November 1985 Vol. III / No. 9

in STRIDE

It's Arrived!

BULK RATE
U.S. POSTAGE
PAID
PERMIT #165
RENO, NEVADA

Hyperception FIRST IN SAGE AND STRIDE GRAPHICS

SAGEBRUSH: GRAPHICS HARDWARE FIREPOWER FOR SAGE AND STRIDE SYSTEMS . . .

- **True bit-mapped graphics and text.** Images may be transferred to and from disk, and to a dot-matrix printer. Text may be of any size and boldness and written at any angle.

- **512×512 resolution (interlaced display) or 512×256 resolution (non-interlaced display).** Units may be upgraded to 512×512 resolution by adding memory and changing an EPROM.

- **Multi-user/single-display and multi-user/multi-display operation.** In the former case all users share a SAGEBRUSH unit and display; in the latter, each user has a display. Dedicated multi-user operation is achieved by chaining SAGEBRUSH units together.

- **BRUSHRAT mouse or graphics sketch pad option.** Connects directly to SAGEBRUSH unit (doesn't use computer serial port), supports dedicated multi-user operation.

- **Standard monochromatic composite video output.** Requires only standard, inexpensive (less then $100) monitor. Avoids overlay of terminal and graphic displays. Video output available at both phono and BNC connectors; two displays may be connected in parallel.

- **Printers with dot-addressable mode supported.** Okidata, Epson, etc. HP Laserjet, too.

- **Fast SAGEBUS/VMEbus video memory interface doesn't hinder computer operation.** Memory-to-memory display update rate of 25.4 frames/sec. (10MHz 68000, frame = 512×512 resolution 32kbyte video memory). No computer serial port required.

- **Sage to Stride upgrade at any time.** Upgrade package includes 'connector-translation' card (no active components) and 3 ICs.

- **Small (6.5"×8.5", 2"), attractive 'baby Sage' unit** that connects easily to Sage and Stride 400 series machines.

. . . AND SOFTWARE THAT WON'T BATTLE YOU OR YOUR COMPUTER-AND EVEN MAKES FRIENDS WITH THE STRIDE TERMINAL GRAPHICS OPTION!!

- **Powerful command set software.** Includes real-number display scaling, windowing, character size, boldness, rotation, and slant directives, foreground line-drawer, arc, elipse, and quadrilateral generation, image transfer to and from disk and to printer, and Boolean image operations.

  — p-System (Pascal, BASIC, FORTRAN 77)

  — 68000 asm. language and PASCAL source code support for other operating systems.

- **p-System Hyperseries applications packages** utilize menu-driven interfaces to provide immediate, useful graphic output.

  — Hyperplot Business Graphics creates 5 types of output displays from text files. Single text file format for all displays.

  — Hyperpaint Sketchpad Graphics generates figures and free-form graphics via icon selection. Requires BRUSHRAT mouse.

  — Hypersignal Signal Processing Graphics provides time and frequency analysis, fast 68000 asm. lang. signal processing library.

- **SOFTWARE RUNS ON STRIDE TERMINAL GRAPHICS OPTION, TOO.** There is only one version of SAGEBRUSH command set software; a 'hardware recognition' module automatically determines host machine type (Sage or Stride w/SAGEBRUSH, or Stride with Wyse graphics overlay).

-------------------------------ALL PRICES SUGGESTED RETAIL ONLY; DEALER PRICES MAY VARY-------------------------------

	SAGEII, IV	STRIDE 400s	STRIDE 400s W/ GRAPHICS OPTION
512×512 SAGEBRUSH AND COMMAND SOFTWARE	$895	$930	—
512×256 SAGEBRUSH AND COMMAND SOFTWARE	$795	$830	—
SAGEBRUSH COMMAND SOFTWARE ONLY	*	*	$349
BRUSHRAT MOUSE (FREE HYPERPAINT INCLUDED)	$125	$125	—
SAGE-TO-STRIDE CONVERSION	$45	—	—
RESOLUTION UPGRADE	$100	$100	—
HYPERPLOT BUSINESS GRAPHICS	$235	$235	$235
HYPERSIGNAL PROCESSING GRAPHICS	$595	$595	$595
USERS MANUAL (120pp., sim. Suede cover)	$20	$20	$20

*Command Software Included

Operating system ____________________
Type and model of printer: ____________________
Method of Payment: __________ Credit Card __________ COD __________ Check or Mo (Texas residents add 6%)
Name: ____________________ Company: ____________________
Address: ____________________ City: __________ State: __________ ZIP: __________
Mastercard No: ____________________ Interbank No: ____________________ Exp. Date: __________
Visa No: ____________________ Exp. Date: __________

Hyperception / 9550 Skillman LB125, Ste. 307H / Dallas, TX 75243 / (214)698-5538

SAGE and STRIDE are trademarks of Stride Micro.
HYPERCEPTION, SAGEBRUSH, and BRUSHRAT are trademarks of Hyperception, Inc.
p-System is a trademark of the Regents of the University of California.
Laserjet is a trademark of Hewlett Packard

Learning UNIX — Sink Or Swim

By Verlene Joyce Bonham

When you go swimming, are you the exuberant type that races madly down the beach and plunges into the water on first sight? Regardless of water temperature?

I once worked at a summer camp with a gal from Michigan who was never bothered by the coldest water. My friend claimed that a group of her high school buddies used to head for Lake Michigan on "good" days in the early spring, cut holes in the ice and jump in! Hmmmm . . .

Anyway, I'm the cautious type. When I go swimming, I usually dip my toe in first to test the temperature and then scan the waves for rocks, sharks, jelly fish and other hazards before wading in.

I apply the same technique to new software. For some years, I've been submerged in the p-System and Pascal environment with a little CP/M on the side. At one time or another, I've also poked and prodded at about every new OS that runs on a Stride or Sage.

Several months back when UNIX started to run back in the R&D lab, I naturally wanted to "get my feet wet." My office system at that time was a Sage, however, which wouldn't run UNIX, (no memory management unit). But, with a little help, I ran a cable from a serial port of my Sage over to an R&D UNIX system terminal port. After writing a quick-and-dirty Pascal program to pass files back and forth and emulate a terminal, I could now talk to the UNIX system from my p-System. Anytime I had a chance, I'd logon and try a few commands.

This was slow and gradual and very painless. If something bothered me, I could always ask one of our UNIX experts or call up the on-line manual.

Other Stride employees were trying the UNIX water, too. Tech Support, (Mitch and Chris) and I all encouraged them to use **learn,** a tutorial program, since it is much nicer than reading through the three huge Motorola UNIX reference manuals. The reactions from these new users weren't so positive.

Our PR manager, a journalism major, took instant adversion to the wording and phrasing used. Sentences such as "When UNIX types a "%" at you" gave her cold chills. The little places where an extra message or two popped up also annoyed her. Once she pointed these out, the rest of us started seeing problems, too. (Gee, Kate, maybe you could find time to rewrite all that for us!) Still, **learn** has a lot to offer the new UNIX user.

After I had some idea (I thought) of how to swim, I got my own UNIX Stride 440 system. While the system is shared by a few marketing folks who aren't heavy users, I'm the main user and, supposedly, the system administrator. About 80% of the installation went great. Several major important features, however, required assistance. For instance, don't you think it is important to have your system tell you a funny limerick when you sign off? Of course! Mail listings should pause on every 20th line. And horror of horrors, the print spooler didn't understand line printers that use single sheet paper instead of fan-fold.

Obviously, tuning up a UNIX system is *much* more work than just being a user! I've got a lot yet to learn.

UNIX is process oriented and runs several little background processes, called daemons, (yes, spelling is the archaic Greek style) such as **cron** which keeps the system time. The UNIX daemons are continually up to something. My 440 has a hard disk with a voice coil actuated drive. It now happily burbles and chirps continually all by itself. This is a little scary at first, but soon the sound becomes just background noise.

UNIX has a great electronic mail system. Mail is passed from UNIX computer to UNIX computer via a protocol called **uucp.** Costs are reasonable since it involves only short haul telephone calls between each site. Sometimes the path to reach another site gets quite involved with mail going through 10 or more machines all across the country.

I like the mail and consider it one of the best features of UNIX. Being able to send a message to another person, simply by saying **mail otherperson** from your terminal is addictive. WARNING! It's not very secure. Don't send top secret business deals over UNIX mail. Sometimes your message disappears down a vortex.

Exploring UNIX is like one big "adventure" game. After you learn most of the magic words and operations you become part of the UNIX club. I once shutdown my UNIX system to bring up another operating system for awhile. At least three people came by to ask if my system had crashed (my mail was being returned) and if they could help load it back up. Happiness to a UNIX user is the nice warm feeling you get knowing that you belong to one of the most active computer cultures in America.

There's always more to learn about UNIX. And just as you figure something out, a new version comes along with different calls. But as one advanced swimmer to you newcomers on the shore, I can only say (as my knees turn blue), "Come on in! The water's fine!" ☐

In STRIDE

Editor: Verlene Bonham

***In Stride* is a monthly publication of Stride Micro. Subscriptions are $12 for one year, $24 internationally. Purchase of a Stride computer includes a one-year subscription upon receipt by Stride Micro of a fully completed owner's registration card. Back issues are available for $2 per copy, as supply lasts. Requests for subscriptions, reprint permission, ad rates, bulk orders or submission of prospective articles should be sent to the Editor, *In Stride*.**

Postmaster: Change of address notices should be sent to:

Editor, In Stride
Stride Micro
P.O. Box 30016
Reno, NV 89520-0016
(702) 322-6868 (8am — 5pm PST)
TWX: 910-395-6073

Stride Micro Eastern Division
112-116 Washington Street
Marblehead, MA 01945
(617) 639-0750

Stride Micro Southern Division:
14755 Preston Road
Suite 600
Dallas, TX 75240
(214) 392-7070

Stride, "Performance By Design" and NOD are trademarks of Stride Micro.

©Copyright 1983-1985 Stride Micro.
All rights reserved.

Stride Signs United Kingdom Agreement

By Rick Kriss

Stride Micro, formerly Sage Computer, has entered into a $5 million manufacturing/distribution agreement with Equinox Computer Systems Ltd., one of the United Kingdom's leading computer manufacturing firms.

Equinox was formed in 1978 to specialize in multiuser microcomputers. In 1981, it became one of the few companies on the approved list for supply of microcomputers to the UK government, supplying the departments of Defence, Health and the Inland Revenue. Equinox is also a major supplier of systems to hospitals in the UK. The company has a staff of more than 70 with its own engineering division for hardware maintenance.

Michael Kusmirak, managing director and founder of Equinox, will have his firm manufacture the Stride 400 Series. The UK distribution arm will be called Stride Micro UK and will be responsible for distribution, marketing and support of the 68000-based family of supermicros.

Kusmirak states, "I feel there is a great opportunity for Stride in the UK. Equinox has a known manufacturing presence there with a strong foothold in government and major account sales which will benefit both companies.

"There is currently a nucleus of Value Added Resellers and we see a rapid expansion of these to handle the increased market interest in UNIX V, p-System and (particularly British products) BOS, MIRAGE, and OCCAM".

Kusmirak and Kriss, Stride's vice president of International Operations, have designed their UK strategy to continue to strengthen Stride's position as a leader in development systems while making strong inroads into the business world with UNIX. Stride's UNIX system is attractive to many new businesses because it offers high performance at a good price. (See the article on UNIX in this issue).

More than 1,500 Sage/Stride systems are already installed in the United Kingdom, in such places as British Leyland, Westland Helicopter and the University of Oxford.

Equinox will be involved primarily in the manufacture of the Stride 440, the heart of the 400 Series. The 440 is similar in size to an IBM PC but with its MC68000 processor, it performs more like a large mini or mainframe. The 440, which comes standard with 1M byte of RAM, a 640K floppy disk drive and ports for four users, can be expanded to accommodate up to 16 users with 8M bytes of RAM and Winchester options ranging from 10 to 67M bytes. The Stride features VMEbus architecture making it compatible with hundreds of vendors' products. Several networking options are available.

The Equinox facility is in the heart of London near scenic sites such as this at Kensington Gardens.

Stride Micro UK is expected to begin manufacture of Stride products during the first quarter of 1986. Under the terms of a separate agreement, Equinox also will be integrating Stride-designed boards into their own high-end business systems.

Distribution activities will be headquartered in Equinox's 25,000-square-foot London facility. Distribution will be controlled by Master Dealers, each of whom will have expertise in particular operating systems environments. Stride feels that the Master Dealer concept will provide the highest level of satisfaction to customers and repeat business to the dealer.

"Stride supports more than a dozen operating systems, including BOS, UNIX, p-System, CP/M-68K, RM/COS and Mirage," Kriss said. "We are a company that believes strongly in customer support and feel we can offer UK users the best support by allowing dealers to maintain the systems they know best."

Kriss and Kusmirak will officially announce the new distributorship and launch the Stride 400 Series into the UK in London during the week of November 4. The introduction will provide an opportunity for all dealers, perspective dealers, VARs and OEMs to learn more about the Stride 400 Series and the roles of Equinox and Stride. In conjunction with the introduction, Stride will hold hardware and software training courses. Representatives from Stride's corporate headquarters in Reno, Nevada, will be on hand to discuss marketing and product plans. □

400 Series

New Faster Specs For Stride 400 Series

The 400 Series is getting better all the time. At the Computer Dealer's Exposition in Las Vegas (COMDEX), Stride announced new standards for all models which boost both performance and memory at no additional cost. Effective November 20, 1985, all Stride microcomputers include a 12 MHz 68000 processor and a full megabyte of RAM.

The new processor replaces the standard 10 MHz CPU offered in the past and should yield performance gains up to 20 percent. To complement this performance increase, 1M byte of RAM will also be standard on all machines to allow users to take maximum advantage of Stride's **RAM Disk** and new **CACHE Disk** options. All RAM will be implemented using 256K-bit, 120 nanosecond DRAM chips to meet 12 MHz 68000 specifications.

Stride's Vice President of Marketing, Buddy Frank, said the changes were in keeping with the company's position of offering superior price/performance ratios. "We've provided these features as extra-cost options since the 400 Series was introduced in September of 1984, but with recent component price reductions, we are delighted to pass the savings, and the power, along to our customers.

"The change comes at an excellent time," Frank added. "UNIX, which is becoming more and more popular on Strides, requires a megabyte to be effective, and the **CACHE Disk** just introduced will allow those using other operating environments to really benefit from the increase."

The disk caching software is part of the Stride BIOS and was released along with the 4.21 p-System in September. Stride's CACHE Disk permits performance gains similar to RAM Disk but affords a greater degree of data security by passing "writes" through to the storage devices. Unlike other popular disk cache systems with severe memory limits, Stride's implementation permits the user to create large and effective RAM caches.

In addition to the changes in the minimum systems, all expansion RAM, from one to 12M bytes, has been lowered in price to about $1,200 per megabyte. For those current owners wishing to take advantage of the CACHE Disk and the other features of IV.21 p-System, a software update is offered. See Page 14 of this issue for details.

The changes announced this month, together with additions made in September, give the Stride 400 Series the power and flexibility to meet virtually any computing needs now or in the future. The table gives a complete rundown of current specifications. ☐

FEATURE:	420/440 floppy based	440	460
PROCESSOR *68000 16/32 bit machine*	12MHz	12MHz	12MHz
PARITY MEMORY *120ns 256K DRAMS*	1 or 2M bytes	1,2,4 or 8M bytes	1,2,4,8, or 12M bytes
CMOS RAM *Battery backed-up*	4K	4K	4K
REAL-TIME CLOCK	standard	standard	standard
CENTRONICS PARALLEL PORT	standard	standard	standard
FLOPPY DISK: DRIVES *96 TPI, 5¼", 640K bytes*	one (or two)	one (or two)	one (or two)
WINCHESTER HARD DISKS *full track buffering*	n/a	10, 20, 33 or 67M bytes	33, 67, 112, 224, or 448M bytes
SERIAL PORTS *300 to 38.4K baud*	4	10, 16	10, 16 or 22
VMEbus SLOTS	1 extra	1 extra	4 (2 extra 2 Euro-Cards)
TAPE DRIVE *45 or 60M bytes, transfers at 11 sec/Mbyte*	n/a	optional	optional
GRAPHICS *Monochrome 784x325 with up to 58 frames/sec.*	optional	optional	optional
NOD CURSOR MOVEMENT DIRECT	optional	optional	optional
OMNINET LAN	optional	optional	optional
FLOATING POINT UNIT *National 16081*	optional	optional	optional
MEMORY MANAGEMENT UNIT *for UNIX System V*	optional	optional	optional
SWITCHING POWER SUPPLY	65W	140W	140W (or two 140W's)

***blue shows standard features**

New Demo Ready!

It's too bad our printers couldn't figure out a way to make the figures to the left rotate on the page as they do on the Stride 400 Series graphics screen.

The figures were created by Don Marsh, a doctorial candidate at the University of California, Berkeley, using a Stride 440 running System V UNIX. The objects were created from a mathematical description and then processed by the graphics programs Unigrafix and Uniquadrix into individual frames. Each frame shows the object rotated a few degrees. The graphics system rapidly displays the frames, giving the illusion of continuous motion.

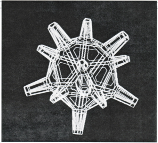
Stride's Bill Bonham then figured out how to condense the frames to fit onto two floppy disks. A third diskette contains the operating system and the DISPLAY3D program. DISPLAY3D was written by Bill using the standard Stride graphics software to download and display the graphics as fast as possible. Real time speeds worthy of the name ***animation*** were achieved. Of course, downloading is even faster from a Winchester hard disk.

Once you start this display, you'll be reluctant to turn it off. You can control the speed of rotation for slightly different effects. Typing the "-" key the rotation slows down; typing the "+" key speeds the display back up. The wire frame of the ship mine (left upper figure) may appear to switch directions. This is really just an optical illusion. Your brain and eye have been fooled by the symmetry of the figure. The display is always going the same way.

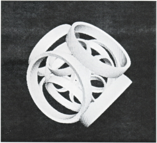
If you run the display very fast, some frames will be skipped. At a certain point, the rotation will suddenly appear to reverse. This illusion is the same type as the classic case of the stage coach wheels appearing to turn backwards when the coach moved fast.

The figures look very "3-D". As they turn, the lighting is accounted for. Note the stipple patterns on the hollow ball. The light is obviously overhead. The small ball inside the larger one also rotates — in the opposite direction!

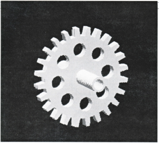
This is a fun program (like most graphics) and a good example of the great things you can do with a Stride. It makes a good demo at trade shows or for your friends. If you've got a Stride graphics board and at least 2M bytes of RAM you can run it. The part number is SF0164 for only $50! Enjoy! □



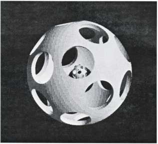
This type of drawing is a "wire frame" of a ship mine.



Because the bands are assymetrical, their movement will seem jerky compared to the other displays.



This simple gear turns gracefully and elegantly in space.



These two hollow balls rotate in opposite directions. Note the stipple patterns which indicate an overhead light source.

NETWORK NEXUS

. . . your Information Connection

COLOR GRAPHICS FOR STRIDE/SAGE

We offer medium and high resolution color graphics boards for Stride 400 series and Sage Computers

EUROGRAPH-H

- Selectable resolution up to 1280x1024 pixel
- Up to 16 colors
- Pan, Scroll, Zoom, Crawl in hardware
- High drawing speed
- Video RAM is part of 68000 address space and can be used as RAM or for bit-mapped graphics

EUROGRAPH-M

- 512x512 pixel
- 8 colors or grey shades
- Graphics processor [1 million pixels/sec drawing speed]
- 3 independent video memory banks [3x64k Byte]
- Light pen and keyboard interface

Inquire about Image Processing boards and other VME-bus products

Graphic routines supported for CP/H, CP/M, MIRAGE, UNIX p-System

NETWORK NEXUS
1521 Old Bayshore Hwy.
Burlingame, CA 94010
415-692-4747

Telex 650-276-2575

UNIX's Time Has Come?

By Buddy Frank

They saved the best for last. That's certainly a flattering answer to why the 68000-based Stride has just recently emerged as a leading hardware choice for UNIX users. While we like to think that's the only reason, a few other factors were at work.

UNIX was pioneered by Ken Thompson and Dennis Ritchie at Bell Laboratories clear back in the late 1960s to aid in program development. It seems that every month since then, one report after another has predicted UNIX would soon become THE operating standard for microcomputers. Today it still hasn't happened, but there are some compelling reasons why it could.

First, UNIX hardware history was written on minicomputers, not micros. The first port was on a modest DEC PDP-7. As good designers should, Ritchie and Thompson matched the OS to the machine. But UNIX quickly grew and moved to the PDP-11 and VAX architectures where it developed an appetite for lots of storage capacity and a fair amount of memory. Most of the micros that followed the introduction of the Altair in 1974 were short of both.

Another thing the so-called PC revolution lacked was multiuser capability. Ironically, UNIX was originally developed as a single-user version of another multiuser OS, (Multics). But it quickly evolved into an excellent shared-user system. In fact, it now seems to lay undisputed claim as the leading multiuser operating system on micros (RM/COS, S1, MBOS and Pick are some of the other competitors).

However, UNIX didn't even get its foot in the micro door until the introduction of the 68000 microprocessor. This chip, unlike the 6502s, 8088s and Z-80s which controlled so many PCs, was finally able to support UNIX in the manner to which it had grown accustomed.

Still, there were problems. Memory was expensive in the late 1970s and early 80s. So were Winchesters that were big enough to really service this OS (a full-blown development system can claim more than 20M bytes). Thus, UNIX microcomputers generally carried minicomputer price tags.

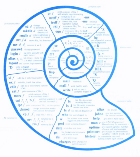
Today, things are changing. Hard disks are becoming commonplace and large memories are no longer exotic (one megabyte is now standard on all Stride machines). The introduction of the Stride 400 Series with a memory management unit was one of the first UNIX systems that delivered true price/performance value from a microcomputer perspective.

Equally important, the 400 Series also provided UNIX developers with one of the few systems that could grow. Of the competing entry-level systems (the IBM PC AT and AT&T UNIX PC), only the Stride is capable of supporting realistic multiuser operation. The 440 model easily expands from a $3,000 floppy-based machine to a 16-user UNIX system, supported with 8M bytes of RAM, 67M bytes of storage and a tape backup unit.

Apart from hardware considerations, UNIX has some inherent qualities that have also slowed its adoption by the microcomputer community. With roots as a development system, UNIX now includes literally hundreds of utilities and routines. There's everything from a text processor to a complete mail system, not to mention a directory full of games and on-line documentation. Unfortunately, with all this power comes complication and confusion.

UNIX commands can be cute, such as "whoami" to display the name of the current user. But they can also be a bit cryptic such as "awk" and "grep". For this reason,

The Stride Unix System is distributed on 1280 block 5¼" floppies or quarter-inch cartridge tapes. The tapes hold up to 67M bytes of information. A tape system is recommended for UNIX operation, since it provides a quick and clean way to dump and restore large data files — or even the entire disk!



This diagram shows the many commands of a UNIX "shell".

many have compared using UNIX to playing "Adventure": If you know the right magic words, you can get through the maze. However, there's no getting around the fact that UNIX is large and can be difficult to learn (the adjacent diagram gives you a glimpse of the many diverse commands available under UNIX). End-users in business and industry were often unwilling or unable to make such an investment in time and training.

One of AT&T's early decisions to make UNIX available at a discount to colleges and universities is beginning to pay dividends. Dozens of students are now emerging with excellent backgrounds in UNIX use and development. Simultaneously, more and more applications that exploit UNIX's strengths, while hiding its weaknesses, are beginning to hit the marketplace.

Programs such as R Office (see page 12) are bringing pleasant surprises to microcomputer users. While they carry slightly higher price tags than traditional micro software packages, their power and utility more than make up for the extra dollars. As a rule, most UNIX applications are derived from "mini" software concepts, providing powerful and proven solutions to a whole new audience. In contrast, micro software has often evolved from an 8-bit background, and much of it has failed to take advantage of the power provided by today's 16/32-bit processors.

The biggest impact of this new sophisticated software running under UNIX will most likely be in business and industry where the cost effectiveness of multiuser systems provides affordable solutions to complex problems.

UNIX is large and bulky, difficult to learn and poorly suited for meeker micros. On the other hand it is rich and powerful, and promoted by Ma Bell herself. Whether or not it will be the operating system of the future, is a question which will surely be debated for several years to come. But today, UNIX on the Stride may just be in the right place at the right time. ☐

UNIX And The MMU

MMU stands for Memory Management Unit. On multiuser systems such as UNIX, an MMU greatly helps the complex task of keeping the many users and their operations separate from each other. One user cannot easily crash other users by making errors.

Almost all versions of UNIX require an MMU. Stride's 400 Series MMU, is a daughter board design. It is a factory installed option and fairly simple to do. However, Stride does not authorize users or dealers to do the installation since it involves disassembling the machine to the CPU board level which should be done in a static-free environment.

Once the CPU board is freed, the MC68000 processor is removed from its socket and the MMU is plugged in. Selected shunts are cut on the CPU board. The change is invisible to an operating system that does not require the MMU.

Without the MMU, the CPU board runs flat out. When installed, the MMU operation only needs one extra wait state to accomplish its arbitration functions.

The 400 Series MMU allocates up to two segments of 4M bytes each. UNIX only uses two of the segments, one for the kernel in Supervisor Mode and the other to map the currently running user proces. Each of the segments allows up to 1024 pages of 4K bytes each.

This means that the largest user program is 4M bytes. The program can be mapped anywhere within the 16M byte addressing range of the 68000. If the system has enough RAM, more than one 4M user area can reside in memory at the same time. ☐

UNIX POSTER

The shell diagram shown above is available for $6.95 as a red and black poster, 21" x 28", suitable for framing. Contact Tom Monroe, TypoGraphics, 492-63rd Street, Apt. A, Oakland, CA 94609.

Mosys

THE MODULA-2 SYSTEM

MOSYS is the first system to provide an integrated software support environment for developing MODULA-2 programs

MOSYS is a *native* code system: complete, self-contained, and well-documented to provide the ideal programming environment.

MOSYS includes compiler, screen editor, document processor and symbolic debugger.

MOSYS PRICING:

New Release 101a
Now only $595

For MOSYS outside U.S. contact:
Robinson Systems Ltd.
Red Lion House
St. Mary St. PAINSWICK Glos GL6 6QR

TWO SPECIAL PRODUCTS FOR THE STRIDE

distributed by

Maritime Infosystems Ltd.
6660 Reservoir Road
Corvallis, Oregon 97333

(503) 929-2552

H.I.T.S.

HALF INCH TAPE SUBSYSTEM

Half inch reel-to-reel tapes, long a mainstay of the mainframe world, are now available to Stride micros.

HITS forges a needed link between Stride and mainframe and mini-computers, providing access to millions of reels of stored data which are not available in other media.

Contact us for a brochure or see the article in September of InStride Tech Notes.

HITS PRICING:

With Kennedy 9600, an 800/1600 BPI 45 IPS (stop/start) tape drive. Introductory price until 12/31/85 $8950 (reg. $9795).

For HITS outside U.S. contact:
Stride Micro International Division

FourByteForth

Address Your Entire Space!

32 Bit Forth for Stride/Sage Computers

Screen Editor
68000 Assembler
Fast Compilation
125 screens/minute

Debugging Tools
Decompiler/Disassembler
Fast Execution
Byte Sieve 18 sec/10 iter.

available as standalone system or under CP/M-68K

Software Architects

1912 Grant
Berkeley, CA 94703
(415) 549-3185

The Most Powerful Language
for the Stride Computer
is also the Cheapest!

$250

plus $5 shipping
CA residents add tax

512K Memory Board For SAGE II, $389

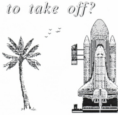
Expansion board doubles memory for Sage II. Every board is shipped 100% tested with 2 year guarantee. Installs in 5 minutes.

For purchase and information, contact:

S.E. Microsystems
La Jolla, California
(619) 456-2895

Visa & Mastercard Accepted

Ready for your career to take off?



Are you familar with the P-System? Have you used Flexware? Want to work on a 112 Meg Stride 460?

Then a growing Flexware developer and Stride Dealer may want ***YOU!***

If you are ready for the "Challenger" and are willing to relocate to Florida, then send your resume to:

Personnel Director
12930 North A1A
Vero Beach, FL 32963-9419

EAST MEETS WEST

Madras City — Headquarters of Infotech Limited.

By Kate Harper

Stride Micro has now expanded its operations into the Far East. Infotech, an electronics firm in India, and the Electronics Corporation of Tamil Nadu (ELCOT), an agency of the India state government, have recently entered into a joint agreement with Stride Micro.

Under the terms of the agreement, Infotech will have licensing and manufacturing rights to the 400 Series within the country of India.

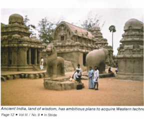
Stride Micro currently distributes into over 40 countries worldwide, but has not previously encouraged its overseas distributors to open their own manufacturing sites. It is a major undertaking requiring extensive capital and, most important, the active support of that country's government.

However, the Stride, InfoTech and ELCOT agreement is strong in all areas. As Rick Kriss, Stride's vice president of International Operations, explains, "We have granted this license based on the substantial commitment of resources from Infotech and the Indian government."

At the inception of the project, the Indian government was searching for a company well versed in 16/32-bit technology that made use of VMEbus architecture.

In September, 1984 Stride introduced the 400 Series MC68000 computer line. The VMEbus is a major design feature of that series. The 400 Series started with a 10 MHz MC68000 and is now running at 12 MHz standard. Under the terms of the partnership, Stride will provide this mature, high-powered 16/32 bit technology to Infotech.

ELCOT will furnish Infotech with a majority of the start-up capital. Financing for the project will come from both public and private sectors. Initial costs are projected at $1.8 million, with production due to begin in January of 1986.



Ancient India, land of wisdom, has ambitious plans to acquire Western technology.

ELCOT is the electronics division of the Tamil Nadu Industrial Development Corporation (TIDCO), a development agency run by the Tamil Nadu state government. ELCOT makes direct investments into targeted industries. The investment being made in Infotech is high, even by ELCOT standards. The revenues to Infotech are expected to be several million rupees within the first year. (The exchange rate for rupees runs about 12.5 to the U.S. dollar.)

In addition to the strong commitment of the Indian government, Stride's belief in the management of Infotech is the prime reason for deciding to take this innovative marketing step.

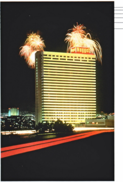
Infotech is located in Tamil Nadu's capitol city of Madras and will build manufacturing facilities there. Madras is regarded as the Silicon Valley of India and is second only to Bombay in industrialization and technological modernization.

Several employees of Infotech will soon be traveling to Reno, Nevada for training.

The first areas targeted by Infotech are the banking and financial industries. Insurance companies, hospitals, hotels, transportation companies, public utilities, educational institutions and libraries are all in the embryonic stages of computerization.

According to an extensive report drawn up by Infotech, the Indian market for microcomputer technology is virtually untouched. For many years, restrictions on high technology imports and the fear by many Indians of man-power displacement retarded the growth of India's computer industry. Prime Minister Rajiv Ghandi has pressed for the opening of India to all forms of technological growth. Under his government, restrictions have been lessened or removed. Public sector employees have begun to realize that computerization will result in more, rather than less jobs, and the acceptance of computer technology has grown. About 300 people are expected to be employed in India as a result of this project. ☐

STRIDE Faire '86



The fireworks will be inside this winter as Stride Faire '86 moves to the Nugget Hotel/Casino for a three-day run beginning February 28. The faire will feature new products, seminars, exhibits, and a special presentation by the development team responsible for the revolutionary new SkyCam. All attendees will also be eligible to win a complete floppy-based Stride 440 system. For more information, drop a line to: Stride Faire '86, P.O. Box 30016, Reno, Nevada, 89520-0016□

R Office
R Office

R Office

R Office is a powerful office automation package that combines a professional full-featured word processor with desktop utilities, a spreadsheet and a database. With both the receptionist and CEO in mind, R Office was designed to be the first and last product a consumer needs to purchase. It is a true multiuser application, written in high-performance 68000 Assembly code. R Office runs under UNIX or RM/COS on all Stride 400 Series systems. □

ANNOUNCING ADVANCED MEDICAL SOFTWARE IN FLEXWARE ON STRIDE

- Insurance Form Preparation
- Automated Patient Checkout
- Cyclical Billing
- Collection Reports
- Practice Analysis

Dealership Inquiries Welcomed

Created and Supported by

MEDSOFT INC.

Computer Systems for Health Professionals

1307 Avon Street
Fayetteville, NC 28304
Ph. (919) 323-1748

CP/M-68K

By Bill Rainey

CP/M-68K has been running on the Stride 400 Series since the machine was first introduced officially in November, 1984.

The current version of CP/M-68K is version 1.2. For those of you who missed the update, an update from version 1.1 to 1.2 is available. An update for the Sage II and IV is also available.

Before ordering, check that the version you have already is not 1.2. Stride has been shipping 1.2 for over a year.

CP/M-68K includes a "C" compiler with a floating point package. The operating system supports TypeAhead. The DDT debugger has symbolic capabilities. Two UNIX-like utilities, MORE (to scroll text files) and FIND (to scan text) have been added as custom utilities from Stride. There is an OVERLAY LINKER in addition to the standard linker. A conversion routine, TOCPM, to transfer files from/to the p-System also is provided in the standard release.

The well-known SVS (Silicon Valley Software) compilers for FORTRAN 77 and Pascal run under CP/M-68K. Direct calls to the 400 Series BIOS are available. The Metacomco Lisp and symbolic manipulation program **REDUCE** run under CP/M-68K.

An emulator package is available from MICROWAVE which will allow a user to run almost any Z80/8080 CP/M routine under CP/M-68K, including the popular WORDSTAR.

CP/M-68K is a very attractive environment for the user who needs all of the considerable power of the MC68000 for a speed-hungry application or research project.

More than one user can share a machine, however. Multiple copies of CP/M-68K are supported under Stride's proprietary Multiuser BIOS. Up to 14 CP/M-68K users can be supported, although it is unusual to have more than six. Shared access to a database is not recommended in this environment, unless the program has been written to use the 400 Series semaphores. Multiuser CP/M does work well for environments where each user has separate needs.

Version 1.2 is highly compatible with other Digital Research CP/M-68K versions on other microcomputers. The cost of CP/M-68K versus UNIX is certainly very attractive for a single user environment. And although traditionally a small machine operating system, CP/M-68K works very well on Stride's 440 with large hard disks — up to 67M bytes. Many academic users have found that the 16M byte addressing capability of CP/M-68K and SVS Fortran 77 to be just what is needed for large number crunching problems.

Stride's CP/M-68K version 1.2 is shipped on four diskettes with a Stride CP/M User's Guide and the Digital Research Institute's manual. It retails for $350. □

Version IV.21 p-System Now Available

Version IV. 21 of the p-System is now shipped standard with every Stride 400 Series. Stride continues to support our earlier computer line and a full release of IV.21 is also available for the Sage. An upgrade to just the BIOS and Utility files is also available.

The chart below gives part numbers and prices for the upgrades. Prices are in U.S. dollars, international users please check with your dealers for pricing.

Part #	Price	Product
SF0159	$ 99	400 Series RUN-TIME p-System: SYSTEM, UTILITY, and BUILD diskettes. Release notes.
SFO160	$150	400 Series Development: SYSTEM, UTILITY, BUILD and DEV diskettes. Includes Pascal Compiler and 68000 assembler. Release notes.
SF0161	$ 99	Sage II/IV RUN-TIME p-System: SYSTEM, UTILITY, and BUILD diskettes. Release notes.
SF0162	$150	Sage II/IV Development: SAGE, SGUTIL, SGBUILD and SGDEV diskette. Includes Pascal Compiler and 68000 assembler. Release notes.
DK0100	$ 25	400 Series BIOS Update: One diskette with new BIOS, MU.BIOS, UTIL.CODE and MU.UTIL.CODE. These files are included in SF0159 and SFO160.

To upgrade to the p-System Pascal compiler, you have to provide proof of a prior purchase of the Program Development Kit. The Purchase Order number from your original order and Serial Number of your machine is best. □

NETWORK
NEXUS

. . . your Information Connection

MU-LOGIN

Multi-User Login
Protection for Stride and
Sage Systems

Login:Guest
Password;
Accepted . . .

Enhance your current p-System/CPM-68k multi-user environment with two-stage password protected login, inter-user mail and terminal port independence [log in from any terminal connected to the system and automatically boot to your partition].

MIRAGE

The Multi-User, Time Sharing Operating System

NETWORK NEXUS is committed to the MIRAGE multi-user operating system. We offer full support, including ports, custom software development and installation of multi-user environments on STRIDE/Sage systems.

NETWORK NEXUS
1521 Old Bayshore Hwy.
Burlingame, CA 94010
415-692-4747

Telex 650-276-2575

Q&A

How big is UNIX?

The main part of UNIX, the ***kernel*** is actually quite small. It takes only 200K bytes of memory when running and only 170K bytes on the hard disk. Stride actually uses a stripped down version of UNIX that fits on a single floppy to do the UNIX installation. Historically, however, the many, many utilities that have been added to UNIX are an integral part of the product. Stride does not attempt to split off utilities into separately sold groups. The entire UNIX V, as shipped by Stride, takes 15M bytes. The on-line manual needs another 6M. If you then allow two times your physical memory for a swap space and a good sized user area, 10M bytes, most UNIX installations need at least a 33M disk.

How do you photograph a computer screen?

Make sure the screen is not changing. A long exposure is necessary, so if possible, mount your camera on a tripod to keep from fuzzing the picture. For black and white shots, use Tri-X Pan 400 with f/16 for ½, 1 and 2 second exposures. For color, use 200 ASA, same exposures. Generally, the ½ and 1 second shots turn out best.

Can I put my 440 on a bookshelf?

NO! Most bookshelfs are not deep enough to allow clearance for air circulation around the machine. Cold air is sucked in from underneath the machine and through the side vents (also the floppy slots) while hot air exits out the rear bottom. If any of these areas are blocked, you could overheat your machine. Also, don't sit the machine on top of paper or fabric surfaces as they tend to pull up and block the output of the fan. However, it is perfectly okay to pile diskettes, paper books, etc. on *top* of the 440.

If I buy a 420 can I upgrade it to a 440 later?

No, we're sorry, but that is not an option. While the 420 and 440 share a CPU board, most other components are unique. The upgrade question is one reason Stride has introduced the new floppy-based 440. This model will upgrade to a hard disk system easily and yet carries the same price tag as the 420. The only rational for buying a 420 instead of a 440 floppy based system is if the smaller size of the 420 is of great importance. ☐

People

Allison Brown

Jon Bengtson

Allison Brown has been a long-time employee of Stride Micro, starting with us back in 1982. She has a degree in Housing and Design from Colorado State University, but when she graduated, housing was in a slump while the computer industry was strong.

Her degree has been useful, though. Right now, she's working on the historical restoration of an old home in Washoe Valley.

Allison's favorite pastime is riding her registered Appaloosa horse, George. Allison rides English, a now popular style here in the West, and likes cross-country jumping. During the winter, George gets a rest while the skiing is good.

Allison has held varied jobs within Stride and was recently promoted to Executive Sales Assistant. "I like my new job," Allison says "Sales gives me a chance to talk to many different people, which I enjoy very much". Allison does final order processing for the USA and Canada — now that's a tall order!

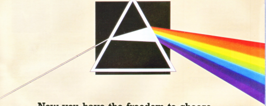
Stride's new Executive V.P. is **Jon Bengtson.** Jon will oversee day-to-day operations as Chief Operating Officer. President Rod Coleman remains Chief Executive Officer, but is now free to pursue long-term planning.

Jon is nearly a native Nevadan, coming to Reno in 1961 to attend the University of Nevada. He's remained here ever since, after graduating with an MBA.

Before joining Stride, Bengtson served as an Financial Executive at Harrahs, Sands Regent and International Game Technology. The latter gave Jon his first exposure to high-tech as the world's leading manufacturer of computerized gaming devices.

Jon is a dedicated outdoorsman, who appreciates Nevada's opportunities to go duck hunting along the marshes and fly fishing in the Sierra mountain streams. ☐

Uniplex II Integrated Software Combines Word Processing, Spreadsheet and Database for UNIX Users



Now you have the freedom to choose...

That's right, now that you can run UNIX on Stride Micro's the question becomes - which software?

Uniplex II is your answer. It is a complete integrated software system for UNIX on the Stride. And freedom of choice is what it is about.

You can store your information and manage it under Uniplex II's powerful database. Then you can choose how to manipulate it. You can, for example, pull a file from the database, work on it in the spreadsheet and then consign it to Uniplex II's word processor for final formatting and printout.

Or you can take a word processed file and manipulate it under the database. Indeed with Uniplex II any file can be processed and freely interchanged within the components of the system - That's real freedom to choose!

Uniplex II components include a word processor as sophisticated as any stand-alone available. All the facilities are there including advanced features such as spelling checking and undo.

The spreadsheet component ranks with the best. With over 32000 columns and 1000 rows you're not likely to run out of space. All the commands and functions you would expect in a high level product are there plus embedded database and UNIX calls. You even get an interactive tutorial system.

The Uniplex II database is a sophisticated relational DBM designed with all the leading edge techniques. Packed with power, the DBM allows files restricted only by UNIX limitations and features the comprehensive SQL query language. System builders will be delighted with its ability to meet their exacting needs.

Other components in Uniplex II unlock your control over your computer. There is a Menu System for executing UNIX commands, a Screen Builder, a Print Spooler for controlling shared printers and a full featured communications facility

Combining all these into one integrated product, written entirely in 'C', means real power for your installation but your freedom of choice comes from Uniplex II's unique design.

Common command functionality over all components means one product to learn instead of many. Piping your information through any component gives you the freedom to decide how to manipulate it.

So choose Uniplex II the one integrated product solution to your office automation under UNIX.

Uniplex II is freedom of choice.

RAKON COMPUTERS PTY. LTD

14 Alexander Street Crows Nest N.S.W. 2065 Australia
Telephone (02) 437-6777 Telex: AA75664