

A Central Bank in a Middle Eastern Country Launches a **National EMV PKI Framework** in Under **6 Months** with eMudhra emCA



Client Overview

A Central Bank in a Middle Eastern Country is the apex financial regulatory authority of the country, responsible for monetary policy, financial system stability, and the oversight of payment systems and services. As the country advanced its national digital transformation agenda, the bank identified the establishment of a sovereign domestic payment scheme — independent of international card network infrastructure — as a strategic priority. Central to this initiative was the requirement for a robust, nationally governed Public Key Infrastructure (PKI) to secure the cryptographic trust layer underpinning all domestic card transactions.

The Challenge

The country's domestic card payment ecosystem had historically depended on the Certificate Authority infrastructure operated by international card networks to secure the cryptographic trust underpinning card transactions. While functionally effective, this dependency presented a growing strategic concern: the certificates securing domestic payment transactions were issued and governed under frameworks controlled by foreign commercial entities, outside the direct regulatory authority of the national institutions. For the central bank, this represented a multi-dimensional challenge spanning digital sovereignty, data localisation, and the long-term resilience of the national payments ecosystem.

Establishing an independent domestic payment scheme required deploying a fully EMV-compliant Certificate Authority capable of issuing and managing certificates for card issuance, payment terminal authentication, and acquiring bank integration — at the scale of billions of transactions annually. The absence of any existing regional precedent for such a deployment, combined with the requirement to go live within six months, made this one of the most technically demanding PKI initiatives in the region's financial sector.

“The scale of our domestic payment activity — over a billion transactions every month — made the absence of a sovereign CA infrastructure a strategic vulnerability, not merely a technical gap. Our domestic payment scheme had to stand on a trust foundation that the country owns and controls.”

Executive Director, Payment Systems

The Solution

eMudhra deployed its emCA solution — a robust, EMV-compliant Certificate Authority — within the central bank's secure infrastructure, enabling full sovereign control over certificate issuance, validation, and governance for the national domestic card scheme. The solution ensures that every transaction, card, and payment terminal is cryptographically verified to the highest EMV security standards, providing the trust foundation required for a nationally governed payment ecosystem.

The emCA architecture supports the complete PKI hierarchy required for domestic card scheme operations: root CA and issuing CA configuration, certificate issuance for card personalisation, terminal authentication, and acquiring bank integration. A custom licensing model was structured for long-term cost-effectiveness, giving the central bank perpetual, scalable control over its EMV PKI operations without ongoing per-transaction costs from international network providers.

The deployment was completed in under six months — making it the first EMV PKI solution of its kind in the region — through a structured implementation process covering rapid CA deployment, custom licensing configuration, and full compliance validation against EMV and national payment regulations.

Results

The deployment of eMudhra emCA enabled the central bank to establish a fully independent, sovereign payment infrastructure — routing 100% of domestic card transactions through a nationally governed PKI framework and delivering significant annual cost savings by eliminating fees associated with international card network CA infrastructure.

Metric	Before	After
Transaction Routing	Dependent on international network CA	100% domestic routing through sovereign PKI
CA Ownership	Foreign commercial entities	Fully sovereign; governed by national institutions
Deployment Timeline	N/A — no domestic PKI existed	Fully functional EMV CA in under 6 months
Regional Precedent	None	First EMV PKI of its kind in the region
Annual Cost	International network CA fees	Millions saved annually through domestic routing
Regulatory Compliance	Constrained by external frameworks	Full EMV and national payment regulation compliance

About eMudhra

eMudhra is a globally trusted provider of digital trust services, offering eSignatures, PKI, Certificate Lifecycle Management, Multi-Factor Authentication, and Identity & Access Management solutions. Licensed by the Controller of Certifying Authorities (CCA), India, eMudhra serves 1000+ enterprises across 40+ countries, helping organisations build secure, compliant, and paperless digital ecosystems.