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本体ファームウェアでの起動

ここではDIPSWをすべて OFF とした状態で、本体標準ファームウェアでの起動をしてみます。

シリアルコンソール接続

RJ-45のシリアル変換コネクタをお持ちでない場合DIPSW-3 を ON にすることでDSUB-9で接続ができます。
TeraTermやputtyなどのターミナルソフトを使用して接続します。
シリアルポートは下記の通り設定して下さい。

項目	設定値
ビットレート	115.2Kbps
データビット	8
ストップビット	1
パリティビット	なし
フロー制御	なし

MA-E3xxに電源をいれると、下図のようにブートローダが起動してきます。
2秒間のタイムアウト待ちがあり、その間に Enter を入力することでシェルのプロンプトへ、
m を入力することでメニュー画面へと移行します。
(下図は Enter を入力してプロンプトを表示させた例です)。

```
/dev/ttyUSB2 - PuTTY
barebox 2013.12.0-00254-g291c1b0 #262 Wed Feb 19 12:09:30 JST 2014

Board: plum-ma[512MiB]
m25p80 m25p800: m25p16 (2048 Kbytes)
booting from SPI

barebox 2013.12.0-00321-g26079eb-dirty #497 Tue Mar 11 14:26:06 JST 2014

Board: plum-ma[512MiB]
nand: ONFI param page 0 valid
nand: ONFI flash detected
nand: NAND device: Manufacturer ID: 0x01, Chip ID: 0xda (AMD/Spansion S34ML02G1), 256MiB, page size: 2048, OOB size: 64
omap-hsmmc omap4-hsmmc0: registered as omap4-hsmmc0
m25p80 m25p800: m25p16 (2048 Kbytes)
i2c-omap i2c-am33xx0: bus 0 rev0.11 at 100 kHz
cpsw cpsw0: detected phy mask 0xc
mdio_bus: miibus0: probed
eth0: got preset MAC address: D0:FF:50:B2:4A:90
malloc space: 0x8e000000 -> 0x9dffffff (size 256 MiB)
Reset is caused by "Warm Reset".
envfs: wrong magic on /dev/env0
no valid environment found on /dev/env0. Using default environment
running /env/bin/init...
filetype: No such file or directory
UBI: attaching mtd0 to ubi0
UBI: scanning is finished
registering /dev/ubi0
registering kernel.0 as /dev/ubi0.kernel.0
registering kernel.1 as /dev/ubi0.kernel.1
registering initramfs.0 as /dev/ubi0.initramfs.0
registering initramfs.1 as /dev/ubi0.initramfs.1
registering kmod.0 as /dev/ubi0.kmod.0
registering kmod.1 as /dev/ubi0.kmod.1
registering rootfs.0 as /dev/ubi0.rootfs.0
registering rootfs.1 as /dev/ubi0.rootfs.1
registering opt as /dev/ubi0.opt
registering overlay as /dev/ubi0.overlay
UBI: attached mtd0 (name "nand0.UBI", size 255 MiB) to ubi0
UBI: PEB size: 131072 bytes (128 KiB), LEB size: 129024 bytes
UBI: min./max. I/O unit sizes: 2048/2048, sub-page size 512
UBI: VID header offset: 512 (aligned 512), data offset: 2048
UBI: good PEBs: 2040, bad PEBs: 0, corrupted PEBs: 0
UBI: user volume: 10, internal volumes: 1, max. volumes count: 128
UBI: max/mean erase counter: 25/21, WL threshold: 4096, image sequence number: 7535
UBI: available PEBs: 0, total reserved PEBs: 2040, PEBs reserved for bad PEB handling: 40

Hit m for menu or any other key to stop autoboot: 1

type exit to get to the menu
barebox@plum-ma[512MiB]:/
```

プロンプトで“boot”と入力することで、起動処理が行われます。
タイムアウト待ち中に何も入力しない場合も、同様に起動処理が行われます。

```
/dev/ttyUSB2 - PuTTY
UBI: attached mtd0 (name "nand0.UBI", size 255 MiB) to ubi0
UBI: PEB size: 131072 bytes (128 KiB), LEB size: 129024 bytes
UBI: min./max. I/O unit sizes: 2048/2048, sub-page size 512
UBI: VID header offset: 512 (aligned 512), data offset: 2048
UBI: good PEBs: 2040, bad PEBs: 0, corrupted PEBs: 0
UBI: user volume: 10, internal volumes: 1, max. volumes count: 128
UBI: max/mean erase counter: 25/21, WL threshold: 4096, image sequence number: 7535
UBI: available PEBs: 0, total reserved PEBs: 2040, PEBs reserved for bad PEB handling: 40

Hit m for menu or any other key to stop autoboot: 1
booting nand
firm_kind0:      1
firm_area0:      0
dipsw:          0
overlay:         tmpfs
overlay_driver:  aufs
[5] boot with latest firmware succeeded.
bootm.image:      /dev/ubi0.kernel.0
bootm.offtree:    /dev/spi.dtb.0
bootm.initrd:     /dev/ubi0.initramfs.0
bootargs.dyn.root: root=AREA=0
bootargs.dyn.watchdog: omap_wdt.start_at_boot=1 omap_wdt.timer_margin=180
bootargs.dyn.console: console=tty00,115200
bootargs.dyn.cleanboot
bootargs.dyn.overlay overlay=tmpfs
bootargs.dyn.overlay_driver overlay_driver=aufs
boot_info:        0x10
  Image Name:   Linux-3.14.0-rc6+
  Created:      2014-03-11  6:09:59 UTC
  OS:           Linux
  Architecture: ARM
  Type:         Kernel Image
  Compression:  uncompressed
  Data Size:    3438472 Bytes = 3.3 MiB
  Load Address: 80008000
  Entry Point:  80008000

Loading OS U-Boot uImage '/dev/ubi0.kernel.0'
Loading devicetree from '/dev/spi.dtb.0'
plum_of_fixup: eXternal I/O board's ID is 0x03, fixup device-tree...
commandline: ubi.mtd=0 mtdoops.mtddev=00PS mtdoops.record_size=8192 zswap.enabled=1 root=AREA=0 omap_wdt.start_at_boot=
1 omap_wdt.timer_margin=180 console=tty00,115200 overlay=tmpfs overlay_driver=aufs
booting kernel with devicetree
[ 0.000000] Booting Linux on physical CPU 0x0
[ 0.000000] Initializing cgroup subsys cpuset
[ 0.000000] Initializing cgroup subsys cpu
[ 0.000000] Initializing cgroup subsys cpuacct
[ 0.000000] Linux version 3.14.0-rc6+ (kikuchi@octopus) (gcc version 4.8.2 (Gentoo 4.8.2 p1,3r1, pie-0.5,8r1) ) #58 P
REEMPT Tue Mar 11 15:09:36 JST 2014
[ 0.000000] CPU: ARMv7 Processor [413fc082] revision 2 (ARMv7), cr=10c5387d
```

Linuxのプロンプトまで表示されました。

```
/dev/ttyUSB2 - PuTTY
[ 4.490575] Detected MACID = 00:80:6d:8d:30:16
[ 4.496270] cpsw: Detected MACID = 00:80:6d:8d:30:17
[ 4.502631] rtc-ds1307 0-0068: setting system clock to 2014-03-12 06:02:52 UTC (1394604172)
[ 4.513957] ALSA device list:
[ 4.517131] No soundcards found.
[ 4.521536] Freeing unused kernel memory: 252K (c08db000 - c091a000)
Loading, please wait...
[ 4.613068] systemd-udevd[119]: starting version 204
Begin: Loading essential drivers ... done.
Begin: Running /scripts/init-premount ... done.
Begin: Mounting root file system ... Begin: Running /scripts/local-top ... done.
Begin: Running /scripts/local-premount ... done.
Begin: Running /scripts/local-bottom ... done.
done.
Begin: Running /scripts/init-bottom ...
root-overlay: Setting up aufs on /root as root file system

[ 37.731400] aufs test_add:280;busybox[173]: uid/gid/perm /ro 0/0/0755, 0/0/01777
0
0
0
[ 37.788290] UBIFS: background thread "ubifs_bgt0_9" started, PID 188
[ 37.849829] UBIFS: mounted UBI device 0, volume 9, name "overlay"
[ 37.856244] UBIFS: LEB size: 129024 bytes (126 KiB), min./max. I/O unit sizes: 2048 bytes/2048 bytes
[ 37.865786] UBIFS: FS size: 44642304 bytes (42 MiB, 346 LEBs), journal size 2193408 bytes (2 MiB, 17 LEBs)
[ 37.875865] UBIFS: reserved for root: 2108566 bytes (2059 KiB)
[ 37.881964] UBIFS: media format: w4/r0 (latest is w4/r0), UUID A7F105EF-58A5-4047-A820-C5D29FE35E38, small LPT model
extracting overlays_log.tar.xz to /overlay ... succeeded.
extracting overlays_home.tar.xz to /overlay ... succeeded.
extracting overlays_etc.tar.xz to /overlay ... succeeded.
done.
[ 39.676348] random: nonblocking pool is initialized
[ 42.494168] init: ureadahead main process (226) terminated with status 5
[ 44.122226] init: mounted-proc main process (236) terminated with status 1
[ 51.543733] UBI error: ubi_open_volume: cannot open device 0, volume 9, error -16
* Initializing random number generator... [ OK ]
* Loading cpufreq kernel modules... [ OK ]
* Starting DNS forwarder and DHCP server dnsmasq [ OK ]
* Starting virtual private network daemon(s)... * CPUFreq Utilities: Setting ondemand C
PUFreq governor... * CPU0...
* Starting FastCGI wrapper fcgiwrap [ Fail ]
* Starting nginx nginx [ OK ]
* Starting PCSC Lite resource manager pcscd [ OK ]
* Starting NTP server ntpd [ OK ]
* Restoring resolver state... [ OK ]
* Running local boot scripts (/etc/rc.local) [ OK ]

Ubuntu 13.10 plum tty00
plum login: █
```

MA-E3xxへのログイン

標準で、下記の2アカウントが登録済みとなっています。

アカウント	パスワード	備考
user1	user1	一般ユーザ
root	root	管理者

“root” でログインした場合の例です。

```
/dev/ttyUSB2 - PuTTY
Ubuntu 13.10 plum tty00
plum login: root
Password:
Last login: Wed Mar 12 15:02:22 JST 2014 on tty00
root@plum:~# df
Filesystem      1K-blocks    Used Available Use% Mounted on
rootfs           253828      120    253708   1% /
udev             244440         4    244436   1% /dev
tmpfs            50768      236     50532   1% /run
/dev/mtdblock8   55296    55296         0 100% /ro
overlay-tmpfs    253828    22932    230896  10% /rw,tmpfs
overlay-persist  253828      120    253708   1% /rw
/dev/loop0       1024      1024         0 100% /ro/lib/modules
/dev/loop1       21504    21504         0 100% /ro/usr/lib/jvm
overlay          253828      120    253708   1% /
overlay.log      253828    22932    230896  10% /var/log
overlay.kmod     253828      120    253708   1% /lib/modules
overlay.jvm      253828      120    253708   1% /usr/lib/jvm
ubi0:overlay     40292     116     38120   1% /rw,tmpfs/.overlay
none              4          0         4   0% /sys/fs/cgroup
none             5120         0     5120   0% /run/lock
none            253828         0    253828   0% /run/shm
none            102400         0    102400   0% /run/user
root@plum:~# cat /proc/mounts
rootfs / rootfs rw 0 0
sysfs /sys sysfs rw,nosuid,nodev,noexec,relatime 0 0
proc /proc proc rw,nosuid,nodev,noexec,relatime 0 0
udev /dev devtmpfs rw,relatime,size=244440k,nr_inodes=61110,mode=755 0 0
devpts /dev/pts devpts rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=000 0 0
tmpfs /run tmpfs rw,nosuid,noexec,relatime,size=50768k,mode=755 0 0
/dev/mtdblock8 /ro squashfs ro,relatime 0 0
overlay-tmpfs /rw,tmpfs tmpfs rw,relatime 0 0
overlay-persist /rw tmpfs rw,relatime 0 0
/dev/loop0 /ro/lib/modules squashfs ro,relatime 0 0
/dev/loop1 /ro/usr/lib/jvm squashfs ro,relatime 0 0
overlay / aufs rw,relatime,si=4eeb5a4c 0 0
overlay.log /var/log aufs rw,relatime,si=4eeb564c 0 0
overlay.kmod /lib/modules aufs rw,relatime,si=4eeb524c 0 0
overlay.jvm /usr/lib/jvm aufs rw,relatime,si=4eeb4e4c 0 0
ubi0:overlay /rw,tmpfs/.overlay ubifs rw,relatime 0 0
none /proc/sys/fs/binfmt_misc binfmt_misc rw,nosuid,nodev,noexec,relatime 0 0
none /sys/fs/cgroup tmpfs rw,relatime,size=4k,mode=755 0 0
none /sys/fs/fuse/connections fusectl rw,relatime 0 0
none /sys/kernel/debug debugfs rw,relatime 0 0
none /run/lock tmpfs rw,nosuid,nodev,noexec,relatime,size=5120k 0 0
none /run/shm tmpfs rw,nosuid,nodev,relatime 0 0
none /run/user tmpfs rw,nosuid,nodev,noexec,relatime,size=102400k,mode=755 0 0
rpc_pipefs /run/rpc_pipefs rpc_pipefs rw,relatime 0 0
root@plum:~#
```

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