

Bilateral and Multilateral Processing of Card Transactions in Europe

A Card Scheme Independent Message Standard

White Paper

Version 1.0

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1 An Overview

Berlin Group: A European Standardisation Initiative

The "Berlin Group" is a European standardisation initiative with the primary objective of defining a scheme independent open message standard for card processing interfaces. The name "Berlin Group" derives from the first meeting in Berlin in October 2004. The Group currently has participation by 23 major players in the card industry from 10 different euro-zone countries and from the UK, Sweden, Denmark, Norway, Iceland, Latvia, Estonia, Lithuania, Turkey, Croatia, Bulgaria, Hungary and Serbia, together representing more than 18 billion card transactions annually within Europe. The participants are national and international card schemes, banking associations and card payment processors, for a current list see www.berlin-group.org.

The group, which was initiated by major national card payment systems, shares the ambitions and vision of the European Central Bank (ECB), the European Commission (EC) and the European Payments Council (EPC) on card payments in a Single Euro Payments Area (SEPA). It proposes that this vision would be best reached by capitalising on and preserving the high levels of efficiency, brand awareness, security, convenience and ease of use already achieved in current national markets.

Aims: Cost Reduction through Unbundling

The principle goal is to meet the aims of the EPC, the ECB and the European Commission with regard to a Single Payment Area, and in particular to be compliant with the SEPA Cards Framework which has been developed by the EPC. The main focus of the Berlin Group is to enable a true *unbundling* of card schemes and processing activities, as required for providing efficient SEPA card payment services to the market. To enable a card scheme-independent processing of transactions between issuer and acquirer, the development of scheme-independent message standards for this interface is required.

Based on these considerations the group has defined a common set of standards for the interface between the acquirer host and the issuer host, which is independent of a specific card scheme, and takes into account the requirements of the SEPA region for card processing as identified by the EPC. Once established in the market, these standards will also allow an easy entry of new payment schemes into the European market, thus contributing to competition in the field of payment systems.

Thus, the Berlin Group has been established as a pure technical standardisation group, focusing on technical and organisational requirements to achieve the above mentioned aims. It has been created in the sense of an "open source"-initiative and it intends to contribute its achievements freely to any interested party.

The Berlin Group is not engaged in the implementation of the standards within or between schemes. Participation in the Berlin Group does not imply either endorsement of any of the solutions identified in the standards, or a commitment to implement them: Decisions on the implementation of the standards delivered by the Berlin Group are left to the individual

market participants. The Berlin Group is open for any party active in the card payment industry within the SEPA region.

Structure of the Berlin Group and Policies

The Berlin Group is governed by a Plenary which is the decision making body and several task forces, all of which report to the Plenary. The Authorisation Task Force, and the Clearing Task Force respectively, is working on standardisation of the authorisation application layer, and on clearing and settlement matters respectively. These task forces meet on a regular basis to work on new features and change requests to the standard. Further task forces are the VPN Task Force and the Security Task Force which have defined functional and security requirements on the connections. The Implementation Task Force is open for implementers of the standard only and has the task to keep the standard in line with the requirements of real implementations. The Implementation Task Force enables implementers to support migration planning, and to initiate change requests based on their practical experience.

The Berlin Group is committed to full transparency of its work in the market. The results of the standardisation work, new areas identified to be addressed and the current work plan are always published on www.berlin-group.org. Further the group reports regularly on the names of those card processors able to be reached via the Berlin Group Interfaces, the number of terminals and cards to be reached and the volumes. The users of the Berlin Group are also committed on a full transparency on the quality of the bilateral processing by reporting on charge back and technical rejections on a regular base on its web site.

The specifications issued by the Berlin Group web site are provided free to use.

Main Achievements and Further Work

The first Berlin Group authorisation and clearing specifications (version 2) which have been implemented describe the acquirer to issuer interface for standard services at POS and ATM, as usually supported by debit cards. These interfaces are already used by several processors throughout the SEPA region for debit card processing.

The Berlin Group has now extended these specifications for the acquirer to issuer interface for special card transactions at POS and ATM as identified by EPC in the Standardisation Volume 3.0. This will also enable the user also to process credit card transactions at POS using the Berlin Group standard. The new release of the Berlin Group standard (version 3) is now available on the Berlin Group web site. Further work on the Berlin Group standard in 2009 will be to work on Mobile Top-up functions.

Further, the Berlin Group has started to standardise the clearing of card based transactions by re-using the SEPA payment instruments built up for SEPA Direct Debit. More details are described in Section 3 and Section 4 of this document.

2 Standard Version 3: Special Transactions at ATM and POS

An overview on the supported architecture is given in the following diagram.

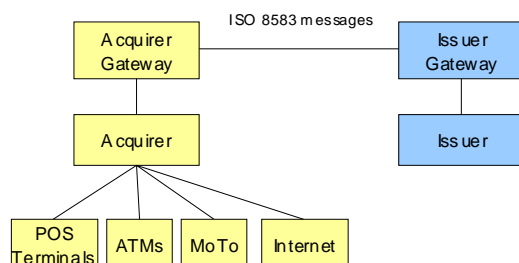


Figure 1: Infrastructure for bilateral and multilateral processing of card transactions

2.1 Supported Services

The Berlin Group has extended the services as supported in version 2 of the standard by special transactions on the acquirer/issuer interface as identified by the EPC Cards Working Group, e.g. transactions with increased amounts for tipping, multi step payments with an update for reservations or e-payments and MOTO transactions. The version 3 of the specification will thus enable processors to process credit card transactions at the POS bilaterally throughout the SEPA region.

Only very specific transactions like electronic purse loading, cash deposit or instalment payments where various regulatory or market requirements negate the value of standardisation, are considered out of scope.

In detail, the Berlin Group Standard version 3 supports the following ATM and POS transactions as identified by the EPC Card Standardisation Volume 3.0:

Service	Description
ATM Cash Withdrawal	A service which allows the cardholder to withdraw cash at an unattended cash dispensing Also called "ATM Cash Disbursement"
Balance Inquiry	A service which allows the cardholder to request information about their account balance.
Cancellation	A service which allows the card acceptor to cancel a previously approved transaction. Cancellation should only occur before the transaction is cleared to the issuer. It is sometimes called "Manual Reversal".
Card Validity Check	A service that allows the validity of the card to be checked. This transaction is only for information and has no financial impact on the card account. It is sometimes called "Information request"
Cash Advance (attended)	A service that allows the cardholder to withdraw cash in an attended environment, e.g. at a POS terminal or a bank counter. Also called Cash Disbursement.

Service	Description
Deferred Payment	<p>A combined service which enables the card acceptor to perform an authorisation for a temporary amount and a completion for the final amount within a limited time frame. Deferred Payment is only available in the unattended environment.</p> <p>Examples where this service is widely used are unattended petrol pumps and phone booths.</p> <p>This is also called "Outdoor Petrol" when used in the specific petrol sector.</p>
Issuer initiated referral	<p>A referral occurs when the initial authorisation request is first responded to with an appropriate Referral.</p> <p>Authorisation Response Code and the transaction is completed with a voice conversation (out of scope) to seek an approval for the transaction to proceed.</p>
No Show	<p>A service which allows the card acceptor to charge the cardholder's account due to the fact that the cardholder has not arrived within the specified time and has not cancelled the guaranteed reservation within the specified period. It is used e.g. for hotel trade.</p>
Original Credit	<p>A service which allows the card acceptor to effect a credit to a cardholder' account. Unlike Refund, an Original Credit is not preceded by a card payment. This service is used for example for crediting winnings from gaming. Same kinematics as Refund.</p>
Payment	<p>The basic service which allows the cardholder to pay for the purchase of goods and services from a card acceptor using their card.</p>
Payment with Cashback	<p>A service which allows the cardholder to obtain cash from the card acceptor in conjunction with a payment. Also called a Cashback transaction. The cardholder customer receives the extra amount in cash along with the goods/services.</p>
Payment with deferred Clearing	<p>A feature where the acquirer postpones the clearing of the transaction. It is used for example for the payment of health expenses.</p>
Payment with Increased Amount	<p>A feature which allows the cardholder to increase the amount to pay by adding an extra amount, for example where a gratuity (tip) is added.</p> <p>There are two different cases:</p> <ul style="list-style-type: none"> • The customer increases the amount of a payment prior to authorisation • The authorisation is processed prior to increasing the payment amount, e.g. adding a gratuity on the receipt.
Remote Payments	<p>e-Payment:</p> <p style="padding-left: 40px;">A Remote Payment where goods, services, etc. are purchased over electronic systems such as the Internet and other computer networks. The cardholder may be authenticated by the issuer.</p> <p>MOTO:</p> <p style="padding-left: 40px;">A Remote Payment following a mail order or telephone order</p>
Quasi Cash Payment	<p>A service which allows the cardholder to obtain items which are directly convertible to cash. For example these can be gaming chips.</p>

Service	Description
Pre-Authorisation Services (Multi Step Payment)	<p>A service composed of the 3 steps</p> <ul style="list-style-type: none"> • Pre-Authorisation, • Update Pre-Authorisation (optional and potentially with several occurrences), and • Payment Completion <p>A Pre-Authorisation allows the card acceptor to reserve an amount for a specified period of time to ensure that sufficient funds are available to complete a subsequent payment.</p> <p>The pre-authorisation is used only to reserve the amount since neither the final amount nor the final date and time of the actual payment are known (e.g. car rental, hotel, video rental, etc.).</p> <p>Pre-Authorisation is also called "Reservation".</p> <p>The Update Pre-Authorisation is used to update the estimated amount and/or the validity period of the previous Pre-Authorisation or the previous Update Pre-Authorisation.</p> <p>The Payment Completion is used to complete a transaction following a Pre-Authorisation or Update Pre-Authorisation Request.</p>
Recurring Payment	<p>A service where the cardholder authorises an acceptor to charge the cardholder's account on a recurring basis.</p>
Refund	<p>A service which allows the card acceptor to reimburse the cardholder partially or totally. Refund is not necessarily linked to any previous transaction.</p>
Unsolicited Balance Information	<p>A feature which allows the card issuer to provide account balance information in the authorisation response message.</p>

The following services are not yet supported by the standard:

- Card Funds Transfer,
- Cash Deposit,
- e-purse - Loading/Unloading,
- Installment Payment,
- Payment or cash withdrawal with explicitly named dynamic currency conversion,
- Payment with cumulative amount,
- Payment with Purchase/Corporate Card or Loyalty information
- Mobile Top-up.

2.2 Specifications

Network and Security

The network between issuer and acquirer gateway has been defined as an IP based VPN, IPSEC is not used. A dedicated network provider is not required. Detailed requirements can be found in the VPN requirement paper of the Berlin Group.

The security of PIN encryption and the authenticity of messages is implemented on application layer. MAC and PAC keys used within the messages are symmetric T-DES session keys. A detailed description can be found in a dedicated security requirement paper, which can be obtained from the Berlin Group when planning an implementation.

Authorisation

The authorisation messages for the above mentioned services rely on ISO 8583:1993. Transaction flows and detailed requirements can be found in the authorisation interface specification.

Clearing and Settlement

The clearing messages rely on ISO 8583:1993 as the authorisation interface. The clearing interface supports presentments, charge backs, fee collection for services, reconciliations, message rejections and file rejections. The settlement of Interchange Fees is integrated within the presentments.

For the clearing, rules have been defined for the technical processing, for example d+0 settlement and rejection rights. Other aspects of the clearing processing such as presentment periods or charge back reasons, are defined as default rules like presentment periods or charge back reasons. The detailed processing rules can be found in the clearing and settlement rule book.

Moreover, procedures between back offices like additional information for dispute management are also standardized and are contained in the clearing procedures handbook. The settlement is performed once a day, normally using Target 2. Settlement is performed between the gateways, on behalf of their respective acquirers and issuers.

Implementation Experiences: Lessons Learned

The Berlin Group interface now has been implemented throughout the SEPA region, the first implementation within a non-euro country is currently underway. It has proven to be easy implementable. The Implementation Task Force has proved to be very useful in standardizing test cases and implementation projects yielding a standard implementation plan. Further, coordinating tests as well as rollouts and organizing certifications of the gateways by a self assessment has also proved an efficient and effective approach.

A simplified entry is feasible for piloting or lower volumes, since automated dispute management procedures like XML formatted arbitration emails are neither mandated nor yet in use.

Eperience to date is that the quality of the processing is very high, and charge back quotas very low.

3 SEPA Card Clearing through SEPA Payments

Card Clearing Market today

Within various European countries, *domestic* card payment systems use the dedicated infrastructure of card processors for the clearing of card transactions. But a major part of domestic payment systems uses direct debit processes within the infrastructure of Automated Clearing Houses (ACH) to clear and settle card transactions at a domestic level.

Currently, the clearing and settlement of *cross-border* card based transactions is performed via a network of card processors, either with a central processor (as for the international payment systems) or without a central processor (as implemented by card processors using the Berlin Group standards for bilateral processing).

The question now arising is whether card transactions throughout the SEPA region might in future also be cleared by ACH as a market alternative to the clearing by dedicated card processors.

Synergies with new SEPA Clearing Infrastructure

The European banking industry is currently implementing a “SEPA Direct Debit Scheme” to support a pan-European direct debit instrument. To enable a full migration of current domestic direct debit formats to these new formats, it is also necessary to migrate the current direct debit based card clearing – at least within various domestic markets – to this new infrastructure. Therefore it is necessary to analyse, whether the SEPA Direct Debit clearing infrastructure may also be suitable for the clearing and settlement of card transactions, e.g. by extending the processes and formats used for the direct debit scheme to the requirements of clearing card transactions.

Doing this not only at domestic level, but at an international level leads to many benefits. The major benefit is that the development of a SEPA Cards Clearing infrastructure will enable a full STP processing for card transaction clearing by using the same processes and formats between different banks and between banks and Clearing and Settlement Mechanisms (CSM). This STP processing is expected to reduce the costs of the clearing processing, since only one SEPA card clearing format is to be supported within Europe in a midterm perspective, irrespective to local or cross-border interfaces. Moreover the banks then are enabled to switch easily between different market solutions for clearing, be it a solution using a European ACH or a bilateral clearing solution between banks.

Thus, a solution for using the new SEPA clearing infrastructure will generate synergies by enabling banks to use the same infrastructure for direct debits and for card clearing within Europe.

The Berlin Group is working on standardising a SEPA Card Clearing (SCC) method, using the SEPA Direct Debit as a technical starting point. First drafts of the SCC specifications will be available in the second quarter 2009. More details on this project can be found in a White Paper on SEPA Card Clearing on the Berlin Group web site.

4 Outlook on Berlin Group Work in 2009

The Berlin Group has decided amongst other things on the following work plan for 2009:

- Detailed specification for a SEPA Card Clearing Framework (SCC)

The Berlin Group has already worked out a draft of a process description and an implementation guide for a SEPA Card Clearing basing on ISO 20022 in 2008, cp Section 3. During 2009, the finalising of the process description and the implementation guide is planned.

- Standardisation of a Top-up service

The Berlin Group has decided to work on a standardisation between the acquirer and issuer gateways to enable acquirer to offer the loading of mobile phone prepaid-accounts at ATM and POS ("mobile top-up").