**i.MX 6 Series Yocto Project Multimedia Gsteamer 1.x  
Release Notes**

# Rev. L3.10.17\_1.1.0 MM 4.0.0, 04/2014

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# 1 BSP Requirements

* Hardware requirements:
  + i.MX 6Dual-Lite/6Quad SABRD-SD board
  + i.MX6Dual-Lite /6Quad SABRD-AI board
  + i.MX6SoloLite EVK board
  + i.MX6SX SABRD-SD board
* Software requirements:
  + Board Support Package (BSP)
    - i.MX Linux BSP version L3.10.17
  + Gstreamer:
    - gstreamer (version 1.2.3)
    - gstreamer-plugins-base (version 1.2.3)
    - gstreamer-plugins-good (version 1.2.3)

# 2 What’s new

* + Support Audio / Video local playback
  + Support HTTP / RTSP Streaming playback
  + Support RTP / UDP MPEGTS Streaming
  + Support RTSP Streaming Server

# 3 Release Contents

**Table 1. Packages for Yocto Release**

| **Package** | **Name** | **Package** | **Remark** |
| --- | --- | --- | --- |
| Standard Package | Gstrearmer plugins | gst1.0-fsl-plugins-[version].tar.gz | FSL Gstreamer plugins |
| libfsl codec | libfslcodec-[version].bin | FSL optimized A/V core codec |
| libfsl parser | libfslparser-[version].bin | FSL optimized core parser |
| libfslvpuwrap | libfslvpuwrap-[version].bin | FSL VPU wrapper for vpu library |
| alsa plugins | fsl-alsa-plugins-[version].bin | FSL ASRC plugins module for alsa lib |
| Special Package | AACPlus Dec | libfslaacpcodec-[version].bin | FSL AACplus core decoder |
| MS Codec | libfslmscodec-[version].bin | FSL optimized MS CODEC |
| MS parser | libfslmsparser-[version].bin | FSL optimized asf parser |
| Excluded Package | AC3 Dec | libfslac3codec-[version].bin | FSL AC3 core decoder |
| DDplus Dec | libfslddpcodec-[version].bin | FSL DD-plus decoder |

# 4 Freescale GStreamer Plugins

**Table 2. Freesclae Gstreamer Plugins**

|  |  |
| --- | --- |
| Audio Decoder | * beepdec: unified audio decoder plugin   Supports MP3, AAC, AAC+, WMA, AC3, Vorbis, DD+, AMR |
| Video Decoder | * vpudec: VPU-based video decoder plugin * Software video deocder plugins: use gst-libav plugins |
| Demux | * aiurdemux: aiur universal demuxer plugin supporting   Supports AVI, MKV, MP4, MPEG2, ASF, OGG, FLV, WebM |
| Video Render | * imxv4l2sink: v4l2 based video sink plugin |
| Camera Source | * imxv4l2src: v4l2 based camera source plugin |

**NOTE:**

* To support WMA, WMV, AAC+, AC3, DD+ decoding and WMA encoding needs to install special and excluded packages.
* vpudec plugins are only for SoCs with VPU hardware.

# 5 Multimedia Feature Matrix

This section provides feature matrix details of various codec used for playback

## 5.1 Parser/Demuxer Specification

**Table 3. Parser/Demuxer Supported Audio/Video**

| **Demuxer feature** | | **ASF** | **AVI** | **MP4** | **OGG** | **FLV** | **MPG2** | **MKV** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Video | H264 | - | Y | Y | - | Y | Y | Y |
| MPEG2 | - | Y | - | - | - | Y | Y |
| MPEG4 | Y | Y | Y | - | - | - | Y |
| H263 | - | Y | Y | - | Y | - | Y |
| MJPEG | - | Y | Y | - | - | - | Y |
| VC1 | Y | Y | - | - | - | - | Y |
| DivX | Y | Y | Y | - | - | - | Y |
| Xvid | - | Y | - | - | - | - | Y |
| VP8 | - | - | - | - | - | - | Y |
| VP6 | - | - | - | - | Y | - | Y |
| Theora | - | - | - | Y | - | - | - |
| RV | - | - | - | - | - | - | Y |
| Audio | AAC | - | Y | Y | - | Y | Y | Y |
| MP3 | Y | Y | Y | - | Y | Y | Y |
| WMA | Y | Y | - | - | - | - | Y |
| AC3 | - | Y | Y | - | - | Y | Y |
| PCM/ADPCM | Y | Y | Y | - | Y | Y | Y |
| AMR | - | - | Y |  | - | - | Y |
| Vorbis | - | Y | Y | Y | - | - | Y |
| SPEEX | - | - | - | Y | Y | - | Y |
| DTS | - | - | - | - | - | Y | Y |
| FLAC | - | - | - | Y | - | - | Y |
| DD+ | Y | - | Y | - | - | Y | Y |

**NOTE:**

* The demuxer support of a certain audio/video type does not necessarily mean that it can be played. This depends on the availability of the codec.

## 5.2 Video Codec Specification for i.MX 6Qual/6DualLite

**Table 4. Video Codec Specification for i.MX 6Qual/6DualLite**

|  | **Feature** | **Profile** | **Max Resolution** | **Min Resolution** | **Max Framerate** | **H/W / S/W** | **Bitrate** | **Comments** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Video Decoder | MPEG2 | MP | 1920 \* 1080 | 64 \* 64 | 30 fps | H/W | 50 Mbps |  |
| MPEG4 | SP | 1920 \* 1080 | 64 \* 64 | 30 fps | H/W | 40 Mbps |  |
| ASP | 1920 \* 1080 | 64 \* 64 | 30 fps | H/W |  |
| H.263 | P3 | 1920 \* 1080 | 64 \* 64 | 30 fps | H/W | 20 Mbps |  |
| H.264 | BP | 1920 \* 1080 | 64 \* 64 | 30 fps | H/W | 50 Mbps |  |
| MP | 1920 \* 1080 | 64 \* 64 | 30 fps | H/W |  |
| HP | 1920 \* 1080 | 64 \* 64 | 30 fps | H/W |  |
| VC-1 | SP | 1920 \* 1080 | 64 \* 64 | 30 fps | H/W | 45 Mbps |  |
| MP | 1920 \* 1080 | 64 \* 64 | 30 fps | H/W |  |
| AP | 1920 \* 1080 | 64 \* 64 | 30 fps | H/W |  |
| VP8 | - | 1280 \* 720 | 64 \* 64 | 30 fps | H/W | 20 Mbps | i.MX6Q |
| 1920 \*1080 | 64 \* 64 | 30 fps | H/W | i.MX6DL |
| MJPEG | - | 1920 \* 1080 | 64 \* 64 | 30 fps | H/W | 120Mpixl/s |  |

## 5.3 Video Codec Specification for i.MX 6SX/SoloLite

i.MX6SX and i.MX6SoloLite uses gst-libav plugins for software video decoding. Below table list the features tested.

**Table 5. Video Codec Specification for i.MX 6SX / 6SoloLite**

|  | **Feature** | **Profile** | **Max Resolution** | **Min Resolution** | **Max Framerate** | **H/W / S/W** | **Comments** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Video Decoder | H.264 | BP/MP/HP | D1 | 64 \* 64 | 30 fps | SW | Using gst- libav plugin |

**NOTE:**

gst-libav plugins are not default installed into Yocto Project image as it's commercial license. Please refer to Multimedia User Guide Appendix for how to install it.

## 5.4 Audio Codec Specification

**Table 6. Audio Decoder Specification**

| **Decoder** | **Feature/Profile** | **Channels** | **SampleRate (KHz)** | **Bitrate (kbps)** | **H/W or S/W** | **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 | S/W |  |
| AACLC | MPEG-2 AACLC | <=5.1 | 8 ~ 96 | 8 ~ 576 / channel | S/W |  |
| MPEG-4 AACLC |
| HE-AAC | HE-AAC V1 HE-AAC V2 | stereo/mono | 8 ~ 96 | Mono: 8 ~384 stereo :16 ~ 768 | S/W |  |
| WMA10 Std | L1 @ QL1 | stereo/mono | 44.1 | 64 ~ 161 | S/W |  |
| [L2 @ QL1](mailto:L2@QL1) | stereo/mono | <= 48 | <= 161 | S/W |  |
| [L3 @ QL1](mailto:L3@QL1) | stereo/mono | <= 48 | <=385 | S/W |  |
| WMA10 Pro | [M0a @ QL2](mailto:M0a@QL2) | stereo/mono | <= 48 | 48 ~ 192 | S/W |  |
| [M0b @ QL2](mailto:M0b@QL2) | stereo/mono | <= 48 | <= 192 | S/W |  |
| [M1 @ QL2](mailto:M1@QL2) | <= 5.1 | <= 48 | <= 384 | S/W |  |
| [M2 @ QL2](mailto:M2@QL2) | <= 5.1 | <= 96 | <= 768 | S/W |  |
| [M3 @ QL2](mailto:M3@QL2) | <=7.1 | <= 96 | <= 1500 | S/W |  |
| WMA 9 Lossless | N1 | stereo/mono | <= 48 | <=3000 | S/W |  |
| N2 | <=5.1 | <= 96 | <=3000 | S/W |  |
| N3 | <=7.1 | <=192 | <=3000 | S/W |  |
| AC-3 |  | <=5.1 | <= 48 | 32 ~ 640 | S/W |  |
| FLAC |  | <= 7.1 | 8 ~ 192 |  | N/A |  |
| BSAC |  | <=5.1 | <= 48 | 64 per channel | N/A | Core codec only |
| Ogg Vorbis | q-1 ~ q10 | Stereo | 8 ~ 192 | <=500 | S/W |  |
| DD-plus |  | <=7.1 | 32 44.1, 48 64, 88.2, 96 | <=6.144Mbps | S/W |  |

## 5.5 Image Codec Specification

**Table 7. Image Codec Specification**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Feature** | **Profile** | **Max Resolution** | **H/W or S/W** |
| Image Decoder | JPEG | baseline | Memory related | S/W |
| PNG | N/A | Memory related | S/W |
| GIF | N/A | Memory related | S/W |
| BMP | N/A | Memory related | S/W |
| Image Encoder | JPEG | baseline | Memory related | S/W |

## 5.6 Speech Codec Specification

**Table 8. Speech Codec Specification**

|  | **Feature** | **SampleRate** | **Bit Rate (kbps)** | **H/W or S/W** |
| --- | --- | --- | --- | --- |
| Speech Codec | G.711 | 8KHz | 64 | S/W |
| G.723.1 | 8KHz | 5.3, 6.3 | S/W |
| G.726 | 8KHz | 16, 24, 32, 40 | S/W |
| G.729ab | 8KHz | 8 | S/W |
| AMR\_NB | 8KHz | 12.2, 10.2, 7.9, 7.4, 6.7, 5.9, 5.15, 4.75 | S/W |
| AMR\_WB | 16KHz | 23.85, 23.05, 19.85, 18.25,  15.85, 14.25, 12.65, 8.85, 6.6 | S/W |

## 5.7 Streaming Protocol Specification

**Table 11. Streaming Protocol Specification**

|  |  |
| --- | --- |
| **Protocol** | **Feature** |
| HTTP | HTTP progressive streaming |
| RTSP | RTP, SDP |
| RTP/UDP | RTP/UDP MPEGTS streaming |

## 5.8 RTSP Streaming Server Specification

**Table 12. RTSP Streaming Server Specification**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Demux feature** | | **AVI** | **MP4** | **FLV** | **MKV** | **MP3** | **AAC** |
| Video | H264 | Y | Y | Y | Y | - | - |
| MPEG4 | Y | Y | - | Y | - | - |
| Audio | MP3 | Y | Y | Y | Y | Y | - |
| AAC | Y | Y | Y | Y | - | Y |

**NOTE:**

To support RTSP server, need to install gst-rtsp-server open source package, you can follow the Multimedia User Guide RTSP streaming server section for how to build and install it.

# 6 Documentation

**Table 9. Documentation Details**

|  |  |
| --- | --- |
| **Document Name** | **Description** |
| MX6\_Multimedia\_GST1.x\_Yocto\_Project\_Release\_Notes.docx | This document. |
| MX6\_Yocto\_Project\_Multimedia\_Gstreamer\_1.x\_User\_Guide.docx | A document describes how to build Freescale Multimedia components with Yocto, and provides how to run various multimedia use cases with Gstreamer command lines. |

# 7 Known Issue and Limitations

* As playbin2 multi-queue max buffer size is 2Mbytes, may cause problem for some long audio/video interleaved streams. Customer can enlarge this buffer size to support the special cases.
* The rotation is not supported for interlaced stream which width/height is larger than 968x968 due to driver limitation. (for i.MX6Qual/DualLite)
* The rotation is not supported for display resolution larger than 1024x1024 due to driver limitation. (for i.MX6Qual/DualLite)
* AAC decoder: ADIF format does not support seek mode and FF/FB.

# 8 Note

* The accurate seek mode may have a longer time delay.
* For the stream container doesn’t have the index table, seek is not supported.
* Not support fast rewind of audio only streams.
* Pulseaudio only available for X11 back-end Yocto Project rootfs.

# 9 Getting Technical Support

If you have any questions or problems concerning this release, please contact your Freescale representative, specifying the release version, the board version, the BSP version, and any other relevant information.