Installation Guide

Part 2

Kernel 4 (linux-2.4.37.9)

If you followed along with Part 1, you've already copied Kernel 4 to your C: drive during your initial setup. I only mentioned one, but there are three Kernel4 kernels. Kernel4 (IDE), Kernel4sata (IDE and SATA) and Kernel4scsi (IDE, SATA and SCSI). Each is larger than the one before, so if you don't need SCSI, don't use the SCSI one, and the same for SATA. IDE only system, use Kernel4, IDE/SATA setup, use Kernel4sata.   That is the only difference so use what is appropriate for your system.

You can actually skip the entire process of installing the kernel 3.10 drivers if your intent or need is to use kernel 4. Just follow the same process as outlined in Part 1 for installing the drivers, but instead of installing drivers090.lha, install the drivers from drivers4. You'll need to switch out the referenced kernel in your "small" file before you launch Amithlon the next time, so that it can use the appropriate kernel 4 modules.

I like to keep kernel 3.10 and kernel 4 on my C: drive and typically will copy "small" and "amithlon" to "3small" and "3amithlon" and then again for "4small" and "4amithlon" so that I can launch either by typing loadlin @3small or loadlin @4small and see which works best for my hardware. This is where the benefit of having a separate drive for Amiga comes in handy. Remove the drive installed with kernel 3 and replace it with a drive you'll use for kernel 4. I personally don't like overwriting kernel 3 drivers with kernel 4 drivers and then finding that kernel 3 worked better and have to reverse what I did and overwrite kernel 4 drivers with kernel 3 drivers. Plus I can easily compare the differences just by switching out the "Amiga" drive and booting either Amithlon on Kernel 3 or Amithlon on Kernel 4.

Kernel 4 is newer and supports more hardware, but if your system is fully supported under kernel 3.10, there is no real need to change kernels.

Boot to DOS and copy the files by typing the commands below:

copy small 3small
copy small 4small
copy amithlon 3amithlon
copy amithlon 4amithlon

Now we'll want to edit the newly created 4small to use kernel 4 (kernel4) instead of kernel 3.10 (kern310)

edit 4small
kernel4 init=/linuxrc console_level=0 root=/dev/ram0 mem=512M initrd=smallird.gz vga=769 ramdisk_size=2310 cachesize=65536 leavepages=7400 video=dovesa

We haven't updated drivers yet so we'll continue booting with Kernel 3.10 until we've installed the drivers.   Launch Amithlon with loadlin @3small

When AmigaOS is up, we'll want to insert our CD/DVD with drivers4 and extract them to ram:

We'll copy them just like we did when installing the Kernel 3.10 (driver090.lha) drivers.

Open a Shell and type:

cd ram:
copy s/#? s: all clone
copy c/#? c: all clone
copy devs/#? devs: all clone

Shutdown your computer (power off or reset) and boot back to our DOS prompt.   Since we've installed the drivers for kernel 4, we'll now want to launch Amithlon with kernel 4.

loadlin @4small

That's it. Kernel 4 is now your boot kernel for Amithlon and you have the drivers installed that pciinsmod will load if a device is found that needs it.

Note*
pciinsmod is installed and a line is added to s:user-startup to run it when you installed
AmithlonUpdate131.lha

Internet

Assuming you have installed all the driver modules and your NIC is supported, let's install
Genesis and AWeb (and AmigaMail while we are at it).   I don't use AWeb or AmigaMail but I
will be running through the defaults so you can choose to install them or not. AWeb can get you
to aminet.net to download an FTP client or be used to locate/download a different browser
(IBrowse or NetSurf).

Take note, if your NIC is supported in the kernel, you won't see a driver module loaded for it.
More than likely, you'll see a module loaded via pciinsmod, but if you've compiled your own
kernel and built your NIC in the kernel, no module will be loaded. The following instructions still
apply the same.

Insert your AmigaOS XL (Amithlon) CD if it's not already in the drive. Just like you would install
OS 3.9, run the installer and choose "Install Internet Software……"
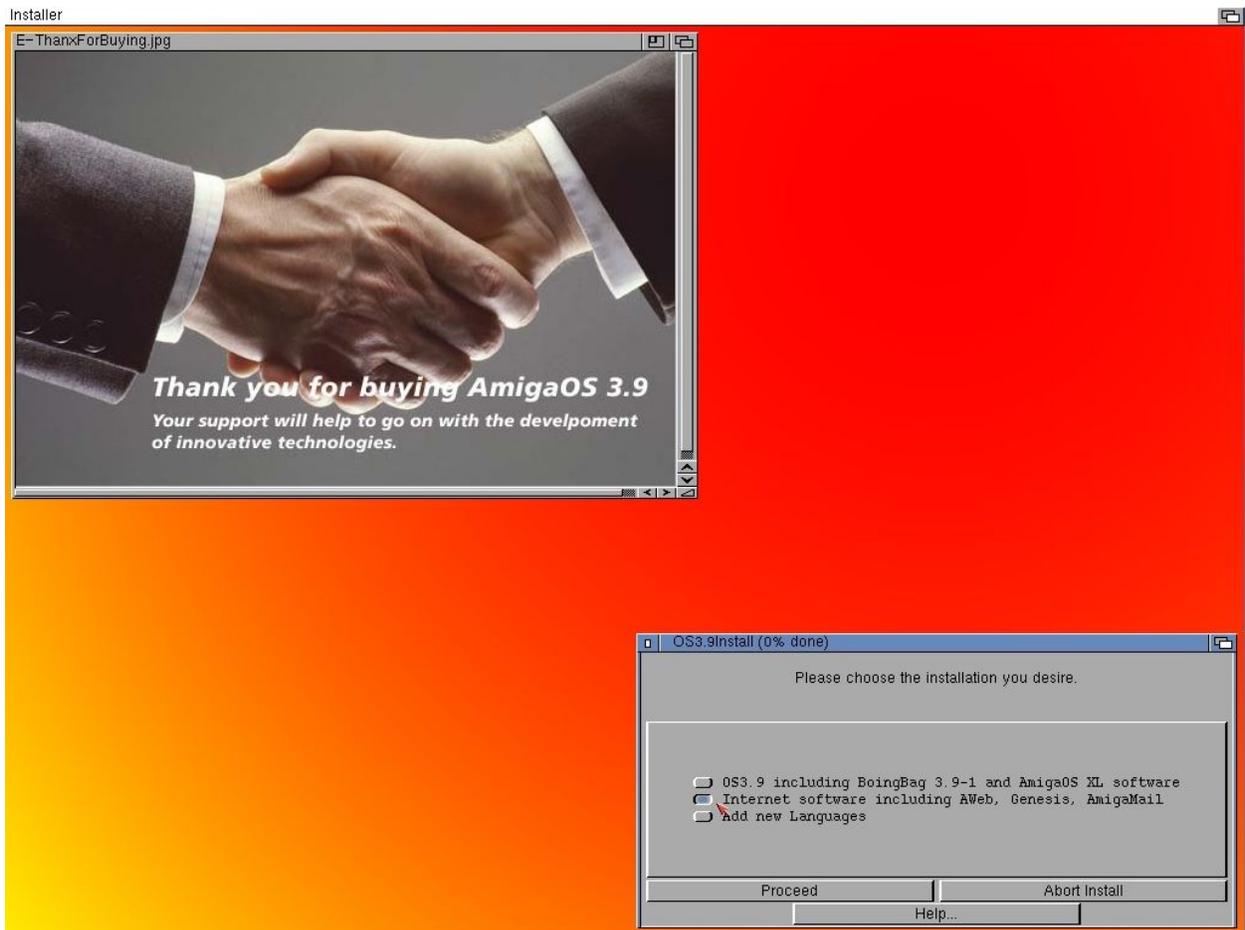
(installing Internet software…..from the AmigaOS XL disc)

I just run through the defaults for everything but make sure to choose your language. This will install Genesis, AWeb and AmigaMail.

When it completes and exits to Workbench, Open your System volume and scroll to Internet.

(Internet drawer on Sys: (default location))

Then open the Genesis folder…

(Genesis drawer)

Inside Genesis you'll find the apps Genesis Wizard, Genesis and Genesis Prefs. Run the Genesis Wizard app to configure your network settings.
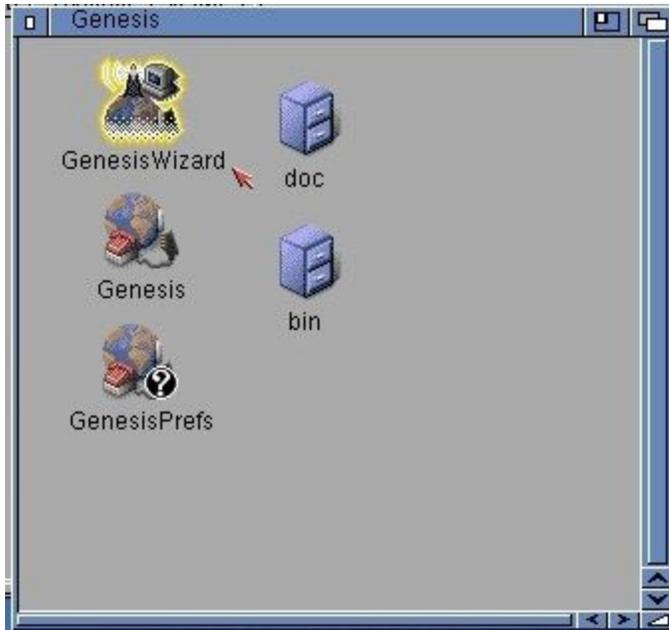
(run Genesis Wizard to configure network settings)

Choose Network as the connection.
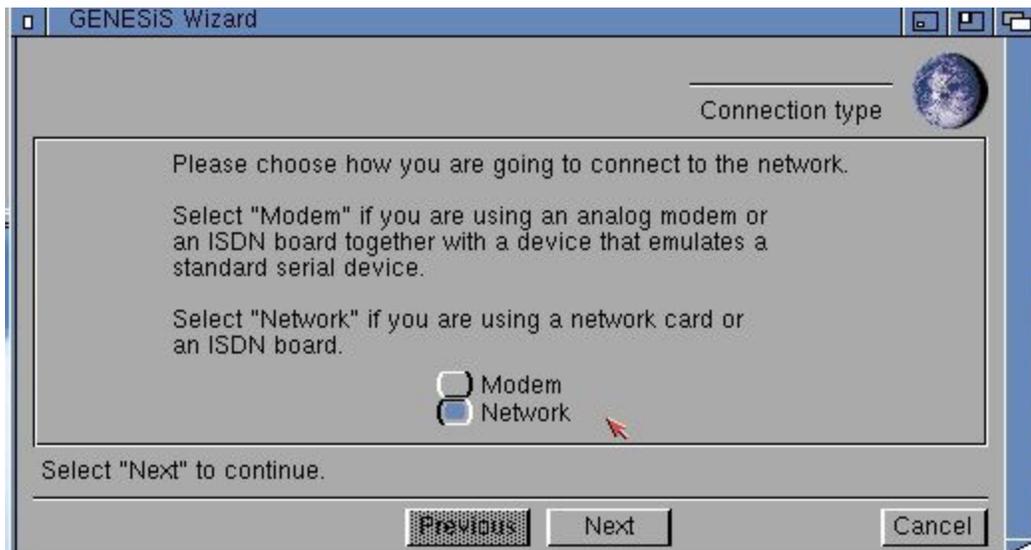
(Genesis Wizard - Connection type)

You will then be asked for your network driver, click the folder button and choose Amithlon1_net.device. **Note, I'm using the "openpci_8139.device" driver on my current setup so I select that in the step below instead of amithlon1_net.device.
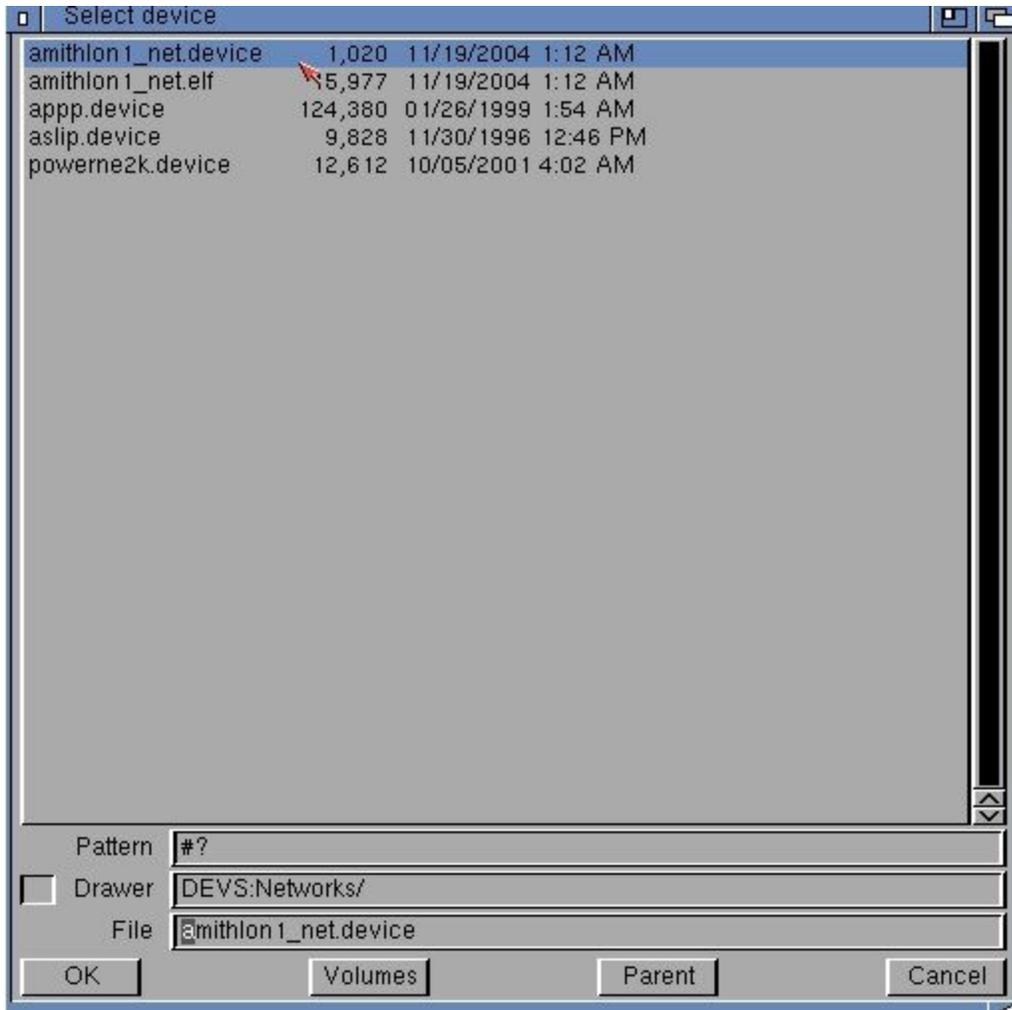
(Genesis Wizard - choosing network device)

Click next. You'll be asked if your sana device requires special configurations, choose no.
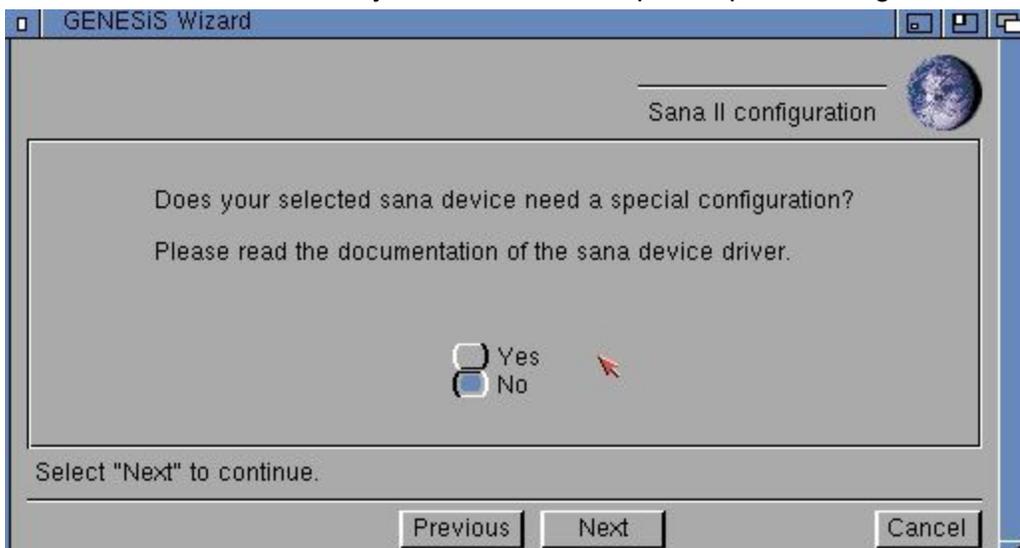
(Genesis Wizard - Sana II configuration)

When you click next, it will initiate a bootp to try and determine your network information, you will have to enter this manually. I pick an IP address not being used from the DHCP range my router provides. I enter it and the Router's IP address and click Next. *(Ignore the numbers, they are specific to my router setup. They change between this picture and the last as I had an IP conflict with another device and had to change it)*

(Genesis Wizard - IP-Address)

Click Next and then enter your router's IP address again as the Domain-Name-Server.

(Genesis Wizard - Nameserver and domain)

You can leave Domain-Name blank and then click Next.

You're done! Click on Genesis to launch the IP Stack and click "Online" to make the connection.

(Genesis program in the Genesis drawer)
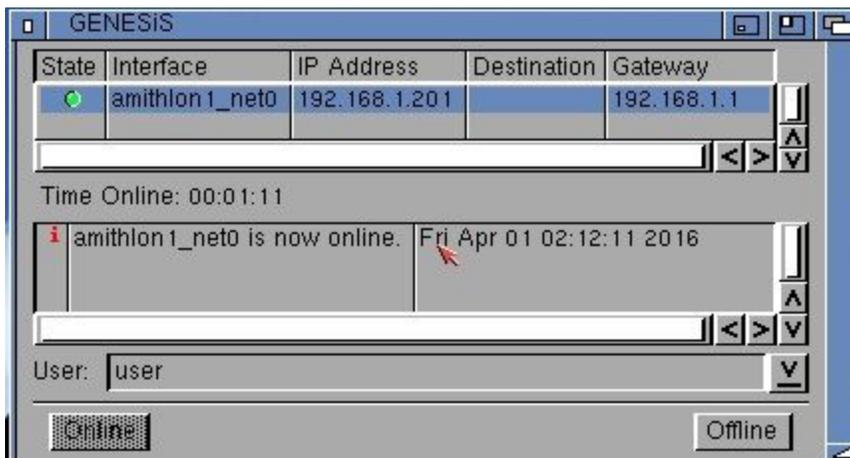
(Genesis, amithlon1_net0 online)

As noted above, I had an IP address conflict with another device on my network so had to change the IP address. You use the GenesisPrefs app to make changes to your network once it's configured through the Wizard.

Since AWeb was installed by the default settings we chose during installation, you can use it to start browsing. NetSurf is being worked on with two different versions, IBrowse works well and there may be others but these are the ones I've used. IBrowse tends to be my favorite as it's fast. Netsurf I use to check out pages that IBrowse can't handle but I tend to use IBrowse more than the others.   The choice is yours.   I've used FTP applications, SMB connections to my NAS box, NFS connections to my NAS box and of course web browsers. I also have used AmigaExplorer between my Amithlon system and Windows 10 system.

Picasso96Mode

For starters...here is an excellent write up on using Picasso96Mode , and below I'll walk through my use of "umc" and Picasso96Mode to create my 1680x1050@60Hz screenmodes.

If you have a hardware accelerated/supported video card, you'll want to use Picasso96Mode to create your screen modes, or at the least, enable the accelerated modes that your card/monitor support. I highly recommend a tool from Aminet called "umc" to help you with the settings to input into Picasso96Mode. UMC

Launch Picasso96Mode from your system Prefs folder.

(Picasso96Mode from your system Prefs)

You'll want to choose the menu "Attach setting to" and choose your Board0: item (mine list as Board0: nvidia-1). You'll want to test each mode and see which ones are working and which ones need tweaking. Some might not work at all. My monitor will not do a 320x240 mode. 640x480 and up are the sizes available but I concentrate primarily on the ones I may use. 640x480, 800x600, 1024x768, 1280x1024 and my monitors native resolution of 1680x1050. I do Chunky (256 Colors), HiColor (16bit) and TrueAlpha (TrueColor & Alpha) for each.

If a mode doesn't work, I'll delete all the "Modes" for it and add a new one and use "UMC" to find the specs I'll input and test. I'll show creating one mode as screen grabs on the Amithlon aren't as easy as on my PC running Virtualbox/Amithlon :)

Get your monitors specs...it's very handy to have them so you know what frequencies you can use as well as you'll need them for your s:startup-sequence later.
I have a HP w2207 monitor which has the following specs:

Horizontal scan range 24-82 KHz
Vertical scan range 48-76 Hz
1680 x 1050 @ 60 Hz

This is the min-max frequencies for Horizontal and Vertical as well as my monitors native resolution (which will offer the sharpest picture quality).

1680x1050@60Hz
I use UMC to get the numbers to input in Picasso96Mode.
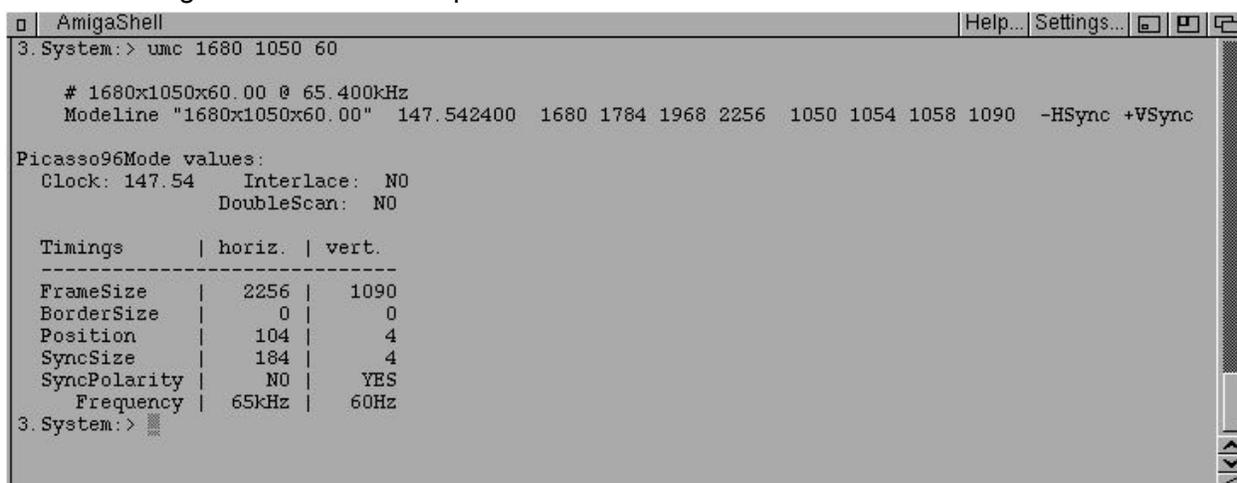
```
□  AmigaShell                                                    Help... Settings... □ ᴾ ⊡
3.System:> umc 1680 1050 60

    # 1680x1050x60.00 @ 65.400kHz
    Modeline "1680x1050x60.00"  147.542400  1680 1784 1968 2256  1050 1054 1058 1090  -HSync +VSync

Picasso96Mode values:
   Clock: 147.54     Interlace:  NO
                   DoubleScan:  NO

   Timings      | horiz. | vert.
   ----------------------------
   FrameSize    |  2256 |   1090
   BorderSize   |     0 |      0
   Position     |   104 |      4
   SyncSize     |   184 |      4
   SyncPolarity |    NO |    YES
      Frequency | 65kHz |   60Hz
3.System:> ▒
```

(UMC utility run with 1680x1050x60Hz input)

I plug those in and test. It was close but I had to click "Edit" and make a few changes.

(Actual numbers used in Picasso96Mode for my 1680x1050x60Hz screen mode)

Once I had it centered and edge to edge I hit Enter, then click "use" and proceed to copy the Chunky mode, change the copy to HiColor, click use, then copy the HiColor mode and change it to TrueAlpha and click Use. Click Save when you have completed all your screen modes and it will save then reboot.
Here are the tools to create new "Modes" and to copy or delete them.
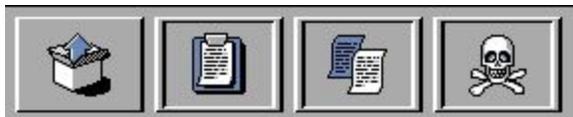
New, Copy to Clipboard, Copy and Delete.
I'll edit the Chunky "mode" and once it's working I'll drag the other (HiColor and TrueAlpha) over the Skull&Crossbones to delete them, then drag the Chunky "mode" over the "Copy" button and change the duplicated "Chunky (256 Colors) to "HiColor" and do the same to get "TrueAlpha"

Now go back to your system Prefs and open ScreenMode and choose your hardware accelerated mode (make sure to "test" before saving).

(ScreenMode from your system Prefs)

```
┌─┬──────────────────────────────────────────────────────┬─────────┐
│ ▫ │ ScreenMode Preferences                          │▫│▫│▫│ │
├───┴────────── Display Mode ──────────┬──────── Mode Properties ──────┤
│ builtin: 1024x768  8bit           ┃▲┃   Visible Size: │1,680 × 1,050 │ │
│ builtin: 1024x768  16bit PC       ┃ ┃                                 │
│ builtin: 1024x768  32bit BGRA     ┃ ┃  Minimum Size: │640 × 200     │  │
│ builtin: 1152x864  8bit           ┃ ┃                                 │
│ builtin: 1152x864  16bit PC       ┃ ┃  Maximum Size: │1,024 × 2,048 │  │
│ builtin: 1152x864  32bit BGRA     ┃ ┃                                 │
│ builtin: 1280x1024  8bit          ┃ ┃ Maximum Colors: │16,777,216   │  │
│ builtin: 1280x1024  16bit PC      ┃ ┃                                 │
│ builtin: 1280x1024  32bit BGRA    ┃ ┃  Supports genlock               │
│ builtin: 640x400  8bit            ┃ ┃  Draggable                      │
│ builtin: 640x400  16bit PC        ┃ ┃                                 │
│ builtin: 640x400  32bit BGRA      ┃ ┃  60 Hz, 65.28 kHz               │
│ builtin: 640x480  8bit            ┃ ┃                                 │
│ builtin: 640x480  16bit PC        ┃ ┃                                 │
│ builtin: 640x480  32bit BGRA      ┃ ┃                                 │
│ builtin: 800x600  8bit            ┃ ┃                                 │
│ builtin: 800x600  16bit PC        ┃ ┃                                 │
│ builtin: 800x600  32bit BGRA      ┃ ┃                                 │
│ FakeNative:HighRes                ┃ ┃                                 │
│ FakeNative:HighRes-Lace           ┃ ┃                                 │
│ FakeNative:LowRes                 ┃▒┃                                 │
│ FakeNative:LowRes-Lace            ┃ ┃                                 │
│ FakeNative:SuperHighRes           ┃ ┃                                 │
│ FakeNative:SuperHighRes-Lace      ┃ ┃                                 │
│ nVidia-1:1024x768  8bit           ┃ ┃                                 │
│ nVidia-1:1024x768  16bit PC       ┃ ┃                                 │
│ nVidia-1:1024x768  32bit BGRA     ┃ ┃                                 │
│ nVidia-1:1120x832  8bit           ┃ ┃                                 │
│ nVidia-1:1120x832  16bit PC       ┃ ┃                                 │
│ nVidia-1:1120x832  32bit BGRA     ┃ ┃                                 │
│ nVidia-1:1152x900  8bit           ┃ ┃                                 │
│ nVidia-1:1152x900  16bit PC       ┃ ┃                                 │
│ nVidia-1:1152x900  32bit BGRA     ┃ ┃                                 │
│ nVidia-1:1280x1024  8bit          ┃ ┃                                 │
│ nVidia-1:1280x1024  16bit PC      ┃ ┃                                 │
│ nVidia-1:1280x1024  32bit BGRA    ┃ ┃                                 │
│ nVidia-1:1680x1050  8bit          ┃ ┃                                 │
│ nVidia-1:1680x1050  16bit PC      ┃ ┃                                 │
│ nVidia-1:1680x1050 32bit BGRA     ┃ ┃                                 │
│ nVidia-1:640x480  8bit            ┃ ┃                                 │
│ nVidia-1:640x480  16bit PC        ┃ ┃                                 │
│ nVidia-1:640x480  32bit BGRA      ┃ ┃                                 │
│ nVidia-1:800x600  8bit            ┃ ┃                                 │
│ nVidia-1:800x600  16bit PC        ┃▲┃                                 │
│ nVidia-1:800x600  32bit BGRA      ┃▼┃                                 │
├──────────────────────────────────────┤                               │
│ Width:  [░░░░░░1024 ▓▼] ✔ Default    │                               │
│ Height: [░░░░░░1050 ▓▼] ✔ Default    │                               │
│ Colors:   16 M [┼┼┼┼┼┼┼┼┼┼┼┼┼▓]      │                               │
│ [ ] AutoScroll              [ Test ] │                               │
├──────────────────────────────────────┴───────────────────────────────┤
│ [ Save ]            [ Use ]                        [ Cancel ]  ◢       │
└───────────────────────────────────────────────────────────────────────┘
```

(Choose your ScreenMode, mine will be 1680x1050x32bit)

Okay, remember when I said you'll need your monitor specs for s:startup-sequence later….well it's later :)

Edit your s:startup-sequence, I just use "ed", it's simple and does the job.

In a CLI/Shell type ed s:startup-sequence and hit enter.
Scroll down to the lines **under** "; Video @ 75 Hx" as we will plug our numbers here and remove the ";" preceding the lines.
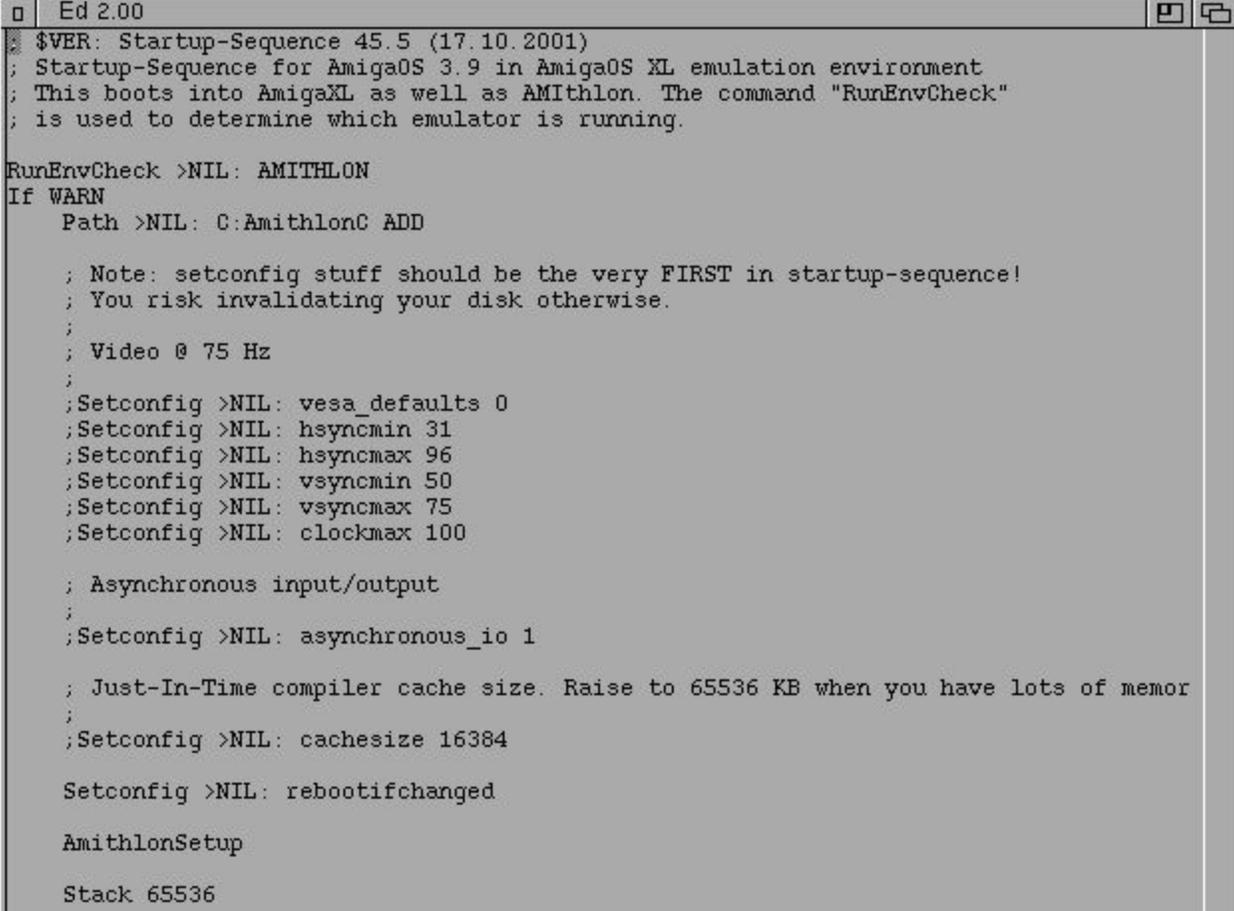
```
□ | Ed 2.00                                                                    □ ⊡
$VER: Startup-Sequence 45.5 (17.10.2001)
; Startup-Sequence for AmigaOS 3.9 in AmigaOS XL emulation environment
; This boots into AmigaXL as well as AMIthlon. The command "RunEnvCheck"
; is used to determine which emulator is running.

RunEnvCheck >NIL: AMITHLON
If WARN
    Path >NIL: C:AmithlonC ADD

    ; Note: setconfig stuff should be the very FIRST in startup-sequence!
    ; You risk invalidating your disk otherwise.
    ;
    ; Video @ 75 Hz
    ;
    ;Setconfig >NIL: vesa_defaults 0
    ;Setconfig >NIL: hsyncmin 31
    ;Setconfig >NIL: hsyncmax 96
    ;Setconfig >NIL: vsyncmin 50
    ;Setconfig >NIL: vsyncmax 75
    ;Setconfig >NIL: clockmax 100

    ; Asynchronous input/output
    ;
    ;Setconfig >NIL: asynchronous_io 1

    ; Just-In-Time compiler cache size. Raise to 65536 KB when you have lots of memor
    ;
    ;Setconfig >NIL: cachesize 16384

    Setconfig >NIL: rebootifchanged

    AmithlonSetup

    Stack 65536
```

(S:Startup-Sequence before modifying)

We will be changing the 6 "Setconfig" settings for video and two others (asynchronous_io and cachesize).

```
┌─┐ Ed 2.00                                                                              ┌─┐┌─┐
; $VER: Startup-Sequence 45.5 (17.10.2001)
; Startup-Sequence for AmigaOS 3.9 in AmigaOS XL emulation environment
; This boots into AmigaXL as well as AMIthlon. The command "RunEnvCheck"
; is used to determine which emulator is running.

RunEnvCheck >NIL: AMITHLON
If WARN
    Path >NIL: C:AmithlonC ADD

    ; Note: setconfig stuff should be the very FIRST in startup-sequence!
    ; You risk invalidating your disk otherwise.
    ;
    ; Video @ 75 Hz
    ;
    Setconfig >NIL: vesa_defaults 0
    Setconfig >NIL: hsyncmin 24
    Setconfig >NIL: hsyncmax 82
    Setconfig >NIL: vsyncmin 48
    Setconfig >NIL: vsyncmax 76
    Setconfig >NIL: clockmax 300

    ; Asynchronous input/output
    ;
    Setconfig >NIL: asynchronous_io 1

    ; Just-In-Time compiler cache size. Raise to 65536 KB when you have lots of memor
    ;
    Setconfig >NIL: cachesize 65536

    Setconfig >NIL: rebootifchanged

    AmithlonSetup

    Stack 65536
```

(my modified S:Startup-Sequence, covering the changes made)

They are all pretty easy to decipher except for "Setconfig >NIL: vesa_defaults 0" and "Setconfig >NIL: clockmax 300". The first disables using VESA default frequencies, which we want since we are inputting our own specific monitor frequencies. The second is the maximum clock rate of your graphics card. Mine is around 270-280 if I remember correctly, but I've read it doesn't hurt to set it a little higher as it will still only go as fast as your card is clocked (it doesn't overclock it). I set it just a tad over.

I'm not sure if asynchronous io helps or not and for cachesize, I have 1 GB of ram in my Amithlon system so setting to the high number makes sense.