

Building for i.MX Mature Boards

1. Introduction

The software for mature i.MX boards is upstreamed into the Linux Kernel and U-Boot communities. These boards can use the current Linux Kernel and U-Boot community solution. NXP no longer provides code and images for these boards directly. This document describes how to build the current Linux kernel and U-Boot software using the community solution for mature boards.

The i.MX Board Support Packages (BSP) Releases are only supported for one year after the release date, so developing mature SoC projects using community solutions provides more current software and longer life for software than using the static BSPs provided by NXP.

Community software includes upstreamed patches that the i.MX development team has provided to the community after the BSPs were released. Peripherals on i.MX mature boards such as the VPU and GPU, which depend on proprietary software, might be limited to an earlier version of the i.MX BSP. Supported i.MX reference boards should use the latest released i.MX BSPs on i.MX Software and Tools. Community solutions are not formally validated for i.MX.

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2. Mature SoC Software Status

The following i.MX mature SoC boards are from the i.MX 2X, 3X, and 5X families.

- i.MX 2X
 - i.MX 23 and i.MX 28 have current support in meta-freescale for the Yocto Project.
 - i.MX 25 and i.MX 27 are provided in the current kernel and U-Boot only.
- i.MX 3X
 - i.MX 31 and i.MX 35 are with the Yocto Project in fido meta-fsl-arm Yocto Project.
 - i.MX 31 and i.MX 35 have support in the current Kernel and U-Boot.
- i.MX 5X
 - i.MX 51 and i.MX 53 are supported without graphics and VPU software in the latest Yocto Project.
 - i.MX 50 is only supported in the Kernel and U-Boot.

3. Further Assistance

Questions can be posted on the i.MX Community or Yocto Project mailing list.

Contact [NXP Professional Services](#) team for additional support.

4. Boards Supported by the Yocto Project Community

The Community Yocto Project supports the following i.MX mature machine configurations

- imx23evk
- imx25pdk
- imx27pdk
- imx28evk
- imx31pdk
- imx35pdk
- imx51bbg
- imx53qsb

4.1. Build environment setup

For the mature reference boards listed above, follow the steps below to set up the build environment.

```
$ mkdir ~/bin
$ curl http://commondatastorage.googleapis.com/git-repo-downloads/repo > ~/bin/repo
$ chmod a+x ~/bin/repo
$ PATH=${PATH}:~/bin
$ mkdir fsl-community-bsp
$ cd fsl-community-bsp
$ repo init -u https://github.com/Freescale/fsl-community-bsp-platform -b morty
$ repo sync
$ source setup-environment build
$ MACHINE=<machine-name> DISTRO=fslc-framebuffer source setup-environment build
```

4.2. Examples

The following examples show how to build and boot, generating log outputs, for i.MX 28 EVK, i.MX 23 EVK, and i.MX 53 QSB. For other boards, the same instructions can be used as shown above. Exchanging the machine name and the image output name are as shown in the examples below.

4.2.1. i.MX 28 EVK

The following include build setup and flash instructions for the i.MX 28 EVK core-image-base image.

```
$ MACHINE="imx28evk" bitbake core-image-base
$ gunzip -f tmp/deploy/images/imx28evk/core-image-base-imx28evk-(date).rootfs.sdcard.gz
$ sudo dd if=tmp/deploy/images/imx28evk/core-image-base-imx28evk-(date).rootfs.sdcard
of=/dev/sd()
```

The following is the console output after successfully booting an i.MX 28 EVK.

```
U-Boot 2017.03+fslc+gac3b20c (May 15 2017 - 13:09:22 -0300)
CPU: Freescale i.MX28 rev1.2 at 454 MHz
BOOT: SSP SD/MMC #0, 3V3
SPI: ready
DRAM: 128 MiB
No arch specific invalidate_icache_all available!
NAND: 0 MiB
MMC: MXS MMC: 0
*** Warning - bad CRC, using default environment
Video: MXSFB: 'videomode' variable not set!
In: serial
Out: serial
Err: serial
```

Boards Supported by the Yocto Project Community

```
Net: FEC0 [PRIME], FEC1
Hit any key to stop autoboot: 0
switch to partitions #0, OK
mmc0 is current device
reading boot.scr
** Unable to read file boot.scr **
reading zImage
4183816 bytes read in 1417 ms (2.8 MiB/s)
Booting from mmc ...
reading imx28-evk.dtb
22685 bytes read in 32 ms (691.4 KiB/s)
Kernel image @ 0x42000000 [ 0x000000 - 0x3fd708 ]
## Flattened Device Tree blob at 41000000
Booting using the fdt blob at 0x41000000
Loading Device Tree to 47b0c000, end 47b1489c ... OK
Starting kernel ...
[ 0.000000] Booting Linux on physical CPU 0x0
[ 0.000000] Linux version 4.9.21-fslc+gb69ecd6 (@b19406-2) (gcc version 6.3.0 (GCC)
) #1 Mon May 15 13:13:27 BRT 2017
[ 0.000000] CPU: ARM926EJ-S [41069265] revision 5 (ARMv5TEJ), cr=0005317f
[ 0.000000] CPU: VIVT data cache, VIVT instruction cache
[ 0.000000] OF: fdt:Machine model: Freescale i.MX28 Evaluation Kit
[ 0.000000] Memory policy: Data cache writeback
[ 0.000000] Built 1 zonelists in Zone order, mobility grouping on. Total pages: 32512
[ 0.000000] Kernel command line: console=ttyAMA0,115200 root=/dev/mmcblk0p3 rw rootwait
[ 0.000000] PID hash table entries: 512 (order: -1, 2048 bytes)
[ 0.000000] Dentry cache hash table entries: 16384 (order: 4, 65536 bytes)
[ 0.000000] Inode-cache hash table entries: 8192 (order: 3, 32768 bytes)
[ 0.000000] Memory: 113252K/131072K available (5554K kernel code, 487K rwddata,
2000K rodata, 280K init, 8032K bss, 17820K reserved, 0K cma-reserved)
[ 0.000000] Virtual kernel memory layout:
[ 0.000000] vector : 0xffff0000 - 0xffff1000 ( 4 kB)
[ 0.000000] fixmap : 0xffc00000 - 0xfff00000 (3072 kB)
[ 0.000000] vmalloc : 0xc8800000 - 0xff800000 ( 880 MB)
[ 0.000000] lowmem : 0xc0000000 - 0xc8000000 ( 128 MB)
[ 0.000000] modules : 0xbf000000 - 0xc0000000 ( 16 MB)
[ 0.000000] .text : 0xc0008000 - 0xc0574cc0 (5556 kB)
[ 0.000000] .init : 0xc0790000 - 0xc07d6000 ( 280 kB)
[ 0.000000] .data : 0xc07d6000 - 0xc084ff80 ( 488 kB)
[ 0.000000] .bss : 0xc084ff80 - 0xc10281f0 (8033 kB)
```

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```
[ 0.000000] SLUB: HWalign=32, Order=0-3, MinObjects=0, CPUs=1, Nodes=1
[ 0.000000] Running RCU self tests
[ 0.000000] NR_IRQS:16 nr_irqs:16 16
[ 0.000000] clocksource: mxs_timer: mask: 0xffffffff max_cycles: 0xffffffff, max_idle_ns:
79635851949 ns
[ 0.000033] sched_clock: 32 bits at 24MHz, resolution 41ns, wraps every 89478484971ns
[ 0.002026] Console: colour dummy device 80x30
[ 0.002200] Lock dependency validator: Copyright (c) 2006 Red Hat, Inc., Ingo Molnar
[ 0.002238] ... MAX_LOCKDEP_SUBCLASSES: 8
[ 0.002262] ... MAX_LOCK_DEPTH: 485
[ 0.002286] ... MAX_LOCKDEP_KEYS: 8191
[ 0.002310] ... CLASSHASH_SIZE: 4096
[ 0.002332] ... MAX_LOCKDEP_ENTRIES: 32768
[ 0.002355] ... MAX_LOCKDEP_CHAINS: 65536
[ 0.002377] ... CHAINHASH_SIZE: 32768
[ 0.002399] memory used by lock dependency info: 5167 kB
[ 0.002423] per task-struct memory footprint: 1536 bytes
[ 0.002592] Calibrating delay loop... 226.09 BogoMIPS (lpj=1130496)
[ 0.071284] pid_max: default: 32768 minimum: 301
[ 0.072124] Mount-cache hash table entries: 1024 (order: 0, 4096 bytes)
[ 0.072184] Mountpoint-cache hash table entries: 1024 (order: 0, 4096 bytes)
[ 0.080102] CPU: Testing write buffer coherency: ok
[ 0.084152] Setting up static identity map for 0x40008400 - 0x40008458
[ 0.101386] devtmpfs: initialized
[ 0.190528] clocksource: jiffies: mask: 0xffffffff max_cycles: 0xffffffff,max_idle_ns:
19112604462750000 ns
[ 0.190742] futex hash table entries: 256 (order: 1, 11264 bytes)
[ 0.191908] pinctrl core: initialized pinctrl subsystem
[ 0.206107] NET: Registered protocol family 16
[ 0.208672] DMA: preallocated 256 KiB pool for atomic coherent allocations
[ 0.460437] Serial: AMBA PL011 UART driver
[ 0.463943] 80074000.serial: ttyAMA0 at MMIO 0x80074000 (irq = 236, base_baud = 0) is a PL011
rev2
[ 0.779127] console [ttyAMA0] enabled
[ 0.879699] mxs-dma 80004000.dma-apbh: initialized
[ 0.902203] mxs-dma 80024000.dma-apbx: initialized
[ 0.929623] SCSI subsystem initialized
[ 0.936802] usbcore: registered new interface driver usbfs
[ 0.943141] usbcore: registered new interface driver hub
[ 0.949212] usbcore: registered new device driver usb
[ 0.965080] pps_core: LinuxPPS API ver. 1 registered
```

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```
[ 0.970101] pps_core: Software ver. 5.3.6 - Copyright 2005-2007 Rodolfo Giometti
<giometti@linux.it>
[ 0.979581] PTP clock support registered
[ 0.986831] Advanced Linux Sound Architecture Driver Initialized.
[ 1.003531] clocksource: Switched to clocksource mxs_timer
[ 1.469818] NET: Registered protocol family 2
[ 1.479707] TCP established hash table entries: 1024 (order: 0, 4096 bytes)
[ 1.488454] TCP bind hash table entries: 1024 (order: 3, 36864 bytes)
[ 1.495968] TCP: Hash tables configured (established 1024 bind 1024)
[ 1.502914] UDP hash table entries: 256 (order: 2, 20480 bytes)
[ 1.509526] UDP-Lite hash table entries: 256 (order: 2, 20480 bytes)
[ 1.518450] NET: Registered protocol family 1
[ 1.527669] RPC: Registered named UNIX socket transport module.
[ 1.533813] RPC: Registered udp transport module.
[ 1.538575] RPC: Registered tcp transport module.
[ 1.543313] RPC: Registered tcp NFSv4.1 backchannel transport module.
[ 1.567028] workingset: timestamp_bits=30 max_order=15 bucket_order=0
[ 1.707050] NFS: Registering the id_resolver key type
[ 1.713170] Key type id_resolver registered
[ 1.717571] Key type id_legacy registered
[ 1.722153] jffs2: version 2.2. (NAND) © 2001-2006 Red Hat, Inc.
[ 1.749520] Block layer SCSI generic (bsg) driver version 0.4 loaded (major 248)
[ 1.757406] io scheduler noop registered (default)
[ 1.770300] backlight supply power not found, using dummy regulator
[ 1.828174] Console: switching to colour frame buffer device 100x30
[ 1.854967] mxsfb 80030000.lcdif: initialized
[ 1.866540] 8006a000.serial: ttyAPP0 at MMIO 0x8006a000 (irq = 234, base_baud =1500000) is a
8006a000.serial
[ 1.879843] mxs-auart 8006a000.serial: Found APPUART 3.1.0
[ 1.887270] 80070000.serial: ttyAPP3 at MMIO 0x80070000 (irq = 235, base_baud =1500000) is a
80070000.serial
[ 1.900487] mxs-auart 80070000.serial: Found APPUART 3.1.0
[ 1.908240] mxs-i2c 80058000.i2c: PIO: Failed to finish WRITE cmd!
[ 1.916734] mxs-i2c 80058000.i2c: PIO: Failed to finish WRITE cmd!
[ 1.924855] mxs-i2c 80058000.i2c: PIO: Failed to finish WRITE cmd!
[ 1.932935] mxs-i2c 80058000.i2c: PIO: Failed to finish WRITE cmd!
[ 1.951807] nand: No NAND device found
[ 1.986516] m25p80 spi1.0: unrecognized JEDEC id bytes: ff, ff, ff
[ 1.997381] libphy: Fixed MDIO Bus: probed
[ 2.158618] random: fast init done
[ 2.166090] libphy: fec_enet_mii_bus: probed
```

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```
[ 2.179401] 800f4000.ethernet supply phy not found, using dummy regulator
[ 2.195850] usbcore: registered new interface driver asix
[ 2.201803] usbcore: registered new interface driver ax88179_178a
[ 2.208594] usbcore: registered new interface driver cdc_ether
[ 2.215644] usbcore: registered new interface driver smsc95xx
[ 2.221924] usbcore: registered new interface driver net1080
[ 2.228270] usbcore: registered new interface driver cdc_subset
[ 2.234874] usbcore: registered new interface driver zaurus
[ 2.241210] usbcore: registered new interface driver cdc_ncm
[ 2.247051] ehci_hcd: USB 2.0 'Enhanced' Host Controller (EHCI) Driver
[ 2.254446] usbcore: registered new interface driver usb-storage
[ 2.293762] ci_hdrc ci_hdrc.1: EHCI Host Controller
[ 2.299809] ci_hdrc ci_hdrc.1: new USB bus registered, assigned bus number 1
[ 2.333889] ci_hdrc ci_hdrc.1: USB 2.0 started, EHCI 1.00
[ 2.357186] hub 1-0:1.0: USB hub found
[ 2.361717] hub 1-0:1.0: 1 port detected
[ 2.383336] mousedev: PS/2 mouse device common for all mice
[ 2.395562] stmp3xxx-rtc 80056000.rtc: rtc core: registered 80056000.rtc as rtc0
[ 2.405190] i2c /dev entries driver
[ 2.423014] stmp3xxx_rtc_wdt stmp3xxx_rtc_wdt: initialized watchdog with heartbeat 19s
[ 2.438153] mxs-mmc 80010000.ssp: Got WP GPIO
[ 2.504152] mxs-mmc 80010000.ssp: initialized
[ 2.531911] mxs-dcp 80028000.dcp: Failed to register sha1 hash!
[ 2.540517] mxs-dcp: probe of 80028000.dcp failed with error -22
[ 2.553963] usbcore: registered new interface driver usbhid
[ 2.559587] usbhid: USB HID core driver
[ 2.577165] input: mxs-lradc as
/devices/soc0/80000000.apb/80040000.apbx/80050000.lradc/input/input0
[ 2.607564] mmc0: new SDHC card at address 88f7
[ 2.637904] mmcblk0: mmc0:88f7 SD04G 3.69 GiB
[ 2.647588] sgtl5000 0-000a: Failed to get mclock: -517
[ 2.679010] mmcblk0: p1 p2 p3
[ 2.686327] mxs-sgtl5000 sound: ASoC: CODEC DAI sgtl5000 not registered
[ 2.693054] mxs-sgtl5000 sound: snd_soc_register_card failed (-517)
[ 2.715093] NET: Registered protocol family 17
[ 2.720908] Key type dns_resolver registered
[ 2.734392] registered taskstats version 1
[ 2.798493] sgtl5000 0-000a: sgtl5000 revision 0x11
[ 2.805554] sgtl5000 0-000a: Using internal LDO instead of VDDD: check ER1
[ 2.850310] mxs-sgtl5000 sound: sgtl5000 <-> 80042000.saif mapping ok
```

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```
[ 2.859899] mxs-sgtl5000 sound: sgtl5000 <-> 80046000.saif mapping ok
[ 2.888297] stmp3xxx-rtc 80056000.rtc: setting system clock to 1970-01-01 00:00:07 UTC (7)
[ 2.898090] usb0_vbus: disabling
[ 2.901423] can-3v3: disabling
[ 2.904684] ALSA device list:
[ 2.907701] #0: mxs_sgtl5000
[ 2.916166] uart-pl011 80074000.serial: no DMA platform data
[ 2.929554] EXT4-fs (mmcblk0p3): couldn't mount as ext3 due to feature incompatibilities
[ 2.943041] EXT4-fs (mmcblk0p3): couldn't mount as ext2 due to feature incompatibilities
[ 3.122967] EXT4-fs (mmcblk0p3): mounted filesystem with ordered data mode. Opts: (null)
[ 3.131706] VFS: Mounted root (ext4 filesystem) on device 179:3.
[ 3.156369] devtmpfs: mounted
[ 3.161772] Freeing unused kernel memory: 280K (c0790000 - c07d6000)
[ 3.168327] This architecture does not have kernel memory protection.
INIT: version 2.88 booting
Starting udev
[ 4.822919] udevd[72]: starting version 3.2.1
[ 5.068810] udevd[73]: starting eudev-3.2.1
[ 6.768795] CAN device driver interface
[ 6.922005] flexcan 80032000.can: device registered (reg_base=c8c2e000, irq=212)
[ 7.116802] flexcan 80034000.can: device registered (reg_base=c8c38000, irq=213)
[ 9.276689] EXT4-fs (mmcblk0p3): re-mounted. Opts: data=ordered
Populating dev cache
ALSA: Restoring mixer settings...
No state is present for card mxssgtl5000
Found hardware: "mxs_sgtl5000" "" "" "" ""
Hardware is initialized using a generic method
No state is present for card mxssgtl5000
Mon May 15 16:15:34 UTC 2017
INIT: Entering runlevel: 5
Configuring network interfaces... [ 16.725131] SMSC LAN8710/LAN8720
800f0000.etherne:00: attached PHY driver [SMSC LAN8710/LAN8720]
(mii_bus:phy_addr=800f0000.etherne)
udhcpc (v1.24.1) started
Sending discover...
Sending discover...
Sending discover...
No lease, forking to background
done.
Starting system message bus: dbus.
```



```
Starting rpcbind daemon...done.
Starting bluetooth
bluetoothd
Starting syslogd/klogd: done
* Starting Avahi mDNS/DNS-SD Daemon: avahi-daemon
...done.
Starting Telephony daemon
Starting Linux NFC daemon
FSLC FrameBuffer 2.3 imx28evk /dev/ttyAMA0
imx28evk login:
```

4.2.2. i.MX 23 EVK

The following section provides build setup and flash instructions for the imx23evk core-image-base image.

```
$ MACHINE="imx23evk" bitbake core-image-base
$ gunzip -f tmp/deploy/images/imx23evk/core-image-base-imx23evk-(date).rootfs.sdcard.gz
$ sudo dd if=tmp/deploy/images/imx23evk/core-image-base-imx23evk-(date).rootfs.sdcard
of=/dev/sd()
```

LCD works out of box.

This section contains the console output after booting the i.MX 23 EVK.

```
U-Boot 2017.03+fslc+gac3b20c (May 15 2017 - 12:25:56 -0300)
CPU: Freescale i.MX23 rev1.3 at 454 MHz
BOOT: SSP SD/MMC #0
DRAM: 128 MiB
No arch specific invalidate_icache_all available!
MMC: MXS MMC: 0
*** Warning - bad CRC, using default environment
Video: MXSFB: 'videomode' variable not set!
In: serial
Out: serial
Err: serial
Hit any key to stop autoboot: 0
switch to partitions #0, OK
mmc0 is current device
reading boot.scr
** Unable to read file boot.scr **
reading zImage
```

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```
4183824 bytes read in 1243 ms (3.2 MiB/s)
Booting from mmc ...
reading imx23-evk.dtb
11178 bytes read in 27 ms (404.3 KiB/s)
Kernel image @ 0x42000000 [ 0x000000 - 0x3fd710 ]
## Flattened Device Tree blob at 41000000
Booting using the fdt blob at 0x41000000
Loading Device Tree to 47b5e000, end 47b63ba9 ... OK
Starting kernel ...

[ 0.000000] Booting Linux on physical CPU 0x0
[ 0.000000] Linux version 4.9.21-fslc+gb69ecd6 (@b19406-2) (gcc version 6.3.0 (GCC)) #1 Mon
May 15 12:13:46 BRT 2017
[ 0.000000] CPU: ARM926EJ-S [41069265] revision 5 (ARMv5TEJ), cr=0005317f
[ 0.000000] CPU: VIVT data cache, VIVT instruction cache
[ 0.000000] OF: fdt:Machine model: Freescale i.MX23 Evaluation Kit
[ 0.000000] Memory policy: Data cache writeback
[ 0.000000] Built 1 zonelists in Zone order, mobility grouping on. Total pages: 32512
[ 0.000000] Kernel command line: console=ttyAMA0,115200 root=/dev/mmcblk0p3 rw rootwait
[ 0.000000] PID hash table entries: 512 (order: -1, 2048 bytes)
[ 0.000000] Dentry cache hash table entries: 16384 (order: 4, 65536 bytes)
[ 0.000000] Inode-cache hash table entries: 8192 (order: 3, 32768 bytes)
[ 0.000000] Memory: 113308K/131072K available (5554K kernel code, 487K rwddata,
2000K rodata, 280K init, 8032K bss, 17764K reserved, 0K cma-reserved)
[ 0.000000] Virtual kernel memory layout:
[ 0.000000] vector : 0xffff0000 - 0xffff1000 ( 4 kB)
[ 0.000000] fixmap : 0xffc00000 - 0xffff0000 (3072 kB)
[ 0.000000] vmalloc : 0xc8800000 - 0xff800000 ( 880 MB)
[ 0.000000] lowmem : 0xc0000000 - 0xc8000000 ( 128 MB)
[ 0.000000] modules : 0xbf000000 - 0xc0000000 ( 16 MB)
[ 0.000000] .text : 0xc0008000 - 0xc0574cc0 (5556 kB)
[ 0.000000] .init : 0xc0790000 - 0xc07d6000 ( 280 kB)
[ 0.000000] .data : 0xc07d6000 - 0xc084ff80 ( 488 kB)
[ 0.000000] .bss : 0xc084ff80 - 0xc10281f0 (8033 kB)
[ 0.000000] SLUB: HWalign=32, Order=0-3, MinObjects=0, CPUs=1, Nodes=1
[ 0.000000] Running RCU self tests
[ 0.000000] NR_IRQS:16 nr_irqs:16 16
[ 0.000000] clocksource: mxs_timer: mask: 0xffff max_cycles: 0xffff, max_idle_ns: 911346093
ns
[ 0.000000] sched_clock: 32 bits at 100 Hz, resolution 10000000ns, wraps every
21474836475000000ns
[ 0.000000] Console: colour dummy device 80x30
```

```

[ 0.000000] Lock dependency validator: Copyright (c) 2006 Red Hat, Inc., Ingo Molnar
[ 0.000000] ... MAX_LOCKDEP_SUBCLASSES: 8
[ 0.000000] ... MAX_LOCK_DEPTH: 48
[ 0.000000] ... MAX_LOCKDEP_KEYS: 8191
[ 0.000000] ... CLASSHASH_SIZE: 4096
[ 0.000000] ... MAX_LOCKDEP_ENTRIES: 32768
[ 0.000000] ... MAX_LOCKDEP_CHAINS: 65536
[ 0.000000] ... CHAINHASH_SIZE: 32768
[ 0.000000] memory used by lock dependency info: 5167 kB
[ 0.000000] per task-struct memory footprint: 1536 bytes
[ 0.070000] Calibrating delay loop... 226.09 BogoMIPS (lpj=1130496)
[ 0.070000] pid_max: default: 32768 minimum: 301
[ 0.070000] Mount-cache hash table entries: 1024 (order: 0, 4096 bytes)
[ 0.070000] Mountpoint-cache hash table entries: 1024 (order: 0, 4096 bytes)
[ 0.080000] CPU: Testing write buffer coherency: ok
[ 0.080000] Setting up static identity map for 0x40008400 -0x40008458
[ 0.100000] devtmpfs: initialized
[ 0.150000] clocksource: jiffies: mask: 0xffffffff max_cycles: 0xffffffff,max_idle_ns:
19112604462750000 ns
[ 0.150000] futex hash table entries: 256 (order: 1, 11264 bytes)
[ 0.150000] pinctrl core: initialized pinctrl subsystem
[ 0.170000] NET: Registered protocol family 16
[ 0.170000] DMA: preallocated 256 KiB pool for atomic coherent allocations
[ 0.350000] Serial: AMBA PL011 UART driver
[ 0.350000] 80070000.serial: ttyAMA0 at MMIO 0x80070000 (irq = 17, base_baud = 0) is a PL011
rev2
[ 0.560000] console [ttyAMA0] enabled
[ 0.670000] mxs-dma 80004000.dma-apbh: initialized
[ 0.700000] mxs-dma 80024000.dma-apbx: initialized
[ 0.710000] SCSI subsystem initialized
[ 0.720000] usbcore: registered new interface driver usbfs
[ 0.720000] usbcore: registered new interface driver hub
[ 0.730000] usbcore: registered new device driver usb
[ 0.730000] pps_core: LinuxPPS API ver. 1 registered
[ 0.740000] pps_core: Software ver. 5.3.6 - Copyright 2005-2007 Rodolfo Giometti
<giometti@linux.it>
[ 0.740000] PTP clock support registered
[ 0.750000] Advanced Linux Sound Architecture Driver Initialized.
[ 0.770000] clocksource: Switched to clocksource mxs_timer
[ 1.290000] NET: Registered protocol family 2
[ 1.300000] TCP established hash table entries: 1024 (order: 0, 4096 bytes)

```

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```
[ 1.310000] TCP bind hash table entries: 1024 (order: 3, 36864 bytes)
[ 1.320000] TCP: Hash tables configured (established 1024 bind 1024)
[ 1.330000] UDP hash table entries: 256 (order: 2, 20480 bytes)
[ 1.330000] UDP-Lite hash table entries: 256 (order: 2, 20480 bytes)
[ 1.340000] NET: Registered protocol family 1
[ 1.350000] RPC: Registered named UNIX socket transport module.
[ 1.360000] RPC: Registered udp transport module.
[ 1.360000] RPC: Registered tcp transport module.
[ 1.370000] RPC: Registered tcp NFSv4.1 backchannel transport module.
[ 1.390000] workingset: timestamp_bits=30 max_order=15 bucket_order=0
[ 1.550000] NFS: Registering the id_resolver key type
[ 1.560000] Key type id_resolver registered
[ 1.570000] Key type id_legacy registered
[ 1.570000] jffs2: version 2.2. (NAND) c 2001-2006 Red Hat, Inc.
[ 1.600000] Block layer SCSI generic (bsg) driver version 0.4 loaded (major 248)
[ 1.610000] io scheduler noop registered (default)
[ 1.620000] backlight supply power not found, using dummy regulator
[ 1.670000] Console: switching to colour frame buffer device 60x17
[ 1.690000] mxsfb 80030000.lcdif: initialized
[ 1.700000] 8006c000.serial: ttyAPP0 at MMIO 0x8006c000 (irq = 148, base_baud =1500000) is a
8006c000.serial
[ 1.710000] mxs-auart 8006c000.serial: Found APPUART 3.0.0
[ 1.730000] nand: device found, Manufacturer ID: 0xec, Chip ID: 0xd7
[ 1.740000] nand: Samsung NAND 4GiB 3,3V 8-bit
[ 1.740000] nand: 4096 MiB, MLC, erase size: 512 KiB, page size: 4096, OOB size: 218
[ 1.750000] Scanning device for bad blocks
[ 1.770000] random: fast init done
[ 3.190000] Bad eraseblock 1192 at 0x00002547f000
[ 4.340000] random: crng init done
[ 5.370000] Bad eraseblock 3012 at 0x00005e27f000
[ 6.790000] Bad eraseblock 4194 at 0x00008317f000
[ 7.010000] Bad eraseblock 4375 at 0x000088bff000
[ 9.150000] Bad eraseblock 6156 at 0x0000c067f000
[ 11.240000] Bad eraseblock 7899 at 0x0000f6dff000
[ 11.610000] gpmi-nand 8000c000.gpmi-nand: driver registered.
[ 11.620000] libphy: Fixed MDIO Bus: probed
[ 11.640000] usbcore: registered new interface driver asix
[ 11.640000] usbcore: registered new interface driver ax88179_178a
[ 11.650000] usbcore: registered new interface driver cdc_ether
[ 11.660000] usbcore: registered new interface driver smsc95xx
```

```
[ 11.660000] usbcore: registered new interface driver net1080
[ 11.670000] usbcore: registered new interface driver cdc_subset
[ 11.680000] usbcore: registered new interface driver zaurus
[ 11.680000] usbcore: registered new interface driver cdc_ncm
[ 11.690000] ehci_hcd: USB 2.0 'Enhanced' Host Controller (EHCI) Driver
[ 11.700000] usbcore: registered new interface driver usb-storage
[ 11.710000] 80080000.usb supply vbus not found, using dummy regulator
[ 11.740000] ci_hdrc ci_hdrc.0: EHCI Host Controller
[ 11.740000] ci_hdrc ci_hdrc.0: new USB bus registered, assigned bus number 1
[ 11.780000] ci_hdrc ci_hdrc.0: USB 2.0 started, EHCI 1.00
[ 11.800000] hub 1-0:1.0: USB hub found
[ 11.810000] hub 1-0:1.0: 1 port detected
[ 11.830000] mousedev: PS/2 mouse device common for all mice
[ 11.840000] stmp3xxx-rtc 8005c000.rtc: rtc core: registered 8005c000.rtc as rtc0
[ 11.850000] i2c /dev entries driver
[ 11.870000] stmp3xxx_rtc_wdt stmp3xxx_rtc_wdt: initialized watchdog with heartbeat 19s
[ 11.880000] mxs-mmc 80010000.ssp: Got WP GPIO
[ 11.950000] mxs-mmc 80010000.ssp: initialized
[ 11.960000] mxs-dcp 80028000.dcp: Failed to register sha1 hash!
[ 11.980000] mxs-dcp: probe of 80028000.dcp failed with error -22
[ 12.000000] usbcore: registered new interface driver usbhid
[ 12.000000] usbhid: USB HID core driver
[ 12.020000] input: mxs-lradc as
/devices/soc0/80000000.apb/80040000.apbx/80050000.lradc/input/input0
[ 12.060000] NET: Registered protocol family 17
[ 12.070000] Key type dns_resolver registered
[ 12.090000] registered taskstats version 1
[ 12.110000] mmc0: new high speed SDHC card at address e624
[ 12.130000] mmcblk0: mmc0:e624 SU08G 7.40 GiB
[ 12.170000] mmcblk0: p1 p2 p3
[ 12.200000] stmp3xxx-rtc 8005c000.rtc: setting system clock to 1970-01-01 00:00:16 UTC (16)
[ 12.210000] ALSA device list:
[ 12.210000] No soundcards found.
[ 12.220000] uart-pl011 80070000.serial: no DMA platform data
[ 12.240000] EXT4-fs (mmcblk0p3): couldn't mount as ext3 due to feature incompatibilities
[ 12.250000] EXT4-fs (mmcblk0p3): couldn't mount as ext2 due to feature incompatibilities
[ 12.350000] EXT4-fs (mmcblk0p3): mounted filesystem with ordered data mode. Opts: (null)
[ 12.360000] VFS: Mounted root (ext4 filesystem) on device 179:3.
[ 12.380000] devtmpfs: mounted
[ 12.390000] Freeing unused kernel memory: 280K (c0790000 - c07d6000)
```

```
[ 12.390000] This architecture does not have kernel memory protection.
INIT: version 2.88 booting
Starting udev
[ 13.870000] udevd[69]: starting version 3.2.1
[ 14.090000] udevd[70]: starting eudev-3.2.1
[ 18.630000] EXT4-fs (mmcblk0p3): re-mounted. Opts: data=ordered
Populating dev cache
Mon May 15 15:32:49 UTC 2017
INIT: Entering runlevel: 5
Configuring network interfaces... ifconfig: SIOCGIFFLAGS: No such device
Starting system message bus: dbus.
Starting rpcbind daemon...done.
Starting bluetooth
bluetoothd
Starting syslogd/klogd: done
* Starting Avahi mDNS/DNS-SD Daemon: avahi-daemon
...done.
Starting Telephony daemon
Starting Linux NFC daemon
FSLC FrameBuffer 2.3 imx23evk /dev/ttyAMA0
imx23evk login:
```

4.2.3. i.MX 53 QSB

This section provides build setup and flash instructions for the imx53qsb core-image-base image.

```
$ MACHINE="imx53evk" bitbake core-image-base
$ gunzip -f tmp/deploy/images/imx53qsb/core-image-base-imx53qsb-(date).rootfs.sdcard.gz
$ sudo dd if=tmp/deploy/images/imx53qsb/core-image-base-imx53qsb-(date).rootfs.sdcard
of=/dev/sd()
```

The VPU, GPU, and multimedia codecs are not supported for this image because they are proprietary software and are not enabled in the community version.

The following text is the console output after booting the i.MX 53 QSB.

```
U-Boot 2017.03+fslc+gac3b20c (May 15 2017 - 15:34:23 -0300)
Board: MX53 LOCO
I2C: ready
DRAM: 1 GiB
```

```

MMC: FSL_SDHC: 0, FSL_SDHC: 1
*** Warning - bad CRC, using default environment
In: serial
Out: serial
Err: serial
Net: FEC
Hit any key to stop autoboot: 0
switch to partitions #0, OK
mmc0 is current device
reading boot.scr
** Unable to read file boot.scr **
reading zImage
7725536 bytes read in 434 ms (17 MiB/s)
Booting from mmc ...
reading imx53-qsb.dtb
21656 bytes read in 17 ms (1.2 MiB/s)
Kernel image @ 0x72000000 [ 0x000000 - 0x75e1e0 ]
## Flattened Device Tree blob at 71000000
Booting using the fdt blob at 0x71000000
Loading Device Tree to 8f54b000, end 8f553497 ... OK
Starting kernel ...

[ 0.000000] Booting Linux on physical CPU 0x0
[ 0.000000] Linux version 4.9.21-fslc+gb69ecd6 (@b19406-2) (gcc version 6.3.0 (GCC)) #1 SMP
Mon May 15 15:06:27 BRT 2017
[ 0.000000] CPU: ARMv7 Processor [412fc085] revision 5 (ARMv7), cr=10c5387d
[ 0.000000] CPU: PIPT / VIPT nonaliasing data cache, VIPT aliasing instruction cache
[ 0.000000] OF: fdt:Machine model: Freescale i.MX53 Quick Start Board
[ 0.000000] cma: Reserved 16 MiB at 0xcf000000
[ 0.000000] Memory policy: Data cache writeback
[ 0.000000] CPU: All CPU(s) started in SVC mode.
[ 0.000000] percpu: Embedded 15 pages/cpu @dff6000 s30952 r8192 d22296 u61440
[ 0.000000] Built 1 zonelists in Zone order, mobility grouping on. Total pages: 261120
[ 0.000000] Kernel command line: console=ttyMXC0,115200 root=/dev/mmcblk0p2 rw rootwait
[ 0.000000] PID hash table entries: 2048 (order: 1, 8192 bytes)
[ 0.000000] Dentry cache hash table entries: 65536 (order: 6, 262144 bytes)
[ 0.000000] Inode-cache hash table entries: 32768 (order: 5, 131072 bytes)
[ 0.000000] Memory: 998996K/1048576K available (10240K kernel code, 797K rwddata,
3380K rodata, 1024K init, 8246K bss, 33196K reserved, 16384K cma-reserved, 507904K h)
[ 0.000000] Virtual kernel memory layout:
[ 0.000000] vector : 0xffff0000 - 0xffff1000 ( 4 kB)

```

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```
[ 0.000000] fixmap : 0xffc00000 - 0xffff00000 (3072 kB)
[ 0.000000] vmalloc : 0xe0800000 - 0xff800000 ( 496 MB)
[ 0.000000] lowmem : 0xc0000000 - 0xe0000000 ( 512 MB)
[ 0.000000] pkmap : 0xbfe00000 - 0xc0000000 ( 2 MB)
[ 0.000000] modules : 0xbf000000 - 0xbfe00000 ( 14 MB)
[ 0.000000] .text : 0xc0008000 - 0xc0b00000 (11232 kB)
[ 0.000000] .init : 0xc0f00000 - 0xc1000000 (1024 kB)
[ 0.000000] .data : 0xc1000000 - 0xc10c766c ( 798 kB)
[ 0.000000] .bss : 0xc10c9000 - 0xc18d6968 (8247 kB)
[ 0.000000] SLUB: HWalign=64, Order=0-3, MinObjects=0, CPUs=1, Nodes=1
[ 0.000000] Running RCU self tests
[ 0.000000] Hierarchical RCU implementation.
[ 0.000000] RCU lockdep checking is enabled.
[ 0.000000] Build-time adjustment of leaf fanout to 32.
[ 0.000000] RCU restricting CPUs from NR_CPUS=4 to nr_cpu_ids=1.
[ 0.000000] RCU: Adjusting geometry for rcu_fanout_leaf=32, nr_cpu_ids=1
[ 0.000000] NR_IRQS:16 nr_irqs:16 16
[ 0.000000] TrustZone Interrupt Controller (TZIC) initialized
[ 0.000000] CPU identified as i.MX53, silicon rev 2.0
[ 0.000000] Switching to timer-based delay loop, resolution 29ns
[ 0.000009] sched_clock: 32 bits at 33MHz, resolution 29ns, wraps every 64424507889ns
[ 0.000031] clocksource: mxc_timer1: mask: 0xffffffff max_cycles: 0xffffffff, max_idle_ns:
57337812242 ns
[ 0.001336] Console: colour dummy device 80x30
[ 0.001378] Lock dependency validator: Copyright (c) 2006 Red Hat, Inc., Ing Molnar
[ 0.001390] ... MAX_LOCKDEP_SUBCLASSES: 8
[ 0.001400] ... MAX_LOCK_DEPTH: 48
[ 0.001410] ... MAX_LOCKDEP_KEYS: 8191
[ 0.001420] ... CLASSHASH_SIZE: 4096
[ 0.001429] ... MAX_LOCKDEP_ENTRIES: 32768
[ 0.001439] ... MAX_LOCKDEP_CHAINS: 65536
[ 0.001449] ... CHAINHASH_SIZE: 32768
[ 0.001459] memory used by lock dependency info: 5167 kB
[ 0.001469] per task-struct memory footprint: 1536 bytes
[ 0.001526] Calibrating delay loop (skipped), value calculated using timer frequency.. 66.66
BogoMIPS (lpj=333333)
[ 0.001552] pid_max: default: 32768 minimum: 301
[ 0.001932] Mount-cache hash table entries: 1024 (order: 0, 4096 bytes)
[ 0.001951] Mountpoint-cache hash table entries: 1024 (order: 0, 4096 bytes)
[ 0.004248] CPU: Testing write buffer coherency: ok
```



```
[ 0.004341] ftrace: allocating 31106 entries in 92 pages
[ 0.075944] CPU0: thread -1, cpu 0, socket -1, mpidr 0
[ 0.076043] Setting up static identity map for 0x70100000 - 0x70100070
[ 0.079814] Brought up 1 CPUs
[ 0.079837] SMP: Total of 1 processors activated (66.66 BogoMIPS).
[ 0.079850] CPU: All CPU(s) started in SVC mode.
[ 0.083340] devtmpfs: initialized
[ 0.116288] VFP support v0.3: implementor 41 architecture 3 part 30 variant c rev 2
[ 0.117336] clocksource: jiffies: mask: 0xffffffff max_cycles: 0xffffffff, max_idle_ns:
19112604462750000 ns
[ 0.117395] futex hash table entries: 256 (order: 2, 16384 bytes)
[ 0.118931] pinctrl core: initialized pinctrl subsystem
[ 0.122939] NET: Registered protocol family 16
[ 0.126479] DMA: preallocated 256 KiB pool for atomic coherent allocations
[ 0.145797] cpuidle: using governor menu
[ 0.146438] No ATAGs?
[ 0.146462] hw-breakpoint: debug architecture 0x4 unsupported.
[ 0.161094] imx53-pinctrl 53fa8000.iomuxc: initialized IMX pinctrl driver
[ 0.256865] vgaarb: loaded
[ 0.258037] SCSI subsystem initialized
[ 0.259743] usbcore: registered new interface driver usbfs
[ 0.259956] usbcore: registered new interface driver hub
[ 0.260213] usbcore: registered new device driver usb
[ 0.260632] 50000000.aips:usbphy@0 supply vcc not found, using dummy regulator
[ 0.261227] 50000000.aips:usbphy@1 supply vcc not found, using dummy regulator
[ 0.264208] i2c i2c-1: IMX I2C adapter registered
[ 0.264296] i2c i2c-1: can't use DMA, using PIO instead.
[ 0.613747] i2c i2c-0: IMX I2C adapter registered
[ 0.613803] i2c i2c-0: can't use DMA, using PIO instead.
[ 0.614204] Linux video capture interface: v2.00
[ 0.614576] pps_core: LinuxPPS API ver. 1 registered
[ 0.614593] pps_core: Software ver. 5.3.6 - Copyright 2005-2007 Rodolfo Giometti
<giometti@linux.it>
[ 0.614656] PTP clock support registered
[ 0.615714] Advanced Linux Sound Architecture Driver Initialized.
[ 0.619578] Bluetooth: Core ver 2.22
[ 0.619721] NET: Registered protocol family 31
[ 0.619734] Bluetooth: HCI device and connection manager initialized
[ 0.619819] Bluetooth: HCI socket layer initialized
[ 0.619854] Bluetooth: L2CAP socket layer initialized
[ 0.620069] Bluetooth: SCO socket layer initialized
```

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```
[ 0.623536] clocksource: Switched to clocksource mxc_timer1
[ 0.801558] VFS: Disk quotas dquot_6.6.0
[ 0.801754] VFS: Dquot-cache hash table entries: 1024 (order 0, 4096 bytes)
[ 0.834943] NET: Registered protocol family 2
[ 0.837016] TCP established hash table entries: 4096 (order: 2, 16384 bytes)
[ 0.837125] TCP bind hash table entries: 4096 (order: 5, 147456 bytes)
[ 0.838585] TCP: Hash tables configured (established 4096 bind 4096)
[ 0.838800] UDP hash table entries: 256 (order: 2, 20480 bytes)
[ 0.839011] UDP-Lite hash table entries: 256 (order: 2, 20480 bytes)
[ 0.839933] NET: Registered protocol family 1
[ 0.841427] RPC: Registered named UNIX socket transport module.
[ 0.841453] RPC: Registered udp transport module.
[ 0.841465] RPC: Registered tcp transport module.
[ 0.841476] RPC: Registered tcp NFSv4.1 backchannel transport module.
[ 0.844526] hw perfevents: enabled with armv7_cortex_a8 PMU driver, 5 counters available
[ 0.850603] workingset: timestamp_bits=30 max_order=18 bucket_order=0
[ 0.879471] NFS: Registering the id_resolver key type
[ 0.879717] Key type id_resolver registered
[ 0.879735] Key type id_legacy registered
[ 0.879895] jffs2: version 2.2. (NAND) © 2001-2006 Red Hat, Inc.
[ 0.882255] fuse init (API version 7.26)
[ 0.893938] bounce: pool size: 64 pages
[ 0.894109] io scheduler noop registered
[ 0.894126] io scheduler deadline registered
[ 0.894725] io scheduler cfq registered (default)
[ 0.904244] imx-sdma 63fb0000.sdma: Direct firmware load for imx/sdma/sdmaimx53.bin failed
with error -2
[ 0.904286] imx-sdma 63fb0000.sdma: external firmware not found, using ROM firmware
[ 0.917424] 53fbc000.serial: ttyMXC0 at MMIO 0x53fbc000 (irq = 47, base_baud =4166666) is a
IMX
[ 1.356833] random: fast init done
[ 1.624363] console [ttyMXC0] enabled
[ 1.631421] [drm] Initialized
[ 1.643996] [drm] Supports vblank timestamp caching Rev 2 (21.10.2013).
[ 1.650647] [drm] No driver support for vblank timestamp query.
[ 1.657462] imx-drm display-subsystem: bound imx-ipuv3-crtc.2 (ops ipu_crtc_ops)
[ 1.665337] imx-drm display-subsystem: bound imx-ipuv3-crtc.3 (ops ipu_crtc_ops)
[ 1.674459] 63ff0000.tve supply dac not found, using dummy regulator
[ 1.681176] imx-tve 63ff0000.tve: dac voltage is not 2750000 uV
[ 1.688051] imx-drm display-subsystem: bound 63ff0000.tve (ops imx_tve_ops)
```

```
[ 1.762343] Console: switching to colour frame buffer device 128x48
[ 1.784963] imx-drm display-subsystem: fb0: frame buffer device
[ 1.794621] imx-ipuv3 18000000.ipu: IPUv3M probed
[ 1.840070] brd: module loaded
[ 1.866648] loop: module loaded
[ 1.874238] ahci-imx 10000000.sata: SSS flag set, parallel bus scan disabled
[ 1.881351] ahci-imx 10000000.sata: AHCI 0001.0100 32 slots 1 ports 3 Gbps 0x1 impl platform mode
[ 1.890367] ahci-imx 10000000.sata: flags: ncq sntf stag pm led clo only pmp pio slum part ccc
[ 1.903192] scsi host0: ahci-imx
[ 1.908482] ata1: SATA max UDMA/133 mmio [mem 0x10000000-0x10000fff] port 0x100 irq 44
[ 1.923442] libphy: Fixed MDIO Bus: probed
[ 1.930059] CAN device driver interface
[ 1.936067] 63fec000.ethernet supply phy not found, using dummy regulator
[ 1.954929] libphy: fec_enet_mii_bus: probed
[ 1.963139] usbcore: registered new interface driver asix
[ 1.969001] usbcore: registered new interface driver ax88179_178a
[ 1.975483] usbcore: registered new interface driver cdc_ether
[ 1.981463] usbcore: registered new interface driver net1080
[ 1.987393] usbcore: registered new interface driver cdc_subset
[ 1.993631] usbcore: registered new interface driver zaurus
[ 1.999429] usbcore: registered new interface driver cdc_ncm
[ 2.005143] ehci_hcd: USB 2.0 'Enhanced' Host Controller (EHCI) Driver
[ 2.011706] ehci-pci: EHCI PCI platform driver
[ 2.016341] ehci-mxc: Freescale On-Chip EHCI Host driver
[ 2.022527] usbcore: registered new interface driver usb-storage
[ 2.043067] ci_hdrc ci_hdrc.1: EHCI Host Controller
[ 2.048453] ci_hdrc ci_hdrc.1: new USB bus registered, assigned bus number 1
[ 2.083596] ci_hdrc ci_hdrc.1: USB 2.0 started, EHCI 1.00
[ 2.094225] hub 1-0:1.0: USB hub found
[ 2.098274] hub 1-0:1.0: 1 port detected
[ 2.108173] mousedev: PS/2 mouse device common for all mice
[ 2.118708] input: mma8450 as /devices/platform/soc/60000000.aips/63fc8000.i2c/i2c-0/0-001c/input/input0
[ 2.132134] i2c /dev entries driver
[ 2.139082] IR NEC protocol handler initialized
[ 2.143923] IR RC5(x/sz) protocol handler initialized
[ 2.149065] IR RC6 protocol handler initialized
[ 2.153654] IR JVC protocol handler initialized
[ 2.158279] IR Sony protocol handler initialized
```

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```
[ 2.162912] IR SANYO protocol handler initialized
[ 2.167709] IR Sharp protocol handler initialized
[ 2.172429] IR MCE Keyboard/mouse protocol handler initialized
[ 2.178366] IR XMP protocol handler initialized
[ 2.189288] imx2-wdt 53f98000.wdog: timeout 60 sec (nowayout=0)
[ 2.195811] Bluetooth: HCI UART driver ver 2.3
[ 2.200281] Bluetooth: HCI UART protocol H4 registered
[ 2.205513] Bluetooth: HCI UART protocol LL registered
[ 2.211882] sdhci: Secure Digital Host Controller Interface driver
[ 2.218183] sdhci: Copyright(c) Pierre Ossman
[ 2.222551] sdhci-pltfm: SDHCI platform and OF driver helper
[ 2.254280] ata1: SATA link down (SStatus 0 SControl 300)
[ 2.259809] ahci-imx 10000000.sata: no device found, disabling link.
[ 2.266261] ahci-imx 10000000.sata: pass ahci_imx..hotplug=1 to enable hotplug
[ 2.303628] mmc0: SDHCI controller on 50004000.esdhc [50004000.esdhc] using ADMA
[ 2.312948] sdhci-esdhc-imx 50020000.esdhc: Got CD GPIO
[ 2.318442] sdhci-esdhc-imx 50020000.esdhc: Got WP GPIO
[ 2.375568] mmc0: host does not support reading read-only switch, assuming writeenable
[ 2.384338] mmc1: SDHCI controller on 50020000.esdhc [50020000.esdhc] using ADMA
[ 2.393165] mmc0: new high speed SDHC card at address aaaa
[ 2.408950] mmcblk0: mmc0:aaaa SS08G 7.40 GiB
[ 2.419243] sahara 63ff8000.crypto: SAHARA version 4 initialized
[ 2.425999] mmcblk0: p1 p2
[ 2.434232] usbcore: registered new interface driver usbhid
[ 2.439887] usbhid: USB HID core driver
[ 2.452116] sgtl5000 1-000a: sgtl5000 revision 0x11
[ 2.460462] sgtl5000 1-000a: Using internal LDO instead of VDDD: check ER1
[ 2.507420] fsl-asoc-card sound: ASoC: CPU DAI (null) not registered
[ 2.513935] fsl-asoc-card sound: snd_soc_register_card failed (-517)
[ 2.521758] fsl-ssi-dai 50014000.ssi: No cache defaults, reading back from HW
[ 2.553415] imx-sgtl5000 sound: sgtl5000 <-> 50014000.ssi mapping ok
[ 2.569824] NET: Registered protocol family 10
[ 2.578496] sit: IPv6, IPv4 and MPLS over IPv4 tunneling driver
[ 2.587373] NET: Registered protocol family 17
[ 2.591954] can: controller area network core (rev 20120528 abi 9)
[ 2.598459] NET: Registered protocol family 29
[ 2.602932] can: raw protocol (rev 20120528)
[ 2.607407] can: broadcast manager protocol (rev 20161123 t)
[ 2.613113] can: netlink gateway (rev 20130117) max_hops=1
[ 2.619591] Key type dns_resolver registered
```

Building for i.MX Mature Boards, Application Notes, Rev. 0, 07/2017

```

[ 2.625204] Registering SWP/SWPB emulation handler
[ 2.680500] input: gpio-keys as /devices/platform/gpio-keys/input/input1
[ 2.688905] hctosys: unable to open rtc device (rtc0)
[ 2.695067] ALSA device list:
[ 2.698065] #0: imx53-qsb-sgtl5000
[ 2.711828] EXT4-fs (mmcblk0p2): couldn't mount as ext3 due to feature incompatibilities
[ 2.791929] EXT4-fs (mmcblk0p2): mounted filesystem with ordered data mode. Opts: (null)
[ 2.800350] VFS: Mounted root (ext4 filesystem) on device 179:2.
[ 2.817234] devtmpfs: mounted
[ 2.822909] Freeing unused kernel memory: 1024K (c0f00000 - c1000000)
INIT: version 2.88 booting
Starting udev
[ 3.560565] udevd[124]: starting version 3.2.1
[ 3.668324] udevd[125]: starting eudev-3.2.1
[ 4.972143] coda 63ff4000.vpu: Direct firmware load for vpu_fw_imx53.bin failed with error -2
[ 5.088461] coda 63ff4000.vpu: Using fallback firmware vpu/vpu_fw_imx53.bin
[ 5.143272] coda 63ff4000.vpu: Initialized CODA7541.
[ 5.148499] coda 63ff4000.vpu: Firmware version: 1.4.50
[ 5.220531] coda 63ff4000.vpu: codec registered as /dev/video[0-3]
[ 5.606644] EXT4-fs (mmcblk0p2): re-mounted. Opts: data=ordered
Populating dev cache
ALSA: Restoring mixer settings...
No state is present for card imx53qsbsgtl500
Found hardware: "imx53-qsb-sgtl5" "" "" "" ""
Hardware is initialized using a generic method
No state is present for card imx53qsbsgtl500
hwclock: can't open '/dev/misc/rtc': No such file or directory
Mon May 15 18:40:20 UTC 2017
hwclock: can't open '/dev/misc/rtc': No such file or directory
INIT: Entering runlevel: 5
Configuring network interfaces... [ 11.963974] Generic PHY 63fec000.etherne:00:
attached PHY driver [Generic PHY] (mii_bus:phy_addr=63fec000.etherne:00, irq=-1)
[ 11.976445] IPv6: ADDRCONF(NETDEV_UP): eth0: link is not ready
udhcpc (v1.24.1) started
Sending discover...
Sending discover...
Sending discover...
No lease, forking to background
done.
Starting system message bus: dbus.

```

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```
Starting rpcbind daemon...done.  
Starting bluetooth  
bluetoothd  
hwclock: can't open '/dev/misc/rtc': No such file or directory  
Starting syslogd/klogd: done  
* Starting Avahi mDNS/DNS-SD Daemon: avahi-daemon  
...done.  
Starting Telephony daemon  
Starting Linux NFC daemon  
FSLC FrameBuffer 2.3 imx53qsb /dev/ttymxc0  
imx53qsb login:
```

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