

PRODUCT BRIEF

QNX Multimedia Suite



The QNX Multimedia Suite is a comprehensive collection of media technology that has evolved over the years to keep pace with the latest media requirements of current-day embedded systems. Proven in tens of millions of automotive infotainment head units, the suite enables media-rich, high-quality playback, encoding and streaming of audio and video content. The multimedia suite comprises a modular, highly-scalable architecture that enables building high value, customized solutions that range from simple media players to networked systems in the car. The suite is optimized to leverage system-on-chip (SoC) video acceleration, in addition to supporting OpenMAX AL, an industry open standard API for application-level access to a device's audio, video and imaging capabilities.

Overview

Consumer's demand for multimedia has fueled an anywhere-anytime paradigm, making multimedia ubiquitous in embedded systems. More and more embedded applications have requirements for audio, video and communication processing capabilities. For example, an infotainment system's media player enables playback of content, stored either on-board or accessed from an external drive, mobile device or streamed over IP via a browser. Increasingly, these systems also have streaming requirements for distributing content across a network, for instance from a head unit to the digital instrument cluster or rear seat entertainment units. Multimedia is also becoming pervasive in other markets, such as medical, industrial, and whitegoods where user interfaces are increasingly providing users with a rich media experience.

The QNX Multimedia Suite is available as middleware technology that can be added to run on the QNX Neutrino® Realtime Operating System (RTOS). The suite supports leading vendor silicon, and takes full advantage of video hardware acceleration. Furthermore, the modular architecture is designed to scale and support new audio and video industry standards as they become available in market.

High-level capabilities of the QNX Multimedia Suite include support for: integrated audio and video CODECs for encoding and decoding, audio and video playback control, multiple playlist and still image formats, media detection and device support, media metadata synchronization and management via embedded databases, and streaming of media server content across the network for playback at the receiving endpoint.

Benefits

- Field proven in tens of millions of vehicles and mobile devices deployed worldwide
- Optimized use of hardware acceleration with extensive hardware platform support
- Used standalone, or integrated with other technologies:
 - QNX Web Browser

- QNX SDK for Smartphone Connectivity (with support for Apple CarPlay and Android Auto)
- Qt distributions for QNX SDP 7
- QNX CAR Platform for Infotainment
- Support for a variety of external media stores

Features at a Glance

Multimedia Playback

- Software-based audio CODECs
- Hardware accelerated video CODECs
- Extensive file format (Container) playback
- Streaming playback
- Supported via OpenMAX AL or Multimedia Renderer APIs
- Multi-track audio
- Subtitle track switching
- Smooth audio track play

Multimedia Management

- Device detection and media sync to database
- Metadata synchronization and management
- Playlist support

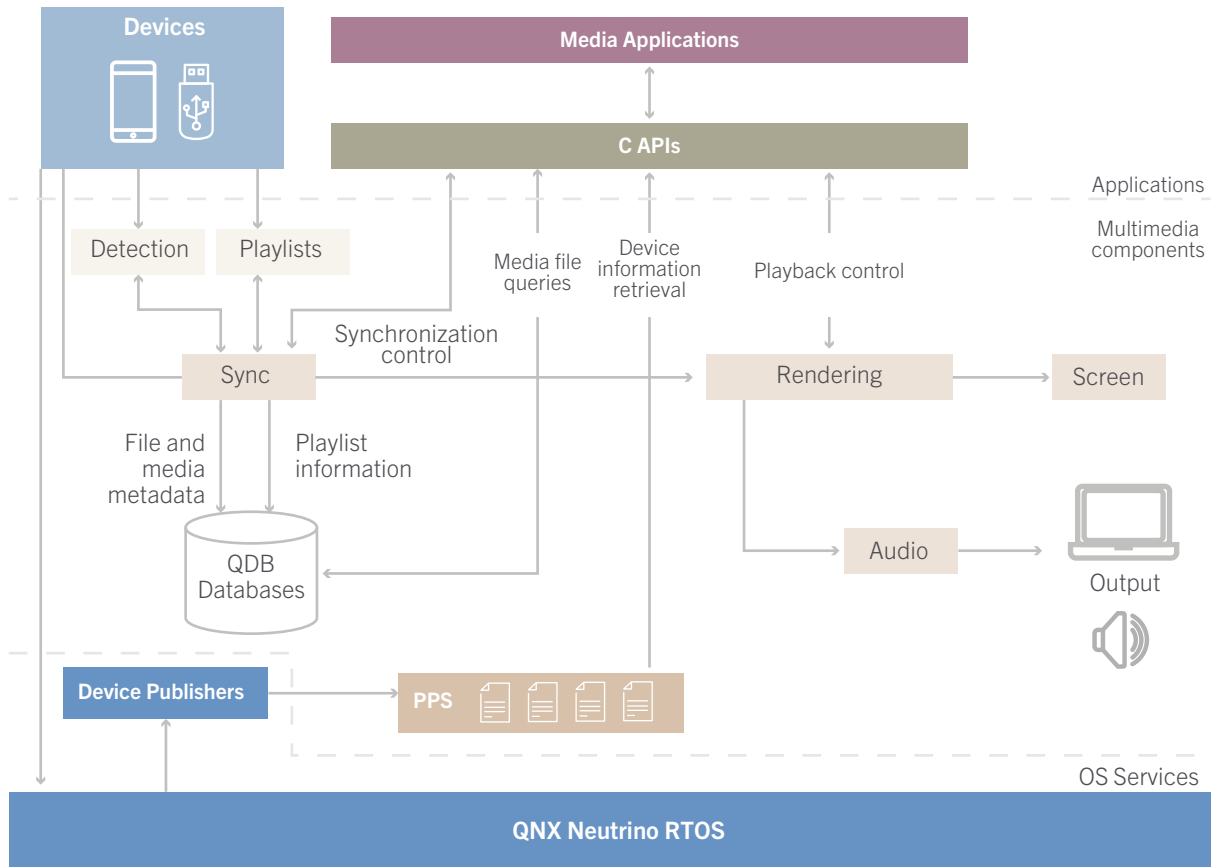
Device Connectivity

- Apple iOS
- Android
- Windows

Encode and Casting

- Audio/video encoding on supported platforms
- Media streaming server
- OpenMAX AL API

Architecture



Multimedia Playback - File Format (Container) Support

File Container	File Extensions	Video Formats	Audio Formats
AAC	.aac, (ADTS and ADIF)	N/A	AAC
AMR	.amr	N/A	AMR Wide Band, AMR Narrow Band
APE	.ape	N/A	Monkey Audio (APE)
ASF	.wma, .wmv, .asf	WMV9, VC-1, MPEG-4 video, H.264, H.263	Windows Media Audio (9,10,10 Professional, Lossless)*, MP3, ADPCM, AAC
AVI	.avi	H.264, Xvid, MPEG-4 video, MPEG-2 video MJPEG, WMV9	MP3, AAC, PCM, Windows Media Audio (9,10,10 Professional)*
FLAC	.flac	N/A	FLAC
FLV	.flv	H.263, H.264	MP3, AAC
MKV	.mkv, .mka	H.265, VP-9, H.264, MPEG-4 video, MPEG-2 video	AAC, MP3, FLAC, PCM, Vorbis, AC-3*
MP2 Program Stream	.mpv, .mpeg, .mpg	MPEG-2 video	MP3, AAC, PCM, AC-3*
MP2 Transport Stream	.ts, .m2t, .m2ts, .mp2ts, .mts	H.265, H.264, MPEG-2 video	AAC, MP3, AC-3*
MP3	.mp3, .mp1, .mp2, .mpa	N/A	MP3
MP4/MOV	.mp4, .mov, .qt, .3gp, 3gpp, .3g2, .m4v, .m4a, .m4b, .mpeg4	H.265, VP-9, H.264, H.263, MPEG-4 video, MPEG-2 video, MJPEG	AAC, MP3, PCM, ALAC, AC-3*, AMR-NB, AMR-WB
OGG	.ogg, .oga	None	Vorbis, FLAC
WAV	.wav	N/A	LPCM, A-Law, U-Law
AIF	.aif, .aiff, .aifc	N/A	PCM

* Requires extra licensing;

Additional CODECS may be supported via services;

Multimedia Playback - Audio Codec Support

Codec	Support Notes	Stereo/Multichannel
AAC	(MPEG-2 and MPEG-4) AAC-LC, HE-AACv2, AAC-LD, AAC-ELD	Multichannel
MP3	MPEG 1, 2, and 2.5, layer 3	Stereo
FLAC		Multichannel
ALAC		Multichannel
Vorbis		Multichannel
AC-3*		Multichannel
WMA*	WMA 9,10,10 Professional, Lossless	Multichannel
APE		Multichannel
Opus		Mono/Stereo
AMR	Narrowband and Wideband	Mono
PCM	LPCM, A-Law, U-Law, ADPCM	Multichannel

* Requires extra licensing;
Additional CODECS may be supported via services.

Multimedia Playback - Features

Subtitle Support:

- Subtitles for captioning standards for file containers:
 - VOBSUB (MP4/MOV, MKV)
 - SRT (MKV, Separate Caption File)
 - SMPTE-TT (Separate Caption File)
- Subtitle track switching

Audio Support:

- Multi-track audio support including track switching
- Smooth audio track play

Playlist Support:

- .m3u • .b4s
- iTunes • .pls
- .wpl • .rmp
- .asx • .xspf

Streaming Formats for Playback:

- HTTP/HTTPS
- RTP
- RTSP
- HTTP Live Streaming (HLS)
- Bluetooth A2DP
- MPEG DASH

Multimedia Management

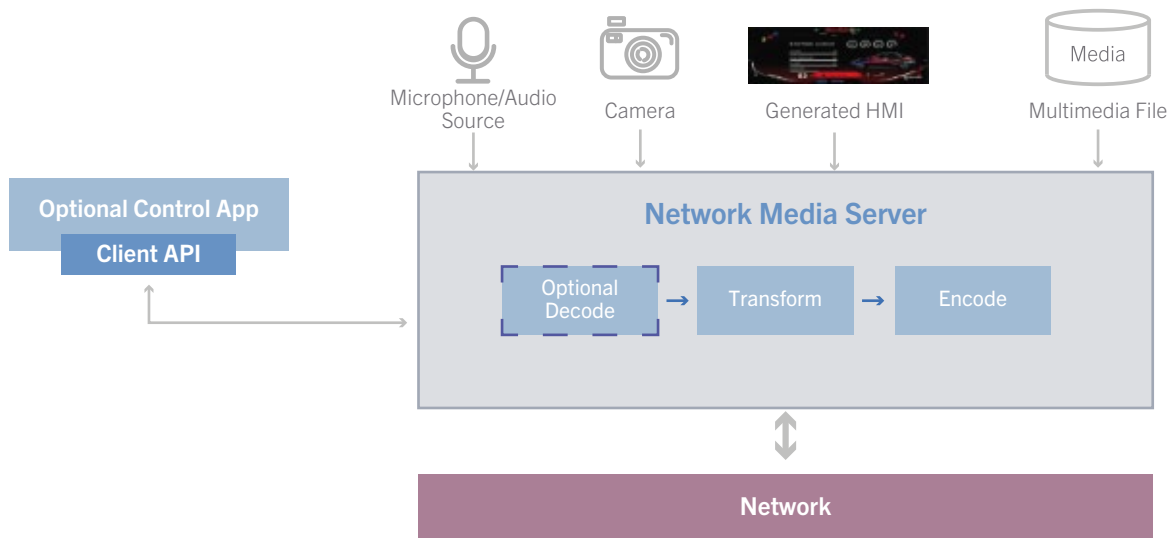
- Device detection and media synchronization to database
- Metadata synchronization and management
 - Title, genre, artist, album, album art, etc.
- Playlist support for syncing and passing to dB
 - M3U, M3U ext, iTunes, PLS, ASX, RMP, B4S, WPL, XSPF

Multimedia Device Connectivity

- Apple iOS: iAP1, iAP2
- Android/Windows: MTP
- Apple CarPlay*, Android Auto*

*available with QNX SDK for Smartphone Connectivity

Multimedia Encode and Casting



- Multimedia server support for streaming content from various sources across a network:
 - o Audio from USB, line-in, or microphone
 - o Camera input
 - o Multimedia files
 - o Screen displays (from UI)
- Stand-alone encoding via OpenMAX AL 1.1
- Encoded data streamed via RTP and RTSP
- Use cases:
 - o Casting user interface across a network
 - o Network camera sharing
 - o Network audio device sharing
 - o Sharing media from a networked server for decode and playback at receiving endpoint

Audio Encode CODEC Support:

Codec	Support Notes	Stereo/Multichannel
AAC	LC, ELD, LD Profiles	multichannel
AMR	Wideband, Narrowband	Mono
PCM		Mono, Stereo
Opus		Stereo

* Additional CODECs may be supported via services;

Video Encode CODEC Support:

- H.264/AVC-1

File Format (Container) Support for Encoding:

File Container	File Extensions	Video Formats*	Audio Formats
mp4	.mp4, .mov, .qt, .3gp, 3gpp, .3g2, .m4v, .mpeg4	AVC1 (H.264), H.263	AMR, AAC
MPEG-2 Transport Stream	.ts, .m2t, .m2ts, .mp2ts, .mts	AVC1 (H.264)	AAC
wav	.wav	N/A	LPCM

Hardware Support

- Texas Instrument Jacinto 6
- NXP i.mx8
- Qualcomm Snapdragon 820
- Renesas H3
- Intel NUC
- Intel Apollo Lake

Additional features, CODECs, and hardware support is available via BlackBerry QNX services team. Contact your BlackBerry QNX sales associate for any enquires.

About BlackBerry QNX

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