



SmartDataCenter

Smart data preparation system

Executive summary

SmartDataCenter is a software solution that enables data preparation for smart card based applications.

SmartDataCenter enables data preparation for EMV applications as well as additional non-payment applications: transport, social, loyalty etc. **SmartDataCenter** supplements the source data from Back Office systems with the necessary application parameters (including risk parameters), manages the necessary cryptographic procedures and generates personalization data file in custom format (including EMV Common Personalization). **SmartDataCenter** ensures flexible integration with software systems and cryptographic devices.

Functions

- Supplementation of Back Office source data with constant and calculated values in accordance with custom smart data configuration;
- Calculation of tag values on the basis of other tags and data fields using formulae;
- Data grouping in DGI;
- Generation and transformation of secret values in accordance with *EMV 4.1*, *EMV* and *Visa Common Personalization* standards and *VSDC 1.3.2*, *VSDC 1.4.0*, *M/Chip 2.1*, *M/Chip 4.0* applications requirements:
 - *UDK* (Unique Derivation Keys) keys generation for EMV applications;
 - *SDA* (Static Data Authentication) data generation using Issuer RSA key pair;
 - *DDA/CDA* (Dynamic Data Authentication/Combined Data Authentication) and enciphered PIN support;
 - PIN block translation and reformatting;
 - Conversion of DES keys with checksum control;
 - RSA conversion from CRT to two component notion;
- Data generation for application load and initialization on *GlobalPlatform* cards;
- Association of EMV application MDK key cryptograms, issuer RSA keys and its certificates and a set of application on a certain card type with BINs of certain card products;
- Flexible rules-driven card keys selection based on the input data (frequently used to change transport keys depending on the target personalization center the personalization data will be forwarded to).
- Generation of output file in diverse formats:
 - XML;
 - *Visa Common Personalization v 1.5*;
 - *EMV Common Personalization v 1.0*.

Architecture

Data preparation interface has the following logics: operator defines a “Card template”, which contains a set of “Application templates” depending of those personalized on the card.

An “Application template” contains definitions of data sets, allocated into groups, files and records. It also defines sources of data and scenarios of application data processing.

Dynamic data are input using scripts, implemented in standard scripting languages. Script technology provides an interface between **SmartDataCenter** and Back Office systems. Scripts for the input from Back Office systems, most widely spread in Russia and CIS, are currently developed.

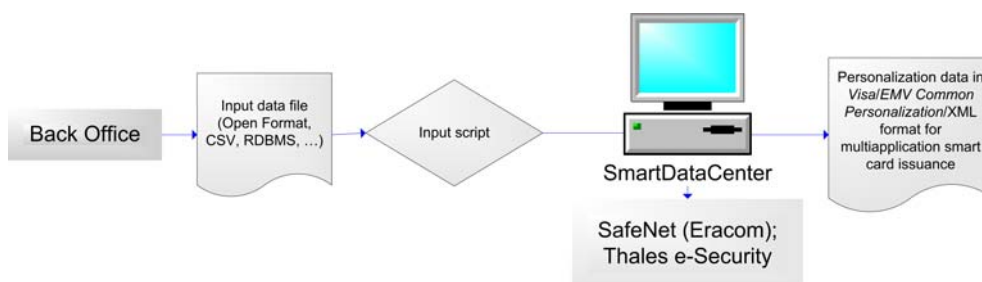


Figure 1. SmartDataCenter architecture.

Features and capabilities

Data input

Data input process is driven by scripts supporting Active Scripting™ technology, which enables to:

- flexibly adapt data preparation system to input data format;
- simultaneously interact with several data sources;
- retrieve data from most industry DBMS;
- preprocess data at the stage of input.

Operating modes

SmartDataCenter enables operation in interactive and batch processing modes. In the interactive mode operator may specify data configuration and run data preparation process in a comprehensive, clear and structured user interface. Batch processing mode enables to run data preparation from the command line. This enables to integrate the smart data preparation process into custom data processing environments.

Data output

Output data with personalization data may be generated in one of the above mentioned formats, which enables simple interaction of data preparation system with any personalization system.

Support

PRONIT specialists assist the client in creating the smart data preparation system:

- Install software;
- Adopt it to the requirements of a certain Back Office system;
- Implement input/output scripts;
- Personnel training;
- Provide relevant documentation;
- Assist clients in office, through e-mail or phone.

SmartDataCenter in action

This section contains examples of configurations, which are used to prepare personalization data in interaction with the most widely spread Back Office systems in Russia and CIS.

If the Back Office system provides only PAN, Expiry Date and Cardholder Name, then personalization data system includes **MSDP Manager** and **SmartDataCenter**.

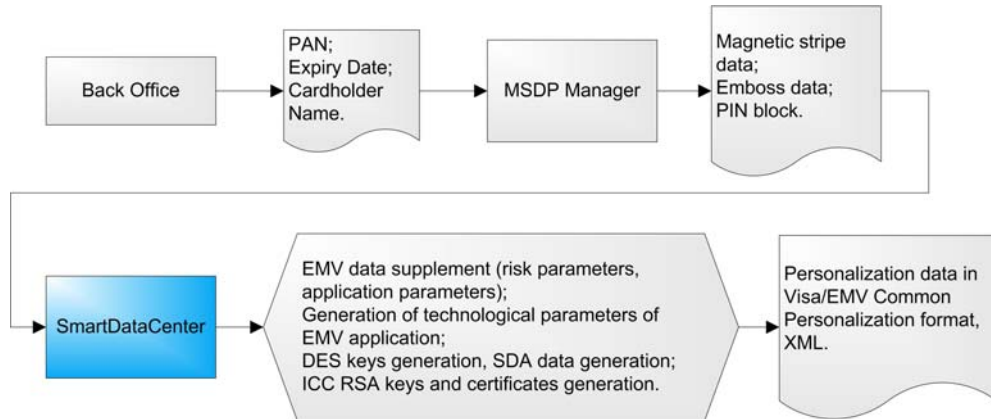


Figure 2. Data preparation system in case of minimal performance of the Back Office system.

If the Back Office system provides magnetic stripe and emboss data and PIN Block, smart data preparation system consists only of **SmartDataCenter** and has the following configuration:

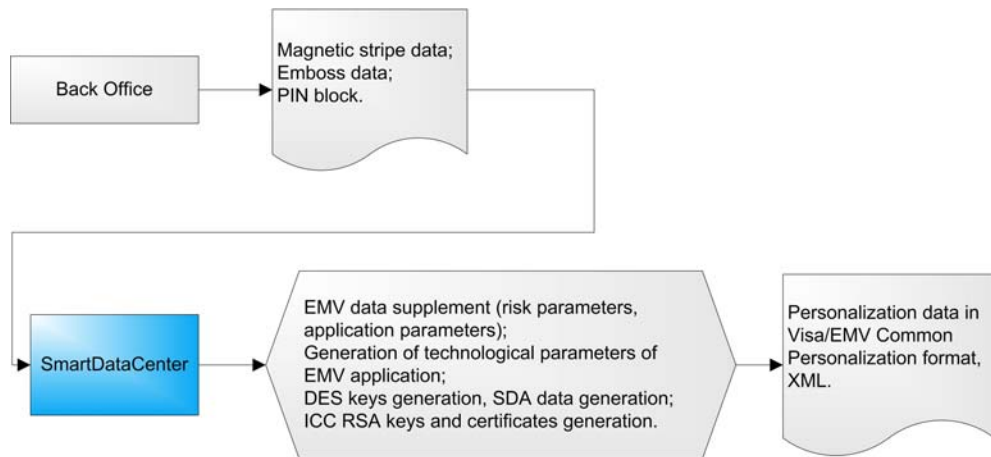


Figure 3. Smart data preparation system in case of average performance of the Back Office system.

If the Back Office system prepares some of the EMV data elements, the smart data preparation system has the following configuration:

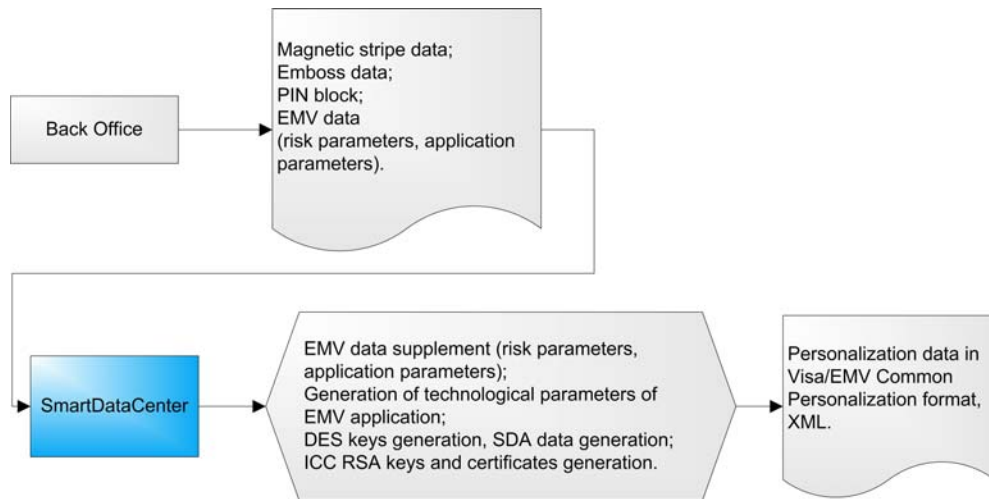


Figure 4. Smart data preparation system in case of higher performance of the Back Office system.

If the Back Office system is more EMV oriented, the smart data preparation system has the following configuration:

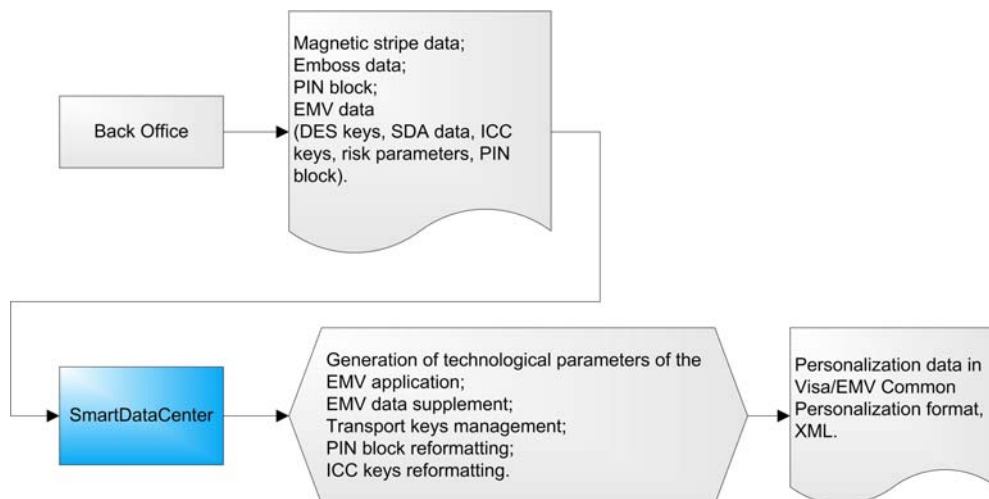


Figure 5. Smart data preparation system in case of high performance of the Back Office system.

These are the most widespread configurations. In every case the flexibility of smart data preparation software adapts to the Back Office system and achieves the desired result – a file with personalization data compliant with *Visa/EMV Common Personalization* industry standards or XML.

Platform

SmartDataCenter workstation

Windows 2000, XP

Cryptographic device

*SafeNet (Eracom);
Thales e-Security.*