

V-OS Virtual Secure Element

Mobile Digital Identity,
Authentication and Authorization
Stronger with V-OS

Virtual Secure Element

V-OS is the world's first and only true patented Virtual Secure Element (VSE) based on Global Platform specifications and designed to meet the security requirements for FIPS 140-2 Level 3.

Today, security sensitive mobile applications such as Mobile Authenticators, Mobile Wallets, and Mobile Banking applications depend on hardware secure elements (SEs) such as dongles, SIM, microSD cards, and ARM TrustZone (or TEE) to execute critical transactions. However, these hardware solutions are costly, cumbersome to distribute and manage, and limit their proliferation.

**STRONGER
WITH V-OS**



Mobile Identity



V-OS App Protection



V-OS Smart Token



V-OS Messaging



V-OS Face Biometrics
V-OS eKYC

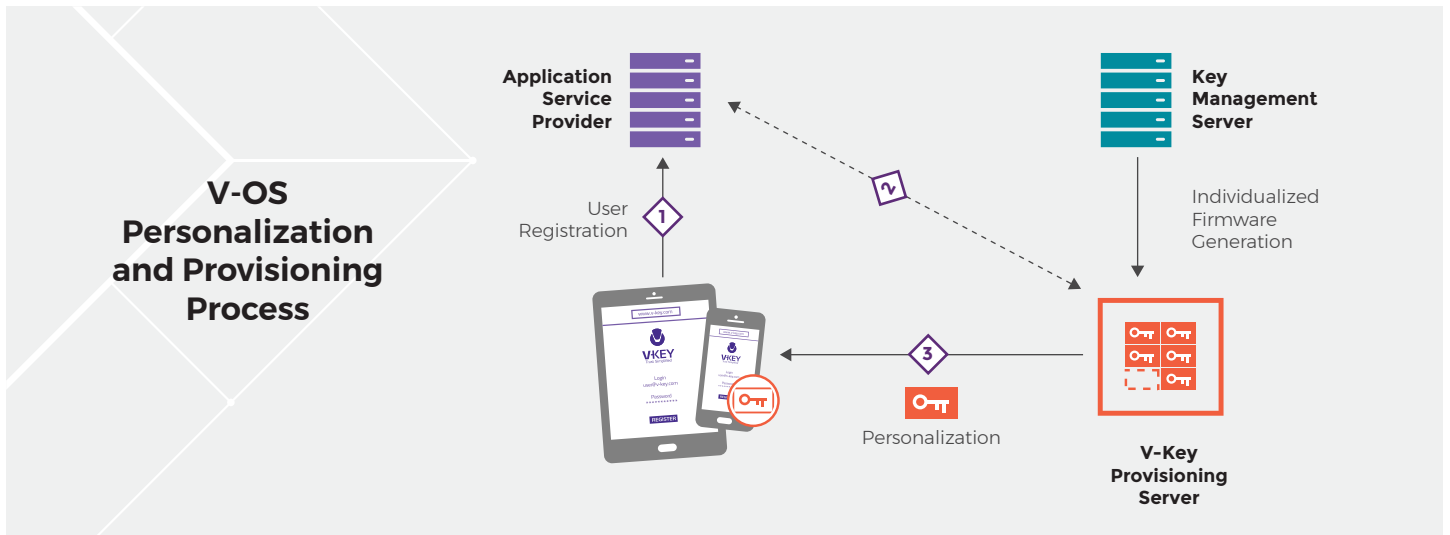


V-OS Cloud Solutions



V-OS' patented and advanced cryptographic capabilities were created so that Trusted Applications can execute securely and reliably, and process and store sensitive data on mobile devices without the need for a hardware SE. It isolates trusted business logics from untrusted mobile application and software

environment, and prevents an attacker with control of the underlying operating environment from accessing or exposing sensitive logic or data.



VIRTUAL SECURE ELEMENT FEATURES AND SPECIFICATIONS



Tamper-Resistant Design

- V-OS achieves isolation through layered tamper detection and response mechanisms such as anti-debugging, device binding, and anti-reverse engineering, to protect against hackers and malware.
- Sensitive cryptographic keys, data, and application codes are protected using advanced techniques in and around V-OS such as binary code morphing, memory encryption, and whitebox cryptography techniques.



Eradicate Costly Hardware Dependency

- For a fraction of the costs and effortless over-the-air deployment, V-OS is able to minimize total costs of ownership and drive faster market penetration.
- Personalized keys and cryptographic protections can be dynamically provisioned for the highest levels of security, and to support key rotations and tokenization requirements.



Certified Cryptography

- V-OS is a patented cryptographic virtual machine that ensures the integrity of crypto processing as well as protects encryption keys and sensitive information.
- It is designed to meet security requirements for FIPS 140-2 Level 3 and Common Criteria EAL3+.



Seamless Developer Integration

- V-OS comes with a flexible and extensible SDK framework incorporating individualization and personalization capabilities for easy integration into your secure mobile applications.
- Out-of-the-Box Support:
 - Block Ciphers:** AES (CBC, ECB, CCM, CTR, XTR, KW), 3DES-CBC, DES
 - Stream Ciphers:** RC4, HC128, RABBIT
 - Public Key:** RSA (PKCS#1, OAEP, SHA-1/256), ECC (P-256, P-384, P-521, SHA-1/256)
 - Hash:** SHA-1/256, HMAC (SHA-1/256), MD5
 - Key Derivation:** KDF-HMAC, PBKDF2
 - PRNG:** ANSI X9.31 AES/DES, Hash DRBG SHA1/256
 - Other Features:** OATH/OCRA, SSL/TLS
 - Platforms:** Apple iOS and Google Android



V-Key is a global leader in software-based digital security, and is the inventor of V-OS, the world's first virtual secure element. Contact us today to schedule an appointment and demonstration.

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