September 2002

Inside

HP's Nanotech Memory Array

A tiny, dense sandwich of molecular circuitry could mean that handheld gadgets soon have a gargantuan memory capacity.

Researchers at the Hewlett-Packard research labs have turned to nanotechnology to help create a system that can store at least 10 times as many bits as existing silicon memory.

The team have created a working prototype mini-memory that is barely one micron square. More than 1000 of these prototypes would fit on the tip of a human hair.

The researchers said the memory chips could be manufactured quickly and cheaply.

The seven-strong team at Hewlett-Packard made the miniature memory by first laying down eight parallel platinum wires, each one of which was only 40 nanometres across. A layer of conductive molecules was put on top of this and then another eight wires were laid across the top at 90° to the base wires. A memory bit was created at the 64 points where the wires met and trapped molecules. By applying voltages to the wires the researchers were able to write and erase information in the memory bits. Refined working devices could have memory capacities of 100 gigabits per square centimetre.

"We believe molecular electronics will push advances in future computer technology far beyond the limits of silicon," said R. Stanley Williams, HP Fellow and director of Quantum Science Research at HP labs.

Importantly the molecular memory created by the HP researchers remembers the information stored in it when its power source is switched off. The creators of the mini-memory believe it should be possible to manufacture the devices relatively quickly and cheaply.

Hybrid electronics

The working prototype was created using a modified printing technique that used silicon moulds to create the platinum wires. But the scientists also admit that they have a lot of work to do to refine their technique because the small size of the components makes the gadgets fragile. Researchers are turning to nanotechnology because conventional ways of making computer memories and processors fall foul of fundamental laws of physics when individual components are below a certain size. Experts believe that nanotechnology is likely to make its first working appearance in hybrid devices that combine traditional electronics with the tiny circuits. The makers of portable consumer gadgets are likely to be attracted by the potentially vast memory capacity of devices built on such small scales.

AMICUE Saturday Coffee SIG
Every Saturday
1:30-3:30
Haps Hungry House
159 St Stoney Plain Rd.

Alberta Amiga is a publication of AMICUE the Amiga Computer Users of Edmonton.
Alberta Amiga is published monthly to inform and support the
Amiga Community in Northern Alberta.
AMICUE meets on the third Thursday of each month at Arch
Bishop Jordan High School 2021 Brentwood Blvd.. Sherwood Park.
Yearly Membership fees of $20.00

Asha's Sunday Chats

Every Sunday evening (in most places) a few Amigans (and former Amigans hoping for the best) gather to chat and share information on a wide range of topics. Subjects will range from the Amiga (of course) to books, TV, and movies to whether or not aliens have visited our planet.

Come join us on the IRC
The network is ExodusNet
The new servers are:

irc.superhosts.net, irc.midnightrose.org, irc.codemain.com
The channel is #team*Amiga

The time(s) are each Sunday evening (9:00pmEST-11:00pmEST 2:00am Monday to 4:00am Monday GMT)

For those who can use Java chat, point your browsers at:
www.reefer.org/chat4.html
or
http://www.reefer.org/chat.html

I put my cam up Sundays so that you can see me as we chat. If you're using an Amiga, get WebVision Aminet, or, if that's down, email me and I'll send you the latest version I've got). It can live on the same screen (MUI) as AmIRC and is easy to use and setup. You can also see the cam on the Web (using a browser). The cam address is www.ashafx.com/cam. There's always a picture up, but it's only live on Sunday nights.
We also love playing with sounds. You can grab all (or some) of the sounds we are playing by going to:
http://enja.org

We have a nice group of friendly folks sharing information, help and humor as we wend our way through the Great Amiga Oddessy.

Hope to see you there!

Please repost this anywhere you find Amigans online!

Asha, asha@ashafx.com,
http://www.ashafx.com

Thomas Frieden: OS4 Questions and answers Amiga, Inc. / Partners :

A few weeks ago, the amiga-news.de community collected a bunch of questions related to OS4 and forwarded them to Thomas Frieden, in the hope that he may answer some of them.

Guess what? Not only did he answer all of them, he even answered them in English, for people who don't speak German.

1. ExecSG, 68k-Emulator, WarpUP

Please describe the Memory-Protection implementation and how this works with pre-OS4 software?
Free memory will always be protected against reading or writing. Some critical memory areas, like the base page (address 0) will also be protected, to allow software to find NULL pointer bugs (which is an extremely common form of bugs).
Old software (68k programs that are emulated, and old PPC software) will run in a different MMU setup. This will not protect anything else but the stuff mentioned above, so even if the program behaves badly, it will be allowed to do so.
New software, OTOH, will have to be written in such a way that memory protection will work. Initially, the protection will be minimal (see above), but with later revisions, we're moving to completely isolated address spaces.
Exec SG already provides for this possibility.

How is Virtual Memory implemented? What has been changed in the implementation compared to your original plans?
The original concept was similar to VMM, i.e. a partition mapped into memory, leaving the original memory system untouched. However, the new plan is to include a virtual addressing scheme at the core. This will allow lots of additional features such a different memory allocation schemes, automatic stack elargement etc.

I don't like Virtual Memory, can I disable it?
You can turn of swapping of memory to disk, yes. However, there's actually no need to do that. It seems a lot of people are judging virtual memory by it's implementation in Windows. Windows uses it's swapping feature even though there's physical memory available.
OS4 will not do that. Even if you have swapping turned on, you will not notice it if enough memory is available. However, when you would normally get a requester telling you that you ran out of memory, the pager will kick in and free some memory. That's all. As long as you do not use enormous amounts of memory, the pager will not become active, and no swapping will occur.

Are there up-to-date Benchmarks from Petunia (68k emulator)?
You will have to check that out on the authors website...

Is Petunia completed now (all CPU commands, FPU, MMU emulation)?
FPU emulation is being finalised right now. MMU emulation is not planned and is really of quite limited interest.

Is Petunia already integrated with Exec SG?
No, not yet. The integration of emulation into OS4 is one of the reason why we are going for a virtual addressing scheme. The emulation integration concept is already designed by an expert in the field and is about to be implemented.

When will there be a new scheduler (as already announced)?
Hmm, I don't think this was announced.

ExecSG uses the same scheduling scheme as the old Exec, that's a prioritized round-robin scheme. It's one of the most efficient schedulers, and most of all, it allows near-realtime behavior. This near-realtime behavior is a critical point in the whole Amiga design: it ensures the responsiveness that we all like about the Amiga. Other schedulers have been available for the Amiga in the past, but while for example 'nice' type scheduling is suited for applications, it isn't suited for drivers.

What we *will* add in future version is real threading: Right now, the only possibility for threads is to use multiple tasks, but this limits the usability (especially since an application consisting of 30 tasks will receive a lot more time compared to an application consisting of just one task).

When will the GCC cross compiler be available for 68k Amigas (as a Linux cross compiler already exists)?
We're currently working on that, with low priority, though. The compiler is also not available publically, because we want to be able to change certain aspects of the ABI on short notice yet.

Will there be "Gurus" again?
Probably.

How much faster will existing PPC applications be under OS4?
We don't have numbers yet but the PPC is already a lot faster when the 68k CPU is turned off. Context-switches will also be substantially faster.

Considering the fact that key components of the OS will be PPC native, we can expect a nice performance gain.
Will games like WipeOut 2097 or Heretic II run under OS4?
We want to have full WarpUp compatibility, so theoretically, they should work. It has to be tested, though.
Hyperion will remaster all of its titles for OS4 for superior performance.

In theory, it should be possible to catch direct access to custom chips registers and emulate the custom chips using UAE code, right?
In theory, yes. However, it's doubtful that this is actually something that would be beneficial. UAE will do a good job emulating old stuff, and with UAE, you'll have full control over the environment, i.e. the CPU used. As most programs that directly access the chipset are unlikely to work reliably in an environment so completely different from old Amigas, I'd say that UAE is by far the better solution.

Will there be somthing like "PuhDerBaer" für OS4?
Uh, WTF is PuhDerBaer?

2. Boot process, File systems, AmigaOne BIOS

Will the annoying "Disk not validated"-Problem be cured with the new implementation of FFS?
No.

Can I press both mouse buttons to enter the early startup menu?
Yes.

What will be in the early startup menu?
It will remain the same for now, maybe some additional options (for selecting the kernel configuration

Early startup menu is in no way related to the motherboard BIOS, correct?
Yes.

What about filesystems? Can I connect my Classic Amiga HD to the A1 and access the contents? Will we still have an RDB or will we get that "trendy" MBR?
The disk format will not change. Definitely no MBR.

Will it be possible to boot from external sources?
This might be possible, but is not planned right now.

What will be the boot time?
Similar to what it is now, hopefully faster.

What will be the floppy disk format? Will the AmigaOne be able to read my 880k Amiga disks?
No, that's a limitation of the floppy controller used in the A1. The Amiga has much more control over it's floppy, which is not available in non-custom controllers.

Will OS4 automatically recognise if a floppy disk gets inserted?
As this is not yet implemented, I can't really say. However, floppy support is becoming more and more unimportant right now, so I don't think too much energy will be wasted on such a dead medium.

How will a Classic Amiga boot OS4? A classic Amiga can't boot from a PPC filesystem, how will that problem be solved?

As there's still a 68k on the classic (which can't be removed due to some signals that are still generated in the 68k), the first boot wil always be done using the 68k. There's no reason why the file system structure can't be used from 68k and PPC alike...

3. Supported Hardware, USB, Firewire

What hardware will definately be supported by OS4 (Gfx,Sound,NICs,USB,etc. ...)?
All of the above.

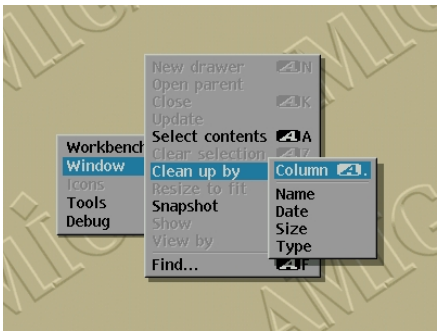
What USB drivers will be available?
Currently, the most important things to cover are keyboards, mice, and HUBs. Other drivers will follow later. Third parties like IoSpirit already have access to our USB stack and will provide for support for devices such as scanners.

What will the USB stack look like? Will it have a GUI?
With a limited GUI.

Will OS4's USB stack be compatible with "Poseidon"?Doubtful.

What about drivers for printers, scanner, CD-ROM etc.?
This will remain in the hands of third parties for now with the exception of the CD-ROM drivers.

Are you working on a driver for PCI-Firewire?No. Firewire is low priority. It's scope is rather limited, therefore it's not considered an essential feature. Support will probably follow later, but it's our firm believe that right now, other stuff is far more important (USB, IDE, SCSI).



Do you have access to documentation for the 'All In Wonder' Radeon 7500 and 8500 too?
The chips on these cards are practically the same as on the other variants.

If yes will there be drivers supporting the additional functionality of these cards?
No, at least not initially.

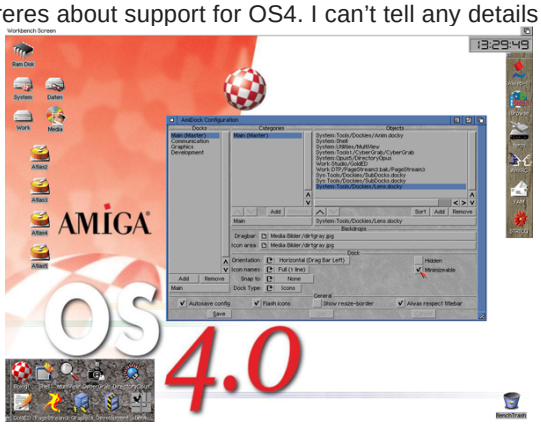
Would there be AHI support for the audio functionality of these cards?
See above.

Will 3D drivers for ATi Radeon 7500 be shipped with OS4.0?
Not initially. The idea is to release OS 4 for the Cyberstorm PPC first where there is no need for such a driver (These boards are AGP only, AFAIK).

Will 3D drivers for ATi Radeon 8500 ship with OS4.0?
This will need to wait for the new version of Warp3D.

Does OS4 run on the Pegasos?
We don't have a Pegasos. Theoretically it would be very easy to get OS 4 to run on the Pegasos considering the very limited technical differences between the AmigaOne and the Pegasos.

What about hardware companies supporting OS4 (wrt scanners, printers)?
None confirmed yet. However, we've been approached by hardware manufactureres about support for OS4. I can't tell any details yet, though.



Will the BlizzardPPC be supported?
Most likely.

Will the BlizzardVision / CyberVisionPPC be supported?
Yes.

4. Other OS4 modules

What's the finalised feature list for OS4?
See Amiga's web page.

What new features will Intuition have?
I'm sorry, but that question is too complex to answer within the scope of this questionnaire.

How much of the new features is finished already?
The new intuition is about 95% finished, last I heard...

What's IBrowse's status?

Ibrowse 2.3 has been in beta-testing for a while now.

What's the status of MUI 4.0?
We have built a complete version of MUI using the latest source-code.

Will there be a new Ed?
No, no new Ed. There are people that use vi, and there are people that use emacs. I use GoldEd. Most people have their favorite editor already. The system's editor is meant for small changes, like changing startup-sequence... most user will still want to go on using their existing editor, though...

How much is DOpus Magellan integrated? Will it be just an external Tool?
That has not yet been decided.

What new shell commands will be available?There will be a new shell, yes. This isn't really the place to start listing individual shell commands.

What's ARexx's future?
Arexx will be preserved but we are looking at alternatives as a replacement down the line.

Will there be multi-user support? Password protection?
No, at least not in the initial version.

Will Screen-Dragging be possible (again)?
Such a feature is technically "challenging" on anything but the classic hardware. If you run OS4 on a Amiga native mode, it will be possible. But different resolutions at the same time on a standard graphics chip are impossible.

Will OS4 stay video compatible? Will it still be possible to display the Workbench on a TV (as long as the gfx card has TV-out)?
If the driver supports it, yes. After all, this is just a matter of the driver.

How secure is the TCP stack? What about Firewall software?
I think a firewall is integrated. There's also the possibility for IP forwarding, which requires some firewall functionality...

Will openening a Workbench window (and rendering the icons) still block the rest of the system?
Sorry, don't know. AFAIK, this wasn't even the case on the latest Workbench. but I could be mistaken...

5. Misc. Stuff

Could you explain the various delays? What difficulties did you encounter? What unexpected problems had to be solved?

It would take us too far to discuss all the reasons for the delays here. The main reason is that we decided to fold most if not all of the functionality originally planned for OS 4.2 into OS 4.0. Plus there's the fact that we needed to develop the AmigaOne Bios after the original development company (completely unrelated to the Amiga market) failed to come up with the goods.

What will we have to pay fo OS4? Will OS3.5/3.9 owners get a discount?
Pricing has yet to be decided. No price-cuts are planned for OS 3.5 and 3.9 buyers. OS 4.0 is the most comprehensive OS update since 2.x to 3.0 and the targetmarket is quite small. This leaves little room for discounts.

How can I become beta tester?
Beta-testing will initially be carried out by selected and trusted individuals who are known to the 30+ OS 4 developers.

Will there be real manuals as PDF,HTML and AmigaGuide documents?
Time permitting.

Who will handle customer support (bug repots, requests)?
This has yet to be finalised. Let's start with actually releasing OS 4.

What are the long term plans (AmigaOS5)? Will AmigaOS become CPU independant or run on multiple CPUs (IA32, IA64, MIPS, SPARC...)?
Sorry, you'll have to ask Amiga about this. Hyperion is currently only interested in moving OS 4 forward and ensuring its survival on a new and modern hardware platform. Basically, the system has been "cleaned" a bit of CPU dependencies.

However, I don’t really see a good chance to run on little endian CPUs... this doesn’t only affect the system, but all user code as well, and I would definitely think that a lot of code will fail. Apart from that, chances to run on IA64 are much smaller than anything else (32 bit systems do no port well to 64 bit systems, at least not when you want to use the extra 32 bits...)
Overall, all code working on a system wich also includes little endian CPUs will have to take care about the endian. This is not a problem in itself, but I’m willing to predict that a lot of people will not care about this. They will code for one specific CPU, and this will lead to a real mess.
What are the chances to get JAVA for AmigaOS?
Better than before when AmigaDE can run hosted on OS 4.x.

When will Quake2 be available for AmigaOS?
Hopefully soon.

Will there be Easter Eggs?
If I’d tell you, I’d spoil the fun ;)

Will Screen-Dragging be possible (again)?
Such a feature is technically “challenging” on anything but the classic hardware. If you run OS4 on a Amiga native mode, it will be possible. But different resolutions at the same time on a standard graphics chip are impossible.

Bugger. I thought this would be the case. That was one of the features I really loved.
Quote:

Will there be “Gurus” again?
Probably.

There bloody better had be.....
Endiens?.... my head hurts.

I’m getting a little worried. This will be fun - it’ll be cool to use. But will it be Amiga.OS.. and I’m for hardware independence, logically it makes the most sense.... but I guess its really hit me. The days gone by. What we knew and loved. its really over.

2002/9/9 9:22 Elektro Cult Member

Elbox : Spider - USB Host Controller

Elbox Computer is proud to introduce the first USB 2.0 host controller for the Amiga computers. The Spider USB 2.0 PCI card provides a simple and affordable way to add five Hi-Speed USB ports to Mediator-equipped Amigas.

The Spider USB 2.0 Hi-Speed PCI controller is backward-compatible, which means it works also with older USB 1.1 peripherals.

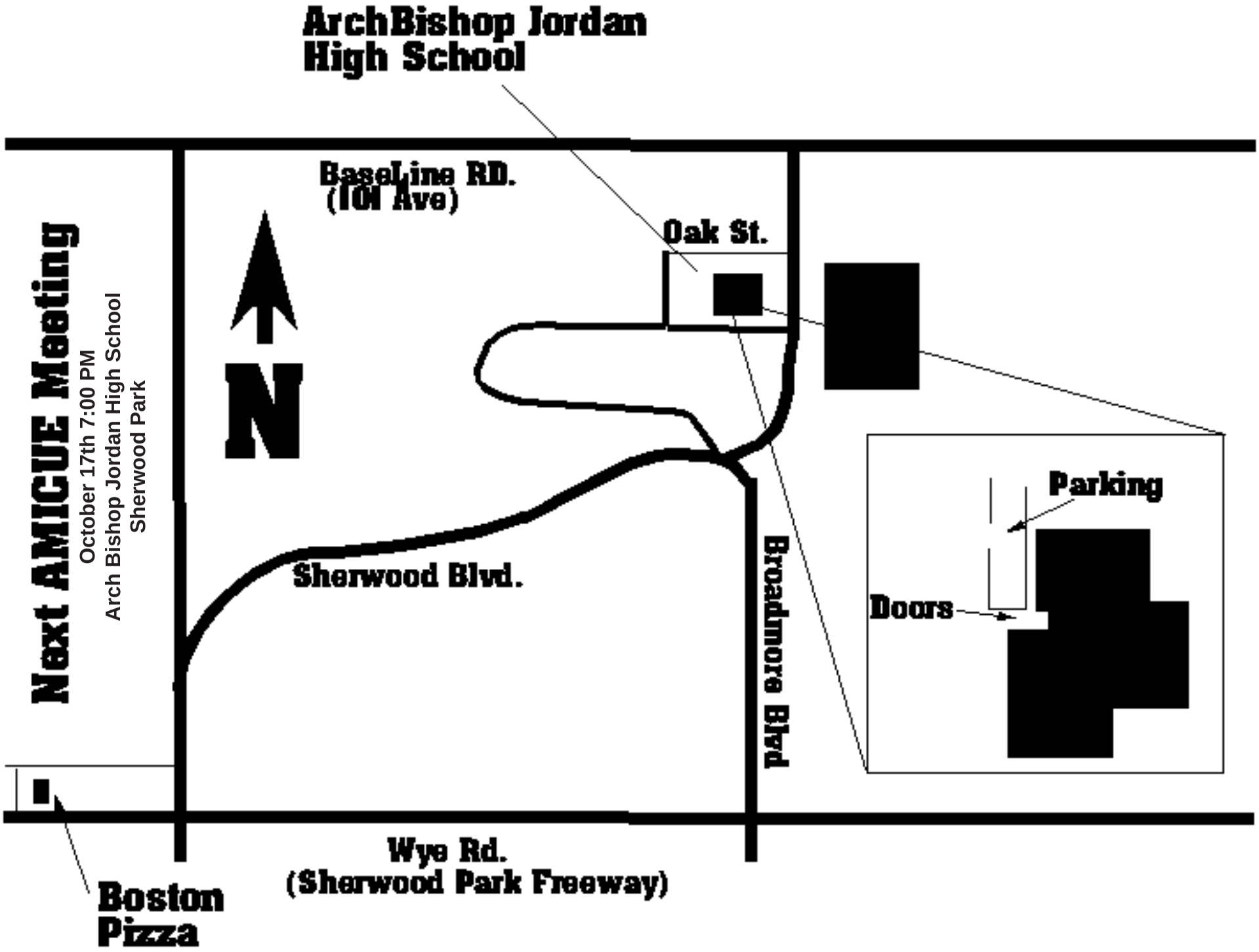
Features: · Four external and one internal USB 2.0 Hi-Speed forts · Compatible with both USB 2.0 (480 Mbps) and USB 1.1 (12 Mbps) devices · Compliant with EHCI, OHCI and PCI 2.2 standards · All ports can handle high-speed, full-speed and low-speed transaction · Supports up to 127 downstream USB devices · Supplies 500 mA power to each USB port · Supports PCI-Bus Power Management Interface · Hot Plug Capability

Requirements: · One free PCI slot · Mediator Multimedia CD

The package contents: · Spider USB 2.0 High-Speed PCI card · Mediator OHCI USB drivers for the Poseidon stack · Unregistered, time-limited version of the Poseidon USB stack

Mediator EHCI USB drivers for the Poseidon stack will be shipped to registered Spider Card users as a free update (when completed).

Pricing and availability: The Spider USB 2.0 High-Speed PCI card will be on sale as of 16 September 2002, at the suggested retail price of EUR 39.95 (VAT excl.) To locate an authorized distributor or purchase the product visit the Elbox Computer website at http://elbox.com/buy.html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