PC Week Sept 1, 1987

PEER TO PEER

Tandem Scores Well with SNA Communication Links

JOE MOHEN

Tandem Computers has always excelled in the fault-tolerance area. Its processors are designed to optimize availability without sacrificing performance. Like archrival Stratus, Tandem's chief focus is in on-line transaction processing and, therefore, its systems are frequently intermingled in SNA networks with IBM gear—both mainframes and personal computers.

According to Dennis L. McEvoy, vice president of software, Tandem is committed to the two pillars of transaction processing: communications and database. Because of this, the majority of Tandem's IBM host connections are to IMS data-communication systems, not CICS.

In 1983, Tandem delivered its first SNA product—SNAX, or SNA Access—which has since been installed in more then 400 sites. SNAX provided the usual 3270 emulator with some innovative extensions. In addition to acting as a secondary SDLC station downstream from a host, a Tandem computer could also emulate a host. This allowed the attachment of SNA peripherals such as 3274s to Tandem hosts, which could, in turn, allow terminals attached to the 3274 to access Tandem applications, or to "pass through" data to an upstream IBM host. This kind of primary SNA is very useful.

SNAX provided not only 3270 logical units (types 2 and 3), but also the SNA roll-your-own logical unit 0. LU allows application implementors to supply their own presentation services. This allowed many additional terminals to be supported—such as the 3650 point-of-sale terminal.

It also provided a base for a programmatic interface released in 1985: SNAX/High Level Services. HLS is intended to serve the program-to-program market. This type of programmatic interface is easier to program than one based on a 3270 data stream. HLS is not an alternative to APPC; rather, it's a complementary offering that helps integrate industry-specific terminals. SNA RJE (3770) emulation was added to the product line in 1985.

Tandem can utilize the X.25 protocol through its "X.25 Access Method" product for applications such as terminal-to-Tandem host, interenterprise communication between Tandem hosts (with a sophisticated package called "Expand") and certain intervendor applications. At this time, Tandem cannot talk to SNA hosts over an X.25 network since Tandem does not yet support either QLLC (for NPSI) or the more advanced ELLC (for System 3X). However, according to Mr. McEvoy, the company intends to support one or the other in the future.

APPC Deficiencies

Tandem also offers an LU 6.2 product, called SNAX/APC, which is intended for program-to-program communications to VTAM hosts. However, its APPC offering appears to have two deficiencies: SNAX/APC supports only basic conversations, not mapped conversations; SNAX/APC does not support node type 2.1 at all, nor is the company committed to doing so in the next year.

SNAX/APC can only talk to a host, and it can only talk to a VTAM LU 6.2 application or CICS basic conversation, either of which must be written in assembler. Coupled with lack of PU 2.1 connectivity, I would not expect APPC to sell well. So it is clear to me that APPC is an area that Tandem could improve.

On the other hand, Tandem blows away the competition in the area of host-to-PC connectivity. It offers a PC-to-host file-transfer product called IXF that works on async lines at up to 19.2K bits per second, and a terminal-emulation package called PC-Link that emulates Tandem 6530 displays.

But the superstar of Tandem's PC-host lineup is MultiLAN. In fact, MultiLAN's design is so impressive that it's considered by many as a model for how midrange computers should connect to LANs. MultiLAN implements the NetBIOS and Server Message Block (SMB) protocols that allow the Tandem host to act as a file server for most major LANs. It uses a gateway box that uses an 80286-based PC as a bridge to 3COM+, IBM Token Ring, Ungermann-Bass and other leading networks. Wisely, the Tandem host also allows read access to any Tandem database files.

MultiLAN lets the host function as a print server, since the Tandem spooler can be accessed by MS-DOS print commands. The company has also rewritten its terminal emulator so that it can run with any of the popular windowing packages. Happily, two Tandem processor complexes can also talk to each other over a LAN, which computers such as the IBM 3090 and System 38 remain pathetically unable to do. ∎

O'Connor & Co. Bring Mini In-House

By Don Steinberg

For a young Manhattan real-estate firm with assets of $1.3 billion, the cost of computing is a minor issue next to the benefits of being able to compute well.

Since its incorporation four years ago, J.W. O'Connor & Co. Inc., of New York, has been paying Management Concepts Inc., a service firm in Atlanta, to process its accounting and financial-modeling data on a Prime minicomputer.

But now the commercial real-estate-investment firm has decided to purchase its own Prime, install the system in-house and rewrite its applications software for its on-site PCs and the minicomputer—all for the sake of increased control over its data-processing operations.
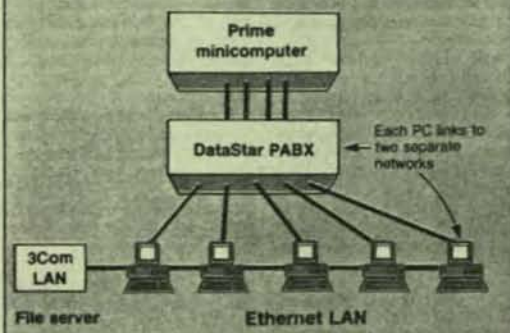
The in-house mini will be linked to personal computers at the firm's New York headquarters so that corporate PC users can tap the data-storage capacity of the Prime system.

Although bringing minicomputing resources closer to home will cost the firm in hardware dollars, programming time and consulting fees, O'Connor executives said such expenses were a small price to pay for the increased flexibility and control the new system will offer its computer users and administrators.

Control over its own data destiny has become increasingly important to O'Connor as the firm has grown, said Anton Barth, the comptroller who oversees the company's data processing.

The firm first hooked up with the Atlanta time-sharing service in 1984, when it acquired some properties whose previous owner was using that particular data-processing service. At the time, O'Connor did not have the internal computer resources to manage these new properties, so its business remained with the outside service.

Even as its dependence on this third-party service firm grew over the last few years, officials at O'Connor knew that the firm eventually would need to buy an on-site computer.

"What happens if we have an argument with these guys tomorrow? They could pull the plug on us, and we'd be in trouble," Mr. Barth said. Despite those fears, O'Connor's relationship with its time-sharing service has been good. In fact, O'Connor will buy its new Prime machine (managers are currently considering a Prime 2755) from Management Consulting.

Beyond the abstract goal of gaining more control, there are technical reasons behind the decision to buy a mini. For example, system speed was starting to become a problem on the often-overburdened time-sharing system. An in-house minicomputer

J.W. O'Connor Networking Plan

J.W. O'Connor plans to bring its computing home, and will soon install a Prime mini that will interface with its PCs over telephone wires.

that shares processing with PCs will relieve this problem. O'Connor also will gain control over the software that runs on the host processor.

Today, with its plan to buy a minicomputer still in the future, all of the firm's regular accounting and specialized real-estate modeling is done on the outside Prime system in Atlanta.

In its New York office, O'Connor has about 25 IBM PCs on a 3Com Ethernet LAN. The PCs run programs such as Lotus Development Corp.'s 1-2-3, Microrim's R:base and Ashton-Tate's MultiMate. The firm uses 1-2-3 with financial models on the Management Consulting Prime system to perform valuation calculations on property acquisitions and assets.

Terminal Emulation

At its New York headquarters, networked PCs gain access to the Prime in Atlanta using terminal-emulation software and dialing through an AT&T leased line that has a multiplexer at each end. The firm uses ASCII PRO terminal-emulation software from United Software Industries, of Canoga Park, Calif., to make its PCs emulate Televideo terminals over the leased line.

New York PCs access the leased line to Atlanta through a DataStar PABX [private-access branch exchange] from Tie Communications Inc., of Shelton, Conn., which also carries the firm's voice transmissions. The PABX handles the circuit switching for data connections; for example, it allows 12 PCs emulating terminals to share fewer ports on the host side.

O'Connor satellite offices in Nashville, Tenn., Dallas and Kansas City, Kan., use similar connections to access the time-shared Prime in Atlanta.

In bringing the Prime to its headquarters, O'Connor could opt to speed up the PC-to-mini link by connecting its new mini
(Continued on Page C/40)

J.W. O'Connor & Co. Inc.

Problem: O'Connor wants to gain increased control over its data-processing operations and the flexibility to run its own software on its host processor.

Solution: The firm plans to buy its own minicomputer. The connection between the planned local mini and PCs on the firm's 3Com LAN will go through an installed PABX.

Tools:

Prime minicomputer (Model 2755 or higher)	DataStar PABX
Primelink communications software	Tie Communications Inc. Shelton, Conn.
Prime Computer Inc.	(203) 929-2000
Natick, Mass.	
(617) 655-8000	
Oracle	
(PC and Prime versions)	
Oracle Corp.	
Belmont, Calif.	
(415) 598-8000	

Prognosis: An in-house mini will increase security by keeping valuable financial data and applications closer to home.

RCA Interna
Service Coul
Fax Cost to

By Tony Pos

In an attempt to m
ile transmission to b
Japan as easy as usin
tic store-and-forwa
service, RCA Global
cations Inc. (Glob
week debuted an i
facsimile service th
can reduce the cost
Japan by 40 percent
times.

RCA's store-and-
service, called Fa
stores outgoing m
RCA's Globcom
Globcom then deliv
sage to the specifie
number. FaxForwar
with CCITT Class 2
ile machines.

Subscribers use
phone numbers to
FaxForward service
fax machine or a P
with a fax board.
stores the message i
com computer and
livery number in Ja
the fax. If FaxForw
ters a busy signal it
periodic basis.

Routed Overseas

FaxForward me
routed overseas t
Japanese internatio
munications carrie
Denshin Denwa (
conditioned lines,
vide a cleaner con
cording to RCA off
seas facsimile trans
ten encounter probl
of the level of noise
on standard dial-up
ficials said.

With more than
facsimile fax mach
Japan—more tha
many as in the Un
that nation was
good place to star
service, RCA of
They expect to e
rope and offer d
Forward next yea

Besides store
FaxForward can
a fax to several loc
distribution list st
com. Users can
specific time for
optionally, receive
that a fax was de

According to
subscribers only
sages that are su
ered.

The service is
begin this week.
said rates are b
connection time
com and the poi

RCA Global
tions Inc. is loc
tennial Ave., P
08854 (201) 885-

, 9370 Pack Costs to Hit Profit

re said it faces several quarters of because of flat sales of its current mitted to the development of soft- or.

gested that VM was trying to maintain an unrealistic growth rate with its current line of products.

IBM brought out the 9370 in October, 1986, and started shipping earlier this year. VM calculates that about 80 to 85 per cent of all the 9370s sold will run the VM operating system.

Mr. Earnest said VM was estimating that IBM would sell anywhere from 3,000 to 5,000 9370s this year, and about 20,000 in 1988. He cautioned, however, "How quickly they get installed is another question." He said VM was unable, at this point, to estimate how much revenue sales of VMCenter II would generate.

Massive Effort

Mr. Earnest explained that the VMCenter port to the 9370 required such a massive effort not because the port itself was difficult, but because VM had to adapt the software to work in the environment where the 9370 will most likely operate.

"The 9370 is targeted for a distributed environment where the end-user will not be a system professional or a data processing professional, but a white collar worker (with little data processing experience)," he said.

VM, therefore, has to add more functionality to the program in areas which previously would have been handled by a data processing professional, such as correcting channel imbalance, he said.

Mr. Earnest said VMCenter II would be priced according to the 9370 model, and that volume discounts would be available. He said permanent license fees would run from $11,000 on a low-end 9370, to $66,000 for the high-end. He said VM would encourage customers to acquire the software through a fixed-term lease rather than a permanent license, in order to expand its recurring revenue base.

SQL/DS Market

Additionally, VM is moving into the SQL/DS market, which is IBM's database management system for the VM operating system. In 1986, VM created an Applied Relational Technology division, which is dedicated to developing products for SQL/DS. The division already sells the SQL/ Edit Plus program, and is work-

will turn its attention to adapting its products for VM/XA, a modified version of the VM operating system which IBM announced in June.

He said VM/XA offered a great opportunity because "IBM is moving everybody toward XA." He said VM was currently examining the difficulty of porting its program to the XA version.

Relationship

IBM and VM have traditionally had a close relationship, with IBM marketing VM's Backup, Tape and Archive programs. IBM, however, this year brought out a program which competes directly with VMBatch, VM's own batch processing software.

Mr. Earnest said he did not expect IBM to become a major competitor, but did say "There is always that danger and potential." He said he doubted IBM would pursue the VM software market aggressively, because "They have so many other things to do with other software. They don't have resources to do everything. I don't think they will get in the way of vendors who help them sell computers," he said.

VM also faces stiff competition from Computer Associates, newly fortified with the digestion of Uccel, which itself marketed a VM package. "The opportunity to be a major player (in the VM market) is reducing itself to one — Computer Associates," remarked Michael Mooney, who recently left VM as vice-president of marketing and sales to join Network Solutions Inc., Vienna, Va.

Mr. Mooney was replaced by Gerard Hummel, who takes the title of senior vice-president, marketing and sales. Mr. Hummel had been senior vice—president for Paul & Turner Inc., a consulting firm. Mr. Hummel will oversee the direction of domestic sales, corporate communications, and strategic marketing.

Additionally, Kevin McNerney added the title of chief financial officer to his duties as vice-president of finance. The chief financial officer duties had been held by Gene Riechers, who was named senior vice-president, strategic planning and international, a new position. He had been senior vice-president of finance and chief financial officer.

Ronald Kral was named senior vice—president and chief technical officer, also a new position; he had been senior vice—president, strategic marketing.

Messrs. Hummel, McNerney,

EDS Wins 4-Year Insurer Pact

DALLAS — Electronic Data Systems has received a 4-year contract to process life insurance administration information for Chubb Life Insurance Co. of America, topping insurance software rivals Cybertek and Continuum Co.

The system, called Insurance Machine, will replace several unspecified systems, consolidating the information processing of three Chubb LifeAmerica subsidiaries. The contract represents the first sale of the system in the U.S.

EDS will handle Chubb's data processing at one of its computer centers, gradually phasing out Chubb's in-house processing facilities, an EDS spokesman said.

EDS and Chubb declined to put a price on the deal.

EDS is installing the system for

insurance companies in Canada and the Netherlands and at four U.S. insurance companies which participated in the development of the system. They are: Allstate; Colonial Life & Accident; Union Central Life; and Motors Insurance Co. The EDS spokesman explained that because these companies participated in the development of the program, they had the right to implement it, so it did not constitute a sale of the program.

Tandem Adds Net Mgmt. Software

CUPERTINO, Calif. — Tandem Computers Inc. last week introduced software designed to enable users to more efficiently manage large networks of its computers.

The program, called Operations Management, gives Tandem users running the Guardian 90 operating system the ability to monitor networks from a single terminal. Operations Management is part of Tandem's Distributed Systems Management (DSM) scheme, which attempts to consolidate isolated systems and network management functions.

Operations Management combines several new software modules including: Viewpoint, an event display and command control center facility for DSM which monitors networks; Distributed Name Service, a storage and retrieval database system for multiple names used to identify system and network components; and Measure and Network Statistics Systems (NSS), two programs that collect performance data and monitor real-time network statistics. Measure had previously been released by Tandem.

Tandem also added several features to its Guardian 90 operating system which allow it to collect and consolidate information on Tandem networks and send the information to other DSM applications. Also added to the operating system was the capability to define formats and protocols used to generate and control management information and TACL, an existing Tandem language, which can be used to build custom macro commands when used with Viewpoint.

The Operations Management package has an initial license fee of $3,200 and a $320 monthly licensing fee for Tandem's NonStop VLX and TXP systems, and it is priced at $1,600 for initial licensing and $160 per month for the company's NonStop EXT25, EXT10 or CLX systems.

The Guardian additions, which are available along with the Operations Management package during the fourth quarter of this year, are included in the price of Tandem's Guardian 90 operating system. Free upgrades of the Guardian operating system are available.

HP to Drop Its Lisp for Lucid's

PALO ALTO, Calif. — HP will phase out its proprietary version of Common Lisp and port Lucid Inc.'s Common Lisp language to the HP 9000 Series 300 and the Precision Architecture Series 800 computers, marketing it as HP Common Lisp.

HP has offered a proprietary Common Lisp development environment for 2 years on the HP 9000 Series 300.

ed as a de facto standard.

HP Common Lisp will be available on the HP 9000 Series 300 by the end of the year, HP said. Availability on the Series 800 Precision Architecture computers is expected in 1988. Pricing information was not available.

Separately, HP will port the Smalltalk 80 application generator tools to the HP 9000 line of

Computerworld 9/7/89   p-117

g Summary

iconductors

25	13	20.63	-1.9	-8.3
24	14	20.75	-0.9	-4.0
13	10	11.88	-0.6	-5.0
56	18	52.00	-3.0	-5.5
17	8	12.63	-0.1	-1.0
19	10	0	-10.0	-100.0
72	34	64.25	-7.1	-10.0
17	8	16.63	+1.0	+6.4
78	35	71.50	-5.1	-6.7
33	13	26.38	-1.6	-5.8

eripherals

9	5	7.63	-0.1	-1.6
23	11	17.00	+0.6	+3.8
9	3	6.00	+0.0	+0.0
16	6	12.13	-0.5	-4.0
18	9	10.13	+0.0	+0.0
5	2	4.00	-0.3	-5.9
26	16	24.50	-0.5	-2.0
23	12	14.63	+0.4	+2.6
30	12	0.00	+0.0	+0.0
16	10	11.13	-0.5	-4.3
9	7	7.25	-0.3	-3.3
13	7	11.25	-0.5	-4.3
104	52	98.50	-3.5	-3.4
29	7	27.00	-12.8	-32.1
10	6	7.63	+0.0	+0.0
40	20	30.75	-2.5	-7.5
13	5	6.00	-0.5	-7.7
20	8	18.50	+2.4	+14.7
10	2	2.88	+0.0	+0.0
10	5	5.50	+0.3	+4.8
6	3	4.69	-0.2	-3.8
34	12	13.00	-0.6	-4.6
44	14	35.25	+1.6	+4.8
18	5	13.63	-0.4	-2.7
84	50	78.13	-4.4	-5.3
23	10	21.50	-0.5	-2.3
6	2	3.13	-0.4	-10.7
14	10	11.13	+0.1	+1.1
25	11	22.63	-0.9	-3.7
35	15	17.75	+0.3	+1.4
6	4	5.13	-0.8	-12.8
27	12	17.50	+0.5	+2.9
14	5	9.00	-0.1	-1.4
17	11	12.63	-0.4	-2.9
46	13	30.13	+1.8	+6.2
5	2	3.00	+0.0	+0.0
7	2	3.75	-0.3	-6.3
7	3	4.50	-0.1	-2.7
43	30	37.75	-1.8	-4.4
3	2	2.88	+0.3	+9.5
102	55	69.50	-2.0	-2.8
36	13	32.88	-0.3	-0.8
85	51	78.75	-3.0	-3.7
19	11	11.13	-1.3	-10.1

ing Companies

35	15	33.13	-1.0	-2.9
14	7	10.88	-0.4	-3.3
8	3	4.38	-0.1	-2.8
7	5	5.25	+0.3	+5.0
55	40	49.75	-2.9	-5.5

ICAN; Q=NATIONAL;
S=SPLIT

S OF 3 P.M. OR LAST BID

eek plunge

l market head south;
Semi bucks trend

lwarts of the technology
search, Inc., took a plunge
g designer Steve S. Chen's
e cancellation of Chen's key
ject, the MP supercom-

plans to leave the Minne-
d seek other investors for
puter, which was expected
-end supercomputer, Cray

Tandem hones net line with central control

BY JEFFRY BEELER
CW STAFF

Tandem Computers, Inc. tomorrow is expected to enhance its existing system and network management capabilities with a suite of centralized-control software products that correspond to IBM's Netview.

Known collectively as Distributed Systems Management (DSM), the products reportedly allow network control center operators to collect status information from multiple-processing or communications modules in the field and route that information to a central operations console.

For large banks and other organizations that maintain many remote user sites, the centralization of network management functions will reduce customers' need to distribute their technical personnel, Tandem said. "Companies have a hard time finding good network managers and operators," said Gary Haars, data processing manager for Georgia Interchange Network, Inc., a Tandem user that operates a regional electronic funds transfer service.

But, Haars said, "they can more easily hire those kinds of people for one central site than for lots of remote ones."

Busy operator

Until now, the vendor's communications management capabilities were limited in the sense that no operations console in its users' network control centers could collect event messages and other information from more than one remote module.

"At service multiple sites, operators had to assign a different console to each system or device in the field and then move from terminal to terminal," said Roger Mathews, one of Tandem's networking product managers.

The result, he explained, was that "users were unable to expand their networks beyond a certain limit because of the high cost and difficulty of managing them."

With DSM, however, the one-terminal-per-machine relationship that characterized Tandem's existing network management scheme has been broken, Mathews said.

Out with the old

DSM also consolidates systems and network management, according to Mathews. The integration of these two complementary activities marks a departure from the company's existing approach, which required that dispersed systems, devices and applications be managed independently of communications lines and modems.

The network control facility's constituent software modules form an Operations Management package that is slated to be incorporated into the next release of Tandem's Guardian 90 operating system. Availability of the revised Guardian release is scheduled for the fourth quarter.

Even before tomorrow's expected announcement, Tandem had already surpassed IBM and most other major systems vendors in its communications management prowess, according to Bear Stearns & Co. analyst Jonathan Fram.

"Networking is built into its operating system, and the company's equipment uses a peer-to-peer instead of a hierarchical style of communication," Fram said. Introduction of the DSM software product set will merely "reaffirm Tandem's position as the premier supplier of backbone networks," he said.

Making a statement

Longtime Tandem watcher Omri Serlin, head of Los Altos, Calif.-based Itom International Co., echoed Fram's conclusions. DSM, Serlin said, "is an important statement of the firm's strategic direction and will be the first in a whole series of network management products" that will eventually address multivendor, especially IBM, environments as well as Tandem's own.

Included among the product's software components is a Subsystem Programmatic Interface that expresses event messages in a form that allows many of them to be handled automatically. The ability for information about remote computing and communications modules to be processed automatically by a program is a prerequisite for another of DSM's constituent modules, the Event Management System (EMS).

Through EMS, Tandem users can route error or status messages from "any node to any operations console." Once a message reaches a network operator, another DSM software component known as Viewpoint presents the collected data in a meaningful format for its intended viewers. In particular, Viewpoint distinguishes various kinds of messages from each other and uses assorted highlighting techniques to call operator attention to suspected communications problems.

Depending on the Tandem processor model, each Operations Management package sells for an initial license fee of $1,600 or $3,200 and a monthly charge of $160 or $320 per CPU.

Turner Hall 'reports' on 1-2-3 links

BY DOUGLAS BARNEY
CW STAFF

CUPERTINO, Calif. — Turner Hall Publishing last week in-

of Reflex from Borland International, and provides forms capability for data entry. 4Views is set to be available next month.

The product resides in random-access memory (RAM) and.

referring to Ashton-Tate's market-leading microcomputer data base.

Turner Hall, a division of Symantec Corp., is providing a free runtime version of 4Views so

Data Communications

Tandem Introduces Management Software

By IRWIN GREENSTEIN

CUPERTINO, Calif.—Tandem Computers Inc. this week is planning to introduce Distributed Systems Management (DSM) software that enables users to manage the company's NonStop networks from a single point.

In addition to providing consolidation of network management, DSM incorporates new capabilities for managing remote systems and applications.

Moreover, users can write programs with DSM that will let them integrate its network management functions with those of NetView, a strategic network management umbrella for Systems Network Architecture (SNA) environments of International Business Machines Corp., said John Mahr, senior product manager at Tandem.

"We are a collector for all management information on Tandem systems, including SNA, into DSM," he said. "We supply the interfaces to write a program to connect (DSM) to a NetView system."

With DSM, important events or problems anywhere in a Tandem network are highlighted on a computer terminal for operator notification that a problem has occurred. Additional information can be displayed, including the probable cause and recommended action.

Six software modules comprise DSM: Viewpoint, Measure and Network Statistics Systems (NSS), Distributed Name Service (DNS), Event Management System (EMS), Subsystem Programmatic Interface (SPI), and Tandem Advanced Command Language (TACL).

Central Control

Viewpoint is a multifunction operations console. It provides a single-system view of overall operations. This software/terminal facility can be used as a status monitor, event display station, and command and control center for DSM.

One Viewpoint station can monitor and control an entire network of systems. Multiple Viewpoint consoles can be designated to monitor and control a selected set of functions, systems or components.

As a status monitor, Viewpoint enables operators to view the availability and usage of systems, network components and applications. As an event display, event messages appear on screens indicating device status changes, malfunctions and recommended actions.

Users can incorporate their own DSM applications, such as monitoring automated teller machines (ATMs), into Viewpoint.

Measure and NSS are two symbiotic modules that allow Viewpoint to display data.

Measure collects and examines performance statistics from all NonStop systems, including their peripherals, processes and transactions. It lets users detect systems bottlenecks and balance workloads.

NSS gives users a network-wide view of performance data. It collects, monitors and reports real-time network statistics on NonStop systems and circuits in a Tandem network.

DNS provides a single source for storing and retrieving information about multiple names used to identify systems and network components. DNS databases are useful for supporting programs that automate operations functions. Operations programs can gain access to the name databases via Tandem's SPI.

SPI defines the formats and protocols to generate and control management information. By providing a common interface for the communication and control among applications subsystems, it is the foundation for programmed operations.

SPI formats and protocols are published and supported by Tandem as an open standard to allow customers and third parties to develop their own DSM applications.

EMS collects and consolidates event information generated by components in Tandem systems, networks and applications. An event may be a hardware malfunction, change in availability of a component or even a normal occurrence.

The data is sent to the EMS in each system, which puts it into a permanent log. Next, EMS can route this information through the network to other systems and then to a DSM application, such as Viewpoint.

TACL is an existing Tandem language. It allows users to create custom and macro commands. DSM also supports Cobol and Tandem Advance Language for writing network-management applications, and interfaces into NetView, according to Mahr.

Mainframe Connection

In conjunction with Tandem's SNA Communications Services (SNAX) software, NonStop users of DSM can write NetView hooks.

"We can connect to IBM mainframes with SNAX; therefore we have the capability to pass information to an IBM mainframe" hosting NetView, Mahr said.

Tandem plans to meld features from its Guardian 90 operating system and its Expand networking product into DSM, he said.

The two functions he cited were Expand's ability to route data

Network Management

over alternate paths if a primary path fails, and Guardian 90's dynamic systems configuration that "lets an operator reconfigure a network while it's still running," he said.

"We'll see, in the future, these features integrated into DSM." The new DSM products will be available in the fourth quarter of 1987.

The package, which includes Viewpoint, Measure, NSS and DNS, has an initial license fee of $3,200 and a monthly license fee of $320 per each NonStop VLX or TXP system.

The package has an initial license fee of $1,600 and a monthly license fee of $160 per each NonStop EXT25, EXT10 or CLX system.

Corvus NOS Is Upgraded

SAN JOSE, Calif.—Corvus Systems Inc. last week announced an enhanced version of its PC/NOS network operating system for the company's Omninet local area network (LAN).

Key upgrades to the new PC/NOS 1.1 not available in version 1.0 include broader MS-DOS support, compatibility with multi-tasking applications, expanded previous files and structure are no longer wanted. The purge utility essentially cleans the entire disk and leaves the system ready for reconfiguration.

Another utility, called Automatic Resource Connection (ARC), re-establishes a network connection on a failed node if it is reactivated. ARC eliminates the

Communicat

Networking, Terminal Emulators, Micro-To-Mainfr

Tandem Debuts NonStop Network Management Kit

BY CHARLIE BRUNO

CUPERTINO, CALIF. — Tandem Computers Inc. this week is expected to take the wraps off a network management software package that will put in place the company's first architecture for managing groups of NonStop computers.

The Distributed Systems Management (DSM) software consolidates previous Tandem network management tasks under a unified distributed network.

Previously, the extent of network management software was limited to only a few tools, according to John Mahr, senior product marketing manager for DSM.

"Now, DSM opens up a whole new management world for users. We found that our customers' requirements are increasingly leaning toward networks with thousands of terminals," Mahr said. "Added to that, customers want a means to let an average worker run the network, not someone with extensive computer skills."

DSM has new capabilities for managing remote systems and networks. Basic DSM services will be included as part of Tandem's Guardian 90 operating system.

While the DSM software products may be a giant step toward integrating scores of Tandem processors into a cohesive, centrally managed network, the company is still working to bring other vendors' hardware under control of the network management software.

Mahr said the company is opening up the DSM architecture to third parties in an attempt to gain applications support for multivendor hardware platforms. "That is a definite challenge," he said. "Our hope is that DSM will be integrated into other vendors' environments."

The new software—which took more than 50 work-years of development effort—is made up of several application-specific network management programs:

Viewpoint is a multifunction program that performs as a status monitor, event display and command control center for DSM operations. It provides a single system view of the entire network operation.

Multiple Viewpoint consoles can control selected sets of functions, systems or components. Users may incorporate their own applications into Viewpoint.

Another segment of the software, Measure and Network Statistics Systems, collects and examines performance statistics for all NonStop processors on the network. It lets users track system bottlenecks and balance workloads. The statistics program offers a network-wide view of performance by gathering real-time statistics on all units in the network.

The Distributed Name Service stores and retrieves data on names that identify system and network components.

Tandem also provided network management additions to its Guardian 90 operating system.

The Event Management System collects and consolidates event information generated by machines in the network and by applications running on the network. An event may be classified as a hardware malfunction, change in availability of a system component or even a normal occurrence logged by the program.

A Subsystem Programmatic Interface has been added to the

> '*Our customers' requirements are increasingly leaning toward networks with thousands of terminals,*' DSM's John Mahr said.

operating system. The SPI defines the formats and protocols to generate and control network management information. Tandem said the SPI formats and protocols are openly published to encourage customers and third parties to develop their own DSM applications.

The new DSM products and additions to the Guardian operating system will be available in the fourth quarter.

A package including Viewpoint, MNSS and DNS costs $3200 for an initial license. Users pay a monthly fee of $320 for each NonStop VLX or TXP system. The same software package carries an initial charge of $1600 and a monthly charge of $160 per system for each NonStop EXT25, EXT10 and CLX system.

A E

October 28, 1987, Wednesday, Late City Final Edition

SECTION: Section D; Page 8, Column 1; Financial Desk

LENGTH: 769 words

HEADLINE: BUSINESS TECHNOLOGY;
How the Exchanges' Computers Got By

BYLINE: By CALVIN SIMS

BODY:
   LAST week's frenzied activity in the nation's stock markets has focused new attention on the computers that processed and recorded the hundreds of thousands of transactions each day on the New York Stock Exchange and the American Stock Exchange.

   There are many ways to measure the sophistication of computer systems like those deployed on Wall Street. An advanced system, for example, can be especially speedy or efficient in the way it handles memory.

   The kind of sophistication that was most important to the exchanges' 200 linked computers in their electronic moment of truth last week is known as '' fault tolerance. '' The computers have been designed with redundant programs and components so that glitches and faults that popped up during the flood of orders resulted in a shift to a different processing path rather than a breakdown.

   Self-diagnosis programs allow the computers to make such switches nearly instantaneously without help from human operators. In addition, the computers keep track of when a sell order and a buy order have been matched so that processing automatically starts from the beginning on another computer if a fault has interrupted it.

   The minicomputers that run the two exchanges were manufactured by Tandem Computers Inc. of Cupertino, Calif. Tandem is the leading manufacturer of fault-tolerant computers widely used for operations, like those of the stock exchanges, that have huge numbers of transactions that must be processed while customers are connected to the system. Other important applications include electronic banking and airline reservations.

   About 28 stock and futures exchanges around the world use Tandem computers, including the Chicago Mercantile Exchange and Nasdaq's over-the-counter trading system as well as exchanges in Hong Kong and New Zealand. Major brokerage firms that use the machines include Nomura Securities of Japan, the First Boston Corporation, the Advest Group Inc., Merrill Lynch & Company and Cowen & Company.

   Analysts estimate that computer companies sold $20 billion worth of computers for transaction-processing applications, including the fault-tolerant machines. While the fault-tolerant segment accounts for a little more than $1 billion, or 5 percent, of the market, it is the fastest-growing part. Analysts

expect it to grow by 15 to 20 percent in the next five years.

Tandem's computer systems start at about $50,000 and can cost as much as several million dollars. The 200 processors in the New York Stock Exchange's NonStop TXP can perform up to 900 standard debit and credit transactions a second. The exchange plans to install soon Tandem's newest product, the Nonstop VLX, which will process 1,300 transactions a second.

Before Tandem's Nonstop was introduced in 1975, most users who needed fail-safe computers had to resort to an expensive practice known as ''hot standby,'' in which a duplicate computer was kept ready to replace one that failed.

Tandem has one major competitor in this market, Stratus Computer Inc. of Marlboro, Mass. Stratus uses a somewhat different redundancy strategy. It has two pairs of processors to perform each task. If there is a malfunction, the processors in a pair do not agree on the answer to a problem and both shut down, allowing another pair to take over.

This so-called lock-step architecture runs as well as Tandem's design in terms of hardware, but it does not offer the same program protection. Stratus supplies I.B.M., which has been seeking to enter this market, with most of its fault-tolerant machines. But most industry analysts prefer the Tandem approach.

''A processing system that is not fully redundant in terms of hardware and software is more open to the possibility of failure,'' said George Weiss, an analyst with the Gartner Group, a market research firm in Stamford, Conn.

Last week, Tandem reported that it earned $105.6 million on revenues of $1.04 billion for its 1987 fiscal year, which ended Sept. 30. Stratus reported net income of $12.8 million on $128.9 million in revenues for the first nine months of the year.

Although Tandem's machines were in the limelight last week for withstanding the heavy trading, its stock did not escape unscathed. During Oct. 19's collapse, Tandem's shares dropped $6.50, to $23.25, on the New York Stock Exchange. They closed yesterday at $19.875, down 75 cents.

''Our computers have kept the stock market's system from failing since 1978, and it's nice to have people finally recognize that,'' said Robert Jolls, Tandem's director of industry marketing. ''I just wish we had a fault-tolerant stock price.''

GRAPHIC: Diagram illustrates how exchange computers, by performing redundant functions as well as separate ones, are able to process and record heavy market transactions (NYT)

SUBJECT: Terms not available

October 27, 1987, Tuesday

DISTRIBUTION: Business Editors

LENGTH: 404 words

HEADLINE: TANDEM-COMPUTERS; (TDM) Tandem Computers announces joint marketing
agreements with UNIX-based application software providers

DATELINE: CUPERTINO, Calif.

BODY:
   Tandem Computers Inc. (NYSE:TDM) Tuesday announced it has signed joint
marketing agreements with two providers of UNIX-based applications for use with
its recently introduced 32-bit LXN system.

   The agreements are with Action Software Corp., San Diego, and Teknekron
Infoswitch Corp., Richardson, Texas.

   Action Software develops and markets a full range of UNIX-based application
software packages for the hospitality and airline industries. Its product
offerings include a multi-user central reservation system and a full service
property management system.

   Teknekron Infoswitch is a leading supplier of inbound and outbound
telemarketing software for cross industry use. Teknekron's Customer Contact
Management System is a turnkey telemarketing system that automates contact
procedures and information storage for clients and suppliers.

   The LXN system, announced in April, is Tandem's first UNIX-based system.
Designed for use as an extension of larger Tandem based systems, the LXN system
extends transaction processing power closer to the end user.

   Both agreements, a software house contract for Action and a value added
reseller agreement for Teknekron, were signed under the sponsorship of the
Tandem Alliance program.

   The Tandem Alliance is a program which encourages application designers to
develop software solutions that run on Tandem systems.

   Action Software Corp. is headquartered at 1420 Kettner Blvd., Suite 502, San
Diego, 92101. Contact Janet Shaffer for further information. The telephone
number is 619/234-5895.

   Teknekron Infoswitch Corp., located at 1784 Firman Drive, Richardson, is a
member of the Teknekron family of high technology companies. Contact Stuart
Rosenfield for further information. The telephone number is 214/644-0570.

   Tandem Computers Inc. manufactures and markets computer systems and
networks for the on-line transaction processing market. The company is
headquartered at 19333 Vallco Parkway, Cupertino, 95014. The telephone number is
408/725-6000.

© 1987 Business Wire, October 27, 1987

Note to Editors: Tandem and LXN are trademarks of Tandem Computers
Inc. Customer Contact Management System and CCMS are trademarks of
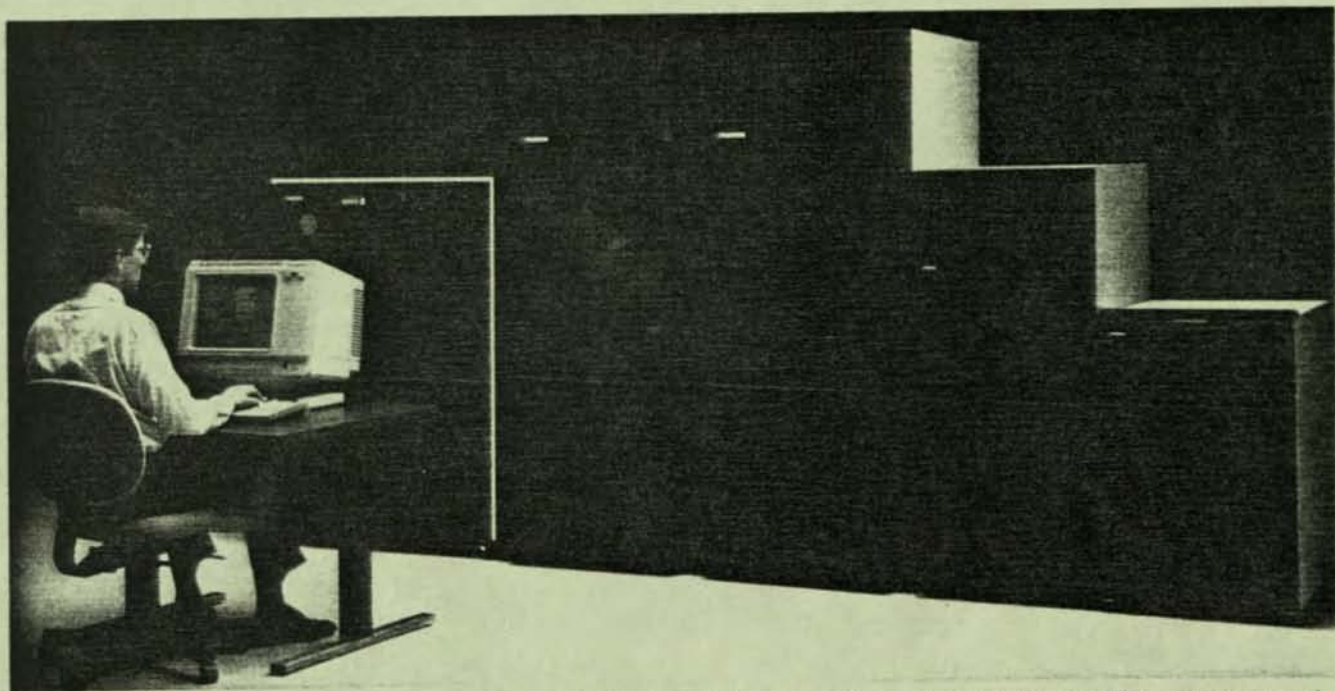Teknekron Infoswitch Corp. UNIX is a trademark of AT&T Bell
Laboratories.

CONTACT: Tandem Computers Inc., Cupertino
          Leslie Stull, 408/725-6237

*With the recent expansion of its
fault-tolerant product line, along with advances
in its data base software technology, Tandem
Computers is aiming to increase its
presence in retail banking.*

Tandem Brings Fault Tolerance to Branch Automation

BY BRIAN TRACEY

Tandem Computers' VLX mainframe, along with the company's NonStop SQL distributed data base software, has been benchmarked as high as 200 transactions per second.

If it were up to many bankers, minicomputers would still be relegated to the egghead world of science and engineering. Starting with their debut in the late 1960s and up until only a few years ago, minicomputers had not made a large impact in financial institutions, except perhaps a few stand-alone departmental processors for office automation in the biggest banks or an equally small number of turnkey systems for community banks.

But the growing needs of financial institutions for on-line transaction processing (OLTP) have helped bring minis out of the lab and into the front line of bank automation. According to a recent research report published by Dataquest of San Jose, Calif., minicomputers have been largely responsible for the growth in the OLTP marketplace. The report predicts OLTP systems—which accounted for only 33% of computer sales in

1981—will mushroom to over 70% of all systems revenues and total $35 billion by the end of this decade.

By almost anyone's estimates, the company that stands to reap a lion's share of this growth is Tandem Computers. The Cupertino, Calif.-based company is riding the OLTP wave, and the beach is still not in sight. After posting record numbers in 1986 while most of the computer industry experienced one of the worst downturns in its history, fiscal 1987 is looking even better for Tandem. The company's nine-month net income for this year totalled nearly $75 million on $744 million in sales, a 78% increase in profits over the year-earlier period.

Founded in 1974 by current chief executive officer James G. Treybig, Tandem has become a Fortune 500 company mainly due to its success in selling fault-tolerant OLTP computers to the financial services industry, which comprised one-third of
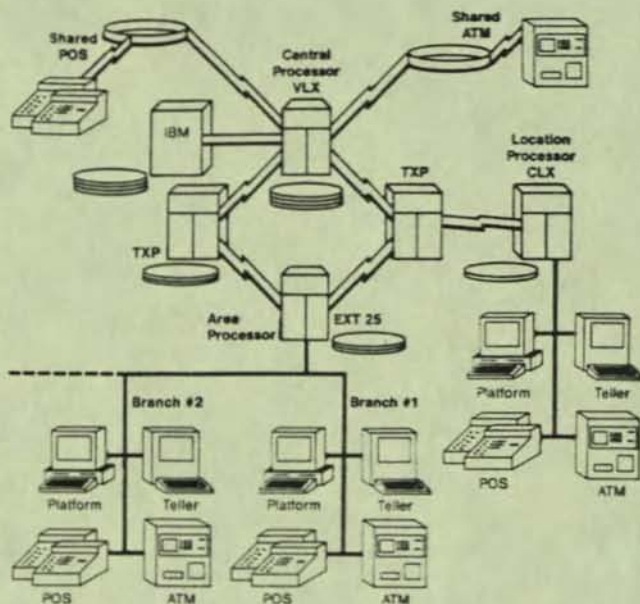
its total 1986 sales. Banks and thrifts specifically contribute 20% of the revenue to Tandem's bottom line, says Joe Oliver, manager of finance industry marketing. "The very first processor we shipped was to a financial institution," he notes, adding that presently 23 of the top 25 banks in the United States are Tandem customers.

Analysts who follow Tandem say that a major reason for its success is that practically all of its computers share the same hardware architecture and operating system, not unlike Digital Equipment Corp.'s (DEC) range of VAX computers that also has made that company an earnings star. An added plus is that Tandem's design supports fault-tolerance via its operating system and selected duplication of key hardware components. "Not only do we have [fault-tolerant] capabilities, but if the application code is under the Guardian operating system, and a bank requires more power, they can just add another computer at the end," Oliver says.

Another factor in the company's meteoric growth has been its aggressive third-party software marketing program that searches out software partners. Tandem currently has 270 such relationships, of which 27 are aimed directly at the banking industry. *(For a complete list of Tandem's third-party banking software vendors, see below.)* About 70% of first-time Tandem hardware purchases this year also involved buying application software from a third party.

Tandem offers a broad price/performance spectrum of pro-

Tandem's prominence in distributed on-line transaction processing allows bankers to spread processors across a network, as this diagram shows. Known for powering ATMs, Tandem is leveraging its retail banking presence into branch automation.

TANDEM'S THIRD-PARTY BANKING APPLICATIONS VENDORS

The following is Tandem's list of third-party software vendors for the banking industry. The companies' products are grouped into electronic funds transfer (EFT) systems, retail, wholesale, and global banking applications.

American Banking Information Systems
222 Westchester Ave.
White Plains, NY 10604
(914) 328-8398
Retail
Circle No. 201

American Management Systems
1777 N. Kent St.
Arlington, VA 22209
(703) 841-6908
Retail
Circle No. 202

Applied Communications Inc.
330 South 108th Ave.
Omaha, NE 68154-2684
(402) 390-7600
EFT, Retail, Wholesale
Circle No. 203

Canada Systems Group
333 University Ave.
Toronto, Ontario

Canada 5MG 2H9
(416) 964-7640
Wholesale
Circle No. 204

Credit Card Software Inc.
The Spectrum Building
900 Winderley Place
Maitland, FL 32751
(305) 660-0343
EFT, Retail
Circle No. 205

Data Architects Inc.
245 Winter St.
Waltham, MA 02154
(617) 890-7730
Wholesale, Global
Circle No. 206

Deluxe Data Systems
8901 North Kildeer Court
Brown Deer, WI 53209
(800) 558-6980
EFT, Retail
Circle No. 207

DML Financial Software Products
115 Broadway, Suite 910
New York, NY 10006
(213) 602-5440
Wholesale
Circle No. 208

Echo Solutions Inc.
P.O. Box 1088
Orem, UT 84057
(801) 226-7800
Retail
Circle No. 209

Harbinger Computer Services
1900 Century Place, Suite 380
Atlanta, GA 30345
(404) 320-1636
Wholesale
Circle No. 210

Internet Systems Corp.
200 West Madison St., Suite 1700
Chicago, Il 60606
(312) 630-0050
Wholesale, Global
Circle No. 211

LeRoux Pitts & Associates
557 South Duncan Ave.
Clearwater, FL 33516
(813) 461-3671
EFT, Retail
Circle No. 212

Logica Inc.
980 Magnolia Ave.
Larkspur, CA 94939
(415) 461-3058
Global
Circle No. 213

cessors, and recent announcements have added new products to the top and bottom of its fault-tolerant lineup. Again like DEC, Tandem is starting to expand beyond its original status as a maker of specialized minicomputers into the mainframe market that IBM dominates. Last May the company introduced upgraded models of its VLX mainframe, which provides transaction processing speeds unheard of in the industry only a few years ago. For example, Tandem officials say the VLX model 804 running the company's new NonStop SQL data base management system (DBMS) can process up to 200 transactions per second (TPS) using the ET1 benchmark, a widely accepted OLTP yardstick. ET1 emulates messages coming from a bank teller terminal. It should be noted that Tandem was instrumental in the specification of ET1—along with a number of bankers and computer scientists—and while it has become a generally accepted benchmark, it is much like the fuel economy ratings displayed on new car windows; actual performance may vary with driving conditions.

Tandem's low-end CLX processor, which also debuted last spring, can handle from two to 15 TPS and can support up to 10 gigabytes of disk storage and 600 communication lines. The TXP and EXP series, whose models currently enjoy the largest installed user base, populate the mid-range. These machines are predominately found driving banks' retail operations, such as ATM networks and switching, point-of-sale (POS) terminals, and credit card authorizations. Tandem always has been stron-

Joseph Oliver, manager of the financial sector at Tandem, says his company's agreement with software supplier Système Corp. will change the way bankers think about branch automation.

gest in retail banking, and the ATM phenomenon has helped fuel banks' needs for efficient, OLTP machines that offer little or no downtime.

Oliver reports that while Tandem has about 175 retail banking customers, wholesale banking operations are increasingly turning to OLTP solutions. The company has about 75 bank users running international banking, wire transfer, and treasury management applications.

In conjunction with the CLX announcement, Tandem also unveiled its first Unix-based computer, the LXN. The 32-bit

TANDEM'S THIRD-PARTY BANKING APPLICATIONS VENDORS

MTech
1925 West John Carpentar Freeway
P.O. Box 152055
Irving, TX 75015
(214) 506-4700
EFT, Retail
Circle No. 214

MTech Wholesale Banking Systems Corp.
101 North Wacker Drive, Suite 400
Chicago, Il 60606
(312) 853-3275
Wholesale
Circle No. 215

National Data Corp.
One National Data Plaza
Atlanta, GA 30329
(404) 329-8537
Wholesale
Circle No. 216

Network Concepts Inc.
Two Ridgedale Ave.
Cedar Knolls, NJ 07927
(201) 285-0202
Wholesale
Circle No. 217

MIS Information Systems Inc.
100 Homeland Court
San Jose, CA 95112

(408) 292-4244
EFT, Retail
Circle No. 218

Transact Data Services Inc.
4211 Young St., Suite 620
Willowdale, Ontario
Canada M2P 2A9
(416) 221-2929
Wholesale
Circle No. 219

Phase3 Systems Inc.
504 Totten Pond Road
Waltham, MA 02154
(617) 466-9800
Wholesale
Circle No. 220

PhiTech Inc.
220 Montgomery, Suite 383
San Francisco, CA 94104
(415) 788-5455
Wholesale
Circle No. 221

Securities Industry Software Corp.
4886 Beaver Brook Drive
Evergreen, CO 80439
(303) 670-1000
Wholesale
Circle No. 222

SHL Systemhouse Ltd.
99 Bank St., 3rd Floor
Ottawa, Ontario
Canada K1P 6B9
(613) 236-9734
Wholesale
Circle No. 223

Systems Designers International
101-103 Fleet Road
Fleet, United Kingdom
02-52-622161
Wholesale
Circle No. 224

Système Corp.
101 Southhall Lane
Maitland, FL 32751
(305) 875-1234
EFT, Retail
Circle No. 225

XRT Inc.
989 Old Eagle School Road, Suite 806
Wayne, PA 19087
(215) 254-0300
Wholesale
Circle No. 226

Zyncon Corp.
Four World Trade Center, Suite 704
New York, NY 10048
(212) 938-2236
Wholesale
Circle No. 227

Tandem

multiuser system is not fault tolerant, but does support disk mirroring to guard against data lost due to disk crashes. It also has links to IBM's Systems Network Architecture (SNA) data communications scheme, can support up to 32 users running both Unix and MS-DOS applications, and comes in at a very attractive price of around $20,000.

The CLX and LXN announcements are significant because they are an attempt by Tandem to extend its presence in banks from mainly front-end processors to mainframes to departmental- and branch-level computers. The key issues involved in how well the company succeeds in the distributed processing arena are vertical banking software applications, data communications, and distributed data base technology.

Tandem Eyes Branch Automation

Despite all the strategic plans, Tandem still views retail banking as its bread-and-butter business, Oliver stresses, and the recent marketing agreement with Système Corp. of Orlando, Fla. showed that the hardware maker is still hungrily in search of new banking applications to augment its electronic funds transfer (EFT) niche.

Système is a developer of branch automation systems that currently run on DEC computers using PCs as workstations. The software house now sees distinct advantages to porting their products over to Tandem, says Harold Covert, president and chief executive officer. "Tandem systems accommodate a wide range of performance criteria, provide continuous availability, work in a centralized or distributed environment, and can expand in a linear fashion," Covert explains. "Traditional

---

Tandem is riding the OLTP wave, and the beach is still not in sight.

---

vendor solutions typically employ a local branch controller, terminals and personal computers, and use a combination of vendor-proprietary, nonintegrated software."

Covert says that banks can either use the CLX as branch controller or a larger machine to power multiple branches. "Controllers were designed to keep the branch running in case the host goes down, but with fault tolerance, banks no longer need to stick to the one-box-per-branch mentality. Our agreement with Tandem will open our market to much larger customers than we have dealt with in the past."

"ATMs don't have a controller in every branch, and they are the most reliable delivery system in banking today," Tandem's Oliver adds. "Some banks will want to go to regional [controllers] and realize the economies of scale of combining all transaction processing on one network. We can build on that highly reliable delivery system."

Distributing OLTP

That delivery system will change dramatically from Tandem's current status as primarily a fault-tolerant front-end for bank mainframes to a more distributed processing arrangement where a network of different-sized computers shares computational chores. Up until recently, however, DBMS software for banks was relegated to centralized big iron, and networking dispersed computers was a headache most DP managers would rather avoid.

Chris Erikson, director of software project management at Tandem, says the company spent $10 million developing its NonStop SQL data base package, and the result offers higher throughput than any other SQL-based product currently on the market.

The nature of banking in 1980s is changing this view, says Chris Erikson, director of software product management at Tandem. "The banking business today is a transaction business characterized by lots of change," Erikson explains. "For example, a bank may start with an ATM service, which is a simple, almost old-fashioned service that is local in scope, so it was probably most cost-effective to put that service up on a single system to serve that local customer base. But as banks go national with their transactions, then they need to take that functionality and place it wherever they want without impacting their original investment in software, and that's what distributed data base software is all about."

It is also why Tandem has spent $10 million since 1977 on developing its just-released NonStop SQL. The package "is five to 10 years ahead of the industry," Erikson claims. "In terms of overall performance, it's five times more powerful than existing relational data bases and equal in price/performance with the highest performance systems in the industry."

SQL-based systems are gaining popularity because of their powerful programming tools and the fact that they support industry-standard programming languages like Cobol. "It lets programmers develop applications faster," Erikson stresses. "SQL basically uses nine verbs—it's an incredibly elegant language—and these verbs can replace up to 50% of a Cobol application."

The drawback to previous iterations of the SQL model—such as IBM's DB2—is that they could not handle the transaction volumes required by larger banks. That's why the money center banks and large regional institutions have stuck to hierarchical data base systems like Big Blue's IMS. "Traditionally DBMS has gone for sheer performance or functionality while it trades off for the other," Erikson says. "The high-performance systems from IBM and other vendors provide very low cost of delivery, but they give up the ability to easily manufacture new applications."

NonStop SQL eliminates the productivity-for-performance tradeoff, Erikson boasts, by integrating the software into the messaging, filing, disk processing, and operating systems, which improves throughput while maintaining the programmer productivity enhancements.

Data distribution across a network is another feature of the package, Erikson says, and the package was fine-tuned to meet the needs of distributed OLTP. "The other technical problem was distributed data base, and that means real-time update capability across the network." he points out. "In transaction services you're not just talking about accessing data; you're talking about updating. Update is the key, and at the same time

maintaining data integrity." He adds that this was achieved utilizing only 5% of processing overhead in running the network.

While NonStop SQL promises to usher in the brave new world of distributed OLTP to banking, the caveat is that currently very few real-world banking examples exist that require that much power. Even a money center bank's ATM network volumes fall miserably short of the 200 TPS heights Tandem has scaled.

Thrift Plans to Live Up to Its Name

First Nationwide Savings of San Francisco should be a perfect example of an institution that would benefit from distributed processing, but due to current volumes, it still can get by with a central processor arrangement. The $11-billion-asset thrift—acquired by the Ford Motor Co. in 1985—is busily expanding its branch and ATM networks in California, New York, Florida, Missouri, Ohio, Pennsylvania, Kentucky, and Hawaii. Much of the expansion this year will be setting up 150 ATM-equipped "mini-branches" in K-Mart department stores across the country.

First Nationwide currently employs 300 ATMs, but future expansion will be dramatic, notes Dan Foss, president of the information systems subsidiary of First Nationwide. "We expect to increase that number in the next few years to 1,500 to 2,000 ATMs," he boasts. "Our growth situation here is predicted to be phenomenal." The thrift also has links to various regionally shared ATM networks.

> ## "With fault tolerance, banks no longer need to stick to the one-box-per-branch mentality."
> —Harold Covert, Système Corp.

To provide the horsepower for this growth, First Nationwide recently installed a Tandem VLX running Deluxe Data System's Connex EFT software. Fault tolerance was a primary force behind the sale, Foss explains. "The Tandem architecture biased our decision towards the software. We wanted a stand-alone, immediate solution."

Unlike most banks that link fault-tolerant minis to mainframes containing the actual deposit account files, First Nationwide's VLX has the capacity to do all of the authorizations and balancing by itself. Foss says that the VLX's expandability was a requirement due to their anticipated ATM-transaction growth, but he adds that Tandems will not overtake his operation. For example, First Nationwide's branch automation system runs off of a Sperry mainframe, and the thrift currently has no plans to enter the POS arena, except possibly through a third-party EFT network, Foss stresses. "We are not a merchant bank, so as a result we probably won't go into POS."

Tandem's Erikson admits that not every banking application lends itself to distributed OLTP. "For example, check processing is still a centralized scale business," he says. "The other issue is that banks have already built memo-post data bases. That's both an opportunity and a challenge, because it's feasible to distribute the memo data base. We've also done studies where it's feasible to open up the window and post in real time." The big hurdle Tandem faces is trying to convince banks to scrap their old transaction processing technology and

Dale Ratliff, director of international marketing at Applied Communications Inc., says his company's deal with the Australia and New Zealand Banking Group Ltd. is the first time it will guarantee price/performance.

their huge inventory of application code.

But one financial institution is going into OLTP in a big way—the Australia and New Zealand Banking Group Ltd. (ANZ). Based in Melbourne, it is the second-largest bank in Australia with assets of $30 billion (U.S.). ANZ is pushing a national POS network aggressively and has signed a five-year contract with EFT software house Applied Communications Inc. (ACI) of Omaha, Neb. to provide a turnkey system capable of processing over 180 TPS. ANZ expects to have about 9,000 to 12,000 terminals on-line by the end of this year,and 60,000 devices linked by 1990, according to Dale Ratliff, director of international marketing at ACI. "These won't be all simple POS terminals. They could be credit-card pay phones or vending machines, or any customer-activated terminal that could come along over the next few years."

Ratliff says that the ANZ deal is unique for ACI in that it is the first time the company is attempting to act as system integrator in addition to being a purveyor of software. "The risk is that we've stepped up to a price/performance criteria," he notes. "As hardware and software architectures improve over the next three to five years, we must deliver lower cost per transaction." This will be achieved by improvements to the VLX and the Guardian operating system, as well as utilizing NonStop SQL, he adds.

The initial configuration, scheduled to go into full production next month, will utilize a four-processor VLX cluster running ACI's Base24-atm and Base24-pos packages. Ratliff estimates the possibility of the ANZ system migrating to a more distributed setup as very good. "It becomes logical to place a small concentrator box at a major retailer with 100 terminals or even in a shopping mall with many individual stores," he points out. The network also will eventually provide on-line data base backup for disaster recovery using Tandem's Remote Duplicate Data Base Facility presently under development.

It's ambitious projects like the one under way at ANZ that Tandem officials hope will be replicated many times over by banks in the U.S. and throughout the world. "Banks can no longer afford to be out of balance for two days," Erikson warns. "Especially in the point of sale area, the competitive advantage is that banks own the data."

He adds that inaction is the banking industry's biggest enemy, and that foot-dragging will cause nonbanks to enter the OLTP waters. "It's frustrating for us to see banks sit back and evaluate while the oil companies and retailers are working with us on incredibly aggressive strategies," he reveals. "We've set the processing platform for the banks, all they have to do is take advantage of it." ▣

September 7, 1987

SECTION: NEWS; Pg. 117

LENGTH: 734 words

HEADLINE: Tandem hones net line with central control

BYLINE: By Jeffry Beeler, CW Staff

BODY:
   Tandem Computers, Inc. tomorrow is expected to enhance its existing system
and network management capabilities with a suite of centralized-control software
products that correspond to IBM's Netview.

   Known collectively as Distributed Systems Management (DSM), the products
reportedly allow network control center operators to collect status information
from multiple-processing or communications modules in the field and route that
information to a central operations console.

   For large banks and other organizations that maintain many remote user sites,
the centralization of network management functions will reduce customers' need
to distribute their technical personnel, Tandem said. "Companies have a hard
time finding good network managers and operators," said Gary Haars, data
processing manager for Georgia Interchange Network, Inc., a Tandem user that
operates a regional electronic funds transfer service.

   But, Haars said, "they can more easily hire those kinds of people for one
central site than for lots of remote ones."

Busy operator

Until now, the vendor's communications management capabilities were limited in
the sense that no operations console in its users' network control centers could
collect event messages and other information from more than one remote module.

   "At service multiple sites, operators had to assign a different console to
each system or device in the field and then move from terminal to terminal,"
said Roger Mathews, one of Tandem's networking product managers.

   The result, he explained, was that "users were unable to expand their
networks beyond a certain limit because of the high cost and difficulty of
managing them."

   With DSM, however, the one-terminal-per-machine relationship that
characterized Tandem's existing network management scheme has been broken,
Mathews said.

Out with the old

DSM also consolidates systems and network management, according to Mathews. The
integration of these two complementary activities marks a departure from the

LEXIS NEXIS LEXIS NEXIS

company's existing approach, which required that dispersed systems, devices and applications be managed independently of communications lines and modems.

The network control facility's constituent software modules form an Operations Management package that is slated to be incorporated into the next release of Tandem's Guardian 90 operating system. Availability of the revised Guardian release is scheduled for the fourth quarter.

Even before tomorrow's expected announcement, Tandem had already surpassed IBM and most other major systems vendors in its communications management prowess, according to Bear Stearns & Co. analyst Jonathan Fram.

"Networking is built into its operating system, and the company's equipment uses a peer-to-peer instead of a hierarchical style of communication," Fram said. Introduction of the DSM software product set will merely "reaffirm Tandem's position as the premier supplier of backbone networks," he said.

Making a statement

Longtime Tandem watcher Omri Serlin, head of Los Altos, Calif.-based Itom International Co., echoed Fram's conclusions. DSM, Serlin said, "is an important statement of the firm's strategic direction and will be the first in a whole series of network management products" that will eventually address multivendor, especially IBM, environments as well as Tandem's own.

Included among the product's software components is a Subsystem Programmatic Interface that expresses event messages in a form that allows many of them to be handled automatically. The ability for information about remote computing and communications modules to be processed automatically by a program is a prerequisite for another of DSM's constituent modules, the Event Management System (EMS).

Through EMS, Tandem users can route error or status messages from "any node to any operations console." Once a message reaches a network operator, another DSM software component known as Viewpoint presents the collected data in a meaningful format for its intended viewers. In particular, Viewpoint distinguishes various kinds of messages from each other and uses assorted highlighting techniques to call operator attention to suspected communications problems.

Depending on the Tandem processor model, each Operations Management package sells for an initial license fee of $1,600 or $3,200 and a monthly charge of $160 or $320 per CPU.

CORPORATE
INFORMATION CENTE

September 7, 1987

SECTION: TOP NEWS; On-Line Network Management; Pg. 5

LENGTH: 619 words

HEADLINE: Tandem melds net control tools;
Unified scheme provides single point for network control.

BYLINE: By Josh Gonze, Staff Writer

DATELINE: CUPERTINO, Calif.

BODY:
 Tandem Computers, Inc. is expected tomorrow to announce four software
packages designed to help users centrally manage networks of Tandem transaction
processors.

 The products, to be unveiled as part of Tandem's new Distributed Systems
Management (DSM) line, provide a single view of a distributed, on-line network.
The new packages include an operations console facility that allows a user to
monitor and control a network from one terminal, a monitor that reports on
random network events such as hardware failures, a programming interface that
allows developers to tie applications into the DSM architecture and a
distributed naming service.

 "This is centrally driven direction, so you can control and drive your
distributed network from one place much better than you could before," said Jack
Gates, national director for Electronic Funds Transfer and Point of Sale network
consulting at Peat Marwick Main & Co. in Dallas.

 The net management products will ship in December, as will Tandem's recently
announced low-end processors, the NonStop EXT10 and EXT25. Tandem expects the
relatively low cost of those processors, announced in August 1986, to fuel an
increase in the number of nodes on Tandem networks. The company reasons that
users will demand centralized network management to avoid a rise in network
management costs.

 The console software, dubbed Viewpoint, is the jewel in the DMS crown.
Viewpoint consists of software residing at both the central site and at each
remote site. The central-site software collects management data sent by network
monitoring packages and integrates that data so it can be accessed from either a
Tandem terminal or a personal computer emulating a Tandem terminal.

 Viewpoint modules residing on remote systems gather and route performance
data collected by Measure, an existing Tandem program that gathers statistics on
network and processor performance on a sampling basis. Viewpoint also gleans
data from Tandem's existing Network Statistics System, which reports on
processors and lines in a Tandem network.

 Previously, every time a Tandem network operator wanted to access information
from different management systems, it was necessary to log on to each system.

In addition to Viewpoint, Tandem will introduce the Event Management System (EMS), software that runs on each remote system in a Tandem network to collect information on specific events, such as a hardware malfunction. The EMS program will also route the collected information to Viewpoint.

Tandem will also publish format and protocol specifications to allow other application developers to write software that works in the DSM environment. The Subsystem Programmatic Interface (SPI), a set of standard formats and protocols for management information exchange, is mainly a set of programming tools for writing event management programs inside application software. The SPI-based application management programs will send their data to EMS, which will transmit the data to Viewpoint.

The company also announced a Distributed Name Service (DNS) providing a single data source containing the multiple names used by network and system components.

Tandem is taking a conciliatory stance toward IBM's NetView. "We recognize that one of our major marketing scenarios is Tandem being managed from NetView," said Roger Mathews, network software product manager at Tandem. Tandem already has a NetView interface for its communications access software, he said, but lacks a usable gateway based on that interface.

"The next thing that we need, software-wise, is a package that uses our SNA management interface to do pass-through of events from Tandem to the NetView system," Mathews said.

September 8, 1987, Tuesday

DISTRIBUTION: Business Editors

LENGTH: 582 words

HEADLINE: TANDEM-COMPUTERS; (TDM) Tandem Computers announces new offerings
for Distribution Systems Management

DATELINE: CUPERTINO, Calif.

BODY:
   Tandem Computers Inc. (NYSE:TDM) Tuesday announced new Distributed Systems
Management software that enables users to more efficiently manage large,
dispersed networks of NonStop systems.

   The new DSM software allows the consolidation of previously isolated systems
and network management functions into a single, unified view of a distributed
on-line network.

   DSM also incorporates new capabilities for managing remote systems, networks
and business applications. It provides flexible software that can be tailored to
specific user needs to support either centralized or decentralized management of
operations, and provides the foundation for automated operations at remote
sites.

   ''The basic network and system management services have been incorporated
into our operating system, which provides an excellent foundation for
distributed systems management,'' said Dennis McEvoy, vice president of
software.

   ''Today's new offerings provide users immediate benefits in DSM, but more
importantly they also provide the framework for Tandem, our customers and our
third-party Alliance software developers to more easily create additional
complementary DSM applications.''

   DSM products are being offered in an Operations Management package. The new
fundamental DSM services will be included as part of Tandem's GUARDIAN 90
operating system. The OM package includes VIEWPOINT, MEASURE, Network Statistics
Systems and Distributed Name Service. The Event Management System and Subsystem
Programmatic Interface are additions to GUARDIAN 90.

   VIEWPOINT, a new multifunction operations software facility, enables a single
terminal to be used as a status monitor, event display and command and control
center for an entire network of distributed systems. VIEWPOINT can display
performance data collected by two existing Tandem products, MEASURE and NSS.

   A new service, DNS provides a single source for storing and retrieving
information about multiple names used to identify system and network components.

   EMS collects and consolidates event information, such as malfunctions,
generated by components in Tandem systems, networks and applications. EMS data

can be routed to VIEWPOINT.

The SPI defines the formats and protocols to generate and control management information. The SPI formats and protocols are published and supported by Tandem as an open standard to enable customers and third parties to develop their own DSM applications.

The new DSM products and additions to GUARDIAN 90 are available fourth calendar quarter 1987.

The OM package has an initial license fee of $3,200 and a monthly license fee of $320 per each NonStop VLX or TXP system. The OM package has an ILF of $1,600 and an MLF of $160 per each NonStop EXT25, EXT10 or CLX system. Each product may also be purchased separately. The price of the GUARDIAN 90 operating system includes EMS and SPI. All prices are in U.S. dollars.

Tandem Computers Inc. manufactures and markets computer systems and networks for on-line transaction processing. The company headquarters are at 19333 Vallco Parkway, Cupertino, Calif. 95014. The telephone number is 408/725-6000.

Note to editors: Tandem, CLX, EXT, GUARDIAN, EMS, DNS, MEASURE, NonStop, NSS, SPI, TXP and VLX are trademarks of Tandem Computers Inc.

CONTACT: Tandem Computers Inc., Cupertino
           Jeri Eaton Flinn, 408/725-5462

beginning on Page 9).
ss, as some observers
ed out, you've already
to one of IBM's customer
rings. IBM's, however,
t so well publicized.
now, everyone has read
ir local dailies about the
illion DEC shelled out to
the show, including
ly $1 million to renovate
oston waterfront to ac-
odate the Queen Eliza-

beth II. But there were also 350 DEC computers on the floor, networked together and linked into DEC's worldwide private network, which DEC president Ken Olsen claimed is the world's largest.

And DEC transferred all management and control for that network from its nearby network center offices to the show floor, just so attendees could get a look at some real

live network management, Olsen said.

In another serious flexing of its networking muscles and logistical prowess, DEC arranged for all registered attendees to have their own mailbox and secure password in

a giant electronic mail network. Many of the attendees actually used the hundred or so terminals that were scattered throughout the show site and tied into the overall private network.

hanges In Its
s MAP Program

amp its
to help

any has
nation-
ed after
said.
issions

and a stiff quota system, a development which could cause some MAPs to leave the program. Currently, MAPS are under no firm quota system and work closely with IBM sales representatives.

IBM has not told MAPs participating in the test when, or if, the changes will be incorporated into the overall program. However, one MAP official involved in the pilot program said IBM will turn out a new MAP program next

CSN Photo by Ron Tuso

MR. KO: DEC president Ken Olsen looks to score a knockout at last week's DECWorld in Boston. For complete show coverage, see DECWorld EXTRA!! beginning on Page 9.

M Deal May Hit
C's Bell Ties

d Erode DEC's Computer Sales

BY NEIL WATSON

ON—IBM's foray into intelligent networks with United
nmunications Inc. won't immediately dislodge Digi-
uipment Corp.'s hold on computer sales to Bell com-
but even some DEC insiders view the pact as an omi-
nous threat.

Since 1984, Bell Communications Research Inc. has used DEC equipment to develop database software for the regional Bell holding companies' forthcoming Signaling System 7 networks. The Livingston, N.J.,

NEWS •
NALYSIS

unit owned by the regional Bells also has used DEC
design and run service control point (SCP) software.
BM's agreement to bundle a database package with its

Ultimate Signs Up To Remarket Tandem Systems

BY ANN LOWE

CUPERTINO, CALIF. — Tandem Computers Inc. has handed out its largest VAR contract ever, and the winner is The Ultimate Corp.

Specific terms were not disclosed, but the contract could be worth "many, many millions of dollars" over the next several years, said Michael Sorkin, senior sales and marketing vice president at Ultimate.

Tandem hopes to capitalize on Ultimate's huge dealer network and make the Pick operating system arena a strategic market for itself, said Michael Bateman, Tandem's vice president of third-party marketing.

The companies sealed the

Computer Systems News pg 1
Sept 14, 1987

CORPORATE
INFORMATION CENTER

Tandem Hands Out Its Ultimate VAR Pact

Continued from Page 1

agreement Sept. 3, shortly after Ultimate acquired operating environment software from Ever-On Corp. that runs Pick programs under Tandem's Guardian operating system (*Software Business*, Sept. 7).

Ever-On, which had been a Tandem VAR since late 1985, sold the Epic operating system to Ultimate after paying a $100,000 out-of-court settlement to Pick Systems Inc., creator of the Pick operating system. Pick sued Ever-On last October, alleging theft of trade secrets.

During its term as a reseller, Ever-On did very little business for Tandem, according to Bateman. He guessed that Ever-On performed poorly because Epic is a young product that hasn't had much of a chance to take off. Other sources said sales were hindered by the lawsuit and by Ever-On's relative lack of market clout.

Bateman said that after Tandem entered its initial agreement with Ever-On, "We learned that the Pick market was a lot bigger than we thought it was." Of particular interest to Tandem is a wealth of Pick applications in retail, transportation, hospitality and other vertical markets, he said.

According to Ultimate, the Pick market was worth nearly $600 million to hardware vendors in 1986. That figure is expected to reach $690 million this year.

Through the Tandem contract, Ultimate gains a line of fault-tolerant, on-line transaction processing systems to offer through its dealer channel. Ul-

timate currently resells systems made by Digital Equipment Corp., Honeywell Inc. and IBM.

Sorkin said Tandem systems will be especially attractive to Ultimate dealers and end users in government, health care, manufacturing and other markets that require either high-volume processing or high machine reliability.

He said Ultimate probably will seek additional dealers that offer applications in such markets.

Despite his enthusiasm for the Tandem platform, however, Sorkin said it probably will account for a "relatively small share"—perhaps 10 to 20 percent—of Ultimate's revenue in the first two years.

"That product line, for us, is

one we'll have to market with great focus and precision," unlike the more general-purpose platforms Ultimate traditionally markets, Sorkin said.

Ultimate probably will not be ready to ship the Tandem systems for two to three months, Sorkin said. The company currently is "Ultimatizing" the Ever-On software—which it has renamed Ulti-

mate Operating System/FT—to make it look like other Ultimate Pick implementations, he said.
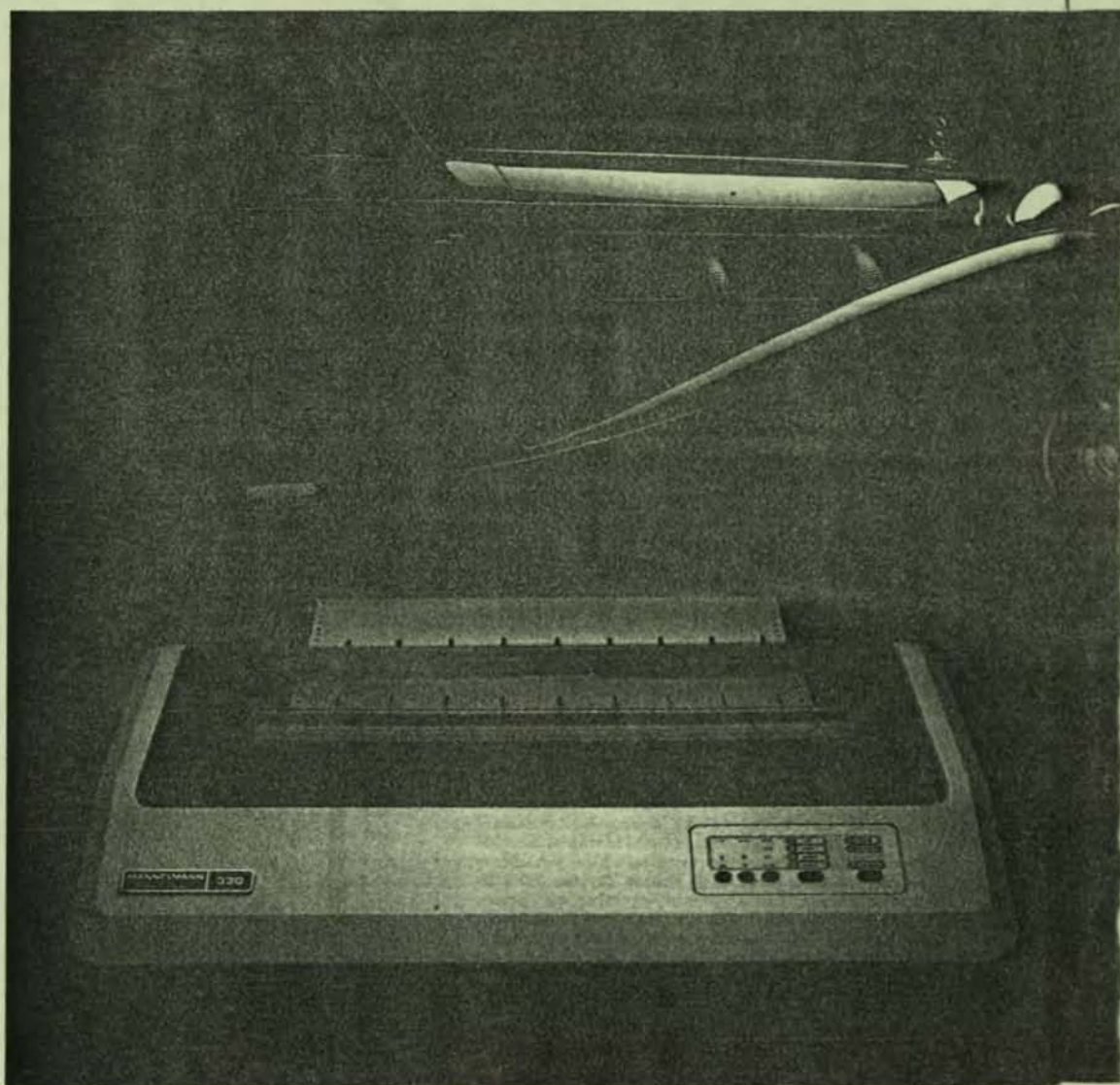
Under its product acquisition agreement with Ever-On, Ultimate will service any existing Tandem installations running Epic. Ultimate also must pay royalties to Pick Systems on sales of Ultimate Operating System/FT, Sorkin said.

Pact Between IBM And United Seen Threatening DEC

Continued from Page 1

hardware for United Telecom may yet rock DEC's solid relationship with the Bell companies. The database IBM produces for United Telecom and other telcos, and the IBM computers and networks on which it will run, is sure to provide stiff competition in the developing SS7 application market.

SCP is the generic name for databases that hold information such as subscriber address and phone numbers, and instructions on how the network should route a call. Bell-South Corp. is testing Bellcore SCP software on clusters of VAX 8600s working with MicroVAX IIs, linked to the phone networks of Southern Bell Telephone Co. and South Central Bell Telephone Co., said Gloria Everett, Bellcore division manager.

IBM will develop its own

engineering applications, such as finite-element analysis, molecular modeling, medical illustration and animation. The hardware/software combination from Prime will cost $72,500. Neither company gave a value for the deal.

• • • •

The Second First Choice

Software Publishing Corp. is upgrading its year-old PFS:First Choice multipurpose software package to include business graphics, data-exchange utilities, a 20,000-word thesaurus and other enhancements. PFS:First Choice—a combined word processor, file manager, spreadsheet and electronic mail system—also is up to 10 times faster now, according to Software Publishing. The new release is to be available in mid-October for $149. Upgrades from Version 1.0 will sell to registered users for $49.95.

• • • •

IBM To Get The Works

Microsoft Corp. later this month will bring out an **IBM** PC version of Works, an entry-level integrated word processor, database, spreadsheet and communications package. Previously available only for **Apple Computer Inc.**'s Macintosh, the new Works will run on IBM's PC line, PC-compatible computers and the PS/2 series. Microsoft plans to launch the $195 IBM version with a major retail promotion in October.

• • • •

SUBROUTINES: **Echelon Inc.**, Los Altos, Calif., is now shipping its Hyperspace Z-System, a CP/M 2.2 compatible operating system for HD64180- and Z280-compatible microprocessors, for $195 . . . **Online/Database Software Inc.**, Pearl River, N.Y., has added CICS COBOL support to its TAB (The Application Builder) software for **Cullinet Inc.**'s IDMS/R database, priced as a $2000 add-on to the $3000 TAB product . . . The Department of Defense has approved **Siemens AG**'s new Ada compiler, which Siemens will bundle with its own systems and offer to OEMs . . . **SourceMate Information Systems Inc.** has added a job-cost module to its AccountMate accounting system, available in source code and a compiled version, each available now for $795 . . . **MCBA Inc.** reseller **Omtool Corp.** has unveiled the $1000 Turbo-Utility package, said to speed the execution of MCBA software by up to five times. It's available now for **NCR Corp.**, **Altos Computer Systems Inc.** and **Unisys Corp.** multiuser systems, and IBM's PC AT and PS/2 series . . . **MCBA Inc.** has started shipping a COBOL job-cost module for **Hewlett-Packard Co.**'s HP 3000 series systems, the first of 18 COBOL-based MRP II packages planned for the HP 3000 series. The modules will cost $5000 to $7500, depending on system configuration . . . **Knowledge Data Systems Inc.** and **a.l.p. Systems** launched a joint project to develop medical expert systems for **Tandem Computers Inc.** NonStop computers . . . **Gimple Software** is shipping a C interpreter bundled into a development and debugging environment for several leading DOS C compilers, priced at $298 for the first copy and $200 for additional copies.

(left column fragments)

and budgets. The elopment Solution ani associations, institutions and pic organizations

ystems consisting S software and A1 are range in price 08 to $269,642. two hospital man- ackages. Hospital t Systems is an in- stem for small and d hospitals. It has nd modules for res- d admissions, pa- nting, order pro- medical records. re Financial Man- for health care financial report- helps users man- ls and human re- ypical A6 config- peripherals for a 225 beds and an 0,000 outpatient ar is $901,437. agement System tner is a manage- ation system for iminal courts. A m, including soft- cessor and periph- 112,235.

ority

lors and resellers. runs on PCs under ital Equipment systems under ix, and the IBM ling to the spokes- dgeSet helped de- he first CD-ROM the Grolier Elec- opedia, in 1985. estment is part of t strategy that fa- s developing new formation tech- eider said. "We at they have one CD-ROM retriev- he said. invests in the in- o market.

CORPORATE
INFORMATION CENTER

September 14, 1987, Monday

DISTRIBUTION: Business Editors

LENGTH: 724 words

HEADLINE: ULTIMATE/TANDEM; (ULT)(TDM) The Ultimate Corp. and Tandem Computers
announce VAR deal

DATELINE: EAST HANOVER, N.J.

BODY:
   The Ultimate Corp. (NYSE:ULT) Monday announced that it has signed a Value
Added Reseller (VAR) agreement with Tandem Computers Inc. (NYSE:TDM) to allow
Ultimate to resell Tandem systems with a version of the Ultimate Operating
System enabling those systems to run application software packages based on the
Pick operating system.

   Theodore M. Sabarese, president of Ultimate, commented ''Ultimate's VAR deal
with Tandem is important for a number of reasons. First, it allows us to offer
our customers the leading machine in the fault tolerant, on-line transaction
processing world, adding an important element to our broad product line.

   ''Second, it lets current and future Tandem customers use any of the
thousands of Pick-based applications. And third, we feel the deal symbolizes
Ultimate's preeminent role in the growing market for systems based on the Pick
operating system.''

   Michael K. Bateman, Tandem vice president of third-party marketing remarked,
''This agreement supports our strategy to develop channels of distribution
through resellers with significant market presence. We are pleased to be
associated with this leading distributor of Pick-based systems. This partnership
will help us to achieve our business goals by expanding our markets to include
Pick-based applications.''

   Currently, Ultimate sells an enhanced implementation of the Pick operating
system on computer systems from IBM, Digital Equipment Corp. and Honeywell
Bull. Ultimate sells the Pick operating system on those machines, using a
worldwide network of dealers to supply specific application software.

   For the Tandem deal, Ultimate acquired a software product from a
Houston-based company called Ever-On Corp.; the product acts functionally as the
Pick operating system, allowing application software written for Pick to run on
Tandem machines and using Tandem's operating system for certain operating system
functions. The product will now be called the ''Ultimate Operating System/FT''
(for '' fault tolerant' '), and Ultimate expects to ship its first Tandem
machines in its third quarter (which begins Nov. 1).

   Continued Sabarese, ''Applications written for the Pick operating system
excel at on-line transaction processing, so being able to sell a fault
 tolerant product is especially important to our long-term strategy. This is a
totally new market for Ultimate, but the demand has been there for a long

time. Now we can, through our dealer network, begin to meet that demand.''

The Ultimate Corp. provides information management solutions to businesses of all sizes by integrating the Ultimate Operating System, an enhanced version of the Pick operating system, with computer hardware from Honeywell Information Systems, Digital Equipment Corp., and IBM.

The Ultimate Operating System is characterized by a unique systems architecture that integrates fourth generation language capabilities with a relational data base. Ultimate's products are distributed through a worldwide network of dealers who add applications software.

In addition to its domestic operations headquartered in East Hanover, Ultimate has subsidiary operations in the United Kingdom, France, Australia, New Zealand and Hong Kong. The Ultimate Corp. was founded in 1978 and the company went public in 1981. Its stock is traded on the New York Stock Exchange under the ticker symbol ULT.

Tandem Computers Inc. is a leading supplier of computer systems and networks for on-line transaction processing. Tandem systems are used widely to run automatic teller machines and point-of-sale networks, stock exchanges, factories, and other enterprises where hundreds of business transactions must be processed and recorded instantly.

Tandem provides a fully compatible family of systems that spans the range of performance requirements for on-line transaction processing applications. The systems can run the same applications and can be networked with each other and with equipment from many other vendors to provide a single computing resource for an organization.

CONTACT: The Ultimate Corp., East Hanover
         Timothy B. Peters, 201/887-9222 Ext. 380
         or Tandem Computers Inc., San Jose, Calif.
         Leslie Stull, 408/725-6237

**CORPORATE
INFORMATION CENTER**

September 14, 1987, Monday

DISTRIBUTION: Business Editors

LENGTH: 541 words

HEADLINE: TANDEM-COMP/ULTIMATE; (TDM)(ULT) Tandem announces VAR agreement with
Ultimate Corp. -- Ultimate is exclusive reseller of Tandem Pick based systems

DATELINE: CUPERTINO, Calif.

 BODY:
    Tandem Computers Inc. (NYSE:TDM) and The Ultimate Corp., East Hanover, N.J.
(NYSE:ULT), Monday announced that the companies have signed a value added
reseller agreement under which Ultimate will be the exclusive reseller of Tandem
NonStop systems with Ultimate's Pick relational database operating system.

    Ultimate will package a Tandem NonStop computer system with software,
originally developed by Ever-On Corp., Houston, Texas, that will enable those
systems to run application software packages based on the Pick operating system.

    The Pick system is an industry standard operating system that currently
supports more than 2,000 business software applications across market segments
with an estimated 75,000 systems.

    Ultimate's products are distributed through a worldwide network of dealers
who add application software. Ultimate's network of more than 130 dealers can
now offer its customers a turnkey solution for their on-line transaction
processing business needs.

    Michael K. Bateman, Tandem vice president of third party marketing commented,
''This agreement supports our strategy to develop alternate channels of
distribution through resellers with significant market presence.

    ''We are pleased to be associated with this leading distributor of Pick based
systems. This partnership will help us to achieve our business goals by
expanding our markets to include Pick based applications.''

    Theodore M. Sabarese, president of The Ultimate Corp., commenting on the
announcement said, ''Ultimate's VAR agreement with Tandem is important for a
number of reasons. First, we can offer our customers the leading machine in the
important fault-tolerant on-line transaction processing world.

    ''Second, it lets current and future Tandem customers use any of the
thousands of Pick based application. And third, we feel the agreement symbolizes
both the growing importance of the market for systems based on the Pick
operating system and Ultimate's pre-eminent role in the market,'' continued
Sabarese.

    The Ultimate contract was signed as a VAR agreement under the sponsorship of
the Tandem Alliance, Tandem's third party marketing program. The primary goal of
the Alliance program is to provide vertical application solutions that run on

LEXIS NEXIS LEXIS NEXIS

Tandem NonStop systems.

   The Ultimate Corp. provides information management solutions to businesses by integrating the Ultimate operating system, an enhanced version of the Pick operating system, and proprietary co-processor technology with computer hardware. The Company is headquartered at 717 Ridgedale Ave., East Hanover, N.J. 07936. Phone is 201/887-9222.

   Tandem Computers Inc. manufactures and markets computer systems and networks for the on-line transaction processing market. It is headquartered at 19333 Vallco Parkway, Cupertino, Calif. 95014. Phone is 408/725-6000.

   Note to Editors: Tandem and NonStop are trademarks of Tandem Computers Inc. Pick is a trademark of PICK Systems.

   CONTACT: Tandem Computers Inc., Cupertino
             Leslie Stull, 408/725-6237 The Ultimate Corp., East Hanover
             Timothy B. Peters, 201/887-9222 Ext. 380

Competitor to SII?
Press Computer launches Tandem system

In a major development announced on September 8, Press
Computer Systems (PCS) fundamentally changed its system
structure, and with that signaled that it was now in a
position to compete for the very largest system orders. It did
this by developing a totally new system operating on Tandem's
NonStop computer hardware, rather that the PDP-11s it has
used up to now. In thus has become the third system vendor to
adopt this hardware -- besides System Integrators and
Raytheon. (Raytheon, of course, no longer supplies
newspaper systems.)

The new system is not only a move to Tandem hardware, but also a
completely new system structure using powerful database
management techniques. It also has a completely new
composition system that permits composition tasks to be run
in either the Tandem computers or in the terminals.

The new software also runs on the PDP-11 computers, so the
company's existing customers will benefit from the ability
to upgrade to the long-awaited new composition system.

*** Company in perspective.

In terms of number of installations, PCS is the UK market
leader in the medium- and large-scale newspaper system
market with 50 customers. PCS's market is totally in the
regional press, unlike Atex, which is probably the leader in
number of terminals in use, and which has a large part of its
market in the national press.

Unlike other suppliers, PCS has built its market on supplying
fully integrated solutions where the total operation of the
newspaper is controlled. This covers not only the input and
management of both the editorial and advertising copy, but
also the management of the accounting, circulation and
distribution of the newspaper. PCS has, in fact, supplied its
systems for these latter management tasks to many customers
who use Atex and other systems for editorial and classified
operations.

An example of this is News International at Wapping, where a
PCS system is connected via a high-speed communications link
to the Atex system.

All of PCS's systems in its fourteen years of operations have
been built using DEC PDP-11 hardware. Currently the Press-11
systems are supplied using PDP-11/73, 83 or 84 processors.

The system is similar to many other suppliers using PDP-11s in that processors are linked via Ethernet to enable communications and data transfer between processors.

Again like Atex, PCS uses its own operating system, but in doing so it is unable to benefit from the wide variety of excellent software tools that come from using the manufacturer's operating systems. This means that all functions, such as data management over a network, have to be written by PCS, as have all database functions.

At present the largest system in use at one site is about 250 terminals, and over two sites more than 300 terminals. These systems use up to ten processors per site, interlinked via Ethernet. (The normal balance is 30 terminals per processor.)

The average PCS system sale over the past year has been around 80 terminals per system.

We have commented in the past on the PCS classified system. In the UK, it is still the standard against which other systems are assessed.

In the ad system one facility that is impressive is brought about by the multi-tasking operation of its terminal -- the Tandberg Topaz, which uses a Motorola 68000 processor.

The multi-tasking aspect of the terminal enables certain background functions to take place while an operator handles other tasks. To implement this, PCS run a number of separate windows on each terminal, which means that one window can be updated while another is in operation. This is used, for example, in sales prompting, where sales prompts will automatically be accessed by the background task in the terminal from the host processor.

Press Computer Systems also sells CText in the UK, and, jointly with CText, in Europe. From this it has obtained a detailed understanding of PC network systems and their limitations. One of Press's CText installations is believed to be the largest installed CText classified site.

From this experience Press Computer has installed a number of PC networks connected to Press-11 systems. These mainly use XyWrite for editing operations linked via Novell software, and communicate with the central PDP-11 site.

*** The new Tribune system.

PCS's new system, called Tribune, operates on standard Tandem hardware and software. The company's rationale for choosing Tandem was not necessarily because of its NonStop architecture, but mainly because of its data management and

transaction processing. It was designed to be a full,
data-driven system with transaction processing, plus
fourth-generation language reporting structures. The
benefits of this are that it gives a great degree of
flexibility in customizing the way in which a system
operates. Such flexibility can be seen in both SII and ND
Comtec systems, both of which use database setups and
flexible tools for generating custom reports.

Initially, when PCS was evaluating its various options,
Tandem was not considered because it was thought to be too
expensive -- a belief based on the prices SII charges for its
systems. But on investigation, PCS found it could put
together Tandem-based configurations that were fully
competitive with other systems they were evaluating.

Factors in Tandem's favor were its data management system,
the fact it could easily be distributed over a network, its
reliability, and the economics. This, together with DEC's
changed strategy to its OEMs (which would cause PCS to lose a
significant proportion of its margin on hardware) swung the
balance to Tandem.

The Tribune systems was jointly developed by PCS's own
software team (21 programmers) and by JRM Software. JRM is a
UK software company with a strong understanding of the
newspaper and printing industry. It is headed by John Mason,
who worked as one of the senior development managers in
Linotype-Paul.

Mason left LP before its structure was changed and
manufacturing and most R&D was moved to Germany. Fourteen
people on JRM's staff are working on the Tribune system. The
first aspect of the system developed by JRM was a totally new
composition system. We have commented in the past that one of
the weaknesses of a PCS system was in the area of composition,
and that a new system was being developed.

From what we have seen of the specification of the new
software, it appears to answer all of our criticisms of the
earlier Press composition facility. This appears to be a very
powerful new facility. We have not had a chance to assess its
performance, but are told that on the PDP-11 systems it is
slightly slower than the earlier system.

This new composition system was written to be portable over a
range of different hardware. To do this PCS prepared its own
standards manual for C programming, which ensures that all
the instructions and methods of programming are consistent
with a range of C implementations.

As we said earlier, the new composition software runs on the
current PDP-11 systems and is being offered as an upgrade to
existing customers. It also runs under standard MS-DOS on the

Olivetti M24 and M240 PCs, and also under Unix.

Unix is the development operating system for the Tandberg Topaz terminals. The software is cross compiled from Unix to run under the Tandberg run-time operating system. The benefit of this is that the same composition system can be run either in the central CPU or within the terminal, so a system can be set up to operate in the most beneficial fashion for a particular site. One limitation, however, is that while the Olivetti (or any other MS-DOS PC) can be used instead of the Tandberg Topaz terminal, it can do so only in a single-tasking, rather that multi-tasking, mode.

The full Topaz system, in addition to composition, will be available in a Topaz emulation in a PC early in 1988. But it will have to wait for OS/2 before it can run in a multi-tasking mode.

The Tribune system will run on any Tandem hardware, but in most cases this will be on the relatively new, lower-cost CLX system, which permits configurations of between two and six processors, and should allow up to around 200-plus terminals to be configured.

Editorial systems can be larger than advertising or commercial systems since much of the editorial processing will be handled within the terminals.

Where there is a need to expand to larger configurations, the EXT hardware enables up to sixteen processors to be interconnected. If there is a requirement to go beyond that, multi-processor configurations can be networked together. The hardware structure theoretically will support up to 255 multi-processor configurations of between two and sixteen processors, which can be in totally separate sites, interlinked via communications into what appears to be one system.

In this setup, the database can be distributed over the total structure, using the Expand network software. PCS found this structure, which is fully supported by standard software, to be ideal for its requirements, particularly where it is finding an increasing demand for distributing system resources.

More on Competitor to SII
Status.

At the time of the launch of the Tribune system, PCS had fully
implemented the classified advertising input and
management system, together with the interlinked sales
accounting. The editorial system is in its final stages of
specification and should be implemented in
January/February 1988. The remainder of the accounting
suite is scheduled for March 1988. There is currently no
scheduled date for the system to be released in the U.S., but
it is likely to be early in 1988.

The pricing is likely to be attractive. A system with 30
Tandberg Topaz terminals, for example, running on a
dual-processor Tandem CLX fault-tolerant configuration
with software, will cost less than L250,00. (On a straight
conversion to dollars, this amounts to about $400,000. But
this is not an accurate judge of what the system will cost in
the U.S., since Tandem hardware prices in Europe are higher
than in the U.S. The U.S. system price is therefore likely to
be lower than this.)

This is less than 10% more expensive that an equivalent
Press-11 configuration.

The first public showing of the Tribune system will be at IFRA
in Amsterdam in October, and then at Newstec in the UK in
November. We will be reporting on both these exhibitions and
will look closely at the system at that time.

*** Significance.

What is the significance of the move to Tandem hardware?

First, it indicates that, at least in PCS's view, there is a
strong customer demand for systems built around standard
hardware and software.

Second, PCS stated that customers have been expressing
doubts about systems using DEC PDP-11s. They see no logical
growth of that hardware, which appears to have reached the end
of its development.

Third, PCS has found that, without a flexible system-wide
database structure using data dictionaries, it is becoming
increasingly difficult to provide the level of flexibility
customers are demanding.

Fourth, in the overall market perspective, it will give a new image to PCS. Up to now, it hasn't been considered as a "big system" supplier in the same way that Atex, SII and Crosfield are viewed, despite the fact that the largest systems in the UK regional press are from PCS. By switching to what is basically the same host computer hardware as SII, it is very likely that PCS will automatically pick up some of SII's reputation for being a "big system" supplier.

Fifth, the new architecture -- PCs for local, interactive functions tied to networked minicomputer database managers -- is a logical use of current technology that should have broad appeal and make Press a considerably more potent contender in the newspaper systems market in the U.S. as well as in the UK.

Sixth, in the UK, Press Computer Systems already has what is probably the largest team of people dedicated to this market -- 64 staff, with an increase planned. (Atex Ltd. is nearly comparable in size currently.) This position is , likely to be strengthened by the Tribune system.

Outside the UK PCS has already planned to expand. It has a small organization in the U.S. and has set up a dealership agreement in France. The Tribune system, with all the inherent advantages of Tandem hardware and relatively portable software, should obviously help in overseas territories.

Press Computer Systems, Ltd., is located at James House, Rookery St., Wolverhampton, West Midlands, WV11 1UP, Great Britain, phone (09) 02 727272, telex 338348 PCSWTN G. In the U.S., Press Computer Systems, Inc., is at 244 West Patrick St., Frederick, MD 21701, phone (301) 662-7331, fax (301) 694-0418.

...at he is now the peer leader.

I think this superior attitude is preimptuous, since we all share equally in ie workload and in being responsible)r the work of the department. This individual, furthermore, is not only a fel->w employee, but also my next door ieighbor and a friend.

What should I do? Should I approach

...low supervisor — a peer of mine.

For one thing, we can't agree on what jobs in our department should have the highest priority. For another, we use different approaches toward managing our employees. My colleague is usually very firm, while I tend to be easygoing. (I have to say, we both get good results most of the time.)

CORPORATE
INFORMATION CENTER

...to spend time to become familiar with the issues, giving both parties a hearing. This wastes my time.

Then, when I finally end up making a choice between the two polarized alternatives with which I was presented, my decision will inevitably cause one of my subordinates to "win" and the other to "lose."

Both my subordinates will lose re-

...both of us that we can't sort out such things without him."

Andrew Grove is chief executive officer of Intel Corp. of Santa Clara. His latest book is "One-on-One With Andy Grove: How to Manage Your Boss, Yourself and Your Co-workers." Send questions to him c/o the Mercury News, Business News Department, 750 Ridder Park Drive, San Jose 95190.

Memoranda

Sybase hires Tandem exec for European market

John Louth cut his business teeth on the international market, so it's no surprise that Sybase Inc. has tapped him to set up its worldwide distribution, support and service network.

In his new job Louth, 49, will report to Mark Hoffman, president of the Berkeley-based maker of database management systems.

Louth says his first chore is to establish a Sybase subsidiary in the United Kingdom. Besides handling direct sales, service and support for the U.K., the subsidiary will work with international dis-

John Louth

tributors to provide service and support in other key European markets.

"The market for (database management systems) is huge," Louth said. But for Sybase to establish a distribution network that's capable of cashing in on the international portion of that market, "service, support and vendor responsiveness are crucial."

Hoffman wants an international organization up and running by the end of 1987. In the future, Hoffman projects, international sales should make up "at least 35 percent" of Sybase revenues.

Louth is no stranger to the international marketplace.

Educated in England, he joined Sybase from Tandem Computers Inc. in Cupertino, where he worked nine years in various jobs, including region-

al director of northern Europe and marketing director for Europe.

Before Tandem, Louth worked for Detroit-based Burroughs Corp. (now Unisys Corp.), where his managerial territory included Europe, Australia, the Pacific Basin, Africa the Middle East and Latin America.

Sybase makes database management systems, which help pieces of equipment within a computer system communicate with each other. The company employs 100 people.

— *Ray Alvareztorres*

Management changes

Pyramid Technology Corp. of Mountain View appointed Stephen G. Tolchin vice president of software development. Tolchin will be responsible for operating systems, languages,

communications products, databases and applications software. He joins Pyramid after eight years at the Johns Hopkins University, Applied Physics Laboratory and Medication Institutions.

Chips and Technologies Inc. of San Jose has formed a new systems engineering group to provide a complete range of systems design and consulting services. Stephen S. Kahng, designer of Leading Edge's Model D IBM-compatible personal computer, joined the company as vice president and general manager of the new Design Services Operation.

San Jose Athletic Club appointed James K. Adcock executive vice president. Adcock, a retired Air Force colonel, was most recently a sales executive with Joseph George Corp. of Santa Clara.

September 17, 1987, Thursday

**CORPORATE
INFORMATION CENTER**

DISTRIBUTION: Business Editors

LENGTH: 250 words

HEADLINE: TANDEM/3COM; (TDM)(COMS) Tandem validates 3Com network for use with MULTILAN products

DATELINE: CUPERTINO, Calif.

BODY:

Tandem Computers Inc. (NYSE:TDM) Thursday announced it validated 3Com Corp.'s 3+ network operating software and its EtherLink network adapters for use with Tandem's MULTILAN products, which link local area networks to Tandem systems.

Introduced in 1986, MULTILAN products support LANs that use the industry-standard NETBIOS application interface. Tandem has already validated the IBM Token-Ring (models 1 and 2); IBM PC Network; Sytek 6110 and 6120; and the Ungermann-Bass PC-NIU and NIU-PC adapters.

3Com Corp., designs, manufactures, markets and supports workgroup computing systems for network-based, graphics-intensive applications. The company sells its products worldwide through full-service dealers, value-added resellers, and computer manufacturers.

Tandem Computers Inc. manufactures and markets computer systems and networks for the on-line transaction processing marketplace. The company is headquartered at 19333 Vallco Parkway, Cupertino, Calif. 95014.

Tandem and MULTILAN are trademarks of Tandem Computers Inc. IBM, PC Network, and Token-Ring are trademarks of International Business Machines Corp. System 6000 is a trademark of Sytek Inc. Ungermann-Bass is a trademark of Ungermann-Bass Inc.

CONTACT: Tandem Computers, Cupertino
          Tom Waldrop, 415/725-7191 3Com Corp., Santa Clara
          Margaret Epperheimer, 408/562-6502

EXECUTIVE SUMMARY

Communications

SynOptics Communications, the Ethernet-compatible local-area network manufacturer, reported the **results of its LattisNet system beta test** that was run at the headquarters of Novell. The beta test showed that the SynOptics Ethernet over unshielded twisted pair had a maximum throughput of 173.46K bits per second as compared to 168.21K bps throughput over thin Ethernet wiring. While the difference was small, it's important to note that despite the cheaper quality of unshielded twisted pair there was no performance degradation.

AT&T will offer an **international electronic-mail link** in conjunction with **Telecom Canada.** The link, which connects AT&T's Mail Gateway 400 with Telecom Canada's Envoy 100, is reported to be the first international application of its kind. AT&T Mail also will connect to Digital Equipment's MAILbus, which interconnects multiple electronic-mail systems.

Comsat General and **Timeplex** have said that they will provide low-cost T1 satellite transmission as backup, overflow, or alternate routing services for large businesses that rely primarily on land T1 links. The service, called Safecom, will transmit between nine American cities, including New York, Atlanta, Chicago, Houston, and Los Angeles.

Amdahl last week dropped a new offering into the **IBM 270X communications processors market:** the 4725. The front-end processor, which comes in two models ranging in price from $71,500 to $545,160, run up to 80% faster than Amdahl's existing 4705E.

US Sprint has begun selling its microwave/satellite network as its **all-fiber network** nears completion. Seventy percent of US Sprint's traffic now runs over fiber.

The Washington International Teleport and Bell Atlantic's Chesapeake and Potomac telco will offer **the first public video switch system** in the country. Called Capitol Coverage, the system will provide broadcasters with live transmission from the White House, Capitol, Pentagon, and the Department of State over fiber-optic video links.

Managers of Tandem Computers NonStop installations can look forward to consolidated network management with **Tandem's Distributed Systems Management.** DSM unites and expands several previous Tandem products to provide companywide monitoring of both hardware and software, featuring status displays, load balancing, resource-name management, a common interface for applications systems, and an advanced control language. It's slated to start shipping in the fourth quarter.

A **high-speed fiber-optic link between Tandem and IBM** mainframes, called Snaxlink, will be available before the end of the year. Snaxlink can be up to 1,040 feet long and transmits a million bits per second in each direction simultaneously. It uses standard SNA interfaces, eliminating the need to modify application programs.

Codex unveiled its **9800 Series Integrated Management Systems.** Based on the Apollo workstation, the systems integrate applications that control and manage several Codex modems and multiplexers. Codex plans to support T1 devices by early 1988.

End User Computing

Lotus Development was on the move last week, releasing an upgrade to its Graphwriter software. **Graphwriter II,** with enhanced file handling and compatibility, is an automated charting system that can link files from 1-2-3 or Ashton-Tate's dBase and chart the data. Graphwriter II has a suggested retail price of $495.

Microsoft, expected to release a new windows program next week, has unveiled an integrated software package called **Microsoft Works** with a list price of $195. The package contains four modules—spreadsheet, word processing, database, and communications—and requires an MS-DOS PC with at least 348K RAM and either two 360K or one 720K floppy drive or a hard disk.

CORPORATE
INFORMATION CENTER

September 22, 1987, Tuesday, BC cycle   **CORPORATE**
INFORMATION CENTER

SECTION: Financial

DISTRIBUTION: California

LENGTH: 173 words

DATELINE: CUPERTINO, Calif.

KEYWORD: Bizbriefs-Calif

BODY:
   Tandem Computers Inc. has invested in a venture aimed at producing an electronic train control system, Tandem said Tuesday.

   The Cupertino-based computer systems manufacturer said that it has become the newest shareholder in an Omaha, Neb.-based venture called Automated Monitoring and Control International, Inc.

   Details of Tandem's stake in the venture were not disclosed.

   Other shareholders include Union Pacific Railroad, the third largest freight carrier in the United States, and SEL Canada of Don Mills, Ontario, which makes automated train control systems.

   The venture is aimed at producing an advanced train control system that would improve safety and efficiency on the nation's railroads. A pilot project using the system is already underway on 200 miles of railroad track in western Nebraska, Tandem said.

   Gerald D. Held, Tandem's vice president of new ventures, said the investment was part of the company's ''ongoing strategy to develop strong partnerships which allow us to meet the needs of our key industries.''

Copyright
INVESTEXT/COMPUTERS AND OFFICE EQUIPMENT
September 21, 1987

Tandem Computers - Company Report
  OPPENHEIMER & CO., INC. - Elling, C.D., et al
  08-06-87   (RN=714195)

TANDEM COMPUTERS (TDM $27 - 8/4/87)

SUMMARY
     * Tandem reported third-fiscal-quarter results in line with our
expectations. Revenues rose 31.4% to $264 million from $200.9 million
last year. Earnings were $0.26 per share versus $0.20 last year and
our $0.25 estimate.

     * Order rates in the quarter approximated shipment levels, with
particular strength in the retail market. The performance of the
individual product families was somewhat mixed, with the high-end VLX
series and the mid-range TXP products selling very well but with the
new low-end LXN getting off to a slow start. Management is positioning
the LXN as a network extender, which most likely will lengthen the
sales cycle.

     * Tandem maintains its leadership position in the on-line
transaction processing market and should continue to generate strong
revenues and earnings longer term. We are estimating fiscal 1987
fourth-quarter and full-year earnings at $0.30-$0.35 and $1.10 per
share, respectively, and fiscal 1988 earnings at $1.40-$1.50 per share.
We believe the shares are fairly valued at current levels.
Nevertheless, Tandem's momentum in its niche markets should represent
good longer term potential for capital appreciation, and we recommend
holding the shares.

TANDEM COMPUTERS (TDM $27 - 8/4/87)

12-Month Range	$37-$17
1985 EPS	$0.42
1986 EPS	$0.72
1987 Est. EPS	$1.10
1988 Est. EPS	$1.40-$1.50

Dividend	Nil
Yield	Nil
Price/EPS 1986	37.5X
Price/Est. EPS 1987	24.5X
Price/Est. EPS 1988	19.3X-18.0X

Capitalization (9/30/87)

	Million	Percent		Million
Long-term Debt	$7.3	1.0%	Current Assets	$632.2
Deferred Taxes	27.4	3.9	Current Liabilities	174.2
Equity	674.2	95.1	Working Capital	$458.0
Total	$708.9	100.0%	Current Ratio	3.6:1

Shares Outstanding	98.6 Million
Float	98.6 Million Shares
Market Capitalization	$2,662.2 Million
Recent Average Daily Trading Volume	609,700 Shares
Fiscal Year Ends	September 30
Book Value/Share (12/31/87E)	$7.15
ROE (1987E)	17.4%

Historical 5-Year EPS Growth Rate	12.2X
Projected 5-Year EPS Normalized Growth Rate	15%-18%
Estimated 1988 P/E Relative to S&P 400 P/E	1.05X
5-Year Historic Relative P/E Range	3.7X-0.9X

S&P 400: 370.65

THIRD-FISCAL-QUARTER RESULTS

Third-quarter results were closely in line with our expectations. Total revenues increased 31.4% to $264 million from $200.9 million in fiscal 1986. Earnings were $0.26 per share compared with $0.20 a year ago and our $0.25 estimate. Line items were essentially as expected, although R&D expenditures were slightly below historical levels. Pretax margins were a healthy 17.0% in the quarter versus 16.3% a year earlier.

Order rates in the quarter closely approximated shipments, with demand in the retail market particularly strong. Management indicated that there were six new accounts in the retail sector and that major enhancements were being ordered from existing customers. The Communications and Securities sectors also were very strong. The VLX family of high-end processors did particularly well, with total revenues now closely approximating those from the highly successful mid-range TXP. Although the new low-end LXN has gotten off to a reasonably slow start from an order standpoint, it is primarily a network extender and thus likely to extend the selling cycle longer term. Momentum in the company's Alliance program remains quite strong.

We project fourth-quarter revenues at $275-$280 million and earnings at $0.30-$0.35 per share. The mid-point of our fiscal 1987 estimate range is $1.10 per share. We expect continued momentum in fiscal 1988, with earnings estimated at $1.40-$1.50 per share. In our opinion, Tandem is well positioned to maintain its leadership position in the on-line transaction processing market, and we would maintain current positions for potential long-term capital appreciation. We believe the stock's near-term price performance will reflect the market's willingness to extend higher multiple valuations for growth situations. However, the stock's multiple of 25X estimated fiscal 1987 earnings appears somewhat rich and could be a limiting factor in its near-term price performance.

TABLE I
TANDEM COMPUTERS
THIRD FISCAL QUARTER INCOME STATEMENT ($ THOUSANDS)

| | JUNE 30, | | % |
	1987	1986	CHANGE
PRODUCT REVENUES	218,838	163,361	34.0%
SERVICE & OTHER	45,140	37,492	20.4%
TOTAL REVENUES	263,978	200,853	31.4%
COST OF PRODUCT REVENUES	57,028	43,431	31.3%
COST OF SERVICE & OTHER	36,164	26,924	34.3%
RESEARCH & DEVELOPMENT	27,417	22,337	22.7%
MARKETING, GEN'L & ADMIN.	102,346	77,560	32.0%
TOTAL COSTS/EXPENSES	222,954	170,252	31.0%
OPERATING INCOME	41,024	30,601	34.1%
INTEREST INCOME, net	3,934	2,054	91.5%
PRETAX INCOME	44,958	32,655	37.7%
TAXES	(19,341)	(14,531)	
TAX RATE	43.0%	44.5%	
NET INCOME	25,617	18,124	41.3%
EARNINGS PER SHARE	$0.26	$0.20	27.7%
AVG SHARES (MIL)	99.7	90.0	
AS % OF TOTAL REVENUE:			
PRODUCT REVENUES	82.9%	81.3%	
SERVICE & OTHER	17.1%	18.7%	
COST OF PRODUCT REVENUES (*)	26.1%	26.6%	
COST OF SERVICE & OTHER (**)	80.1%	71.8%	
RESEARCH & DEVELOPMENT	10.4%	11.1%	
MARKETING, GEN'L & ADMIN.	38.8%	38.6%	
TOTAL COSTS/EXPENSES	84.5%	84.8%	
OPERATING INCOME	15.5%	15.2%	
PRETAX INCOME	17.0%	16.3%	
NET INCOME	9.7%	9.0%	

(*) AS A PERCENT OF PRODUCT REVENUES
(**) AS A PERCENT OF SERVICE AND OTHER REVENUES
Fiscal years end September 30.
Source: Company data; Oppenheimer & Co., Inc. estimates.

TABLE II

TANDEM COMPUTERS INCORPORATED
EARNINGS MODEL ($ Mil.)

[Part 1 of 3]

	1981	1982	% CHANGE	1983	% CHANGE
PRODUCT REVENUES	186.9	272.6	45.9%	360.1	32.1%
SERVICE & OTHER	21.5	39.6	84.0%	58.1	47.0%
TOTAL REVENUES	208.4	312.1	49.8%	418.3	34.0%
COST OF PRODUCT	75.5	109.3	44.7%	168.7	54.3%
COST OF SERVICE & OTHER					
R&D	17.8	33.6	88.7%	39.2	16.4%
MG&A	74.6	128.5	72.2%	160.6	25.0%
TOTAL COSTS & EXPENSES	168.0	271.4	61.6%	368.5	35.8%
OPERATING INCOME	40.4	40.7	0.8%	49.8	22.3%
OTHER INCOME (NET)	10.7	6.0	-43.7%	0.7	-87.9%
PRETAX INCOME	51.1	46.7	-8.5%	50.5	8.0%
TAXES	24.5	16.9	-31.2%	19.7	16.6%
TAX RATE	48%	36%		39%	
NET INCOME	26.5	29.9	12.5%	30.8	3.2%
EARNINGS PER SHARE	$0.36	$0.38	6.2%	$0.38	-0.8%
AVG. SHARES OUT. (MIL.)	74.1	78.4		81.6	
AS % OF REVENUES:					
PRODUCT REVENUES	89.7%	87.3%		86.1%	
SERVICE & OTHER	10.3%	12.7%		13.9%	
COST OF PRODUCT (A)	36.3%	35.0%		40.3%	
COST OF SERVICE & OTHER (B)					
R&D	8.6%	10.8%		9.4%	
MG&A	35.8%	41.2%		38.4%	
TOTAL COSTS & EXPENSES	80.6%	87.0%		88.1%	
OPERATING INCOME	19.4%	13.0%		11.9%	
INTEREST, net	5.1%	1.9%		0.2%	
PRETAX INCOME	24.5%	15.0%		12.1%	
NET INCOME	12.7%	9.6%		7.4%	

MANAGEMENT RECLASSIFIED CERTAIN REVENUE AND EXPENSE ITEMS DATING BACK
TO 1985 RENDERING COMPARISONS WITH PRIOR YEARS INAPPROPRIATE.

(A) AS A PERCENTAGE OF PRODUCT REVENUES.   PRIOR TO 1985 IT REPRESENTS
    TOTAL COST OF REVENUES AS A PERCENTAGE OF TOTAL REVENUES.
(B) AS A PERCENTAGE OF SERVICE & OTHER REVENUES.

Fiscal years end September 30.
Source: Company data; Oppenheimer & Co., Inc. estimates.

TABLE II

TANDEM COMPUTERS INCORPORATED
EARNINGS MODEL ($ Mil.)

[Part 2 of 3]

	1984	% CHANGE	1985	% CHANGE	1986	% CHANGE
PRODUCT REVENUES	448.6	24.6%	523.4	16.7%	632.3	20.8%
SERVICE & OTHER	84.0	44.5%	100.7	19.9%	135.5	34.5%
TOTAL REVENUES	532.6	27.3%	624.1	17.2%	767.8	23.0%
COST OF PRODUCT	218.8	29.7%	185.6	-15.2%	175.2	-5.6%
COST OF SERVICE & OTHER			83.0		104.7	26.1%
R&D	52.5	34.1%	73.8	40.6%	87.0	17.9%
MG&A	210.2	30.9%	231.6	10.2%	294.9	27.3%
TOTAL COSTS & EXPENSES	481.5	30.7%	574.1	19.2%	661.8	15.3%
OPERATING INCOME	51.1	2.7%	50.1	-2.0%	106.0	111.6%
OTHER INCOME (NET)	5.2	610.0%	6.3	21.0%	8.5	35.7%
PRETAX INCOME	56.3	11.5%	56.4	0.1%	114.5	103.2%
TAXES	23.1	17.2%	22.0	-4.8%	50.7	130.8%
TAX RATE	41%		39%		44%	
NET INCOME	33.2	7.8%	34.4	3.5%	63.8	85.5%
EARNINGS PER SHARE	$0.41	8.8%	$0.41	0.1%	$0.72	75.3%
AVG. SHARES OUT. (MIL.)	82.8		83.5		88.4	
AS % OF REVENUES:						
PRODUCT REVENUES	84.2%		83.9%		82.3%	
SERVICE & OTHER	15.8%		16.1%		17.7%	
COST OF PRODUCT (A)	41.1%		35.5%		27.7%	
COST OF SERVICE & OTHER (B)			82.4%		77.2%	
R&D	9.9%		11.8%		11.3%	
MG&A	39.5%		37.1%		38.4%	
TOTAL COSTS & EXPENSES	90.4%		92.0%		86.2%	
OPERATING INCOME	9.6%		8.0%		13.8%	
INTEREST, net	1.0%		1.0%		1.1%	
PRETAX INCOME	10.6%		9.0%		14.9%	
NET INCOME	6.2%		5.5%		8.3%	

	1987E	% CHANGE	1988E	% CHANGE
PRODUCT REVENUES	855.0	35.2%	1111.5	30.0%
SERVICE & OTHER	170.0	25.4%	200.6	18.0%
TOTAL REVENUES	1025.0	33.5%	1312.1	28.0%
COST OF PRODUCT	225.0	28.4%	289.1	28.5%
COST OF SERVICE & OTHER	125.0	19.4%	150.5	20.4%
R&D	110.0	26.4%	140.0	27.3%
MG&A	390.0	32.3%	498.6	27.8%
TOTAL COSTS & EXPENSES	850.0	28.4%	1078.2	26.8%
OPERATING INCOME	175.0	65.1%	233.9	33.7%
OTHER INCOME (NET)	14.0	64.6%	20.0	42.9%
PRETAX INCOME	189.0	65.1%	253.9	34.4%
TAXES	81.3	60.2%	109.2	34.4%
TAX RATE	43%		43%	
NET INCOME	107.7	68.9%	144.8	34.4%
EARNINGS PER SHARE	$1.10	52.4%	$1.45	31.7%
AVG. SHARES OUT. (MIL.)	98.0		100.0	
AS % OF REVENUES:				
PRODUCT REVENUES	83.4%		84.7%	
SERVICE & OTHER	16.6%		15.3%	
COST OF PRODUCT (A)	26.3%		26.0%	
COST OF SERVICE & OTHER (B)	73.5%		75.0%	
R&D	10.7%		10.7%	
MG&A	38.0%		38.0%	
TOTAL COSTS & EXPENSES	82.9%		82.2%	
OPERATING INCOME	17.1%		17.8%	
INTEREST, net	1.4%		1.5%	
PRETAX INCOME	18.4%		19.4%	
NET INCOME	10.5%		11.0%	

MANAGEMENT RECLASSIFIED CERTAIN REVENUE AND EXPENSE ITEMS DATING BACK TO 1985 RENDERING COMPARISONS WITH PRIOR YEARS INAPPROPRIATE.

(A) AS A PERCENTAGE OF PRODUCT REVENUES. PRIOR TO 1985 IT REPRESENTS TOTAL COST OF REVENUES AS A PERCENTAGE OF TOTAL REVENUES.
(B) AS A PERCENTAGE OF SERVICE & OTHER REVENUES.

Fiscal years end September 30.
Source: Company data; Oppenheimer & Co., Inc. estimates.

INVESTEXT/COMPUTERS AND OFFICE EQUIPMENT
September 21, 1987

Tandem Computers, Inc. - Company Report
DREXEL BURNHAM LAMBERT INCORPORATED - Orr, J.W.
07-21-87   (RN=712713)

POINT OF VIEW
    Tandem's results for the third fiscal quarter ended June 30 were
in line with our expectations. Revenue growth was strong, at 31.4%
year-to-year, with the domestic revenue gain very good and the
international gain even better. We are maintaining our fiscal 1987 full
year estimate at $1.10 per share. For fiscal 1988, earnings now look
like they could be $1.40 to $1.50 per share depending on the tax rate.
We are holding our $1.50 single point estimate pending more information
on the tax rate. We continue to rate the stock Neutral-1, based on
current multiples.

Third Quarter Results

    Product sales in the third quarter were $218.8 million, up 34%
from $163.4 million a year ago, while service revenues increased 20%
from $37.5 million to $45.1 million. Total revenues in the quarter were
$264.0 million, up 31% from $200.9 million last year, and net income
increased 41% from $18.1 million, or $0.20 per share, in the third
fiscal quarter of 1986 to $25.6 million, or $0.26 per share, this year.
Domestic revenues were up 19.8% over the prior year while international
revenues increased 50% year to year. In plain language, another
excellent quarter of top-line growth.

    The high-end VLX processors showed very strong growth in the
quarter and the EXT-25 gained strength at the low end in the period.
Sales to the retailing industry were particularly strong, while sales
to the securities and communications industries were also very good. In
the quarter, Tandem recorded revenues and expenses related to the
services segment of the business which were essentially passed through
to a subcontractor and caused the gross margin on services to decline
significantly from the previous quarter level. The other ratios were
reasonable.

    Tandem's balance sheet continues to be very strong with $296
million of cash, almost no long-term debt and $674 million of equity
($6.77 per share) at the end of the quarter.

Outlook

    In the fourth fiscal quarter we estimate revenues will again
increase 29% to about $285 million and look for earnings per share to
be around $0.32, up about 39%. Our fiscal 1987 full year estimate
remains $1.10 per share. For fiscal 1988 we estimate revenues will
increase 25-27% and, therefore, expect earnings to be $1.40 to $1.50

per share depending on the tax rate for the year, which could be 36-38%. For the time being, we are maintaining our single point estimate at $1.50.

Demand for Tandem's products has been very strong in fiscal 1987, with revenues increasing an estimated 34%; we expect they will continue to grow above 25% in fiscal 1988.

Stock Market Considerations

At the current price, the stock is selling for 19.2x our fiscal 1988 estimate and we believe this valuation reasonably discounts the favorable outlook. We note that after many quarters of upside surprises, Tandem has settled down to a more definable pattern. The likelihood of upside surprises does not seem strong now, coming off a year (fiscal 1987) of 34% revenue growth and pretty fully developed margins. A gain in the mid-20% area in fiscal 1988 revenues, as we are now projecting, should sustain the multiple and offer at least moderate upside. We continue to rate the stock Neutral-1.

Last Research Abstract on Tandem Computers, Inc.: April 21, 1987.

EXECUTIVE SUMMARY

IBM

IBM is denying reports of **3090 upgrade delays.** One user, however, says that his scheduled upgrade was pushed back three months and another can't get IBM to give him a delivery date. While some competitors report that IBM has problems in the yield of the thermal conduction modules it manufactures, Gartner Group attributes the delays to "unanticipated success" of the 3090E models.

The **RT PC** wasn't one of IBM's hottest sellers, but thrifty Big Blue has found a way to use up all those RISC chips: Construct **an experimental 512-CPU parallel processing computer** called RP3, for Research Parallel Processing Prototype. The RP3, which is built entirely from off-the-shelf parts, should be running in a 64-processor configuration by the end of this year.

IBM **will close its Service/Exchange Centers** beginning October 1, which means that future maintenance on workstations and associated products will be accomplished by courier pickup and delivery service at the same price or less than carry-in service. IBM Authorized Dealers and selected IBM locations will continue to offer carry-in service.

DEC

VAX 8000 series owners can now put quadruple the memory in the same space, thanks to DEC's announcement of 64-Mbyte boards. The VAX 8250 and VAX 8350 now support a maximum of 128 Mbytes, while all larger VAXes can support up to 256 Mbytes. The minimum memory configurations have also been increased to range from 16 Mbytes on the VAX 8250 to 64 Mbytes on the VAX 8800.

In another DECworld Round Two announcement, DEC unveiled a **compact two-board VAXcluster adapter** that reduces the footprint of most models by one cabinet, doubling the performance per square foot.

A new **Ethernet adapter for the VAX 8000s** lets the same VAX participate in up to four different Ethernets at the same time, keeping the applications for each separate if desired. The new adapter also permits VAX 8000s to act as compute or storage servers for local-area VAXclusters made up of MicroVAXes.

Supercomputing

Celerity Systems introduced a 64-bit minisupercomputer with configurable scaler and vector components. The Celerity 6000 has up to 1 gigabyte of real memory and up to 11 I/O channels. A basic one-scaler-processor system, which will be available in November, lists for $250,000.

Mainframe Computing

Ultimate announced that it will be reselling **Tandem Computers** systems with a version of Ultimate's Pick-based operating system.

Midrange Computing

Following the sudden departure of Bob Miller to MIPS Computer, **Data General** is beefing up its management ranks. Recent hires include Michael B. Evans, formerly chief financial officer of Commodore International, as vice president and CFO, and James J. Ryan, lately group vice president of the financial systems and trading services group at McGraw-Hill, as vice president of the Information Management Group.

Prime Computer has signed an agreement to buy **Versacad,** a Huntington Beach, Calif., CAD software vendor that had sales of $6 million last year. Versacad will continue cranking out its PC and workstation products under Prime's CAD/CAM and workstation group, adding to Prime's application portfolio and giving it an entry into the MS-DOS/OS/2 software market.

Data Voice Solutions has brought out the Centaur II Mainframe and Centaur II Mini. The parallel-processing Centaur II systems leverage currently installed equipment, turning VDTs into functional MS-DOS workstations. The mainframe ranges in price from $50,000 to $185,000; the mini from $25,000 to $60,000.

Standards

The **Corporation for Open Systems** introduced five Unix-compatible packages that test for concurrence with the various components to the Open Systems Interconnection standard. The programs test the 802.4, Internet, Transport, FTAM, and MHS protocols. The products will be generally available next year; members will be able to obtain them sooner.

September 21, 1987, Monday

**CORPORATE
INFORMATION CENTER**

DISTRIBUTION: Business Editors

LENGTH: 375 words

HEADLINE: TANDEM/SEL-CANADA; (TDM)(UNP) Tandem Computers, SEL Canada join
Union Pacific in new joint venture for advanced train control system

DATELINE: CUPERTINO, Calif.

BODY:
    Tandem Computers Inc. (NYSE:TDM) Monday announced that it and SEL Canada
have joined Union Pacific Railroad as stockholders in Automated Monitoring and
Control International Inc. of Omaha, Neb., a closely-held corporation
established to develop and market electronic monitoring and control systems.
AMCI will initially concentrate on developing an advanced train control system
for the railroad industry. ATCS is of interest to railroads because it provides
technology which will enhance safety and significantly improve operating
efficiency. Tandem Computers and SEL Canada will participate in developing the
new system. According to Gerald D. Held, Tandem vice president of new ventures,
''This investment in the emerging market of train monitoring and control is part
of our on-going strategy to develop strong partnerships which allow us to meet
with the needs of our key industries.'' AMCI anticipates a growing market for
ATCS, particularly when its economic viability is proven in a number of pilot
projects. One such pilot project is currently underway on 200 miles of Union
Pacific's line in western Nebraska. AMCI plans to use technology developed for
ATCS to solve monitoring and control problems in other industries in the future.
Union Pacific, the third largest freight railroad in the United States, is
planning to implement ATCS system-wide. This will allow their planned
centralized train dispatching center in Omaha to control trains on 21,500 miles
of track in 20 states by the end of 1992. SEL Canada, of Don Mills, Ontario,
Canada, is a division of ALCATEL. It has an extensive background in
computer-based train control systems. SEL Canada provided the system used by
the fully automatic SkyTrain system which opened in 1986 in Vancouver, British
Columbia. Tandem Computers Inc., Fortune 500 company located in Cupertino,
manufactures and markets computer systems and networks for on-line transaction
processing.

    CONTACT: Tandem Computers Inc., Cupertino
              Joyce Strand, 408/725-6516
              or
              Automated Monitoring and Control International Inc., Omaha
              Marjorie Fredd, 402/498-4904

September 21, 1987, Monday, BC cycle

SECTION: Financial Report.

LENGTH: 13 words

BODY:
   TANDEM COMPUTERS INC, 100,000 AT 29, OFF 2-1/8, CROSSED BY FIRST BOSTON

**CORPORATE
INFORMATION CENTER**

September 28, 1987, Monday

DISTRIBUTION: Business Editors

LENGTH: 434 words

HEADLINE: TANDEM-COMPUTERS;   (TDM) Personalized products firm installs Tandem
system for on-line order entry

DATELINE: CUPERTINO, Calif.

 BODY:
    Tandem Computers Inc. (NYSE:TDM) announced Monday that Initials+, a San
Francisco-based provider of personalized products, installed a Tandem NonStop
EXT25 system for automated on-line order entry.

    Initials+ specializes in offering name-brand products that can be monogrammed
or engraved, including clothing, soft goods and corporate gifts. The products
are sold by independent contractors called personal retailers. Initials+ has
more than 450 personal retailers in California, Washington, Oregon, Nevada,
Utah, Colorado, Arizona and Texas.

    By fall, the Tandem system will be linked to Apple Macintosh computers used
by personal retailers for paperless ordering of products. Currently, orders are
placed by mail or telephone.

    The system will provide inventory updates, order confirmations, order
tracking, product information and electronic mailings from headquarters or from
personal retailers using Tandem's PS MAIL electronic mail system. Application
software for the system is from PBL Associates Inc. of Point Richmond, Calif.

    ''The benefit of the Tandem system is its ability to support the rapid growth
of Initials+ without any major changes in the application or user environment,''
said Michael London, chairman and chief executive officer of Initials+.

    Susan Hailey, retail industry marketing manager for Tandem, commented,
''Initials+ represents a new concept in retailing which combines the elements of
personal sales with personalized merchandise. Tandem's highly available, easily
expandable on-line systems are a natural fit for this potentially fast-growing
service.''

    PBL Associates Inc. is a member of the Tandem Alliance, a program to
encourage the development of application software that runs on Tandem systems.
The address is Ten Cottage Ave., Point Richmond, Calif. 94801-3917. The phone
number is 415/234-4338.

    Tandem Computers Inc. manufactures and markets computer systems and
networks for the on-line transaction processing marketplace. The company is
headquartered at 19333 Vallco Parkway, Cupertino, Calif. 95014, 408/725-6000.

    Note: Tandem, NonStop, EXT25 and PS MAIL are trademarks of Tandem

Computers   Inc.   Apple and Macintosh are trademarks of Apple Computer
Inc.

CONTACT: Tandem Computers   Inc., Cupertino
           Glenn LaFrank, 408/725-6435
           Leslie Stull, NRMA - Booth #302

           Initials+, San Francisco
           Neal O'Callaghan, 415/781-1234

BY ERIC NEE

SANTA CLARA, CALIF. — Ridge Computers Inc. today is slated to introduce its fourth-generation computer, which is said to run at 14 MIPS using a single processor.

The new Ridge 5100 will be able to support up to 128 users, twice the number supported on the Ridge 3200 and four times the number supported on the Ridge 32.

Because the 5100 will support a larger number of users, Ridge expects to be able to sell more systems into the comput-er-aided-software-engineer-ing (CASE) market than it has in the past, said Larry Lunetta, Ridge vice president of marketing.

The company also expects to begin penetrating the commercial market with the systems, he added, particularly those niches that demand on-line-transaction processing and database management.

CASE is one of the four target markets into which Ridge sells. But the sector actually ranks third behind the ECAD and MCAD markets, where the company sells most of its sys-tems, Lunetta said.

Ridge has installed about 600 systems, half in the U.S. and half in Europe.

Groupe Bull, which distributes the Ridge system in Europe, is the company's largest customer, accounting for "less than half" of Ridge's sales, Lunetta said. Bull will also resell the 5100 in Europe.

The 5100 can be configured with between 16 Mbytes and 144 Mbytes of main memory, and 300 Mbytes to 14.4 Gbytes of disk storage. In the future, main memory will be expand-

that Newton-Evans Research

The report analyzed the re with revenue of more than $5 ures used to compile the rep Newton-Evans weighed that d tion compiled during the first

Heading up the list of "losers ing with **Convergent Inc.,** w cent decrease in net income. Th from a reduction in orders fror

SCI Systems Inc. also suffe in SCI's case, **IBM**. The com percent, to $470.2 million. A president of Newton-Evans, from a decline in orders from

Although its corporate rever **as Instruments Inc.** stagnate ton said. Income from informa from $1 billion to $931 millio

By contrast, **Amdahl Corp.** and **Cray Research Inc.** end

"Amdahl did very well and last year just because they're b compatible mainframes; they perceived as equivalent to II Newton said.

Compaq's information proc cent, largely due to its succes IBM, Newton said.

Cray's net income rose 65 p cording to the report.

A company's gains or losses i necessarily related to the cate Newton said. Instead, superi peared to be linked to the qualit

••

Tandem Reveals Stake In RR Co.

CUPERTINO, CALIF. — Tandem Computers Inc. last week revealed that it has become co-owner of a company chartered to develop and market electronic control systems for railroads.

Tandem, Union Pacific Railroad Corp. and SEL Canada will be the sole stockholders of Automated Monitoring and Control International Inc. (AMCI), Omaha, Neb., which began as a Union Pacific research group on train control systems.

Union Pacific invited the other two companies into AMCI, which is developing an advanced train control system (ATCS) using Tandem comput-ers and electronics and radios from SEL, Don Mills, Ont.

Spokeswomen from Tandem and AMCI declined to say how much each company invested in AMCI, or the equity position each firm now holds.

William Howell, an employee in Tandem's venture capital division, said this is the company's sixth equity investment in the past two years that follows its strategy of investing to develop markets for its products. A Tandem spokeswoman said the company has aggressively targeted the ground transportation industry as an expansion market.

The AMCI spokeswoman said the fault-tolerant capabilities of Tandem's computers suit them well to the railroad industry's round-the-clock scheduling needs.

AMCI projects that the ATCS marketplace will generate more than $1 billion in revenue over the next 10 years. The spokeswoman said that in the future AMCI plans to market its products to other transportation fields, such as trucking.

Currently, AMCI is running a pilot project of ATCS on 200 miles of Union Pacific tracks in western Nebraska. AMCI's spokeswoman said some ATCS-type products will be available early next year.

Musical Chairs, /

Atari Corp. is at it again, th ganization. Jerry Brown, vice ager, has left the company and by ex-**Apple Computer Inc.** now heads up a new Atari pers said Brown and the compan leave, but declined to give his

Before the corporate overh dling sales and marketing for products. Over the summer, th up into two divisions: the perso is responsible for sales and ma and the entertainment electr sponsible for sales, marketin game products.

Wilson will lead the compu and general manager. Previot lar role, but did not have a for

Wilson's counterpart on th Katz, holds the title of preside tronics division. Before the reo tive vice president, entertainr

Prior to joining Atari, Wils **Memory Inc.,** a supplier of / last title there was vice presi MacMemory, spent five years

"What we're doing now is try markets," said an Atari spoke own staff and budget."

Wilson and Katz both re Sam Tramiel.

Pyramid Announces New 9805 Model

MOUNTAIN VIEW, CALIF. — Pyramid Technology Corp. earlier this month announced that it has reconfigured and re-priced its low-end 9805 mini-computer system.

New features for the 9805 include expanded memory and a choice of three different disk drives. According to a Pyramid spokesman, improved construction techniques allowed the company to offer all three new models at a lower price than the original 9805.

When it was introduced in May, the 9805 carried a price tag of $139,000 for a unit with 4 Mbytes of memory and a 470 Mbyte disk drive. The new 9805 configurations contain 8 Mbytes of memory, with the choice of a 300- or 470-Mbyte or 1.1-Gbyte disk drive.

The 8-Mbyte configuration with the 470-Mbyte drive is the only model currently available, now priced at $112,350. The same machine with the 300-Mbyte drive can be shipped 90 days after receipt of order, for $106,650. The 8-Mbyte model equipped with the 1.1 Gbyte unit will be available in October, priced at $122,850.

The changes should help make the 9805 available to a wider range of buyers, the spokesman said. "Rather than doing something special every time, we customized it to fit most peoples' needs," he said. "The different disk drives makes it easier to upgrade."

Pyramid also announced shipment of the expanded version of its AppleTalk Connectivity Package, which allows Apple Computer Inc.'s Macintosh II and Macintosh SE units to be linked on a network with Pyramid mainframes.

Priced at $10,000, the package allows one Macintosh or SE unit to connect to a Pyramid system. It contains software developed by Pyramid and Centram Inc., Berkeley, Calif., and a gateway built by Kinetics Inc., San Jose, Calif. Software to connect additional Macintosh units is priced at $189.

Centram is a subsidiary of Sun Microsystems Inc., Mountain View, Calif., and Kinetics is owned by Excelan Inc.

CORPORATE INFORMATION CENTER

September 29, 1987, Tuesday

DISTRIBUTION: Business Editors

LENGTH: 212 words

HEADLINE: TANDEM; (TDM) Tandem Computers elects Elkins v.p. of customer engineering

DATELINE: CUPERTINO, Calif.

BODY:

Tandem Computers Inc. (NYSE:TDM) announced Tuesday that its board of directors has elected John M. Elkins, 47, vice president of customer engineering. Elkins reports to Vice President of Operations Stephen C. Schmidt. Elkins was promoted to vice president from director of customer engineering. He has functional responsibility for customer service worldwide and line responsibility domestically. He joined Tandem in May 1985 as the regional director for the south central region. Prior to this, Elkins spent 21 years with the IBM Corp. in numerous positions, including sales and sales management, strategic planning and marketing. He holds a degree in business administration from Memphis State University. Tandem Computers Inc. manufactures and markets computer systems and networks for the on-line transaction processing marketplace. The company's headquarters are at 19333 Vallco Parkway, Cupertino, Calif. 95014. The telephone number is 408/725-6000.

Note to Editors: Tandem is a trademark of Tandem Computers Inc.
IBM is a trademark of International Business Machines Inc.

CONTACT: Tandem Computers Inc., Cupertino
           Jeri Eaton Flinn, 408/725-5462