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i.MX Android™ Extended Codec Release Notes

Contents

1 Release Description

The features described in the release notes are NXP extended media formats and codecs based on Android™ native media framework.

Only codecs that have no license restriction are included in the standard release package.

Codecs that have license restriction are provided in separate packages. For more details, see Section 6.

2 Supported Hardware SoCs/ Boards

- i.MX 8QuadXPlus/8QuadMax MEK Board

3 What's New

- Enhanced stability and robustness.

4 Enhanced Features

4.1 Local playback

This section describes the local playback information.

4.1.1 Enhanced and extended formats and codecs

The following table provides the information about the enhanced codecs.

Table 1. Enhanced codecs

File extension	Demuxers	Video decoders	Audio decoders
.mp3	-	-	MP3
.aac/.adts	-	-	AAC LC/PLUS
.wav	-	-	LPCM
.flac	-	-	FLAC
.amr/.awb	-	-	AMR-NB/AMR-WB
.mp4 .mov .f4v	MP4	MPEG4 SP/ASP except GMC H.264 BP/MP/HP H263 MJPEG HEVC	AAC LC/PLUS MP3 Dolby Digital Plus
.m4a	MP4		AAC LC/PLUS
.3gp	MP4	MPEG4 SP/ASP except GMC H.264 BP/MP/HP H263 HEVC	AAC LC/PLUS AMR-NB AMR-WB
.avi	AVI	MPEG4 SP/ASP except GMC Xvid H.264 BP/MP/HP H263 MJPEG HEVC	AAC LC/PLUS MP3 LPCM
.wma	ASF	-	WMA STD, PRO, Lossless Dolby Digital Plus
.wmv/.asf	ASF	VC-1 SP/MP/AP WMV 7/8 HEVC	WMA STD, PRO, Lossless
.mkv/mka	MKV	H.264 BP/MP/HP MPEG4 SP/ASP except GMC Xvid	AAC MP3 WMA STD, PRO, Lossless

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Table 1. Enhanced codecs (continued)

File extension	Demuxers	Video decoders	Audio decoders
		VC-1 SP/MP/AP	Vorbis
		HEVC	Dolby Digital Plus
			Opus
.flv/.f4v	FLV	Sorenson H263	MP3
		H.264 BP/MP/HP	AAC
.mpg	MPEG2/PS	MPEG2 BP/MP	MP3
.vob	MPEG2/TS	MPEG2 BP/MP	AAC
.ts		H.264 BP/MP/HP	AC3
.m2ts			LPCM
			Dolby Digital Plus
.webm	MKV	VP8	MP3
			AAC LC/PLUS
.rmvb	RM	RV 8/9/10	RA
.rm	RM	RV 8/9/10	AAC
.ra	RM	-	RA

NOTE

- For detailed video and audio codec capability, see Section 5 "Codec Specification".
- AC3, AACPlus, ASF, WMV, WMA, DDPlus, and RMVB are restricted codec packages and are not generally available. Install them from the Restricted Codec Package.
- MJPEG subtypes and MJPEG_2000 and MJPEG_B are not supported.
- MJPEG only supports YUV420 and YUV422 (horizontal) color formats.

4.2 Streaming playback

The following table provides the information about streaming playback.

Table 2. Feature matrix for streaming playback

Protocol	File format
HTTP	.mp4/.3gp/.mov
	.flv/ .f4v
	.avi
	.wmv/.asf
	.mpg/.vob/.ts
	.mp3
	.aac
	.wma
	.mkv

Table continues on the next page...

Table 2. Feature matrix for streaming playback (continued)

Protocol	File format
RTP	.ts
UDP	.ts

To set up RTP/UDP streaming, perform the following operations:

- Install vlc 1.1.5 on Windows® OS or Ubuntu.
- For UDP streaming server: run VLC with the command:

```
vlc -vvv stream_file_name --sout udp://224.0.1.1:1234
```

- For the RTP streaming server:
  a. Start vlc with the GUI, and select MediaStreaming.
  b. Press Add to load the stream file, press Stream, and click Next.
  c. Select RTP/Mpeg Transport Stream from the drop-down list, and click Add.
  d. Enter the IP address 224.0.1.1 and base port number 5004, and deselect Activate Transcoding.
  e. Press Stream at the bottom. The server is started.
- For the UDP streaming client, run the Gallery on the Android platform with the command:

```
am start -n com.android.gallery3d/com.android.gallery3d.app.MovieActivity -d udp://
224.0.1.1:1234
```

- For the RTP streaming client, run Gallery on the Android platform with the command:

```
am start -n com.android.gallery3d/com.android.gallery3d.app.MovieActivity -d rtp://
224.0.1.1:5004
```

- For the uni-cast, use the client IP address instead of 224.0.1.1 when starting the server, and use the server IP address instead of 224.0.1.1 when starting the client.

4.3 Audio pass through streaming

Audio pass through supports audio AC-3 and DD-plus. To enable audio pass through, run the following command to set the property:

```
setprop persist.audio.pass.through 2000
```

5 Codec Specification

5.1 Video decoder for i.MX with VPU hardware

Table 3. Video decoder for i.MX with VPU hardware

	Format	Platform	Profile	Min. resolution	Max. resolution	Frame rate	Bit rate	Comment
Video Decoder	HEVC	i.MX 8MQuad	main/main 10	144 x 144	4096 x 2160	60 fps	160 Mbps	-

Table continues on the next page...

Table 3. Video decoder for i.MX with VPU hardware (continued)

	Format	Platform	Profile	Min. resolution	Max. resolution	Frame rate	Bit rate	Comment
		i.MX 8MMini	main/main 10	144 x 144	1920 x 1080	60 fps	100 Mbps	-
		i.MX 8QuadXPlus	main	144 x 144	4096 x 2160	30 fps	100 Mbps	-
		i.MX 8QuadMax	main	144 x 144	4096 x 2160	60 fps	100 Mbps	
	H.264	i.MX 8MQuad	HP/MP/BP	96 x 48	4096 x 2160	30 fps	60 Mbps	-
		i.MX 8MMini	HP/MP/BP	48 x 48	1920 x 1080	60 fps	60 Mbps	-
		i.MX 8QuadXPlus	HP/MP/BP	64 x 64	4096 x 2160	30 fps	50 Mbps	-
		i.MX 8QuadMax	HP/MP/BP	64 x 64	4096 x 2160	30 fps	50 Mbps	
		i.MX 6	HP/MP/BP	64 x 64	1920 x 1080	60 fps	50 Mbps	-
	VP9	i.MX 8MQuad	profile 0, 2	96 x 72	4096 x 2160	60 fps	100 Mbps	-
		i.MX 8MMini	profile 0, 2	72 x 72	1920 x 1080	60 fps	100 Mbps	-
	VP8	i.MX 8MQuad i.MX 8MMini	-	48 x 48	1920 x 1080	60 fps	60 Mbps	-
		i.MX 6Quad	-	64 x 64	1920 x 1080	30 fps	20 Mbps	-
		i.MX 6DualLite	-	64 x 64	1280 x 720	30 fps	20 Mbps	-
	MPEG4	i.MX 8MQuad	SP/ASP	48 x 48	1920 x 1080	60 fps	-	-
		i.MX 8QuadXPlus	SP/ASP	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 8QuadMax	SP/ASP	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 6	SP/ASP	64 x 64	1920 x 1080	30 fps	40 Mbps	-
	MPEG2	i.MX 8MQuad	MP	48 x 48	1920 x 1080	60 fps	-	-
		i.MX 8QuadXPlus	MP	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 8QuadMax	MP	64 x 64	1920 x 1080	60 fps	-	-
		i.MX 6	MP	64 x 64	1920 x 1080	30 fps	50 Mbps	-
	H.263	i.MX 8MQuad	P3	48 x 48	1920 x 1080	60 fps	-	-
		i.MX 6	P3	64 x 64	1920 x 1080	30 fps	20 Mbps	-
	VC1	i.MX 8MQuad	AP/MP/SP	48 x 48	1920 x 1080	60 fps	-	-
		i.MX 6	AP/MP/SP	64 x 64	1920 x 1080	30 fps	45 Mbps	-
	MJPEG	i.MX 8MQuad	-	48 x 48	1920 x 1080	60 fps	180 Mpixl	-
		i.MX 6	-	64 x 64	1920 x 1080	30 fps	120 Mpixl	-
	RV	i.MX 8MQuad	9	48 x 48	1920 x 1080	60 fps	-	-
		i.MX 6	8/9/10	64 x 64	1920 x 1080	30 fps	40 Mbps	-

5.2 Video decoder for i.MX without VPU hardware

Table 4. Video decoder for i.MX without VPU hardware

	Format	Platform	Profile	Min. resolution	Max. resolution	Frame rate	Bit rate	Comment
Software Video Decoder	-	i.MX all	-	-	According to system performance	According to system performance	According to system performance	Supported With Android Native Decoder

5.3 Video encoder for i.MX with VPU hardware

Table 5. Video encoder for i.MX with VPU hardware

	Format	Platform	Profile	Min. resolution	Max. resolution	Frame rate	Bit rate	Comment
Video Encoder	H.264	i.MX 8M Mini	HP/MP/BP	132 x 96	1920 x 1080	60 fps	40 Mbps	-
		i.MX 8QuadXPlus	HP/MP/BP	64 x 64	1920 x 1080	30 fps	-	-
		i.MX 8QuadMax	HP/MP/BP	64 x 64	1920 x 1080	30 fps	-	-
		i.MX 6	BP	64 x 64	1920 x 1080	30 fps	20 Mbps	-
	VP8	i.MX 8M Mini	-	132 x 96	1920 x 1080	30 fps	60 Mbps	-
	MPEG4	i.MX 6	SP	64 x 64	1280 x 720	30 fps	12 Mbps	-
	H.263	i.MX 6	P3	64 x 64	1280 x 720	30 fps	8 Mbps	-

5.4 Audio decoder

Table 6. Audio decoder

Decoder	Feature/Profile	Channel	Rate (KHz)	Bitrate	HW/SW	Comments
MP3	MPEG-1 (Layer-1/ Layer-2/Layer-3) MPEG-2 (Layer-1/ Layer-2/Layer-3) MPEG-2.5 (Layer-3)	stereo/mono	<=48	8-448	SW/HW	-
AACLC	MPEG-2 AACLC	<=5.1	8-96	8-256	SW/HW	AACLC HW decoder only supports stereo/ mono channel.
	MPEG-4 AACLC					

Table continues on the next page...

Table 6. Audio decoder (continued)

Decoder	Feature/Profile	Channel	Rate (KHz)	Bitrate	HW/SW	Comments
HE-AAC	HE-AAC V1 HE-AAC V2	stereo/mono	8-96	Mono: 8-384 stereo:16-768	SW/HW	-
WMA10 Std	L1 @ QL1	stereo/mono	44.1	64-161	SW	-
	L2 @ QL1	stereo/mono	<=48	<=161	SW	-
	L3 @ QL1	stereo/mono	<=48	<=385	SW	-
WMA10 Pro	M0a @ QL2	stereo/mono	<=48	48-192	SW	-
	M0b @ QL2	stereo/mono	<=48	<=192	SW	-
	M1 @ QL2	<=5.1	<=48	<=384	SW	-
	M2 @ QL2	<=5.1	<=96	<=768	SW	-
	M3 @ QL2	<=7.1	<=96	<=1500	SW	-
WMA 9 Lossless	N1	stereo/mono	<=48	<=3000	SW	-
	N2	<=5.1	<=96	<=3000	SW	-
	N3	<=7.1	<=96	<=3000	SW	-
AC-3	-	<=5.1	<=48	32-640	SW	-
FLAC	-	<=7.1	8-192	-	N/A	-
DD-plus	-	<=7.1	32, 44.1, 48 64, 88.2, 96	<=6.144 Mbps	SW	-
RA	cook	stereo/mono	8k, 11.025k, 22.05k, 44.1k	-	SW	-
BSAC	-	stereo/mono	8-48	16-128	HW	-

5.5 Audio encoder

Use Android OS default audio encoders.

6 License Restricted Codecs

For information about receiving the restricted codec packages, contact an NXP representative.

6.1 Package list

The following features are supplementary to standard codec release packages.

Table 7. License limited codecs

Package name	Feature
fsl_ac3_dec.tar.gz	Audio Codec: AC3
fsl_ddp_dec.tar.gz	Audio Codec: DD Plus

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Table 7. License limited codecs (continued)

Package name	Feature
fsl_aacp_dec.tar.gz	Audio Codec: AACPlus
fsl_ms_codec.tar.gz	• Demuxer: ASF • Video Decoder: WMV • Audio Codec: WMA
fsl_real_dec.tar.gz	• Demuxer: RM • Video Decoder VPU firmware • Audio Decoder: RA
imx_dsp.tar.gz	Audio Hardware Codec: Hi-Fi firmware
imx_dsp_codec.tar.gz	Audio Hardware Codec: MP3, BSAC
imx_dsp_aacp_dec.tar.gz	Audio Hardware Codec: AACLC, AACPlus

6.2 How to install the license limited codecs

See the readme file for each package.

7 Limitations of This Release

- The minimum resolution is 64*64
- Complex Profile of WMV9 is not supported
- Multimedia files that do not have an index table may not be searchable
- Corrupted multimedia files may not be searchable and may have an incorrect duration

8 Known Issues

None.

9 Revision History

Table 8. Revision history

Revision number	Date	Substantive changes
O8.0.0_1.2.0_8QXP-EAR	12/2017	Initial release
O8.1.0_1.2.0_8QXP-PRC	03/2018	i.MX 8QuadXPlus PRC/Beta release
O8.1.0_1.2.0_8QXP-beta2	08/2018	i.MX 8QuadXPlus Beta2 release
O8.1.0_2.0.0-beta	01/2019	i.MX 8QuadXPlus/8QuadMax Beta release
O8.1.0_2.0.0-ga	04/2019	i.MX 8QuadXPlus/8QuadMax GA release

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