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The Micro-AmigaOne and Amiga OS4 Developer Prerelease (Update 1)

by Jeremy Reimer

Version 1.0 – January 17, 2005

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Introduction

The Amiga computer was a machine ahead of its time. When it was released in 1985, its color screen (4096 colors in HAM mode!), four-channel sampled stereo sound, preemptive multitasking GUI, and custom chips to accelerate both sound and graphics made the year-old Macintosh seem antiquated and the PC positively Paleolithic. Steve Jobs was reported to be extremely worried about the Amiga, but fortunately for him and Apple, Commodore had absolutely no idea what they were doing.

Many jokes have been made about Commodore being unable to sell water to a dying man in the desert, and sadly, these jokes were not that far from the truth. After a showy introduction at the Lincoln Center, which included pop star Deborah Harry and artist Andy Warhol, Commodore stopped all production and advertising of the Amiga 1000, in anticipation of the imminent release of the new 2000 and cost-reduced 500 models. These didn't appear until 1987, and much early momentum was lost. Commodore continued to make terrible mistakes, suffered financially from declining C-64 sales, and eventually went bankrupt in April 1994.

The Amiga, by this time, had carved out a small but devoted niche, especially in digital video. The Video Toaster, closely tied to the Amiga hardware, replaced hundreds of thousands of dollars worth of TV editing equipment for under US$8,000. Bundled with this hardware was Lightwave, a 3D modeling and rendering program that was used to make the pilot and first season of Babylon 5 (in the remaining seasons, they continued to use Lightwave, but this time on Alpha and Intel computers).

Third-party developers, not willing to wait for the protracted Commodore bankruptcy to resolve itself, developed add-ons for the Amiga giving it access to the new 24-bit SVGA graphics cards coming from the PC world, freeing the dependence on the now-aging custom graphics chips, as well as PowerPC upgrade cards that worked like massive coprocessors for applications rewritten to support them.

However, the lack of a new Amiga computer hurt the platform greatly. Commodore was bought at liquidation by Escom AG, a German PC firm who wanted only the Commodore brand name and logo, and had no interest in the Amiga. Escom itself went bankrupt a few years later, and the Amiga was briefly bought out by set-top manufacturer VISCorp, before they too filed for liquidation.

Its third owner was none other than Gateway Computers, who were interested mainly in Commodore's old patent portfolio, but claimed to be interested in resurrecting the platform. However

it became increasingly clear that Gateway was never going to do anything with the Amiga, so a consortium of investors calling themselves Amino Development bought out the rights to the Amiga hardware and OS in 1999. The new company was called Amiga, Inc., the same name as the original group headed by Jay Miner that had started the computer company in 1982 before Commodore bought them out. Amiga had come full circle!

In the heady days of the dot-com boom, Amiga Inc. had all sorts of grandiose plans for resurrecting the platform. A new OS based on QNX, then Linux, as well as a Java-like "Amiga Anywhere" development environment or AmigaDE were proposed. Of these three, only the last ever came to fruition before Amiga Inc. ran out of money when the bubble burst. There had been some talk of a new, PowerPC-based version of the classic AmigaOS, version 4.0, but as Amiga, Inc. had no more resources, everyone assumed it was dead. WIRED magazine even gave OS4 a special vaporware award, beating out even Duke Nukem Forever!

But an amazing thing was happening. Three companies were actually working on a new Amiga platform. One, bplan Gbmh (formed from the ashes of Phase 5, an Amiga accelerator card company) was originally going to be a licensee of Amiga Inc. and produce hardware to run OS4. They had a falling-out with the moribund Amiga Inc., merged with Thendic to became Genesi, and decided instead to produce both the hardware and an "Amiga-like" OS themselves. These were released as the PegasosPPC motherboard and MorphOS in late 2001.

A second company, Eyetech UK, was to be the second licensee of OS4. Eyetech had been an Amiga hardware and add-on distributor, and formed a partnership with a Taiwanese company to produce modified Teron PowerPC motherboards. The third company, Hyperion Entertainment, was hired by Amiga, Inc. to write OS4 itself. As Amiga, Inc. had no money, Hyperion signed a contract that would give them the rights to OS4 if Amiga, Inc. went bankrupt. Hyperion was a small company that produced ports of Windows games for the Macintosh, Amiga and Linux market.

The first AmigaOne motherboards were released in 2002, but there was no OS4 to go with them, so they shipped with Debian PPC Linux instead. Was Hyperion too small a company to manage this massive task, the first operating system project they had ever attempted? While MorphOS gained a small but dedicated following, AmigaOne owners anxiously awaited any kind of news. Finally, after an agonizing 18-month wait, the first Developer Prerelease CD of OS4 was shipped to AmigaOne owners worldwide. Eyetech, meanwhile, had announced a new batch of AmigaOne motherboards, this time coming in the tiny mini-ITX form factor. An update to OS4 was delivered to coincide with their release. The prospect of exploring a brand new operating system plus the possibilities of doing hardware design around a tiny, low-power motherboard were too much for me and I bit the bullet and ordered an AmigaOne Micro with OS4 on November 2004.
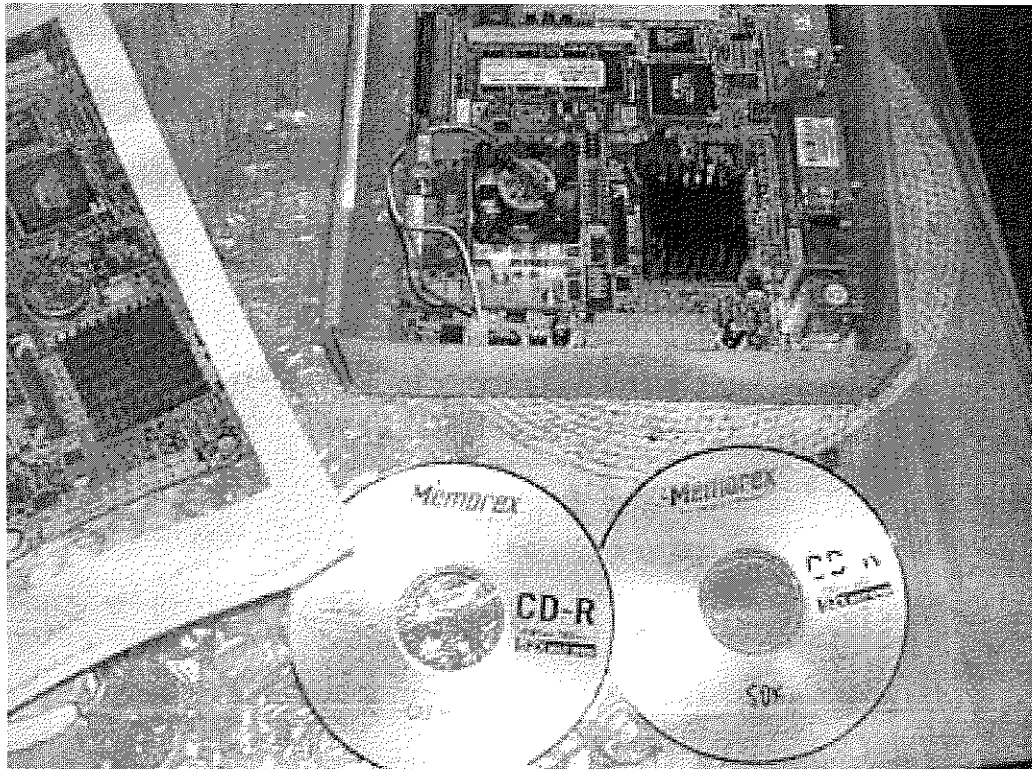
The motherboard

The AmigaOne Micro C"model measures 17m x 17m and contains an 800MHz IBM PPC 750FX or KCPU (commonly known as the G). This CPU is on a removable daughter card so it can be replaced with a G (PPC 74xx) module (800MHz ones are available now, faster ones are in development, including a 1.5GHz from Freescale). It comes with 256MB of PC-133 RAM onboard, plus an extra SO-DIMM slot. Onboard graphics are provided by a Radeon 7000 with 32 megabytes of memory.

Sound (Cmedia), 10/100 Ethernet (3com) and two USB 1.1 ports are also onboard, as well as PS/2 connectors for a mouse and keyboard, serial, parallel and game ports. Motherboard ribbon connectors are provided for one extra serial and two extra USB ports.

The motherboard is a modified Teron Mini design. It uses a VIA 82C686B northbridge chipset and an Artica-S southbridge. It has a single PCI slot and two IDE connectors, one for standard IDE cables, the other for laptop-sized 2.5"drives. There is no connector for a floppy drive.

The Micro AmigaOne, in its shipping box

The BIOS for the motherboard is called UBoot, and was written by Hyperion themselves. It allows both menu-based and command-line interaction, and is quite powerful. It includes a built-in bootloader that allows the user to select multiple operating systems, such as OS4, Debian Linux, SUSE Linux, and Yellow Dog. Apparently you can even run Mac OS X on top of Debian using the program "Mac On Linux" although I have not tested this out personally.

The price for the motherboard varies depending on the dealer you are purchasing from (yes, there still Amiga dealers in existence!) but is around US$700. This includes the motherboard with CPU, 256 megabytes of RAM, and a licensed copy of OS4, the final version of which will be shipped out to owners when it is finished. While this is clearly much higher than equivalent PC or even Macintosh hardware prices, one has to remember that economies of scale come into play at the low volumes of a project like this. Basically, these are "early adopter" prices.

Hardware compatibility

OS4 runs only on Eyetech AmigaOne boards, including the ATX form factor AmigaOne XE-G3 and XE-G4 models, and the new Micro AmigaOne "C" model that is reviewed in this article. Many people have asked whether or not they can install OS4 on their Macintosh, since both use PowerPC hardware. The answer is no, as OS4 requires a custom ROM embedded on all AmigaOne motherboards in order to boot. This was done under agreement between Eyetech and Hyperion, in order to cut down on piracy and to reduce the number of hardware combinations that Hyperion needed to test and support. However, Hyperion is working on versions of OS4 for classic Amigas (such as the A1200) that have been enhanced with PowerPC upgrade boards such as the Blizzard and Cyberstorm.

The reason Eyetech and Hyperion chose to go with PowerPC-based motherboards over x86-based ones mostly comes down to compatibility: there are many applications for the Classic Amiga that were enhanced with PowerPC code to run on the various accelerator boards mentioned previously. The goal is to be able to run all of these apps without recompiling or modification under OS4. However there are some other advantages to this choice, such as the extremely low power draw of chips like the IBM 750FX (less than 10W under maximum load!)

As far as add-on cards, the AmigaOne comes with standard PCI slots and the XE-G3 and XE-G4 come with an AGP slot for adding graphics cards. Currently OS4 supports only ATI Radeon cards and 3DFX Voodoo cards, but a driver for NVIDIA GeForce cards is in the works. Most Soundblaster and C-Media sound cards are supported, as are about a half-dozen models of Ethernet cards. Wireless PCI cards using the Prism chipset are supported thanks to an OS4 driver ported over from Linux. For a complete hardware compatibility list, click here.
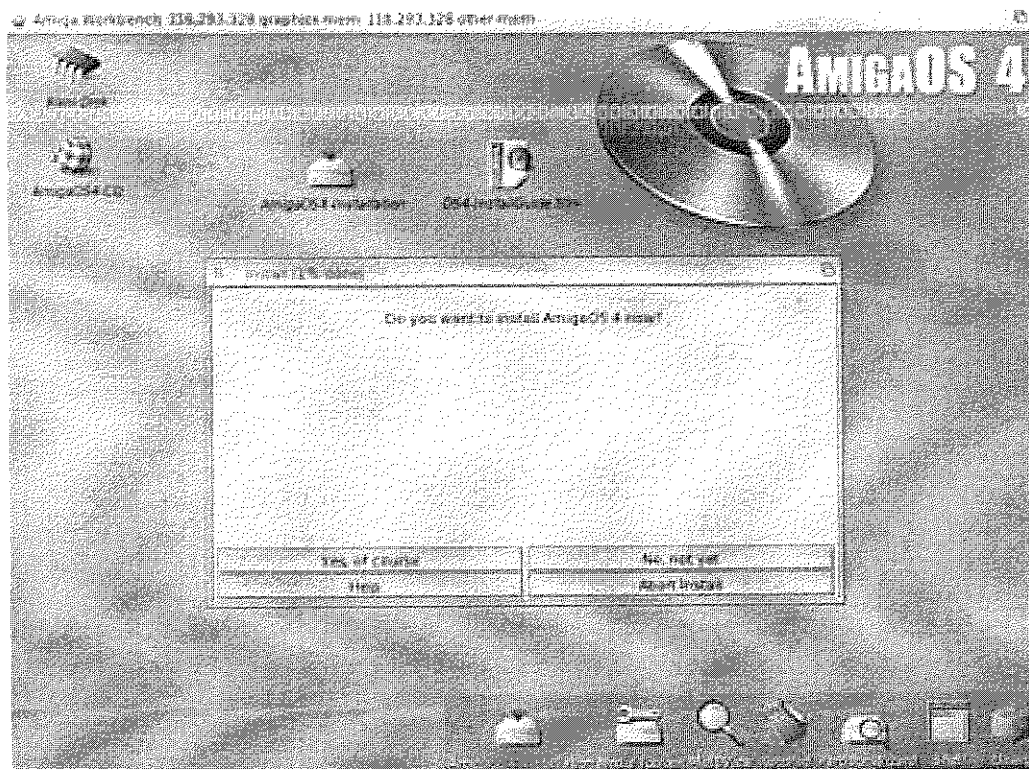
Installing OS4

OS4 came on a single, self-booting CD-ROM. Installation was quite straightforward. Complete instructions along with screenshots were provided from Hyperion at this website. Older AmigaOnes

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required a firmware update to UBoot, but my A1 Micro already came with the latest version of UBoot installed, so I did not have to go through that step.

The installer, like all Amiga installers, allows three levels of interaction: Beginner, Intermediate and Advanced. Advanced mode merely allows the confirmation of some of the hardware drivers, for example the Radeon driver, whereas the other modes install them automatically. The only confusing part was the need to check the new partition as bootable in the partition manager. This could probably be done automatically in future releases, at least in beginner and intermediate modes.

There is a single reboot involved if you have repartitioned a blank hard drive. The only technical input that was required (apart from partitioning) was the refresh rate of my monitor; however, the default setting would have worked even if I did not know how to do this. I was prompted for my location, allowed to set up my keyboard and mouse preferences and set my time zone. Interestingly, unlike OS X, there is an option for both Canadian — French *and* Canadian — English! The whole process was remarkably painless and took less than half an hour. The installation guide was also available on the CD for those without an Internet connection or who didn't want to print it out.
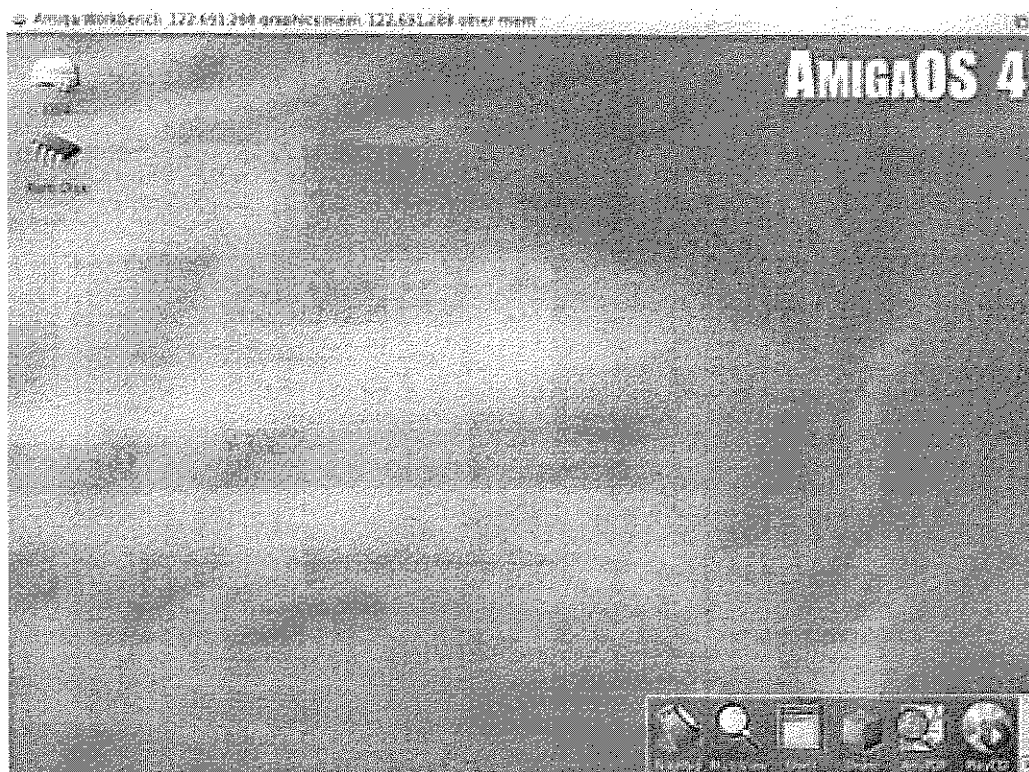

The OS4 Installation screen

The OS4 environment

OS4 boots remarkably qickly. From a cold boot, including waiting for power up, BOS messages, straight to a usable desktop took slightly over 30 seconds. A "warm boot," which bypasses the BOS startup and merely reloads the operating system, takes slightly over 10 seconds. (You initiate the warm boot by holding down Ctrl and tapping the left and right Windows keys.) From there you are presented with the minimalist OS4 desktop:

The default OS4 desktop on first boot

AmiDock

The first thing you notice when you boot to the OS4 desktop is the Dck-like floating bar on the right hand side of the screen. This is called AmiDck, but hold the phone to Apple's lawyers: this is a refined version of the same AmiDck that was released with OS 3.9, the last update to the "Classic" Amiga OS that Amiga, Inc. released in 2000.

AmiDck can be resized, hidden, moved to any edge of the screen, and the transparency of the background is adjustable as well. Icons do not bounce, but they do glow briefly when you click them.

Program icons can be dragged onto the dock, but not dragged off, for that you must right click the dock and select "Edit..." to enter the AmiDock properties dialog.

Another new feature of the Dock is the ability to run small applets called "Dockies." These are icons similar to the docklings of Mac OS X 10.0 that can be dragged to the Dock and perform special features, such as a clock that shows the current time, a screen magnifier, or even a sub-dock object that opens other docks inside it. New Dockies are being written all the time.
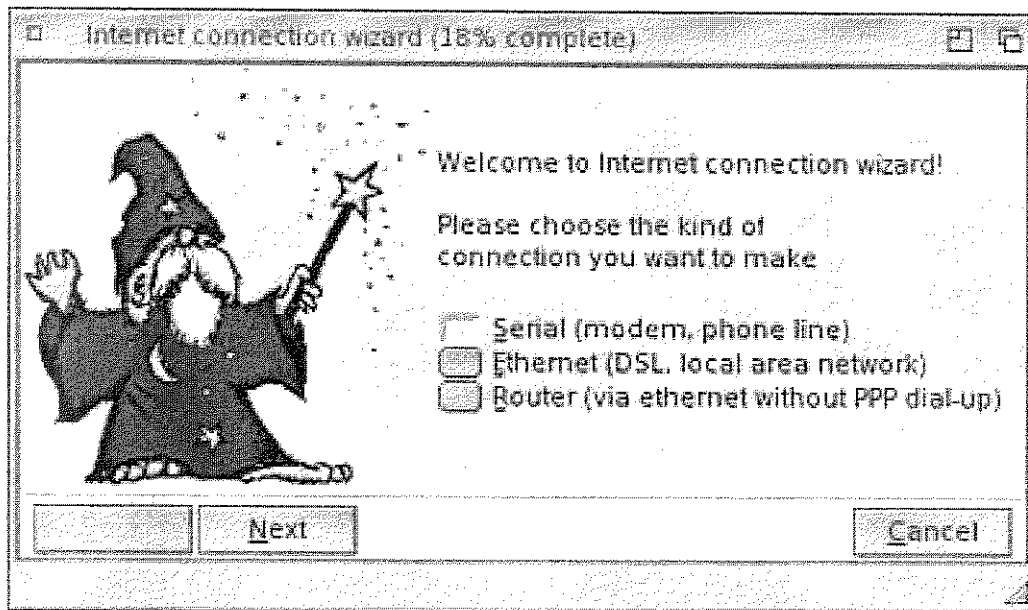
Mousing

The default mouse pointer is a red arrow, as it was on the very first Amiga. This is often easier to spot than a black (Macintosh) or white (Windows) pointer, but the user can change the mouse pointer to any image and color they want, using the built-in pointer editor. Scrollbars on windows are on the right hand side by default, and are proportional. Like in NeXTstep, the up and down scroll arrows are next to each other right below the scroll bar. However, these don't get much use when one has a scroll wheel, which in this release works only with USB mice, but in the final release will work on PS/2 mice as well.

Desktop and drawers

There are two icons on the OS4 desktop by default. One is the icon representing your hard disk, which looks like a drive with a little red and white Boing ball in front of it. The other is the RAM Disk icon. AmigaOS has always had a built-in RAM disk, long before it ever had virtual memory, and many applications assume its presence. Items in the Clipboard, for example, will appear here.

Clicking on your hard disk icon opens up the "root directory" of the Amiga file system. By default, there are nine folders (called "Drawers" in Amiga jargon) available. Devs contains things like printer drivers, Ethernet drivers, and something called "Datatypes," which was a pretty unique Amiga invention. Datatypes allow new file formats to be added to the OS that all applications can then recognize and use. So, for example, if you had an old graphics viewer that came out before PNG files existed, all you have to do is add the PNG datatype to the OS and now this app can load, display and save PNG files.

The next drawer is called Internet, and performs much the same functionality as Network Connections in Windows. Clicking "New Connection" will bring up the Internet Connection wizard, allowing the user to set up dial-up, LAN or router-based internet access. Except that on an Amiga, there really is a wizard!

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The OS4 Internet Connection Wizard

Next comes the MUI Drawer. MUI stands for Magic User Interface and is a set of libraries developed as an add-on to classic AmigaOS and ported to OS4. MUI allows all kinds of customizations., allowing the user of MUI applications to change the appearance and behavior of all kinds of aspects of the GUI, from scrollbar preferences to popup bubble help to the default behavior of screens.

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Example of a Magic User Interface Settings screen

AmigaOS has always supported running applications on separate screens. The idea was that you could open up new applications using any resolution and color depth you wanted, sort of the way games on Windows open up a new screen at the resolution you have specified for that particular game. On the Amiga, all applications have this ability.

One feature of the original custom Amiga graphics chips was that you could "pull" down screens with the mouse to see screens that were behind them. This feature, called "draggable screens," was never duplicated by any graphics card manufacturer since, so sadly it is not available on the AmigaOne. However, you can still switch between screens using the Left-Amiga-N and Left-Amiga-M control keys (The left and right Windows key substitute for the left and right Amiga keys on the classic Amiga keyboard. Keyboards without a right Windows key can map the Right Mouse Button key to perform the same function.)

Another interesting feature of AmigaOS is the way menus work. Like the Macintosh, programs use a single menubar at the top of the screen, but it is hidden by default until the user moves to the Workbench titlebar and holds down the right mouse button. However, if you click the right mouse button anywhere else on the screen, the application's full menu list is available from a popup menu. In terms of Fitt's Law, this is even more efficient than a top menubar, but for people who prefer using the menubar, there is a system setting to turn this off and have the right mouse button only pop up contextual menus that are relevant to the object clicked on.

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The next icon is Prefs, the equivalent of the Control Panel or System Settings. Here you can adjust settings for the mouse, joystick, sound output, printers, USB, video modes, and miscellaneous Workbench features. (Workbench is the name of the AmigaOS shell, its Windows equivalent would be Windows Explorer) You can also manage fonts from this area. OS4 supports Bitstream, classic Amiga and TrueType fonts, and supports anti-aliasing, but not subpixel AA rendering (aka Cleartype)
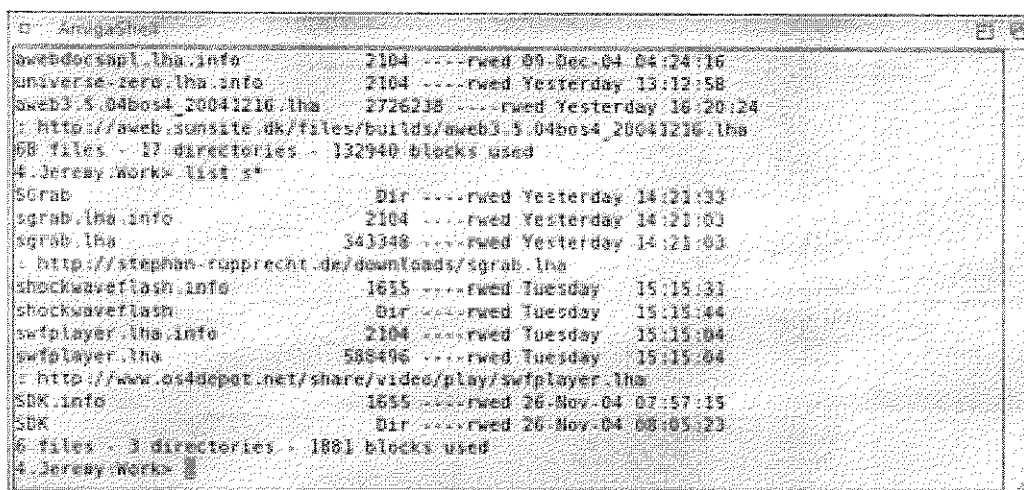
After Prefs comes Storage, which is kind of a duplicate of Devs, then System, which contains some utilities like Find (a Search tool), Format, GrimReaper (a program crash analyzer), and the AmigaDOS shell.

AmigaDOS shell

The shell is fairly standard, with command history and tab completion. AmigaDOS commands, however are not quite DOS commands and not quite Unix commands. Jay Miner once wrote that he wished AmigaDOS could have changed its commands to be more like DOS commands, as he felt it would have helped new users out.

For example, the COPY command's syntax is COPY FROM sourcedir/file TO destdir/file. Instead of cd .. to go up one directory, the command is cd /. The directory command is dir, but a single-column directory is list. Over the years, many Amigans who use multiple systems have created an elaborate system of aliases to make the AmigaDOS commands more closely resemble DOS or Unix ones.

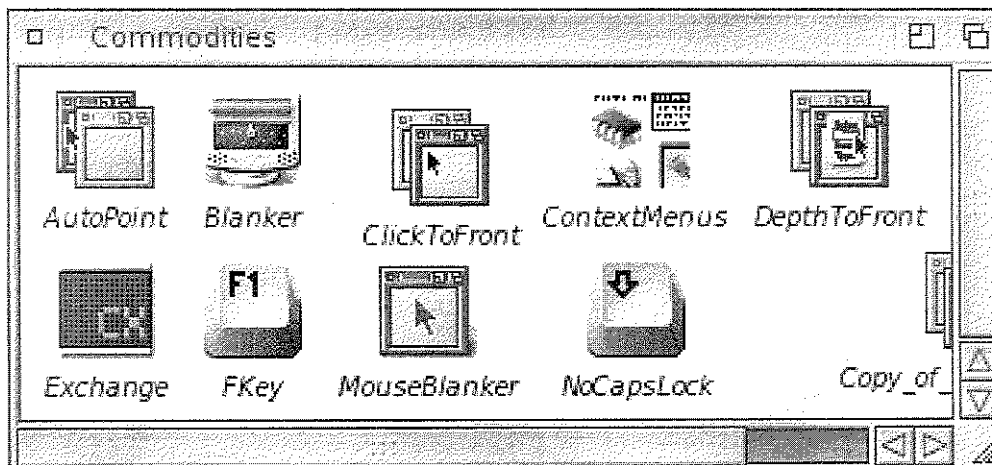One nifty feature that you can see in the above screenshot is that any file that you have downloaded shows the full URL of the downloaded file on the right hand side in single-column view. This is very handy whenever someone asks you "where did you find that file?" Just copy and paste! The standard Amiga cut and paste shortcuts are right-Amiga-C and Right-Amiga-V, so they work everywhere, even in the shell.

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The AmigaDOS shell

Tools

After System comes the Tools drawer, full of small utilities like the partition manager, calculator, Trash can, Dockies (mentioned earlier) and Commodities. Commodities are small utilities that change the default behavior of Workbench. They can be loaded by double clicking on their icons, or loaded in a startup script.

The AmigaOS Commodities drawer

Windowing

Windows in AmigaOS work somewhat differently to those in other windowing operating systems. The windowing system in AmigaOS is called Intuition, and was developed in 1985. The widget in the

upper left side of each window is a standard close widget, but the two on the right are not what they would seem.

The AmigaOS standard window widgets

The first alternates the window size and position between the last two settings the user has selected. This is sort of like the "green" widget in OS X. The second, however, is unique to AmigaOS, but those of you who have used desktop publishing programs will understand it instantly. It alternates between "Push to back" and "Pull to Front." Windows can be moved up and down the stack in this way, which is somewhat surprising the first time you use it, but quickly becomes a natural way of working. Windows can be selected with a left mouse click and they become active (the titlebar and window frame turn from grey to blue) and usable even if they aren't at the front. However, sometimes you want to pull a window to the front when the widgets aren't visible, and that's where the Commodities come in.
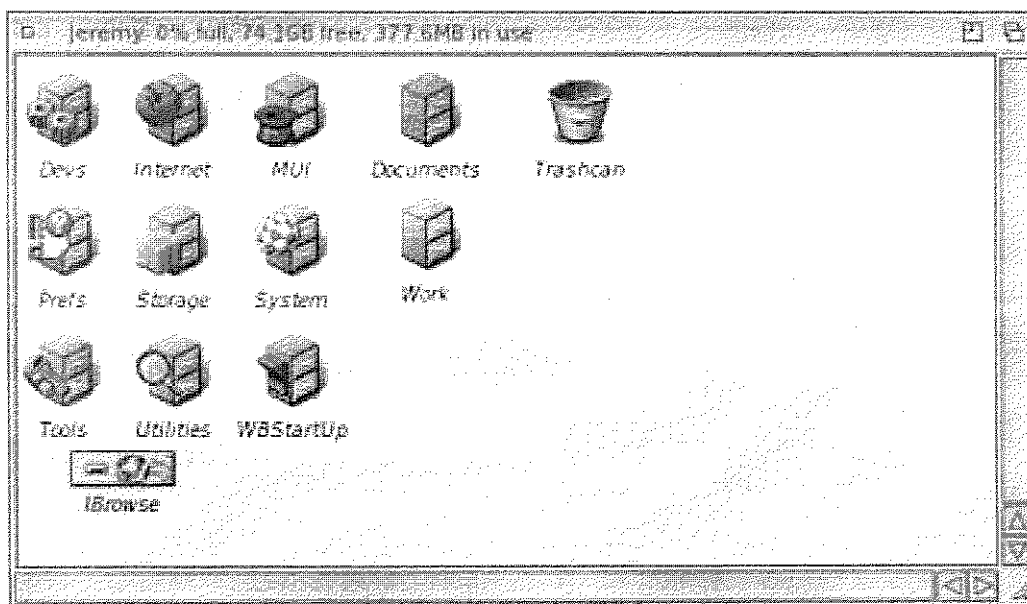
Activating the commodity Click To Front will make any window pop to the front of the stack with a double left click. You can click anywhere on the window, not just the titlebar. Another Commodity, AutoPoint, mimics the default behavior of X Windows by automatically shifting the window focus whenever the mouse hovers over a new window. Still more commodities control the behavior of right clicking (discussed earlier) and the function keys.

After the Tools drawer is Utilities, which for now contains just a clock, the native PDF viewer AmiPDF, the Postscript clone Ghostscript, Notepad, and Multiview, a graphics and text viewer integrated into the Workbench. The last drawer is WBStartup, which along with text-based startup scripts, allows the user to automatically run applications and utilities when Workbench starts.

The icons are nicely drawn and fairly minimalist. All Amiga icons have two states, one closed and one opened, so a drawer icon will appear open if the window is open somewhere. OS4 adds a halo effect (nothing to do with iPods, sorry!) around selected and opened icons as well. Apple users who marveled at OS X's ability to use huge, oversized icons will be interested to know that said feature actually originated in AmigaOS 1.2, circa 1985. It remains in AmigaOS to this day, allowing application vendors to create large, attractive icons that stand apart from the standard system ones.

An interesting feature of Workbench is that it does not automatically show all files in a directory. Only files that have a second file with an .info extension present will show up in Workbench windows by default. This allows application installers to present a clean window with only the necessary files visible for the user. On a per-drawer basis, the user can turn "Show All Files" on. Now all files appear as icons in the drawer, with the formerly hidden files semi-transparent:

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A drawer before "Show All Files" is selected

A drawer after "Show All Files" is selected

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AmigaOS4 architecture

The original AmigaOS was designed to work on a 7.14MHz 68000. While it was small and fast and supported full preemptive multitasking, there was no memory management hardware (or MMU) to support virtual memory and memory protection. Fatal crashes were common and every Amiga user got to know the funny error message in the flashing orange box: "Software failure. Guru Meditation. Press left or right mouse button to continue." (Neither button ever did anything useful at that point.)

Unfortunately, just as happened with the classic Macintosh OS, a large software base arose that assumed that it could have full control over the machine, and adding full protected memory was basically impossible without either breaking tons of legacy applications or becoming completely unstable or both, as Apple's doomed Copland project realized. Apple eventually solved the problem by brute force, loading a complete copy of the old operating system in a virtual machine every time the user needed to run a Classic application in OS X.

Hyperion realized that with the current state of the Amiga applications market, asking developers to write for a completely new operating system was unrealistic. After all, if you are going to do that, you might as well write for the Windows market and have your old users run old Amiga applications in an 68k Amiga emulator such as the excellent WinUAE. Instead, Hyperion decided to rewrite the old Exec kernel from AmigaOS 3.1 in PPC code, supporting virtual memory and memory protection, but leave the memory protection features turned off by default. This allows application developers to easily port their old 68k Amiga apps to PPC and 4.0 native code, often with a single recompile. The current plan is to introduce memory protection for OS4 apps in version 4.1. However, the kernel can watch for illegal memory accesses and when it finds them, it displays a "Grim Reaper" dialog that allows the user to kill the offending application.

Legacy Amiga applications, such as games, that were written to access the old custom chipset hardware directly, will not run in OS4.0. However, a port of WinUAE for OS4, called E-UAE, has been produced that will allow these games to be run as well. So-called "system friendly" legacy Amiga applications, the kind that were able to use PC-based graphics cards, run directly from the OS4 shell. The operating system launches a 68020 emulator seamlessly in the background when the application's icon is double-clicked. In this release of the OS, the emulator is interpretive only, and provides the speed of about a 50MHz 68040 on the 800Mhz AmigaOne hardware.

As many legacy Amiga applications were designed to run well on a 12MHz 68020 (the CPU of the popular Amiga 1200), this is often fast enough for undemanding apps. However, a JIT-compiled 68020 emulator engine called Petunia has been completed and is now in beta-testing. This will be included in the full release of OS4. The JIT adds a six- to seven-fold speedup to emulated applications.

Legacy apps run under the assumption that they have full access to system memory, and buggy applications can currently take down the entire system, similar to 16-bit Windows applications under
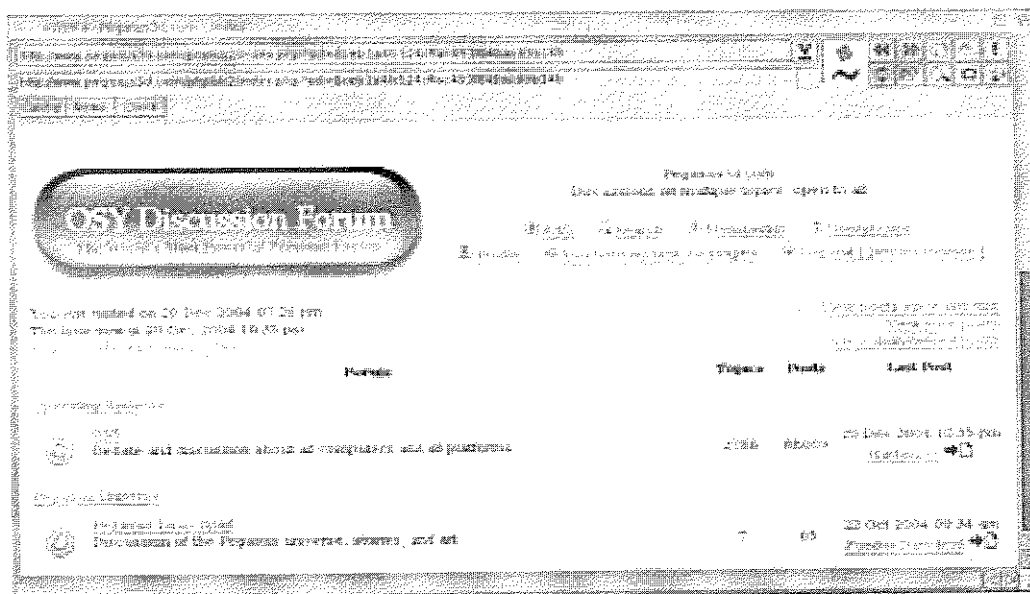
the Windows 9x series. Applications that have already been programmed to take advantage of a PPC add-on card will be supported through the use of the WarpUP library, however, this is still being beta tested and was not available in this release of OS4.

AmigaOS features and applications

This prerelease of AmigaOS4 does not come with many applications by default. There is NotePad, for simple documents, a graphical port of Emacs, a graphical de-archiver shell called Unarc, AmiPDF for PDF viewing, PlayCD to play audio CDs, and on the install CD but not installed by default is a demo version of the web browser iBrowse. The demo has a 30-minute time limit for browsing, but is friendly enough to allow the user to exit and restart for another 30 minutes. The full version of iBrowse supports features such as tabbed browsing.

Another Amiga web browser, AWEB, has been open-sourced and has been recompiled for OS4. It is a fast and highly configurable browser. Every keystroke and menu option can be defined by the user. However, both iBrowse and AWEB are quite dated by current browser standards. Neither browser supports CSS, for example, which on many websites merely degrades the appearance somewhat, but on some sites messes up the formatting completely. Also, some poorly-coded Javascript code will sometimes cause problems with AWeb and iBrowse.

The AWEB PPC web browser, surfing the OSY forums

However, help is on the way. The AWEB team has taken the KHTML code (the same code that Apple used as the core of their Safari browser) and is working on integrating it with the AWEB interface. The iBrowse team is also working on a CSS-compatible rendering engine for the next update of their
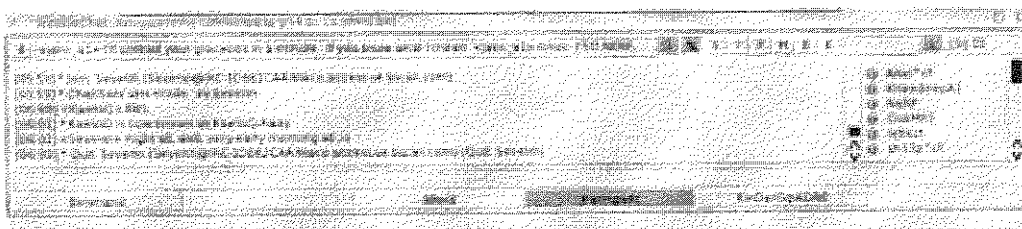
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browser. There is also an effort underway to port Firefox and Mozilla, and a bounty of over US$9,000 has been raised for the first coder who is able to do so. So far, the porting process has been extremely slow, but as more people buy AmigaOnes and OS4, it is likely to improve.

Flash support is somewhat limited. A legacy Amiga OS 3.x Flash viewer/player is available, and someone has already recompiled it for OS4, although the OS4 version does not yet support sound. QuickTime support and a DivX player have been demonstrated on a more recent build of OS4, but I have not had a chance to test them myself.
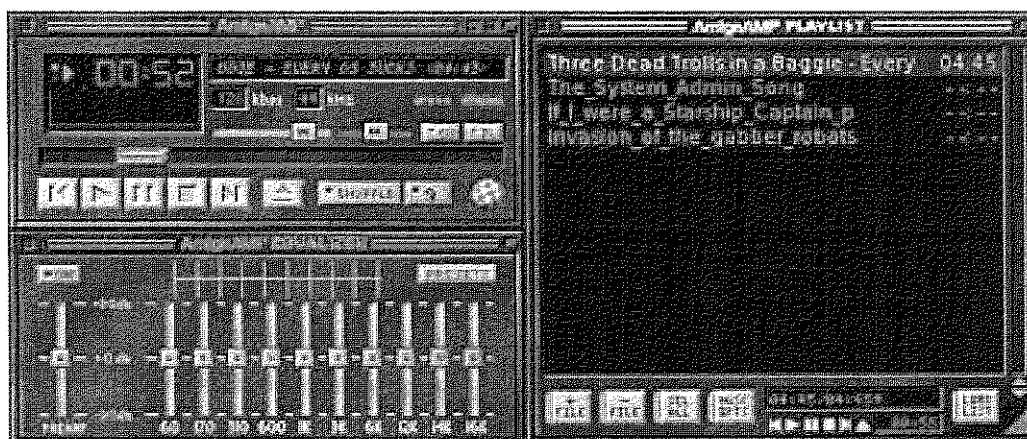
For chatting purposes, WookieChat is a nice, basic free IRC application that has been recompiled for OS4 and works well. For more advanced features there is AMIRC, which is still a Classic application but runs very quickly on OS4. Mail can be read with classic applications such as YAM, and Usenet news by apps such as New York and NewsRog. FTP support is built into the shell, and Classic versions of graphical FTP utilities are available, although the one I tried, AmiFTP, did not work on this release of OS4. There are also messenger applications that can use the AIM, MSN and ICQ networks.

WookieChat, a simple IRC application.

MP3 files can be played by a number of Amiga players, such as AMPlifier and AmigaAMP. These two mimic WinAMP's functionality and can even use WinAMP skins. While they are both 68k applications, someone has helpfully updated the mpega.library used to decode MP3 files to PPC code.

Installing these applications showed the flexibility of OS4 when it comes to moving from a Classic environment — both apps launched and played seamlessly, and all I had to do to update the decoder engine is drag and drop the new mpega.library file into the Libs: directory. I was still playing MP3s, but I no longer had the performance hit from emulating a 68020 to decode them.

The AmigaAMP MP3 player

Video files can be played using multiple player programs. The program AMP2 will play most video formats, including DivX, although I was only able to test it with MPEG1 video files. DVPlayer will play DVDs and MPEG2 files.

Text editing is handled expertly with the well-renowned CygnusEd, which runs very quickly even in emulated mode. Desktop publishing can be done with Pagestream, a classic Amiga application that is still being updated today, including an OS4-native version currently in the works. Graphics manipulation can be handled by several Classic Amiga programs including Photogenics (a Photoshop clone), fxpaint and ImageFX (the latter is currently available in PPC-enhanced version, but a true OS4 version is not available yet).

The one really sore spot in the applications department is in Word Processing and Office-style programs. The legendary Final Writer does not currently work under this build of OS4, and neither does AmigaWriter. Papyrus software has announced an Amiga version of its office suite but as they do not offer a demo version I was unable to test it for this review. There has been talk of porting over OpenOffice, but the gargantuan task of moving over hundreds of megabytes of strange source code has so far proven too daunting for Amiga enthusiasts.

OS4-native games are quite rare at this point, although the porting of the Linux SDL graphics and sound library has allowed a ton of 2D sidescroller ports. An OS4 version of Freespace 1 is available from Hyperion today, and they expect to port the rest of their Amiga game library (which includes titles like Shogo, SiN, and others) as soon as they can. Quake I and II have been ported, along with other old classics like Duke Nukem 3D. Emulators such as MAME, the Ultima 7 emulator Exult, the LucasArts emulator SCUMMVM and the PlayStation emulator FPSE have also been ported to OS4.

Performance

Many people, upon reading the hardware specs of the Micro Amiga One, will feel that the performance (800MHz PowerPC 970, SDR RAM) is far below modern gear. This is true to a certain extent, but it does not give the whole picture. AmigaOS was originally written for a 7.14 MHz 68000, and the last Classic version released by Commodore, 3.1, was optimized for a 12 MHz 68020 platform. According to Hyperion, over 90% of the OS code has been converted from 68k to PPC, and the only code yet to be translated (serial port code, AREXX macro routines), does not typically impact on performance.

Because the OS is so small (About 60MB on disk for a complete install), it fits very nicely in 256MB of RAM, with room for several applications, most of which have a similarly small memory footprint. This means that you can run the OS and multitask between several applications without ever swapping to the disk. In fact, although the new ExecSG kernel in OS4 supports virtual memory, it appears to be turned off in this build.

Running the OS and all its apps completely in memory provides a very different user experience than one is used to from modern operating systems. Switching applications is instantaneous, as is switching screens (providing you are running separate screens at the same monitor resolution, otherwise you have to wait for your monitor to resync).

Scrolling is about as fast as on my 2.4GHz P4 PC. While the PC clearly blows away the AmigaOne on pure CPU performance (for example, unarchiving files, or ripping to MP3), for general use they "feel" about the same. The A1 feels much faster than my 733MHz Pentium 3 running XP, and makes my poor 500MHz G3 iBook running OS X feel like a pig stuck in molasses.

There are some areas in which the OS is slower than modern operating systems such as OSX and Windows — the TCP/IP stack in particular seems rather slow at this point in time. A completely unscientific test had an FTP download taking over twice as long on my AmigaOne as on my PC (although to be fair, the PC was being used as a router for the Amiga, so I do not consider these timings strictly accurate). However, this is still a beta OS and things should improve over time.

Of course all this speed is addictive and fun, but the lack of proper memory protection (and the fact that this is a beta OS with many issues still to be worked out) can be extremely annoying. The saving grace is that with a three-finger salute (Ctrl-Windows-Windows) the operating system can be back up again in less than ten seconds. I liken OS4 at this point to the dune buggy in Half Life 2 — it's a blast to drive, but you're going to flip it over often.

Conclusions

I was not a classic Amiga owner in the old days, although I was aware of the existence of the platform. It was my desire to learn more about the history of Commodore and the Amiga that led me

to Panorama, the Vancouver chapter of the Commodore Computer Users Club, which still exists to this day. One of the club members donated a fully loaded Amiga 500 with 30 megabyte hard drive to me, along with a huge stack of old Amiga magazines to help me with my research for my book I had decided to write about the computer and its history.

Playing with the old Amiga was fun, but hearing about the new AmigaOne and OS4 really piqued my interest. The sheer audacity of attempting to revive a platform that everyone in the world had long-since pronounced dead and buried is interesting in itself, but as I began to play with a friend's A1 at club meetings I realized something else, something that perhaps has allowed the new mystery company KMOS to find investors that allowed it to purchase the moribund Amiga, Inc. outright.

The AmigaOS is small (tiny, even!) fast, and Internet-ready, yet already has a large library of supported applications, exactly what is needed for the next generation of cell phones and other handheld devices. I have been playing around with Compact Flash to IDE adapters, and have installed the OS (as you can see from the screenshots, the OS plus all the applications and data I was testing took up only 377 megabytes) onto a 512MB compact flash card for a prototype wireless tablet I am developing.

Will Amiga, Inc. and KMOS succeed where Be, Inc. and so many others have failed? It is perhaps too soon to tell, but the story has been more than interesting thus far.

At the moment OS4 is not pretending to be anything more than an enthusiast OS for a niche market. Both Eyetech and Hyperion have other projects that have bankrolled them this far (peripherals for Eyetech and game ports for Hyperion), and they do not expect A1/OS4 sales to fund their companies any time soon. In speeches around the world, Alan Redhouse of Eyetech always opens by saying that everyone always asks them: "Why are you doing this?" And the answer he gives, with a smile, is "We don't know!" There is an infectious enthusiasm among Amiga users, who have waited almost a decade for a new Amiga, and are very excited to have one.

However, as cell phones, PDAs and living room set-top media boxes become more prevalent in the future, there is a chance that the A1 and OS4 could find a profitable niche. I have used PDAs that have similar CPU and RAM capacities as my AmigaOne and they do not provide the same speed and functionality that is already available in OS4. OS4 feels like a full desktop, yet has the resource requirements of a handheld. There is a chance, albeit a small one, that the Amiga might play a small role in this arena.

Clearly, OS4 as it stands today is not ready for general public consumption. There are many rough edges with this version of the OS, stability is still an issue, and the web browsing situation clearly needs to be improved. For Classic Amiga owners with a large library of older applications that they would like to run on more modern hardware, it is almost a no-brainer, but it has less to offer "switchers" from the PC or Macintosh camps at this point in time.

http://arstechnica.com/reviews/os/amiga.ars

However, a curious thing happened as I began writing this article on my AmigaOne. I found I was switching less and less from the A1 back to the PC, and I was enjoying my typical PC using experience (browsing, writing and chatting on IRC) more than I typically did. Had I succumbed to a particularly virulent form of Amiga madness? Perhaps, but it is a madness that I recognize from days gone by and thought was gone forever: the sheer joy of computing and the fun of discovering a new platform.

Postscrip

Just prior to publication, Hyperion announced that the second major update of OS4 was available for registered owners to download. I have not had a chance to test this out yet, but I am told it adds support for mass-storage USB devices (such as digital cameras) and includes an update to the kernel, display drivers and many other subsystems, as well as a bundled PPC movie player called MooVid.

Rision History

Date	Version	Changes
January 17, 2005	1.0	Release

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Hyperion entertainment - Triple A software for Amiga, Linux & Mac   http://www.hyperion-entertainment.biz:8080/amiga

New AmigaOS Update available

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Leuven, Belgium - 27 December 2004.

Hyperion Entertainment would like to take this opportunity to thank our customers for their continued support. A prosperous and successful 2005 to all of you!

As a belated X-mas present, Hyperion Entertainment and the Amiga OS 4 development team are pleased to announce the immediate availability for registered users of another update of Amiga OS 4.0.

The update is available from our download section and contains the following:

- Kernel 51.20
- dos.library 51.24
- CrossDOS FS 51.19
- Timer device 51.4
- loader-51.6
- Mass Storage Support for USB
- Updated USB stack
- elf library 51.5
- Moovid PPC
- SmartFileSystem 1.234
- newlib.library 2.8
- CDFileSystem 51.4
- rtg.library 41.4252
- graphics.library 51.12
- Grim Reaper 51.4

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