

Case study



Utimaco enables revolutionary step in digital sound quality and authenticity

[The motivation: improving the user experience while authenticating the artist's work](#)

MQA has chosen Utimaco to enable their revolutionary technology that delivers master quality audio in a file that is small enough to stream or download. MQA music guarantees the highest recording quality, as well as the provenance of the file. Utimaco's role was to provide the hardware backend – the root of trust – in which the cryptographic keys, which are used to sign MQA audio streams, are generated and stored.

[The challenge: improving the listening experience without sacrificing convenience](#)

A start-up with the highest credentials in quality audio production, MQA recently announced their Master Quality Authenticated (MQA) technology, an industry-first solution to capture and share high quality music. With traditional, compressed music files, sound quality has been continually sacrificed for convenience. With MQA technology, there is no sacrifice. MQA captures and preserves the missing 90 percent currently obscured or discarded in an MP3 file, and delivers it all in a file that is small enough to download and stream easily.

The solution: authentication to prove provenance and identify master recordings

To ensure the integrity of the artist's music from the original source to the end listener, MQA needed a solution for securely signing the music file, to ensure cryptographically that what the listener hears is what the artist approved. Authentication is critical to MQA technology, which must work end-to-end, from the studio all the way to the music fan. An advanced cryptographic solution was the best option to verify the musical file. MQA turned to Utimaco, a leading manufacturer of hardware-based security solutions that provide the root of trust to keep cryptographic keys safe, secure critical digital infrastructures and authenticate high value data assets.

The technical solution: Digital signatures for proof of integrity.

Utimaco provides a FIPS-certified hardware security module (HSM) that generates and stores cryptographic keys, and generates secure digital signatures that authenticate the audio data. Using the custom capabilities of the CryptoServer SDK, MQA implemented an advanced signature scheme that provides an audit trail guaranteeing the provenance of each piece of music. The decoder uses these signatures to authenticate and verify the integrity of each piece of music as it is played.

The implementation: hardware to authenticate the end-to-end process of music recording

In the case of MQA, the Utimaco hardware module will be deployed at the encoding house, as well as at the mastering house where the mastering engineers finalize the product. Once the master recording is finalized, the artist and sound engineers sign off on the musical file and when it is downloaded to the decoder – the user's playback device – an indicator lights up (e.g. an LED on hardware or an icon on-screen) as proof of the file's provenance and to ensure that the sound is identical to that of the source material. Only by controlling this entire process can the optimal MQA performance be achieved; with Utimaco's flexible solution, the integrity of the artist's master recording can be maintained all the way from the studio to the listener.

The success criteria: trusted authentication, empowering the revolution

Critical to the continued success and monetization of high-resolution streaming and download services of the music industry, is the ability to preserve trust in the supply chain from artist to consumer. Although, like most modern music delivery formats, MQA does not use encryption, certifying the end-to-end integrity of the listener's experience is essential. A market leader in tamper-resistant security, Utimaco is at the forefront of enabling the authenticated delivery needed to drive next-generation entertainment consumption.

About MQA

Using pioneering scientific research into how people hear, the MQA team has created a technology that captures the full magic of an original studio performance. MQA is a revolutionary end-to-end technology that delivers master quality audio in a file that's small enough to stream or download easily. It is also backwards compatible, so your music will play on any device – the days of sacrificing quality for convenience are finally over. Visit www.mqa.co.uk for further information.

About Utimaco

Utimaco is a leading manufacturer of hardware security modules (HSMs) that provide the Root of Trust to the IoT. We keep your cryptographic keys and digital identities safe to protect critical digital infrastructures and high value data assets. Utimaco delivers a general purpose HSM as a customizable platform to easily integrate into existing software solutions or enable the development of new ones. With professional services, we also support our partners in the implementation of their solutions. Put your trust in Utimaco – today and in the future. For more information, visit hsm.utimaco.com