

# in STRIDE

December 1984

Vol. 13/No. 11



# SAGEDBRUSH

by Hyperception

## GRAPHICS FOR SAGE AND STRIDE COMPUTERS

### HYPERCEPTION CAN ENHANCE SAGE II, SAGE IV, AND STRIDE 400 SERIES COMPUTERS WITH VERY POWERFUL GRAPHICS AT VERY LOW COST

Beyond the standard SAGEDBRUSH graphics command software, Hyperception also offers business software that uses menu selections to create charts and graphs from text files.

The following list of features shows why SAGEDBRUSH graphics is clearly the performance-price answer for Sage and Stride systems:

• **True bit-mapped graphics and text.** Unlike a terminal with added on graphics, images may be transferred to portrait, dot, and to character-by-device. SAGEDBRUSH software supports hardware for popular printers. Combination of bit-mapped text and powerful software text-formatting features allow virtually every type of text file and view.

• **Fully integrated, p-system compatible software.** Some SAGEDBRUSH graphics command set highlights:

ARC	ARC, ORIGIN, and STIPES	GRAPH	Background color and relative center — useful for hidden characters
ARND	n-by-n character into matrix	PERMAP	Character-to-character transformation
CGN	Text rotation	PSAVE	Quasi-random generation
CMOD	Control character dimensions in x and y directions independently	CGUAP	Compression to hardware device
CLAMP	Character clamp	LTRCK	Control character codes
CTHCK	Character thickness	LTRW	Control character
WPDRAW	Text and graphics window function (filling)	SCALE	Resize screen to user-defined ratio

The disk transfer command set is equally powerful. Some disk transfer command set highlights:

- **LOAD** Transfer disk image file to video display
  - **OFFDIS** Transfer video display to disk image file
  - **DISDUP-logical** AND, OR, and XOR disk image files with a System array
  - **DISDUP-physical** read images from video display to p-System array
  - **DISWRT** write images from p-System array to video display
  - **DISWRT-logical** AND, OR, and XOR video display with p-System array
- **Multi-user single-display and multi-user multi-display operation.** In the former case of users share a SAGE/STRIDE unit and display, in the latter, each user has a dedicated unit and display. Dedicated multi-user operation is achieved by sharing SAGE/STRIDE units together.

• **DRUG-BEEP option can add free-free graphics entry, screen positioning capability.** DRUG-BEEP converts directly to a SAGEDBRUSH unit, and supports distributed multi-user operation. Other includes software:

- **Specialized microformats, composite video output** — no need for an expensive video monitor. Video output available at both options and a BNC connector.
- **Only low-cost, standard printer with dot-addressable mode necessary for hardware** (e.g., Okidata, Epson, etc.). No need for expensive color printer.
- **100 x 100 resolution (two interfaced outputs) or 112 x 112 resolution (interfaced output)** (unit may be upgraded to 112 x 112 resolution by adding memory and changing an EPROM).
- **100% bus-compatible design.** Unit may be upgraded from Sage to Stride operation at any time via conversion kit. Kit includes connection, conversion card (no active components), and proprietary PAL.

The Hyperception business package is also available from Hyperception. An easy-to-use, menu-driven software package, Hypercept features:

- Five types of input (Direct, D-D, Histogram, pie-chart, task schedule, multi-variable graph, standard Histogram)
- Data sets created by menu query or text-editor, modified using text-editor
- On-line HELP menus
- On-line example displays

#### ALL PRICES SUGGESTED RETAIL, DEALER PRICES MAY VARY

SAGE/STRIDE (Sage II, IV)	112 x 112 res.	112 x 112 res.	112 x 112 res.
SAGEDBRUSH (Stride 400)		at \$1,000 ea.	at \$1,200 ea.
Resolution upgrade	NA	at \$1,100 ea.	at \$300 ea.
Sage to Stride Conversion		at \$100 ea.	at \$100 ea.
Stride to Sage Conversion		at \$0 ea.	at \$0 ea.
Monitor		at \$175 ea.	at \$175 ea.
User Manual		at \$0 ea.	at \$0 ea.
Type and mode of printer			

Method of Payment:  Credit Card  COD  Check or M.O. (Texas residents add 8%)

Name: \_\_\_\_\_ Company: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

Manufacturer's No. \_\_\_\_\_ Telephone No. \_\_\_\_\_ Day Code \_\_\_\_\_

Model No. \_\_\_\_\_ Fax Code \_\_\_\_\_

Hyperception • 3000 Lantana Ave., Suite 400 • Dallas, TX 75219 • (214) 598-9500

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# Inside In Stride

by Verlene Burkan, Editor

Interest in the new language Modula-2 is growing rapidly, and all of us involved (see adjoining article on MODUL2) have a vested interest in seeing the language develop into a single strong standard, without splintering into various "dialects".

Work being done in committees at the British Standards Institution addresses several critical areas, one of the most important being the library module definitions. If you want to be kept up-to-date on their progress, your best bet is to join MODUL5.

At this point it might help to identify the standards groups:

ISO — International Standards Organization  
25, Rue des Saussaies  
75007 Paris, France  
Tel: 33 (1) 47 71 20 00

ANSI — American National Standards Institute  
1100 Broadway  
New York, NY 10036 USA  
Tel: 212 512 2000

BSI — British Standards Institution  
389, Chiswick Park  
Uxbridge, Middlesex, UK  
Tel: 01894 740000

The IEEE (Institute of Electrical and Electronics Engineers) also develops highly regarded standards for technical protocols, languages, interfaces, etc.

ANSI, BSI, and IEEE are all member groups of ISO, and are non-profit organizations. Conformance to their standards is done voluntarily by the technical community. Members of the committees devote considerable personal time and money to the standardization effort. Drafts proposed by the committees are circulated for public review and then proposed to the main body. If accepted by the national body, they stand and may then be proposed at an international standard to the ISO group.

Occasionally, two national groups will propose competing standards to ISO, as was the case with Pascal. Both the IJC (the Joint Pascal Committee, formed by the IEEE and ANSI in tandem) and the BSI submitted standards to ISO. The BSI version became the current ISO standard. Very few differences exist between the ANS standard Pascal and ISO Level 1 standard Pascal. The IJC, in the United States has been working on an extension of the Pascal language for over three years. Their last proposed extension to the Pascal ANSI standard (June '88) is available for public comment. To acquire a copy, send a check for \$15, (payable to IJ Secretariat), to IJ Secretariat/ CB&A, Suite 500 YTI 1st NW, Washington, DC 20001 (202) 737-8888.

The Secretariat can also help you with questions about the organization, dues, agendas, publications, etc.

A lot of work has been done since then, and the IJC is currently integrating and reconciling the differences in

over 20 extension proposals. Kenneth Zarewski, Chairman of the committee, expects a working draft to be out by December. By late 1989, they hope to publish a Draft Proposed ANSI Extended Pascal for public comment. They are also trying to resolve some of the subtle differences between the ANSI standard and the ISO Level 1 standard.

Note that UCSD Pascal contains many extensions to the current standard. The proposed extended Pascal may contain radically different means of dealing with garbage collection, strings, etc. As information reaches me, I'll pass it along via the magazine. If you have comments to make to IJC, send them care of Kenneth Zarewski at the Secretariat address above.

## New Association For Modula-2 Users

MODUL5, the Modula-2 Users' Association, has been organized to provide those interested in the Modula-2 language with a forum to meet and exchange ideas. Information on the standardization effort, Modula-2 examples, implementation projects, and programming techniques will be distributed in the MODUL5 Newsletter, a quarterly publication.

To join in North and South America, please send check or money order for \$30 (U.S. currency) payable to Modula-2 Users' Association to the USA address. Those in other areas should send a check or bank transfer for 10 Swiss Francs, payable to Modula-2 Users' Association, to the Swiss address.

Modula-2 Users' Association  
c/o Pacific Systems Group  
P.O. Box 1017  
Palo Alto, California 94303  
USA

Modula-2 Users' Association  
c/o Swiss Organization  
6010, 8000 Geneva  
Switzerland

MODUL5, soon to be an official non-profit organization, offers membership to all parties interested in the new and developing Modula-2 language.

## Applause Please!

The new Stride 400 Series of microcomputers is getting quite a bit of media attention, here's a listing of some of the recent articles:

Computer News/Building Daily (p. 16),  
Electronic Design (p. 28),  
E E Times (p. 17),  
EET (p. 10),  
IBM/Micro Systems (p. 10),  
Electronic Week (p. 10),  
Computer Systems News (p. 13),  
Electronic Products (p. 19),  
IBM/Micro Systems (p. 10).

Several other reviews and/or articles are also in the planning stages and should continue to generate more and more attention for the Stride/Sage family of products.

# STRIDE Faire '85



This photo has gotten all the attention she will receive. We scheduled her before our 4th 1985. She, when we ran a similar picture for the Sage Faire, she was wearing a different headpiece. In both, she looks like a beautiful woman in the 18th-century appearance she possesses. Her "traditional" style "gender" was made visible in the 18th-century headpiece. She is the star of the year's Faire.

There were a lot of surprises at last year's Sage Faire. We twice as many people showed up as we'd anticipated; the new Stride product line was "lovely" previewed under the name "Sage VI," and, despite the fact that the press wasn't even formally invited, we got some great reviews.

BTE's Jerry Pourcelle wrote in his User's Column, "I reminded me of some of the early micro conversations, the fun ones before they got so large. There was a difference, though: although there were enough hobbyists and hackers to make the conversations interesting, there were also a number of industry heavyweights to make it likely that what was said would have an effect. All told, I don't think I've more enjoyed a convention since the West Coast Faire in Los Angeles where Carl Helms, my late mad friend Don MacLean, and I invented this column."

We couldn't have been more pleased with Pourcelle's remarks if we had written them in our own PR department. Our original objective with the Faire was to bring together all the diverse interest groups associated with our technology and give them a chance to share their ideas and thoughts with us and with each other.

It worked beautifully last year, and we're attempting to produce the same high quality conference this time around.

There will again be a full schedule of varied seminar on subjects ranging from software sales to computer graphics. Since Stride and Sage users seem to have an appetite for new and developing technology, Stride Faire '85 should be particularly rewarding. Several sessions are aimed at the new language Modula-2 and will culminate with a keynote address from Niklaus Wirth.<sup>2</sup>

Dr. Wirth, from the ETH Institute in Zurich, Switzerland, is the author of both Pascal and Modula-2 and is considered a leader in the development of advanced programming concepts. His appearance in Reno is a rare opportunity to hear one of the "legends" of computer science.

Stride Micro will also host an exclusive product introduction of several devices we think will break new ground in microcomputer technology.

When all that is added to the fact that Northern Nevada is an internationally known resort destination, you can rest assured that everyone coming to Reno for Stride Faire '85 will leave a winner.

Walt Smith, the smiling fellow here in control. Finally, we're introducing an upper echelon of the Sage community through the Faire. Previous Stride Faire '85 was, Smith, I wish, had been able to get it right. It's the last time in the "modern" world.

Contact Larry Smith, Stride Faire Manager, for more information into the upcoming Stride Faire (702) 733-4666.



Don Helms of Stride Faire. Despite that we only had a year since our last year's Faire, he also was a Sage Faire computer conference presented by computer giant, Intel. Helms, the year after the computer conference and as a host, we then invited Helms for a new Stride '85.

# The First PC

By Rod Coleman

It continues to amaze me that the microcomputer industry is only ten years old. It sometimes seems as though the Apple II must have handled the navigation chores on the Mayflower as that IBM has already been flooding the market with PCs since the invention of the wheel. The reality is that the entire concept of the personal computer is just now getting ready to celebrate a one decade anniversary.

In 1965 our industry will spend \$758,000,000 just to advertise the virtue of owning a microcomputer. That's a remarkable figure when you consider that just one short decade ago a single article/ad about a "home computer" started this whole business.

There was one about the "Altair 8800" computer kit, and it appeared in the January 1975 issue of Popular Electronics (now Computers & Electronics). Today, new product stories are a daily occurrence. Just ten years ago, the Altair release was something special. It was billed as the "world's first microcomputer kit to rival commercial models."

As the saying goes, it's hard to appreciate the impact of that magazine cover if you weren't there. I do think it's safe to say, that of the thousands of executives and marketing people closely involved in the microcomputer world today, some of them had any idea they'd be here, back in 1975.

The rambles caused by the Altair announcement were never felt on Madison Avenue or Wall Street ten years ago, as hardware introductions are today. Rather, it was in the imaginations of hundreds of engineers, experimenters and dreamers that this event was recorded.

In my case, it built the foundation of a philosophy that took me from a systems analyst to the founder/president of Stride Micro. I was among the thousands that sent away for the literature package offered in the Altair article. Working as the data processing manager for a parts house in Northern California, I was no stranger to computers. But in reading the magazine, I realized this was something different. It shed light on the concept that computers might really be "personal" someday.

One must understand that computer junkies in 1975 were almost resigned to the fact that they'd be sentenced to a life term of after-hours experimenting on someone else's machine. This usually meant getting access to a university time-share system or working for a business that would let you work nights in the computer room. The thought that an individual might be able to afford, or use, a machine all by himself was almost too good to be true.

It was brought down to earth when the Altair specifications arrived by mail. The severe memory limitations meant there were few practical applications for such small capacities. Nonetheless, this first exposure planted a powerful seed. With some imagination and a little more memory, you could conceive of a personal computer running a high level language.

It wasn't long before that dream took shape. I was working with microprocessors in the communications

HOW TO "READ" THE COVER SPECIFICATIONS

## Popular Electronics

PROJECT BREAKTHROUGH!

### World's First Minicomputer Kit to Rival Commercial Models...

"ALTAIR 8800" SAVE OVER \$1000



ALSO IN THIS ISSUE:

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- CCD-TV Camera Tube Successor?
- Thyristor-Controlled Photoflash

TEST REPORTS:

- Motorola 6800 Processor System
- Power AT-200 Open-Relay Receiver
- Sun-Monaco 4024 AM Receiver
- Microcomputer "Wings" Made by Heath Product With Proprietary Circuit

industry when I encountered Steve Jobs in a San Jose "Byte Shop" selling an Apple I in a plywood box actually running BASIC! He didn't make a sale that day, but it wasn't long before I thought an early Radio-Shack computer. It was serial 42.

Things blossomed for me shortly afterward when Motorola announced their 6808000 processor. I recognized this as a technological breakthrough on a par with the Altair, and was able to capitalize on the opportunity by being one of the first to build and market a sophisticated computer based on that chip in 1982 (the logic IC).

While our machine was easily more capable than the original Altair, we took great pains to match the "gutsy roots" philosophies and concepts it pioneered. We made the source code to our BASIC available, spent hours talking with experimenters and software developers on the phone, and even published the schematics for the whole system in the owner's manual. I believe that technology is to be shared and explored, not locked behind closed systems or threats of copyright infringement suits. That was the real heritage of the Altair article and the magazine itself: stimulated development instead of inhibiting it.

Today, our company has been renamed Stride Micro and markets a full family of powerful multiuser and networked systems. Many of our customers are corporations and members of the Fortune 1000. But our heart, and the core of our installed base, is still with those wearing T-shirts and exploring the thresholds of new technology in microcomputers. These are the same folks who would have rushed to buy those copies of Popular Electronics a decade ago.

## Grads

Congratulations to the graduates of the first 400 Series training class. Pictured are (front to back, left to right): Bob Hawkins, Stride Training Manager; Kent Schaefer, Strideframe Consultants; Mark Anderson, Stride Micro; Peggy Luker, Stride Micro; Hasty Larson, CRC. Topics covered in the class were 400 Series product configuration, applications, Liaison networking, marketing techniques, system diagnostics and sub-assembly replacement. This is a pretty formidable amount of information to absorb in just one week, but our graduates and a dealer to learn say they through successfully.

Ed: How did this training class go overall as a representative? For more information, contact Bob Hawkins at Stride Micro.



## Q & A

### Are there new Program Development Manuals for the p-System IV.2 release?

No. Softech Microsystems (the vendor) has not finalized the new manuals yet. When complete, the manuals will be for Version IV.21 not IV.2. Also, as Liaison is a separate product (actually an addition to the p-System) that documentation may be handled independently. The IV.10 Program Development manual contains the majority of information needed and is still available through Stride.

### Heft a tape in the car overnight and it freezes. Can it still read BT?

"Condition" the tape by letting it warm up in your computer room for about 8 hours. Rewind it back and forth once before trying to read it. Use the same method if the tape has been overheated.



Page 68 December 1984 by Bruce

### Is there any reason not to use 10 sectors/track on the 400 machines?

Not under most operating systems. However, if you are using LRS, you should stick to Sector/Track as we think it gives a small speed advantage. Also, if you are mixing operating systems on multi-ls, it is best not to deviate as it will be difficult to update. Many of our test and setup routines, such as MUI, BLUD, depend on having 10 sectors/track.

### The 400 Series Liaison Manual refers to AFS, what is it?

AFS stands for Advanced File System. It was intended as a replacement for the current file system, called the Standard File System (SFS). It has several attractive features, such as non-contiguous file allocation (no more thrashing!) but its large size and slow speed have prevented it from being accepted. It is used internally by Softech Microsystems with Liaison on their in-house LAN. References to AFS will be removed from future manuals and Stride Micro has no current plans to carry it.

## USUS Events

An attentive group participated in the fall USUS meeting held in Toronto, Canada. The meeting was hosted by TDI Computer Systems, Ltd., Canada (Chuck Emery and Kirby McPhillips). The next scheduled event is the intensive USUS organizational meeting to be held in Reno, Nevada at the MGM Grand Hotel/Casino, in conjunction with Stride Fair, February 8-10th.

# Outstanding Dealer: Microstrategies

In recognition of exceptional past performance as a Stride/Sage Dealer, the management and staff of Stride Adams are proud to present the first Outstanding Dealer award to Microstrategies, 158 Village Green, Mills, Massachusetts.

Microstrategies was originally started in 1982 in Mills, as a virtual market software house. In their search for the best computer for their software, they found Stride/Sage. Now, the company's purpose is two-fold: they still develop innovative software, but being a Stride Dealer has become a solid part of the business.

As software developers, they have several successful programs. Profit\$ is a software program for apparel and sporting good retailers that Microstrategies developed. JPA, Essential Fiscal Aid, is a set of useful development tools for Pascal programmers.

Microstrategies staff currently consists of six people: Mahan Singh Khalsa, President; Sat Gopal Singh, Vice President Software and Head Programmer; Cansuvar Khalsa, Customer Support, Sales & Accounting; Par Quares, Secretary; Sat Guro Khalsa, Technician; Jaiwan Mukya Khalsa, Documentation & Software Sales and Installation.

As the first Outstanding Dealer, the team at Microstrategies exemplifies the best qualities sought in a dealer: solid business practice, friendly customer service and good marketing skills.



Sat Gopal Singh (right), pointed here at the Stride Adams monitor of Profit\$, a sales tool to illustrate good sales.

## METACOMP

Join the Fifth Generation  
TURN YOUR STRIDE COMPUTER INTO A  
POWERFUL AI WORKSTATION

Explore the world of Artificial Intelligence and Expert Systems with CAMBRIDGE LISP 3.0!

#### FEATURES:

CAMBRIDGE LISP 3.0 includes a variety of METACOMP LISP, a subset of COMMON LISP with enhancements to aid porting code from other Lisp implementations.

#### POWERFUL:

CAMBRIDGE LISP provides flexible, built-in speed-COMPARABLE TO FORTRAN LISP with a 1.5MB to 10MB, and delivers up to 100K or more DYNAMICALLY, with automatic space allocation and full garbage collection. It can handle floating-point code through arbitrary precision, and integer of any size, limited only by memory.

#### EXTENSIVE ENVIRONMENT:

CAMBRIDGE LISP includes an INTERPRETER, for easy program development, and an integrated EDITOR for code efficiency. It also includes a FULL SCREEN EDITOR for source code, built-in pretty-printing, a MICRO-VIDEO EDITOR, and other DDD options. ALSO

#### SYMBOLIC MANIPULATION:

Also available, implemented in CAMBRIDGE LISP, is the mathematics pre-processor system REDUCE 3. This program, designed by Dr. A.C. Horn of the Rand Corporation, can manipulate and solve complex algebraic equations, do lattice operations, determine differential equations, calculate with matrices, and much more, with many applications to real engineering and scientific problems.

CAMBRIDGE LISP is available under CP/M-800 or under Microsoft's TOPS-2000 operating system, and requires 12.5K RAM.

For more information, call your Stride Adams dealer or contact Metacomp, Inc.

METACOMP  
Executive Inc.  
287 Walling Ave., Suite 10  
Menlo Park, CA 94025  
(415) 321-0022

PRODUCTS OF CAMBRIDGE (CPM800) and TOPS-2000: Symbolic, Limited (LISP 3.0); Digital Equipment Corporation, (CP/M-800); Digital Research, Inc.; Teko - (Video Editor).

# Network Power For 420

The Tride 420 is probably one of the highest performance, one-in-many-hits-available today. But outside of an occasional database access, what advantage would a network provide you, a prospective 420 user, especially if your work were more technical than business oriented?

Let's assume you start with one of the smallest machines Tride sells: a single floppy 420 system. Now, with two floppies, a 420 is a dynamic environment. However, working with a single floppy is tough. To do a simple disk copy may mean swapping disks up to 20 times! Run, before tripping on that other drive, look around. A 440 or 460 may be nearby. Connect the two together via a network, and your 420 can now use some of the larger system's hard disk. The network will also provide data access up to 2-3 times faster than the floppy disk would have. Now, with another volume on-line, the copy problem disappears.

Even if fully equipped, your 420 can profit from a network link. After all, what user ever has enough disk space? For example, system files typically take up a good bit of the available floppy space. The adjoining article by Bill Benham shows how to switch from the system floppy at the root volume, to an area on another computer's hard disk over the network. Your floppy drive is now free, and the system programs load faster.

Every user has different needs, of course, but techniques like this show that the real value of networking is just starting to be realized. If attaching an already potential 420 with more disk area (at no additional cost), will provide quite an incentive for even the most solitary of users to link up.

## Comparing Disk Drive Speed

All disk drives are not created equal. Besides the obvious difference in storage capacity, models from different vendors vary in how fast the data can be accessed. One of the most important speed considerations is the "seek time" of the drive. This is the time it takes for the head to move from its last location to the new location and start loading/writing. Maximum seek time is the worst case time taken when the head was the maximum distance possible away from the new location.

Here are a few values for the vendors currently supplying Tride Micro with drives for the 480 series:

Vendor	Maximum Seek Time	Average Seek Time	Disk Size
Seagate	20 msec	85 msec	10M, 15M
Quantum	30 msec	45 msec	10M
Maxtor	40 msec	30 msec	52M, 112M

Note that the bigger drives are also the faster drives!



## Access p-System Operating System Files Over The Network

by Bill Benham, Sage Fellow

*Bill Benham is one of the founders of Tride Micro and the author of the Tride-420 user's manual. Before his final disk conversion specialists who have made outstanding contributions to the company.*

### General Operation

The Tride 400-series computer is booted normally from a system diskette. The user initiates a program, or, optionally, it is executed automatically as a SYSTEM.STARTUP file, which in turn calls up several other programs and system functions. The result is that the computer, which initially had the floppy diskette as its "root volume" (that is, the area where it found all of the operating system code) now has an area on another machine's hard disk which it accesses over the network.

### Advantages

This idea allows a system with limited disk resources (such as single floppy 420) to expand its storage capabilities. In the case of a 420, loading system files across the network is about 2-3 times faster than from the floppy diskette.

### Installation

The hard disk volume must have the exact same version of SYSTEM.PACAL at the exact same block as the SYSTEM.PACAL file on the floppy diskette. This is easily done by making SYSTEM.PACAL the first file on both devices. Remember, if one device has a duplicate directory, the other device must have a duplicate directory in order for the files to start at the same block.

The files, STARTUP.CODE, STARTUP.TEXT (referred per your installation), and INITSTARTUP.CODE, should be placed on the bootable floppy diskette. The file SYSTEM.STARTUP.CODE may be renamed SYSTEM.STARTUP to cause an automatic switch to the network. Otherwise, once the system boots from the floppy, you must execute INITSTARTUP manually.

SYSTEM.STARTUP.CODE is a single program which initiates redirection of input from the command file STARTUP.TEXT. That is, the characters read from STARTUP.TEXT run the same commands they would if they were being typed in by the operator.







The QIC-02 cartridge drive from Hewlett-Packard provides up to 400 bytes of storage on the 400 and 401 Series computers. QIC-02 cartridges are optional.

## Q&A On QIC-02 Tapes

by Verlene Boehman

Many questions were received about the new QIC-02 cartridge system that is only one step away from the familiar 800-series. In addition to the Department of Data, Hewlett-Packard Research and Development, we thank Archive Corporation for their excellent test streaming, which undoubtedly assisted their introduction of the new tape to tape, cartridge Archive Corporation, 3360 California Avenue, Costa Mesa, CA 92626 (714) 441-4376.

### What kind of tape drive is available for the 400 Series?

It is called the QIC-02 streaming tape drive. QIC stands for Quarter Inch Cartridge. This technology only came into its own in late 1981, when 29 tape-drive vendors, after a seven-month effort, standardized on the QIC-02 interface.

Once the standard was in effect, the many different vendors' produced drives that could be interchanged. Computer manufacturers were quick to design in the interface, as the hardware required was minimal. Also, the new drives themselves are small, fitting a 3 1/4" footprint, and inexpensive.

### What exactly is the QIC-02 interface?

The connector is a 50-pin edge connector for flat cables. The signals are all standard TTL levels, both to and from the host. (The 400 Series uses Low Power Schottky with excellent results.) Maximum cable length is three meters. All odd pins 1-23 are logic ground. The signals consist of a

bi-directional 8-bit data bus, with optional 8th bit for parity (not used in the 400 Series), four control signals from the computer to the drive, and four signals from the drive to the computer.

In addition to this relatively simple hardware specification, the QIC-02 defines a set of device commands, each a single byte. To conform to the standard, every QIC-02 device must respond to all of the commands in the standard (6) set. (There are also sets of optional (O), reserved (R), and vendor (V) commands.) The full standard (6) set is supported by the BIOS. p-system Pascal programs can access the tape drive through UNITREQ4D, UNITREQ16, and UNITSTATUS calls to device 115. (See page 132 of the *Strive Owner's Manual, Vol 1*.) The BIOS calls are generally available to any programmer on any operating system on the 400 Series machines, even if only through assembly level routines.

### How do cartridge drives compare with reel-to-reel tape drives?

Data on a streaming tape is written in large blocks of bytes. Between these areas, there may be blank areas known as "interblock gaps." Streaming cartridge drives generally operate continuously at high speeds without interblock gaps so no part of the tape is unused. Streaming 1/2" reel-to-reel drives also operate continuously at high speeds. However, they use interblock gaps to main-

### (Tape Continued)

tains an IBM-compatible format which reduces the amount of data that could be stored on the tape. A different kind of tape mode, called "stream/stop" (or "streaming") requires inter-block gaps between small blocks so that the tape can be accessed as a block-structured device, like disk drives. While this mode may be more convenient to write a program for, the transfer speed will drop, typically from 90ips to around 24ips. Again, less data can be stored on a cartridge written in "stream/stop" mode.

1" tape drives generally store a byte of data (8 bits plus parity) across the width of the tape. On 1/2" tape, the bits are stored serially down the length of the tape, resulting in slower throughput for the same tape speed. The newer 1/4" models have much higher recording density and speed, which has helped to increase performance.

The capabilities of 1/2" tape drives can be truly awesome; a high-end product from HP offers 800-70004 bytes of on-line storage, 6250 spm (characters per inch), both streaming and start/stop modes, auto tape loading/threading, etc. The prices are generally also awesome; the model above retails around \$45,000. Even 1/2" tape systems retail below \$10,000. Power and space requirements are also gargantuan: they are typically installed with a separate power supply in 19" rack mounted systems, four to six feet high.

### How fast is the tape drive?

The maximum data rate across the QIC-02 is about 2M bytes per minute or 90K bytes/sec. This means a 2M hard drive can be backed up in 1.5 minutes! A comparison of the other devices on the system shows that the tape drive is the third fastest device on the system:

Device	Data Transfer rate
RAMDRM	5,000K bytes/sec
Hard disk	900K to 400K bytes/sec
QIC-02 tape	90K bytes/sec
Console	62K bytes/sec
floppy disk	20K bytes/sec

The speed is rather deceiving. After all, the tape is 600 feet long. To read or write information at the end of the tape means first "streaming" past all of the information at the front of the tape. This can take minutes. By comparison, the longest time it will take to reach any block on the slowest hard-disk (Seagate) is 285 msec. (This is the "seek" time of a hard disk.) In the time it actually takes for an operator to read or write information to the tape, the tape drive is probably the slowest device to use.

Two common speeds for streaming tapes are 30ips and 90ips (ips stands for inches per second). The tape drive model on the 486 series operates at 90ips.

For maximum throughput, it is important that data be given the tape drive as fast as it can receive it, that is, it must "stream" over the tape without pauses.

If the tape must be stopped between transmissions, the amount of data being transferred in each transmission becomes important, because it takes time for the drive to "ramp-up" to speed (and also to "ramp-down") any delay between sending one block of data and the next, will impact throughput. One study by Data Electronics Inc. (EDM February 3, 1982, Sam Thompson) actually showed that a 30ips drive could out-perform a 90ips drive if the

block size was 100 or less. Tape programs written for the 400 Series should take this into account and use the largest block size possible. The Stride ATMS tape back-up program supplies data to the drive at the full 90K/byte and "streams" the tape.

Another way to increase the throughput to the tape is to double buffer. For example, a backup program would write to one buffer into buffer #1 in memory and start the tape. While the tape is busy on buffer #1, more data from the disk would be loaded into buffer #2. Thus, two operations would be going on almost simultaneously. When the tape finished with buffer #1, it would start on buffer #2, releasing buffer #1, for the disk routine to use again. This works well in interrupt-driven large-memory systems such as the 400 Series. The ATMS backup program also double buffers.

### When is a tape drive really needed?

First, to lower operating expenses. Consider a system which requires a total of 10 floppies a week to backup. At \$4.00 per floppy, this costs from \$40-\$60. A tape cartridge costs \$40 and holds 60M bytes (or 40M bytes optionally) the equivalent of about 150 diskettes. Therefore, if more than 8-12 floppies are being used to backup at regular intervals, a tape drive might be justified. Note, if files must be saved indefinitely (some industries are required by law to save their records for several years) this cost becomes especially important. If the media can be reused fairly soon, then the difference in cost becomes less important.

A second reason for backing up via tape is to reduce backup time. The larger the amount of data, the longer it will take to transfer it. When backing up with floppies, a lot of time is spent inserting and removing diskettes. Consider how often the backup must be made. If the backup must be done on a daily basis, rather than weekly, the difference between a 30 minute floppy backup session and a 2 minute (if that) tape backup session adds up fast.

### What are the technical specifications of the drive?

The currently used drive is the 2445, Intelligent Scorpion drive from Archive. It features 3 tracks, 1 channel with 2 heads (one for forward motion, one for reverse), 45M bytes (formatted) on a 400' tape, 60M bytes on a 600' tape, 1920 recording mode, 6000 fpi recording density, 4-in-1 ECL encoding method, 10,000 fpi (bus reversal per inch) bus density, 90ips tape speed, and 300 ms start/stop time.

### How reliable is the tape media?

The packaging of the tape into the cartridge solves many of the old problems of dust, finger prints, and creases which could destroy data on open reel-to-reel systems.

The Scorpion uses an "AC erase" technique which allows the extremely high recording density. The brushless DC drive motor speed is tightly regulated by a digital servo system. Other security measures taken are up to 16 retries on a CRC error, and wide band phase-locked-loop tracking of instantaneous speed variations.

Overall, simply because of the tougher packaging around the tape, tape cartridges are a lot more secure than floppies. However, both are susceptible to erasure by magnetic fields. Appliances such as vacuum cleaners with large motors have been known to wipe tapes clean.

Storage areas should be kept at normal room temperatures and fairly dry.



# Advanced DB Master.



Software announces a true multiuser database for Siskie microcomputers. Advanced DB Master has evolved from the popular product enjoyed by over 30,000 Apple users to a powerful business information system. Data is secure due to complete file and record locking. Hard disk files can be up to 100M bytes in size. A test editor is built in for easy report generation. Computed fields allow "spreadsheet-like" calculations within the database. Specific parts of the product have been re-written to take advantage of Siskie's speed and unique multiuser capabilities. A single user version is also available. Suggested retail prices are \$495 and \$1,295 respectively. Contact your Siskie dealer for details.

DB Master is a Trademark of Software Incorporated.  
Siskie is a Trademark of Apple II Inc.

# ATMS Provides Main-Frame Like Tape Facilities

By Steve Wilkins

The new ATMS (Archive Tape Management System) tape backup facility may come as somewhat of a shock to p-System users as its user interaction is quite different from the typical p-System style. However, main-frame and Unix users will feel right at home.

ATMS provides tape cartridge backup of volumes and files for the p-System. The program was intentionally designed to be very terminal independent, with no "cursor" menus, windowing, or use of special attributes, such as full screens. This provides the greatest possible ability to port the program across different operating systems.



9-track 3180 magnetic IBM tape media is used for IBM tape cartridge tapes. ATMS (below) is the tape management control, and manages up to 750 tapes. There's a whopping 65,000 bytes of off-line storage.

ATMS prompts the user with a single command line, walking the user through each step. On-line help is available at any point, simply by typing "HELP." A screen of instructions pertinent to the current process will appear. Commands are "case-insensitive" so that it doesn't matter if you type in upper or lower case.

There is also an optional Mode available which allows the user to string together on-line all of the commands to

do in sequence. The system is very flexible, allowing commands to be separated by one or more spaces or a carriage. Two consecutive commas indicate a multi-response equivalent to typing in just a carriage return. Data for the command can also be substituted line-by-line by enclosing it in quotes. (Yes, you can input a quote as data, just two quotes side-by-side.)

Users will also find the Command File feature of ATMS useful. The commands used for a backup session are typed into a file called COMMANDEFINT. When executed, ATMS looks for this file and, if the file exists, does the commands specified. Thus, backups that must be done on a regular basis can be run very easily by non-technical people, since all they need to know is how to save ATMS.

ATMS is not just a dump-and-restore program. It will help a large facility manage an inventory of up to 750 tapes, shared among up to 100 users. Database concepts are used to build a file-containing information about all of the tapes in the inventory. This file normally resides as a 800 block area on a floppy disk. Should the floppy be lost, data can still be read from the tapes, however, the database serves as a convenient way to keep track of the many tapes and how they are used. Normally, this file would not be kept on hard disk. The reason for backup is, of course, a protection against information on the hard disk being lost.

ATMS assigns tapes in the inventory to several different categories. Every tape has a "label," which is not the paper stuck on the cartridge, but a header of information written at the front of the tape. New tapes are brought into the database inventory by assigning them a Volume Serial Number, VSN, (subset of IBM) which ranges from 1 to 750. VSN numbers given to tapes that become damaged or physically lost, are assigned to the "Delete Pool" category so that those numbers can be reused by a new tape.

Tapes are assigned to users, with each user given an alphanumeric User Number of up-to-8 characters. Once a tape is assigned to a user, another user cannot access it unless the original user "transfers" it to him. (This applies to several users; a category of users called "Managers" that have special privileges). ATMS always checks tape ownership before permitting any read or write operations.

If a user does not need a tape any longer, it can be "released" and put in a category called the "library pool." The next user needing a tape will be given one out of the "library pool" on a first-in-first-out basis.

For those wishing to access the low-level functions of the tape drive, the QRC-BU command primitives are available as ATMS calls.

ATMS is a welcome addition to the Stride software utilities, providing a quick, effective backup for p-System users, and additional high-end inventory management features rarely provided on small computers.

# Returns Require An RMA

By Chris Dunlap

Stride Micro is initiating a new system of handling repairs/returns of computers and components. In the future, when you have a problem and need to return any part of your equipment to Stride, you will need to contact me, Chris Dunlap, Technical Support Engineer. I will be glad to discuss the difficulty regarding the equipment and, if appropriate, will assign you a Return Merchandise Authorization number (RMA). In my absence, either Peggy Isley or Janice Cline will be able to assist you.

Label for equipment with the RMA number before you put it into the box. Be sure and use the original box the equipment arrived in as it is specifically designed to minimize shipping damage. Then mark the RMA number on the outside of the box. If it is not marked on the outside of the box, there is the possibility that our shipping department won't accept the package and a lot of time will be lost while the equipment is in transit.

We hope this new system will streamline our return/repair service to provide better tracking and turnaround time.



Paul Chikvadze, Division Manager,  
Southern Division



Jim Kinchley, Division Manager,  
Eastern Division

## People

**Paul Chikvadze** is the new Stride Micro Sales Manager for the Southern Division. He brings to Stride his invaluable experience and knowledge of the computer marketplace gained from working for such companies as Applied Digital Data, Honeywell and CALCOMP. Paul is a native Texan, a "base lined," He lives in Dallas with his wife, Ann, who runs her own business and daughter, Lani, who is in the first grade. On weekends, Paul enjoys spending time on the tennis courts and likes to hunt (quail and doves). He's also a football fanatic - one game as to what team he cheers on is victory! We hope you will join us in extending a warm welcome to Paul and his family.

**Jim Kinchley** has been Stride Micro's Sales Manager, Eastern Division, for the past two years. Having graduated from the University of Boston, he even has the proper Bostonian accent! Prior to joining Stride, Jim was General Manager of Hamilton Micro, a division of Avnet, Inc., one of the world's largest electronic distributors. Jim has done an excellent job of coordinating and developing the RMA Program in the Northeast. Summer, you can find Jim sailing his lobster cat and when the weather turns cold, you can look for him on the ski slopes. Jim is also an avid racquetball player and has issued an open challenge to other enthusiasts at Stride.

## New Dealers

The number of authorized Stride Dealers throughout the country continues to grow. Welcome aboard!

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## Place An Ad!

Consider that our Stride ads cost an inflated \$45 each. Distribution currently stands at 6800 and continues to grow. How else can you directly reach the Stride/Sage community? Contact Chris Kinchley (702) 322-6888 for rate schedules.

# Union Local Goes Express

By AJM Data Services

Things aren't what they used to be around Local 1294, Oilfield Maintenance Workers, in Lakewood, California. So smiles Business Manager/Territory Treasurer, Arley L. Cox, when he recalls the time and frustration of the past few days. "It's hard to believe," Cox tells. In stride, "but less than a year ago we were posting all our membership dues transactions on individual cards. It used to take two people two weeks. What's really funny is that at the time we were on a timesharing CPU squeezing our procedures into an ill-fated, "universal" program format, but the downtime was so long we just threw up our hands and started doing everything by hand."

In January of this year, Arne Johnson, President of Ajm Data Services, Inc., Single Dealer in Ventura, California was in the process of constructing a Local Business-Office Management program for Labor Unions. Arley Cox had been suggested as an expert source, a guy who "had it all together." When the two men met, their mutual needs were met with on-line, real-time solutions. Cox had the "11 users" and Johnson came back with the "can-do" and "how-to" including the system to handle it all and then some, a Sage IV (configured with one 640K bytes floppy disk drive, one fixed 18Mbytes Winchester hard disk and 202K bytes of parity RAM). Peripherals selected were a Quate QST-301, Okidata Microline 95Printer and a Hayes SmartModem 1200. A multiuser system was installed with Microsoft 2, Spell-T, Fineware Financial Package and Ajm's Union Local Software Package.

"When I saw Arne's commitment to doing things the right way, remembers Cox, I said, "Yes", to the Sage system the same day he presented it. What Arne didn't know was that for the past year I'd been looking hard at literature. "Sage made them all look like buggy whip merchants."

Now, instead of two weeks, Sage posts Local 1294's dues in two days, and that new time frame includes All the billing plus District and International Headquarters reports. How does Arley Cox spend his 'gift' of time these days? How? "I'll tell you one of the off-ice—in the field recruiting new members, building better member communication and contractor/employee relationships for his 600 member local."

AJM Data delects stride exclusively and is now marketing their second in a series of industrial specific user software programs. "LEASE PORCE" is a turnkey lease Management System for the Independent Leasing Company at under \$2,000. "LEASE PORCE", comments Mike Leibick, AJM Vice-President and 15-year Leasing Professional, "does everything for the vehicle and equipment leasing firm except 'boxes and windows', but we're working on that, too!"



Arley Cox and Arne Johnson look for ways to post Local 1294 membership dues.

Cox is not sure when he will utilize the Sage IV on the time share in his office.

## Tape Backup Over The Network

If one system on a network has a tape drive, other users on the net may want to try to use that station to backup their files rather than to dump disks etc. Before running ATMS (which has to be done on the computer with the tape drive), the user should add the volumes to be backed up to those maintained by a disk server on the net. This will allow ATMS access to those volumes. Run ATMS as normal.

This will work, but a test run here at State Microsystems showed that it will be slow. A 1024 byte area which would normally take 5 minutes to backup, took 90 minutes over the network. Also, the tape will not hold as much data. Despite the slower speed, this is probably more convenient than dealing with 40 floppies. Therefore, a user should try seeing which method, floppies or tape, is suitable for his files.

Note that backing up over a floppy to tape (would there be any good reason to do this?) would also suffer speed problems of the same sort.

# SEASONS GREETINGS



- Mouse.
- DB Mouse.
- New terminal.
- Floppy diskettes.
- Chocolate diskettes.
- Chocolate CPU chips.
- Essential Pascal Adb.
- Extra RAM memory update.
- Books on Modula 2.
- A (big or Modula 2) compiler.
- A dust cover for the computer.
- A floppy diskette head cleaner kit.
- An uninterruptible power supply (UPS).
- The newest volumes in the LMSL library.
- A subscription to BYTE magazine.
- Master Chess Program.
- A rolltop computer desk (with lock).
- A lockable, kid-proof box for diskettes.
- A gift certificate at the local computer store.
- Plane tickets to Reno for the February Stride Faire.
- A subscription to the Journal of Pascal, ADA, and Modula 2.
- Membership in an electronic mail service (such as Telemail or the Source).
- Anti-static mat.
- Tape cartridges.

The holiday season is here, and like every year, we're all faced with lists of choices as we look for gifts for our family and friends. Computer people are especially hard to buy for as they tend to want very specific and sometimes pricey items. As most of us here at Stride are those very same hard-to-please types, we made a list for the editorial staff we would want for Christmas! Hopefully, this may be of some help to you and yours in the shopping days ahead! If not, well, we had fun doing it. . . . Now, where was it you could get chocolate diskettes. . . . ?

MS-DOS Mouse is not a true chocolate CPU. The rest of more the Stride. Chocolate diskettes are available from the local store. The Source-Park Store-USA, Atlanta, GA. (770) 412-2111. (MS-DOS Mouse is not the 1" or 5" disk and the 1" is only 500K.

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