IMXWNR

i.MX Windows 10 IoT Release Notes

Rev. 1.5.0 — 8 December 2023 **Release notes**

Document Information

Information	Content
Keywords	i.MX, Windows 10 IoT
Abstract	This document contains important information about the package contents, supported features, known issues and limitations in this release.

1 Overview

i.MX Windows 10 IoT 1.4.0 release includes all necessary code, documents, and tools to assist users in building and running Windows 10 IoT on the i.MX boards from scratch.

Prebuilt images are also included for a quick trial on the following platforms:

- i.MX 8M Mini EVK
- i.MX 8M Nano EVK
- i.MX 8M Plus EVK
- i.MX 8M Quad EVK
- i.MX 8QuadXPlus MEK (Silicon Revision C0)
- i.MX 93 EVK

1.1 References

For more information about Windows 10 IoT Enterprise, see Microsoft online documentation.

The following quick start guides available on the NXP website contain basic information on the board and setting it up:

- i.MX 8M Quad Evaluation Kit Quick Start Guide
- i.MX 8M Mini Evaluation Kit Quick Start Guide
- i.MX 8M Nano Evaluation Kit Quick Start Guide
- i.MX 8M Plus Evaluation Kit Quick Start Guide
- i.MX 8QuadXPlus Multisensory Enablement Kit Quick Start Guide
- i.MX 93 Evaluation Kit Quick Start Guide

1.2 BSP change history

This chapter lists changes in releases including new features and defect fixes.

- 12/2023 W1.5.0
  - **Supported boards:**
    - MCIMX8M-EVK Evaluation Kit
    - 8MMINILPD4-EVK Evaluation Kit
    - 8MNANOLPD4-EVK Evaluation Kit
    - 8MPLUSLPD4-EVK Evaluation Kit
    - MCIM8QXP-MEK (Silicon Revision C0)

  - MCIMX93-EVK (Silicon Revision A0)
- **New features:**
  - **General**
    - make-winpe-enterprise.cmd - Added option `/iso`, which makes the script use .ISO file containing Windows image instead of `install.wim` file.
  - **Power Button**
    - The Power Button (marked ONOFF) is available for Shutdown/PowerOn/Sleep/Wake functionality in Win IoT on M-Scale EVK boards and 93-EVK board. The feature is not available on QXP.
  - **UEFI Non-Volatile Variables:**
    - The UEFI Non-Volatile variables are implemented using Nor Flash for persistency. For details see the README in iMXNorFlashDxe driver in UEFI.
  - **Debug Prints in UEFI Runtime Services:**
    - It is now possible to get debug prints to the serial console from UEFI Runtime Services. This feature is enabled by RUNTIME_DEBUG in iMX8CommonDsc.inc.
  - **Sensors**
    - Support for batching of accelerometer data in both MCIM8QXP-MEK and MCIMX93-EVK
  - **GPU/display driver:**
    - D3D9 support has been enabled by default.
    - MIPI-DSI display interface supported for i.MX 8M Plus, 3-display configuration available (HDMI + LVDS + MIPI-DSI).
    - LVDS1 display supported for i.MX 8QXP, dual-display configuration available (LVDS0 + LVDS1).
    - UEFI firmware display driver for i.MX 8QXP supported for both LVDS0 and LVDS1.
- **Fixes:**
  - **GPIO:**
    - 8MPLUSLPD4-EVK: Expansion connector GPIO pins EXP CN pin 10 (RXD) and EXP CN pin 8 (TXD) pin routing and interrupt vector numbers updated.
  - **UEFI I2C:**
    - Fixed iMXI2cRead (iMXI2cReadE) method in iMXLpi2cLib UEFI driver. It removes a duplicate i2c device register address setting if the i2c device register is read.
    - I2C9 (DSI1_I2C0) added to Dsdt-Rhp.asl, so it can be accessed by the user mode application.
  - **GPU/display driver:**
    - Direct Flip for A8R8G8B8 display format fixed and enabled for i.MX 8QXP, i.MX 8M Plus, and i.MX 8M.
  - **MCIMX8M-EVK DDR Timing Fix**
    - Occasional freezes or strange patterns on display i.MX 8M fixed by the DDR timing fix in the U-Boot component based on HW errata.

- 7/2023 W1.4.1
  - **Supported boards:**
    - MCIMX8M-EVK Evaluation Kit
    - 8MMINILPD4-EVK Evaluation Kit
    - 8MNANOLPD4-EVK Evaluation Kit
    - 8MPLUSLPD4-EVK Evaluation Kit
    - MCIM8QXP-MEK (Silicon Revision C0)
    - MCIMX93-EVK (Silicon Revision A0)
  - **New features:**
    - **General**
      - make-winpe-enterprise.cmd: While creating a Windows image, the option for disabling window transparency in the GUI is now selected by default. With this change, the script option `/`

`disable_transparency` was removed, and a new option `/enable_transparency` (for enabling the window transparency) is now supported.

- **Wi-Fi driver:**
  - Wi-Fi board based on 88W8997 SoC is supported. Wi-Fi functionality is enabled.
- **Ethernet (imxnetmini.sys) driver:**
  - PHY initialization engine is updated. Read modify write (MII_REG_RMW) operation of PHY registers is added into the set of commands supported in the ACPI table _DSD `ConfigCmds` property.
- **USB in UEFI**
  - USB is enabled in UEFI by default. USB hub, keyboard, mouse, and mass storage devices can be used in UEFI.
- **GPU/display driver:**
  - X86 support: Existing X86 D3D11 apps can now run with GPU acceleration.
  - D3D9 support: A beta D3D9 driver is included. This driver is disabled by default and is intended for customers to test existing WPF apps.
  - Dual-monitor support is added for i.MX 8M Plus (LVDS and HDMI display interfaces).
  - HDMI-audio interface is supported for i.MX 8M Plus.
- **Audio driver:**
  - HDMI-audio driver is added for i.MX 8M Plus (imxaud_hdmi).

– Fixes:

- **Ethernet in UEFI:**
  - MCIMX93-EVK: Ethernet PHY RTL8211FDI-VD-CG initialization sequence in the ACPI table is updated.
  - MCIMX93-EVK: Ethernet MAC location in fuses is updated (NET2)
- **USB in UEFI:**
  - MCIMX8M-EVK: USB Initialization is updated. PHY suspend is disabled (ERR011231).
- **SPI driver:**
  - The case when a write transfer is sometimes not completed is fixed.
  - Upper limitation ReferenceClockHz/2 for communication speed is added. ReferenceClockHz is specified in ACPI.
- **GPU/display driver:**
  - 1280x800 resolution with 71 MHz pixel clock is supported in the HDMI and LVDS display clock driver.
  - When the IMX-LVDS-HDMI or IMX-MIPI-HDMI converter is used but the monitor is disconnected, the UEFI display driver reports an error and does not initialize the display controller. It is fixed, now the UEFI driver initializes to the default resolution when the monitor is disconnected from the converter.

• 3/2023: W1.4.0

– Supported boards:

- MCIMX8M-EVK Evaluation Kit
- 8MMINILPD4-EVK Evaluation Kit
- 8MNANOLPD4-EVK Evaluation Kit
- 8MPLUSLPD4-EVK Evaluation Kit
- MCIM8QXP-MEK (Silicon Revision C0)
- MCIMX93-EVK (Silicon Revision A0)

– New features:

- **General**
  - 8MPLUSLPD4-EVK: The size of SDRAM was increased to 6 GB. Note: This change requires windows10.0-kb5019275-arm64_c6c2abc31137d43e762304bd1542ba413d2b8b9e.msu to be installed. The patch is applied in the installation script (make-winpe-enterprise.cmd) by default.
  - U-Boot updated to version 2022.04-00346.

  - ATF updated to version v2.6.
  - The CPU core count in ACPI (Dsdt-Platform.asl) is controlled by the PcdCoreCount setting now.
  - make-winpe-enterprise.cmd: A mechanism for the application of updates to the Windows image is added. See Quick Start Guide for details.
  - make-winpe-enterprise.cmd: The /patch_sdport parameter was removed. There is an updated version of the system "sdport.sys" driver in windows10.0-kb5019275-arm64_c6c2abc31137d43e762304bd1542ba413d2b8b9e.msu patch. The patch is applied in the installation script (make-winpe-enterprise.cmd) by default.
  - flash-bootloader.cmd: Support for abbreviations of board names is added.
- **Power Management**
  - The Deepest Runtime Idle Platform State (DRIPS) is supported, see `powercfg /sleepstudy`.
- **Audio driver:**
  - A new Wm8962codec driver is added to support the WM8962 device.
- **SPI driver:**
  - A new imxlpspi driver is added to support the LPSPI IP block.
- **Camera driver:**
  - A new MIPI CSI-2 DWC driver is added into BSP to enable video capture on i.MX 93.
  - A new driver for the X-RPI-CAM-MIPI camera board (AP1302 ISP + AR0144 camera) is added to enable video capture on i.MX 93.
- **Malone VPU driver:**
  - A new Malone VPU driver for hardware accelerated video decoding is added. Supported codecs: H264, H265, VP8, MPEG2, MPEG4.
- **GPU/display driver:**
  - Support of rotated modes and display modes smaller than the native mode for an HDMI monitor on i.MX 8M Plus.
  - The IMX-DSI-OLED1 panel driver is added to the MIPI-DSI driver for i.MX 8M Nano.
  - The display controller and display interface are disabled when entering Power-down mode and enabled upon wake-up.
  - UEFI display driver is supported for i.MX 93. Supported displays:
    - MIPI-DSI with Mipi2Hdmi display bridge supporting resolution up to 1080p.
    - LVDS panel BOE ev121wxm-n12 with fixed resolution 1280x800.
- **IMU driver:**
  - A new IMU sensor driver is added. It combines the Linear accelerometer and the Gyroscope sensor.
- **FlexCAN driver:**
  - The FlexCAN device is supported on i.MX 93.
- **UART driver:**
  - LPUART is supported for i.MX 93 in interrupt mode. No flow control pins are available.
  - RTS-CTS flow control is supported on all UART Instances. RTS/CTS functionality is enabled on UART3 (where RTS/CTS signals are available on the EVK) on i.MX 8M\Mini\Nano\Plus.

– Fixes:

- **GPU/display driver:**
  - Performance of NV12 format processing on i.MX 8M Plus and i.MX 8M Nano is improved to make video playback performance better.

  - i.MX 8M Plus: 85.5 MHz and 65 MHz pixel clocks added to HDMI to support 1366x768@60 and 1024x768@60 resolutions.
- **Audio driver:**
  - Fixed "DPC execution time exceeds system limit" assertion when the microphone is used.
- **I2C driver:**
  - Fixed a memory leak in the unloading imxlpi2c driver related to the ACPI Dsd Buffer allocation.

- 12/2022: W1.3.0

– Supported boards:

- MCIMX8M-EVK Evaluation Kit
- 8MMINILPD4-EVK Evaluation Kit
- 8MNANOLPD4-EVK Evaluation Kit
- 8MPLUSLPD4-EVK Evaluation Kit
- MCIM8QXP-MEK (Silicon Revision C0)

– New features:

- **General**
  - UEFI.fit image is merged to U-Boot FIT image on 8M platforms.
  - The UEFI binary is compressed before inserted to uefi.fit on 8M platforms.
  - The firmware name is suffixed with "`_uuu`" if it is compiled with UUU tools.
  - Removed "`-t signed`". The firmware is always signed when using "`-t secured_efi`".
  - Custom HAB/AHAB signing keys can now be used by defining the "KEY_ROOT" path.
- **Audio driver:**
  - Driver `imxaud.sys` has been split into `imxaud.sys` using multichannel SAI peripheral for i.MX 8M and `imxaudsc.sys` using single-channel SAI peripheral for i.MX 8QXP.
- **I2C driver:**
  - A new imxlpi2c driver for the LPI2C peripheral is included. Interrupt and polling modes have been supported.
  - A new iMXLpi2cLib driver for the LPI2C peripheral in UEFI is included.
- **ENET driver:**
  - QoS driver is supported on i.MX 8M Plus.
- **I2C sensor drivers:**
  - e-Compass FXOS8700 - Accelerometer and Magnetometer is supported on the i.MX 8QXP MEK board.
  - Gyroscope FXAS2100 is supported on the i.MX 8QXP MEK board.
  - Ambient Light Sensor ISL29023 is supported on the i.MX 8QXP MEK board.
- **GPU/display driver:**
  - GPU driver is added for i.MX 8QXP.
  - HDMI display interface is supported for i.MX 8M Plus.
  - The GPU driver version is increased to 1.4.
  - The GPU driver support for video processing is added for i.MX 8M Nano/Plus.
  - The source code for the GPU driver kernel part (galcore) is included in the BSP.
- **UART driver:**
  - LPUART is supported for i.MX 8QXP in interrupt mode. No flow control is available for LPUART0 and LPUART2. LPUART1 (m2 slot) has RTS, CTS pins wired.

– Fixes:

- **GPU/display driver:**
  - Unsupported resolution and pixel clock (for example 1280x800, pclk=68.9 MHz) display an error message. As a workaround, the algorithm was changed to set the closest possible pixel clock and display a warning message.

  - i.MX 8M: Resolution 720p is set by default when a display is not connected or it does not support EDID.
- **USBC:**
  - i.MX 8M Plus: USB 3.0 devices were incorrectly detected as USB 2.0. USB Type-C multiplex/ demultiplexer switch "Selection control" pin polarity setting has been added to the ACPI table.

- 10/2022: W1.2.1

– New features:

- **Wi-Fi and Bluetooth driver:**
  - Wi-Fi AzureWave AW-CB178NF board based on 88W8897 SoC has been supported. Wi-Fi and Bluetooth functionality have been enabled.

- 8/2022: W1.2.0

– Supported boards:

- MCIMX8M-EVK evaluation kit
- 8MMINILPD4-EVK evaluation kit
- 8MNANOD4-EVK evaluation kit
- 8MPLUSLPD4-EVK evaluation kit

– New features:

- **General**
  - Visual Studio 2019 has been supported, but version 2017 is no longer supported.
  - Firmware update: buildme64.sh switch –cap added to build the Firmware capsule. Capsule update working from UEFI shell with capsule stored on SD card: fs0: CapsuleApp.efi fs3: FirmwareCapsuleIMX.cap
  - make-winpe-enterprise.cmd parameters have been updated. See User's Guide for details.
  - i.MX 8M CPU frequency changed from 1 GHz to 1.5 GHz
- **GPU driver:**
  - The GPU driver has been updated to v1.3.
  - The GPU driver is added for i.MX 8M Plus and i.MX 8M Nano SOCs.
  - The GPU driver support for video processing has been added for i.MX 8M.
- **Camera driver:**
  - The OV5640 camera has been supported for all EVK boards.
  - The OV10635 camera has been supported for all EVK boards.
  - The YUV422 YUY2 and YUV420 NV12 camera color formats have been supported. The i.MX 8M EVK does not support the YUV420 NV12 format.
- **Display driver:**
  - The Windows driver with fixed display mode supported for the LVDS display interface for i.MX 8M Plus.
  - The Windows driver with fixed display mode supported for the MIPI-DSI display interface for i.MX 8M Nano.
- **VPU driver:**
  - The VPU decoder has been supported for i.MX 8M Quad, i.MX 8M Mini, and i.MX 8M Plus EVK boards.

– Fixes:

- **WM8960 driver:** I2C is correctly released when the WM8960 device is removed.

- 6/2022: W1.1.0

Public release for i.MX 8M Nano and i.MX 8M Plus platforms.

– Supported boards:

- MCIMX8M-EVK evaluation kit
- 8MMINILPD4-EVK evaluation kit

  - 8MNANOD4-EVK evaluation kit
  - 8MPLUSLPD4-EVK evaluation kit
- **New features:**
  - **Camera driver:** OV5640 camera in the J1502 connector has been supported on the i.MX 8M EVK board.
  - **FlexCAN driver:** FlexCAN device has been supported on i.MX 8M Plus EVK by the imxcan.sys driver.
  - **I2C driver:** I2C expander (PCA6416) has been supported in iMX8BoardInit module and options `SelectCAN1InsteadOfI2C5` and `SelectCAN2InsteadOfPDMStream3` allow configuring corresponding selectors on the Base Board.
  - **GPU driver:** The GPU driver has been updated to v1.1.
  - **Debug drivers:** WinDbg over Ethernet has been supported. WinDbg over Ethernet requires the `kd_8003_1fc9.dll` library that is not distributed as a part of the BSP. To get this library, contact Microsoft.
  - **ENET driver:** HW checksum offload has been supported in the NDIS miniport driver.
- **Fixes:**
  - **Audio driver:** A failure during uninstallation in the Device manager has been fixed.
  - **Display driver:** IMX-LVDS-HDMI and IMX-MIPI-HDMI converters: If a native HDMI display resolution exceeds the upper limit, the fixed maximum available resolution is set instead. 1920x1080@60 Hz in case of IMX-MIPI-HDMI and 1280x720@60 Hz in case of IMX-LVDS-HDMI.
  - **SD driver:** Configuration “fixed device” has been changed to “removable device”, which allows you to safely remove the SD card by the "Eject" option.

- 4/2022: W1.0.0
  Public release for i.MX 8M and i.MX 8M Mini platforms.
  - **Supported boards:** MCIMX8M-EVK evaluation kit 8MMINILPD4-EVK evaluation kit
  - **New features:**
    - **VPU driver:** Supported codecs: HEVC, VP9, H.264, VP8. MPEG-2 and MPEG-4 codecs are supported on i.MX 8M only.
  - **Fixes:**
    - **UART driver:** The UART driver failure during uninstallation in the Device manager has been fixed.
    - **I2C driver:** The issue in the iMXI2cRead function (when ReadBufferSize == 1) in UEFI has been fixed.
    - **buildme 64.sh:** The script has been updated. Updates in the UEFI source code were included in firmware.bin only if the firmware was built with -c parameter (clean build).
    - **PCIe:** PCIE ATU (Address Translation Unit) setup for PCIE BAR memory-mapped registers in UEFI drivers has been fixed. After this fix, the system works as expected in UEFI and the relevant Storage drivers appear in Windows.
- 3/2022: W0.9.1
  Public preview release for i.MX 8M platform.
  - **Fixes:**
    - **eMMC driver:** eMMC tuning parameters add to the Dsdt-Sdhc.asl.
    - **BSP deployment:** Removed invalid characters from make-winpe-enterprise.cmd.
- 1/2022: W0.9.0
  Private preview release for i.MX 8M platform.
  - **Supported boards:** The existing BSP with support for the MCIMX8M-EVK NXP board.

2 BSP supported features

The following table displays the features supported in this BSP release. If no board is explicitly mentioned, the feature is shared across all boards listed in Supported Hardware in the Release contents section; otherwise, the feature is only supported on the boards listed.

Board name	Board revision	Schema revision	BSP name
MCIMX8M-EVK	700-38820 REV A	SCH-38820 REV A2	MX8M_EVK
8MMINILPD4-EVK	700-31407 REV A3 (base board)	SCH-31407 REV C4 (base board)	MX8M_MINI_EVK
	700-47712REV X2 (cpu board)	SCH-47712 REV A2 (cpu board)	
8MNANOLPD4-EVK	700-31407 REV X5 (base board)	SCH-31407 REV C2 (base board)	MX8M_NANO_EVK
	700-38823 REV A (cpu board)	SCH-38823 REV A2 (cpu board)	
8MPLUSLPD4- EVK	700-46370 REV B (base board)	SCH-46370 REV B1 (base board)	MX8M_PLUS_EVK
	700-46368 REV A (cpu board)	SCH-46368 REV A3 (cpu board)	
MCIM8QXP-MEK	700-29683 REV C2 (cpu board)	SCH-29683 REV D5 (cpu board)	MX8QXP_MEK
	700-29918 REV C1 (base board)	SCH-29918 REV C1 (base board)	
MCIMX93-EVK	700-51943 REV X2 (cpu board)	SCH-51943 REV B (cpu board)	MX93_11X11_EVK
	700-51961 REV X7 (base board)	SCH-51961 REV B (base board)	

Feature	Supported board	Comment
Boot Image		
U-Boot	All i.MX	- Clock, Anatop regulator, ENET, UART, MMC/SD, eMMC4.3/4.4/4.5.
OP-TEE	All i.MX	- OP-TEE OS is required on the boot partition with the TEE file for OP-TEE enablement.
Machine-specific layer		
Interrupt	All i.MX	- GIC
Clock	All i.MX	- Controls the system frequency and clock tree distribution.
Timer	All i.MX	- System timer tick and broadcast timer support.
GPIO	All i.MX	- GPIO is initialized in an earlier phase according to the hardware design.

Feature	Supported board	Comment
IOMUX	All i.MX	- Provides the interfaces for I/O configuration.
SCFW	i.MX 8QXP	- Clock/Power/Security is controlled by the “System Control Firmware”. The “imxscfw” driver controls the communication channel with this firmware.
DMA engine		
SDMA	i.MX 8M	- SDMA HAL
Character device drivers		
UART	i.MX 8M/Mini/Nano/Plus	- DMA (default) and Interrupt mode is configurable in ACPI - UART2 is not available in Windows, used by the Cortex-M4 processor.
LPUART	i.MX 8QXP/93	- Interrupt mode
Networking drivers		
ENET	All i.MX	- i.MX 8 supports Atheros AR8031 PHY with 10/100/1000 bps mode
ENET QOS	i.MX 8M Plus	- ENET QOS is available on i.MX 8M Plus. - RTL8211 PHY is supported.
PCIe	All i.MX	- i.MX 8 supports the M.2 interface.
Sound drivers		
SAI	All i.MX	- Supports both transmit to and receive from the audio codec.
WM8524 codec	i.MX 8M/Mini/Nano	- Supports playback
WM8960 codec	i.MX 8M Plus/8QXP	- Supports playback and record.
WM8962 codec	i.MX 93	- Supports playback and record.
HDMI audio	i.MX 8M Plus	- Supports playback. HDMI device must be audio capable.
USB drivers		
USB Host	All i.MX	- Supports USB-A and USB-C connectors.
Display/GPU		
HDMI	i.MX 8M/Plus	- Up to 1080p
LVDS display interface	i.MX 8M Plus/8QXP	i.MX 8M Plus: - Single-channel mode up to 720p - Dual-channel mode up to 1080p (or 1920x1200@60 Hz) - Default mode set to 720pi.MX 8QXP: - Single-channel mode up to 1080p - Default mode set to 1080p
IMX-LVDS-HDMI (LVDS to HDMI converter)	i.MX 8M Plusi.MX 8QXP	- Single-channel mode. Default resolution – see above.
MIPI-DSI display interface	i.MX 8M Mini/Nano/Plus	- i.MX 8M Nano/Plus: supports Windows GPU driver up to 1080p (or 1920x1200@60 Hz). The default

Feature	Supported board	Comment
		resolution is set to 720p.- i.MX 8M Mini: no Windows driver, only firmware support up to 1080p. Default resolution with IMX-MIPI-HDMI converter depends on the monitor native mode – 1080p in most cases.
IMX-MIPI-HDMI (MIPI-DSI to HDMI converter)	i.MX 8M Mini/Nano/Plus	- Default resolution – see above.
GPU	i.MX 8M/Plus/Nano/8QXP	- HW acceleration for 3D rendering through D3D11 API, therefore accelerates D2D, XAML, UWP, WinUI, Windows desktop UI, and D3D11 apps.
Multiple displays	i.MX 8M Plus/i.MX 8QXP	- i.MX 8M Plus: HDMI, LVDS, and MIPI-DSI.- i.MX 8QXP: LVDS0 and LVDS1
Camera		
Camera (SoCs with CSI Bridge)	i.MX 8M/Mini	- Video preview at 720p 30 fps YUYV.
Camera (SoCs with ISI)	i.MX 8M Plus/Nano	- Video preview at 720p 30 fps YUYV and NV12
OV5640 camera	All i.MX	- Second camera configurable in UEFI in <BOARD>.dsc file.
OV10635 camera	All i.MX	- Selectable in UEFI in <BOARD>. dsc file.- i.MX 8M/Mini/Nano/Plus requires an external 12 V PSU and a manual reset every time Windows OS is rebooted.- i.MX 8QXP powers the camera via mini SAS connector.
X-RPI-CAM-MIPI camera	i.MX 93	
Video		
VPU full feature	i.MX 8M	- Supported codecs HEVC, VP9, H.264, VP8, MPEG-2, and MPEG-4 codecs
VPU limited feature	i.MX 8 Mini/Plus	- Supported codecs HEVC, VP9, H.264, VP8.
General drivers		
uSDHC	All i.MX	- Supports SD, SDXC, eMMC.
I2C	All i.MX	- Supports I2C master mode.
SPI	All i.MX	- Supports SPI master mode.
FlexCAN	i.MX 8M	- FlexCAN low-level driver.
RTC	i.MX 8M/Mini/Nano/Plus	- Basic Set/GetTime UEFI support, reset/battery time retention.
Nor Flash	i.MX Plus/Nano	- UEFI Non-Volatile Variables stored in Nor Flash.
Power management		
Device power management	All i.MX	- Sample PoFx callbacks are implemented in i2c and pwm drivers. Devices entering D3 (power down) and

Feature	Supported board	Comment
		D0 (active) states, WakeUp sample callbacks in the i2c driver.
Processor power management	All i.MX	- PEP (Power Engine Plugin) driver is included in this release. Set usePpm to 1 in imxpep.cpp to enable processor power management, and contact NXP for the latest Pep version.
USB Power delivery	All i.MX	- The initial USB Power delivery contract is negotiated in U-Boot. See `tcpc_port_config` structure initialization in imx8mp_evk.c, imx8mq_evk.c, imx8mm_evk.c, and imx8mn_evk.c files for actual setting of voltage and current for the given board.
Power button	8M/Mini/Nano/Plus/93	- Power Button supports Shutdown/PowerOn/Sleep/Wake
8M Nano overdrive	8M Nano	- PcdPmicOverDriveEnable setting in firmware's MX8M_NANO_EVK.dsc increases Nano CPU 1.2 GHz to 1.4 GHz, GPU 400 MHz to 600 MHz. Using Nano overdrive requires a passive CPU cooler or thermal management driver

3 Known issues/limitations

Read through all hardware-related reference material and ensure that you have made all the necessary hardware modifications before using the software.

Limitation/Workaround	SoC
Boot	
Limitation: Supported boot media are SD and eMMC only. **Workaround:** No workaround.	All
UEFI	
Limitation: Non-volatile (NV) non-authorized UEFI variables available only on i.MX 8MPLUS and i.MX 8MNANO EVK.**Workaround:** On i.MX 8MMINI, 8MQ and QXP EVK the solution can be ported.	All
Camera	
Limitation: Only i.MX 8MQ EVK SCH-29615 rev. B4 is supported. Earlier board revisions use different I2C for the camera.**Workaround:** For i.MX 8MQ EVK SCH-29615 rev. B3, choose I2C1 camera device instead of I2C2 in `mu_platform_nxp/NXP/<BOARD>/AcpiTables/Dsdt Camera_<CONFIGURATION>.asl`.	i.MX 8M
Limitation: OV10635 requires an external 12 V power source and cannot be reconfigured by software without a power cycle. **Workaround:** After powering off the board, unplug the power supply from the camera and wait a few seconds before powering the camera and EVK board again.	i.MX 8Mi.MX 8M Mini i.MX 8M Nano i.MX 8M Plus
Display/GPU	
Limitation: Some monitors/displays may fail reading EDID using the on-board HDMI interface because of an incompatible voltage level shifter on 8MPLUSLPD4-EVK revision A. **Workaround:** Use 8MPLUSLPD4-EVK revision B1 or newer.	i.MX 8M Plus
Limitation: LVDS and MIPI-DSI display interfaces share the clock source for the pixel clock. If both interfaces are used at the same time, the resolution (pixel clock) of both displays must be the same. The exception is 1080p (148.5 MHz) and 720p (74.25 MHz), because the clock of the former is an integer multiple of the latter. **Workaround:** No workaround.	i.MX 8M Plus
Limitation: If LVDS, MIPI-DSI and HDMI display interfaces are used at the same time (3-display configuration), and Extend mode is selected for all three displays, artifacts may occur in the desktop screen (screen incorrectly refreshed) **Workaround:** Use Duplicate mode for at least two of the displays	i.MX 8M Plus
Limitation: Using Remote Desktop to connect to the device results in a black screen. **Workaround:** Apply the following register value to run the older XDDM driver for Remote Desktop: `reg add "HKLM\System\CurrentControlSet\Control\Terminal Server\WinStations" /v "LoadWddmIDDDriver" /t REG_DWORD /d 0x0 /f`	i.MX 8M
GPIO	

Limitation/Workaround	SoC
Limitation: EXP_IO pins on the EXP CN connector cannot be used as GPIOs because they are connected to PCA6416 I/O expander for which there is no driver implemented. **Workaround:** Use the GPIO pin on the EXP CN connector connected directly to the SoC's pin with GPIO functionality instead of connecting to the PCA6416 I/O expander.	i.MX 8M Mini i.MX 8M Nano i.MX 8M Plus
SDHC	
Limitation: The `imxusdhc.sys` in crash dump mode does not read HW-specific settings from ACPI so these values are hardcoded in the `SdhcSlotInitialize()` method. **Workaround:** Keep these values synchronized with values in Dsdt-Sdhc.asl ACPI table.	All
Limitation: SD card insertion/removal can cause a bug check if the delay between insertion/removal is too short. **Workaround:** Wait a few seconds before insertion/removal.	All
UART/LPUART	
Limitation: The RTS-CTS hardware flow control is not available for all UARTs. **Workaround:** Use UART with routed RTS-CTS pins.	All
USB	
Limitation: The size of SDRAM was increased to 6 GB. This change requires windows10.0-kb5019275-arm64_ c6c2abc31137d43e762304bd1542ba413d2b8b9e.msu to be installed. **Workaround**: The patch is applied in the installation script (make-winpe-enterprise.cmd) by default.	i.MX 8M Plus
PCIe	
Limitation: PCIe DMA supports 32-bit addressing only. Connected PCIe devices using memory > 4 GB may work incorrectly. **Workaround**: Allocate memory for PCIe devices below 4G or copy data to lower address space in the device driver.	i.MX 8M i.MX 8M Mini i.MX 8M Plus i.MX 8QXP
VPU	
Limitation: All MScale SoC´s (hantro VPU) decoding attempts could fail, due to runtime requirements of physical contiguous memory. This memory may not be available because of RAM fragmentation. **Workaround**: Reboot the board and play the video on the freshly booted system.	i.MX 8M i.MX 8M Mini i.MX 8M Plus

4 How to report a bug

To report a bug, contact your application engineer or create a ticket on the community website by following these steps:

1. Go to website https://community.nxp.com/t5/i-MX-Processors/bd-p/imx-processors
2. Click "**ASK A QUESTION**"
3. Fill in the Subject and click "**Check Title**". Using a more descriptive title makes it easier to sort by issue. For example, include the name of the operational system in the title.
4. If there are no similar topics, click "**Continue and Post**"
5. Fill in the body part with the following information:
   - Customer name
   - Board type and revision
   - BSP version
   - Describe the issue in detail
6. Click "**Post**" and wait for a response

5 Revision history

The table below summarizes the revisions to this document.

Revision number	Release date	Description
W0.9.0	1/2022	Private preview release for i.MX 8M platform.
W0.9.1	3/2022	Public preview release for i.MX 8M platform.
W1.0.0	4/2022	Public release for i.MX 8M and i.MX 8M Mini platforms.
W1.1.0	6/2022	Public release for i.MX 8M Nano and i.MX 8M Plus platforms.
W1.2.0	9/2022	Sections 1.2 and 3 are updated.
W1.2.1	10/2022	Section 1.2 is updated.
W1.3.0	12/2022	i.MX 8QuadXPlus MEK board support added.
W1.4.0	3/2023	i.MX 93 EVK board support added.
W1.4.1	7/2023	Section 1.2 is updated.
W1.5.0	12/2023	Section 1.2 is updated.

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