DTA

SYSTEM OVERVIEW
OF
DTA-SMART

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1. DTA-SMART Systems & Platforms

1.1 Introduction to DTA-SMART Application

The technology developed by DTA is based on the client/server architecture. The system runs under MS Windows 3.1, Windows 95, Windows NT 4.0 or later releases, and the application is named DTA-SMART. If the remote data collection option is chosen the host computer must be running Windows NT 4.0 or later.

2. SmartCard Application

This application allows the use of the smart card technology in a, dynamically and functionally advanced manner, in the respect of standards defined by the EMV (Europay/MasterCard/Visa).

Today we are using the MPCOS smart cards that use the triple-DES algorithm and dynamically keys. This also means that each smart card has its own key set.

The personalisation of the smart cards and the downloading of the smart card application in the processor is done in co-operation with DTA, the issuing bank and or a third party supplier approved by the bank. We follow the security standards and conditions defined by the bank.

Our application takes advantage of the multi functional capabilities of the smart card. This is the basis of our philosophy, and that we look at the chip as a spreadsheet with many cells. Each cell consists of an own application with a specific function. E.g. in the project with VISA and Sparebanken 1 we use two different electronic purses.

The smart card is based on a re-loadable chip, which allows reuse. There is no need to purchase a new card when the electronic purse is empty. The cardholder might then load “cash” into the purse using automatic teller machines (ATM’s), load spots or in a bank branch. The security base on the standards defined by the card organisation.

All transactions performed using the smart card are recorded with an audit trial based on the standards defined by the international card organisations.

3. Terminal Application

The main function of this application is to detect if the card is valid or not. In addition, there are functions for credit (load) and debit (purge) of transactions in a secure way.

All terminals used by DTA system use the SAM (Security Access Method) which allows exchange of data in a proper and a secure way accepted by the international card organisations.

As previously mentioned DTA uses the Triple-DES algorithm which consists of the highest security level known in the card business world wide..

The terminals may be stand-alone, portable or attached to a Cash Register. When attached to a Cash Register they communicate using the Bank-Axept protocol. Transaction data is collected from each terminal via data collection card, serial interface connection to a PC, or via remote data collection via modem (dial-in or dial-out).

4. DTA-SMART Back Office

The DTA-SMART Back Office system consists of 12 different modules:

- Terminal Module
- Issuer Module
- Acquirer Module (Merchant Administration Module)
- Data Collection Module
- Interchange / Settlement Module
- Card Production Module
- Encryption/Key Administration
- Credit / Debit Module
- Terminal Administration
- Card Master Module
- Operator Module
- Report & Statistics Module

The different modules allow the operator to maintain an overall control over the card administration system.

4.1 Terminal Module

The Terminal Module holds information on each individual terminal including terminal imprinter number, site address, debit/credit SAM reference, type of communication feature, terminal owner reference number (Acquirer number), type of terminal description, terminal telephone number and date of terminal installation.

4.2 Issuer Module

The Issuer Module holds the basic data on each cardholder which the operator is allowed to keep stored in the database. The specific fields depend on the different rules and regulations given by the authorities of each country. Enhancements regarding design of these modules and screens will be developed due to bank demands.

The Issuer Module holds all cardholders name, date of birth, title, card number, cardholders account number, cardholders sub. account number (chip account number), addresses, date of card issue, card expire date, different terms and conditions connected to cardholder agreement, card production dates, notepad for cardholder specific information, mail form as; post, email, Internet, account balance, card sequence number, field for card production info.

4.3 Acquirer Module

The Acquirer Module holds information on name, addresses, telephone numbers, internal account number of the merchant acquirer, the number of terminals owned by the acquirer,

reference numbers to the unique terminal imprinter numbers, and Merchant acquirer bank account number.

There is a logical connection between the Terminal Module and the Acquirer Module regarding terminal numbers.

4.4 Data Collection Module

The Data Collection Module is the module collecting data from terminals. The collection of data can either be manually collected on a GMX chip card, or remotely using a modem, or using a local network solution.

Unique batch numbers are created automatically, and on-line traffic is available on local network solution. At this stage the format used is proprietary, but we plan to develop it to work with the VISA Net format..

4.5 Interchange/Settlement Module

The Interchange/ Settlement Module split in-coming transactions according to bank-tables defined in the database for further communication with banks or other external transaction service providers.

Reconciliation of all in-coming and outgoing transactions takes place in this module.

4.6 Card Production Module

The Card Production Module updates every day the information needed for the production of new cards and renewals from the database table. Files are prepared for download to card manufacture under authorised rules determined by card organisation and banks

The Issuer Module is automatically updated on cardholder level regarding information as e.g. «card in production and card distribution form»

4.7 Encryption/key administration

The application has the capability to generate the security encryption keys used in the exchange of data in the communication between the smart card and the terminal (SAM). It is further developed according to international standards related to pre-defined encryption keys.

As mentioned earlier we are working on the RSA-static key program and will support this when this has been defined by the international card organisations.

4.8 Credit/Debit Module

The Credit/Debit Module allows manual load or refund of cash to the chip.
The load or refund is done in the bank environment or other authorised environment. The function is initiated by the use of Security Master Card in conjunction with the Operator Module.

4.9 Terminal Administration Module

The Terminal Administration Module consists of various remote controls and administration of the terminals. It has total control over each application, cards accepted, encryption keys, terminal application versions in the different terminals. In addition it also has the functionality to control the different card products which shall be accepted and approved.

4.10 Card Master Module

The Card Master Module holds information on personnel holding specially developed Master Security Cards for given authorised tasks to perform e.g. bank branch staff for doing loads or refunds from chip.

4.11 Operator Module

The Operator Module holds information on operators handling the system overall. The operator module can also be linked to terminal ID and associated operations, as e.g. a barkeeper or several barkeepers. It consists of entry of operator ID combined with unique PIN (Personal Identification Number).

4.12 Reports and Statistics Module

The Report and Statistic Module use a standard reporting tool to develop different reports and statistic. The reports are tailored for the banks use and need for different information.

5. Other applications

5.1 Vending Machines Module

The Vending Machine Module has been developed to run a Coca-Cola™ vending machine. The application can be implemented in other vending machines covering other type of products to be sold by the use of SmartCard technology.

5.2 Automatic Card Load

The Automatic Card Load is in development. It permits a customer to debit money from his or her main bank account using their normal bank card and add the money to the Smart Card. It does this by emulating a Cash Register attached to a standard bank card terminal, and adding touch screen technology to facilitate the money transfer.