turned out we actually would have had to go to an IBM 3084 to do what we've done."

Will Zachmann, vice president of corporate research, International Data Corp., Boston, says Britton-Lee had a good year in 1984 but "not as good as I had expected." The company had revenues of $21.6 million.

By comparison, Teradata is targeting $3.5 million in revenues for the year ending this June. "This is influenced by the fact that we have established a leasing and rental program," Clements says. "If it were pure sales, it would be much higher." After nine months in beta test at three sites, Teradata began active selling last July.

Early last year, Zachmann predicted that 1984 would be the year database machines would "achieve a significant level of familiarity and acceptance." Now, he says, "They haven't made quite the headway I thought they would, but I still think it's not a question of whether but of when the potential of database machines is going to be fully realized." He thinks now they will not be a big success as back ends for midsized systems, but will see "enormous growth" as network servers.

Bill Carpenter, manager of the Computer and Information Sciences Department at Inco, a McLean, Va., software systems consulting firm that is both a user and an oem of Britton-Lee machines, says internal use of four IDMs has taken over a task formerly done manually, and has overwhelmed "the people trying to do it." This task was the creation of an employee skills inventory, which has simplified the firm's ability to write proposals and staff projects more quickly.

Inco has developed its own front end for use with the Britton-Lee machine, which it calls SQL/Universe. It gives full SQL query capability and can run with IBM and North Star micros, Prime and DEC-PDP 11/70 minis, and the IBM 4300 family with VM/CMS. Carpenter says Inco has sold about a dozen Britton-Lee machines, most with SQL/Universe.

In March, Teradata demonstrated what it called "the largest parallel-processing computer commercially available to the business data-processing industry." It was a DBC/1012 system with 60 parallel processors working against a multi-million-record relational database. Teradata chairman and chief executive officer Jack Shemer says the system "has the equivalent processing capacity of IBM's largest system, the 3084Q, priced at approximately $6.2 million including storage. The comparable DBC/1012 is priced at $1.7 million."

Who could use this? "Any information-intensive businesses, such as banks, insurance companies, airlines, the government, and defense contractors—there are literally hundreds of firms out there that have these requirements," says Teradata's Clements.

The jury's still out until someone actually does use the system. But it does sound tempting. ⊙

FAULT TOLERANT

THE FT CROWD

IBM's entry into the fault tolerant market represents a serious threat to Tandem, but meeting the MAP standard may be more important.

by Charles Howe

Rumor has many bodyguards. Their names include the true gen, the hot skinny, the straight dope, and the ubiquitous scuttlebutt. What follows are the facts on the recent accord between IBM and Stratus Computers Inc., and the meaning behind Tandem Computers' new low-end EXT product and the multibillion-dollar factory automation marketplace that all three companies are eyeing. Like any story involving the machinations of IBM, some of what follows is also the true gen.

IBM, of course, broke tradition when it cut a nonexclusive deal with Marlboro, Mass.-based Stratus for perhaps $20 million worth of its fault tolerant product

line a year. These machines should appear on the marketplace late this year as the System/88 and will arrive with unspecified value added. Why did IBM at long last decide to go the oem route?

"IBM sees the strategic need for a fault tolerant product," says John C. Levinson, an analyst with the brokerage firm Goldman Sachs & Co., New York. "IBM has publicly expressed this need for several years. With this in mind, we find it hard to view the Stratus arrangement as much more than a stopgap. IBM must eventually have its own fault tolerant product capable of running IBM's own operating system and receiving the full backup of IBM's sales force."

"Don't expect any significant volume of System/88 sales soon," adds Omri Serlin, head of the consulting firm Itom

Tandem recently won a J.C. Penney contract—worth perhaps $10 million—that is said to have sent some in Armonk straight up the wall.

International in Los Altos, Calif. "IBM has a very tentative marketing program, which is going to be handled in a very special way. It's not going to be handled by your standard national accounts salespeople. IBM will maintain a special sales office in Gaithersburg, Md., called the High Availability Marketing Information Center. If the national accounts salesperson gets a request for a fault tolerant machine, he will go running back to Gaithersburg. It's clearly a tentative thing." IBM declined to comment.

Shortly after IBM made the deal with Stratus, Tandem Computer in Cupertino, Calif., let fly with a low-end salvo that may better equip it to deal with the new competitive environment. Tandem has sold minicomputer-type processors to the high-end marketplace for the past few years, while Stratus has positioned its microprocessor-based system somewhat lower (see Fig.1). Now Tandem abruptly adds the NonStop EXT to its line, at the identical $120,000 price point of what used to be the Stratus low end, the FT200. Like the rest of its current product line, the device runs Tandem's SNAX software, allowing integration into existing IBM Systems Network Architecture systems. It also comes with a Fox fiber-optic cable connection for networking applications. Many view the machine, which will mainly be used in nodal applications, as an attempt to crimp Stratus at the low end.

As Fig. 1 shows, each company has almost evenly matched product lines. Stratus's new FT250, introduced to establish a new low end in the fault tolerant market, is only $5,000 cheaper than the EXT in a bare-bones configuration. It appears the two companies are playing one-upmanship with each other.

"I think the direction here is that Tandem has repackaged the NonStop II for smaller operational plug-in-the-wall environments," says Peter Lowber, a senior analyst with the Yankee Group in Boston. "There's no real new technology involved here. The price differential is really insignificant. I think that what's significant is the packaging." Without the raised floor and special air condtioning requirements, Tandem can go after departmental computing and other distributed data processing placements previously outside its big-shop marketing campaigns.

In that light, many are asking why IBM made a deal with Stratus. Tandem, after all, is the industry leader in fault tolerant and on-line transaction-processing machines, not to mention the pioneer in the technology. With sales last year of some $565.9 million, Tandem is substantially larger than Stratus, which posted revenues of $42.1 million for the same period. On the other hand, Stratus is almost doubling in growth each year while Tandem showed an increase of 26% in revenues in 1984.

"I think that IBM went to Stratus because Tandem has consistently and ill-advisedly positioned itself as being a direct competitor," speculates Serlin. In other words, there's lots of bad blood between Big Blue and feisty Tandem. He adds that Tandem recently beat IBM out of a J.C. Penney contract—worth perhaps $10 million—that is said to have sent some in Armonk straight up the wall. "Besides, I think that the IBM technical evaluators were much more impressed with the Stratus approach for solving fault tolerance than with the Tandem approach."

The FT and OLTP technologies and applications are well known (see "Fault Tolerant Blues," March 15, p. 82)."In the Stratus machines, the recovery from faults is entirely done at the hardware level," explains Serlin. "In Tandem products, there is active cooperation by the software to require recovery from faults." The machines made by both vendors are used in such environments as banking and airline reservations, where downtime is anathema. Tandem and Stratus both claim to have a solid handle on running their systems in an SNA configuration. Most observers, however, give a slight SNA edge to Tandem.

Both firms have a list of blue-chip customers that salespeople wave in the faces of prospective customers as if they were selling laundry powders with testimonials. "They do a damn good job managing our incoming ticker lines, and for on-line applications on our trading systems," says Merrill Lynch's dp manager Vince Grillo. "I'm a happy Stratus

---

FIG. 1

FAULT TOLERANCE AT A GLANCE

TANDEM

	NS1+	EXT	NSII	TXP
MIPS/processor	0.7	0.8	0.8	2
TPS/processor	1-2	1-2	1-2	3-4
Max. no. of processors in a system	16	2-4	16	16
Max. memory/processor	1.5MB	8MB	8MB	8MB
FOX interface	no	yes	yes	yes
SNAX/6100	no	yes	yes	yes
Entry price (dual cpu)	$89,000	$120,000	$129,500	$328,000

STRATUS

	FT200	XA400	XA600
MIPS/processor	0.7	2.0	3.0
TPS/processor	1-2	3-4	5-6
Max. no. of processors	32	32	32
Max. logical memory/processor	8MB	16MB	16MB
Entry price (one duplexed processing module)	$120,000	$185,000	$270,000

TPS = transactions per second
Source: ITOM International Co.

user.... I have no idea right now just what the implications of the Stratus deal with IBM will be." Stratus claims more than 200 customers with some 350 systems. Recent users include General Motors at its new Buick plant, U.S. Steel, and the U.S. Air Force at its Cheyenne Mountain installation.

Tandem claims a longer customer list, including Wells Fargo Bank and Mobil Oil, plus a number of the divested Bell operating companies. Automakers General Motors and Mercedes Benz are big customers, too.

Opinion differs considerably on just what IBM will be getting from Stratus, which will not be including some of its applications software packages in the deal. "IBM will get our operating systems" is how John Morgridge, vice president of marketing for Stratus, explains it. By this reasoning, IBM could be getting the technological short end of the Stratus stick. "IBM's products will lag behind ours," he adds. IBM is keeping mum.

System/88 may arrive in the marketplace hotter than a gunfight in Dodge City if you can believe some of the gurus picking over the scarce scraps of official information. "I think the product will support a very strong high-level SNA capability that will be DIA and DCA-compatible," says analyst Levinson. "This means that it can share information with IBM's office systems. There is in fact IBM-specific software being added to this product." IBM just said it was developing software to link the 88 to its other systems, with no elaboration. So it's anybody's guess as to what will come out.

Others wonder about IBM's level of commitment to software development for a foreign box. A number of analysts and industry observers agree that IBM will not be aggressively marketing the System/88. Some, like Levinson, think that IBM is cobbling up its own fault tolerant supermini, with a release date more than a year off—if ever.

"IBM just wants to have Stratus machines in its back pocket," says Serlin. "So if they get in a situation where the customer says either you have a fault tolerant machine or you leave the room, then they reach into their hip pocket and whip it out. Basically, the offering will plug a hole." Serlin is not sure that IBM will ever build its own FT machine. "IBM is becoming aggressive in terms of dropping all the old traditions," he notes. "It's completely conceivable that if this thing succeeds, they may be more aggressive in marketing Stratus and other products than in funding their own in-house efforts. This could be the start of something big."

Just how big is anybody's guess. In the beginning of the FT era, around 1978,

Tandem sold its machines for their fault tolerance capabilities. Then Jimmy Treybig and Tandem's other Hewlett-Packard alumni discovered that many users were buying the devices for their OLTP capabilities. The marketplace for such applications may exceed $27 billion, according to InfoCorp. The combination of an IBM/Stratus entry and the new bottom-of-the-line Tandem and Stratus products may, in the great tradition of the computer in-

"Manufacturing is going to be our fastest growing marketplace in years to come."

dustry, expand the market even further. Notes industry consultant Lorraine King, president of San Francisco-based Adam, Cobb and King, "If a cheap enough, truly fault tolerant machine were available, you would find many companies going ahead."

Any deal has winners and losers. Stratus tells prospective investors that it expects to continue to double its revenues each year for the next several years. The arrangement with IBM has already helped it win new ones, says Morgridge, a former Honeywell executive. He notes that several large potential customers are now wiling to listen to his pitch as a result of the IBM connection, which is as close to the Good Housekeeping Seal of Approval as the computer industry can get. When pressed, Stratus officials guesstimate that up to 30% of Stratus's revenues may come from IBM.

Tandem seems humbled by the good fortunes of Stratus, after several years of trying to ignore its rival's existence. "We certainly take this as a serious thing for us," says Gerald Peterson, Tandem's vice president for product management. "IBM is a super marketing organization. Instead of fighting two or three skirmishes to win an order, now we'll have to fight five or six."

Almost overlooked in the imbroglio is another gathering storm, IBM's quiet entry into factory automation and robotics (see "R2D2 Meets Goodwrench," May 1, p. 50). Stratus and Tandem are both taking a long, hard, cold look at this area and both like what they see. And so they should. Market research firm Frost & Sullivan estimates that American corporations will spend some $63 billion building these automated plants in years to come, with the automakers accounting for a big chunk of that. "This is going to be our fastest growing marketplace in years to come, though it would be pure guesswork for me to come up with numbers right now," says Bill Elliot, director of systems support at Stratus. About 10% of its sales are to manufacturing sites, while 25% are to

brokerage firms such as Merrill Lynch and Morgan Stanley.

Tandem has done its homework a shade more fine in this area. "If you include instrumentation applications, I'd guess up to 30% of our installed base would be interfacing with some kind of device that would be on a factory floor in a networking capacity," says Ronald Potter, Tandem's manager of manufacturing industry marketing. Potter adds that the market is "gonna blow open. We think there are tens of billions of dollars there. I think Tandem would look at a 20% marketplace within that $63 billion Frost & Sullivan figure."

Potter says that Tandem experienced a 43% growth last year in manufacturing industry sales—from 11% to approximately 21% of gross sales. After a late start, Tandem is trying to position itself as a big player in General Motors' Manufacturing Automation Protocol scheme. "This November we will go public at the Autofac trade show with a Tandem MAP function. We look to 1986 to have the first levels of MAP for delivery and our intention is to continue and develop all seven layers of the protocol as soon as possible," Potter promises. In the short and medium term, the race to develop MAP-compatible systems may mean more to the future of Tandem and Stratus than new low-cost boxes.

Readers can expect the hot skinny on further developments as they break. ◉

SOFTWARE

THE NEW GAME IN TOWN

Micro software vendors are beginning to offer site licenses, not because they want to, but because customers are demanding them.

by Willie Schatz

In the halcyon days of 1984, life in the software industry was simple. Make the product. Shrink-wrap it. Send it to the shelves. Count the money.

It still works that way, but the times they are a-changin'. Industry has suddenly discovered a new entity out there. It's called the corporate world. When its inhabitants talk, industry listens. And all it's hearing lately are two words: site and license.

"Site licenses provide corporate

Tandem Loosens System Bottlenecks

Guardian rewrite should soothe users of fault-tolerant machines

For years, performance bottlenecks have plagued and piqued users of fault-tolerant machines from Tandem Computers Inc. But the firm believes it will be more vigilant in protecting its customers' interests with a rewrite of the Guardian operating system.

In the long term, Tandem believes the rewrite, known as Guardian 90, can support an operating speed of 1,000 transactions per second—enough to meet user needs until the end of this decade. In the short term, when volume shipments of Guardian 90 begin in July, it should start relieving the problems which have irritated Tandem users for years.

Results from seven test sites indicate the new operating system release provides a 50% to 70% improvement in interactive on-line transaction throughput and a 500% improvement in batch file-writing speed. Although volume shipments do not begin until summer, Tandem says that none of Guardian 90's 20 users has complained. None of the test sites or users would allow their names to be used or their personnel to be interviewed.

At the company's annual meeting this year, officials discussed Guardian 90, promising the first major rewrite of the Guardian operating system since its launch in 1977. Current users of NonStop II, NonStop TXP, and NonStop EXT systems—who originally paid a one-time fee of $3,500 per processor for their Guardian software—get Guardian 90 for free. The new operating system will run, without modification, all programs written under previous versions of Guardian that use Tandem's Transaction Monitoring Facility (TMF) to handle automatic failure recovery and transaction integrity.

Even though Guardian 90 will run programs written on the firm's original NonStop I processors, it cannot run on those machines. New users of Guardian 90 on the NonStop II or TXP lines will pay the same price—$3,500 per processor—that users have been paying for the previous release.

The Guardian 90 XF sells for $11,000

per processor for new NonStop II and TXP users.

Users of Tandem's new low-end EXT processors will pay $200 per month for Guardian 90 and $600 for Guardian 90 XF.

Because Guardian 90 and Guardian 90 XF were not available previously, there was no comparable one-time fee for their use on the EXT processor. Whether the monthly fees cost users more than one-time fees depends on how long they use the software, a spokeswoman notes.

Among the new features of the operating system are 4 Mbytes of user space and library code—32 times the previous maximum—and auto-rollback, a fully automated recovery system that ensures all transactions are recovered accurately, without user intervention, in the event of multiple component failures.

Omri Serlin, president of ITOM International Co., Los Altos, Calif., a fault-tolerant-computer market analyst, says Guardian 90 represents a significant improvement for users.

Tandem says TMF users will see the greatest performance improvements. Serlin says that is only fair because they suffer the most Guardian degradation now.

In performance-sensitive applications, he says, users have been forced to "turn off the fault tolerance" by not using TMF. Guardian 90 may be fast enough for those users to take full advantage of the Tandem architecture. Serlin says users also will gain the benefit—mentioned by Tandem only in passing—of modularity.

Guardian 90 consists of smaller modules than Guardian. Serlin says users can get by with smaller memory sizes because, "if they don't want a feature, they don't have to load it, and the rest will still work."

This much is clear: By reacting to the major complaint of most Tandem users—excessive operating-system overhead—Tandem has shown that, even as it approaches $600 million in sales, it still responds nimbly to market demands.—*Paul E. Schindler Jr.*

Soft On OA Pack

Integrated office packages don't seem to be selling as well as the hoopla around them might indicate. In a recent industry survey to be published in June, International Data Corp. found 6,450 integrated packages installed in the United States.

Catherine Caskey, the IDC research analyst who wrote the report, says the research firm based the number on shipment statistics from vendors accounting for all such systems shipped as of January.

"The numbers are low, and it is surprising," says Tim Caffrey, director of IDC's microcomputers and office systems group. "If we believed everything we've read about these systems, we'd think there were a lot more."

Caskey says that the systems are "in their infancy. Most users aren't ready for an integrated office system. Most have a multivendor office environment, and that makes it hard for them to choose a single system."

One third of the packages purchased were Digital Equipment Corp.'s All-In-1, which beat Data General Corp.'s Comprehensive Electronic Office and IBM's Distributed Office Support System by safe margins.

All-In-1 held about 32% of the market in integrated office packages last year. Data General's CEO ran a close second, with 22% of the market; IBM's Profs and Disoss packages together took 21.6%.

But the market share lineup could shift drastically next year when two major players, Wang Laboratories Inc. and IBM, introduce new products.

Wang Office was not included in the survey, IDC says, because it did not ship until this year. IBM should ship a new integrated office package, Personal Services, this summer. That could boost IBM's market next year.■

May 6, 1985

SECTION: NEWS; Randon Access; Pg. 2

LENGTH: 75 words

BODY:
Tandem Computers, Inc. is already developing a successor to its recently
introduced Nonstop EXT, according to sources close to the company. Like EXT, the
follow-up machine will preserve Tandem's existing architecture and will be aimed
at users in the branch or district offices of large corporations. But Checkmate,
as the unannounced CPU is known internally, will be implemented in gate arrays
-- a technology not now present in Tandem processors.

Tandem arms itself with 'poison pill' defense

By David Sylvester
Mercury News Business Staff

Tandem Computers Inc. of Cupertino became one of the first local companies to develop defenses against a hostile takeover by adopting a complicated stock plan.

The plan would make a hostile takeover of Tandem more expensive. Such measures, dubbed "poison pill" defenses, have become more widely used after the spate of hostile takeover attempts on Wall Street.

Crown-Zellerbach Corp. of San Francisco granted similar rights to stockholders to protect itself against an unwanted takeover bid by British businessman Sir James Goldsmith. The rights would allow stockholders to sell shares to a new owner at twice the price they paid for them.

Under Tandem's plan, every Tandem shareholder will receive stock rights entitling them to buy one-hundredth of a share of newly created preferred stock for an exercise price of $80 a share. Each of Tandem's 42 million outstanding shares would receive a stock right.

If Tandem wants to merge with another company, then the board can buy back the stock rights at 10 cents a share.

However, if Tandem is the target of an unfriendly takeover, then the shareholder would face a decision. He could exercise the right at $80 a share and buy one-hundredth of a share of preferred stock. Or he could retain the right and purchase $160 worth of stock in the company attempting the takeover later.

The rights can be exercised when up to 20 percent of the company's stock is acquired or a tender offer for more than 30 percent of the company's stock is proposed. If the rights are never exercised, they will expire in five years.

"Basically, it means a company must buy the rights before it buys the stock," said Pat Becker, Tandem spokesman. "It makes it that much more expensive to take us over."

Tandem chairman Thomas Perkins said the plan protects Tandem from "unfair takeover attempts" but does not block all future mergers.

However, he said Tandem is not aware of any potential tender offer for its stock and is not discussing a merger with other firms.

SJ Mercury News 5/21/85 p.1F

Tandem first-quarter sales rise 32%

CUPERTINO, Calif. — Tandem Computers, Inc. reported that first-quarter sales rose 32%, and profits more than tripled compared with the same quarter a year ago.

Tandem reported revenue of $146.5 million for the quarter ended March 31, compared with $111.2 million in the first quarter of 1984. Profits were $6.8 million, or 16 cents per share, compared with $1.9 million, or 5 cents per share, a year ago.

Tandem President James G. Treybig attributed the strong showing to wide market acceptance of the company's V-8 disk drive, introduced early in the quarter. Treybig said early customer response has also been favorable to Tandem's Nonstop EXT system.

future operating costs by $56 million annually, exceeding its earlier target of $40 million.

Datapoint also trimmed by $500,000 its expected pre-tax operating loss for the quarter, which totaled $10.5 million before the special charges, he added.

Edelman said Datapoint's losses were related directly to his original plans to liquidate the company. Orders and revenues fell sharply, he admitted, when customers believed Datapoint would be sold off in pieces to the highest bidder.

Evidently unable to sell the

quarter revenues that dropped 19 percent, to $125 million, from $155 million a year ago.

Datapoint attributed the loss to some $27 million in pre-tax charges associated with the cost-reduction program it initiated earlier this year, which was accelerated during the third quarter under the direction of Asher B. Edelman, who took control of the company in March.

According to Edward P. Gistaro, president and chief executive officer, the charges include $9.6 million in severance costs result-

quarter—to $65 million from $67.3 million a year ago—revenue from equipment sales plunged more than 30 percent, to $60.4 million from $87.6 million. According to the company, orders were lower as well.

Cavalier argues that Datapoint's problems are related more to the competitive computer industry than to any loss of confidence on the part of customers. He said the marketplace has changed dramatically since Datapoint experienced its primary growth from 1977 through 1982, and that major players such as International Business Machines Corp., Ungermann-Bass and Digital Equipment Corp. would have stripped market share from the company, regardless of Edelman's takeover.

Datapoint, however, believes that it can reverse its fortunes, in part by restoring customer confidence. To that end, the company said it would give its OEM dealers—firms that remarket Datapoint products with value-added software and other features to specific vertical markets—a "stronger voice" in determining product research, development and delivery schedules.

Edelman said that he and Gistaro told Datapoint's seven-member OEM Advisory Council that the company's R&D would be "customer-propelled."

"A new emphasis will be placed on asking customers, 'What do you need from Datapoint?' " he said.

The response by Datapoint's OEM dealers, whose profits are dependent on the company's products, was positive. Howard Larson, vice president of Efax Corp., Elmhurst, Ill., said he was "very sure" that Edelman is committed to Datapoint and that Datapoint is committed to better addressing its customers' needs.

Larson said Datapoint's R&D is "right on target," with important new products to be delivered in a "reasonable time frame."

Though not permitted to detail what these new products might be, Russell Knutter, president of Business-Oriented Support Systems, Detroit, said, "If Datapoint delivers what they've promised, it will be one hell of a product line."

Knutter said Datapoint is upgrading its entire product line and that it would have an exceptionally strong networking offering.

Tandem Rolls A 'Poison Pill'

CUPERTINO, Calif.—Tandem Computer Inc. has devised a "poison pill" scheme to thwart potential hostile takeover attempts.

The preemptive measure calls for Tandem to declare a dividend distribution of rights to buy a new series of participating preferred stock.

Tandem will issue one right for each of its 42 million shares outstanding. Each right entitles the shareholder to buy 1/100th of a share of a newly created series of preferred stock at an exercise price of $80.

Thomas J. Perkins, chairman of Tandem's board of directors, said the company was "not aware of any current takeover attempt, nor is the company engaged in merger discussions with any party."

Rather, Perkins said, the "poison pill" scheme was designed to "ensure that all stockholders be treated on a fair and

equal basis in the event of any proposed takeover of the company."

Perkins stressed that the measure was not designed to block all mergers.

The rights issued by Tandem would be exercised when an individual or a group acquired 20 percent or more of Tandem's common stock or announced or made a tender offer for 30 percent or more of Tandem's common stock. Should that occur, each stockholder could buy the 1/100th share of preferred stock or wait for completion of the proposed merger or tender offer.

Completion of a merger or tender offer would give Tandem shareholders stock in the surviving company worth twice the exercise price of the rights. In the event of a friendly takeover, Tandem would redeem the rights at ten cents each.

—Juli Cortino

REI Net Dips; Sales Rise

DALLAS—Recognition Equipment Inc. (REI) last week reported net income in its second fiscal quarter dropped 32 percent on revenues that rose 13 percent.

For the three-month period ended April 30, net income was $1.29 million, or 13 cents per share, compared to $1.9 million, or 25 cents per share, in the like quarter of 1984. The 1984 quarter net income included an extraordinary item of $590,000 from tax credits and operating losses carried forward.

Revenue for the quarter rang in at $37.5 million. That compares to fiscal 1984 second quarter revenue of $33.2 million.

Backlog of orders for the lease and purchase of REI's data entry equipment dropped by about $12.5 million from last year's quarter.

REI chairman and CEO William G. Moore Jr. attributed the decline in orders to "general market softness domestically and the relative strength of the dollar overseas."

For the six-month period, net income was $3.35 million, a 9 percent increase over last year's $3.1 million. Revenue for the period was $75.4 million, compared to $63.1 million in the like period last year.

May 29, 1985 p35

e only 70 percent com-plementation.

disservice was done r promoted the myth are development is a ing task," Nixon said. found that application nt is sped up by an n the analysis and de-s, rather than pro- and testing."

ng software with uires creating a data ugh a series of ques- nswers about the "en- tributes" and "rela- in a given organiza-

nguage-based system relational database nt system, a report reen generator and a uage. It has a "sound base," Nixon said, of development, rela- ry, normalization for orage and an expert

r Exsys is on a sliding $50,000 at the low end DC model of the MV ,000 at the highest end 10000. Price includes velopment-end, run- e.

esn't see the exclusive ement as an impedi- rket penetration, say- has brought DG from New Zealand hard- tplace to third.

ketplace, several officials from Austin, Tex.-based Execucom Systems Corp. arrived here last week to sing the praises of their company's newest graphics and business analysis software.

"Impressionist" generates high-resolution, presentation-quality graphics on an International Business Machines Corp. Personal Computer, PC/XT or PC/AT, either as a stand-alone system or with most business micro software, including Lotus 1-2-3, Symphony, Multiplan and Execucom's IFPS/Personal. IFPS (Interactive Financial Planning System)/Personal is the PC version of Execucom's successful IFPS mainframe financial modeling and analysis system.

The business analysis package, "Mindsight," is intended to give users of Apple Computer Inc.'s Macintosh the same functionality that IFPS/Personal users have on the IBM PC.

The PC and minicomputer versions of Impressionist are scheduled to be shipped June 16, at prices of $995 and around $30,000, respectively. At the departmental level, Impressionist runs on Prime and Digital Equipment Corp. machines. An IBM mainframe version of Impressionist, at a price of $40,000, and of Mindsight, at $595, are slated to be shipped in mid- to late summer. Impressionist can produce

color monitors, high-resolution cameras, color ink-jet and dot matrix printers and pen plotters.

"This micro product, and the mainframe product, will perform all the functions of Issco's (San Diego-based graphics software vendor) mainframe product," said Charles "Rick" Bayless, vice president of marketing.

Bayless added that Impressionist is 40 to 60 percent faster, in both versions, than Issco's mainframe product. "In the long range, what we hope is that people will migrate to our mainframe (graphics) product."

Mindsight provides Mac users with a minimum of 512-kilobyte financial modeling, what-if analysis, goal seeking, graphics and reporting.

"We've got a big part of the

erating officer. "The question is, 'What's next?' Apple is No. 2."

He said that, though Mindsight has many of the same characteristics as IFPS/Personal, it was engineered to take advantage of the Mac architecture— graphics, icons and pull-down menus.

Bayless and Anderson also said the company is trying to expand its distribution channels, from direct sales only to a strategy that includes original equipment manufacturers and other distribution outlets.

Execucom is also working on a joint artificial intelligence project with Carnegie-Mellon University, Pittsburgh, in hopes of using the technology in its products, the two executives said.

—Marsha Johnston Fisher

'Guardian' Is Upgraded

CUPERTINO, Calif.—Tandem Computers Inc. has introduced a more powerful edition of its eight-year-old Guardian operating system, called Guardian 90.

The new software moves Tandem closer to being able to offer computer systems that will process 1,000 transactions per second, a goal the company hopes to reach by 1990.

The multiprocessor, "network-oriented" Guardian 90, is compatible with applications software written for previous releases of Guardian.

Guardian 90 will be offered free of charge to existing owners of Tandem's NonStop II, NonStop TXP and NonStop EXT systems. The new operating system will not be supported by Tandem's older NonStop I on-line transaction processing system, introduced in 1976.

Tandem, which will offer the new Guardian operating system with three additional applications packages, will call the grouping Guardian 90XF, for extended facility. The package is designed for high-volume, on-line application systems and distributed networks.

The three Guardian 90XF software packages are the "Encompass" distributed database management system, "Expand," which is used for networking, and "Transfer," an information delivery system.

The upgraded Guardian operating system represents a 60 percent rewrite of the original operating system. Guardian 90 increases user code and library space up to four megabytes, 32 times the former amount. Other features include an advanced disk process that improves system performance for batch applications.

New NonStop II and TXP users will be charged a licensing fee of $3,500 per processor for Guardian 90. The initial license fee for users of Guardian 90XF on the NonStop II and TXP is $11,000 per processor.

There is no initial licensing fee for new NonStop EXT users. Instead, a monthly license fee of $200 per system for Guardian 90 will be charged. Tandem will charge $600 for Guardian 90XF. The monthly fee will be charged for the life of the system.

—Juli Cortino

s 'Lisp' Developer

commands are more to the kinds of com- le use in a more con- ind of operating sys- e do not have to use ions to use the sys- aid.

aid, the software now ommon Lisp, "the choice among people (artificial intelli-

in reason for having isp is that it can be e of an across-the- stry standard. More large companies in are trying to provide cts and they don't ve to choose between ialects. It's nice to hing that's recognized rd," she said.

he Ephemeral-Object llector is a utility that ovided because of the works. "Generally a llector will slow down ine, but Ephemeral- bage allows your ap- run much faster with than when it is off." ffey, director of Brat- h Corp., Cambridge, ich develops artificial information systems

new software that's just come in, it has a few bugs. But it has two features which we find extraordinarily useful to us," Duffey said.

"One is the superior documentation that Symbolics has provided with Release 6. It provides a very convenient way of being able to rapidly locate a small paragraph of information in a particular manual, that I need when I'm working on-line, and directs me to the appropriate place in the larger manual sets when I need more detailed information," he said.

Duffey said the release has an improved style of user interface that exposes more of the system code to the user, providing flexibility for applications. "That's very important to us because our end-user markets are the people, to turn a cliche on its head, who are not computer-friendly."

He said there were some minor problems with the some of the commands in the Command Processor and "standard deviations" in the site-installation manual where the user has to do something slightly different than what the manual instructs he or she to do to install the product.

Plexus Offers Sys3 Upgrade

SAN JOSE, Calif.—Plexus Computers Inc. has upgraded the Sys3 operating system featured on its super microcomputers to a version of Unix System V, Release 2.

The new system, called "Sys5.2," will be available in the third quarter. A 16-user version is priced at $2,000. The 32-user system has a price tag of $3,500.

The new operating system permits programs to be written to memory in blocks that are not adjacent to one another. The technique saves time by reducing the number of disk swaps

Machines Corp. and IBM-compatible mainframes.

Sys5.2 also works with the Plexus Network Operating System, an Ethernet-based local area network that links Plexus machines.

Other features of the new system include shared memory access and a 25 to 32 percent performance gain over Sys3.

Plexus chairman Robert Marsh said applications written for Sys3 can be easily ported to Sys5.2. According to Marsh, object code can be transported across with no modification, although source code must be re-

Tandem enhances Guardian system

CUPERTINO, Calif. — Tandem Computers, Inc. has introduced an enhanced release of its Guardian operating system that is said to improve significantly on-line transaction processing performance.

According to a spokesman, Guardian 90 is fully compatible with previous releases of the Guardian multiprocessor, network-oriented operating system, which supports the Nonstop architecture of all Tandem computer systems. All applications compatible with prior releases of Guardian can be run with Guardian 90.

The spokesman said initial customer tests and company benchmarks have indicated performance increases between 50% and 70% for on-line transaction processing applications using Tandem's transaction monitoring facility. Guardian 90 also allows greater flexibility to run larger applications by increasing user code and library space up to 4M bytes — 32 times the amount in previous releases, the spokesman said.

Guardian 90 is said to feature a high-performance disk process that serves as the foundation of all disk record and file management activities. The process reportedly improves performance for batch applications, I/O-intensive on-line processing and system utilities programs. The disk process is compatible with all Tandem disk drives and

Computerworld
May 27, 1985
P 45

with the Tandem 3106 and 3107 controllers.

In addition, Guardian 90 also is said to offer an automatic rollback feature, which was described as an automated recovery feature that allows Tandem systems to recover more quickly from multiple component failures.

Bundled products

Tandem also announced that Guardian 90 will be offered with three other software products as a package called Guardian 90XF. The products are Encompass, a distributed data base management system; Expand, a system for transparent networking; and Transfer, a general-purpose information delivery system.

The product package is targeted at users building high-volume applications and distributed networks, the spokesman said.

Guardian 90 will be provided at no cost to existing Nonstop II, Nonstop TXP and Nonstop EXT users.

For new Nonstop II and Nonstop TXP customers, the initial license fee will be $3,500 per processor. On the same machines, the initial license fee for Guardian 90XF will be $11,000 per processor.

The spokesman said there is no initial license fee for new Nonstop EXT users. Monthly license fees of $200 per system for Guardian 90 and $600 for Guardian 90XF will be charged. Guardian 90 and 90XF will be available in July.

Tandem Computers is located at 19333 Vallco Pkwy., Cupertino, Calif. 95014.

Tandem backs GM's MAP, more ISO levels

CUPERTINO, Calif. — Tandem Computers, Inc. has announced plans to support General Motors Corp.'s Manufacturing Automation Protocol (MAP) and various levels of the International Standards Organization's (ISO) network reference model.

MAP is a seven-layer net architecture model that General Motors is developing in accordance with the ISO's Open Systems Interconnect model. MAP specifications have been placed in the public domain so that companies can develop products for GM or other manufacturing facilities working with MAP. Tandem plans to design products that will conform to MAP specification 2.1, the latest version of the model's specifications.

In addition, Tandem intends to supply

...graded its Network Access Switch to handle more ports at greater speeds/**67**

*ComputerWorld
May 27, 1985
p65*

---

products that conform to various levels of the ISO's seven-layer model. Tandem products that conform to the lower three layers of that model are already available. Products that conform to Levels 4 and 5 are reportedly under development.

Tandem is located at 19333 Vallco Pkwy., Cupertino, Calif. 95014.

SOFTWARE

Tandem Adds OS For Its Fault-Tolerant Systems Line

CUPERTINO, CALIF. — Tandem Computers Inc. has introduced a new version of its Guardian operating system for its NonStop II, NonStop TXP and recently introduced NonStop EXT fault-tolerant computers.

The new operating system, called Guardian 90, is compatible with all previous versions of Guardian. Therefore, all applications software presently in use will be able to run with Guardian 90, according to Tandem.

Guardian 90 is said to increase performance between 50 and 70 percent for on-line transaction-processing applications.

New Disk Process

One reason behind the improved performance is a new disk process that Tandem developed, said Bob Jolls, Tandem's director of data base products. Tandem was reluctant to discuss the proprietary features of the new disk record and file management process other than to say that writing a file in a batch application is about four to five times faster with the new operating system.

Moreover, Guardian 90 will allow users to run larger applications programs because it has increased the user code and library space by up to 4 Mbytes, it was noted.

Tandem president James Treybig had alluded to the new operating system at the company's annual shareholders' meeting earlier this year (*CSN*, March 4).

Ultimate Goal

Treybig said that Guardian 90 is one step in furthering Tandem's goal of designing a system by 1990 that processes 1000 transactions per second.

Currently, its systems' peak performance is in the 100-to-200-transaction-per-second range.

The company will provide Guardian 90 at no charge to existing owners of NonStop systems beginning in July. For new NonStop II and TXP users, $3500 per processor will be charged. New NonStop EXT users will be charged a monthly license fee of $200 per system.

—*Susan Kerr*

Sierra Offers Mac Software

CUPERTINO, CALIF. — Sierra Information Systems Inc., a 15-man start-up, will attempt to fill a perceived void in Apple Computer Inc.'s Macintosh software offerings with its first product: an accounting and financial management package called Accountant's Choice.

The new line consists of seven modules: general ledger, accounts payable and accounts rece——— sales order proces——— ——xed assets, and pu——————— inventory con- t.——— module is priced at ——— scheduled for availsummer.

———— ———et is ——re," saia Kevin Po———— ——ng a prob-

Sierra

NonStop support

WATFORD-BASED Applied Communications says it will support Tandem's new NonStop EXT machine with its own Base24 family of electronic funds transfer products, to make a total package costing £275,000. Applied Communications was one of the original members of the Tandem Alliance group, which aimed to bring 20 European software houses together to write applications for Tandem machines. The company already supplies Base24 software to National Girobank, the Nationwide Building Society and the Abbey National Building Society.

Computer Weekly
May 23, 1985 p8

Technical Reports available from the Corporate Information Center,
                                        Tandem Computers Inc
                                        19333 Vallco Parkway
                                        Cupertino, CA 95014

last update: 5/23/85

LEVEL 1 - 1 OF 1 STORY

May 20, 1985, Monday

DISTRIBUTION: Business Editors

LENGTH: 737 words

HEADLINE: TANDEM-COMPUTERS; Offers new high-performance operating system,
GUARDIAN 90

DATELINE: CUPERTINO, Calif.

BODY:
     Tandem Computers Inc. (OTC: TNDM) Monday significantly boosted the
performance of its computer systems with the introduction of a new, more
powerful version of its GUARDIAN operating system. GUARDIAN is a
multi-processor, network-oriented operating system that supports the NonStop
architecture of all Tandem systems. GUARDIAN 90 is compatible with GUARDIAN, and
all application software used with previous releases of GUARDIAN can be run with
the new operating system. Initial customer experience with GUARDIAN 90 and tests
by Tandem have produced performance increases ranging between 50 and 70 percent
for on-line transaction processing applications using Tandem's transaction
monitoring facility (systems software that provides automatic recovery from
failure and ensures transaction integrity). Gerald L. Peterson, vice president
of international marketing and product management, said, ''We have designed an
operating system for the 1990s -- an operating system with the flexibility and
functionality that allows our users to gain higher performance from transaction
processing applications today and in the future. ''By 1990 we see the need for a
system that processes 1,000 transactions per second. GUARDIAN 90 will help us
achieve that.'' The new system software runs on three computer systems: NonStop
II, NonStop TXP and the recently introduced NonStop EXT systems. Tandem has
maintained its basic architecture and continues to produce the only computer
system in the industry offering both fault tolerance and linear expandability.
When processors are added to a Tandem system, each unit added yields a full
unit's worth of processing power. There is virtually no performance degradation
associated with expandability. The company also announced GUARDIAN 90 will be
offered with three other software products as a package called GUARDIAN 90XF.
The XF signifies extended facility. The software is ENCOMPASS, a distributed
data base management system, EXPAND for transparent networking and TRANSFER, a
general purpose information delivery system. The new package is designed to
provide state-of-the-art tools for customers who are building high-volume,
on-line application systems and distributed networks. GUARDIAN 90 also allows
greater flexibility to run larger application programs by increasing user code
and library space up to four megabytes, 32 times the previous amount. An
important part of GUARDIAN 90 is an advanced, high-performance disc process that
serves as the foundation of all disc record and file management activities. The
process improves performance for batch applications, I/O-intensive on-line
processing and system utilities programs. Writing a file sequentially in a
batch application is approximately four to five times faster with GUARDIAN 90
than with previous releases. The new disc process is compatible with all Tandem
disc drives and with Tandem 3106 and 3107 disc controllers. One new feature,
auto-rollback, is a fully automated recovery system, allows Tandem systems to
recover faster from multiple component failures. The integrity of all

@ 1985 Business Wire, May 20, 1985

transactions is preserved without user intervention. ''The flexibility of our
fundamental architecture,'' explained Peterson, ''has allowed us to rewrite 60
percent of the operating system code to provide significant throughput
improvements for on-line transaction processing and for batch applications that
use sequential file processing. ''This new version of Tandem's GUARDIAN
operating system reflects and adds to Tandem's high availability, data integrity
and flexible growth.'' GUARDIAN 90 will be provided free to all existing owners
of NonStop II, NonStop TXP and NonStop EXT systems. For new Tandem NonStop II
and TXP users, the licensing fee will be $3,500 per processor. The initial
license fee for GUARDIAN 90XF on the NonStop II and TXP is $11,000 per
processor. There is no initial licensing fee for new NonStop EXT users. A
monthly license fee of $200 per system for GUARDIAN 90 and $600 for GUARDIAN
90XF will be charged. GUARDIAN 90 and the GUARDIAN 90XF package will be
available in July. Tandem Computers Inc. manufactures and markets computer
systems and networks for the on-line transaction processing marketplace. The
company is headquartered in Cupertino.

     CONTACT: Tandem Computers Inc., Cupertino
               Corinne C. DeBra, 408/725-7574

NCR, Tandem Sign Hitachi Contracts

SAN BRUNO, Calif. — Hitachi America Ltd. has signed OEM contracts with NCR and Tandem, both of which will buy Hitachi's high-capacity 8-inch Winchester disk drives over the next 3 years.

Hitachi estimated the value of its NCR deal at $25 million. The company declined to estimate the value of its Tandem agreement. Hitachi said it will start shipping drives to NCR's General Purpose Systems division at Wichita, Kan., in the third quarter and to Tandem in July.

Copyright ® 1985 Business Wire Inc.;
Business Wire

May 17, 1985, Friday

DISTRIBUTION: Business Editors

LENGTH: 435 words

HEADLINE: TANDEM-COMPUTERS; Declares dividend distribution of rights to
purchase participating preferred stock

DATELINE: CUPERTINO, Calif.

 BODY:
   The board of directors of Tandem Computers Inc. (OTC: TNDM) has declared a
dividend distribution of rights to purchase a new series of participating
preferred stock. The rights, issued one right for each share of the company's
common stock, will entitle their holders to buy 1/100th of a share of the
newly-created series of Tandem preferred stock at an exercise price of $80. The
rights are being distributed under a rights plan unanimously adopted by the
board of directors. The plan, similar to those adopted by a number of other
companies, is aimed at protecting the value of Tandem stock held by all
stockholders by making so-called two-tier takeovers relatively unattractive to a
potential acquirer and by discouraging greenmail attempts. In making the
announcement Friday, Thomas J. Perkins, chairman of Tandem's board of directors,
stated, ''We are not aware of any current takeover attempt, nor is the company
engaged in merger discussions with any party. ''This action stemmed from the
board's belief that Tandem has a bright future and that its stockholders are
entitled to protection from unfair takeover attempts so that their shares can
enjoy the potential appreciation which the board believes will ensue,'' Perkins
said. According to Perkins, ''The rights dividend is not intended to block any
merger which might be proposed in the future, but is instead designed to ensure
that all stockholders be treated on a fair and equal basis in the event of any
proposed takeover of the company.'' Under the rights plan, the rights will
become exercisable only in the event that a person or group acquires
beneficially 20 percent or more of the company's common stock, or announces or
makes a tender offer for 30 percent or more of the company's common stock. In
the event of a merger, the rights entitle their holders to receive stock in the
acquiring company worth twice the exercise price of the rights. Shares of the
company's common stock issued during a period of five years following the date
this plan becomes effective will be issued together with rights. The rights will
expire on May 17, 1990, unless they are redeemed earlier by the company for a
price of $0.10 per right. The rights plant will be effective as of May 17, and
the dividend is payable to stockholders of record at the close of business on
May 31. Tandem Computers Inc. is a Delaware corporation headquartered in
Cupertino.

    CONTACT: Tandem Computers Inc., Cupertino
             Pat Becker (press), 408/725-6035 or
             Cacey Tangney (financial), 408/725-7555
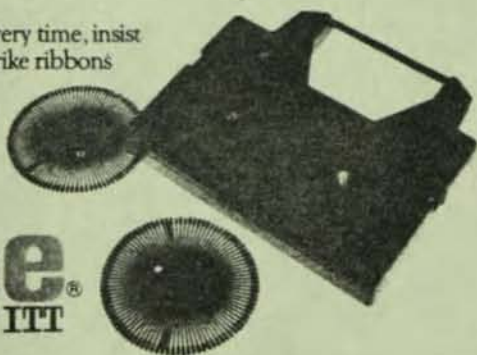
consistently superior, based on a signal-to-noise ratio, to transmission via modems using the earlier Compromise Equalization technique.

According to Nagarasan, modems of Telenetics' competitors such as Racal-Vadic and Hayes Microcomputer Products Inc. use an earlier equalization technique, not based on Rockwell chip sets, called "Compromise Equalization" to compensate for transmission-quality variations on telephone lines. He explained, "Normally at 1200 bps, the criteria are not so great that equalization is absolutely necessary, although it is always necessary at 2400 bps."

"At 1200 bps, though, the user traditionally has to compensate for poor quality transmission by such means as a noise filter on the telephone receiver. When you use the Rockwell design, as we do, by putting in a front-end processor, adaptive equalization is inherent. We believe there is no 1200-bps modem on the market made this way."

Nagarasan said Racal-Vadic and Hayes do not have adaptive equalization at 1200 bps because it is more expensive to produce 1200-bps modems with adaptive equalization; OCC services where the technique can make a big difference are relatively recent; and they "have used Bell-type discrete technology for some time now and are not about to go back and start over with Rockwell digital signal processing."

However, Racal-Vadic vice-president of data communications products Don Spalinger said Racal-Vadic does

lows switching back and forth from data and voice during a single call.

They also feature an onboard speaker with user-controlled volume control, which Nagarasan said is a convenience that allows the user to hear whether a call goes through.

Telenetics supplies the modems with Relay, an IBM PC communications software package that Telenetics markets and supports under a contract with VM Personal Computing Inc., its developer.

The software enables the user to develop a directory for dialing through the PC. It provides password security, encryption, and 3270 terminal emulation without the need for additional boards, Nagarasan said. It also provides data compression, which increases effective data transmission rates by an additional 40 percent. Data compression results in time and cost savings, Nagarasan said.

"The key point about the Relay software," Nagarasan said, "is that in most other IBM solutions you have to have a synchronous modem and software to 'call' the mainframe. With Relay, a software package which most Fortune 500 companies now have, you don't need an extra package of anything—you already look like a 3270."

The ExpressData 12i/2 is priced at $535. The ExpressData 24i/2 is priced at $795. Both are available in 60 days ARO.

Nagarasan said the modems will be marketed primarily through retail and wholesale distributors.

Tandem Begins Development On Products For GM's MAP

DALLAS — Tandem Computers Inc. said it has launched development of software and hardware products supporting the General Motors Corp.-developed Manufacturing Automation Protocol (MAP) factory automation specifications.

Tandem made the announcement at a meeting of the MAP users group, which was addressing the latest version of the specifications, MAP 2.1. The specifications detail communications protocols and compatibility issues for vendors designing equipment for factory automation, local-area-network applications.

According to a spokeswoman, Tandem intends to incorporate products supporting MAP 2.1 on its fault-tolerant NonStop II, TXP and EXP computers for introduction later this year.

She noted that General Motors, an existing Tandem customer, already has issued requests for proposals for computers and network equipment that incorporate MAP 2.1. Some of the Tandem developments will be specially configured for GM applications, she said.

Computer Systems News
5/13/85 p 34

ternally as the Mightyframe, will be more powerful than the Miniframe (4 to 16 users) and less powerful than the Megaframe (32 to 64 users.

Convergent expects to introduce another product developed for AT&T fairly soon.

Communications will be enhanced, with support for IBM's SNA. An X.25 gateway, Convergent's CT-Net networking scheme and Ethernet are all under development this year.

Ely said the company has several problems to correct in order to get its profit margins higher. The company, he said, must fix its order and shipment management, reduce its accounts receivable, improve production capacity and costs, restore profitability and regain customer confidence.

John M. Russel, Convergent's chief financial officer, said the company's losses, chiefly related to a $13.8 million loss due to the failure of the WorkSlate portable computer, are behind it.

ests Probe
Ventures

April 3 MIS Week, page 1), and Southwestern Bell's acquisitions of assets in Electra Co. and Comcoa Inc., phone equipment manufacturers.

The BOCs immediately denied the allegations.

Ameritech said it was currently in the process of reporting to Justice about the Davox interest, which, it said, would not involve manufacturing, and that neither Ameritech nor Aetna would be involved in manufacturing in their jointly developed product.

BellSouth also said that neither it nor Fiberlan would be involved in manufacturing, calling the AT&T request to Justice "wholly without merit. We have scrupulously observed the manufacturing prohibition of the MFJ."

Southwestern Bell called the AT&T allegations "totally in error."
            —Dan Trigoboff

Formed in 1971 by British expatriates Terence Matthews and Michael Cowpland, Mitel had tremendous success with its SX-200, a small analog PBX that holds about 25 percent of the world market for sales of under-150-line PBXs. The company recently introduced enhancements to the SX-200 that will expand its capacity to 350 lines and provide integrated voice/data communications.

Mitel ran into severe problems, however, while developing a larger digital switch, the SX-2000. In addition to extensive research and development cost overruns for the new system, the company suffered from excess manufacturing capacity and poor inventory and cash management, according to Maria Sbrilli, an analyst with Smith Barney.

"There was a poor transition at

marketplace and offer the British giant "a major North American base."

British Telecom last week purchased CTG, a major though as yet unprofitable Canadian interconnect contractor (see related story, page 26), in a move to establish distribution channels in North America. Mitel accounted for about 10 percent of total U.S. PBX shipments in 1984.

Eric Buck, who follows Mitel for DLJ Securities, said that although the deal would give BT an entree into the North American market, Mitel's R&D problems with the SX-2000 would be difficult for the British company to address. Mitel, on the other hand, will clearly benefit from the infusion of cash and renewed credibility from the British Telecom name, he said, noting that Mitel had lost the confidence of

Harris To Sell Sopho-Net

DALLAS—The Harris Corp. last week said it reached an agreement with Philips Export B.V., a Dutch company, for Harris to sell and service Philips' Sopho-Net system, an advanced wide-area packet-switched network, in North America.

Officials said Sopho-Net, introduced in Europe last year, is a fully distributed, open-architecture packet-switched network that would provide for dynamic and completely open conversion between computer protocols.

The system will provide for automatic routing and network management over any transmission media and would connect with X.21/X.25 public data networks. It also will provide gateways for IBM System Network Architecture and will allow a non-SNA terminal to enter the SNA environment.

Officials said the arrangement would be targeted to multinational corporations with private networks. Harris will sell and service orders made in the continental United States while Philips will handle the European markets.

Sopho-Net would enable users

to save up to 40 percent for their leased-line facilities, officials said, and can be used over any existing link, including satellite, fiber optic, microwave, or by public and private exchanges.

The system uses a 16-bit, multimicroprocessor architecture and has node throughput rates in excess of 1,500 packets per second. Node transmit time for packets is less than 20 microseconds, officials said.

The Sopho-Net system is offered in three sizes, a micro, mini, and regular node, which perform protocol conversion, packet assembly/dissassembly, and packet switching and routing. Ports can operate at a maximum speed of 72 Kbps, and any port can be confirmed for device connections or trunks.

The micro-node accommodates eight to 24 ports, is housed in a desktop cabinet and sells for a minimum of $20,000. The mini-node is a floor-standing unit supporting up to 64 ports and can be configured for full redundancy for power supply, disk drive and processor modules.
            —Paul McCloskey

tage of growth opportunities," the officials said. Most of the capital injection is expected to be used to reduce Mitel's debt. The company had about $202 million of net debt at the end of 1984 and currently has long-term liabilities of about $151 million, they said.

"We intend to build on the manufacturing and research and development resources in the countries where they now operate, adding a major international dimension to our business in customer premises equipment," said Sir George Jefferson, chairman of BT.

However, it is not clear what level of access Mitel will have to research and development from BT, which spends about $240 millioon a year on R&D. The BT officials said they recognize the software problems Mitel has had with the SX-2000 and hope to get those sorted out quickly.

At a joint news conference held in Ottawa on Friday, BT's vice chairman, Deryk Vander Weyer, said that, although the company would examine Mitel's executive structure once the acquisition is complete, he did not expect "sweeping changes in management."

Hitachi Signs Deals With NCR, Tandem

SAN BRUNO, Calif.—Hitachi America Ltd. last week signed OEM agreements with NCR Corp. of Dayton, Ohio, and Tandem Computers Inc., based Cupertino, Calif., to supply hard disk drives.

The $25 million, three-year agreement with NCR calls for Hitachi's eight-inch Winchester disk drive to be integrated into NCR's 6099 storage subsystem for its mini and mainframe computers. Hitachi will begin shipping the drives in the third quarter.

Hitachi will supply the same product to Tandem for its new NonStop EXT computer system over a three-year period. The value of the contract was not disclosed.

market, operating expenses far
out of line with reduced revenues
and what it calls "a stretch-out in
the sale-cycle due to a transition in
the company's product line,"

Foundyller said the company
has "major problems" with its
CDS 3000, 4000 and 5000 line.
"Its CDS 5000 is actually an IBM

10 million lines of code the
have to move and if they do
expect to do it, or have it com-
pleted by next spring, it might be
too late."

Prime's Net Goes Up 19% In 1st Quarter

NATICK, Mass.—Prime Com-
puter Inc. bucked the sluggish
industry trend during the first
quarter and reported that net
profits were up 19 percent while
revenues rose 21 percent.

Net income for the quarter,
which ended March 31, was re-
ported at $11.9 million, or 25 cents
per share, compared to the $10.1
million, or 21 cents per share, for
the same period last year.

Revenues were $175.8 million,

as opposed to $145.6 million for the
first quarter of 1984.

Prime president Joe M. Henson
said his company's continued
growth in the face of the continuing
strength of the U.S. dollar and a
sluggish domestic market was
"directly attributable" to the
company's strategic planning in
research and development ac-
tivities in both its general appli-
cation and computer-aided design
and manufacturing (CAD/CAM)

computer line, and to the planning
and expansion of its international
sales organization.

He reported that 45 percent of
first quarter revenues came
directly from international sales
and added, "There is considerable
uncertainty, particularly in re-
gard to the domestic economy,"
but said the company remains
optimistic in this area—while it
continues to expand its inter-
national marketing.

A spokesman for Prime said,
"There is really no one area that
we can point to for our success. We
have had very strong inter-
national performance, we had no
particular weaknesses in our
product line, our new Prime 9955
(Prime's top-of-the-line system)
came in above expectation in sales
and if you care to speculate, most
of our sales about 85 percent, are
to end-users and they tend to
purchase for immediate use, not
like OEMs (original equipment
manufacturers) who tend to con-
sider long-term economic anxie-
ties. They tend to consider their
buying in a year to two-year time-
frame."

—Bill Dooley

Tandem Earnings Surge

By JULI CORTINO

CUPERTINO, Calif.—Tandem
Computers Inc. posted a jump in
second fiscal quarter earnings to
$6.84 million, or 16 cents per share,
for the period ended March 31.

For the like period in fiscal 1984,
Tandem reported net income of
$1.97 million, or 5 cents per share.

Tandem president James G.
Treybig said the manufacturer of
on-line transaction processing
systems was not affected by the
general malaise that has plagued
the computer industry this year.

"There has been a great deal of
uncertainty in the computer indus-
try recently, with many com-
panies reporting lower financial
results. However, Tandem has not
seen a downturn in our business,

compared with a year ago," said
Treybig.

The maker of fault-tolerant
computer systems reported that
revenue increased to $146.4
million versus $111.2 million for
the same period in fiscal 1984.

Treybig attributed the boost in
Tandem's earnings to "strong
market acceptance" of the com-
pany's new V-8 disk drive. He also
said that "early customer
response" to the company's newly
introduced NonStop EXT system
has been "very favorable."

For the six month period ended
March 31, Tandem's income was
$20.8 million, or 50 cents per share,
versus $12.02 million, or 29 cents a
share, for the like period in fiscal
1984.

Revenue for the six-month
period increased to $306.1 million,
up from $237.6 million for the first
half of fiscal 1984.

Separately, Tandem said it will
support the General Motors'
Manufacturing Automation
Protocol specifications. Support
for GM's MAP is in keeping with
Tandem's strategy to market its
systems into computer-integrated
manufacturing areas.

According to Tandem, the com-
bination of Tandem's SNA, or
SNAX product, X.25, and MAP
will let the company offer benefits
to manufacturers interested in in-
tegrating their new automated
manufacturing lines with existing
computer-based manufacturing
systems.

Priam Earnings Plunge In Qtr.

SAN JOSE, Calif.—Priam
Corp. reported a a $4.8 million loss
on a 15 percent increase in rev-
enues for its third fiscal quarter
ended Mar. 31.

Priam's $4.8 million, or 21 cents
per share, loss compares to net
income of $905,000, or 4 cents per
share, reported in the same period
last year. Revenues for the quar-
ter totaled $29.2 million, up from
the $23.4 million reported in the
same quarter last year.

These figures include the results
from both Priam and Vertex Per-
ipherals, which Priam completed
acquiring in the last quarter.

A $1.6 million charge against
earnings was applied because of
the merger, for costs,

ports A $1.2M Qtr. Loss

Masstor also reported it has for-
med a Canadian subsidiary, called
Masstor Systems Canada Ltd.,
Toronto, and named Ted White,
former chief executive officer of
Trilogy Inc. and former president
of Amdahl Canada Ltd., as chair-
man of the board of the new subsid-
iary.

According to Masstor, the com-
pany's cash flow has improved,
with negative cash flow for the
quarter totaling $700,000, as com-
pared to a negative cash flow of $6

million in the first quarter of 1984.

In a prepared statement, David
Addison, president, said "sales in
the first quarter were the highest
quarterly sales in the company's
history, reflecting growing
strength in our domestic sales,
which also set a new record for the
period. We were disappointed by
the low level of international sales
in the quarter and gross margins
were adversely affected by pro-
posals submitted more than a year
and a half ago."

MIs Week
May 8, 1985 p80

May 6, 1985

SECTION: NEWS; Randon Access; Pg. 2

LENGTH: 75 words

BODY:
 Tandem Computers, Inc. is already developing a successor to its recently
introduced Nonstop EXT, according to sources close to the company. Like EXT, the
follow-up machine will preserve Tandem's existing architecture and will be aimed
at users in the branch or district offices of large corporations. But Checkmate,
as the unannounced CPU is known internally, will be implemented in gate arrays
-- a technology not now present in Tandem processors.

Copyright ® 1985 CW Communications/Inc.;
Computerworld

May 6, 1985

SECTION: NEWS; Randon Access; Pg. 2

LENGTH: 75 words

BODY:
   Gate arrays will also form the technological base for a second processor
model now under development within Tandem Computers, Inc., according to an
analyst who follows the vendor closely. Continuing with its chess theme, Tandem
has reportedly nicknamed the second processor Check and intends for the system
to be a replacement for its current top-of-the-line mainframe, the Nonstop TXP.
Check is said to be slated for introduction early next year.

Computer Systems News 5/6/85 P 91 (handwritten margin)

Wyse Qtrly. Stats Up Sharply; 2nd Stock Offer Set

By Julie Pitta

SAN JOSE, CALIF. — Wyse Technology Inc., appearing to hold its place in the forefront of the display terminals market, last week reported sharply higher sales and earnings for its fourth quarter ended March 31.

Wyse's earnings quadrupled to $2.3 million, or 28 cents a share, from $556,000, or 10 cents a share, in the fourth quarter of 1984. Sales more than tripled, reaching $25.2 million from $7.3 million in last year's fourth quarter.

Separately, Wyse announced plans for a secondary offering of its common stock late this month or early next month. Douglas Levick, chief financial officer, said proceeds from the offering—which will be priced at the prevailing market value—will be used to increase working capital and for general operations.

Wyse went public at $7 a share last October. The stock has been trading in the $10- to $11-a-share range lately.

Tandem's Profit Jumps 250% In 2nd Quarter

By Susan Kerr

CUPERTINO, CALIF. — Tandem Computers Inc. last week reported a 250 percent jump in net income on a 32 percent revenue gain for its second quarter ended March 31.

The maker of fault-tolerant computers said net income reached $6,841,000, or 16 cents a share, from $1,974,000, or 5 cents a share, in the same period a year ago.

Revenue rose to $146,489,000 from $111,236,000 in last year's second quarter.

"There's been a great deal of uncertainty in the computer industry, but Tandem has not seen that

SPOTLIGHT

Wang At A Cross
Key Issues Must Be Resolved A

By Jo-Ann Johnston

LOWELL, MASS. — Long ago, the minicomputer companies lost their status as the darlings of Wall Street. Digital Equipment Corp., Data General Corp. and Prime Computer Inc. have all gone through some hard times in recent years, times when sales and earnings have fallen off and the financial community has been disappointed.

But through it all, Wang Laboratories Inc. continued to thrive and continued to retain the affection of investors. Six months ago, in *The Wall Street Journal*, Wang president and chief operating officer John Cunningham characterized his company's uninterrupted growth this way: "Wang is the only virgin in the senior class."

Not any more.

After 10 years of constant quarterly growth, Wang posted a 66 percent decline in earnings for the recent third quarter. Prospects don't look much brighter for the fourth

quarter, and its stock, which had been trading in the mid- to high-20s a few months ago, now seems stuck in the teens. Adding insult to injury, Standard & Poor's Corp. has put the company on its Creditwatch surveillance list.

To be sure, Wang has moved quickly and aggressively to prevent the dip from turning into a major slide.

The company has already instituted a hiring slowdown and scheduled a two-week manufacturing shutdown. And a cost-containment program is being felt at all levels. At the highest level, Wang's top 15 officers are taking a 10 percent annual pay cut—estimated

Will the corporate ci when Dr. Wang decid

IBM Chief: Prospects 'Never Brighter'

By Robert Hertzberg

ATLANTA — IBM president and chief executive John F. Akers, in his first address to shareholders, last week painted a bright picture of IBM's long-term prospects and asserted that software and value-added remarketing represent two of the company's biggest potential growth areas.

"Our software business has been growing in excess of 30 percent a year," Akers said. "It's one of the fastest-growing segments of our business."

Turning to the VAR channel, Akers said, "We would expect the volume of business through that particular channel to increase as time goes on." Akers indicated that the VAR channel is important because IBM "cannot satisfy all the [software] needs of every segment of the business."

Akers made his remarks at IBM's annual shareholders' meeting, which the Armonk, N.Y.-based company holds in a different city each year in order to reach as broad a base as possible of its 790,000 stockholders of record.

The new chief executive used the occasion to note the achievements of his predecessor, 60-year-old John R. Opel, now IBM's chairman, and to make the case for IBM's prospects in the information processing industry having "never been brighter."

"This year, information processing will generate $300 billion," Akers said. "By some time in the 1990s, we'll be operating in a trillion-dollar industry."

"Thus far in the 1980s, we have been able to keep pace with the growth of the industry," Akers said. "Our plans indicate that we can continue to do so."

Speaking to a packed house at the Civic Auditorium here, Akers touched on those factors—principally the strong dollar and product transitions—that the company has maintained caused first-quarter earnings to decline by 18 percent. Akers, in response to a question, denied that IBM has "abandoned" its PCjr, a for-the-home device that the company stopped manufacturing last month. "We continue to support it, and we provide a 12-month warranty for it," Akers said.

Mostly, however, Akers focused on the more positive developments at IBM. He said the company, which

John Akers

Computervision Loss Larger Than Expected

BEDFORD, MASS. — Computervision Corp. last week said it lost $18.8 million in the first quarter

Control
Weakne
Into Its

MINNEAPOLIS its computer busin said that it woul in its second quar

The broadly div mainframe and earned $31.7 milli year's second quai however, Control I $1.2 billion.

Speaking to s annual meeting he Norris said that mainframe, perip nesses have rem rent quarter.

Norris said that an unspecified nu ripherals Product off—"will not be the first-half ea achievement of C goal for the year."

Tandem Computers' Net Income Up 250 Percent In 2nd Quarter

"downturn," Tandem president James Treybig said in a prepared statement.

However, analysts pointed out that Tandem's second-quarter results were much lower than those of the December-ended quarter, when the company earned about $14 million, or 34 cents a share, on revenue of nearly $160 million.

"Looking at the results on an absolute basis, I'd have to say they were moderately disappointing," said David Wu, an analyst with Montgomery Securities. "But if you look at the results on a relative basis," Wu said, "they're not disappointing at all.

"I know a lot of computer manufacturers that wish they could have the problems Tandem does, particularly some of the companies on the East Coast."

Spending Slowdown

Rich Edwards, a senior analyst with Robertson, Colman & Stephens, said the slowdown in capital spending did indeed hurt Tandem's performance in the second quarter.

"Another problem was that their Dynabyte workstation product [introduced in October 1984] is not selling through," Edwards added.

"That product really needs additional graphics and hard disk capability, which Tandem has already announced, but won't ship until this next quarter.
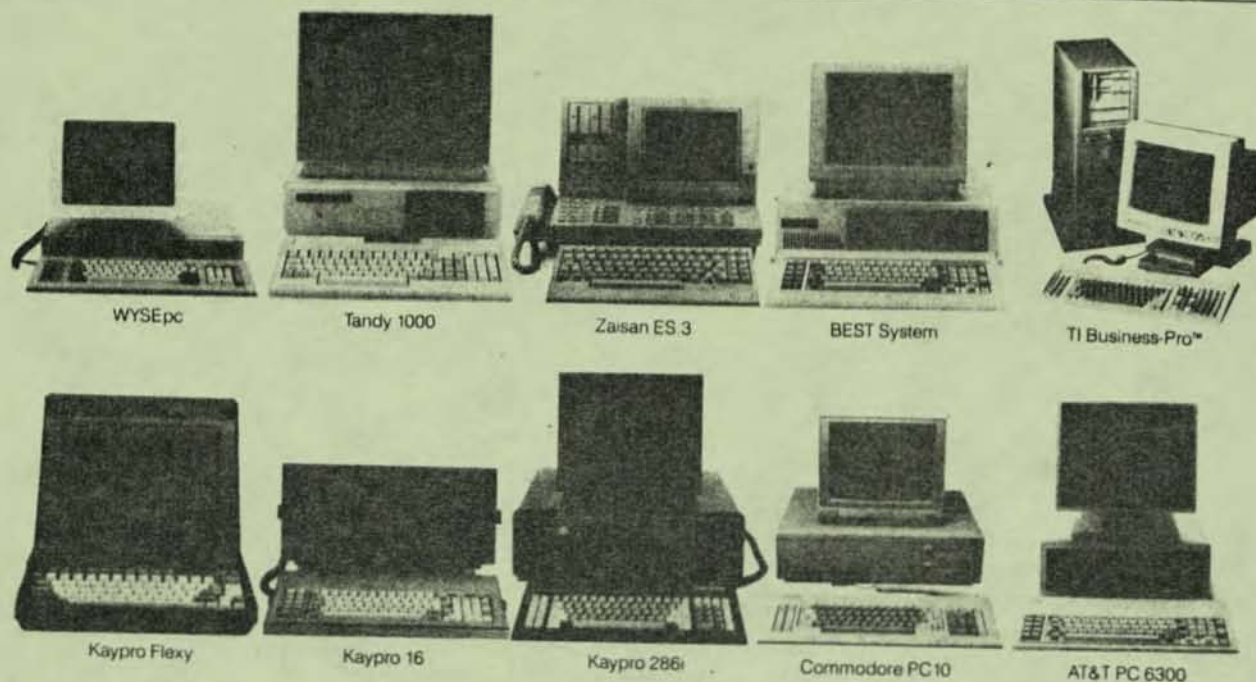
"That was probably worth a couple of million there alone," according to Edwards.

Edwards said he has lowered his earnings expectations for Tandem through the company's 1986 fiscal year. Part of the reason he lowered his estimates is that Tandem will face increasing competition from IBM, which is remarketing a fault-tolerant computer built by Stratus Computer Inc.

Bid Vs. IBM

"In at least 70 percent of Tandem's bids, they go up against IBM," Edwards said. "IBM now has a definite [fault-tolerant] product in its back pocket, which will have to affect Tandem."

WYSEpc

Tandy 1000

Zaisan ES.3

BEST System

TI Business-Pro™

Kaypro Flexy

Kaypro 16

Kaypro 286i

Commodore PC10

AT&T PC 6300

Wyse's Stats Rise Sharply In 4th Quarter

"We wanted to have a larger initial offering, but we couldn't manage that," Levick explained.

"This will provide us with a stronger capital structure for any bumps in the road ahead," Levick added.

Joel M. Hausman, a research analyst at Robertson, Colman & Stephens, said Wyse's fourth-quarter numbers "were well above our expectations."

"We're forecasting positive growth through fiscal '86 with revenue growth in the 60 percent range and earnings in the 40 to 45 percent range," Hausman said.

However, the analyst said that Wyse's future growth might be tempered by "continued pricing pressure."

About a month ago, Wyse lowered the price on its WY-50 alphanumeric display terminal to $599 from $695.

Wyse apparently made the