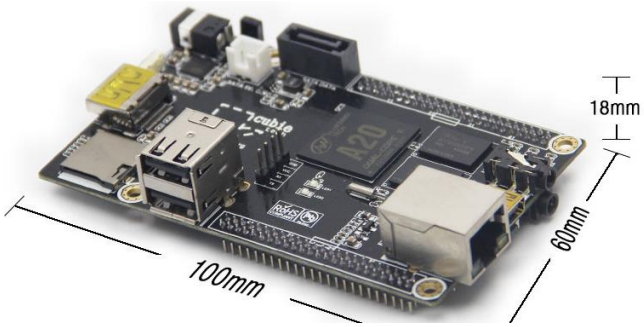

How to make an IoT server using Cubieboard2 and Armbian

Juozas Kimtys - How to make an IoT server using Cubieboard2 and Armbian

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Introduction

Main technical data of Single Board Computer module Cubieboard2: chipset is Allwinner A20 (two cores of ARM Cortex-A7 at speed 1GHz), 1GB RAM, micro-SD card slot, Ethernet, **no Wi-Fi**. Pitch of two 48-pins GPIO extension connectors is **2.0 mm**, not 2.54 mm. Manufacturers pages http://docs.cubieboard.org/tutorials/cb2/start and http://cubieboard.org/model/cb2/ contains links to information, but now only few of them are working. If to search on Internet actively, it is possible to find some information and to download already configured Linux like firmware images (most of them are very old). Links:

https://linux-sunxi.org/Cubietech_Cubieboard2

https://mega.nz/folder/ZtwxCCJC#AIYHcTqz-ucjuzKnE9qD7A/folder/I8x0GZrK

https://openwrt.org/toh/cubietech/cubieboard2

https://openwrt.org/toh/hwdata/cubitech/cubitech_cubieboard2

New Linux like system image:

https://www.armbian.com/cubieboard-2/

Links to hardware definition for Cubieboard2 for building other Linux images:

https://github.com/torvalds/linux/blob/master/arch/arm/boot/dts/sun7i-a20-cubieboard2.dts

https://github.com/linux-sunxi/sunxi-boards/blob/master/sys_config/a20/cubieboard2.fex

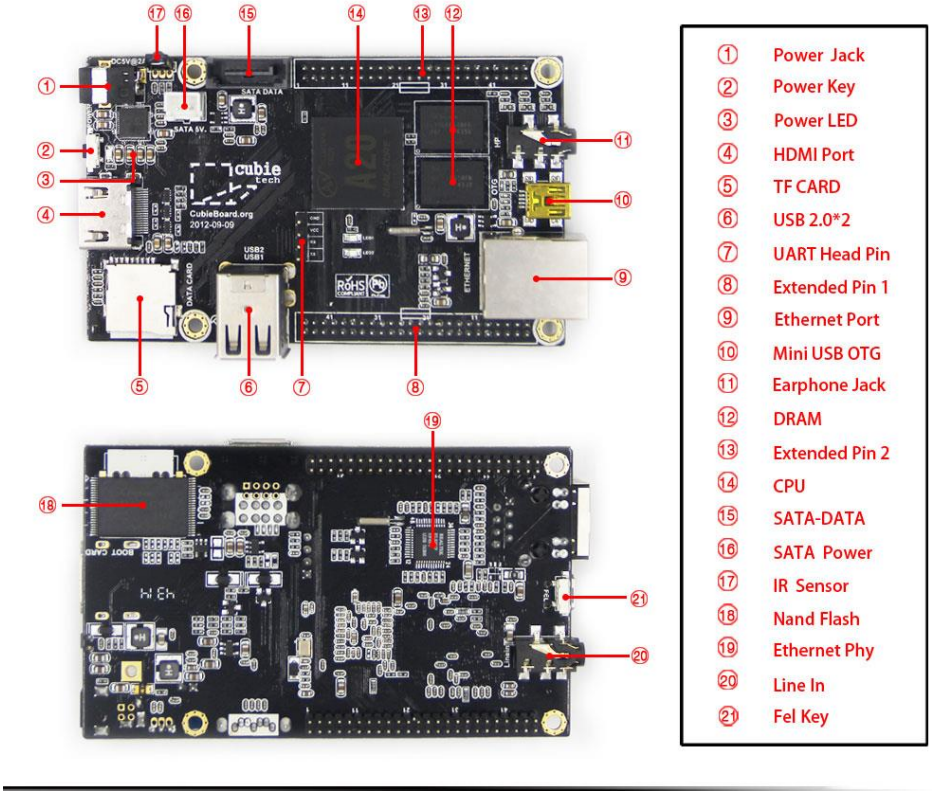

FIGURE 1 - OPTIONS OF CUBIEBOARD2 ON PICTURE FROM MANUFACTURER'S SITE

Boot options for Cubieboard2

Primary boot source by default is micro-SD card slot on top side of module. But some of modules may contain secondary boot option – boot from some memory on bottom side of the module. This memory on bottom side of the module can be of following variants: 1) some NAND chip, 2) eMMC chip of type SDIN7DP2-4G (Ultra NAND, managed NAND), 3) second micro-SD slot, 4) memory chip unsoldered after sale for various reasons. Thus, the system firmware can be "loaded" by using external micro-SD card writer on some desktop computer or by using the tool named PhoenixSuite (to "load" to soldered memory chip) through the OTG USB port (mini-USB connector on board).

Power options for Cubieboard2

There are at least two options to provide 5V to the module: 1) OTG USB port (mini-USB connector on board), 2) DC connector "4.0/1.7mm". Current up to 2A is required in case of using external 2.5` HDD connected to SATA connector of the module.

Creating system card

There are available various Linux firmware distributions for Cubieboard2. But, after trying to work with about 8 years old Debian 7.1 or Cubian or Lubuntu, we will realize, that it is impossible to install any additional software or commands, or libraries – because most of links now do not work. Only **OpenWrt** distribution of Linux now is fresh and working on the Cubieboard2. But later we found that we have difficulties on **OpenWrt** with installation of additional software. Now we found else one - better distribution – **Armbian**. We are selecting "cli" version (instead of also available "desktop" version).

Writing system image to micro-SD card we are processing by using nice program suggested in Armbian site - usbimager on Windows PC.

Our Armbian firmware file name is:

Armbian_23.02.0-trunk_Cubieboard2_lunar_edge_6.1.11.img.xz

Note: This is unsupported and untested automated build!

Disk partition will be resized to max card size automatically during the first boot of Armbian.

Serial console

We are connecting signals RX and TX of our serial to USB adapter to special connector on the board picture numbered as "7". This connector also contains 3V3 power supply circuit required for our adapter.

Below are the pictures of dialog in Realterm console. Default speed is "115200", 8N1. Typing username **root** or **cubie** and password **cubieboard** into the console window to login to our Debian. Typing username **cubie** and password **cubie** into the console window to login to our Cubian. OpenWrt will automatically enters to session without requesting login. Armbian will asks to enter new root password for the root user and after will asks to enter and create new user name, username and password during the first boot.

FIGURE 2 - CONSOLE DIALOG OF DEBIAN. USERS: ROOT OR CUBIE, PASSWORD: CUBIEBOARD

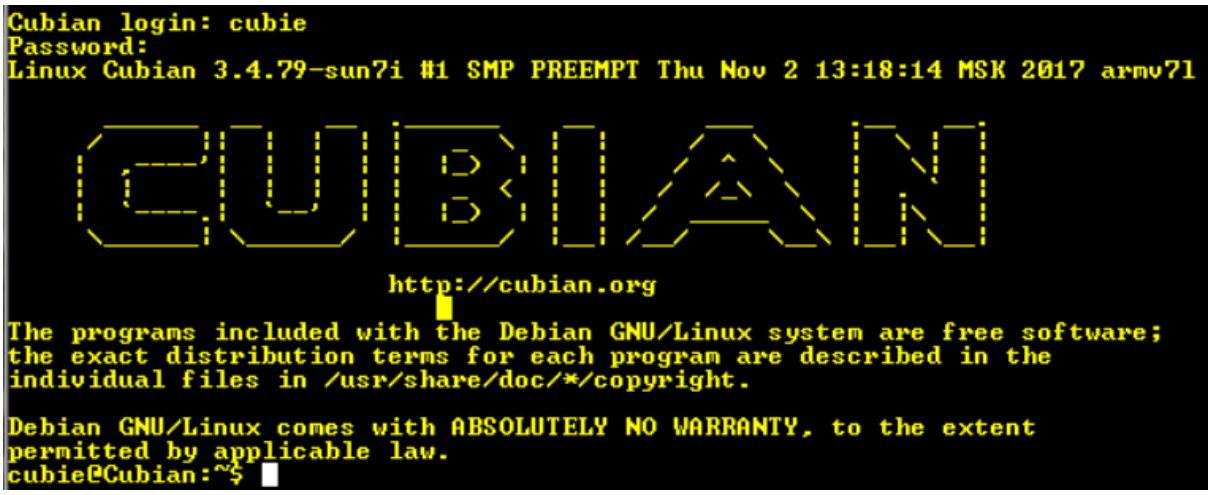

FIGURE 3 - CONSOLE DIALOG OF CUBIAN. USER: CUBIE, PASSWORD: CUBIE

FIGURE 4 - CONSOLE DIALOG OF OPENWRT

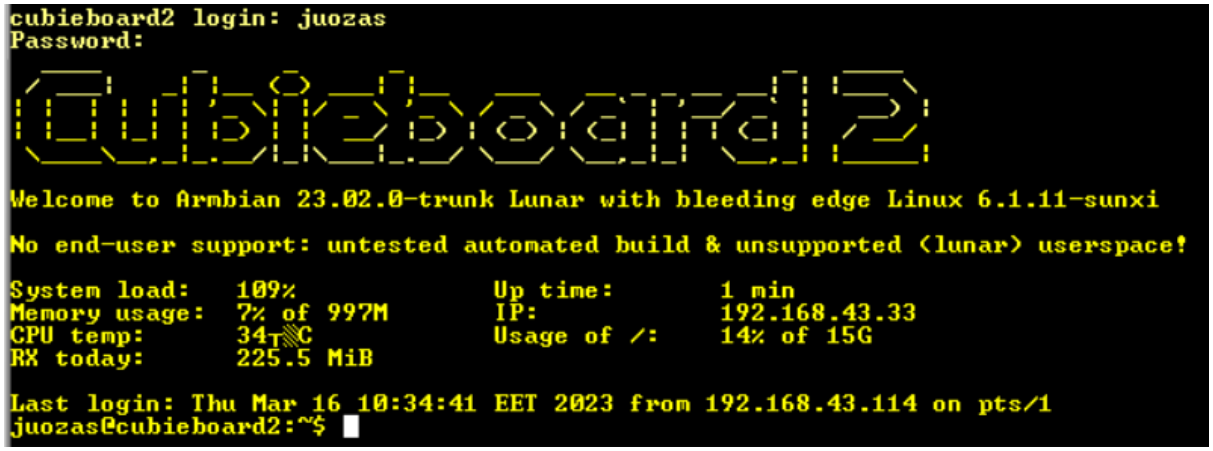

FIGURE 5 - CONSOLE DIALOG OF ARMBIAN

Setting time zone of our server

Will be requested during first boot.

Expanding disk size of our Armbian server

Will be expanded automatically during first boot.

Revision History

Version	Date	Comments
ver.1.0	2023.03.16	Initial release
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