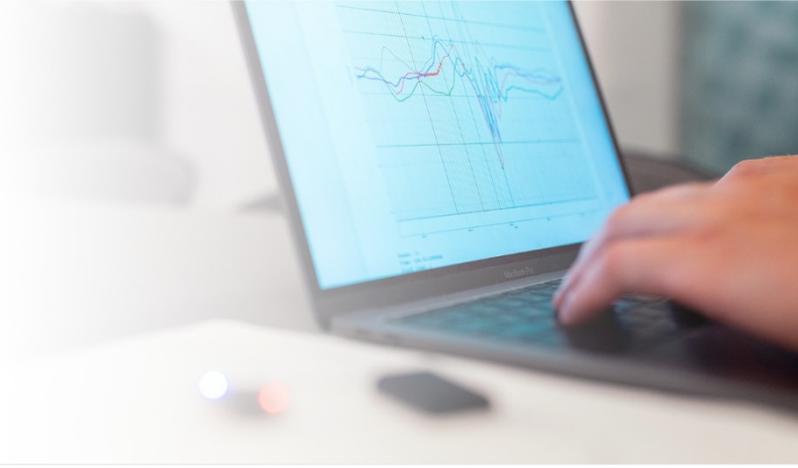


# The Solutions Series

Captivating. Compelling. Complex.



Quixant, the world-leading partner to the gaming industry presents “The Quixant Solutions Series” - a new collection of thought-provoking, educational papers concerning challenges faced by the gaming industry, that provide an in depth-insight into how Quixant enable their partners to unleash their creativity, rock the industry and crack every opportunity. Our parameter-pushing platforms, monitors and tools offer endless possibilities to keep you ahead of the game.

Quixant understand the complexities involved with designing and developing innovative gameplay experiences and floor-winning cabinets. In this series of articles, Quixant experts will explore key tools that we have researched and developed in order to make the creation of games easier and faster - from creating synchronised lighting sequences, real-time debugging and sharper security features.

With these diverse range of topics, we hope to inspire and enlighten our audience to the many differentiators offered when partnering with Quixant.

If you would like some more information, or have any questions please contact [innovation@quixant.com](mailto:innovation@quixant.com).

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## QxVDR - Quixant Video Decoding and Rendering

### Overview

Rapid advances in technology and an increase in innovation, related to content delivery and high-performing graphics, have pushed the boundaries of what embedded platforms can deliver. With the need for high-performance both in processing and graphical power - it is crucial that these platforms adapt to these growing needs.

The gaming industry is evolving quickly and the rate of adoption of technology is faster than ever before. This progress has accompanied the development of bigger and brighter displays with higher resolution, latest-generation data transfer throughput, and more effective storage options and interfaces. Therefore, it is imperative these systems need a robust design to provide greater reliability through their embedded platforms.

Today's slot games immerse players into an entire environment characterised by simple yet dramatic storylines, innovative, powerful sound, and enticing graphics. Every part of the game has the objective of captivating the audience and delivering a rich audio-visual experience; to deliver this capability it is important to design and deliver the ultimate embedded platform that can support these features.

Our commitment to continually invest in research & development and customer-centric solutions forms the foundation on which we have built - and continue to build - trusted relationships with some of the biggest players in the world.

### Video Decoding and Rendering

The limits of creativity are constrained by the ability of your video player and associated tools to bring content to life.

Video decoding is playing/decompressing the video, decoding is used when you open a video file or watch any online stream, like YouTube or Netflix. You decode compressed-coded material to raw quality so that your display can present it, or during editing when you have preview window opened, or during rendering when the PC board has to make close to RAW format for a second, in order to compress it with as low quality loss as possible.

Video rendering, or encoding, is making of the compressed-coded video. So, of course depending on your original video, you encode/render to mp4, .mov, or another relevant format. If original video was compressed in any way -simply put, if it wasn't in RAW format (in 99.9% of cases it isn't, since 1 hour of RAW Full HD takes up to 1TB, and RAW 4k takes 20mins per TB of storage) - the video decoding happens in the background.

For every video that is rendered, it is important to have the right compression capability and low-quality loss to retain its original details - which brings out the best impression and immersion.

## What is Quixant VDR (QxVDR)?

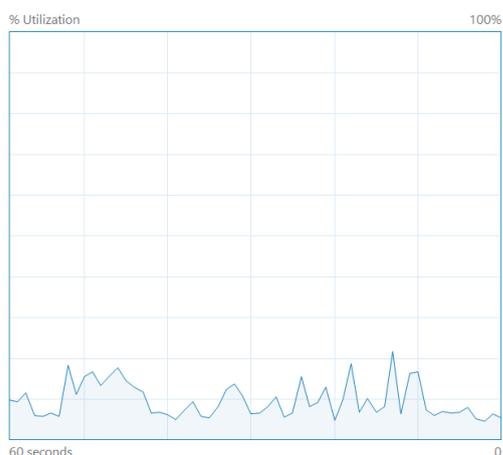
Quixant Video Decoding and Rendering (QxVDR) is a library to be used to play mp4 videos in your current game engine environment, with or without alpha channels.

The alpha channel is a colour component that represents the degree of transparency (or opacity) of a colour (i.e. the red, green and blue channels). It is used to determine how a pixel is rendered when blended with another.

### Benefits of QxVDR:

- QxVDR supports the full line of Quixant products to keep your gaming platform safe.
- Compared to other video encoders, QxVDR provides hardware acceleration, in turn consuming very little CPU processing power during the playing cycle to keep it free to do other computational tasks.
  - With a powerful and stable GPU - available on all Quixant products - hardware acceleration will allow you to utilize to its full extent in all supported applications, not just your games
- Using DirectX 11 and above, you can utilize the power of the dedicated GPU for even more processing power.
- CPU usage is the most important consideration in the gaming environment and freeing up CPU cycles is what VDR does best.

#### CPU



#### QxVDR Player

#### CPU



#### Bink Player

#### **Solution Metrics [1]**

	Ultra HD	Full HD	300x200
CPU load	1%	0-1%	0-1%
GPU usage	37%	13%	6%
RAM usage	240 MB	80MB	19MB
Time to first frame show off [2]	40ms	20ms	11ms
Max number of simultaneous videos decoded in hardware [3]	5	8	16

[1] Based on testing using QMax-1 with Windows 7 Embedded and AMD R-series quad core APU

[2] Timing for decoding and rendering

[3] Assuming constant 30 FPS frame rate maintained

## What Operating Systems does QxVDR run on?

Our technology works with Windows and Linux and with any CPU architecture. For Windows, we utilize DirectX 9 and up and for Linux we use OpenGL.

## Product Comparison:

- Bink, from RAD Games Tools, has a proprietary video file formation used for full motion video.
- The Bink video format can only be viewed with the Bink player, so you cannot test video without using the player.
- QxVDR allows you to preview your compressed video using any standard mp4 video (without the alpha channel) to make sure you have the correct video.

## Product Licensing

- With Bink, the licensing fee is around \$8,500 per platform / year.
- Quixant is committed to deliver value and support our customers on the products we deliver.
- QxVDR adds value to our already powerful hardware product family and compliments its features with seamless integration and enabling our customers delivering better content.

## How easy is it to use?

With our simple library, you can easily play multiple videos on the screen at once.

Do you need to have 21 individual videos with alpha channels playing over each other?

Do you require versatility on video size?

Look no further.

- To create a QxVDR video, use an existing sequence of images you have previously created and run our QxVDR Compressor on it.
- It will output an mp4 video that is ready to be played.
- You can adjust fps, bitrate, alpha values and compression threshold to get the quality you want with the speed you need.
- Simple API interface allows your software developers to add in code to play the videos, and we will supply you with multiple example code samples to get you started.

## Quixant Support

With the QxVDR, you get the same level of support with our dedicated support team, ready to help you with your custom engine to get you up and running in no time.

## Future of QxVDR

As gaming engines become powerful and with the adoption of Unity across the gaming world - we at Quixant are always 'Ahead of the Game' - and are currently working with Unity to deliver the power of QxVDR within the framework of the Unity Engine - and provide the best of both worlds.

We plan to launch our Unity Plugin for our Quixant customers by Q3 2020.