

MAPIN For National Securities Depository Limited (NSDL)

Securities and Exchange Board of India (SEBI) has entrusted NSDL to issue identity cards to investors and intermediaries in the country. There are about 2 million investors and intermediaries in the country. Phase I System is to issue the cards for 400 000 investors and intermediaries. Phase II system is for the rest of the investors and intermediaries.

There are four types of users who will be registered with the system:

1. Intermediaries (eg. brokers, mutual funds, etc)
2. Corporate bodies
3. Employees of intermediaries
4. Individual investors

System Architecture

MAPIN is an n-tier architecture as shown in the figure below. There will be a central system located at NSDL premises, where all data and servers will be located and operated by NSDL. The data for various types of investors will be collected at various points of service (POS), which will be operated at remote locations. It is possible that some POS will be mobile, could be set up at a company's premise for collection of data for all of its employees, and moved to a new location.

All the 4 category of users will be issued identity cards. The printed identity card will have name, unique identity number, photo and signature for all investors and intermediaries. In the case of corporate bodies, the authorised signatories will be identified and issued the cards. The unique identity card for investor is issued after checking investor's fingerprints against the database of fingerprints of all existing investors. After establishing uniqueness, unique number will be generated and the card is prepared.

An investor's particulars can be verified by intermediaries / broker by using unique ID no. and accessing the central database through the internet. In such a case information like name, photo and signature for a given identity card is displayed for intermediaries on his / her terminal. In case of doubt, the intermediary will ask the investor to approach a Point Of Service to get verification certificate. At the POS, the investor gives fingerprints and his/her unique identity number. Upon successful match with the corresponding identity number and fingerprints at central database, POS will issue a verification certificate.

Technologies

1. The heart of the system is fingerprint based matching (and establishing unique identity of users and detecting duplicates).
2. Data capture: live scan device for capturing fingerprints, digital camera for photo, and scanner for signature image capture
3. Authentication is based on PKI and smart cards.
4. The data transmitted from POS to central site via internet is digitally signed and sent thru HTTPS, making it safe and secure from possible tampering.

Technical Overview

Hardware

IBM Blade Servers

Software

Webserver

Apache/Linux

Application Server

Tomcat

OS

Redhat Linux

Windows

Current Database & Response Times

Average search time per transaction is approximately 21-25 seconds on a 312,000 individual registration database.

System Architecture

In summary, this application will have a blend of sophisticated technologies and a very good reference site for all civilian applications of fingerprint technology with authentication based on smart cards and PKI in India.

