Solution Brief

Payment Switch with Integrated HSM

Unified Payment Interface (UPI) Solution

The Business Challenges addressed:

Digital payment landscape in India is going through a tremendous transformation. With government efforts to enable cashless economy across the country, increase in the number of smartphone users and easy affordability of the internet, banks have seen a tremendous shift of consumer towards UPI and mobile apps-based payment over the past few years. The challenges banks face is to provide secured real time immediate payment transaction facility.

The Solution Overview:

Kiya.ai UPI platform facilitates next generation of online immediate payments by providing strong end to end security and data protection. The platform enables customers to transact in real-time using a single identifier – Aadhaar number or Mobile number or a Virtual payments address – without knowing any account information.

The platform enables financial firms to integrate their core and other transaction systems to connect with all the services delivery & payment channels including ATMs, Internet, Mobile, Kiosk, POS, Cards and other Payment Gateways.

Key Features
- Virtual payment address (UPI ID)
- Push and pull payments including P2P, P2M and B2C
- Multi-factor authentication
- Accept offline payments using QR code and Bharat QR
- Reconciliation and settlements
- Real-time customer onboarding

With the objective of providing high level security and to provide cryptographic operations, we have integrated Thales HSMs in our system for two use cases:

- General Purpose (GP) HSM (Luna HSM) for UPI transaction authorization.

  We store 4- or 6-digit UPI PINs corresponding to our customer accounts in encrypted form in our database. The encryption happens through GP HSM. When we get a transaction request, it contains an encrypted user-entered PIN. The encryption is done using this using GP HSM,

- Payment HSM for Card PIN block generation

  When customer wants to set the UPI PIN, or when he/she has forgotten the same, he/she has an option of re-setting it by using his debit card credentials. The debit card PIN is used to generate a PIN block, which is sent to the Bank's ATM Switch for validation. We used payShield HSM to generate a PIN block as per PCI-PTS standards.

Solution Key Features and Benefits

UPI Switch is an implementation of NPCI's Unified Payment Interface, which enables real-time payments in both P2P and P2M. Both Send Money and Request Money are supported.

Other features:
- One time and Recurring Mandates
- Aadhaar based authentication for onboarding.
- Cardless withdrawal from ATM using UPI.
- UPI Mapper - which supports feature phone-initiated payments using UPI Number.
- GST and International transactions support
- UPI Lite for quicker payments of smaller denominations
- Unified Dispute and Issue Resolution (UDIR)
- RuPay Credit Card integration

Solution works on On-premises, public cloud, AWS Outposts / Azure Stack / Google Anthos, Virtualized environments, Container environments and Hybrid environments. HSMs helps customers in Authorization of transactions and Authentication for onboarding (during set / reset of PIN)

Solution Architecture Diagram
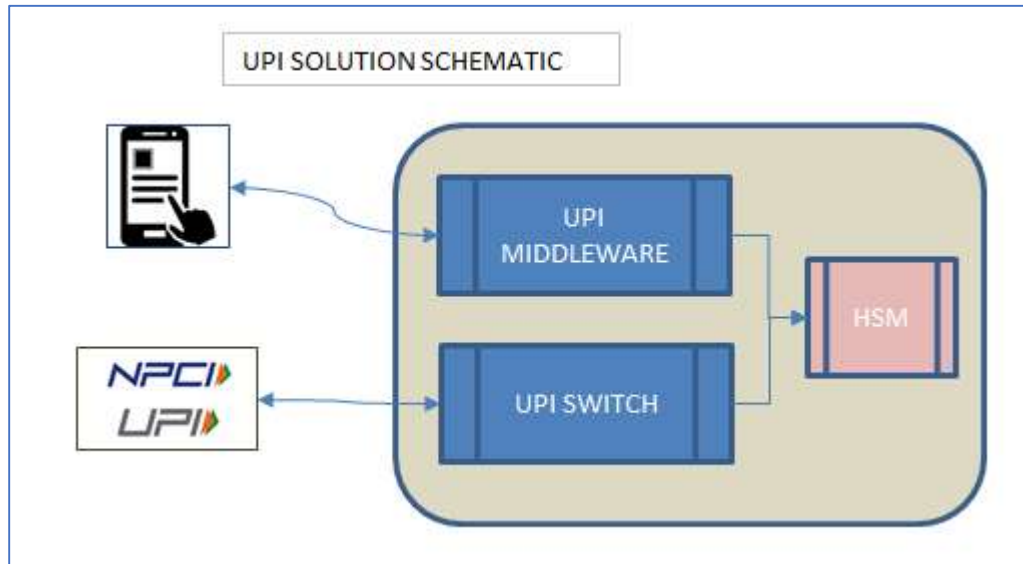
About Kiya.ai

- Kiya.ai is one of the most innovative digital solutions providers serving financial institutions and governments globally. Known for its deep domain expertise in Financial Services, Digital Payments, Governance, Risk, and Compliance solutions along with market-ready processes which help clients traverse their digital transformation journey and create sustainable value for the community.
- Headquartered in Mumbai, Kiya.ai helps businesses transform through advanced digital solutions and new-age technologies such as Multi-experience & Omnichannel Banking, Artificial Intelligence, Robotic Process Automation (RPA), and Data Analytics.
- Kiya.ai has 12 global offices and serves 500+ enterprises in 56 countries across South-East Asia, Africa, the Middle East, Europe, and North America. Kiya.ai is ISO 9001 and ISO 27001 certified and is assessed at CMMI Level 5 v2.0.