RN00266

i.MX Debian Software Release Notes

Rev. 1.0 — 24 February 2025 **Release notes**

Document information

Information	Content
Keywords	i.MX, Linux, LF6.6.36_2.1.0, i.MX, Debian, SDK, Flexbuild
Abstract	The i.MX Debian Linux SDK Distribution is a Debian-based Linux enablement software for NXP i.MX series processors that are based on Arm cores to provide quick evaluation for customers.

1 Overview

This document contains important information about the package contents, supported features, known issues, and limitations in this release.

This release is based on i.MX Linux Release LF6.6.36_2.1.0. For more information on the i.MX software release, see i.MX LINUX.

This document refers to i.MX Software LF6.6.36_2.1.0 Release Notes (document RN00210 v.LF6.6.36_2.1.0) and includes special information for Debian OS and flexbuild tools.

Supported boards

- i.MX 8M Plus EVK
- i.MX 8M Mini EVK
- i.MX 93 11x11 EVK
- i.MX 93 11x11 FRDM
- i.MX 91 11x11 FRDM

Note: *During the project setup, to set up an i.MX build, accept the NXP license. This acceptance is recorded in the build configuration files so that the following proprietary binaries can be extracted during the build process. The NXP proprietary packages contain a software content register (SCR) file that lists information about the package:* `imx-gpu-viv`, `imx-codec`, `imx-vpu-hantro-vc`, `libgpuperfcnt`, `isp-imx`, *and* `imx-parser`.

1.1 Release contents

This release consists of the following:

- Documentation
- GPU driver upgraded to `imx-gpu-viv-6.4.11.p2.8d-aarch64` (compiled based on Debian 12 runtime dependency)
- GPUPerfCnt driver upgraded to `libgpuperfcnt-6.4.11.p2.8d-aarch64` (based on Debian 12)
- VPU driver upgraded to `imx-vpu-hantro-vc-1.10.0d` (based on Debian 12)
- ISP driver upgraded to `isp-imx-4.2.2.24.3d)` (based on Debian 12
- Flexbuild source code

i.MX flexbuild software also releases open source through repos on Github. The following table lists all the repos on GitHub.

Table 1. i.MX flexbuild GitHub distributions repos

Repo	Description
flexbuild	i.MX flexbuild source code

2 What's new

This section describes the changes in this release, including new features and defect fixes.

2.1 New features

The following new features are added in the i.MX Debian Linux SDK 24.12 release:

- Flexbuild upgraded to 2.16.2412
- Debian 12.8 (base, desktop, server) RootFS with update
- Linux kernel upgraded to LTS 6.6.36

- U-Boot upgraded to 2024.04
- ATF upgraded to v2.10.0
- GPU driver upgraded to `imx-gpu-viv-6.4.11.p2.8d-aarch64` (compiled based on Debian 12 runtime dependency)
- GPUPerfCnt driver upgraded to `libgpuperfcnt-6.4.11.p2.8d-aarch64` (based on Debian 12)
- VPU driver upgraded to `imx-vpu-hantro-vc-1.10.0d` (based on Debian 12)
- ISP driver upgraded to `isp-imx-4.2.2.24.3d)` (based on Debian 12
- Supported eIQ AI/ML and GoPoint components
  - `Tensorflow-lite 2.16.2` with GPU/NPU acceleration
  - `tflite_ethosu_delegate`
  - `tflite_vx_delegate`
  - `tim_vx`
  - `ethosu_driver_stack`
  - `ethosu_firmware`
  - `ethosu_vela`
  - `eiq_examples`
  - `nnstreamer`
  - `nnstreamer_edge`
  - `ssat`
  - `tvm`
  - `nnshark`
  - `imx_demo_experience`
  - `imx_nnstreamer_examples`
  - `imx_smart_kitchen`
  - `imx_smart_fitness`
- DPDK L2FWD and L3FWD applications
- Gstreamer 1.24.0 and various plugins for i.MX

Supported platforms in the i.MX Debian Linux SDK v24.12 release:

- i.MX 8M Plus EVK
- i.MX 8M Mini EVK
- i.MX 93 11x11 EVK
- i.MX 93 11x11 FRDM
- i.MX 91 11x11 FRDM

Note: *Other i.MX platforms may work with Debian but without warranty due to no full test yet.*

Supported features on i.MX 8M Plus EVK and i.MX 8M Mini EVK:

- Debian 12.8 desktop
- HDMI monitor display
- DSI MIPI touchscreen display
- Desktop GUI with GPU acceleration
- Multimedia video playback with VPU codec
- MIPI CSI camera OS08A20 with ISP (only on i.MX 8M Plus EVK)
- MIPI CSI camera OV5640
- Web browsers (Chromium, Firefox)
- Support Qt6 application
- Wi-Fi + Bluetooth
- eIQ TensorFlow lite support

- Gstreamer support
- DPDK for networking acceleration

Supported features on i.MX 93 EVK and FRDM:

- Debian 12 server (Recommended)
- Debian 12 desktop (PoC, unrecommended yet, which can run but without ideal performance due to no GPU)
- HDMI monitor display
- LVDS touchscreen display (only on i.MX 93 EVK)
- CSI MIPI camera AP1302 with ISP
- Wi-Fi + Bluetooth
- eIQ TensorFlow lite support
- Gstreamer support
- DPDK for networking acceleration

Supported features on i.MX 91 FRDM:

- Debian 12 server (does not support desktop)
- Wi-Fi + Bluetooth

3 U-Boot and device Trees

This section describes the different U-Boots and device trees, as well as different kernel and boot parameters.

3.1 U-Boot configurations

In Table 2, the U-Boot configurations are listed for each machine configuration. The machine configurations are provided through the Yocto project layers in `meta-imx-frdm` layers under `meta-imx-bsp/conf/machine` subdirectory.

Table 2. U-Boot configurations

U-Boot configuration for boot device	Description	Supported machine configuration
`sd`	`sd` supports boot from an SD card. This is the default U-Boot configuration. For boards supporting eMMC, SD boot can be flashed in eMMC for boot from eMMC instead of an SD card.	`imx91_11x11_evkimx93_11x11_evkimx8mmevk imx8mpevk`
`emmc`	Supports boot from eMMC.	`imx91_11x11_evkimx93_11x11_evkimx8mmevk imx8mpevk`
`ecc`	Supports DDR ECC.	`imx91_11x11_frdm_inline_eccimx93_11x11_frdm_inline_ecc`

3.2 Kernel device trees

Table 3 describes the kernel and device trees included in this release. A list of several device tree files is provided for each board to offer examples on how to handle different pin conflicts due to pin muxing.

Table 3. Kernel and device tree configurations

Kernel and device tree configuration	Description
Kernel binary image	i.MX 8 and i.MX 9 image kernel is built with `imx_v8_defconfig` in `arch/arm64/configs`.
DTB descriptions	Each reference board has a standard device tree as follows: • `imx91-11x11-frdm.dtb` • `imx93-11x11-frdm.dtb` • `imx8mp-evk.dtb`: Supports single or multiple displays with HDMI, MIPI-DSI-HDMI, and LVDS-HDMI • `imx8mp-evk-revb4.dtb`: Supports i.MX 8M Plus Rev. B4 board • `imx91-11x11-evk.dtb` • `imx93-11x11-evk.dtb` • `imx93-11x11-evk-pmic-pf0900.dtb` • `imx93-14x14-evk.dtb` • `imx8mm-evk.dtb` • `imx8mm-ddr4-evk`
Audio	Enables various audio device trees: • `imx91-11x11-frdm-aud-hat.dtb` • `imx91-11x11-frdm-8mic.dtb` • `imx93-11x11-frdm-aud-hat.dtb` • `imx93-11x11-frdm-8mic.dtb` • `imx8mp-ab2.dtb`: Audio board • `imx8mp-evk-sof-wm8960.dtb`: Sound open firmware for WM8960 audio • `imx8mp-evk-rpmsg.dtb`: Supports low-power audio playback • `imx8mp-evk-rpmsg-lpv.dtb` Supports low-power voice • `imx8mp-evk-revb4.dtb`: Supports WM8962 codec • `imx8mm-evk-ak4497.dtb`: Audio board ak4497 codec • `imx8mm-evk-ak5558.dtb`: Audio board ak5558 codec • `imx8mm-evk-audio-tdm.dtb`: Audio board TDM • `imx93-14x14-evk-aud-hat.dtb` • `imx93-11x11-evk-aud-hat.dtb` • `imx93-11x11-evk-mqs.dtb` • `imx93-11x11-evk-rpmsg.dtb` • `imx93-11x11-evk-rpmsg-lpv.dtb` • `imx93-11x11-evk-pmic-pf0900-aud-hat.dtb` • `imx93-11x11-evk-pmic-pf0900--mqs.dtb` • `imx93-11x11-evk-pmic-pf0900--rpmsg.dtb` • `imx93-11x11-evk-pmic-pf0900--rpmsg-lpv.dtb`
Bluetooth wireless technology Wi-Fi	Enables the Bluetooth wireless technology and Wi-Fi hardware. The standard device tree supports Wi-Fi and Bluetooth: • `imx91-11x11-frdm.dtb` • `imx93-11x11-frdm.dtb` • `imx8mp-evk.dtb` • `imx8mm-evk.dtb` • `imx8mp-evk-usdhc1-m2.dtb` • `imx91-11x11-evk.dtb` • `imx93-11x11-evk.dtb` • `imx93-11x11-evk-pmic-pf0900.dtb` • `imx93-14x14-evk.dtb`
Video capture	• `imx8mp-evk-basler.dtb`: one Basler ISP camera (AR0821), reaches up to 4K30

Table 3. Kernel and device tree configurations*...continued*

Kernel and device tree configuration	Description
	• `imx8mp-evk-dual-basler.dtb`: Dual Basler ISP cameras (AR0821), reaches up to 1080 P60 • `imx8mp-evk-basler-ov5640.dtb`: Dual camera Basler ISP + OV5640 • `imx8mp-evk-os08a20.dtb`: Initial support for one ISP camera - OS08A20 • `imx8mp-evk-dual-os08a20.dtb`: Initial support for dual ISP cameras - OS08A20 • `imx8mp-evk-os08a20-ov5640.dtb`: Initial support for dual cameras OS08A20 + OV5640 • `imx93-11x11-frdm.dtb`: Support AP1302 • `imx91-11x11-frdm-mt9m114.dtb` and `imx93-11x11-frdm-mt9m114.dtb`: Support parallel MT9M114 camera • `imx93-11x11-evk.dtb` and `imx93-11x11-evk-pmic-pf0900.dtb`: Support AP1302 • `imx91-11x11-evk-mt9m114.dtb`, `imx91-9x9-qsb-mt9m114.dtb`, `imx93-11x11evk-mt9m114.dtb`, and `imx93-9x9-qsb-mt9m114.dtb`: Support parallel MT9M114 camera • `imx91-11x11-frdm-tianma-wvga-panel.dtb` and `imx93-11x11-frdm-tianma-wvga-panel.dtb`: Support Tianma TM050RDH03 5.0-inch WVGA TFT LCD panel • `imx93-11x11-frdm.dtb`: Single-channel LVDS-to-HDMI converter • `imx93-11x11-frdm-dsi.dtb`: MIPI DSI 7-inch Waveshare LCD panel
LP UART	Enables LPUART: • `imx91-11x11-frdm-lpuart.dts` • `imx93-11x11-frdm-lpuart.dtb`
LD	Supports the system to be switched to Low Drive (LD) mode: • `imx91-11x11-frdm-ld.dtb` • `imx93-11x11-frdm-ld.dtb`

4 Known issues/limitations

Table 4 lists some key known issues of Debian Linux on the i.MX boards.

Table 4. Known issues and workarounds for i.MX family SoC

ID	Description	Workaround
DEDI-71	Display: sometimes needs to reboot twice after installing the Debian desktop	It is going to be fixed in the next release

5 References

This release includes the following references and additional information:

- *i.MX FRDM Software User Guide* (document UG10195)
- *i.MX Debian Linux SDK User Guide* (document UG10155)
- *i.MX Linux Release Notes* (document RN00210 v.LF6.6.36_2.1.0)
- *i.MX 93 EVK Quick Start Guide* (document IMX93EVKQSG)
- *i.MX 93 Applications Processor platform* (document IMX93QSBQSG)
- *i.MX 8M Mini EVK Quick Start Guide* (document 8MMINIEVKQSG)
- *i.MX 8M Plus EVK Quick Start Guide* (document IMX8MPLUSQSG)

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7 Revision history

Section 7 summarizes revisions to this document.

Table 5. Revision history

Document ID	Release date	Description
RN00266 v.1.0	24 February 2025	Initial public release

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