



Clearing and Settlement in the VPC system

The settlement process, securities accounts and roles in the VPC system

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1. Clearing and settlement in the VPC system

Euroclear Sweden AB ("ES") offers clearing and settlement of securities denominated in SEK and EUR. The business unit Settlement & Asset Services (SAS) at ES is responsible for these services. The settlement of securities fulfils international demands as regards to the delivery of securities against payment and is also a final and irrevocable settlement in accordance with the EU directive concerning Settlement Finality (98/26/EC).

2. The VPC system

The VPC system supports different types of securities, equities and interest-bearing cash instruments as well as the respective derivatives. The VPC system is divided into two sections with slightly different functionality – the AM sub-market and the PM sub-market. In the AM sub-market, the functionality has been developed to optimally meet the needs for clearing and settlement of equities traded on the stock exchange, although other instruments such as interest bearing securities are also cleared and settled in the AM sub-market. The functionality in the PM sub-market has been developed to meet the needs of institutional investors' clearing and settlement of fixed income securities. Those issuers for which special terms exist as regards to debt instruments, known as a PM programme, are handled in the PM sub-market. It is possible to transfer these interest bearing securities between the PM sub-market and the AM sub-market.

The settlement process in the VPC system is carried out according to the BIS model I, i.e. gross settlement with regards to both securities and payments. Instructions are checked before being marked 'ready to settle' in real time during the settlement day. Settlement then takes place on a number of fixed occasions during the day. The settlement can be referred to as Designated Time Gross Settlement (DTGS). In addition, ES also provides gross settlement in real time (RTGS).

In the DTGS procedure, each separate instruction is checked for both payment capacity and securities holding. Payment capacity for each transaction is checked on the liquidity settlement accounts (LSA), the settlement bank accounts for central bank liquidity within the VPC system. For the settlement of payments in Swedish kronor, the Riksbank has commissioned ES to administer certain central bank accounts, known as LSA in SEK. For the settlement of payments in euro between settlement banks, ES has a client fund account at Bank of Finland on behalf of the settlement banks. The balance in the client fund account of each settlement bank is registered in the VPC system on LSA in EUR.

A corresponding check is made on the clearing members' cash memorandum accounts (CMA). Furthermore, it is possible for clearing members to set limits for their customers, or groups of customers, against which payment capacity on this level is checked. In the PM sub-market of the VPC system, regarding SEK, settlement banks are able to utilize the functionality for automatic pledge of securities to obtain intraday credit from the Riksbank. The VPC system possesses functionality for the simultaneous processing of several instructions at once, with the aim of minimizing the need for liquidity and intraday credit.

The method of settlement used in the VPC system limit the impact of failing participants and enables a reduction of time between trade and settlement, down to T+0. Several settlement cycles per day enables more efficient links with other clearing and settlement systems as well as a high settlement ratio at the end of the day.

In order to ensure a high level of system availability, ES has two IT centres located at separate geographical sites. Data is mirrored in real time, which enables operations to be rapidly switched to the alternative site, should any problem arise at one of the IT centres. Furthermore, all clearing members have communication links with both IT centres. Back-ups are made and archived in a number of different ways in order to enable recreation of data in the event of extreme disasters where both IT centres have been destroyed. Over the years, the VPC system has maintained a very high level of availability. In 2003, the availability exceeded 99.99% during the opening hours of the system, 7 a.m.–9 p.m. (07.00-21.00).

3. Roles in the VPC system

3.1 Clearing members

A clearing member (CM) participates in ES clearing and settlement and is responsible for ensuring that securities and payments are settled on instructed settlement dates. Clearing members can register instructions in the VPC system themselves, or via another participant. Clearing members may participate in the clearing process in one or more sub-markets and currencies, i.e. AM SEK, AM EUR, PM SEK and/or PM EUR.

3.2 Account operators

An account operator (AO) is an institution that maintains a register in a specific VPC account. Account operators have a technical connection with ES allowing them to register instructions in the VPC system. Furthermore, an account operator opens VPC accounts and register changes in the accounts, such as trade instructions and changes in account details.

3.3 Settlement banks

The settlement bank supplies services related to the settlement of payments and operates on behalf of one or more clearing members, and handles the disbursement or receipt of payments at settlement. Settlement banks may choose to participate in one or more sub-markets and in one or more currencies. As settlement bank for payments in Swedish kronor, the institute must be a participant in the RIX payment system of the Central Bank of Sweden. As settlement bank for payments in Euro, the institute must be a participant in a payment system at a central bank and thereby have access to credit in Euro or have an agreement with a participant in such payment system and have access to credit in euros.

3.4 Nominees

A nominee is the representative for one or more investors in relation with ES. Nominees maintain nominee accounts, where one or more investors holdings are registered. A nominee normally manages the holdings of individual investors in his own custodian system, where holdings are mirrored on an aggregated level to one or more nominee account at ES. Alternatively ES offers Service accounts, which allows actors to hold securities accounts for their clients in the VPC system and have ES manage the majority of the functions that otherwise would have been carried out by the nominee himself. Nominees that are not account operators must retain such an operator to carry out registrations on behalf of the nominee in the VPC system.

4. Securities accounts

The VPC system has several types of accounts for register holdings of securities.

4.1 VPC accounts

A VPC account is either an owner account, which is in the name of the investor, or a nominee account, in the name of the nominee on behalf of the owner (see below). Equity market instruments as well as bond and money market instruments may be registered on VPC accounts. All instructions to VPC accounts are settled in the AM sub-market of the VPC system.

In the PM sub-market, the VPC account is named PM account. An investor participating in the institutional fixed income market may have an account operator, a member in the PM sub-market, to open a PM account in his name. Before an account operator opens a PM account, an agreement is drawn up with the investor, which amongst other things bestows upon the clearing member the right to pledge acquired securities until the time when payment has been effected by the investor. This type of pledging on a PM account is known as acquisition pledging. PM accounts are linked to an organisational unit, designated in the system as an office, in order to specify which account operator each PM account belongs to. It is only that particular account operator that has access to the PM account.

4.2 Nominee accounts

Nominees that open some type of nominee account, a VPC account or a PM account, maintain a register of the holdings of individual investors in their own custodian system. The nominee has the right to operate on securities in the account, the balance of which may be made up of the securities of a number of different customers. The holdings of the individual investors are not separated in the VPC system, so the nominee is required to manage the administration relating to the securities, for example tax administration and the reporting of address details. Nominees are obliged to regularly report the holdings of individual investors to ES, for example prior to general meetings of shareholders and corporate actions such as stock dividends.

4.3 Service accounts

A service account is a special type of VPC account in the AM sub-market of the VPC system. The service account constitutes a supplement or an alternative to the nominee's custodian system and makes it possible, amongst other things, to keep a register of both Swedish and foreign securities in the same account in the VPC system. For these accounts, ES provides certain central services relating to registration, the disbursement of dividends and interest payments, the distribution of issue rights, tax reporting, the valuation of holdings, etc.

5. The settlement process

The settlement process in the VPC system commences as soon as the instructions are registered in the system. In the matching process, receipt and delivery instructions are paired up. Once the instructions have been matched, a pre-settlement check process is carried out on settlement day where the securities holding and the payment capacity is checked. If these conditions are fulfilled, instructions are marked 'ready to settle'. Thereafter, settlement takes place at stated occasions during the settlement day. When instructions are settled, securities and payments change owners.

The settlement process for the AM sub-market and the PM sub-market can be summarised in the following stages:

Term	Registration	Matching	Pre-settlement check	Ready to settle	Settlement
Implication	Instructions registered in the VPC system	Instructions are unilaterally irrevocable	Checking of delivery and payment capacity	Payments and deliveries are guaranteed	The payment and delivery instructions are settled

5.1 The AM sub-market matching process

Trades on the stock exchange should, according to market practice, be registered in the VPC system by 12 noon on S-2. As soon as both parties in a trade have registered their instructions in the VPC system, a matching control commences in which the settlement details are checked according to the matching criteria set out below. The parties can follow the status of the instructions in the VPC system in real time. Once matching has taken place, neither of the parties may unilaterally revoke its transfer order. Special rules, however, apply for pre-match instructions.

The criteria that must correspond in the VPC system in order to match an AM-trade are:

- Counterparty
- Trade date
- Settlement date
- Quantity/nominal amount
- Securities/ISIN
- Payment amount and settlement currency
- Where applicable, event code (does not apply to Prematch)/event identity

5.2 Prematch

Market rules, as drawn up by the Swedish Securities Dealers Association, stipulate that certain instructions should be prematched. Matching criteria, in addition to the criteria set out above, for those instructions that require pre-matching are cum/ex, that is, including or excluding dividend, and customer reference.

Prematch instructions are handled in ES prematch system where matching attempts begin as soon as the instructions have been registered. On day S (Settlement day), the matched instructions pass over automatically to the clearing and settlement system, whereupon the order is checked for delivery and payment capacity (pre-settlement checking). In the event that the order is not settled on day S, the instructions revert to the prematch system and are tried again for settlement on the following settlement day. This process is repeated for a period of 20 days, unless the order has been settled. Instructions in the pre-matching system are not binding and can be unilaterally revoked as long as they have not been transferred to the clearing and settlement system. The parties can monitor the status of the instructions in the VPC system in real time.

5.3 The PM sub-market matching process

PM instructions must be registered in the VPC system as promptly as possible. According to market practice, inter-bank trades should be reported and matched within one hour of trade.

The matching of instructions on the money market follows the same process as for instructions on the equity market and the parties are able to follow the status of the instructions in the VPC system in real time.

The criteria that must correspond in the VPC system in order to match a PM trade are:

- Counterparty
- Own VPC account
- Counterparty's VPC account
- Trade date
- Settlement date
- Quantity/nominal amount
- Securities/ISIN
- Payment amount and settlement currency

5.4 Pre-settlement check and 'ready to settle' marking in the AM and PM sub-markets

The next step in the settlement process is the pre-settlement check of all matched instructions and transfers. The pre-settlement checks in the AM and PM sub-markets are conducted according to the same principles with the exception interest payments and redemptions, which are checked separately, as described below.

Commencing the morning, at 07:15, matched instructions that have been registered with that settlement date are checked. The check consists of several different routines that are optimized to achieve the best performance with regards to instructions that are about to be marked 'ready to settle'. The pre-settlement check is governed by the principle of first checking the delivery capacity where the securities are concerned, and then checking the payment capacity. Securities and payment sums are reserved and released in the various cycles. The pre-settlement check continues throughout the day, with intermission at the settlement times. The instructions that are registered during settlement day are checked in real time for 'ready to settle' marking.

The VPC system includes a number of processes designed to reduce demand of liquidity. These processes are run continuously during the day in order, as far as possible, to mark several instructions 'ready to settle' simultaneously. This enables participants who have both purchased and sold securities, or vice versa, to have corresponding instructions marked 'ready to settle' without facing demands for gross payment capacity or actual holdings in the securities concerned.

The payment capacity is checked on three levels: settlement bank level, clearing member level and the level of the underlying customers of the clearing member. The check at the

latter level is made on the clearing member identities (CID), or the PM account groups (PMK). At the settlement bank level, the payments are managed by utilizing what is known as liquidity settlement accounts (LSA), settlement bank accounts with central bank liquidity for securities settlement, which are administered by ES. At the clearing member and CID/PMK level, payments are managed in cash memorandum accounts (CMA).

The settlement headroom in a liquidity settlement account (LSA) consists of funds transferred from the Swedish riksbank regarding SEK and from Bank of Finland regarding EUR, the net payments of settled instructions and the net payments of instructions marked 'ready to settle'. The settlement headroom in a cash memorandum account (CMA) consists of a limit, the net payments of settled instructions and the net payments of instructions marked 'ready to settle'. The limit for a clearing member is registered by the settlement bank and constitutes the maximum payment obligation that the settlement bank will accept for the clearing member. The limit for CID/PMK is registered by the clearing member.

The principles governing how the actual settlement headroom is calculated during day S for the settlement bank and for the clearing member and CID/PMK are shown in the table below:

Settlement bank (LSA)	Clearing member, CID/PMK (CMA)
+ Deposits LSA	+ Limit
- Withdrawals LSA	+ Increase settlement headroom
+/- Net settled instructions	- Decrease settlement headroom
+/- Net instructions 'ready to settle'	+/- Net settled instructions
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= Settlement headroom	= Settlement headroom

5.5 Pre-settlement check, Interest and redemption

The interest and redemption payments for instruments issued in the PM sub-market are pre-settlement checked in a special process. This interest/redemption process is carried out on a number of occasions during the day. Those clearing members that have been retained as issuing institutions by issuers must have the requisite settlement headroom available, on both the CMA and LSA, by the time specified by ES in a special resolution for the interest/redemption process. In the case of issuers that have both interest payments/redemption as well as issues, only the net of these is required. A settlement headroom requirement is also placed on buyers in the primary market. The deadlines for payment capacity can be seen in a special resolution concerning "Settlement incentives".

5.6 Intraday credit

In addition to the liquidity-saving processes mentioned earlier, and with the aim of minimizing the need for liquidity on the PM sub-market, ES offers settlement banks the option of obtaining intraday credits from the Riksbank in the VPC system regarding SEK. An intraday credit is raised against collateral in securities held in PM accounts specially designated by the settlement bank. This is administered by ES to create an increased settlement headroom where required. The credits are automatically created by ES in conjunction with the pre-settlement check.

5.7 Settlement

Instructions marked 'ready to settle' in the pre-settlement check are settled on the nearest following settlement occasion. The sum of all payments from settlement becomes available in the LSA as soon as settlement has been taken place. Matched instructions not settled on the intended settlement day must be registered again with a new intended settlement date by both parties, except for pre-match instructions.

	Settlement batches				
AM sub-market	10:00 AM	12 noon	2:00 PM	5:00 PM	
<hr style="border: 2px solid black;"/>					
PM sub-market	08:00 AM	10:00 AM	12 noon	2:00 PM	5:00 PM

Settlements at 17:00 (5 p.m.) apply only to free of payment instructions.

5.8 The settlement process – terms and incentives

In order to ensure that the clearing members deliver the securities in time and possess the required settlement headroom in order for settlement to take place, and thus achieve as high a settlement ratio as possible, ES has in cooperation with the market participants developed a set of incentive rules. The incentive rules comprise of, amongst other things, differentiated fees, depending on the time of registration, and in certain cases penalty fees and publishing within the membership circle. For detailed information on incentives, see document 'Special resolution CS 5 2005, Settlement incentives'.

When the VPC system opens at 07.15 (7.15 a.m.), clearing members must have a base settlement headroom registered on each and every CMA that belongs to the clearing member. The base settlement headroom is calculated by ES based on the historical gross turnover and net payment amount for each clearing member. Certain exemptions apply, however, as regards to those clearing members that have a limited number of net payment amounts or a minimally calculated base settlement headroom over a particular period of time. The base settlement headroom shall remain in place up to the final point in time for settlement with payment. A reassessment of the size of the base settlement headroom takes place each quarter at rolling 12-month intervals. Each clearing member is informed by ES of the base settlement headroom requirements applicable at any particular time.

Each settlement bank must possess a base settlement headroom (liquidity) on each and every LSA, as specified by ES, when the VPC system opens at 07.15 (7.15 a.m.) on day S. The base settlement headroom (liquidity) is calculated in a similar way to the basic limit, based on the historical gross turnover and net payment amount. The base settlement headroom (liquidity) must remain in place up to the final occasion during the day for settlement against payment. A reassessment of requirements is made by ES each quarter at rolling 12-month intervals. Each settlement bank is informed by ES of the settlement headroom (liquidity) applicable at any point in time.

5.9 Cancellations

To cancel matched instructions, it is required that both parties agree to cancel their respective instructions. In the VPC system, it is possible to cancel an instruction that has been settled earlier the same day, given that both parties agree. The cancellation is made through the registration of a new instruction with reference to the original instruction. Furthermore, both the securities and the settlement headroom must be available in order for the cancellation of an instruction against payment to be accepted.

6. Real time settlement/RTGS

Real Time Gross Settlement (RTGS) makes it possible for instructions to be settled in real time during the settlement day. Matched RTGS instructions against payment are settled after a check of the securities holdings and of the funds in the Swedish riksbank regarding SEK and in Bank of Finland regarding EUR for the instruction in question. Liquidity settlement accounts and cash memorandum accounts are, therefore, not affected at all by these instructions, as the payment is handled in the central bank systems. RTGS instructions free of payment are settled after a check of the securities holdings. RTGS instructions are settled, trade by trade, continuously during the day in both SEK and EUR and in both the AM and the PM sub-markets. RTGS instructions may be registered from 07.00 (7 a.m.) up to the final settlement cycle in the VPC system at 17.00 (5 p.m.).

7. Technical interface

Members connect to ES via NCSN Network. NCSN Network supplies encrypted communication links direct with ES. The capacity of communication line is adjusted to the member's needs. Communication with the system is achieved via proprietary interface in real time via Web Sphere MQ or in batches of files using FTP via the NCSN Network.

Status changes in a registration are reported back to the customer, which means that the customers are always able to keep their own systems updated to the current status.

As an alternative to ES proprietary system interface, ES supplies an ISO 15022-based interface. This interface is offered to ES customers via SWIFTNet, or via the NCSD Network and Web Sphere MQ. Support is available for transactions in SEK/EUR directed to the AM sub-market, including prematch, and to the PM sub-market. In future versions, ES also aims to support messages concerning corporate actions in accordance with ISO 15022.

8. Customer support

Customer Service is provided by ES Help Desk or the operative group of Clearing and Settlement Services.

The complete product description of the clearing and settlement functionality of the VPC system is available in document 'NewClear product description'.