IDQ

Redefining Randomness
Use Case: Mobile Services

Securing network for internal communications

VoIP phone with Quantum-Enhanced Crypto module

Customer: Seetalk Communications	
Industry: Information Technology	**Seetalk** Communications
Country: South Korea	

Business need	Solution	Results
?	**✎**	**🏆**
Provide stronger security into internal network telecommunication	A Quantum-enhanced crypto module with IDQ's Quantis QRNG chip and real-time video encryption chip	The Quantum-enhanced crypto module protects sensitive internal information

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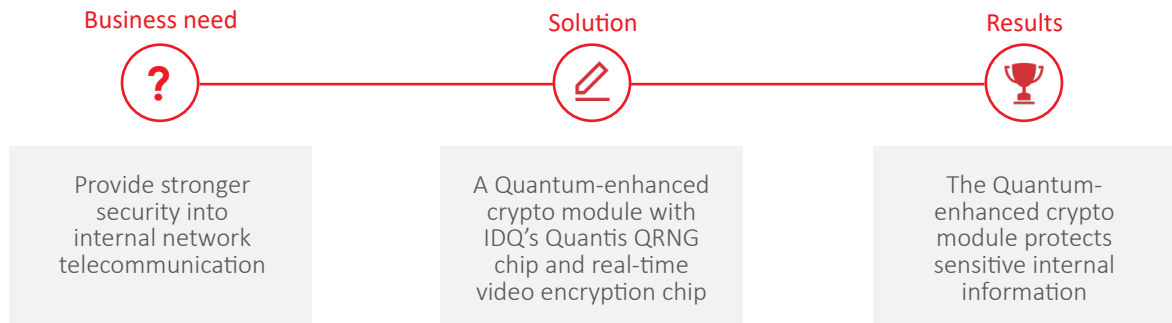
Business need

Seetalk Communications is a Korean-based IT company providing video communication devices, solutions, and telco services based on VoIP. In 2016, they completed the development and commercialization of "See-station", a smart video call terminal.

Currently, with COVID-19 pandemic, the demand for video conference calls is increasing. The company's target market is organizations dealing with sensitive information such as the military, the National Intelligence Service, Blue House, and the government office. As their calls include sensitive information, they had a need for strong security to block eavesdropping and external hacking of VPN networks.

Seetalk Communications were therefore looking for the best partner who could provide the strongest security on their devices.

Solution

Seetalk Communications launched an Internet video phone (VoIP) equipped with two encryption modules: a quantum-enhanced security module coupled with a real-time video encryption chip. The product is a real-time voice and video phone that combines the advantages of SW-type video conferencing (like Zoom service) and codec equipment to provide

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a convenient and easy system in the form of a screen phone with all-in-one AV functions that can be built into the conference room.

They wanted more than just VoIP standard security, conscious that the use of pseudo-random numbers alone was not secure enough. Seetalk Communications chose a quantum-enhanced crypto module that can encrypt/decrypt HD-grade images and sounds in real time. The module integrates KEV7, the real-time video encryption chip developed by KCS, a company specializing in security algorithms, and ID Quantique's IDQ250C2, the smallest of the Quantum Random Number Generation (QRNG) chip models.

ID Quantique's miniaturized QRNG can be easily mounted in various IoT products, smart devices, games, POS terminals, and many more, through standard interfaces. At its core, the QRNG chip contains a light-emitting diode (LED) and an image sensor. Due to quantum noise, the LED emits a random number of photons, which are captured and counted by the image sensor's pixels, giving a series of raw random numbers that can be accessed directly by the user applications. In addition, the Quantis QRNG Chip provides full entropy instantaneously from the very first bit. By implementing this crypto module, the signaling could be established as TLS and double-encrypted into media (voice/video).

Results

The company has now deployed the Quantum-enhanced crypto module on their Internet video phone. IDQ's Quantum RNG chip works with KCS chip to create quantum technology enhanced encryption keys. The improved randomness prevents an eavesdropper from trying to compute what could be the key value. The high quality encryption key links with the KCS real-time video encryption chip to prevent extortion of third-party video and voice data. This product is suitable for customers such as institutions that exchange sensitive information through telecommunication, and more demand is expected in the future.

> *We were worried that the randomness source from our existing IP Video Phones would not be secure enough for our target markets before applying IDQ's QRNG chipset. To our great satisfaction, the prototypes, randomization and subsequent video/voice media were successfully implemented seamlessly. Thanks to QRNG technology, SeeStationQ will be able to make quantum security enhanced video calls in the network, making it widely available in military units, government agencies, businesses, and other places where high-level security is a must.*
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> Chankyu Choe, Director of Seetalk Communications