

PN7462 FW Update On Win10/Ubuntu/i.MX8MN-EVK+Linux BSP

Step 1. Connections And Firmware Version

Step 2. Updating FW On PC Windows 10

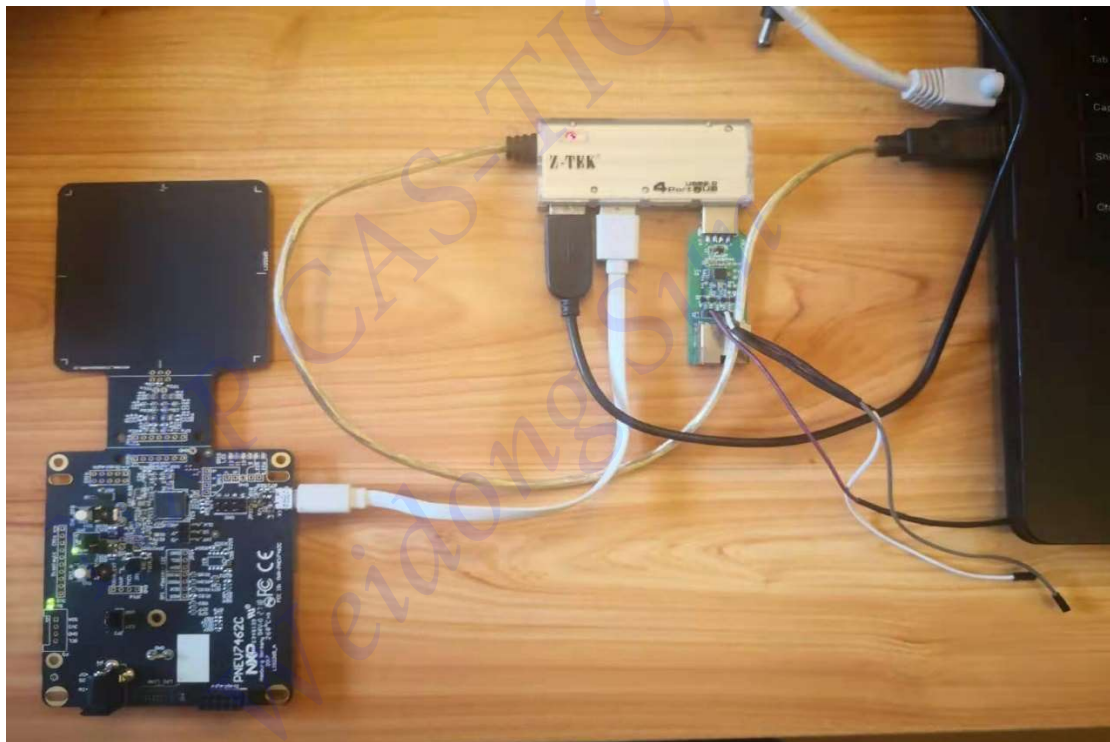
Step 3. Updating FW On VMplayer16.0 + Ubuntu 20.04

Step 4. Updating FW On i.MX8MN-EVK With Embedded L5.4.70_2.3.0 BSP

Step 5. Confirming whether update is successful using cockpit4.8

Step 1. Connections And Firmware Version

1. Connections



2. Downloading cockpit4.8 and installing it to windows 10 PC

https://nxp.flexnetoperations.com/control/frse/product?child_plneID=751867&cert_num=437646287&ver=ARC

Version	Description	Download Log
05.03.00	NFC Cockpit configuration tool for NFC ICs	Download Log
04.08.00	NFC Cockpit configuration tool for NFC ICs	Download Log
04.07.00	NFC Cockpit configuration tool for NFC ICs	Download Log
04.03.00	NFC Cockpit configuration tool for NFC ICs	Download Log
04.00.00	NFC Cockpit configuration tool for NFC ICs	Download Log

The firmware of the version of cockpit is in directory :

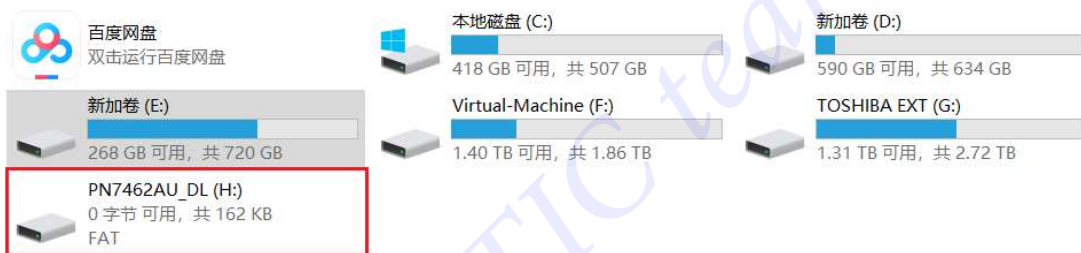
D:\nxp\NxpNfcCockpit_v4.8.0.0\firmware\PN7462AU (my installation path)

📄 NxpNfcCockpit_03_04_00_Flash.bin	2018/4/20 22:00	BIN 文件	69 KB
📄 NxpNfcCockpit_28_00_00_EEPROM.bin	2017/2/7 18:03	BIN 文件	3 KB
📄 README	2018/4/6 18:00	文本文档	1 KB

Step 2. Updating FW On PC Windows 10

1. Power On PN7462 DEMO board
2. Push DWL_REQ and Reset Button at the same time
3. Release Reset Button, 2 seconds later, Release DWL_REQ

About 2-3s later, windows 10 will find the Mass Storage Device Like below:



Double click it :

📄 CRP_00.BIN	BIN 文件	158 KB
📄 CRPSTA_0.BIN	BIN 文件	0 KB
📄 DRP_00	dat 媒体文件	4 KB
📄 DRPSTA_0	dat 媒体文件	0 KB

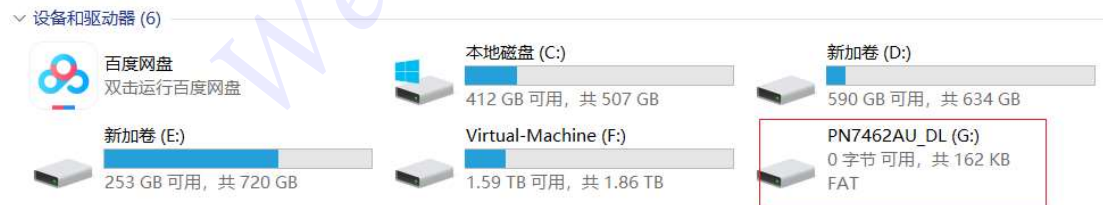
4. Updating firmware of Flash

--Updating firmware of Flash

Delete CRP_00.BIN, and copy NxpNfcCockpit_03_04_00_Flash.bin to H disk

(PN7462AU_DL), Wait for several seconds, PN7462 board will restart and new disk for

PN7462 will be found



--Updating firmware of EEPROM

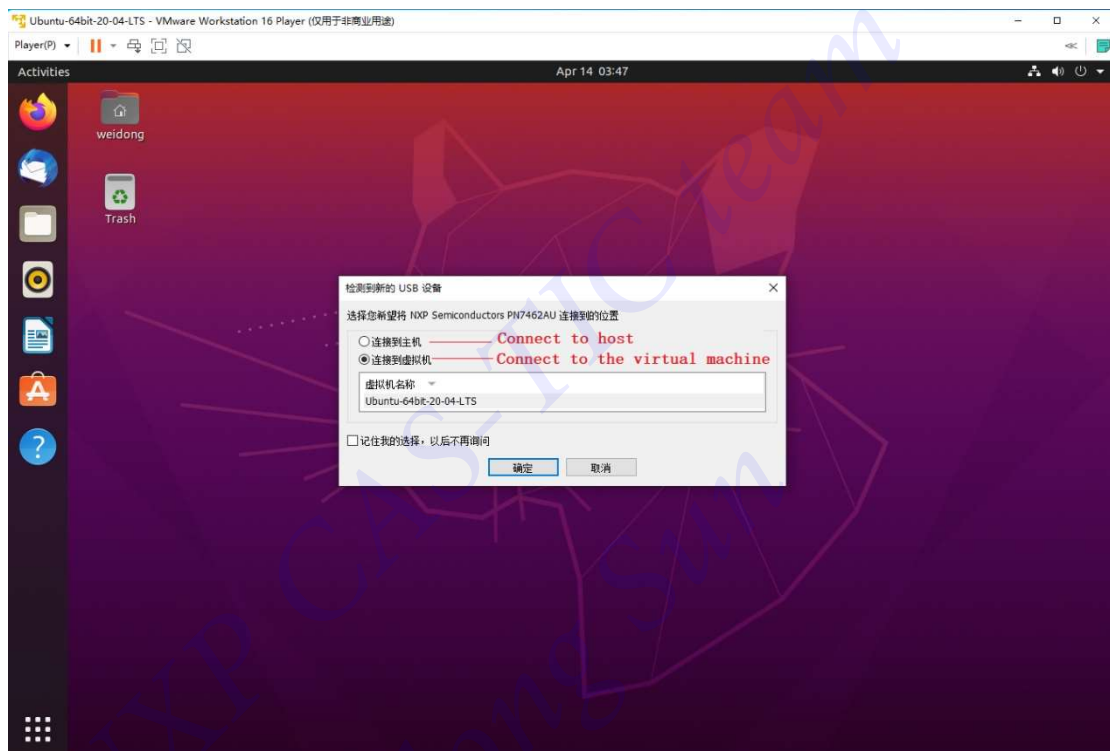
Delete DRP_00.dat and copy NxpNfcCockpit_28_00_00_EEPROM.bin to G disk, Wait for several seconds, PN7462 board will restart, and the board is remounted to windows.

📄 CRP_00.BIN	BIN 文件	158 KB
📄 CRPSTA_0.BIN	BIN 文件	0 KB
📄 DRP_00	dat 媒体文件	4 KB
📄 DRPSTA_0	dat 媒体文件	0 KB

Disconnect the PN7462 board from the PC USB, and then reconnect it. Go to Setp 5 to confirm whether the update is successful.

Step 3. Updating FW On VMplayer16.0 + Ubuntu 20.04

1. Power On PN7462 DEMO board
 2. Push DWL_REQ and Reset Button at the same time
 3. Release Reset Button, 2 seconds later, Release DWL_REQ
- VMplayer virtual machine will ask you to connect to the host or virtual machine, Select “connect to virtual machine”, then press OK button.



Checking whether PN7462 board is mounted to linux.

```
# cd ~/
```

```
# ls /dev/sd*
```

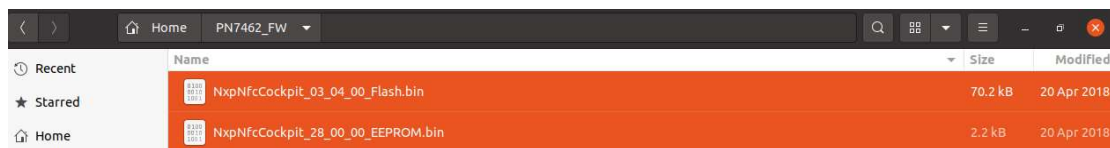


Create a new subdirectory and copy firmware of Flash and EEPROM to ubuntu 20.04.

```
# cd ~/
```

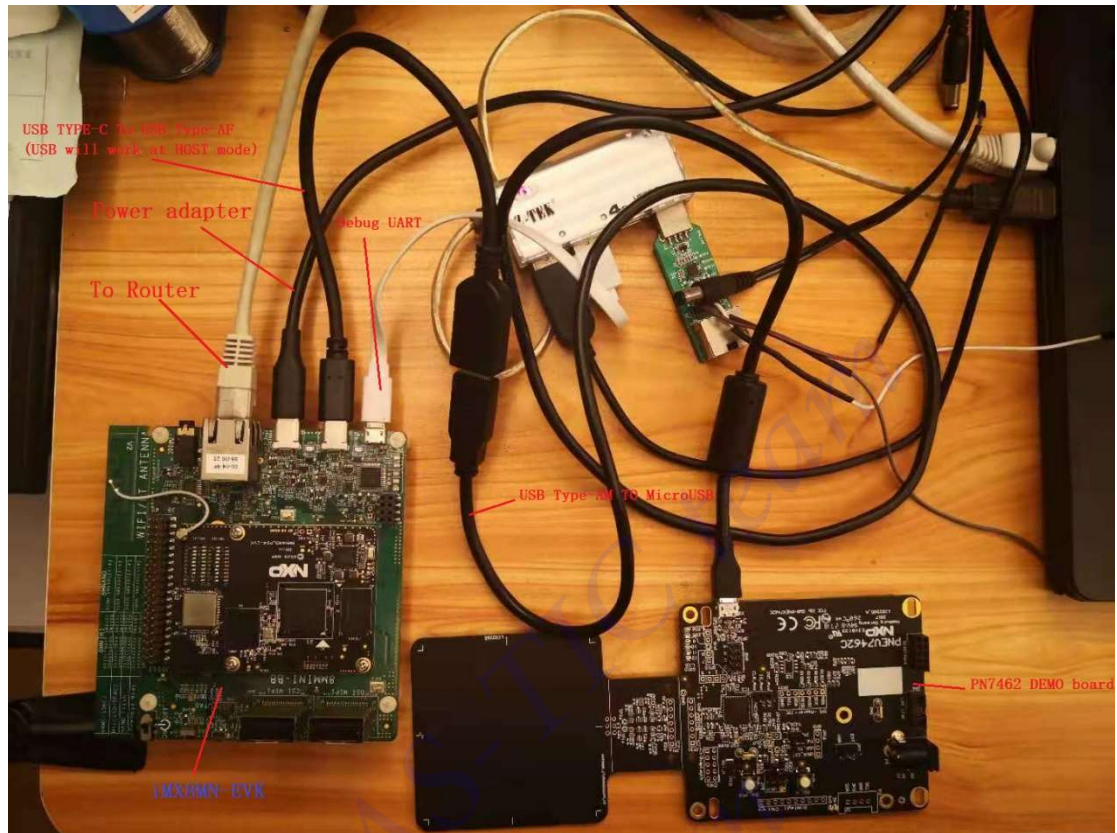
```
# mkdir PN7462_FW
```

Then copy and paste above 2 firmware files from windows to the PN7462_FW directory on virtual machine.

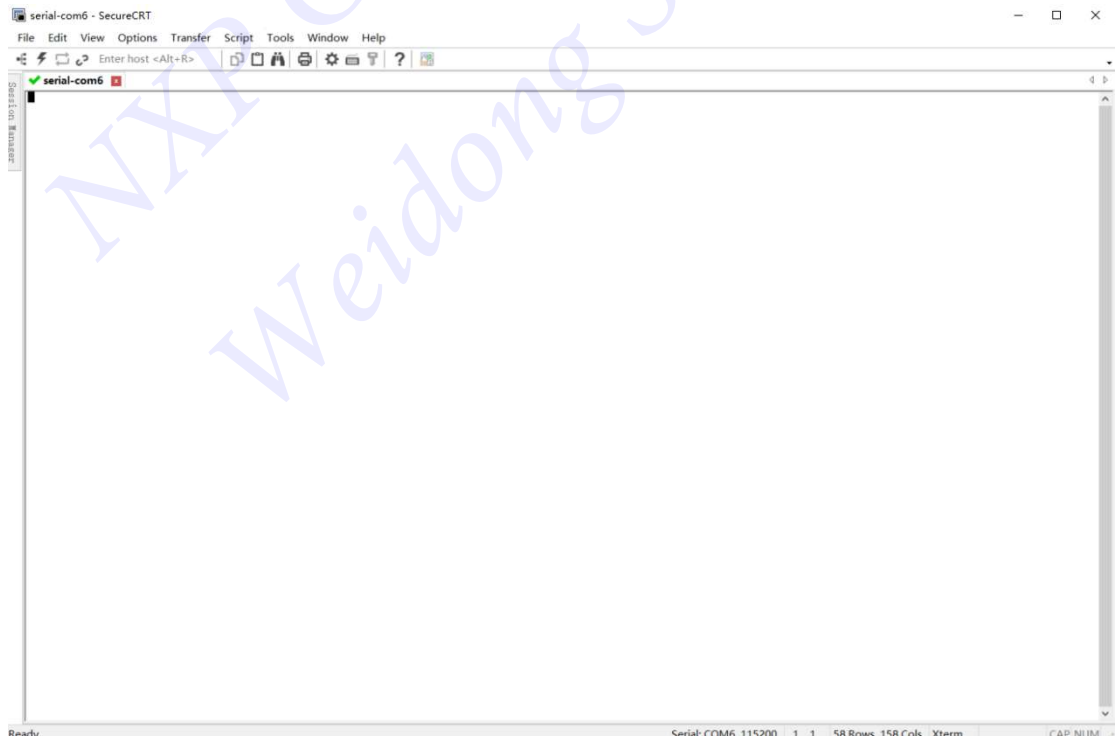


Step 4. Updating FW On i.MX8MN-EVK With Embedded L5.4.70_2.3.0 BSP

1. Connections



2. Open the terminal software and connect to the debug UART (for example, SecureCRT etc)



3. Power On i.MX8MN-EVK

Linux BSP begins to run:

```
serial-com6 - SecureCRT
File Edit View Options Transfer Script Tools Window Help
serial-com6
Enter host <Alt+R>
serial-com6
U-Boot SPL 2020.04-5.4.70-2.3.0+ge42dee801e (Dec 04 2020 - 00:32:06 +0000)
DDRINFO: start DRAM init
DDRINFO: DRAM rate 3200MT/s
DDRINFO: ddrphy calibration done
DDRINFO: ddrmix config done
Normal Boot
Trying to boot from BOOTROM
Image offset 0x0, pagesize 0x200, ivt offset 0x0
NOTICE: BL31: v2.2(release):imx_5.4.70_er4-1-gf1d7187f2
NOTICE: BL31: Built : 03:26:03, Dec 2 2020

U-Boot 2020.04-5.4.70-2.3.0+ge42dee801e (Dec 04 2020 - 00:32:06 +0000)
CPU: i.MX8MNano Quad rev1.0 1500 MHz (running at 1200 MHz)
CPU: Commercial temperature grade (0c to 95c) at 26C
Reset cause: POR
Model: NXP i.MX8MNano LPDDR4 EVK board
DRAM: 2 GiB
TCPC: Vendor ID [0x1fc9], Product ID [0x5110], Addr [I2C1 0x52]
Power supply on USB2
TCPC: Vendor ID [0x1fc9], Product ID [0x5110], Addr [I2C1 0x50]
MMC: FSL_SDHC: 1, FSL_SDHC: 2
Loading Environment from MMC... *** Warning - bad CRC, using default environment

[*]-Video Link 0 can't find cec device id=0x3c
fail to probe panel device adv753503d
failed to get any video link display timings
probe video device failed, ret -22

[0] lcd-controller@32e00000, video
[1] dsi-controller@32e10000, video_bridge
[2] adv753503d, panel
Can't find cec device id=0x3c
fail to probe panel device adv753503d
failed to get any video link display timings
probe video device failed, ret -22
In: serial
Out: serial
Err: serial

BuildInfo:
- ATF f1d7187
- U-Boot 2020.04-5.4.70-2.3.0+ge42dee801e

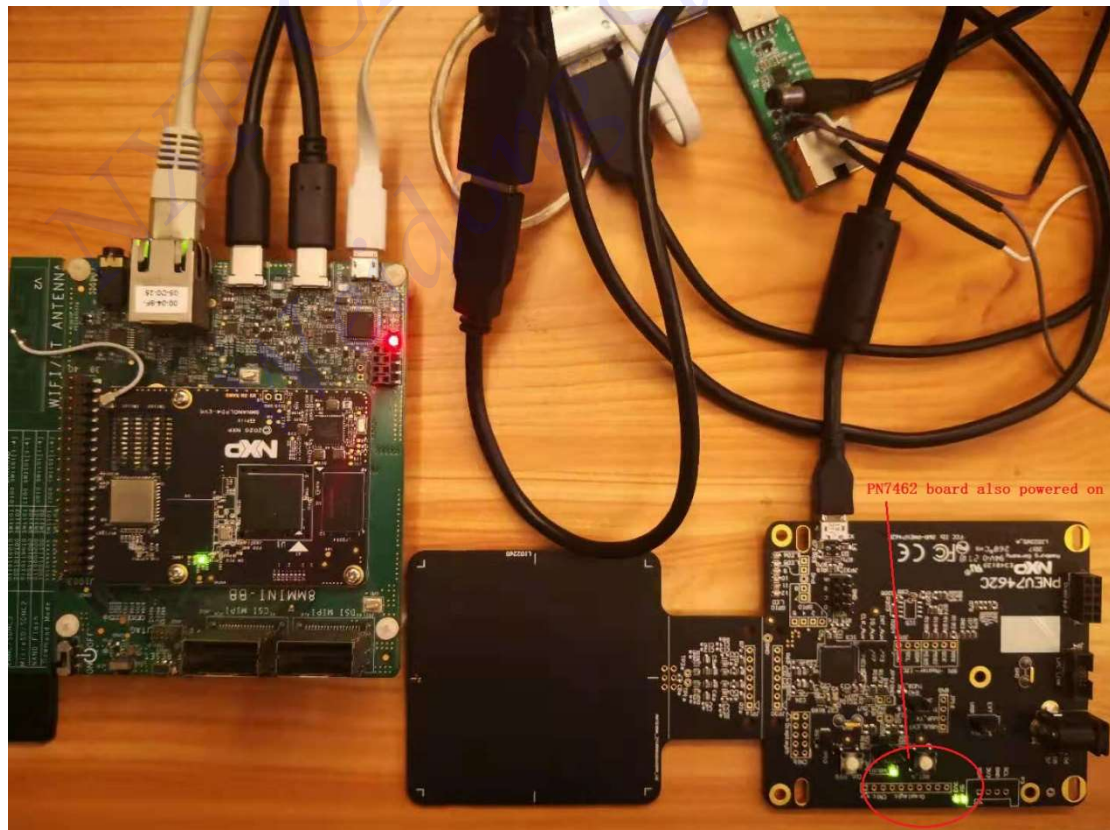
switch to partitions #0, OK
mmc2(part 0) is current device
Flash target is MMC:2
Net:
Warning: ethernet@30be0000 using MAC address from ROM
eth0: ethernet@30be0000
Fastboot: Normal
Normal Boot
Hit any key to stop autoboot: 1 █

Ready
Serial: COM6, 115200 55, 34 58 Rows, 158 Cols Xterm CAP NUM
```

When booting is done, input "root" to log in.

```
imx8mnevk login: root
Last login: Sat Nov 14 04:40:53 UTC 2020 on tty7
[ 38.043172] audit: type=1006 audit(1605328884.660:12): pid=550 uid=0 old-auid=4294967295 auid=0 tty=(none) old-ses=4294967295 ses=2 res=1
root@imx8mnevk:~#
```

At the same time, PN7462 board is also powered on.



- Adding parameter to usb_storage module
echo "1fc9:0117:r,n,m" > /sys/module/usb_storage/parameters/quirks
- Push DWL_REQ and Reset Button at the same time
- Release Reset Button, 2 seconds later, Release DWL_REQ

```
root@imx8mnevk:~# [ 2726.174729] usb i-1: USB disconnect, device number 6
[ 2731.720967] usb 1-1: new full-speed USB device number 7 using ci_hdrc
[ 2747.228978] usb 1-1: device no response, device descriptor read/64, error -110
[ 2747.508910] usb-storage 1-1:1.0: USB Mass Storage device detected
[ 2747.515516] usb-storage 1-1:1.0: Quirks match for vid 1fc9 pid 0117: 20
[ 2747.523583] scsi host0: usb-storage 1-1:1.0
[ 2748.546991] scsi 0:0:0:0: Direct-Access NXP PN7462AU 1.00 PQ: 0 ANSI: 0
[ 2748.560771] sd 0:0:0:0: [sda] 327 512-byte logical blocks: (167 kB/164 KiB)
[ 2748.570699] sd 0:0:0:0: [sda] Write Protect is off
[ 2748.578689] sd 0:0:0:0: [sda] Asking for cache data failed
[ 2748.584215] sd 0:0:0:0: [sda] Assuming drive cache: write through
[ 2748.635997] sda:
[ 2748.659023] sd 0:0:0:0: [sda] Attached SCSI removable disk
[ 2749.063283] sda:
```

Check if PN7462 board is mounted.

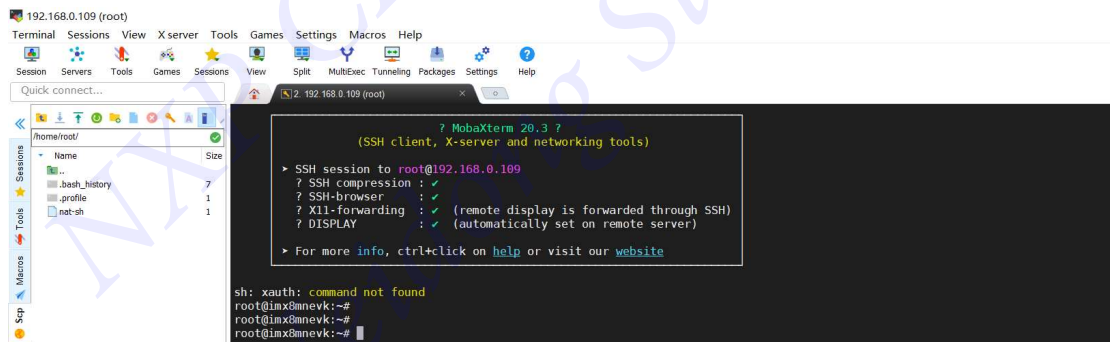
ls /dev/sd*

```
root@imx8mnevk:~#
root@imx8mnevk:~#
root@imx8mnevk:~# ls /dev/sd*
/dev/sda
root@imx8mnevk:~#
```

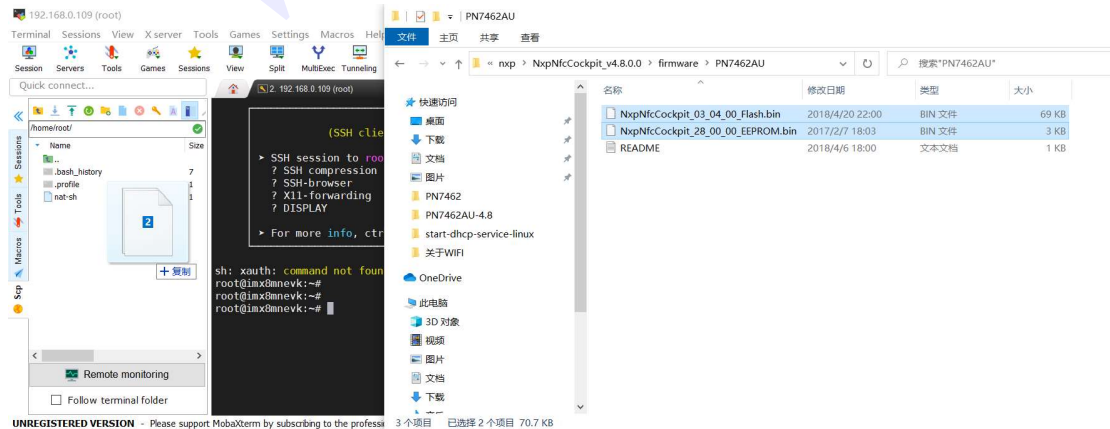
- Checking i.MX8MN-EVK ip address and using MobaXterm to connect the board
ifconfig

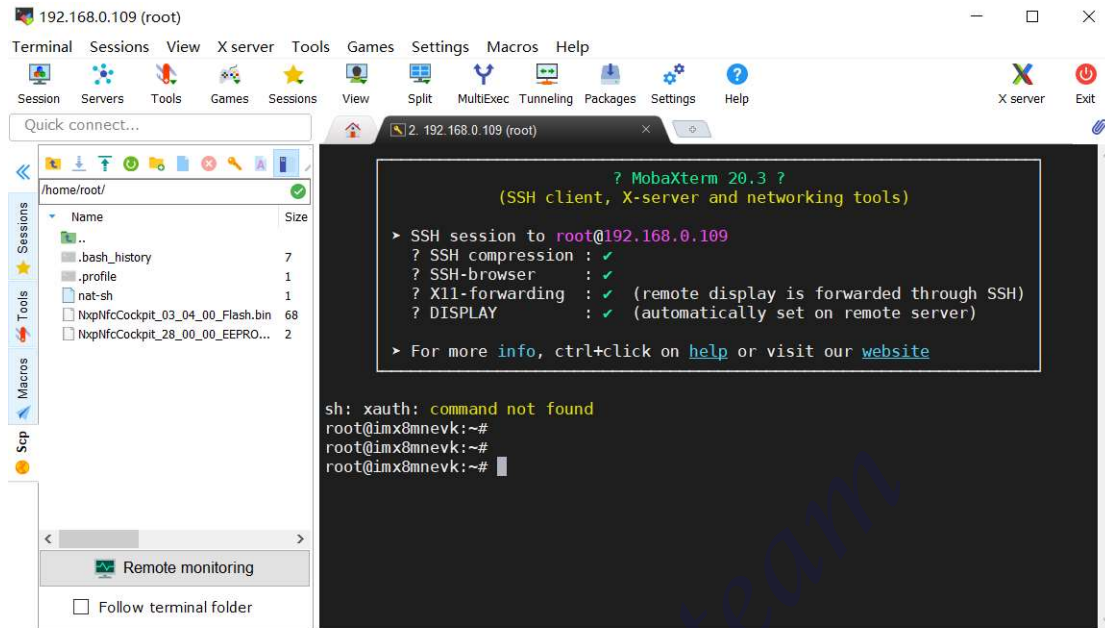
```
root@imx8mnevk:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:04:9f:06:da:96
          inet addr:192.168.0.109  Bcast:192.168.0.255  Mask:255.255.255.0
          inet6 addr: fe80::204:9fff:fe06:da96/64  Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1156  errors:0  dropped:0  overruns:0  frame:0
          TX packets:109  errors:0  dropped:0  overruns:0  carrier:0
          collisions:0  txqueuelen:1000
          RX bytes:147611 (144.1 KiB)  TX bytes:13482 (13.1 KiB)
```

Then start MobaXterm on windows 10 and log in iMX8MN-EVK with SSH protocol.



- Drag and drop the 2 firmware files to the board.





UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: <https://mobaxterm.mobatek.net>

9. Updating firmware of Flash and EEPROM

We can operate it on terminal or MobaXterm.

```
# dd if=NxpNfcCockpit_28_00_00_EEPROM.bin of=/dev/sda seek=03
```

```
root@imx8mnevk:~# dd if=NxpNfcCockpit_28_00_00_EEPROM.bin of=/dev/sda seek=03
4+1 records in
4+1 records out
2240 bytes (2.2 kB, 2.2 KiB) copied, 0.000222 s, 10.1 MB/s
root@imx8mnevk:~#
```

Several seconds later, PN7462 board will be remounted. We can see logs like below:

```
root@imx8mnevk:~# [ 3217.747423] usb 1-1: USB disconnect, device number 7
[ 3217.823008] FAT-fs (sda): unable to read boot sector to mark fs as dirty
[ 3218.480986] usb 1-1: new full-speed USB device number 8 using ci_hdrc
[ 3218.656410] usb-storage 1-1:1.0: USB Mass Storage device detected
[ 3218.663011] usb-storage 1-1:1.0: Quirks match for vid 1fc9 pid 0117: 20
[ 3218.669768] scsi host0: usb-storage 1-1:1.0
[ 3219.683531] scsi 0:0:0:0: Direct-Access    NXP      PN7462AU      1.00 PQ:
0 ANSI: 0
[ 3219.697492] sd 0:0:0:0: [sda] 327 512-byte logical blocks: (167 kB/164 KiB)
[ 3219.707227] sd 0:0:0:0: [sda] Write Protect is off
[ 3219.715217] sd 0:0:0:0: [sda] Asking for cache data failed
[ 3219.720782] sd 0:0:0:0: [sda] Assuming drive cache: write through
[ 3219.776221]  sda:
[ 3219.797536] sd 0:0:0:0: [sda] Attached SCSI removable disk
[ 3220.194817]  sda:
```

Then continue to update the firmware of Flash


```
# dd if=NxpNfcCockpit_03_04_00_Flash.bin of=/dev/sda seek=10
```

```
root@imx8mnev:~# dd if=NxpNfcCockpit_03_04_00_Flash.bin of=/dev/sda seek=10
137+1 records in
137+1 records out
70208 bytes (70 kB, 69 KiB) copied, 0.00451312 s, 15.6 MB/s
```

Several seconds later, PN7462 board will be remounted. We can see logs like above.

Up to now, operations for updating firmware have been done on i.MX8MN-EVK.

Step 5. Confirming whether update is successful using cockpit4.8

1. Disconnect the USB connection of PN7462 (with PC or I.MX8MN-EVK), and power off it.
2. Connect the PN7462 board to the PC USB, and run cockpit 4.8 on windows

The screenshot displays the NXP Cockpit 4.8 software interface. The top-left pane shows 'Registers/EEPROM access' with a bit selection table and 'Write Operation' options. The bottom-left pane shows 'Log Monitor' with a list of system logs, including 'INFO:ServiceFactory:Generating Services for VCOM_PN7462AU' and 'INFO:EEPROMService_PN7462AU:Read from EE address:0x201240 2bytes. Value=1C 00'. The right pane shows 'Protocol Layer' settings for Layer 14443-3a and 14443-4a, including baud rate (106 kBd/s) and RF field control options. The status bar at the bottom indicates 'Status: Read Register PCR_PADOUT_REG@0x4002403C. Value=0x00400000'.

If the log monitor area is like the above, it means the firmware update was successful. If the area is empty, it means the update failed.

NXP CAS-TIC Team
Weidong Sun
04-15-2021