一点课 One Point Lesson

分类：基础知识☐	工作技巧☑	改善提案☐	问题解决☐	设备保养维护☐	其他☐

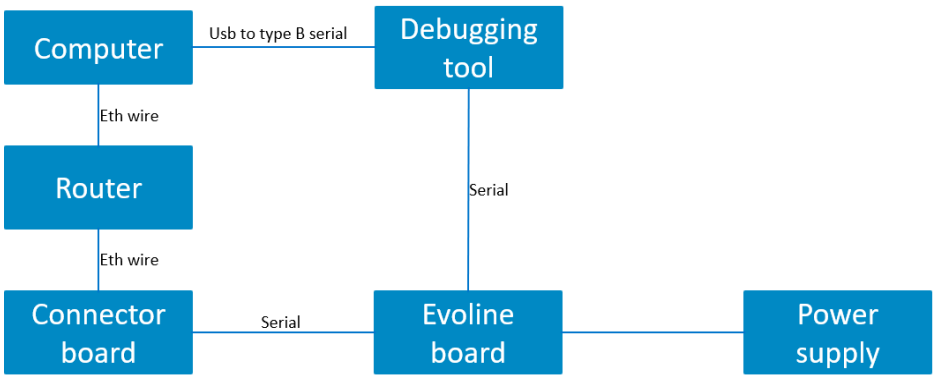
编号		部门	RD
主题	如何烧录 UBOOT 和 YOCTO 进 EVOLINE 主板并配置主板	制作人	Louris
		批　准	

Equipment requirements

- Evoline main board
- Connector board
- Power supply
- Debugging tool
- Router

Equipment setup

- Power supply set to 18V and 2A output
- Connect equipments as following picture:



- Download tftpd-hpa in ubuntu by `sudo apt-get install tftpd-hpa`

  open file `sudo vim /etc/default/tftpd-hpa` to check your default TFTP_DIRECTORY

  modify the permission of TFTP_DIRECTORY to 777 by `chmod 777 your_TFTP_DIRECTORY`

- Save your U-BOOT and Yocto images in the TFTP_DIRECTORY, here taking `u-boot-dtb-mx6evomon_dev.imx` and `iv.wic`as an example: (`/srv/tftp` is my

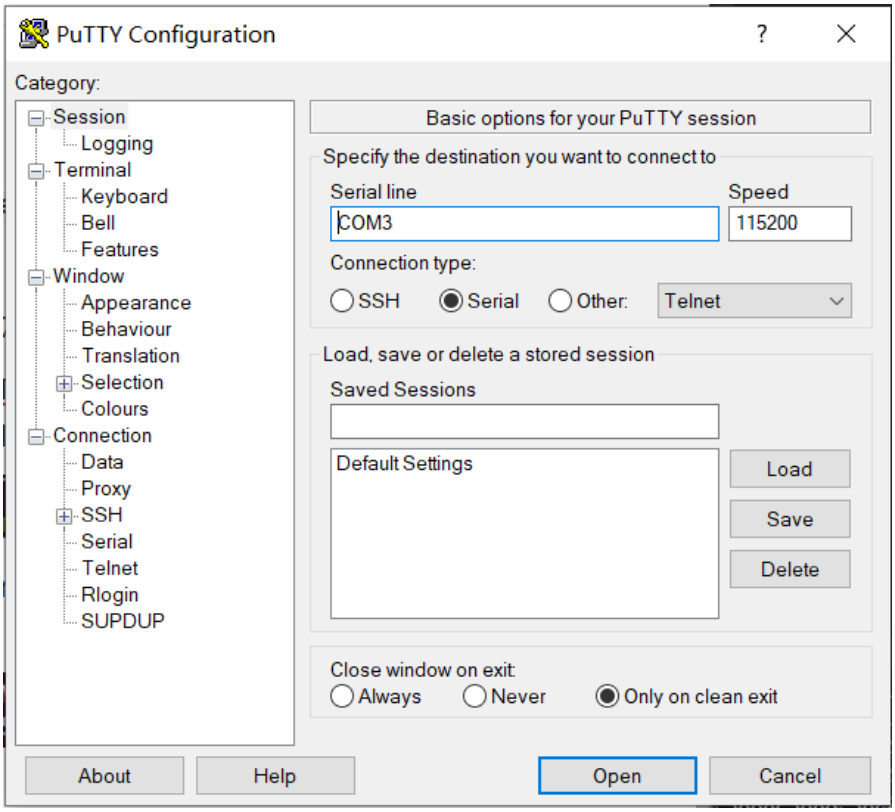
TFTP_DIRECTORY)

```
liu@liu:/srv/tftp$ ls
iv.wic  u-boot-dtb-mx6evomon_dev.imx
```

- Check your VM IP by typing `ifconfig` in terminal, taking it as the `serverip` (`192.168.72.131` is my `serverip`)

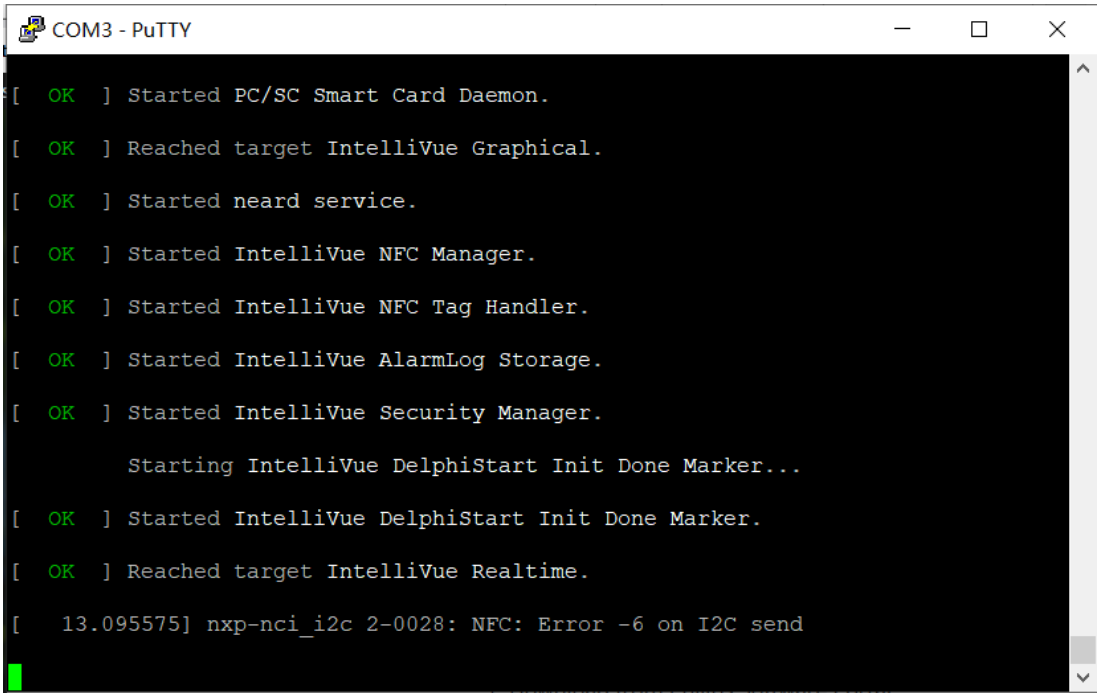
```
ens38: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.72.131  netmask 255.255.255.0  broadcast 192.168.72.255
```

- Download `PUTTY` and setup as following:



where the Serial line `COM3` is the PC USB port which connected to the debugging tool `console to computer` and it could be different from each other's PC.

- Turn on the power supply and open the `PUTTY` and you should see rolling information in `PUTTY` :



- Once the rolling is stop and showing `restart at 3 seconds`, you should key `osum` to enter bootloader command-line **AS SOON AS POSSIBLE**. Once enter the command-line, there will be a time limit for operation, if you meet the time limit, the system will be reboot.

Images Flashing

- Enter the command line of EVOLINE board, keying `usb start`
- Set up the environment by using

  `setenv ipaddr 192.168.1.102` `setenv gatewayip 192.168.1.1` `setenv serverip 192.168.72.131`

  the `ipaddr` is the ip address for your main board and it can be modify by yourself `192.168.1.xxx`, here `102` is for example.

  `serverip` is the ip for your VM as mentioned above.

- Key `saveenv` to save environment and `printenv` can check your environment setting
- To flash your UBOOT image, keying `tftp`

`192.168.72.131:u-boot-dtb-mx6evomon_dev.imx`

the UBOOT image in your TFTP_DIRECTORY will be transmitted to the main board.

Then, keying `sf probe 2:0; sf erase 0 70000; sf write ${loadaddr} 400 70000`

- To flash Yocto, keying `tftp 192.168.72.131:iv.wic` `mmc write ${loadaddr} 0 0x457fe`

  `0x457fe` is the size of your yocto image divided to 512 and changed to hex, and it should be dividable to 512.

  There should be some information showing that flashing is done.

- If flash successfully, restart you board, the UBOOT should be able to jump to linux kernal, if not, please keying

  `setenv bootcmd 'run basicargs; run mmcargs; ext2load mmc 0:1 ${loadaddr} zImage; ext2load mmc 0:1 ${fdt_addr} imx6dp-calimon.dtb; bootz ${loadaddr} - ${fdt_addr}'`
  `setenv mmcrootfstype ext4 rootwait saveenv`

- `printenv` to check the following variables are correct:
  - mmcargs=setenv bootargs ${bootargs} root=${mmcroot} rootfstype=${mmcrootfstype}
  - mmcroot=/dev/mmcblk0p2 ro
  - mmcrootfstype=ext4 rootwait
  - bootcmd=run basicargs; run mmcargs; ext2load mmc 0:1 ${loadaddr} zImage; ext2load mmc 0:1 ${fdt_addr} imx6dp-calimon.dtb; bootz ${loadaddr} - ${fdt_addr}

  if not the same, can use `setenv` to setup.

- `saveenv` to save all once modify.

Linux system setup in board

- Once all images flashed successfully, it will jump to linux kernel, and when it stops, you need to key in `root`

```
root@genericiv32:
```

then you enter the linux system on board.

- Keying `ip a` to check all available netcard, select your netcard and key `cd /etc/systemd/network` , then `vi 10-wired-static.network` and input the content as follow:

  `[Match]`

  `Name= the available netcard name you choose`

  `[Network]`

  `DHCP=ipv4`

  if system output `Read file system only`, key `mount -o remount,rw /` to overwrite the system.

  Keying `systemctl restart systemd-networkd` and `systemctl enable systemd-networkd` to restart and enable your setup.

- Generate ssh keys with command:

  `cd /etc/ssh`

  `ssh-keygen -t rsa -f ssh_host_rsa_key`

  `ssh-keygen -t ecdsa -f ssh_host_ecdsa_key`

  `ssh-keygen -t ed25519 -f ssh_host_ed25519_key`

- `vi /etc/ssh/sshd_config_readonly` and modify the following content:

```
#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key
```

- `cd /etc/systemd/system/multi-user.target.wants`

`ls -l systemd-networkd.service`

save the output path `../../../../lib/systemd/system`

- Create two soft connections by

  `cd /ect/systemd/system/getty.target.wants`

  `ln -s ../../../../lib/systemd/system/systemd-networkd.service systemd-networkd.service`

  `ln -s ../../../../lib/systemd/system/sshd.socket sshd.socket`

- `reboot` the system
- `ifconfig` to check the ip address of the board
- Open windows powershell in your windows system, input `ssh root@the ip address of your evoline board` to connect to the board.

实施日期	10-Mar-2022										
何人（培训担当）	Louris										
何人（接受培训）											
培训后的评价	4 1 3 2	4 1 3 2	4 1 3 2	4 1 3 2	4 1 3 2	4 1 3 2	4 1 3 2	4 1 3 2	4 1 3 2	4 1 3 2	4 1 3 2
得分											

【评价】1、知道但是不会做；2、能做到一定程度；3、能够有自信的做到；4、可以教别人

【说明】一点课编号规范：部门名称(第一个字母大写)－XXXX(年月缩写)-序号，品质部 12 年 11 月第 3 个一点课编号为：PZB-1211-003