

Terminal Applications

Version: 2.0.0

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Version history:

2005-01-27	Version 2.0.0	This document is based on the earlier guideline "Terminal Software" and have therefore been given the version number 2.0.0
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1 Basic software requirements

1.1 General

A terminal suitable for the Swedish market should be capable of handling

- debit/credit purchase, purchase with cash-back, purchase return and cash advance transactions, both magstripe and chip for different brands, internationally and domestically,
- other applications such as a loyalty application when needed.

In addition, it must be possible to securely handle remote download of new and revised application software and required parameters including cryptographic keys.

The terminal should be configurable to work stand-alone or to be integrated with a sales system.

1.2 Software architecture

The architecture of the software needs to be capable of handling messages between applications and different software modules. The basic reason for this functionality is the need for a common log of transactions, one procedure of settlement for all applications etc. This could be solved by a "Master application" (MA) controlling the user interface, maintenance and synchronisation of the software. The MA could be divided into two parts when the terminal has separate units for applications supporting cardholder and operator.

The MA controls the overall functionality of the terminal such as user log on/off, card reading and amount entering (prior application selection), settlement procedures, software and parameter loading, common journal and error handling and so on. The MA will interface with applications such as debit/credit and loyalty for the actual card transaction processing. MA should also be responsible for terminal unique data and application independent data.

1.3 Program distribution and activation

The terminal shall have support for secure software loading. All software to be loaded in the terminal must be signed. The signature is meant to prove that the software has been approved by the actual acquirer. The terminal shall check the signature before allowing the loaded software to become active.

Terminals supporting multi-applications must have the capability to update a single application or a part of an application without the need to download the complete set of software for the terminal. If the application could not be started after installing new software it should be possible to rollback to the previous version.

Every time the terminal is connected to a host system the terminal-interface shall allow for a trigger to be set and sent down to the terminal. The trigger informs the terminal when and to which server it has to connect in order to fetch new software. The trigger itself shall be unique so that the terminal recognises if the same trigger has been set in different host systems to which the terminal connects. Prior to the loading of new software the terminal shall be properly settled and cleared of financial data.

1.4 Parameter distribution and activation

The Swedish acquirers have, through their processors Babs and CEKAB, developed a file distribution system which shall be used to distribute parameters for associated terminals. Parameters are to day defined for the debit/credit application but could be expanded to cover parameters for also other applications. The file distribution system is specified in detail in the document "BABS and CEKAB Common Interfaces: Software & Parameter Download" (EMVTERMINAL file name: PPL-specification_yymmdd.doc). This document also specifies the procedures for initiating parameter download and related security requirements.

2 Different card payment environments

Payment solutions can to some extent vary between different environments. Important environments with influence on the card payment applications are:

- Stationary shop
- Delivery firm using portable equipment
- Hotel
- Restaurant and Bar
- Unattended gasoline station

2.1 Stationary shop

The stationary shop environments could be divided into a number of variants depending on the point of sale structure used in the shops. In many cases integrated solutions are preferred. Some merchants require their operators to enter a "User ID" into the terminal before it can be used. Some require that the terminal supports shift handling.

Common for the card handling in merchant environments and most unattended environments is that the purchase amount is known when the purchase transaction takes place. The core handling of the card payment is a straightforward authorisation. The clearing transaction could be captured by the authorisation host (Draft Capture or Single message system) or the clearing-transaction could be stored in the terminal and send to the acquirer later in a batch collection (Two messages system).

2.2 Delivery firm using portable equipment

In some sale situations portable terminals are used. An important difference from the terminal for the stationary shop is that often one single keyboard is used for both operator input and cardholders PIN entry. A security solution is needed in order to prevent unauthorised access to the PIN processing software area when entering data in a clear text mode.

2.3 Hotel

In hotels the guest normally pays after the consumption of services, not possible to return. Since the hotel wants to be sure in advance that the guest is able to pay, a preauthorisation based on an estimated amount can be made upon the guests arrival. Such preauthorisation shall always be approved by the guest using his PIN or signature, for an EMV card the highest supported CVM (Cardholder Verification Method) must be used. A receipt shall be given to the guest specifying the nature of this transaction. A suitable text is: ESTIMATED FINAL AMOUNT SEK: XXX.XX.

Additional authorisations can be repeated each time the earlier estimated amount proves to be too low and shall contain the estimated additional amount. If additional authorisations are made without the presence of the card, a keyed data entry format has to be used.

When the guest leaves, a clearing (electronic follow up) transaction is created. This shall contain the final purchase amount and also the approval code, the application cryptogram (TC) and the amount obtained from the first authorisation made.

2.4 Restaurant and Bar

In restaurants and bars it is especially important to point out that the guest must be able to make a card payment without losing sight of his card. To achieve this portable terminals will be necessary to use in many environments.

It is not allowed to use a preauthorisation in order to block an amount not yet spent on the cardholders account. In many cases the guest shall be able to add amounts like tip and wardrobe to the bill. If these extra amounts shall be included in the card payment transaction they must be known in advance and included in the amount registered on the terminal. It shall not be possible to add amounts to the transaction in a following step.

2.5 Unattended gasoline station

In an unattended gasoline station a card payment, like in the hotel, has to be authorised before the final amount is known. However, in this case no individual estimate of the final amount is possible. Instead, before petrol is delivered, an authorisation is made using the amount SEK 1:- or any other amount specified for the actual card type. Petrol may then be delivered up to the limit corresponding to an amount equal to the floor limit for the actual card type.

As for hotel transactions the clearing transaction shall contain the approval code and the application cryptogram from the authorisation made. The card does not need to remain in the terminal after the authorisation process is finished. In the acquirer agreement shall be specified whether an optional advice transaction shall be sent when the final purchase amount is known.

3 Master Application

As described above, to be able to use and reuse core card payment software some type of a Master Application (MA) in some sense is needed. The MA is also needed when the terminal supports more than one application.

The MA is expected to include a cardholder interface, which supports application selection. Other parts, common for several applications, can be reconciliation, transaction journal, support for inter-application communication and hardware dependent functions.

The MA will be different depending of the environment and how the terminal is used (stand alone or integrated).

The MA must be configured or developed according to the available functions. MA should handle the initial card reading independent of the technology used (chip or magstripe). It is suggested that the MA also handles the operator menu and controls what functions may be available according to specified authority rules.

4 Debit/Credit application

4.1 Debit/Credit transactions

Transaction types to be performed by the Debit/Credit application are Purchase, Purchase with cash-back, Purchase return (Refund), Cash advance and Purchase advice (in Swedish "Efterregistrering").

The Refund transaction is always sent as an Advice message. The processing centre must be able to send this information to the issuer, if the issuer so requires.

The acquirers will supply parameter files, the content of which includes rules that the Debit/Credit application has to follow. For instance, some of the above mentioned transaction types may not be permitted in a certain environment.

Support for foreign currency is not a requirement for stand-alone terminals in this stage. It must be easy to modify the application to always show and accept amounts in both SEK and Euro using a fixed currency exchange rate.

Specific Swedish requirements on the Debit/Credit application are that a purchase shall cause a VAT value to be calculated or manually entered by the operator and that the terminal must be able to request an ID-card number to be entered for a signature-based transaction.

4.2 Stand in processing (STIP)

If the terminal can send an authorisation message to the acquirer but not reach the issuer, the transaction may be approved by the acquirer according to relevant STIP parameters. Domestically Stand In Processing (STIP) is a bilateral agreement between acquirers and issuers. The terminal shall in these cases accept an approval also containing no ARPC.

In situations when the card has a chip but the chip can not be read (fallback to magstripe), the transaction must always be sent online.

5 Other applications

Always when a new application is going to be implemented the organisation having the role of TSP (as defined in the guideline "Terminal Service Provider - TSP") must be given the opportunity to verify that the new application has no negative impact on the debit/credit application or any other already existing application.

Loyalty has often been given as an example of applications requested by many merchants in the future. For this type of application the following directions are given.

Two options must be considered:

1. The loyalty program is identified by the magstripe and with no connection to payment.
2. The loyalty program is "stored" in the chip, identified via the PSE or found in a single directory.

In the first case the magnetic stripe should be inserted *before* the payment process in order to simplify the dialogue between cashier and cardholder.

In case 2 an application supporting a loyalty program should look for the loyalty program first of all in the application selection process in order to simplify the dialogue.

In both cases the aim is to have the information available to proper handle "points", price reduction or whatever before making the purchase transaction.