



Miura Systems has long been at the forefront of reshaping merchant and consumer interaction by providing versatile and secure mobile payment solutions. With over 3 million terminals worldwide, Miura Systems operates globally across many business segments, including retail, hospitality, finance, and transportation.



Secure Payment Solutions for Any Environment

As part of a project to transition key injection processes to the cloud, Miura Systems worked with VirtuCrypt to design and deploy a cloud-based remote key loading service. This service supports millions of devices already deployed along with those in production, is fully scalable to support future solutions, and removes a layer of complexity for Miura partners who choose to use it. The move reflects Miura's drive to be at the forefront of reshaping the merchant and consumer experience in a mobile world.

Remote Key Loading in the Cloud

Anytime you present your payment card or mobile phone at a retail payment terminal, an encryption key quickly goes to work to encrypt the PIN or the primary account number (PAN) associated with your card. This encryption obscures the data and protects against information theft as the transaction is sent back to the card issuer for validation. For this process to work, an encryption key must be securely loaded into that endpoint device, whether it be an ATM, a payment terminal, or a commercial off-the-shelf device used for payment acceptance.

With Remote Key Loading (RKL), this essential key injection process allows organizations to manage keys for an entire infrastructure without having to physically access any terminals or devices. With RKL in the cloud, VirtuCrypt acts as a key distribution host, securely automating the manual key replacement process by managing and loading keys from one central location over a secure IP network. VirtuCrypt is powered by Futurex hardware, which means that VirtuCrypt clients receive the same security and compliance benefits that would come from owning Futurex hardware, in particular FIPS 140-2 Level 3 and PCI HSM compliance, without having to manage a Key Injection Facility and avoiding PCI scope.



From Miura Systems: Darren Shaw, Chief Product Officer

As a pioneer in mobile payment acceptance, Miura Systems is dedicated to delivering solutions which provide the greatest flexibility for clients and seamlessly facilitate their unique brand of payment services without compromising on the highest standards of security. Implementing cloud-based remote key loading through VirtuCrypt has enabled us to radically streamline the deployment and maintenance of our payment devices across a whole range of geographic markets and customer use cases.

The Business Case

Since the company's founding in 2008, Miura devices have pioneered the global adoption of mobile payment solutions by helping retailers bridge the gap between a static customer-facing environment and the desire for full mobility. Through its best-in-class solutions such as the M010 and M020, Miura has brought mobile acceptance to retail, hospitality, financial services, and countless industries with endless aisle applications, queue busting, contactless, and NFC technologies.

Miura's technology is built to support remote management, but at the time, its cryptographic infrastructure was not. Miura wanted to move from a manual, expensive and disconnected system to a fully integrated solution in the cloud.

Typical RKL Implementation

Remote key loading with VirtuCrypt allows key rotation from a secure web dashboard from anywhere in the world. Device data and key cryptograms can be securely be uploaded, and key injections can be tracked and controlled.

VirtuCrypt

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Target Infrastructure

The infrastructure that Miura wanted to implement included a number of key requirements:

Reduce Cost of Ownership

Miura required a solution that would allow them to provide a turn-key service to their partners for the secure remote loading of keys, decreasing the total cost of ownership.

Meet Future Compliance

With new PCI requirements for RKL on the horizon alongside a need to maintain total flexibility in service delivery, Miura required a forward-thinking solution to meet all future PCI requirements surrounding RKL.

Scalability

Miura has terminal operations throughout the world, with a growing presence in Asia Pacific, EMEA and throughout North America. To facilitate its future expansion, Miura required a highly scalable cloud solution to meet both current and future corporate growth.

Remove Compliance Scope

Miura required a solution that eliminated the compliance scope for PCI DSS.

Integrate Current Certificate Authority

Miura required a cloud solution that would allow the continued use of their own Certificate Authority.



The Solution

To fulfill its requirements, Miura implemented a Remote Key Loading cloud environment with VirtuCrypt. Remote key management securely automates the manual key replacement process by managing and loading cryptographic keys for payment terminals.

After a successful proof of concept, Miura signed VirtuCrypt services under their certificate authority and then let VirtuCrypt do the rest. Certificate-based RSA PKI is the most common and accepted method of RKL communication. Unlike symmetric cryptography where a single encryption key can be used to encrypt and decrypt a message, asymmetric cryptography requires two keys to communicate. A public key is used to encrypt and send the message by the sender, and a private key is used to decrypt the message by the recipient. This adds another layer of security in that not only is the message encrypted, but the recipient's identity is verified and authenticated by possessing the appropriate private key.

PKI is the cryptographic backbone of RKL. For ATMs and payment terminals to receive and decrypt the keys sent to them by the RKL service, they must first be in possession of a private key, which is known as a certificate. This certificate is injected into the payment terminal or ATM, usually at the time of manufacture by a certificate authority. Once the endpoint device receives its unique certificate, it can be deployed in the field where it can establish a secure connection. This facilitates the exchange of keys with the RKL platform. VirtuCrypt connected with Miura's various processors to exchange keys and establish the needed Key Exchange Keys (KEKs) to remotely inject terminals before they are shipped out for field usage.

VirtuCrypt Elements Remote Key Loading

A deployment of the VirtuCrypt Elements Remote Key Loading service fulfilled Miura Systems' requirements for remote key management. This easy-to-use solution delivers symmetric encryption keys to payment systems, such as the Miura M020 payment terminal series, seamlessly, using a public key infrastructure-based environment.



The Results

In conjunction with a robust, cost-efficient, scalable RKL cloud solution, Miura received a number of benefits by transitioning to a VirtuCrypt cloud-hosted solution:

- ▶ Reduced capital and operational expense associated with deploying and managing a PCI-approved RKL environment
- ▶ Peace of mind that comes with knowing the burdens associated with annual audits and fulfilling compliance mandates are met by VirtuCrypt's RKL service
- ▶ A service which is fully redundant and employs automated failover technology, not only locally but to geographically separated locations, providing and maintaining the highest levels of availability.
- ▶ The VirtuCrypt Intelligence Portal (VIP) Dashboard, VirtuCrypt's web-based management portal that allows users to easily manage all aspects of their service from anywhere around the world
- ▶ Previously established registration and pre-exchanged keys with all the major processors including Chase, First Data, TSYS, Vantiv, WorldPay, which reduces time and complexity required for establishing processor keys for future key exchanges.

Since its conception, Miura has deployed over 3 million payment devices worldwide and this number continues to grow. The implementation of a cloud based- RKL infrastructure supports Miura's global expansion, particularly with the most recent release of the Miura M020 series. The M020 payment terminal is the smallest, lightest, fully functional payment device in the market to date. Its hybrid nature means that it can be used in standard retail environments or on-the-go, and has been deployed by many different businesses across the globe. Regardless of location or geography, Miura can support, update, and remotely inject these terminals with ease.

VirtuCrypt is proud to partner with Miura and support their global expansion and looks forward to furthering their goal of bringing innovative payment solutions to an increasingly mobile world.

Global Implementation from a Single Location

Remote key loading with VirtuCrypt allows key rotation from a secure web dashboard from anywhere in the world.



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