

## CASE STUDY

# eMudhra's emCA: The key to secure and reliable identities for Smart Meters in Eastern Europe

OVER 15 YEARS  
EXPERIENCE  
IN DIGITAL IDENTITY  
AND TRANSACTION  
MANAGEMENT

1000K  
CHANNEL PARTNERS

900+  
ENTERPRISE  
CUSTOMERS

## About Partner

Our partner is a European company that provides payment and transactional services, particularly for banks and merchants. The company was formed in 2014 through the merger between two entities, and it has since grown to become one of the largest payment service providers in Europe.

They offer a range of services, including payment processing, card issuing and acquiring, e-commerce and mobile payment solutions, fraud detection and prevention, and digital identity verification. It also provides solutions for cashless payment transactions in various sectors such as retail, transportation, healthcare, and government.

The company operates in over 50 countries and serves more than 1,000 financial institutions, as well as numerous merchants and businesses. In recent years, our partner has also been involved in the development of blockchain-based solutions for secure and efficient payment processing. The company is committed to providing innovative and sustainable payment solutions that meet the evolving needs of its clients and the wider market.

## About End Customer

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Our end customer is part of a large energy holding company in Europe, which is one of the largest energy companies in Central and Eastern Europe. They are primarily involved in the transportation, distribution, and sale of natural gas in an Eastern European country. They also operate gas storage facilities and provide gas-related services to industrial and commercial customers.

Their gas distribution network covers most part of an Eastern European country and includes over 8,000 km of pipelines, which transports gas to more than 2 million customers. The company also owns and operates several gas storage facilities, which provide crucial support to energy system during periods of high demand.

Overall, our end customer is a significant player in the Eastern Europe natural gas market and is an important part of energy infrastructure in that region.

## Business Scenario

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The end customer wanted to deploy a large ecosystem of smart meters to remove dependency on error prone manual intervention for meter reading, as this was having a direct impact on revenue and downgrading the overall customer experience at end-points. As a result of deploying over a million smart meters in the area of interest, it was paramount for our client to ensure device security as they had to TRUST the data being transacted from a large ecosystem of smart meters deployed in the region.

Apart from the above challenges, our end customer also wanted to leverage smart meters as they come with a plethora of benefits:

**Accurate billing:** Smart meters provide real-time data on gas consumption, eliminating the need for estimated readings. This helps ensure that customers are billed accurately based on their actual usage, which can prevent disputes and save time and money.

**Improved customer experience:** With smart meters, customers no longer need to schedule appointments for meter readings or provide access to their homes or businesses. This reduces inconvenience and improves customer satisfaction.

**Enhanced efficiency:** Smart meters automatically transmit consumption data to the utility company, reducing the need for manual data collection and processing. This can improve the efficiency of operations and reduce costs.

**Better energy management:** Smart meters provide customers with access to their consumption data, which can help them identify patterns and adjust their usage to reduce energy consumption and costs. This can also help utility company manage demand more effectively and reduce the risk of outages or service interruptions.

**Increased safety:** Smart meters can detect gas leaks and alert the utility company to potential safety hazards. This can help prevent accidents and improve the safety of customers and communities.

## eMudhra Solutions

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eMudhra provided emCA as the certificate authority software to our partner, to provide the necessary PKI functionality and integration capabilities for its product line (smart meters in this case). emCA includes all the latest PKI standards, with support for RSA and ECC certificates, as well as offers the opportunity to automate processes.

emCA works as a central, high availability certificate authority, from which departments and partners in our partner network could enroll for certificates for their product lines and administrators (smart meters in this case). The solution used a multi-layered approach to provide extra levels of security between the entities and the certificate authority (emCA), who communicate using the standard CMP protocol. All requests were identified using digital signatures to ensure that only authorized clients had access.

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Certificates issued by emCA helped the end customer to safeguard the high-volume smart meter ecosystem with:

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**Authentication:**

Secure mechanism for authenticating smart meters, ensuring that only authorized devices were allowed to access the network. Smart meters were equipped with digital certificates that were issued and verified using emCA. This helped prevent unauthorized access and protected against cyber-attacks.

**Data Encryption:**

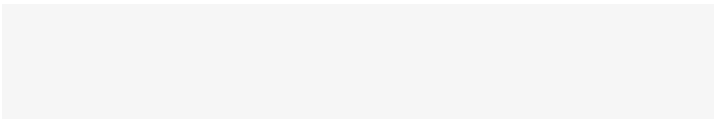
Our Digital Certificates provided a secure method for encrypting data transmitted between smart meters and the end customer's systems. This helped ensure that data was protected against interception and tampering, which helped prevent data breaches and unauthorized access.

**Non-repudiation:**

emCA provided non-repudiation for smart meter readings, which means that the authenticity and integrity of the data could not be disputed. This was achieved by using digital signatures, which were generated and verified using the emCA Certificate Authority. This helped ensure that billing and usage data was accurate and reliable.

**Secure updates:**

Digital Certificates issued using emCA helped securely update the firmware and software of the smart meters, ensuring that they were protected against known vulnerabilities and security threats. Digital certificates were used to verify the authenticity and integrity of updates, ensuring that only authorized updates were installed.



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## Value added to our Partner and End Customer

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### Partner

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- Our partner could seamlessly integrate X.509 Digital Certificates into their smart meter manufacturing process at scale
- emCA allowed the stakeholders in the partner ecosystem to manage the overall lifecycle of certificates including creation, modification, revocation and renewal.
- Active CRL list was provided through the emCA platform to ensure all the certificates in use are valid.
- With emCA Certificate Authority for Private PKI deployment, our partner was able to take the benefits of PKI for secure digital transformation of our end customer's energy business in Eastern Europe.

### End Customer

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Accurate and timely data: Smart meters provided accurate and timely data on gas consumption, eliminating the need for estimated bills and reduced the likelihood of errors in billing. This helped customers better understand and manage their energy usage, as well as ensured that they were only charged for the gas they actually used.

**Improved efficiency:** Smart meters significantly improved the efficiency of gas service by automating the process of meter reading and billing. This helped reduce the costs associated with manual reading and billing, such as labor, transportation, and administrative expenses.

**Enhanced security:** PKI enabled smart meters provided enhanced security by encrypting data transmitted between the meter and the end customer's systems, and authenticated devices using digital certificates. This helped protect against cyber-attacks and ensured the integrity and confidentiality of customer data.

**Greater control:** Smart meters provided our end customer's users with greater control over their energy usage, by providing real-time information on gas consumption and enabled them to monitor and adjust their usage accordingly. This helped customers reduce their energy bills and contribute to a more sustainable energy future.

**Reduced carbon footprint:** Smart meters helped reduce the carbon footprint of our end customer and their customers, by enabling more accurate and efficient management of gas usage. This helped reduce the amount of gas consumed and decreased the emissions associated with gas production and distribution.

### About eMudhra

eMudhra, a global provider of digital identity and cybersecurity solutions, specializes in digital signature certificates, Public Key Infrastructure (PKI) services, and robust authentication protocols. Our impactful presence in India and international presence have allowed us to support governments and enterprises in safeguarding their digital transactions and vital information.

eMudhra offers digital certificates, PKI-based solutions, authentication and identity governance services. With a strong presence in India and a global footprint, eMudhra helps organizations securely manage their digital transactions and protect sensitive information. Being a leading digital identity and cybersecurity solutions provider, eMudhra is now focused on futureproofing cybersecurity using Post Quantum Ready Cryptography and Zero-Trust Identity Governance model.

