

Amithlon How To:

(A wordy guide to setting up AmigaOS on an x86 Box)

Why?:

- 1) It's a swine to set up on modern hardware, so I hope this helps.
- 2) It wasn't that easy to do with older 'supported hardware'.
- 3) I think Amithlon is the most practicable route to 'high-end classic Amiga'* use these days.
*Ok DraCo
- 4) Did you ever wonder what a 'classic system' could be capable of if only Motorola cooked the '040 to 1ghz+?
- 5) Most guides assume too much knowledge on the part of the 'fresh user'.
- 6) Most guides forget to mention the necessary updates and drivers which can be very hard to find. (I've included them!)

- I do assume you know enough about AmigaOS to be able to install 3.9 yourself AND have enough knowledge of (Win)UAE to have a functioning installation ready -

What you need:

- 1) The original Amithlon boxed-copy, given the included files are not free-ware.*
- 2) This guide and associated files.
- 3) A system that has a fighting chance of running Amithlon.
- 4) Good partition software capable of assigning non-standard labels to partitions.
(You need to be able to assign &76 to one partition. I use Acronis)
- 5) Access to a Floppy drive. A bootable USB one will do fine.
(None of my PC's have a floppy drive built in.)
- 6) AmigaOS installed onto a copy of WinUAE will be a help.
- 7) Try to NOT to use a USB keyboard or mouse. It's just asking for trouble! Use PS2

*If you have a boxed-copy the legality of Amithlon is iffy at best**

** Bernie Meyer: The principle developer of Amithlon got royally shafted by his associates. Funnily enough this includes A(._.)STinc. He had to pull he plug on the project to avoid a court case that may have cost him millions!***

This also caused Umilator (Amithlon's follow-up) to be canned just prior to launch. Shame, it was MUCH better and was MUCH easier to setup and use. It was also pretty-well future proof. (The likely reason you are reading this blurb - having got a bit stuck!)*

****Better-still, Bernie was working on an AMD64 68k-JIT compiler as a follow-up to the one we know and love. It made heavy use of virtual look-up tables within the huge 64bit address space. The advantage of this would have been greatly increased speed, efficiency, and most (all) of the current JIT-compiler's failings were cured.

Bernie lost interest in this project as a result of the above mess!

/ *If you know where to get a copy of Umilator I'd be eternally grateful! *

Hardware:

The 'ideal system' is:

Mobo: nForce2-4 (32bit VIA is fine) with a supported AC97 codec for sound. Some nForce NIC's are supported too.

CPU: Athlon XP(-M) - as fast as you can get!

GFX: AGP GeForce 4Ti. No if's, but's, or maybe's! It's the best card fully supported by (updated) Amithlon. It's also fine for most XP use.

PCI Voodoo3? This will work well with Amithlon and if you know how to hack the install files, Warp3D too.*

*Oh, yes another A(____).STinc mess! They couldn't agree licensing so the Warp3D makers made sure it wouldn't work with Amithlon. (Actually it's very easy to get working but, no, I'm not going to say how) Amithlon has so much extra power compared to a 'real' Amiga you'll be fine with software 3D - it's just a shame that's all.

Sound: PCI Sound-blaster128 is fine. (Oh, come on! How many Amiga sound cards are as good as that?) A PCI Sound-Blaster Live! will work with a little more effort.

HDD: IDE vs SATA - DO NOT USE SATA WITH AMITHLON! IT WILL NOT BOOT!!!
DON'T EVEN HAVE SATA ENABLED IN BIOS!!!

(Gary's latest kernel has some nForce SATA support, but don't bet on it working for you.)

USB: For God's sake. Get the Poseidon USB stack (and ArakAttack the PCI driver). USB is very nice and useful on a quick system: Mouse, keyboard, camera, scanner, memory stick, HDD, CD/DVD... need I go on?

What may work:

Don't blame me if you bought a computer for Amithlon that doesn't conform to the 'ideal system' and you can't get it to work. The following words are for those who hope to add Amithlon as an option to an existing computer.

Mobo: Just about any will work to some extent (especially 32bit ones).

CPU: Intel32bit will be fine (Amithlon needs an update for stability). AMD64 should be fine, Dual-Core - maybe. Intel64 could work. Intel Core-Duo - no chance!

GFX: Any card should be fine if you're prepared to put up with the unaccelerated slowness of the 'fall-back' VESA support. (Actually your mileage may vary as some cards don't support VESA properly) Given how fast Amithlon is, unaccelerated support is still probably faster than fully-accelerated on a real miggy!

-AGP: Good.

-PCI: Fine.

-PCIe: You're kidding! Actually Amithlon can't tell the difference between PCI and PCIe so you may be ok with a good dollop of luck. Better still, if your PCIe card has an equivalent PCI version (you cheep bu**er!) that is fully supported by Amithlon you may be lucky enough to have full support with that too! (Sadly the same cards for different busses often have different internal id-codes which can result in Amithlon's Kernel not recognising them as functional.)

-IGP: May be surprisingly good. An Amiga doesn't need a fantastic GFX card and most IGP chip-sets use GFX cores from golden-oldies. Just what Amithlon wants - in theory. eg: nForce 6150 uses a GF4 core so this could be the ideal solution. Needless to say I haven't tried this!

Sound: AC97? So that's just about every mobo then? Um, no! Not all codecs are supported even with updates! Apart from the two Creative cards mentioned there is plenty of choice, just don't expect your Audigy to work.

HDD: If it's SATA don't bother! (If you've read the doc's with Gary's latest kernel and you think you're ok: Install on IDE anyway! Test SATA if you want to at a later date.)

NIC: There is very limited support for NIC's. Mostly old and slow ones. Unless you are lucky with your mobo one you are best buying one for Amithlon use. (They are dirt cheep)

Updated drivers improve this situation a lot - even some gigabit Lan chip support, though why would you need that on an Amiga..?

TV Cards: There is a proggy called AmithlonTV - says it all, really. Support is limited so don't expect to be lucky. Buy a known functioning card if you want this.

To begin:

1) I'm assuming you have a (semi)suitable PC, that you want to dual-boot with XP. As this setup uses Grub as a boot manager you don't have to install XP or you can add more OS's as you see fit... All will become plain shortly.

2) Do it my way! Amithlon can get funny about some setups! So when I say: 'put all your Amithlon-specific partitions on your Boot HDD' (should be IDE 0, master) I mean it.

3) Install XP with whatever Windoze partition tool you want to use FIRST. Why? If you are going to dual-boot with an M\$ operating system it's best to get the loooong process over with. More importantly M\$ doesn't believe in dual-booting so if you add one of their OS's to an existing system you'll likely loose your current boot-manager and access to the rest of your system!

(BTW: XP is a good OS! Yes really, I'm not kidding! Google for nLite, use that to cut all the M\$-fat from XP. Then burn a new install CD and prepare to be amazed! - well pleasantly surprised.)

4) If you don't want XP (eg: it's a dedicated Amithlon machine) the process is much the same but you'll have to use a Linux-based partition proggy. For that you're on your own: After years of downloading distro after distro I've come to the conclusion that Linux is an utter bag of evil-smelling poo!*

*I've included an alternate guide to installing Amithlon onto an empty HDD using freedos if you have no intention of dual-booting. (It's nicely written - damn him!)

5) You have a working XP machine with a suitable partition manager? Good, download the rest of the included files.

AmithlonSys.rar - the latest necessary Amithlon-specific files.

Artwork.rar - Box and CD scans along with some 'extras'.

BootPartition.rar - Selected Sys:c/AmithlonC/ and Sys:s/ contents inc my Startup-Sequence

Drivers.rar - various AmigaOS Amithlon-specific updates and drivers.

GarysKernel.rar - Including associated doc's and files.

Grub.rar - a .raw floppy image and Windoze image writer to make a Grub boot floppy.

UsefulSoftware.rar - Stuff that may ease your start with Amithlon.

AmigaHDD.rar - a bare 3.9 install with most of the updates ready to go. This file may not be available initially - It depends on my degree of laziness - not strictly needed.

Alternate Guide.zip - An 'alternate install guide'. Useful if you're not going to dual-boot.

Getting to it:

1) I'm assuming your primary (boot) hard drive looks something like this in your partition manager:

HDD(0,0)

<WindowsXP-NTFS-Primary-Active>|<Games-NTFS-Primary>|

Partitions can be Primary or Logical. You have a limited number of Primary partitions. I think XP needs its system partition to be Primary AND SO DOES Amithlon! (Most other Os's don't care much about this distinction.)

2) Use your partition manager to make some space at the end of your HDD by resizing your existing partitions. If yours is like the above resizing **<Games-NTFS-Primary>** should go without a hitch.

If your HDD only has a XPsystem partition ie:

<WindowsXP-NTFS-Primary-Active>|

You may well need a reboot to complete the task. If so, follow the instructions with care and DON'T INTERRUPT the process. Or you may end up with a non-booting PC that requires a new install of XP.

I'd recommended making enough space for a 600mb AmithlonSys partition and however much you can see your virtual AmigaHDD growing to... (Mine is just over 12gb)

3) Add two partitions so you end up with something like:

<WindowsXP-NTFS-Primary-Active>|<Games-NTFS-Primary>|<AmithlonSys-Fat32-Primary>|<VirtualHDD-&76-Primary>|

AmithlonSys: must be formatted as Fat32 and set as Primary partition.

VirtualHDD: can be formatted to whatever. It is best set as Primary and MUST have the partition type set to &76. (This is where you find out if your partition software is any good!)

4) Copy the contents of **AmithlonSys.rar** to your Fat32 AmithlonSys: partition. This should now contain two folders called: 'Amithlon' and 'boot'. The former contains the updated Amithlon system files. The latter contains the Grub system files with a modified Menu.lst file that I will come to later.

5) Copy the contents of **Grub.rar** somewhere (That may as well be your AmithlonSys: partition too.) It should contain one folder called: 'Grub Floppy Image'. This should contain: **diskio.dll**, **grub-0.97-i386-pc.img**, and **rawwritewin.exe**

6) Stick a writable floppy in your drive and run rawwritewin.exe It should be self explanatory: You're trying to get **rawwritewin.exe** to write the floppy image **grub-0.97-i386-pc.img** to the floppy drive! ie: (A):

Now for the fun bit!

First a little info: You're going to replace the WindowsXP boot manager with Grub. This means that if all is well instead of booting into Windows you'll get a menu of options to choose from that you can navigate with the cursor keys. It will default to booting XP for now, but you will also see lots of Amithlon-specific options. **DON'T TRY ANY OF THESE YET!!!**

Grub is set up assuming your XP is on the first partition of your master drive on IDE0. This is by far the most likely setup, but if in doubt read on first!

Install Grub:

1) Boot PC with new Grub install floppy in the Drive. (You did remember to set booting from floppy in your BIOS?)

You'll get:

Grub loading stage2.....

then:

grub>

2) Type: **find /boot/grub/stage1**

You'll get:

(fd0) <-Grub found itself on your floppy drive!

(hd?,?) <-Grub found itself somewhere on your HDD.

Where **(hd?,?)** = **(hd<IDE Channel>,<Partition>)** counting from zero.

Mine is: **(hd0,2)** The second number may vary but if the first isn't zero then you haven't installed on your Primary IDE, Master HDD - this is unlikely to work! (Write this down, you'll need it later.)

If grub finds nothing you didn't type it in properly. If no **(hd?,?)** reported, you didn't put the correct Grub files onto the correctly formatted AmithlonSys: partition. (I'm pretty sure this is a step-by-step guide!)

3) Type: **root (hd?,?)** where **?,?** are the numbers you got!

You'll get:

File-system type is fat, partition type 0xb

The Grub installer now knows where the system files you want to use are, and has reported that all is well.

4) Type: **setup (hd0)**

You'll get:

Much grinding, some messages, and maybe the odd error - don't worry. Eventually Grub will say it's installed successfully.

This will put Grub's boot code into your HDD's MasterBootRecord, replacing XP's.

5) Pull the floppy and reboot your PC. You should now have a quite long options list with XP highlighted at the top. Good, you have a functioning Grub - you haven't bugged anything!

It will auto-boot to XP - again DO NOT TRY ANY OF THE AMITHLON OPTIONS!!!

6) Once XP is up navigate to: **AmithlonSYS:\boot\grub** and load **MENU.LST** into a text-editor.

One with that does find-replace.

Find ALL instances of **(hd?,?)** and replace with whatever your Grub install floppy reported.

You're there!

Have a quick look through the **MENU.LST** boot options and see what seems nearest to your GFX card: nVidia, ATI, Matrox, VESA, and Unsupported Naughty cards that don't do VESA properly.

While you're at it take a look at the comments at the end of **MENU.LST**

Time for some Amiga Magic:

Finally! (You hope)

1) Reboot your PC and select an option that seems appropriate to you. At this stage your **MUST** select an option that includes: '**Internal Amithlon HDD Image**' as part of the description.

You haven't installed anything onto your HDD yet!

Fingers crossed...

Boing Ball! - Hurrah!!! Houston we have Amithlon's Kernel!

Fingers crossed...

Reboot in progress stage1 (68040 soft reset) - Your Amiga has started.

Reboot in progress stage2 (gfx card reset) - AmigaOS is attempting to start Picasso96.

Nearly there..!

and...

Workbench! It's Workbench! Thank the Maker!

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Ooo, that looks a bit grim. Well the internal HDD is quite stripped out, time to get 3.9 fully installed onto your HDD.

(Did you notice the 8mb of Chip Ram?)

Nothing? - Something in the above install process went wrong, or you chose a boot option wholly incompatible with your hardware.

Boing Ball! - Just keeps a-bouncing? The Amithlon Kernel started, but ran into a problem. Most likely it choked on some part of your hardware... You've not been trying SATA have you?

-Crash-

Reboot in progress stage5

then round to:

Reboot in progress stage1 (68040 soft reset)

Reboot in progress stage2 (gfx card reset)

-Crash-

add-nauseum...

Depending at which stage this happens you'll get a hint where your problem lays. (This should not happen with the Amithlon built-in AmigaOS as it is known to work but may be a sign of where you've bugged your own HDD install.)

Tips:

- Have a look at the notes at the end of the MENU.LST file once you're back into XP & do some experimenting...
- Change 'console_level=0' to 'console_level=4' in your chosen boot-option. This will replace the Boing-Ball with the Kernel boot output and may reveal the problem.
- 'Kernel Panic' usually means the Kernel met hardware it doesn't know how to cope with and stopped. The primary cause is SATA has not been disabled in BIOS.

Installing workbench:

Read ALL of the following carefully BEFORE you begin! There are a few Amithlon-specific issues:

- 1) There is a 3.9 installer on the Amithlon CD - when it's time use that BoingBag1 is already there and if memory serves it will install the Amithlon-specific files too: **Sys:c/AmithlonC**, **GFXdrivers**, **AHI**, Some needed files inside **Sys:s/**, etc.
- 2) You really don't want to be lumbering your new system with **FFS**! Get the latest **68k-SFS** and use that. (**PFS** is better, but a bit of a swine to get running under Amithlon)*
- 3) Install **BB2** (and the unofficial **BB3** patches ;))
- 4) Install ALL of the Amithlon updates + Gary's updated drivers + **powerpci_usr.lha** This will help with things like Intel-CPU issues, faster GFX, changeable screen-modes if you're using VESA, wider support for peripherals etc...

Tip: There are a lot of updates and I'm afraid not all are relevant to every system. The best thing to do is do them in chronological order having read the doc's for each first. Tedious in the extreme, but it will help you not to overwrite newer updates with older ones, and prevent you using updates you don't need. (eg: The Intel patch if you have an AMD cpu.)

*Q. How do I get FFS onto my VirtualHDD when the built-in Fat95 support is broken?

A. The most convenient method is to:

- Use **HDTToolBox** to set up your partitions as you like using **FFS**. (Select **amithlon.device** then **VirtDsk...**)
- Only ever Quick-Format under Amithlon. Watch out! **HDTToolBox** can 'see' all your partitions!
- Boot into **XP**, fire up **WinUAE**, select: Hard drives tab, select: **Add Hard Drive**, select: entry with looong name, select: **Add Hard Drive**. This should now appear in the window above along with your current mounts.
- You can now use **WinUAE** to transfer any files you want - **FFS** for instance!
- Back to **AmigaOS** using the InternalHDD as before. Open the **SFS.lha** and copy **SmartFileSystem** into **Amithlon_HD:/**
- HDTToolBox** again, back to the partitioning window, select: **Add/Update**, select: **Add New File System**, and choose **SmartFileSystem** from the selection. Click **OK** (may need to Update drive) and the table should have **L:SmartFileSystem...** in addition to **FFS**.
- Take a note of the end of the **SFS** line eg: **CFS/00** or whatever.
- Back to the partitioning window, select a partition, select: **Change...**, select: **CFS/00** (whatever corresponds to your **SFS**) and select: **OK**. Do that to all your partitions in turn. Remember to tick the **Bootable** box for your Boot-Partition and give it a low priority (mine's -2) so if your HDD goes nipples-up you'll still be able to boot with the internal AmithlonHDD image.
- Don't forget your PC's IDE is far faster than any Amiga, so... increase buffers on all your partitions (200 should be safe).

Do any of the other drive-speeding tweaks you know-of in **HDTToolBox**. THEN check the doc's with Gary's 310kernel. DMA is switched off by default to increase reliability - bugger that! Switch it back on again - if your chip-set will allow.

TIME TO SEE IF YOU'VE GOT IT CORRECT SO FAR:

Doing the following will ease full WB3.9 installation later and make sure you're not missing any essential files, and will prove all has gone to plan up to this point.

- 1) Copy the entire contents of **Amithlon_HD** to your HDD boot partition.
 - 2) Reboot your x86 box, THIS TIME selecting the matching Grub option to the one that works for you BUT does NOT contain the built-in HDDImage.
- It all boots up? Hurrah! You are now running Amithlon off your HDD (even if it looks the same) proving that all is now installed and functioning.
- No go? Go back a step to **HDTToolBox** and try again - more carefully!

Install Workbench 3.9:

1) Slip the AmithlonCD into your slot. When the Icon pops-up (Isn't WB nice?) navigate to the 3.9 install folder and RUN THE INSTALLER over the top of your boot partition that already contains the files copied from **Amithlon_HD**. Thereby making sure you've no risk of missing any essential files, and also simplifying the already easy installation. (Isn't WB nice?)

2) This should go without a hitch as you did what I suggested earlier. (Didn't you?)

3) Now it's time to go through the chore of installing BB2, (poss BB3) then all the Amithlon updates *in order* that make it even better than it was before:- faster, stronger, better... (Sorry Steve Austin moment there.)

I've included all the ones I can remember in **Drivers.rar**. In a nutshell these fall into the following categories:

- Amithlon patches: for ahem... Bugs, system-updates, and patches to make it play better with Intel-CPU's.

- Updated GFX driver: more stable, (much)faster, removes the VESA-mode limitation of being unable to change mode.

- Updated AHI with extra drivers: As you'd expect - I've included the x86-Amithlon specific version as running 'native' should be faster. As it happens I can't tell the difference, it's somewhat unstable, and a pain to get working so: USE THE 68k version!

- Extra drivers for other things like NIC's, sound cards etc... kindly created by Gary: v090.

- OpenPCI with more drivers! OpenPCI is a .lib to abstract different Amiga systems so drivers can be written once to OpenPCI and work on any Amiga with OpenPCI installed. Very helpful to developers, a further source of drivers for you, don't forget to install OpenPCI first! With luck I've included most of latest versions, but once you've seen what I've shovelled into the **Drivers.rar** do have a trawl round the 'net. There may be faster, better... versions about.

DON'T FORGET: There may well be drivers you need that I've not included as I'm unaware of their existence, having never needed them myself.

A quick word about AmigaOS Drivers for Amithlon:

You have options:

- Native AmigaOS drivers - the ones to go for if you can.

- OpenPCI drivers - fine to use, but mind that extra level of complication!

- Native x86 Amithlon specific drivers - usually much faster than 68k versions. Context-switching between 68k and x86 can cause some 'odd effects' on occasion.

- Linux Kernel drivers - say what? A neat way of getting lots of compatability with ease.

Write an AmigaOS driver for NIC's say that rather than following the AmigaOS API (a separate driver required for each chip-set) 'tunnels' right through the OS and Amithlon to the underlying Linux Kernel. That way if the Linux Kernel supports it you have access to it via AmigaOS and your 'one driver fits everything' driver. Good eh?

Um... No!

Compared to AmigaOS; Linux is a 'bag of sh*te'. Being a monolithic kernel with no pretence at real-time operation it can hold up AmigaOS a bit like some brain-dead peripherals can slug your otherwise smooth-running Amiga when in operation. As it happens

Amithlon has soooo much power compared to a real Amiga that this may not be an issue.

(AHI Kernel drivers often crackle and stutter a bit, and NIC Kernel drivers can sometimes drop inconvenient packets) AmigaOS just doesn't expect such 'bad behaviour' so doesn't cope well, while GNU-Linux 'knows' about these problems and 'hides' them as best it can.

Of far greater practicable importance: If you have a Kernel driver installed EVEN IF YOU AREN'T USING IT it will block access of ALL OTHER drivers to that hardware type.

eg1: I installed the Linux Kernel AHI driver for my SB-Live! card. I didn't like the stuttering, so installed the OpenPCI version and can't work out why I have no sound with the new driver.

eg2: My mobo has two NIC's. I got one to work with with an AmigaOS driver, found a Linux Kernel driver for the other and now my first NIC has stopped working!

The moral is: Don't use these drivers unless you have no choice.

That's All Folks!

Charlie(Mouse)

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When feeling less lazy, I'll get round to doing the AmigaHDD.rar file: A 'base' 3.9 install with BB2 & all the drivers/patches I can think of pre-installed.

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:

Let me know how you get on. Suggestions for improvements, errors that have crept in, etc...

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:
:

Please note the included **Bigird.gz** and **Smallird.gz** are NOT as Amithlon intended! They are versions I have hacked!

The main changes are to the kickstart image for extra functionality, stability and speed. From memory the original image was from an A2000 which I swapped it for an A4000 kickstart... Then swapped it back as it didn't 'improve' anything...

Whatever kickstart is now in there is fairly heavily patched: It would be a shame to let 3.9 patch over my hard work! (Well, the work of others added by me!)

-See setpatch from my **Startup-Sequence** to get an idea of what to disable for 'best effect'.

-See my **Startup-Sequence** for other patches/switches that currently seem 'good' to me. (always in a state of flux)

-PowerWindowsNG support is now built-in. So it's worth installing. eg: off-screen dragging works.

-You'll notice I have **HSMathLibs**. I've included the ***OLD* WinUAE** mathlibs as they seem to work rather well with Amithlon as a free alternate.

-**RaMithlon** is a great patch for Amithlon. It's a kind-of Turbo CopyMemQuick. 68k routines replaced by x86 ones!