YB3x Getting Started

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1. Evaluation Kit content

- YB3X with the following I/O
  - C3858 (12C@2Ghz) CPU
  - 16GB DDR4
  - 256GB M.2 NVME SSD
  - 2x 10Gb SFP+
  - 2x 1Gb Ethrnet
  - 4x USB3.0
  - 1 xRS-232 + 1 x RS-232/485 ports
- PSU - Power supply 110-2230VAC to 12VDC/100W
- RS232 cable + adapter
- Getting Started leaflet

2. Unpacking and getting started

1. Place the YB3x in a 19" rack or a desk – do not cover the upper heat sink.
2. Serial port RS-232:
   1. Connect the RJ11 side of the RS232 cable to the back of the YB3x.
   2. Connect the other side of the RJ-11 to the RJ11 to DB-9 adapter.
   3. Connect the Adapter to a PC with an RS-232 port (or a USB to serial adapter).
   4. Set the host PC serial port to 115200 baud rate, 8 bit data, No Parity, 1 Stop Bits.
   5. Connect the PSU DC connector to the YB3x. Connect the PSU to mains. The YB3x will automatically turn on.
   6. The serial terminal will show boot messages.

3. Serial port Configuration

Most modern PC's do not have a serial port. The simplest way to add one is with a USB-to-Serial adapter. The adapter may come with it's own driven which you need to install prior to using the serial port.
The most common USB-to-Serial adapter are those who are based on Prolific Technology's PL2303. It has drivers for all versions of Windows. Linux kernel >2.6.1 has this driver built in.

Terminal emulation for the serial port can be done with *PuTTY* which is available for both Linux and Windows.
Window configuration should be 128 columns by 27

3.1. Serial port configuration with Linux

You may have regular serial ports: `/dev/ttyS0,/dev/ttyS1,...` or `/dev/ttyUSB0, /dev/ttyUSB01,...` when using USB-to-Serial adapter.

The following assumes you have USB-to-Serial adapter.

To find out the serial port you have:

```
~$ ls -l /dev/ttyUSB*
crw-rw---- 1 root dialout 188, 0 Jan 31 13:04 /dev/ttyUSB0
```

Linux has found one port `/dev/ttyUSB0`, but only root and dialout group can access it.
Add yourself to the dialout group, First check if you are in:

```
~$ id -Gn yourusername
yourusername adm cdrom sudo dip plugdev lpadmin sambashare kvm
```

The above indicates you are not part of dialout group. Add yourself to dialout:

```
~$ sudo usermod -a -G dialout yourusername
```

You have to logout/login for the group changes to take effect.

Use `stty` to configure the serial port for other programs[1].

```
~$ stty -F /dev/ttyUSB0 115200 -parity cs8 -cstopb
```

This will set `/dev/ttyUSB0` serial to 115200 baud, No parity, 8 data bits, 1 stop bit

Example file copy to the serial port:

```
~$cat mytextfile  > /dev/ttyUSB0
```

3.2. Serial port configuration with Windows

1. Enter the windows Control panel / Device Manager
2. Expand the Ports (COM & LPT)
3. Right click and select the serial port Properties
4. Select Ports settings tab and set:
    1. Bits per second: 115200
    2. Data bits: 8
    3. Parity: None
    4. Stop bits: 1
5. While you are at the Port settings, you can change the COM port number. Click "Advanced" button and select the COM port number from the drop down list.

Serial port configuration from the command line:

```
mode COM1: 115200,N,8,1
```

1- PuTTY can configure the serial port by it's own and does not need `stty`.

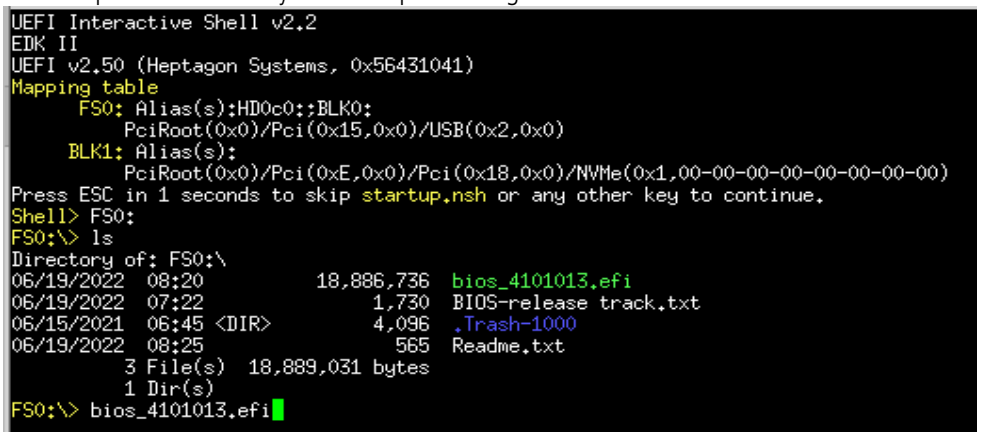
This will set serial port 1 to 115200 baud, No parity, 8 data bits, 1 stop bit
Example file copy to the serial port:

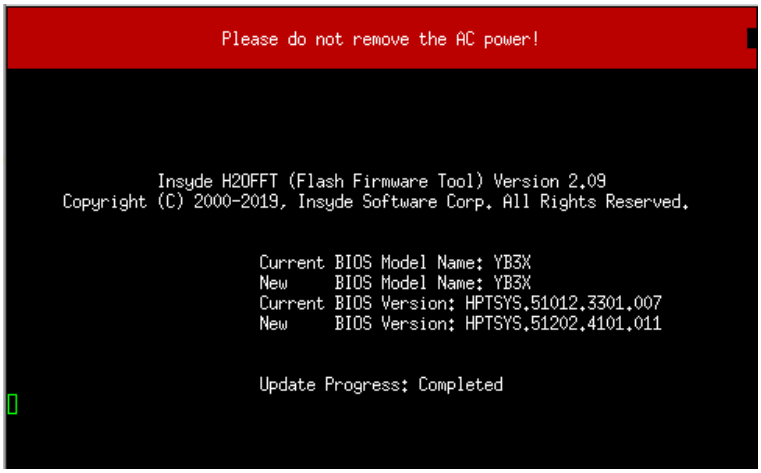
```
copy myfile.txt COM1
```

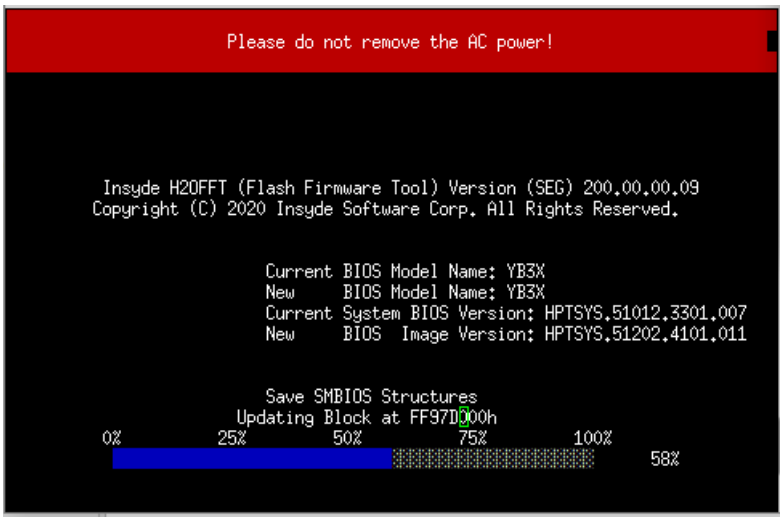
4. BIOS Upgrade

I. Preparations:
- Copy the BIOS update files to root folder of the USB drive (drive should be formatted with FAT32).
- Insert the USB drive to one of the YB3x USB sockets.
- Attached a serial cable and run a terminal program such as putty etc..
- Power on the YB3x.

II. BIOS update:
- At the system prompt, type "FS0:" and press <Enter>
- "ls" will list the files in the USB drive. One of the files will be "bios_?????.efi" where ????? represent the bios version string.
- Type "bios_" and hit the <tab> key (the system will complete to bios update file name.). Press <Enter> and watch the BIOS update.
-wait until completion - (please be noted - system will restart several times during the update)
- Remove The USB drive
- After each BIOS update there will be a new "memory train" process. It is a one-time processes. While at it, a red LED will contentiously lit. Do not power down the system! This process might take 5..8 minutes.

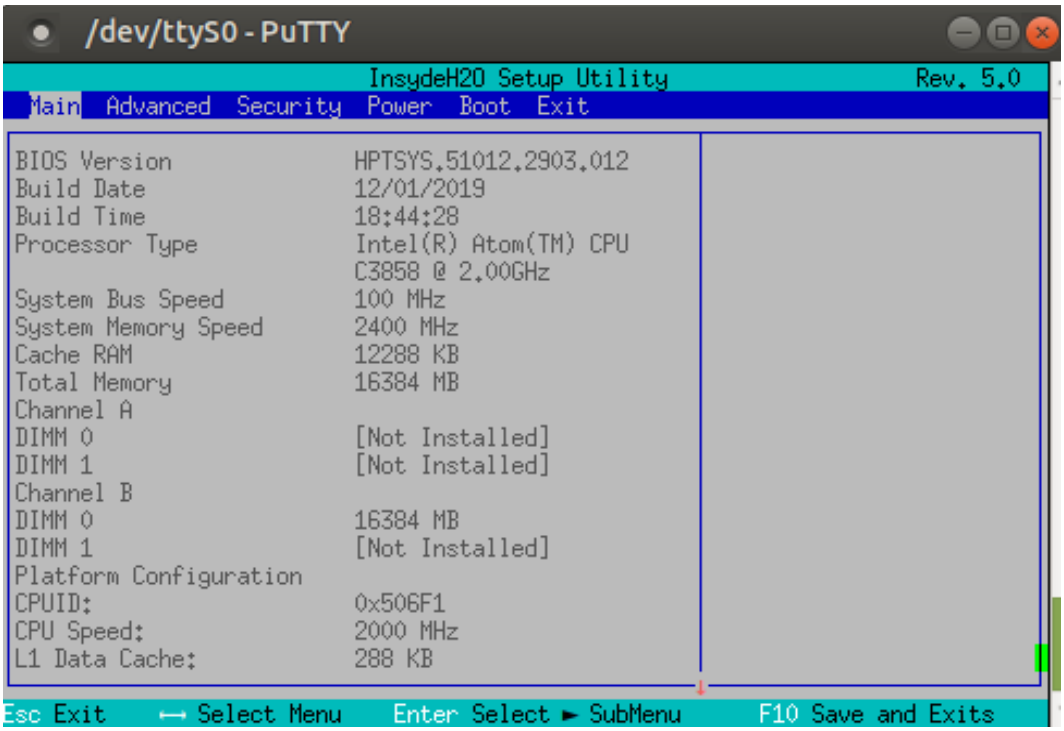




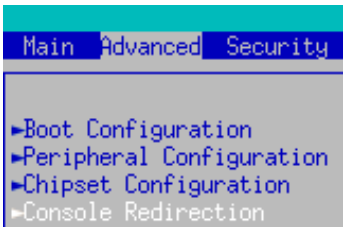

Please do not remove the AC power!
Insyde H2OFFT (Flash Firmware Tool) Version (SEG) 200.00.00.09
Copyright (C) 2020 Insyde Software Corp. All Rights Reserved.
Current BIOS Model Name: YB3X
New BIOS Model Name: YB3X
Current System BIOS Version: HPTSYS.51012.3301.007
New BIOS Image Version: HPTSYS.51202.4101.011
Save SMBIOS Structures
Updating Block at FF97D000h
0% 25% 50% 75% 100%
58%

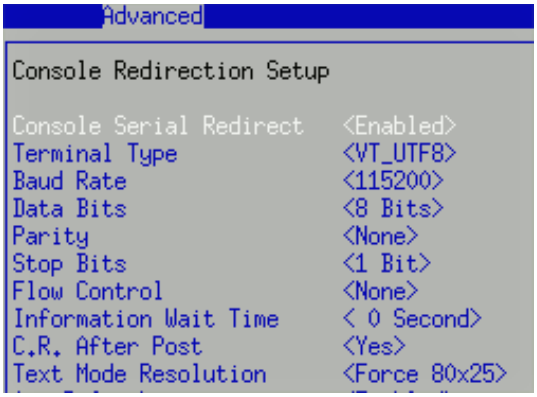
5. UEFI shell and BIOS

1. The YB3x will boot into UEFI shell (current version 2.4).
2. To access the bios, type `exit` and select `Setup Utility`.
3. If the BIOS screen does not look like the below image, change the following parameters:

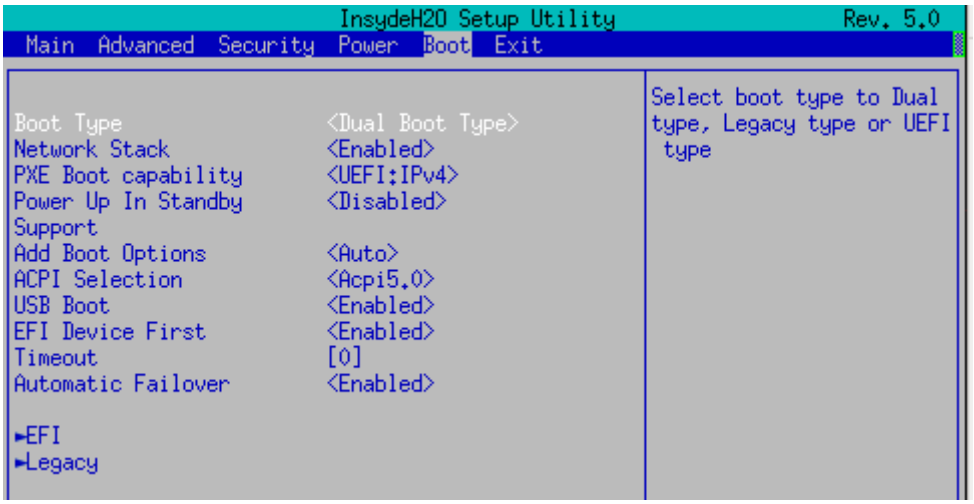


1. Open `Advanced` → `Console Redirection`.
2. Change Terminal type to: `<VT_UTF8>` .
3. Change Text Mode Resolution to: `<Force 80x25>`.
4. Click F10 to save changes and reboot.

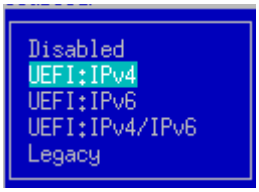




5.1. Enabling netbooting (PXE)



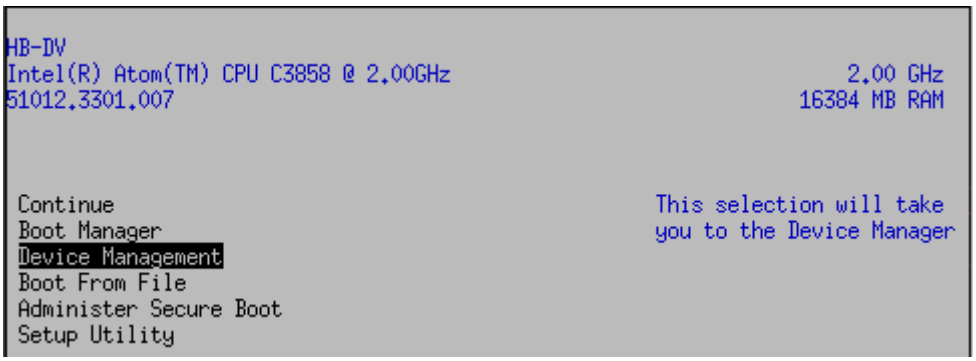
1. Go to Boot menu
2. Enable `Network Stack`
3. Select `PXE Boot capability` and select `UEFI:IPv4`
4. Click F10 to save changes and reboot.



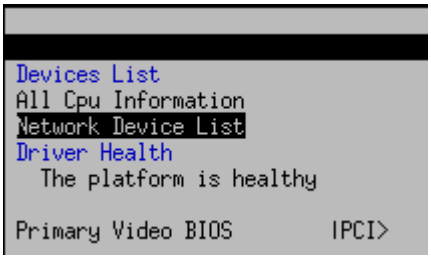
5.1.1. Configuration of Network device

The following enables manual configuration of the network device(s) for the PXE boot.

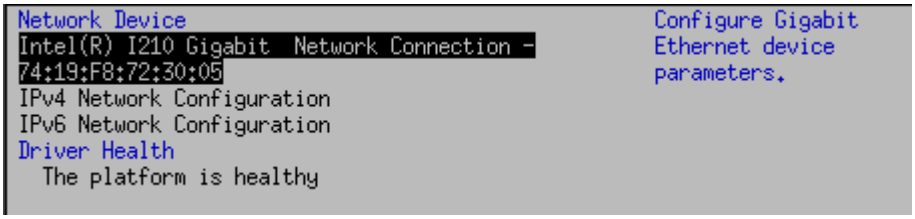
1. Boot into UEFI shell and type `Exit`.
2. Select `Device Management`.



3. In the next screen, select `Network Device List`.

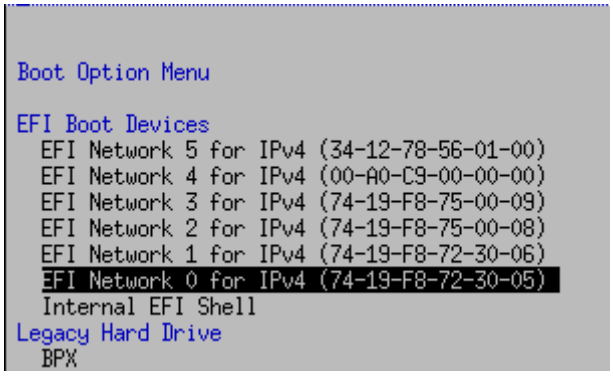


4. Select the 1st device. (The device list will vary in length in accordance with the number of installed devices).



5. Select IPv4 Network Configuration and set the configuration in accordance with your local network. Press `F10` to save the configuration

6. Return to Boot menu and select the just configured network interface (select by MAC address)



6. OS installation

Important: The YB3x default tty is `/dev/ttyS0`. When preparing a custom Linux image, please remember to use this port!

Below are two examples of OS installation from USB drive.

6.1. Ubuntu Linux

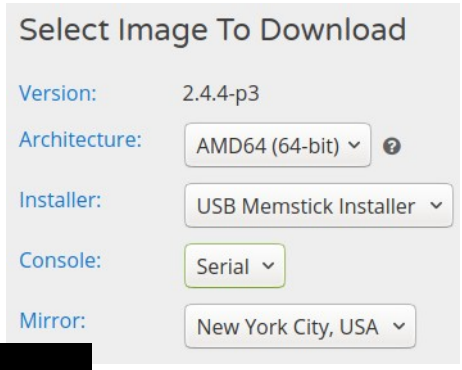
While the below instructions are generic by nature, the "server" flavor is a better fit for the YB3x[2].

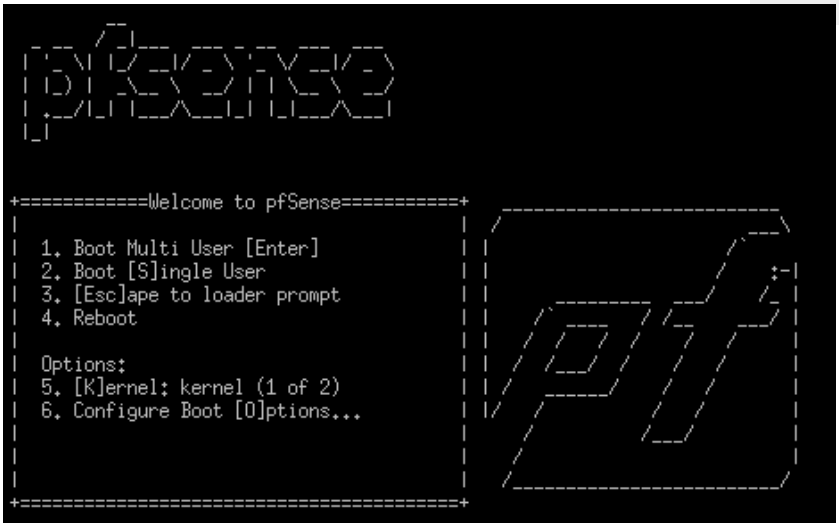
1. Download the ISO image of the selected OS.
2. Create a bootable USB SSD.
3. Edit *boot/grub/grub.cfg* so the entry for "Install Ubuntu server" will look like:

```
menuentry "Install Ubuntu Server" {
    set gfxpayload=keep
    linux   /casper/vmlinuz vga=normal console=tty0 console=ttyS0,115200n8 ---
    initrd  /casper/initrd
    }
```

6.2. pfSense

1. Download pfSense image with the following parameters:
   1. Architecture: AMD64 (64-bit)
   2. Installer: USB Memstick installer
   3. Console: Serial
2. Copy the image into a USB SSD.
3. Insert the USB SSD into one of the YB3x USB ports and power up.
4. The below menu should appear after boot completion:





2 Credit is due to ynkjm for the gitHub repository on the subject (link).

7. Revision Notes

Revision	Date	Revision notes
1.0	12.APR.2019	Draft version
1.1	17.JUN.2022	Changes following BIOS upgrade to 4101013

8. Copyright Notice