# ML00-ARO

# **Training Notes**

GIGABYTE Software

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# 0. General Information

### 0.1. Issue Control

This document was edited with **Microsoft Word**, **Version 2003**. The graphic drawings are originally sketched in **Microsoft PowerPoint Version 2003**.

### 0.2. Record of Changes

### Table 0-1. Record of Changes

Issue	Date	Authors	Reason for Changes
1.00	2015/10/29	Wesley Ku	First release.
1.01	2016/04/12	Wesley Ku	Add Raid 6 command.

### 0.3. References

NO	Document title

### 0.4. Acronyms

## 1. Serial port

### 1.1. Connect to UART\_PH

UART Pin Define: Green: UART VCC Red: UART RX Blue: UART TX Yellow: UART Ground



## 1.2. Connect UART by Windows tool

## 1.2.1. Using TeraTerm to connect device UART

Open "Tera Term" and select "serial" in new connection dialog and Select PC COM port.

Tera Term: New co	onnection		×
© ТСР <u>∦</u> Р	Hos <u>t</u> : 10.1.7.93 I Hist <u>o</u> ry Service: Telnet SSH Other	TCP <u>p</u> ort#: <b>22</b> SSH <u>v</u> ersion: <b>SSH2</b> Proto <u>c</u> ol: <b>UNSPEC</b>	•
Serial     Se	Po <u>r</u> t: COM1: 通討	連接埠 (COM1)	•
	OK Cancel	<u>H</u> elp	

### **1.2.2.** Setup Serial port

In Tera Term menu "Setup -> Serial port", make sure all setting as follow.

Tera Term: Serial po	ort setup	×
<u>P</u> ort:	СОМ1	ОК
<u>B</u> aud rate:	115200	•
<u>D</u> ata:	8 bit	▼ Cancel
P <u>a</u> rity:	none	•
<u>S</u> top:	1 bit	▼ <u>H</u> elp
<u>Flow</u> control:	none	•
Transmit o	lelay nsec/char 0	msec/line

#### 2. **SSH** connect

### 2.1. Get Board IP address

Using Serial port and command "ifconfig" to get current IP address



### 2.2. Connect to device by SSH

#### 2.2.1. Using TeraTerm to connect device SSH

Open Tera Term and Select TCP/IP at new connection dialog. 1. Tera Term: New connection 32

● TCP <u>/I</u> P	Hos <u>t</u> : 10.1.7.88	•
	✓ Hist <u>o</u> ry Service: ○ Te <u>I</u> net ◎ <u>S</u> SH ○ Other	TCP port#: 22 SSH version: SSH2 v Protocol: UNSPEC v
© S <u>e</u> rial	Po <u>r</u> t: COM1: 通言	ī連接埠 [COM1] ▼
	OK Cancel	<u>H</u> elp

2. Select "add key" and "Continue"



3. Enter user name and passphrase

### User name: root Passphrase: 123456

SSH A	uthentication		 ۲
Loggin	g in to 10.1.7.8	38	
Authe	ucation require	ea.	
	User <u>n</u> ame:	root	
	<u>P</u> assphrase:	•••••	
		Remember password in memory	
		Forward agent	
٥	Jse p <u>l</u> ain passw	ord to log in	
OL	Jse <u>R</u> SA/DSA/E	CDSA/ED25519 key to log in Private key file:	
OL	Jse r <u>h</u> osts to lo	g in (SSH1) Local user name:	
OL	Jse <u>c</u> hallenge/r	esponse to log in(keyboard-interactive)	
Ol	Jse P <u>ag</u> eant to	log in	
		OK Disconnect	

## 3. SOFT RAID

### 3.1. Create Raid-0

- 1. Create a RAID-0 Array
- mdadm --create --verbose /dev/md0 --level=0 --raid-devices=16 /dev/sd[abcdefghijklmnop]1 2. Check the progress with the following command
- cat /proc/mdstat 3. Get more information about a RAID array
- mdadm --detail /dev/md0
- 4. Formatting and Mounting a RAID Array mkfs.ext4 /dev/md0
- mount /dev/md0 /mnt/md0 5. Stop raid
- dd if=/dev/zero of=/dev/md0 bs=1M count=50 mdadm --stop /dev/md0

### 3.2. Create Raid-1

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- Create a RAID-1 Array mdadm --create --verbose /dev/md1 --level=1 --raid-devices=2 /dev/sd\*1 /dev/sd\*1
   Check the generative with the following generation.
- Check the progress with the following command cat /proc/mdstat
- 3. Get more information about a RAID array mdadm --detail /dev/md1
- Formatting and Mounting a RAID Array mkfs.ext4 /dev/md1 mount /dev/md1 /mnt/md1
- V.Stop raid dd if=/dev/zero of=/dev/md1 bs=1M count=50 mdadm --stop /dev/md1

### 3.3. Create Raid-5

- Create a RAID-5 Array mdadm --create /dev/md5 --level 5 --raid-devices=16 /dev/sd[abcdefghijklmnop]1
- Check the progress with the following command cat /proc/mdstat
- 3. Get more information about a RAID array mdadm --detail /dev/md5
- Formatting and Mounting a RAID Array mkfs.ext4 /dev/md5 mount /dev/md5 /mnt/md5
- Stop raid dd if=/dev/zero of=/dev/md5 bs=1M count=50 mdadm --stop /dev/md5

### 3.4. Create Raid-6

- 1. Create a RAID-6 Array mdadm --create /dev/md6 --level 6 --raid-devices=16 /dev/sd[abcdefghijklmnop]1
- Check the progress with the following command cat /proc/mdstat
   Cot more information about a BAID array.
- Get more information about a RAID array mdadm --detail /dev/md6
- Formatting and Mounting a RAID Array mkfs.ext4 /dev/md6 mount /dev/md6 /mnt/md6
- Stop raid dd if=/dev/zero of=/dev/md6 bs=1M count=50 mdadm --stop /dev/md6

# 4. UPDATE UBOOT , Kernel and FileSystem

### 4.1. Setup TFTP server

### 4.1.1. Windows

1. Download tftpd32 or tftp64 http://tftpd32.jounin.net/tftpd32\_download.html

B	IFT <sub>P</sub>	Consociation Les Hones Desarrosof Fédi Testimenatio Testimenatio Testimenatio Testimenatio	The indu	stry Tf
Download Tuple Celsinees	Versions	(Tep/-iout do page)		-
tods2 sitchergements <b>E-Mard</b>	23.Rev 2013	va sn 64bit OS	Imita 2 doubled edition (dia) Imita 2 doubled edition (dia) Imita 2 double edition (dia) Imita 2 double edition (dia) Imita 2 double edition (dia) Imita 3 double edition (dia) Imita 3 double double doubled Imita 2 double double doubled	
llipse@joania.zet	7 March 2011	v4.00	iftpd32 standard edition (zip) (4/3 40) iftpd32 standard edition (zip) (4/3 40) iftpd32 standard edition (installer) (5/47 46) iftpd33 standard edition (zip) (5/26 48) iftpd64 standard edition (zip) (5/26 40) iftpd64 standard edition (zip) (5/26 48) iftpd64 standard edition (zip) (5/26 48) iftpd64 standard edition (zip) (5/26 48)	
	9 January 2011	V1.2	tftpTprosv 1.2 (53.88)	1

2. Exec tftp32.exe or tftp64.exe and setting file folder

Tftpd32 by Ph. Jounin Setting file folder
Current Directory
Server interfaces 10.1.6.52 Realtek PC Show Dir
Tftp Server Log viewer server IP auto detecter
About <u>S</u> ettings <u>H</u> elp

## 4.1.2. Linux (Ubuntu)

Reference Website link:

http://www.mmweg.rwth-aachen.de/~philipp.michalschik/wordpress/running-tftp-server-on-ubuntu-12-04-lts-precise/

### 4.2. Update Firmware

Update firmware by TeraTerm TTL will keep u-boot setting (MAC will not be erased). Update firmware by command will erase u-boot setting (MAC will be erased) if run command "run delenv".

### 4.2.1. Update by TeraTerm TTL (auto update)

1. Control->marco->Annapurna\_V1.1.ttl

Tera Term	- [disconnected] VT		
File Edit S	etup Control Window Help		
	Reset terminal		
	Reset remote title		
	Are you there	Alt+T	
	Send benek	Alt+5	
	Reset port		
	Broadcast command		
	Open TEK		
	Close TEK		
	Matro		
	Show Macro Window	1 11	
. Boot on D	UT		-
. Input DU	Г ІР		
Input padd		1	
Contraction of Contraction			
	Input ipaddr:		
	1.2%-1		
	OK		
L A	ID		
. Input Serv	ver IP		
and an and a state			
	Input serverip:		
22	14		
	OK		
. Wait $15 \sim 2$	20 minute to updated		
. Check upo	late finish		
Ann	apuma		
1	-Televine,		
	- 200 - 200 - 2000		
U	pdate Finish!		
	0K		
6		-9	
. Check FW	/ version		
root@	alpine:~#		
	alnine:«# ca	t /etc/	MI 00 rele
root@	alpinet in ca		4 035
root@			
root@ ML00	File System	Version	= 1.035
root@ ML00	File System	Version	= 1.035
root@ ML00	File System ' alnine:∝#	Version	= 1.035

### 4.2.2. Update by command

- 1. Into u-boot shell after power-on.
- Get current device MAC setting printenv ethaddr (Will return ethaddr=[current MAC], save [current MAC] to text file)
- 3. Set up tftp server on PC side setenv ipaddr [IP for device]
- setenv serverip [IP for tftp server]4. Updating the board's Device Tree run dtupd
- 5. Updating the AL-Boot image on flash run bootupd reset
- Into u-boot shell after reset command in step 5.
- 7. Updating the kernel image on the NAND

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run kernelspiupd

- 8. Update Ubuntu file system
- run rootfsupd
  Set default env(option, will erase MAC setting) run delenv reset
- 10. Into u-boot shell after reset command in step 9.
- Write MAC address(option) eth\_addr [current MAC] 4 saveenv reset
- Check MAC address printenv ethaddr eth1addr eth2addr eth3addr (Will return ethaddr=[current MAC] eth1addr=[current MAC +1] eth2addr=[current MAC +2] eth3addr=[current MAC +3])

## 5. I2CSlave tool

### 5.1. Open I2CSlave

When boot complete, i2cslave daemon will start automatically.

### 5.2. Check I2CSalve daemon

Run command "ps | grep i2cslave" in Linux shell.