



Digital Enablement Platform

A complete issuance, tokenization and transaction processing solution for digital and mobile payments

A new era of mobile payments

The mobile payments landscape has gone through a series of radical changes in recent times. We have seen a simplification of the technical and commercial deployment of payment apps in mobile devices, but also a proliferation of payment models that have re-introduced a degree of complexity. The use of SIM-based Secure Elements (SEs) managed through third-party Trusted Service Managers (TSMs) that emulate the chip on an EMV payment card has been largely supplanted by two parallel models – proprietary payment apps aligned with mobile device OS brands, such as Apple Pay and Android Pay, and independent mobile payment apps that can be deployed by issuers and processors using *cloud-based payments* models, or HCE.



The ‘X-Pay’ (i.e. Android, Apple and Samsung Pay) models either continue the use of a Secure Element – such as Apple’s *Secure Enclave* embedded in iPhone hardware, or a hybrid approach as with Android Pay, where a cloud-based payments model uses a Trusted Execution Environment (TEE) to secure the sensitive data. Both these approaches prevent unauthorized access to card data and credentials through cryptographic access control, much as in traditional payment cards.

Cloud-based payments models use a variety of risk mitigation techniques, including the frequent replenishment of limited and single-use keys, to prevent and minimize the impact of any exposure of sensitive data. The mobile payment applications supporting cloud-based payment models now implement software secure elements utilizing whitebox cryptography and anti-tamper functionality to safeguard and protect sensitive data on the mobile device against unauthorized access.

An important common factor of these approaches is their use of *Tokenization* to protect and to control the usage of card numbers (PANs) when used in mobile payments. A Token – a surrogate PAN – is substituted for the real PAN (the *Funding PAN*) by a Token Service Provider who securely holds the mapping between the token and the funding PAN. Another approach is to use an *Alternate PAN* generated by the card issuer and associated with the funding PAN in a similar way to a secondary card issued on the same account, but whose use is confined to the mobile payment app to which it is provisioned.

To facilitate the introduction of the X-Pay models, their owners have collaborated with the major card networks for tokenization, app provisioning (i.e. the personalization of a mobile payment app with cardholder data and settings) and lifecycle management. Commercial and regulatory factors will, in time, result in these models opening their systems to tokenization and management services operated by issuers and processors, and enable these providers to compete on costs and service levels. This is expected to take place in the short term.

In contrast, cloud-based payments suffer no such constraints and issuers and processors are able to deploy these payment methods subject only to card brand certification (or an equivalent waiver) of their device payment app and cloud-based payments platform.

Making mobile work

The X-Pay models are gaining rapid acceptance in the market because their deployment has been made relatively simple in comparison to SIM-based SE models, but at the cost of control, flexibility and branding options. Questions also remain over the longer-term costs of the current network-managed tokenization services, and for issuers who also have extensive acquiring interests, the constraint of having to pass all mobile payment traffic, including on-us transactions, through the card brand networks for de-tokenization to take place has major, sometimes show-stopping consequences.

Proxama has built a solution that resolves these issues and alleviates the overhead of successive integration projects each time an X-Pay comes, goes or changes its operating model. Proxama’s **Digital Enablement Platform** enables both independent cloud-based payments and provides the channels into all the X-Pays, existing and new, as these open up.

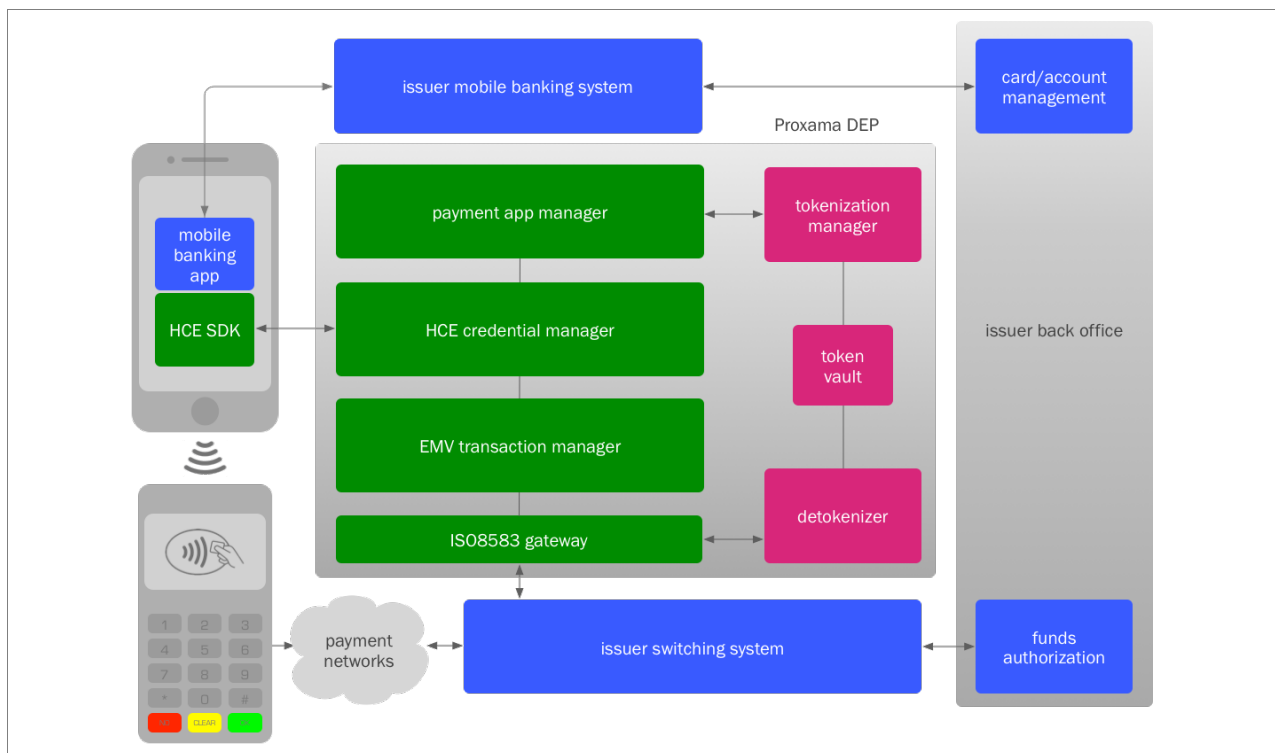
Building on a Payments Heritage

Proxama has been supplying industrial-strength card payments software to major issuers and processors around the world for over ten years. Our solutions for card personalization, lifecycle management and transaction processing today support combined card-bases of hundreds of millions of cards. It is on the foundation established by these products that Proxama's **Digital Enablement Platform (DEP)** has been designed and built, with additional components for Token Services, HCE Credential Management and the NFC payment-enabling of mobile apps completing the picture.

The major components comprising the DEP suite are:

- ▶ **Payment Application Manager** – a real-time app, device and brand-neutral provisioning and lifecycle management system that has been in use over many years supporting both card and mobile payment apps
- ▶ **Tokenization Manager** – an EMVCo-compliant Token Service Provider that supports mobile payment and stand-alone tokenization for multiple use cases, including e-commerce applications and shared customer registry; also provides de-tokenization during authorization processing at the performance levels needed to match those of high-end authorization systems
- ▶ **HCE Credential Manager** – a component that implements the card brands' specifications for cloud-based payments, covering both single and limited-use key provisioning, the risk analysis processes associated with key lifecycle management and replenishment and which provides secure communication between DEP and the payment apps in individual consumer mobile devices.
- ▶ **EMV Transaction Manager** – a mature EMV authorization module that now implements the new crypto algorithms and transactional risk management needed for cloud-based payments transactions.
- ▶ **HCE SDK** – a card-brand certified mobile SDK that enables NFC payments on Android phones when integrated with a mobile app such as mobile banking or with a mobile wallet of the issuer's choice.

Additional components to manage the routing and message handling of authorization requests received from card networks can be provided to minimize the impact of DEP deployment on existing infrastructure. A high-level architecture diagram of a sample cloud-based implementation is shown below:



Existing issuer components are shown in blue, Proxama DEP components are shown in green and pink.

Integrating Proxama DEP

Proxama DEP has been designed to have minimal impact on issuer/processor systems and to ease the transition to mobile payments by fitting alongside existing card issuing and processing processes. DEP essentially requires only two integration points with an existing infrastructure – the ability to receive confirmation that a consumer request for card digitization is approved, potentially via a mobile banking server, and once the mobile app is enabled, to pass a de-tokenized authorization request into the existing authorization system for available funds and card status checks.

Flexible options for message routing are provided to enable the issuer's network-facing front-end systems to either route requests to EMV Transaction Manager using its optimized API or by passing the entire ISO8583 message.

Integrating the Proxama HCE SDK with an existing issuer app, such as mobile banking, will drive usage of that app for both payment and account management functions, and allow the consumer's payment experience to be controlled and branded by the issuer, rather than the one-size-fits-all approach that is imposed by the X-Pay models.

Proxama DEP supports both tokenization and alternate PAN approaches to mobile payment, and this together with all the options for provisioning, cloud-based risk management and transaction processing are configured via DEP's intuitive browser-based user management GUI.

The added value

Proxama DEP provides a single platform for provisioning apps and processing EMV transactions regardless of the payment device form factor; for example, card, mobile, tablet, watch or wristband. Whether your organization is a mature EMV card issuer, has outsourced EMV issuing and processing to third parties, or is embarking on EMV migration, Proxama DEP presents opportunities for those functions to be consolidated onto a single platform, resulting in substantial savings, and benefits in terms of control, flexibility and customer retention.

Next step...

Contact Proxama. Find out more about Proxama's **Digital Enablement Platform** and other smart product solutions.

Visit our website: www.proxama.com Call us: +44 (0) 203 668 2888 email us: hellopayments@proxama.com



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