CoM-335X NFS 挂载根文件系统

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类别	内容
关键词	AM335X，CoM-335X，NFS
摘要	通过 NVM（非易失存储器）中的 u-boot，网络下载 kernel 并挂载根文件系统

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修订历史

版本	日期	原因
V1.00	2018-11-10	创建文档

1 概述

软件调试是产品开发生命周期的一个必经阶段，包括内核、根文件系统、应用软件等。通常的做法是先烧录 BootLoader、内核、根文件系统，再调试应用软件。在调试阶段可能需要频繁烧录内核、根文件或下载应用软件，这会耗费不少时间。通过网络下载内核与挂载根文件系统，可以解决频繁烧录的问题。

本手册，主要介绍如何通过 TFTP 下载内核以及挂载 NFS 根文件系统。

操作环境：

- **平台**：EVB-335x
- **操作系统**：Ubuntu 16.04 server 64-bit （内核版本 4.4.0-131-generic）
- **nfs**：nfs-kernel-server_1.2.8-9ubuntu12_amd64

2 软件需求

NFS 协议包括有 version 2、version 3、 version 4 三个版本（下文分别简称 NFSv2、NFSv3、NFSv4），要在主板启动内核时实现 NFS 文件系统的挂载，必须保证 u-boot、kernel 与 NFS server 之间的版本一致。

2.1 u-boot NFS 指令

支持 NFS 指令，配置 u-boot 需定义：

```
#define  CONFIG_CMD_NFS
```

//u-boot 默认支持 NFS，在 u-boot 源码的 include/config_cmd_default.h 中查看

```
#define CONFIG_NFSBOOTCOMMAND
```

//可在板级配置文件 include/configs/com335x.h 中定义（非必要，使用该配置是为了方便理解，因为其见名知义）。若定义此项，u-boot 环境变量中出现“nfsboot=”参数，为 nfsboot 赋值作为 NFS 的配置。

说明：

1、U-boot 2014.04（COM-335x 使用该版本）支持 NFSv2，在 u-boot 源码 net/nfs.c 中查看，如代码清单 2-1 所示（红色字体）；

代码清单 2-1

```
static void
rpc_req(int rpc_prog, int rpc_proc, uint32_t *data, int datalen)
{
        struct rpc_t pkt;
        unsigned long id;
        uint32_t *p;
        int pktlen;
        int sport;

        id = ++rpc_id;
        pkt.u.call.id = htonl(id);
        pkt.u.call.type = htonl(MSG_CALL);
        pkt.u.call.rpcvers = htonl(2);  /* use RPC version 2 */
        pkt.u.call.prog = htonl(rpc_prog);
        pkt.u.call.vers = htonl(2);     /* portmapper is version 2 */
        pkt.u.call.proc = htonl(rpc_proc);
        p = (uint32_t *)&(pkt.u.call.data);

        if (datalen)
                memcpy((char *)p, (char *)data, datalen*sizeof(uint32_t));

        pktlen = (char *)p + datalen*sizeof(uint32_t) - (char *)&pkt;
```

```
        memcpy((char *)NetTxPacket + NetEthHdrSize() + IP_UDP_HDR_SIZE,
                (char *)&pkt, pktlen);

        if (rpc_prog == PROG_PORTMAP)
                sport = SUNRPC_PORT;
        else if (rpc_prog == PROG_MOUNT)
                sport = NfsSrvMountPort;
        else
                sport = NfsSrvNfsPort;

        NetSendUDPPacket(NetServerEther, NfsServerIP, sport, NfsOurPort,
                pktlen);
}
```

2、我们这里使用装有 ubuntu 16.04 操作系统的主机作为远程根文件系统的保存主机，查看 NFS server 默认支持的协议版本，与 u-boot 所支持的是否一致？ubuntu 操作系统在/etc/default/nfs-kernel-server 文件中查看，我们目前的 ubuntu 16.04 主机，由于默认不支持的 NFSv2，所以要设置兼容性，在“2.3 NFS server 注意事项”中介绍。

3、新版本的 u-boot 支持的 NFS 协议版本较高，例如 u-boot 2018.01 默认支持 NFSv2，若主机不支持 NFSv2，则使用 NFSv3。

4、内核的版本匹配问题，见“2.2 kernel 配置”。

5、NFS 版本的修改并未简单改“代码清单 2-1”中的 `pkt.u.call.rpcvers = htonl(2);` 与 `pkt.u.call.vers = htonl(2);` 的值，就可兼容其他版本的 NFS。此外，新版本 u-boot 的移植工作量大。所以，推荐在 NFS server 端解决版本兼容的问题。

2.2 kernel 配置

内核需要支持 NFS 类型根文件系统。在内核源码的根目录执行：

```
make ARCH=arm menuconfig
```

依次选择

```
File systems    --->
[*] Network File Systems    --->
--- Network File Systems
      <*>     NFS client support
      [*]       NFS client support for NFS version 3
      [*]       NFS client support for the NFSv3 ACL protocol extension
      [*]       NFS client support for NFS version 4
```

[*] NFS client support for NFSv4.1 (EXPERIMENTAL)
[*] Root file system on NFS

配置如图 2-2 所示。

```
--- Network File Systems
<*>   NFS client support
[*]     NFS client support for NFS version 3
[*]       NFS client support for the NFSv3 ACL protocol extension
[*]     NFS client support for NFS version 4
[*]       NFS client support for NFSv4.1 (EXPERIMENTAL)
[*]   Root file system on NFS
[ ]   Use the legacy NFS DNS resolver
[ ]   Use the new idmapper upcall routine
```

图 2-2

说明：当选择了 **NFS client support** ，即支持 NFSv2。NFSv3、NFSv4、NFSv4.1 可不选，视实际情况而定。

此外，还需选上 kernel level autoconfiguration。依次选择：

[*] Networking support --->
--- Networking support
[*] IP: kernel level autoconfiguration

如图 2-3 所示：

```
<*> Packet socket
<*> Unix domain sockets
< > PF_KEY sockets
[*] TCP/IP networking
[*]   IP: multicasting
[ ]   IP: advanced router
[*]   IP: kernel level autoconfiguration
[*]     IP: DHCP support
[*]     IP: BOOTP support
[*]     IP: RARP support
```

图 2-3

2.3 NFS server 注意事项

搭建 NFS server 请参考 Ubuntu 官方网站。

COM-335x 的 U-boot 支持的 NFS v2 版本，而 Ubuntu 16.04 支持 NFS v4 版本。由于版本不兼容，

当挂载 NFS 文件系统时，出现如图 2-4 所示的错误。

```
[   12.241601] VFS: Unable to mount root fs via NFS, trying floppy.
[   12.248387] VFS: Cannot open root device "nfs" or unknown-block(2,0)
[   12.255075] Please append a correct "root=" boot option; here are the availab
le partitions:
[   12.263865] 1f00             128 mtdblock0   (driver?)
[   12.269160] 1f01             128 mtdblock1   (driver?)
[   12.274461] 1f02             128 mtdblock2   (driver?)
[   12.279749] 1f03             128 mtdblock3   (driver?)
[   12.285049] 1f04            1920 mtdblock4   (driver?)
[   12.290345] 1f05             128 mtdblock5   (driver?)
[   12.295634] 1f06            3072 mtdblock6   (driver?)
[   12.300934] 1f07            5120 mtdblock7   (driver?)
[   12.306223] 1f08          513536 mtdblock8   (driver?)
[   12.311521] Kernel panic - not syncing: VFS: Unable to mount root fs on unkno
wn-block(2,0)
```

图 2-4

修改“/etc/default/nfs-kernel-server”文件，让其兼容 NFS v2 版本，在该文件的末尾添加以下语句，如图 2-5 所示。

```
RPCNFSDOPTS="--nfs-version 2,3,4 --debug --syslog"
```

```
# Options for rpc.svcgssd.
RPCSVCGSSDOPTS=""

# Options for rpc.nfsd.
#RPCNFSDOPTS=""
RPCNFSDOPTS="--nfs-version 2,3,4 --debug --syslog"
~
```

图 2-5

配置 NFS server，使用文档编辑工具打开/etc/exports ，分别设置目录、访问 IP、选项（通常设置权限等），如图 2-6 所示。

```
/home/daniel/rootfs *(rw,sync,no_root_squash)
~
~
```

图 2-6

说明：

/home/daniel/rootfs 指定 NFS 文件系统加载目录；

* 设置访问 IP，*代表所有 IP，亦可某个主机或某 IP 段（例如 192.168.x.x）；

(rw,sync,no_root_squash) 设置权限等选项，根据需求设定。

2.4 其他

TFTP 用于下载内核镜像，搭建在 NFS server 同一主机上，配置过程请参考 Ubuntu 官方网站。

3 实现过程

以 NVM 存储 u-boot 的 COM-335x 为例，简单介绍 NFS 文件挂载的实现过程。

1、准备内核与根文件系统：

将内核（uImage）保存到 TFTP 配置（/etc/default/tftpd-hpa 文件）所指定的目录下，如图 3-1 所示，TFTP_DIRECTORY 的值即为 TFTP 服务器的目录。

图 3-1

将根文件系统解压到/etc/exports 所指定的目录，如图 3-2 所示。

图 3-2

说明:更换内核，替换 uImage 文件即可；应用程序保存到根文件系统中。

2、烧录 u-boot

擦除 Nand Flash，将用于启动 NFS 的 MLO 与 u-boot.img 保存到 SD 卡的根目录，上电自动烧录 u-boot。烧录完成，查看 u-boot 的环境变量（env）配置，如图 3-3 所示。

```
Net:   cpsw
Hit any key to stop autoboot:  0
U-Boot#     printenv
arch=arm
baudrate=115200
board=com335x
board_name=com335x
bootcmd=run nfsbootargs;tftp 0x82000000 uImage $filesize;bootm 0x82000000
bootcount=1
bootdelay=1
console=ttyO0,115200n8
cpu=armv7
eth1addr=b0:d5:cc:08:3b:df
ethact=cpsw
ethaddr=12:34:56:78:90:00
gatewayip=192.168.0.1
hostname=embedall
ipaddr=192.168.0.126
lcdtype=AUO_AT070TN94
mtdids=nand0=omap2-nand.0
mtdparts=mtdparts=omap2-nand.0:128k(SPL),128k(SPL.backup1),128k(SPL.backup2),128
k(SPL.backup3),1920k(u-boot),128k(u-boot-env),3m(logo),5m(kernel),-(rootfs)
netmask=255.255.255.0
nfsbootargs=setenv bootargs console=${console} root=/dev/nfs rw nfsroot=${server
ip}:${rootpath} rootfstype=nfs rootwait=1 ip=${ipaddr}:${serverip}:${gatewayip}:
${netmask}:${hostname}:${netdev}:off lcdtype=${lcdtype} consoleblank=0
rootpath=/opt/nfsroot
serverip=192.168.0.114
soc=am33xx
vendor=eac
ver=U-Boot 2014.04-rc2-svn2391 (Nov 12 2018 - 08:43:12)

Environment size: 946/131068 bytes
```

图 3-3

NFS 环境变量参数简介，如表 3-1 所示：

表 3-1

serverip	NFS server IP（**必要**）
ipaddr	主板 IP（**必要**）
gatewayip	网关（非必要，建议设置）
netmask	子网掩码（必要）
hostname	主机名称（非必要）
netdev	网络设备（非必要），例如 eth0。
rootpath	NFS 根文件系统的保存目录（**必要**）

此时，图 3-3 中配置未必满足要求，例如 rootpath、serverip 等。根据实际情况使用 **setenv** 指令配置：

```
setenv   rootpath /your/dirctory/rootfs
setenv serverip 192.168.1.x
saveenv          ←---- 设置完成，用 saveenv 保存，不保存的设置仅当次有效
```

设置无误后，输入 boot 或 run bootcmd 启动系统，或者重上电启动。

3、查看 NFS

系统启动后，查看 NFS 根文件系统的挂载情况，以及文件系统目录结构。如图 3-4 所示：

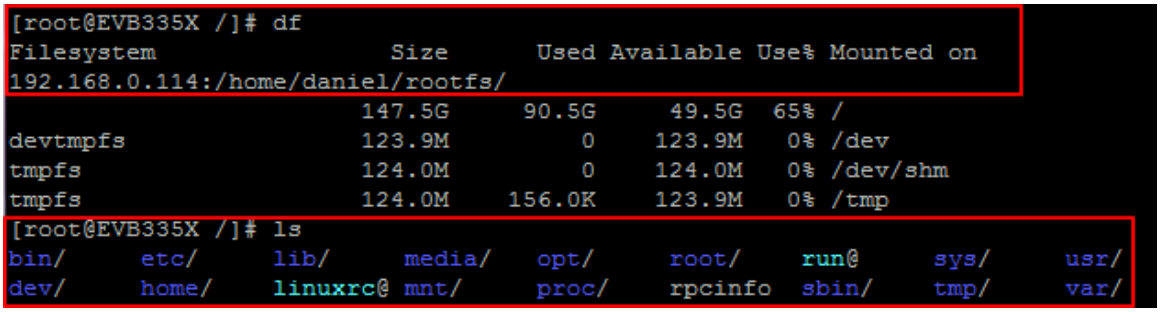

图 3-4

正常显示图中信息，则表明 NFS 启动完成。

4 免责声明

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附录 1　NFS boot log

```
U-Boot 2014.04-rc2-svn2391 (Nov 12 2018 - 08:43:12)

I2C:   ready
DRAM:  256 MiB
NAND:  512 MiB
MMC:   OMAP SD/MMC: 0, OMAP SD/MMC: 1
Net:   cpsw
Hit any key to stop autoboot:  0

NAND read: device 0 of0x280000, size 0x300000
 3145728 bytes read: OK
There is no valid bmp file at the given address
cpsw Waiting for PHY auto negotiation to complete. done
link up on port 0, speedll duplex
Using cpsw device
TFTP from server 192.168.0.114; our IP address is 192.168.0.126
Filename 'uImage'.
Load address: 0x82000000
Loading: ##################################################################
         ##################################################################
         ##################################################################
         #######
         3.9 MiB/s
done
Bytes transferred = 2951672 (2d09f8 hex)
## Booting kernel from Legacy Image at 82000000 ...
   Image Name:   Linux-3.2.0
   Image Type:   ARM Linux Kernel Image (uncompressed)
   Data Size:    2951608 Bytes = 2.8 MiB
   Load Address: 80008000
   Entry Point:  80008000
   Verifying Checksum ... OK
   Loading Kernel Image ... OK

Starting kernel ...

[    0.000000] Linux version 3.2.0 (ronggang@axcor-RD001) (gcc version 4.7.3 20130226
(prerelease) (crosstool-NG linaro-1.13.1-4.7-2013.03-20130313 - Linaro GCC 2013.03) )
#61 Fri Jun 6 09:46:28 CST 2014
```

```
[    0.000000] CPU: ARMv7 Processor [413fc082] revision 2 (ARMv7), cr=10c53c7d
[    0.000000] CPU: PIPT / VIPT nonaliasing data cache, VIPT aliasing instruction
cache
[    0.000000] Machine: com335x
[    0.000000] Memory policy: ECC disabled, Data cache writeback
[    0.000000] AM335X ES2.1 (neon )
[    0.000000] Built 1 zonelists in Zone order, mobility grouping on.  Total pages:
65024
[    0.000000] Kernel c line: console=ttyO0,115200n8 root=/dev/nfs rw
nfsroot=192.168.0.114:/home/daniel/rootfs/ rootfstype=nfs rootwait=1
ip=192.168.0.126:192.168.0.114:192.168.0.1:255.255.255.0:embedall::off
lcdtype=AUO_AT070TN94 consoleblank=0
[    0.000000] PID hash table entries: 1024 (order: 0, 4096 bytes)
[    0.000000] Dentry cache hash table entries: 32768 (order: 5, 131072 bytes)
[    0.000000] Inode-cache hash table entries: 16384 (order: 4, 65536 bytes)
[    0.000000] Memory: 256MB = 256MB total
[    0.000000] Memory: 253776k/253776k available,erved, 0K highmem
[    0.000000] Virtual kernel memory layout:
[    0.000000]    vector  : 0xffff0000 - 0xffff1000   (   4 kB)
[    0.000000]    fixmap  : 0xfff0000xfffe0000   ( 896 kB)
[    0.000000]    vmalloc : 0xd0800000 - 0xff000000   ( 744 MB)
[    0.000000]    lowmem  : 0xc0000000 - 0xd0000000   ( 256 MB)
[    0.000000]    modules : 0xbf000000 - 0xc0000000   (  16 MB)
[    0.000000]      .text : 0xc0008000 - 0xc052f000   (5276 kB)
0.000000]      .data : 0xc056a000 - 0xc05c1180   ( 349 kB)2 kB)
[    0.000000]       .bss : 0xc05c11a4 - 0xc05efd24   ( 187 kB)
[    0.000000] NR_IRQS:396
[    0.000000] IRQ: Found an INTC at 0xfa200000 (revision 5.0) with 128 interrupts
[    0.000000] Total of 128 interrupts on 1 active controller
[    0.000000] OMAP clockevent source: GPTIMER2 at 24000000 Hz
[    0.000000] omap_dm_timer_switch_src: Switching to HW default
clocksource(sys_clkin_ck) for timer1, this may impact timekeeping in low power state
[    0.000000] OMAP clocksource: GPTIMER1 at 24000000 Hz
[    0.000000] sched_clock: 32 bits at 24MHz, resolution 41ns, wraps every 178956ms
[    0.000000] Console: colour dummy device 80x30
[    0.000184] Calibrating delay loop... 795.44 BogoMIPS (lpj=3977216)
[    0.087383] pid_max: default: 32768 minimum: 301
[    0.087499] Security Framework initialized
[    0.087597] Mount-cache hash table entries: 512
[    0.087950] CPU: Testing write buffer coherency: ok
[    0.088676] devtmpfs: initialized
[    0.108008] omap_hwmod: gfx: failed to hardreset
```

```
[    0.123879] omap_hwmod: pruss: failed to hardreset
[    0.124926] print_constraints: dummy:
[    0.125280] NET: Registered protocol family 16
[    0.127396] OMAP GPIO hardware version 0.1
[    0.129581] omap_mux_init: Add partition: #1: core, flags: 0
[    0.131642]  omap_i2c.1: alias fck already exists
[    0.132276] omap-gpmc omap-gpmc: GPMC revision 6.0
[    0.132292] Registering NAND on CS0
[    0.132875]  omap_hsmmc.0: alias fck already exists
[    0.134289]  omap_i2c.2: alias fck already exists
[    0.134711] [ext_uart platform init]: gpmc mem base is 0x01000000
[    0.134738] gpmc_cssp_init for ST16C554 device succeeded
[    0.134928] com335x: mcasp1 init
[    0.135015]  davinci-mcasp.1: alias fck already exists
[    0.135474]  da8xx_lcdc.0: alias fck already exists
[    0.135961]  omap_i2c.3: alias fck already exists
[    0.136822]  edma.0: alias fck already exists
[    0.136840]  edma.0: alias fck already exists
[    0.136856]  edma.0: alias fck already exists
[    0.154806] bio: create slab <bio-0> at 0
[    0.156751] SCSI subsystem initialized
[    0.157469] usbcore: registered new interface driver usbfs
[    0.157751] usbcore: registered new interface driver hub
[    0.157935] usbcore: registered new device driver usb
[    0.158252] registerd cppi-dma Intr @ IRQ 17
[    0.158265] Cppi41 Init Done Qmgr-base(d087a000) dma-base(d0878000)
[    0.158273] Cppi41 Init Done
[    0.158300] musb-ti81xx musb-ti81xx: musb0, board_mode=0x13, plat_mode=0x3
[    0.158596] musb-ti81xx musb-ti81xx: musb1, board_mode=0x13, plat_mode=0x1
[    0.177402] omap_i2c omap_i2c.1: bus 1 rev2.4.0 at 400 kHz
[    0.178324] pca953x 1-0074: interrupt support not compiled in
[    0.338204] tps65217 1-0024: TPS65217 ID 0xe version 1.2
[    0.339096] print_constraints: DCDC1: 900 <--> 1800 mV at 1500 mV
[    0.340033] print_constraints: DCDC2: 900 <--> 3300 mV at 1275 mV
[    0.340947] print_constraints: DCDC3: 900 <--> 1500 mV at 1125 mV
[    0.341838] print_constraints: LDO1: 1000 <--> 3300 mV at 1800 mV
[    0.342739] print_constraints: LDO2: 900 <--> 3300 mV at 3300 mV
[    0.343634] print_constraints: LDO3: 1800 <--> 3300 mV at 1800 mV
[    0.344543] print_constraints: LDO4: 1800 <--> 3300 mV at 3300 mV
[    0.357404] omap_i2c omap_i2c.2: bus 2 rev2.4.0 at 400 kHz
[    0.377386] omap_i2c omap_i2c.3: bus 3 rev2.4.0 at 400 kHz
[    0.379023] Advanced Linux Sound Architecture Driver Version 1.0.24.
```

```
[    0.380186] Switching to clocksource gp timer
[    0.396648] musb-hdrc: version 6.0, ?dma?, otg (peripheral+host)
[    0.396839] musb-hdrc musb-hdrc.0: dma type: dma-cppi41
[    0.397148] MUSB0 controller's USBSS revision = 4ea20800
[    0.397179] musb0: Enabled SW babble control
[    0.398046] musb-hdrc musb-hdrc.0: USB OTG mode controller at d084a000 using DMA,
IRQ 18
[    0.398201] musb-hdrc musb-hdrc.1: dma type: dma-cppi41
[    0.398497] MUSB1 controller's USBSS revision = 4ea20800
[    0.398522] musb1: Enabled SW babble control
[    0.398925] musb-hdrc musb-hdrc.1: MUSB HDRC host driver
[    0.399024] musb-hdrc musb-hdrc.1: new USB bus registered, assigned bus number
1
[    0.399145] usb usb1: New USB device found, idVendor=1d6b, idProduct=0002
[    0.399159] usb usb1: New USB device strings: Mfr=3, Product=2, SerialNumber=1
[    0.399172] usb usb1: Product: MUSB HDRC host driver
[    0.399181] usb usb1: Manufacturer: Linux 3.2.0 musb-hcd
[    0.399191] usb usb1: SerialNumber: musb-hdrc.1
[    0.400067] hub 1-0:1.0: USB hub found
[    0.400095] hub 1-0:1.0: 1 port detected
[    0.400748] musb-hdrc musb-hdrc.1: USB Host mode controller at d084c800 using DMA,
IRQ 19
[    0.401178] NET: Registered protocol family 2
[    0.401364] IP route cache hash table entries: 2048 (order: 1, 8192 bytes)
[    0.401640] TCP established hash table entries: 8192 (order: 4, 65536 bytes)
[    0.401785] TCP bind hash table entries: 8192 (order: 3, 32768 bytes)
[    0.401869] TCP: Hash tables configured (established 8192 bind 8192)
[    0.401880] TCP reno registered
[    0.401891] UDP hash table entries: 256 (order: 0, 4096 bytes)
[    0.401912] UDP-Lite hash table entries: 256 (order: 0, 4096 bytes)
[    0.402096] NET: Registered protocol family 1
[    0.402346] RPC: Registered named UNIX socket transport module.
[    0.402358] RPC: Registered udp transport module.
[    0.402366] RPC: Registered tcp transport module.
[    0.402374] RPC: Registered tcp NFSv4.1 backchannel transport module.
[    0.402578] NetWinder Floating Point Emulator V0.97 (double precision)
[    0.402601] Error: Driver 'omap-gpmc' is already registered, aborting...
[    0.413478] VFS: Disk quotas dquot_6.5.2
[    0.413539] Dquot-cache hash table entries: 1024 (order 0, 4096 bytes)
[    0.414043] msgmni has been set to 495
[    0.414719] io scheduler noop registered
[    0.414729] io scheduler deadline registered
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[    0.414784] io scheduler cfq registered (default)
[    0.416227] da8xx_lcdc da8xx_lcdc.0: GLCD: Found AUO_AT070TN94 panel
[    0.427058] Console: switching to colour frame buffer device 100x30
[    0.433822] omap_uart.0: ttyO0 at MMIO 0x44e09000 (irq = 72) is a OMAP UART0
[    1.161791] console [ttyO0] enabled
[    1.166153] omap_uart.1: ttyO1 at MMIO 0x48022000 (irq = 73) is a OMAP UART1
[    1.174033] omap_uart.2: ttyO2 at MMIO 0x48024000 (irq = 74) is a OMAP UART2
[    1.181869] omap_uart.3: ttyO3 at MMIO 0x481a6000 (irq = 44) is a OMAP UART3
[    1.189672] omap_uart.4: ttyO4 at MMIO 0x481a8000 (irq = 45) is a OMAP UART4
[    1.197510] omap_uart.5: ttyO5 at MMIO 0x481aa000 (irq = 46) is a OMAP UART5
[    1.214955] brd: module loaded
[    1.223023] loop: module loaded
[    1.227082] at24 1-0050: 1024 byte 24c08 EEPROM, writable, 16 bytes/write
[    1.236515] mtdoops: mtd device (mtddev=name/number) must be supplied
[    1.243680] omap2-nand driver initializing
[    1.248280] ONFI flash detected
[    1.251716] ONFI param page 0 valid
[    1.255372] NAND device: Manufacturer ID: 0x2c, Chip ID: 0xdc (Micron
MT29F4G08ABADAWP)
[    1.264111] Creating 9 MTD partitions on "omap2-nand.0":
[    1.269680] 0x000000000000-0x000000020000 : "SPL"
[    1.276185] 0x000000020000-0x000000040000 : "SPL.backup1"
[    1.283229] 0x000000040000-0x000000060000 : "SPL.backup2"
[    1.290148] 0x000000060000-0x000000080000 : "SPL.backup3"
[    1.297087] 0x000000080000-0x000000260000 : "U-Boot"
[    1.304300] 0x000000260000-0x000000280000 : "U-Boot Env"
[    1.311128] 0x000000280000-0x000000580000 : "logo"
[    1.318642] 0x000000580000-0x000000a80000 : "Kernel"
[    1.327282] 0x000000a80000-0x000020000000 : "File System"
[    1.539767] usb 1-1: new high-speed USB device number 2 using musb-hdrc
[    1.548325] OneNAND driver initializing
[    1.553753] CAN device driver interface
[    1.557770] CAN bus driver for Bosch D_CAN controller 1.0
[    1.610230] davinci_mdio davinci_mdio.0: davinci mdio revision 1.6
[    1.616704] davinci_mdio davinci_mdio.0: detected phy mask fffffffef
[    1.624194] davinci_mdio.0: probed
[    1.627756] davinci_mdio davinci_mdio.0: phy[4]: device 0:04, driver unknown
[    1.635314] PPP generic driver version 2.4.2
[    1.640249] PPP BSD Compression module registered
[    1.645172] PPP Deflate Compression module registered
[    1.650668] ured new interface driver zd1201
[    1.656683] usbcore: registered new interface driver cdc_ether
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[    1.663143] usbcore: registered new interface driver cdc_eem
[    1.669264] usbcore: registered new interface driver dm9601
1.678692] usbcore: registered new interface driver cdc_ncm
[    1.684980] usbcore: registered new interface driver cdc_acm
[    1.690926] cdc_acm: USB Abstract Control Model driver for USB modems and ISDN
adapters
[    1.699305] Initializing USB Mass Storage driver...
[    1.704602] usb 1-1: New USB device found, idVendor=0424, idProduct=2514
[    1.711638] usb 1-1: New USB device strings: Mfr=0, Product=0, SerialNumber=0
[    1.719282] usbcore: registered new interface driver usb-storage
[    1.725589] USB Mass Storage support registered.
[    1.731460] usbcore: registered new interface driver usbserial
[    1.737746] hub 1-1:1.0: USB hub found
[    1.741772] hub 1-1:1.0: 4 ports detected
[    1.746064] USB Serial support registered for generic
[    1.752373] usbcore: registered new interface driver usbserial_generic
[    1.7bserial: USB Serial Driver core
[    1.763984] USB Serial support registered for GSM modem (1-port)
[    1.770584] usbcore: registered new interface driver option
[    1.776422] option: v0.7.2:USB r GSM modems
[    1.782153] mousedev: PS/2 mouse device common for all mice
[    1.789267] input: gpio-keys-polled as
/devices/platform/gpio-keys-polled.0/input/input0
[    1.799797] input: ti-tsc as /devices/platform/omap/ti_tscadc/tsc/input/input1
[    1.808193] rtc-ds1307: probe of 1-0068 failed with error -5
[    1.814336] i2c /dev entries driver
[    2.810231] omap_i2c omap_i2c.3: controller timed out
[    3.830221] omap_i2c omap_i2c.3: controller timed out
[    4.850223] omap_i2c omap_i2c.3: controller timed out
[    5.870220] omap_i2c omap_i2c.3: controller timed out
[    6.890221] omap_i2c omap_i2c.3: controller timed out
[    7.910219] omap_i2c omap_i2c.3: controller timed out
[    8.930221] omap_i2c omap_i2c.3: controller timed out
[    9.950220] omap_i2c omap_i2c.3: controller timed out
[    9.971831] cpuidle: using governor ladder
[    9.976566] cpuidle: using governor menu
[    9.985691] usbcore: registered new interface driver usbhid
[    9.991574] usbhid: USB HID core driver
[    9.996357] tiadc tiadc: attached adc driver
[   10.003529] _regulator_get: 1-001b supply IOVDD not found, using dummy regulator
[   10.011409] _regulator_get: 1-001b supply DVDD not found, using dummy regulator
[   10.019133] _regulator_get: 1-001b supply AVDD not found, using dummy regulator
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[   10.026862] _regulator_get: 1-001b supply DRVDD not found, using dummy regulator
[   10.037183] asoc: tlv320aic3x-hifi <-> davinci-mcasp.1 mapping ok
[   10.048089] ALSA device list:
[   10.051257]   #0: COM335X EVM
[   10.054357] oprofile: hardware counters not available
[   10.059638] oprofile: using timer interrupt.
[   10.064137] nf_conntrack version 0.5.0 (3965 buckets, 15860 max)
[   10.070898] ip_tables: (C) 2000-2006 Netfilter Core Team
[   10.076562] TCP cubic registered
[   10.079950] NET: Registered protocol family 17
[   10.084636] can: controller area network core (rev 20090105 abi 8)
[   10.091199] NET: Registered protocol family 29
[   10.095853] can: raw protocol (rev 20090105)
[   10.100332] can: broadcast manager protocol (rev 20090105 t)
[   10.106292] Registering the dns_resolver key type
[   10.111294] VFP support v0.3: implementor 41 architecture 3 part 30 variant c rev
3
[   10.119319] ThumbEE CPU extension supported.
[   10.123865] mux: Failed to setup hwmod io irq -22
[   10.129443] Power Management for AM33XX family
[   10.134128] pm: Err (-22) setting core voltage setting
[   10.139705] Trying to load am335x-pm-firmware.bin (60 secs timeout)
[   10.146392] Copied the M3 firmware to UMEM
[   10.150740] Cortex M3 Firmware Version = 0x184
[   10.158656] clock: disabling unused clocks to save power
[   10.166379] Detected MACID=b0:d5:cc:8:3b:dd
[   10.172349] drivers/rtc/hctosys.c: unable to open rtc device (rtc0)
[   10.181835] net eth0: CPSW phy found : id is : 0x4dd072
[   10.188066] PHY 0:01 not found
[   12.181156] PHY: 0:04 - Link is Up - 1000/Full
[   12.210399] IP-Config: Complete:
[   12.213778]      device=eth0, addr=192.168.0.126, mask=255.255.255.0,
gw=192.168.0.1,
[   12.221735]      host=embedall, domain=, nis-domain=(none),
[   12.227567]      bootserver=192.168.0.114, rootserver=192.168.0.114, rootpath=
[   12.274563] VFS: Mounted root (nfs filesystem) on device 0:15.
[   12.281637] devtmpfs: mounted
[   12.285125] Freeing init memory: 232K
Bad inittab entry at line 28
Starting logging: OK
Populating /dev using udev: [   12.639856] udevd[643]: starting version 182
done
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Initializing random number generator... done.
Starting network...
RTNETLINK answers: File exists
NFS root
Starting sshd: /var/empty must  group or world-writable.
OK
Starting vsftpd: OK
xres = 800, yres = 480
[root@EVB335X /]#
```