How to recover the OpenAZBox MOD kernel on an Azbox, only displaying: Booting…

I ran into problems, after I installed OpenAZBox MOD firmware and wanted to go back to the RTi Core 1.6 firmware.

The problem was that, at the second zboot stage, the box got stuck, due to an incorrect zboot signature.

This problem started when using the latest version of AZUP, at that time 2.2.5.

Connecting my receiver to my PC with a FTDI Chip TTL-232R cable, gave the following error:

Checking zboot signature.. it's not zboot file.
Error : Internal, code = ffffffff
YAMON>

In this tutorial, I'll try to explain how to revive your fooked up AZBox HD receiver. This does not apply to AZBox Me or miniME receivers.

Please read the tutorial thoroughly, for it describes where to obtain the hardware and also where you can download additional needed software.

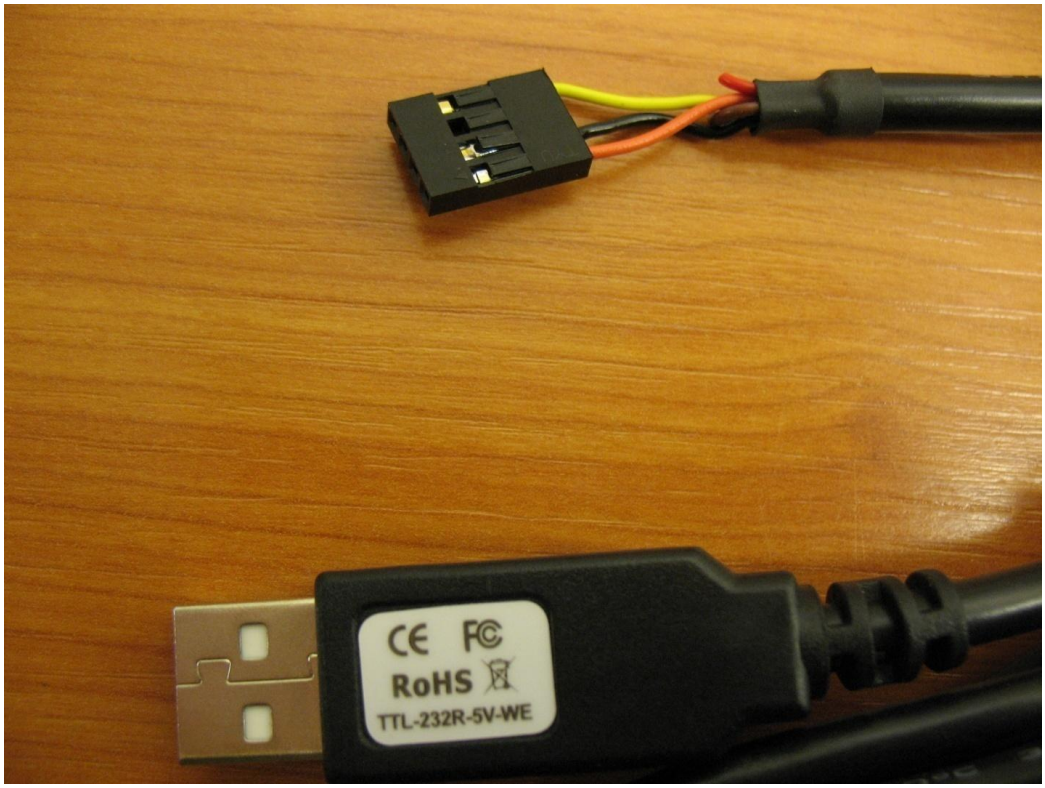
This tutorial is based on my personal situation and I hope others can use it to recover their first generation AZBox HD receiver. Using the manual or any flashing procedure is done at your own risk.

The manual is based on the original "**How to recover a blocked Azbox only displaying: Booting…"**.

Special thanks to sattommy for his insights.

Used hardware

I have used a FTDI Chip TTL-232R-5V-WE cable. This is a USB to TTL Serial cable.



Just Google “Yamon cable” and lots of shops will pop up. Please look for a finished product as the image shows.
Drivers: http://www.ftdichip.com
Datasheet: http://www.ftdichip.com/Support/Documents/DataSheets/Cables/DS_TTL-232R_CABLES.pdf

Used software

Putty.

Putty is a terminal emulator which also support serial connections.
Since most of us already use Putty we already have it installed.

http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

Download link: http://the.earth.li/~sgtatham/putty/latest/x86/putty.exe

There is no need to install Putty, simply download it somewhere on your PC and launch it.

TFTP server.

You will need a TFTP server on your PC, I use Pumpkin.

http://kin.klever.net/pumpkin/

Download link: http://kin.klever.net/pumpkin/binaries

Possible alternative: http://tftpd32.jounin.net/

Download link: http://tftpd32.jounin.net/tftpd32_download.html (this one has a 64 bits version).

FileZilla

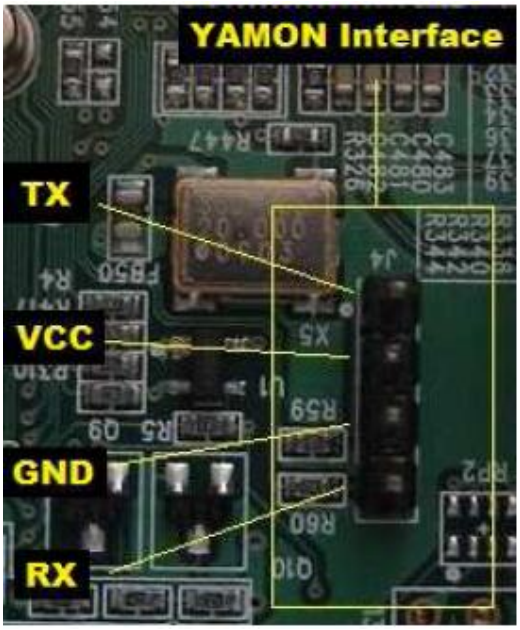
You will need a FTP client:

http://filezilla-project.org/

Download link: http://filezilla-project.org/download.php?type=client

The YAMON Interface

The connector to access Yamon looks like this on the motherboard:



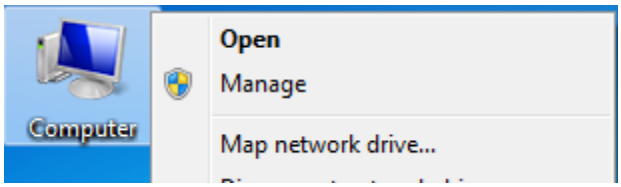
Connector op de Azbox		Connector op de USB/TTL adapter
TX	**[yellow]**	**RX**
VCC	***DO NOT CONNECT***	***DO NOT CONNECT***
GND	**[black]**	**GND**
RX	**[orange]**	**TX**

Just to be clear, I give you the wire colors that I use on the Azbox side since this connector is quite common and my cable is assembled and ready.

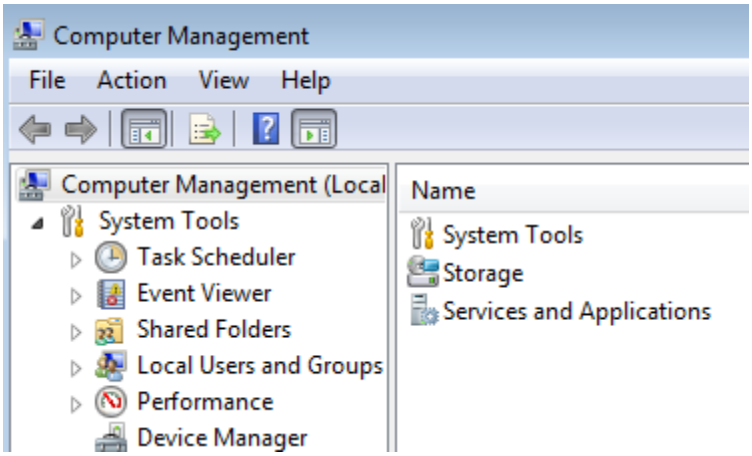
IMPORTANT: On the Azbox motherboard there is a dot near the TX pin, this gives you an indication on how to connect the cable (see later on for detailed photos).

adapter USB/TTL driver installation and configuration.

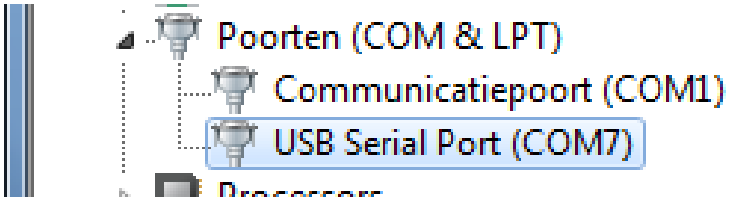
You should install the driver on your PC and check that they are properly working (no error message on Windows).



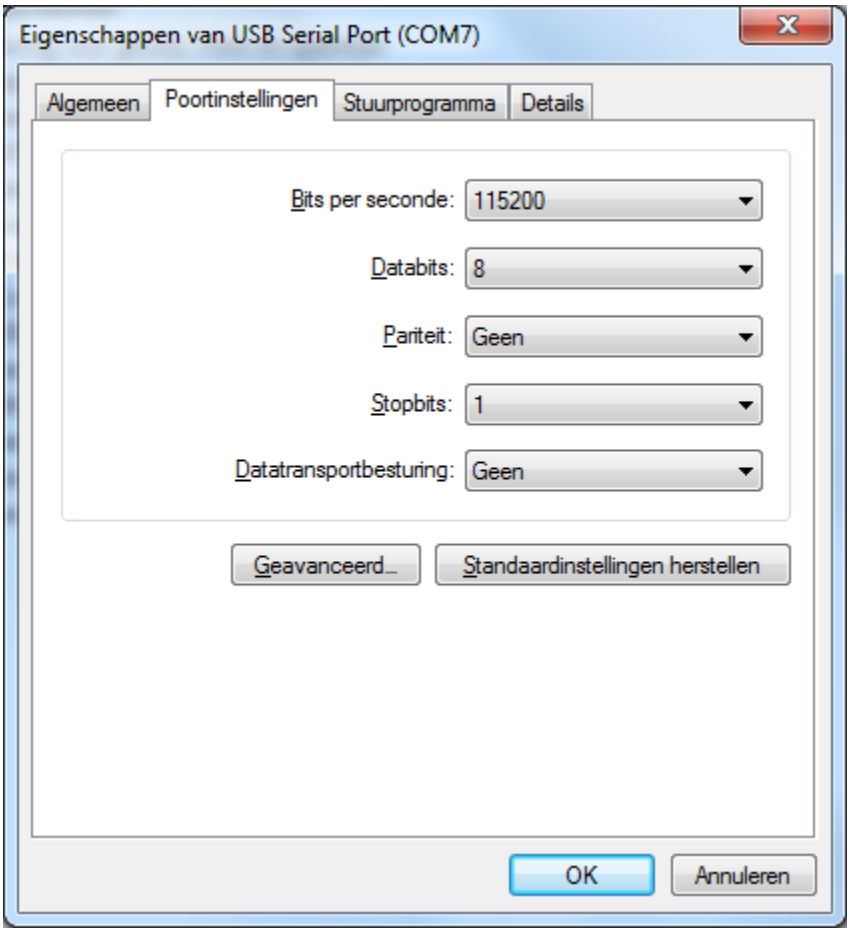
Right click on My Computer , and select **Manage** option.



Click on **Device Manager.**



In the list that appears select the Ports (COM and LPT) and double click on USB Serial Port. Please write down the port number (for example COM7) This value can be different on your PC.



Open the Parameters tab of this port and configure it like like on the screenshot above.

Normally only the port speed needs to be changed by Bits per seconds: **115200**, Data bits: 8, Stop bits: **1**

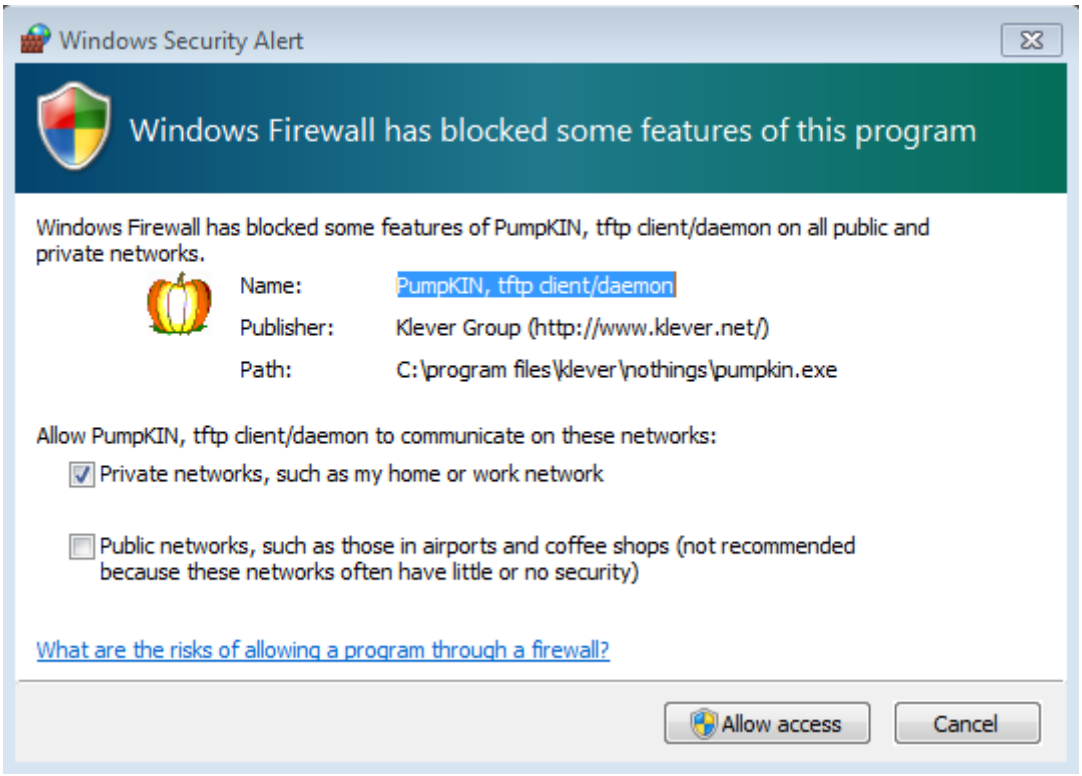
Press OK.

Starting the TFTP.

In the package that comes with this tutorial, you have the Files folder, you need to configure your TFTP server to use this folder.

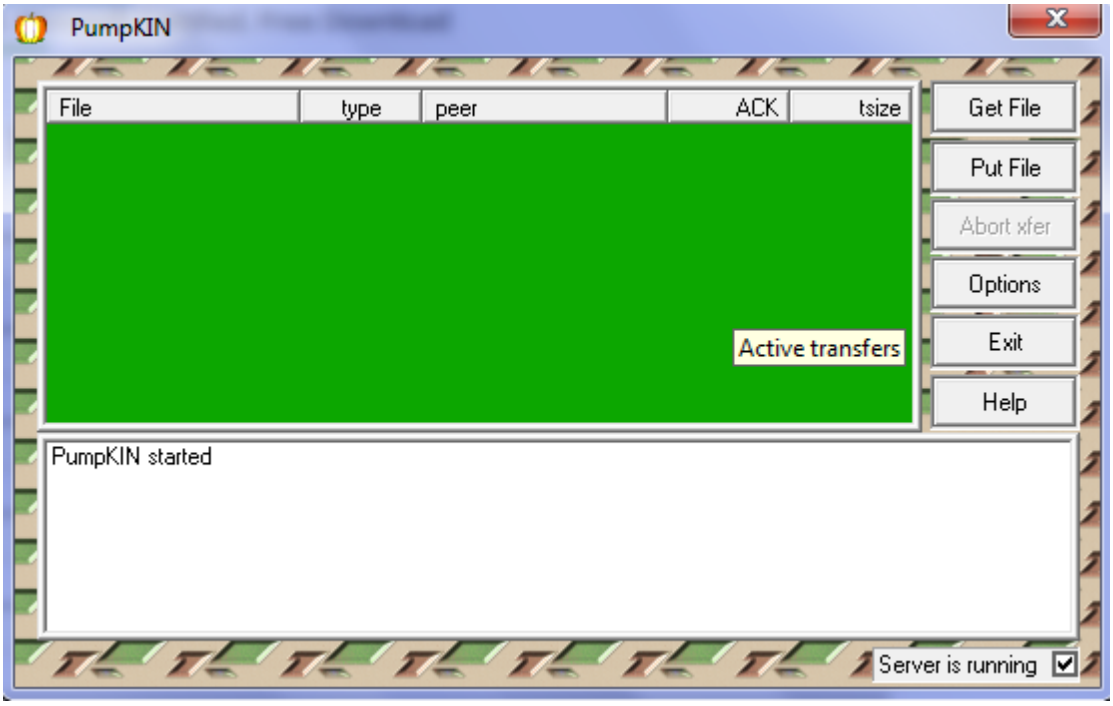
Start PumpKIN.

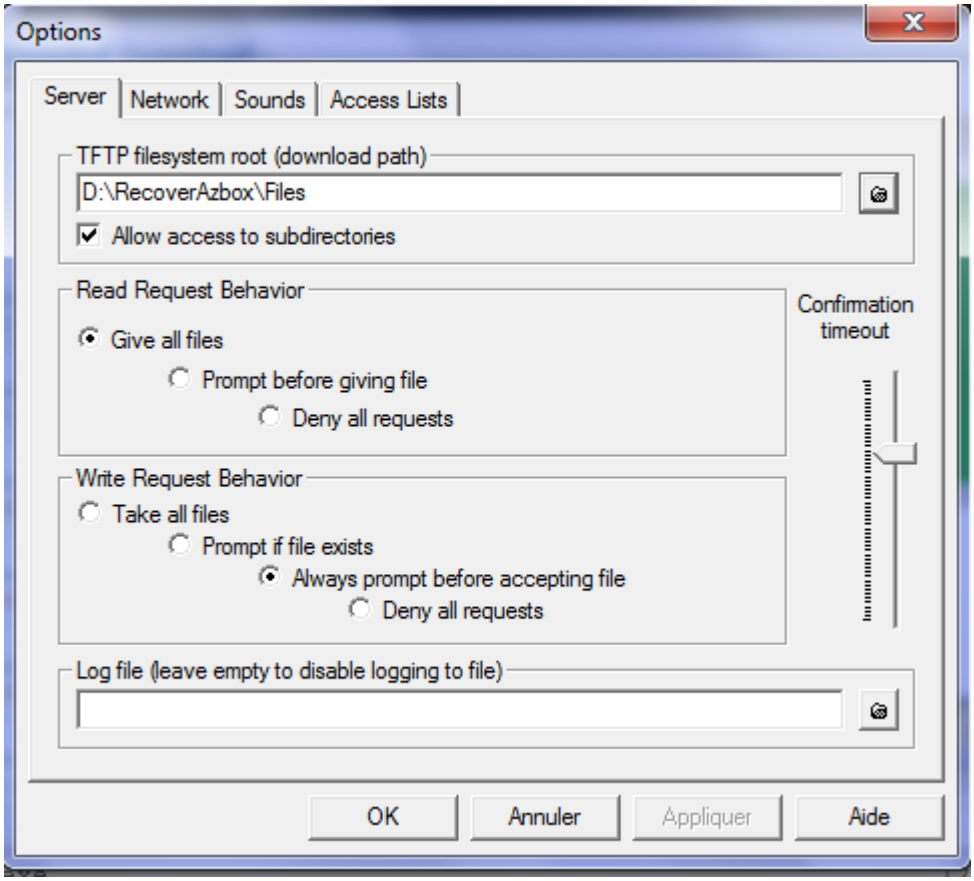
The first time PimpKIN will start, your firewall will ask you to allow PumpKIN to access the network and at the first start you will have:



You need to Allow access..

Press Options button:



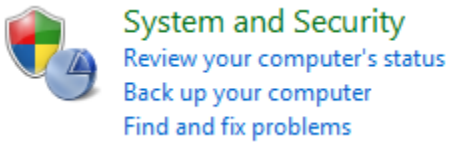


In the field TFTP filesystem root (download path) set the Files folder location (the easiest way is to click on the folder icon and browse your folder to point out the right one).

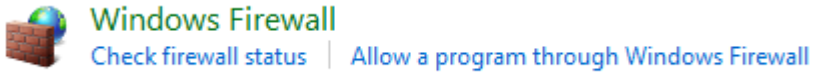
Then select the Give all files and click OK.

Disabling Windows Firewall (or any other).

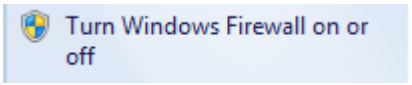
To avoid many problems it is could be advisable to disable the Firewall that is active on your PC. Here is how to disable the Windows Firewall. Goto **Control Panel** → **System and Security**



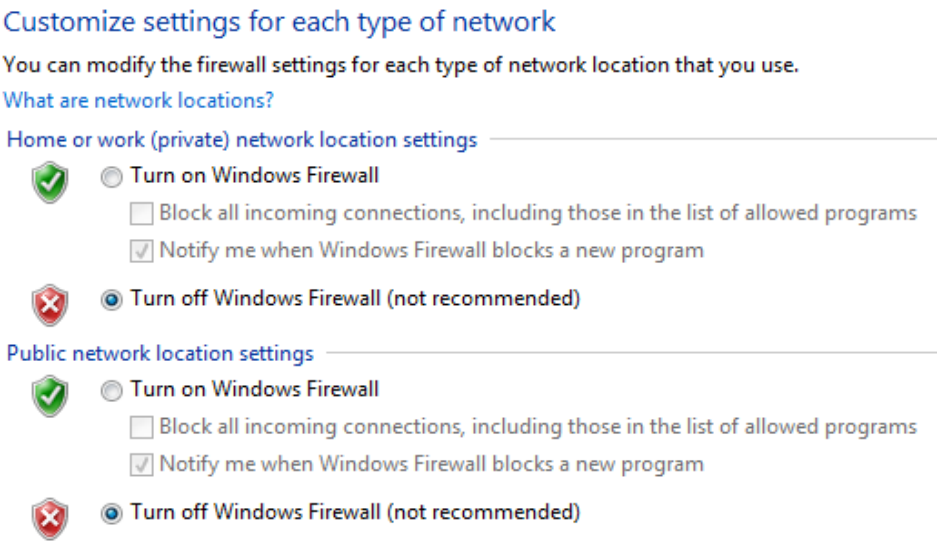
Select **Windows Firewall:**



The select: **Turn Windows Firewall on or off.** (on the left pane)



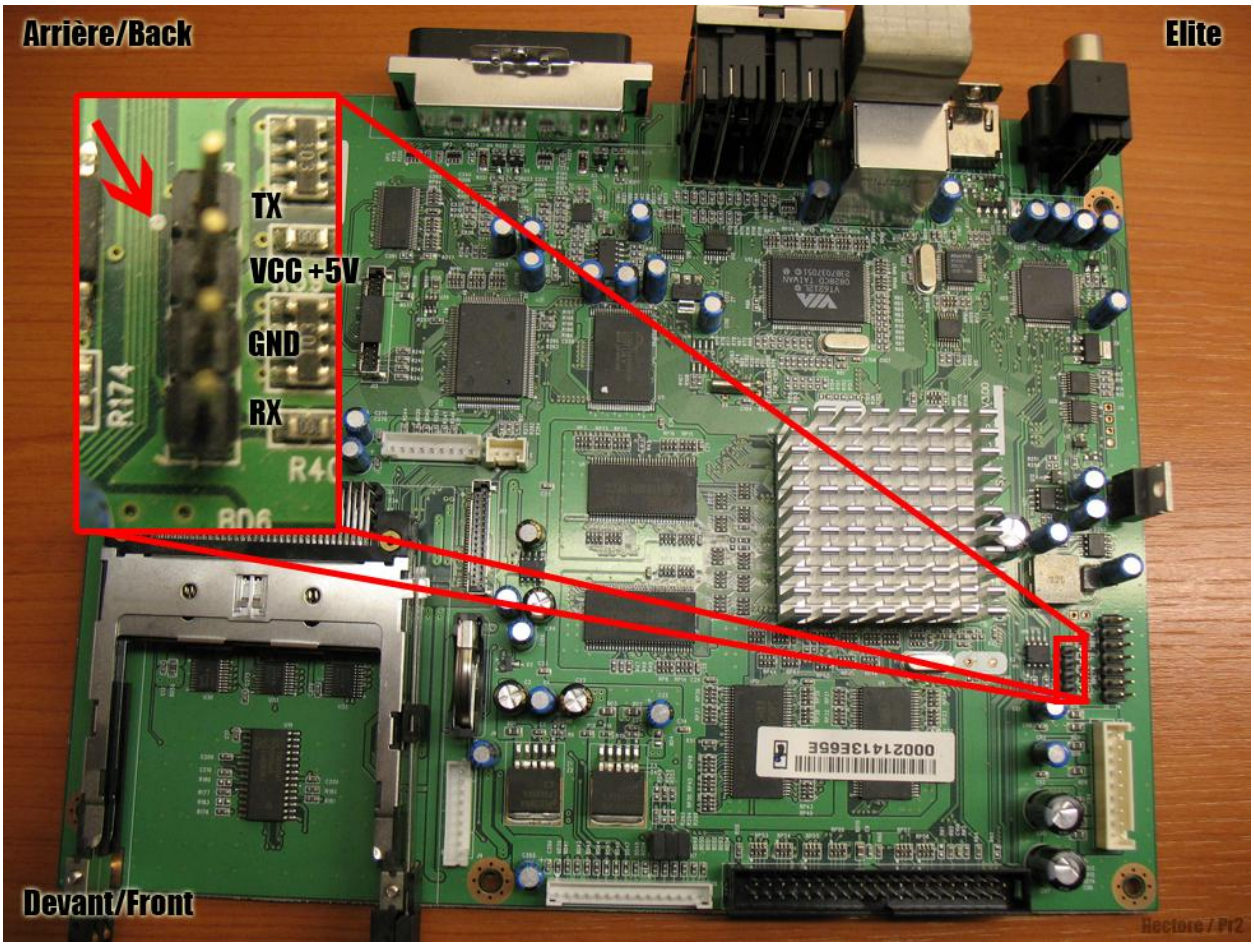
And disable the Firewall.



Press OK to confirm.

How to connect the cable on the Azbox motherboard:

Elite:

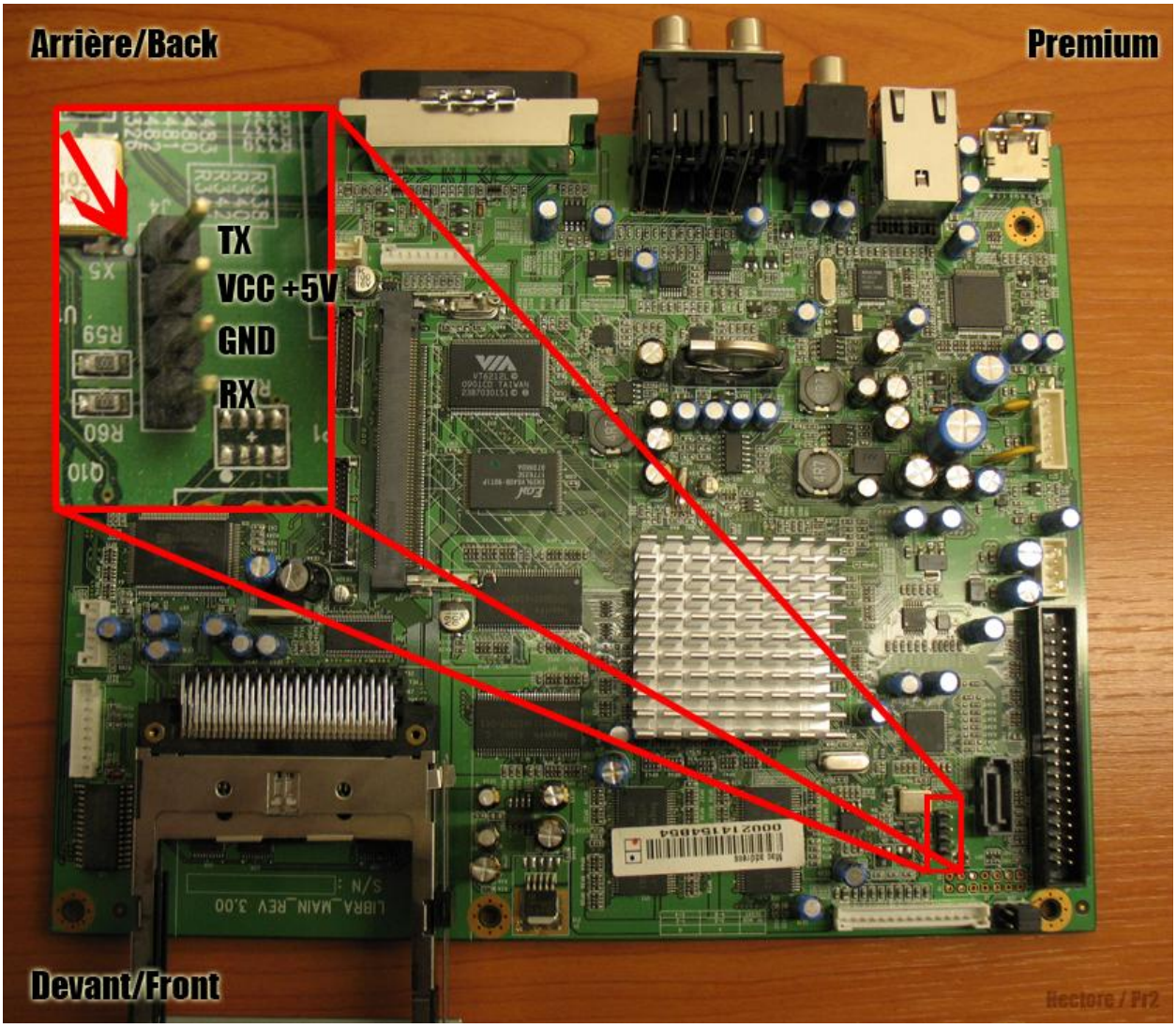


Carefully check for the dot on the motherboard that indicates the TX pin of the connector.

Remember that you need to connect this TX pin to the RX of your adapter

IMPORTANT: Don not use the VCC connection.

Premium:

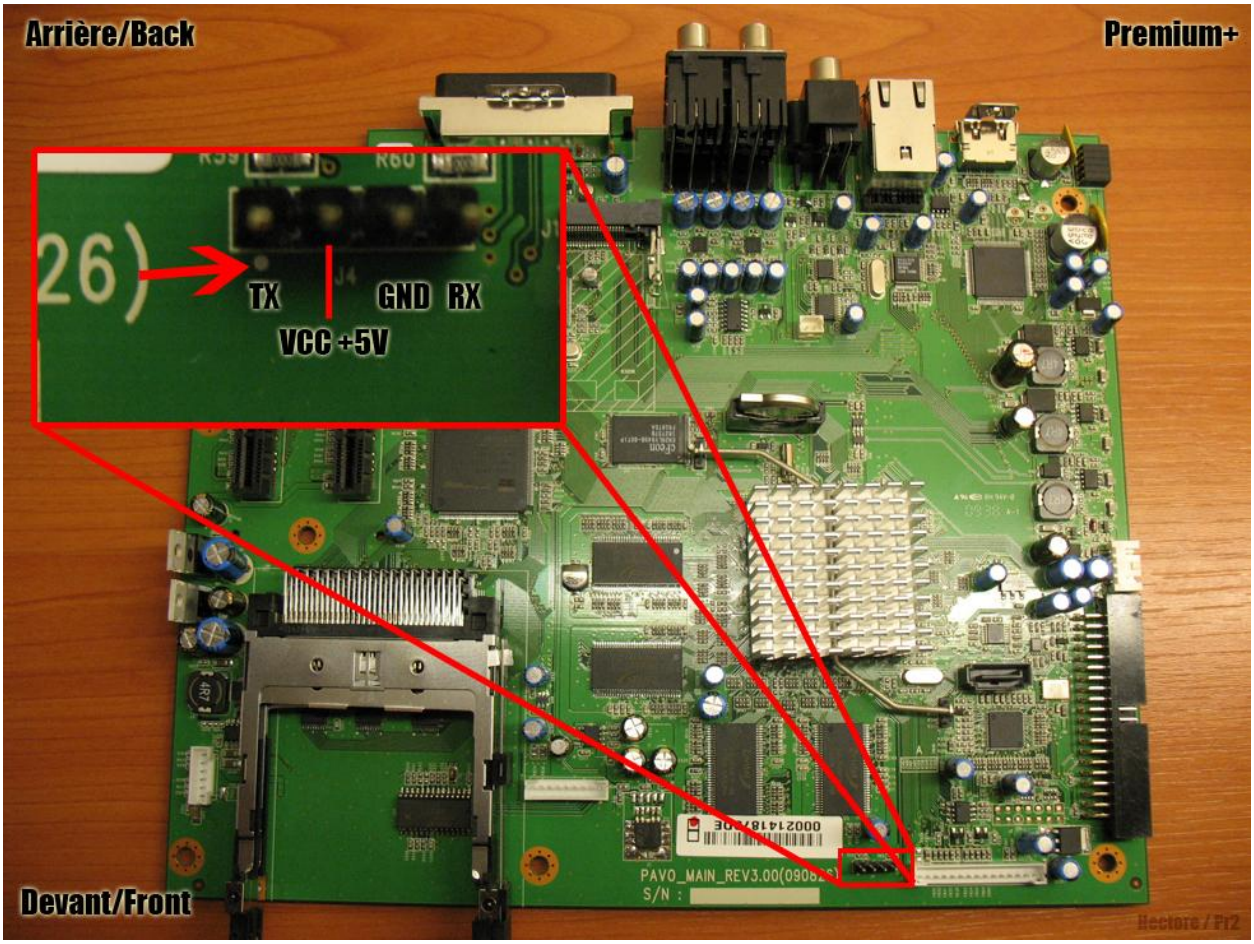


Carefully check for the dot on the motherboard it indicates the TX pin of the connector.

Remember that you need to connect this TX pin to the RX of your adapter

IMPORTANT: Don not use the VCC connection.

Premium Plus:

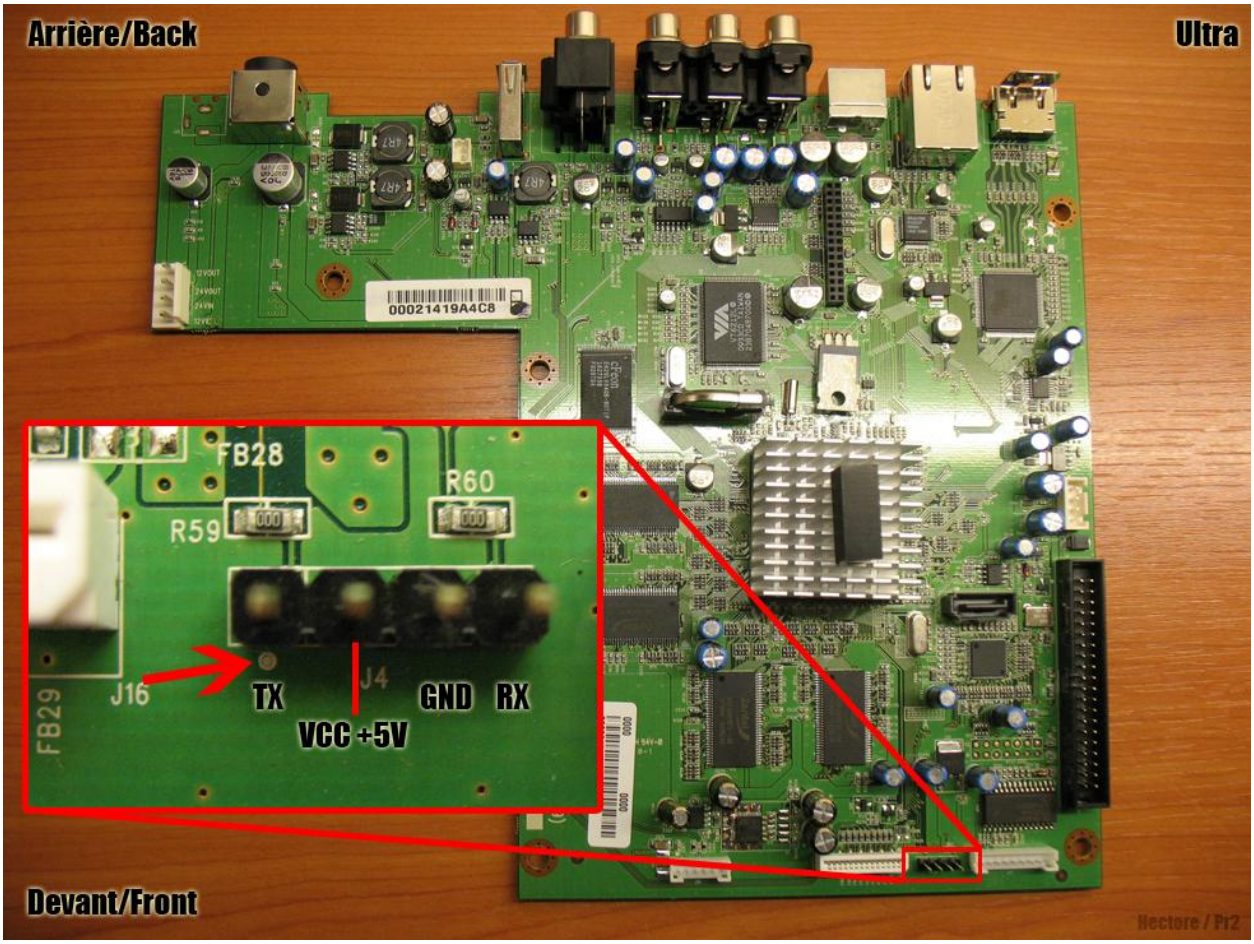


Carefully check for the dot on the motherboard it indicates the TX pin of the connector.

Remember that you need to connect this TX pin to the RX of your adapter.

IMPORTANT: Don not use the VCC connection.

Ultra:



Carefully check for the dot on the motherboard it indicates the TX pin of the connector.

Remember that you need to connect this TX pin to the RX of your adapter.

IMPORTANT: Don not use the VCC connection.

Recovery of your Azbox.

Just to make sure.

You have the USB to TTL Serial cable.

You have a terminal emulataor [Putty]

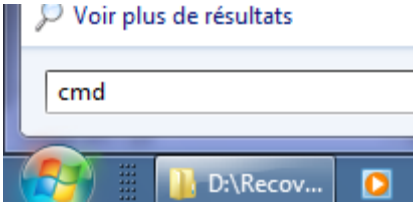
You have a TFTP server running and pointing on the rigth folder on your PC. [Pumpkin or TFTP32]

You know the COM port number associated with your adapter.

You have connected your Azbox to a wired network, using a network cable (RJ45). Your PC must be on the same network.

How to find your PC IP address.

To find IP address of your PC, press the Start button on your desktop and type the following in the search field: **cmd**



then press the Enter key and a black window will appear.

In this window, type the following command Then type: **ipconfig**

The result will look like:

```
Ethernet adapter Local Area Connection:

   Connection-specific DNS Suffix  . : home
   IPv4 Address. . . . . . . . . . . :  192.168.1.7
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 192.168.1.1
```

The field Ipv4 Address shows the current IP address of your PC
In this example it is: 192.168.1.7

For your Azbox, you need to find a free IP address in your network in the range of 2 and 253.

Let say we choose 241. In that case, the IP of your AZBox would be; 192.168.1.241

Now, we will test if this address is free:

Give the following command in the black windows, where we typed the ipconfig command, earlier on.

ping 192.168.1.241

If the answer is ….

```
Pinging 192.168.1.241 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.241:
   Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

… you can keep this value. It seems to be free on your network.

But if the answer is …

```
C:\>ping 192.168.1.241

Pinging 192.168.1.241 with 32 bytes of data:
Reply from 192.168.1.241: bytes=32 time=6ms TTL=64
Reply from 192.168.1.241: bytes=32 time=5ms TTL=64
Reply from 192.168.1.241: bytes=32 time=6ms TTL=64
Reply from 192.168.1.241: bytes=32 time=3ms TTL=64

Ping statistics for 192.168.1.241:
   Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
   Minimum = 3ms, Maximum = 6ms, Average = 5ms
```

… you will need to find another IP address , by choosing another random value (between 2 and 253) and test it again.

Starting Recovery process.

To follow and understand this tutorial you have to keep in mind that, in this example below:

The IP address of the PC is 192.168.1.7 (by DHCP lease or as static IP number)

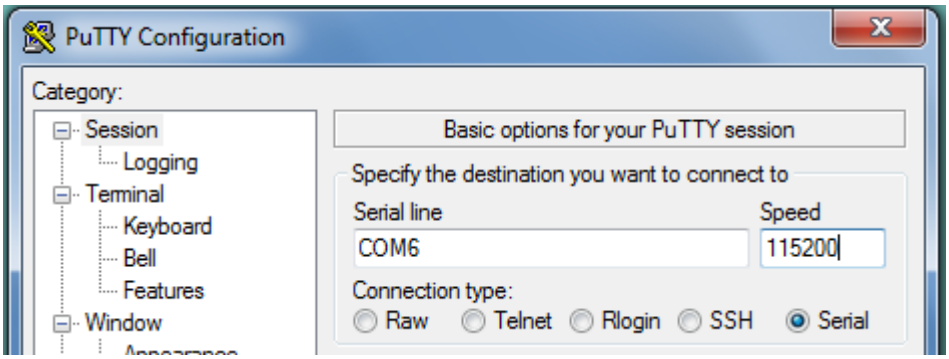
The Azbox IP address is 192.168.1.241 (to be defined by yourself)

You will need to adapt the values according to your local LAN. Or you can also temporarily assign a fixed IP address to your PC. Lets say: 192.168.1.10

Step 1: starting Putty and the serial connection

Power off your Azbox with the back switch and connect the cable carefully inside your Azbox and the adapter in your PC.

Start Putty.



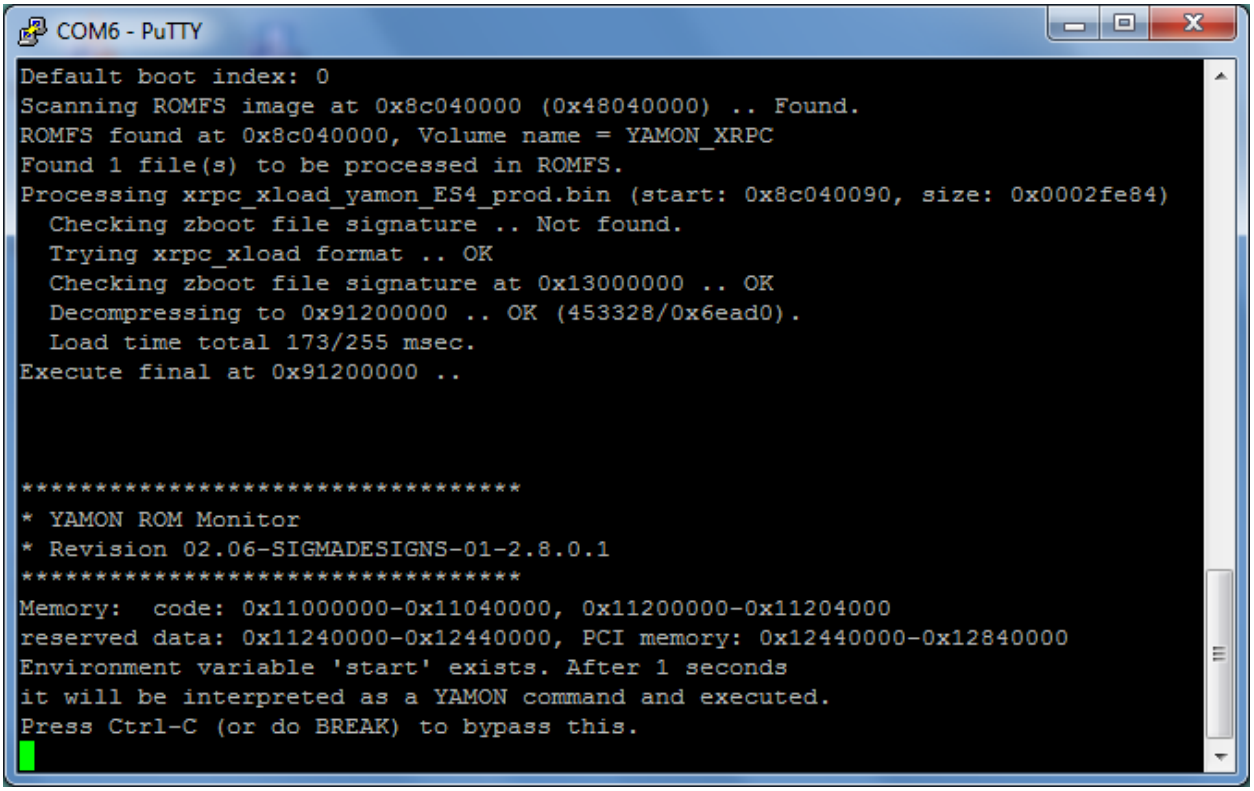
Proceed, doing the following:

- Select Serial
- Define the Serial Port name: COM6 (this can be different for you (see before on how to find it))
- Speed: 115200 (be careful: by default it is 9600. This is not the right speed. So, you need to change it).

Press the Open button of putty and flip the power switch on your Azbox (Power On).

Step 2: connection to Yamon

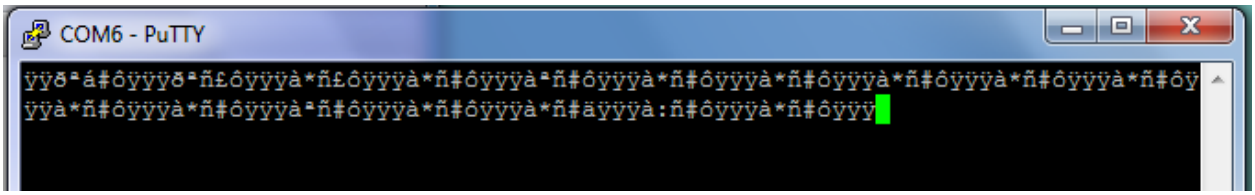
You will get a window looking like the next image.



Be careful: At some point Yamon will present a small pause (see screenshot above). When this is the case, press **Ctrl-C** to stop the boot process.

Tip: If nothing happens, when your switch on the power, check if your cable is connected correctly.

If you have this kind of result, …



… you probably didn't select the right speed in Putty. As stated before, this should be 115200kBps.

Change the speed and start again with the correct speed.

You should get a prompt:

```
YAMON>
```

If the boot process continue, power off/power on your Azbox to start over.

Press the Ctrl-C keys, as fast as possible, when the message is displayed.

If it still fails, I would advice that you carefully check your cable or change your adapter.

Technical remark:

If you see nothing in Putty, please check carefully that the cable between the front panel and the motherboard is connected. The Azbox refuse to boot if it doesn't detect the VFD.

If your Azbox only display this in Putty:

```
xosPe0 serial#afb47efe68cceef4f95c03f6bf65836f subid 0x50
xenv cs2 failed
xenv cs3 failed¡øpower supply: ok
dram0 ok (8)
zboot (1) failed
```

This procedure cannot help you. You will need to JTAG or send your Azbox back for repair.

Step 3: Enabling Azbox network Interface

On the YAMON> prompt, give/type the following commands

```
setenv ipaddr 192.168.168.20
setenv subnetmask 255.255.255.0
setenv gateway 192.168.168.1
```

IMPORTANT: Please keep in mind that the above IP numbers are an example. Adapt the IP numbers to your personal network.

For each command, Yamon will reply with:

```
Updating XENV block at 0x48000000.
.
XENV verification OK.
```

To initialize the network, type the command:

```
net init
```

Example of command result:

```
YAMON> net init
Ethernet driver for EM86XX (v1.0)
(MAC xx:xx:xx:xx:xx:xx, tx_desc/rx_desc = 16/32)

em86xx_eth::open(em86xx_eth) - Full-duplex mode
em86xx_eth::open(em86xx_eth) - 100 Mbit/s
em86xx_eth ethernet start
ipaddr:     192.168.168.20
subnetmask: 255.255.255.0
gateway:    192.168.1.1
```

Enabling network:

net up

Result:

em86xx_eth ethernet start

To check connectivity, type the following command:

ping 192.168.168.10

Result:

YAMON> ping 192.168.168.10
64 bytes ICMP-ECHO-REPLY user data received from 192.168.168.10

It is alright you can continue the process.

If you get the following result:

YAMON> ping 192.168.168.10
....
Error : No response from ping server
Hint : Check remote host IP or var's 'ipaddr', 'gateway' & 'subnetmask', or try command "net down"/"net up"

Your network configuration is not correct. You carefully need check all your parameters and also double check that you have **disabled your PC Firewall**.

It is useless to continue if this basic test fails.

Step 4: Loading and starting Rescue Linux

Type the following command:

load -b tftp://192.168.168.10/vmlinux.bin 0x90020000

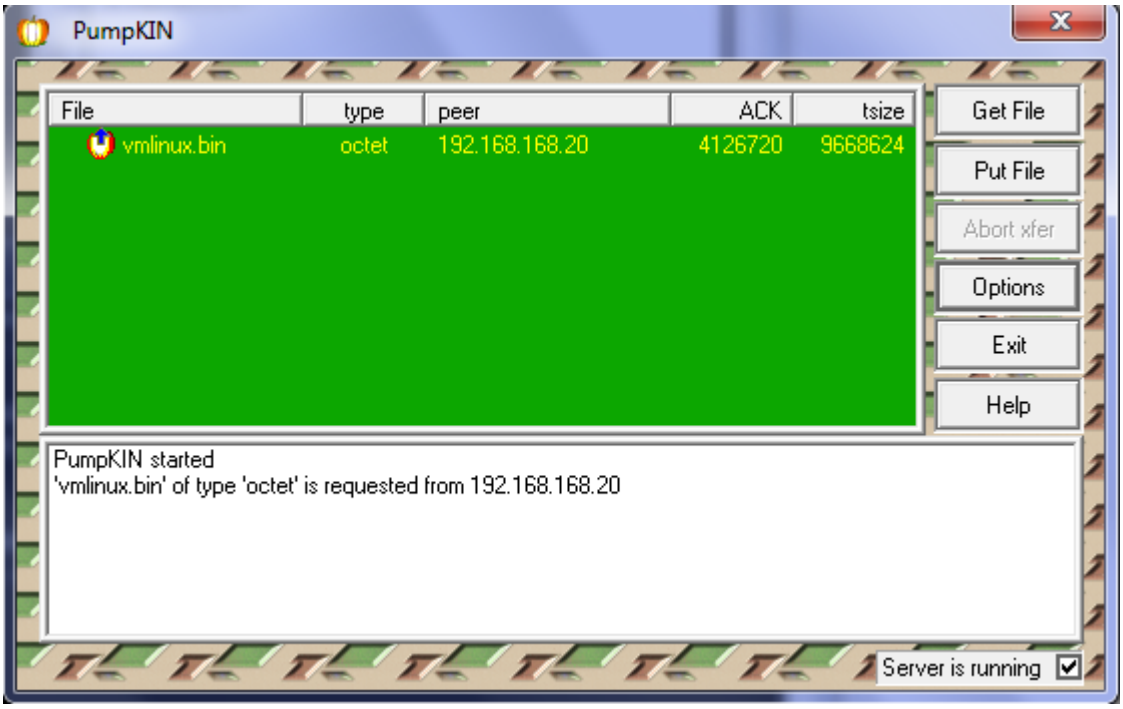
IMPORTANT: Please keep in mind that the above IP number is meant as an example. Adapt the IP number to your personal network. It should be the IP number of your PC.

The result of the command is:

```
About to load tftp://192.168.168.10/vmlinux.bin
Press Ctrl-C to break
.....
.....
.....
.....
.....

Start = 0x90020000, range = (0x90020000,0x9095880f), format = BINARY
Length = 0x938810 (9668624)
Checksum = 0x2254194d
```

On your TFTP server (PumpKIN), you will see something like this:



After Rescue Linux has been send, you can stop PumpKIN on your PC.

If your Azbox cannot connect to your TFTP server, please check the settings and ensure that your Firewall is disabled.

When this is done, you need to type the command:

go

Result:

```
YAMON> go
em86xx_eth ethernet stop
Linux version 2.6.22.19-19-the_ripper (root@debian) (gcc version 4.3.2 (Debian 4.3.2-1.1) ) #185
PREEMPT Mon May 31 16:44:40 CEST 2010
Configured for SMP863x (revision ES6+/RevA+), detected SMP8634 (revision ES7/RevB).
Detected CPU/System/DSP Frequencies: 300.37/200.25/300.37MHz
SMP86xx Enabled Devices under Linux/XENV 0x48000000 = 0x00021ace
 BM/IDE PCIHost Ethernet I2CM I2CS USB PCIDev2 PCIDev3 SCARD
Valid MEMCFG found at 0x10000fc0.
.....
EXT3 FS on hda1, internal journal
EXT3-fs: recovery complete.
EXT3-fs: mounted filesystem with ordered data mode.
mount: mounting /dev/hda2 on /PLUGINS failed: Invalid argument
mount: mounting /dev/hda3 on /DISK2 failed: Invalid argument
mount: mounting /dev/hda4 on /Download failed: No such device or address
insmod: can't read '/MMP/modules/2.6.22/llad.ko': No such file or directory
insmod: can't read '/MMP/modules/2.6.22/em8xxx.ko': No such file or directory
===> Starting vsftpd...

AZBOX login:
```

Step 5: Connecting to the Rescue Linux

If starting Rescue Linux starts well, you will get a login prompt.
Type **root** as login name. When or if you are prompted for a password, it is azbox.

AZBOX login: **root**

```
login[700]: root login on 'ttyS0'
AZBOX[~]$
```

IMPORTANT: if your Azbox is connected to a network with a DHCP server, your Azbox will have received an IP address.

Type the following command: **ifconfig**

You will get a similar response as the following:

```
eth0      Link encap:Ethernet  HWaddr xx:xx:xx:xx:xx
          inet addr:192.168.1.9  Bcast:192.168.1.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:228462 errors:0 dropped:0 overruns:0 frame:0
          TX packets:218317 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:23883754 (22.7 MiB)  TX bytes:20516512 (19.5 MiB)
          Interrupt:46
```

Look for the value: **inet addr:** , so you will get your Azbox IP address. In this example it is 192.168.1.9.

If you don't have a DHCP server or if you use a crossed cable, we will set a fixed IP in your Azbox.

Type the following command:

ifconfig eth0 192.168.168.20 netmask 255.255.255.0 broadcast 192.168.168.255 up

IMPORTANT: Please remember that the above IP number is meant as an example. Adapt the IP number, subnet mask and broadcast values to your personal network.

We will check again if this work:

AZBOX[~]$ **ping -c 5 192.168.168.10**

```
PING 192.168.168.10 (192.168.168.10): 56 data bytes
64 bytes from 192.168.168.10: seq=0 ttl=128 time=1.943 ms
64 bytes from 192.168.168.10: seq=1 ttl=128 time=0.654 ms
64 bytes from 192.168.168.10: seq=2 ttl=128 time=0.481 ms

--- 192.168.168.10 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 0.481/1.026/1.943 ms
```

Stop the ping with: Ctrl-C.

If you didn't get this result, you have a connection problem between your Azbox and your PC.

Step 6. Transferring the recovery files

We will send the recovery files to our Azbox.

I have included a backup_kernel_344 file in the package.

With your favorite FTP client (for example: FileZilla), connect to your Azbox IP 192.168.168.20 (or the one received from your DHCP server and retrieved with ifconfig, in this example 192.168.1.9).

Transfer the files ***backup_kernel_344*** and ***update*** to the folder ***/tmp*** on your Azbox.

Those files are in the /Files folder provided with this tutorial package.

With putty (always connected via serial adapter):

Type the commands:

cd /tmp

chmod a+x update

Step 7. Starting recovery

Type the following command, using your putty-window:

cd /tmp
./update backup_kernel_344

IMPORTANT: The above command starts with a dot ./update

Result:

```
INFILE: backup_kernel_344 , OUTFILE:/dev/mtdblock4
Progress O
Progress 1
Progress 3
.....
```

Be patient! The progress values are percentages. When this procedure is finished, your Azbox will restart automatically and boot with the OpenAZBox MOD 3.4.4 kernel.

When booting, the AZBox VFD Display will let you know what the IP number will be, so you can flash E2 firmware again, using the latest AZUP tool. At the time of writing this tutorial, it was V2.2.6.

Your Azbox is back with the 3.4.4 kernel boot loader and you can upgrade your Azbox to the OpenAZBox or other firmware builds.

Do not forget to **enable** again your **Firewall** on your PC.

Lange