

General Information (Origin of Request)		
<input checked="" type="checkbox"/> User Requirements Document (URD) <input checked="" type="checkbox"/> User Detailed Functional Specification (UDFS) <input type="checkbox"/> User Handbook (UHB) <input type="checkbox"/> Other User Functional or Technical Documentation (SYS)		
Request raised by: ECB	Institute: ECB	Date raised: November 2020
Request title: Delta set retrieval		Request ref. no: CSLD-0061-UDFS
Request type: Common		
1. Legal/business importance parameter: High	2. Market implementation efforts parameter – Stakeholder impact: Low	
3. Operational impact: None	4. Financial impact parameter: free of costs	
5. Functional/ Technical impact: High	6. Interoperability impact: None	
Requestor Category: Central Banks		Status: 4CB detailed assessment

Reason for change and expected benefits/business motivation:

With the delta set query functionality for RTGS and CLM the transmission of high data volumes can be avoided or at least reduced. Owing to the fact that a delta query functionality is part of TARGET2, such an option is expected in future in RTGS and CLM as well.

Description of requested change:

Scope

A delta set can be queried for changes related to cash transfers and cash transfer orders in case of new entries and/or a change of the cash transfer status since the last query. New and modified items can be requested within one query. The query response will contain the new and modified items.

New: New cash transfers or cash transfer orders in RTGS/CLM since the last query with the same query name are included in the response message.

Modified: The modified items have already been reported with the same query name. However, its cash transfer status has changed compared to the last query response. This includes cash transfers or cash transfer orders with cash transfer status change to a final status.

New and modified items are not distinguished in the query response.

Note: Each change of cash transfer status (see RTGS UDFS section 5.6.1.3.5 Cash transfer status / CLM 5.7.1.3.4 Cash transfer status) is provided as part of delta set after the change of the cash transfer status has taken place.

Examples:

Scenario	Initialisation response	Response to delta query n	Response to delta query n+1	Response to delta query n+2
Cash transfer order A has been submitted between the initialisation query and the delta query n. A has been queued and settled between delta query n+1 and delta query n+2	---	<i>A (as new item with cash transfer status queued)</i>	---	<i>A (due to change of cash transfer status from queued to settled)</i>
Cash transfer order B has been included in the initialisation response. B has been queued. The settlement takes place between delta query n and delta query n+1.	<i>B (with cash transfer status queued)</i>	---	<i>B (due to change of cash transfer status from queued to settled)</i>	---
Cash transfer order C is submitted between the initialisation response and the delta query n. C has been revoked between the delta response n and the delta query n+1.	---	<i>C (as new item with cash transfer status queued)</i>	<i>C (due to change of cash transfer status from queued to revoked)</i>	---
Cash transfer order D is reported in the initialisation response. D is rejected between the delta response n+1 and the delta query n+2.	<i>D (with cash transfer status queued)</i>	---	---	<i>D (due to change of cash transfer status from queued to rejected)</i>

The delta set retrieval functionality is available in A2A mode only.

A delta set retrieval can be initiated in RTGS and CLM only separately.

Sequence of activities

Step 1:

The provisioning of a delta set requires a delta set initialisation query (indicated by message element <RequestType> with code "INIT" in the query message). The delta set initialisation query contains the search criteria provided in the query request relevant for future delta set queries. The search criteria cannot be modified when sending delta query requests referring to this initialisation query request.

An initialisation query request is done by sending a GetTransaction request (initialisation query – camt.005 GetTransaction). The system state of the query result is saved at the time of the delta set initialisation query, as the delta set query result has to be compared with the saved system state of the delta set initialisation query result. Each query request indicated as delta set initialisation query is considered as a new delta set initialisation query.

Step 2:

RTGS/CLM responds with a delta set initialisation query response (camt.006 – ReturnTransaction) with a query name (Message element [<QryNm>]). This query name is the reference to the search and return criteria stated in the delta set initialisation query. The query name remains the same for all following related delta set query responses. Each subsequent request that refers to this query name invokes at RTGS/CLM site a query with the referenced search criteria providing all elements defined in the referenced return criteria.

The query name only remains valid for this user of the party and that business day.

Step 3:

A delta set query request is sent by the user using a camt.005 with the relevant query name.

RTGS/CLM only provide delta set retrieval functionality for camt.005/camt.006.

Submitted annexes / related documents:

None

Proposed wording for the Change request (will be provided during the detailed assessment):

UDFS

RTGS UDFS v2.1

5.6.3 Query management for RTGS including a new section “5.6.3.4 Specificities for delta set queries”

The delta set query is a specific feature, which allows to query for a reduced set of cash transfer (orders) related to new items or already reported items with changed status according to the defined search and return criteria.

The following additional rules apply:

- | The feature is only available in A2A.
- | It is based on the cash transfer query messages, i.e. GetTransaction (camt.005) and cash transfer query response message, i.e. ReturnTransaction (camt.006).
- | Precondition for the usage is, that the delta set query is always sent by the same user (linked to the same party).
- | Delta set queries are possible for one or more accounts. In maximum, the user may query its full data scope within the respective settlement service (RTGS or CLM).
- | For a delta set query a combination of search and return criteria is defined with the delta set initialisation query.
- | A delta set query is valid for one business day. Thus, one delta set initialisation query is necessary per business day and the query name returned by RTGS/CLM is valid throughout the whole business day.
- | A cash transfer (order) which newly fulfils the search criteria, is part of the delta set query response on the next delta set query. Additionally each cash transfer status update is part of the delta set query response. A cash transfer (order) which no longer fulfils the search criteria (e.g. due to modified cash transfer priority), is no longer part of the query response even if the status changes between two delta set queries.
- | In case a delta set query response is missing, a new delta set initialisation query is necessary to avoid gaps in the reported result sets.

9.22.1.2 Messages (Send RTGS query)

Cash transfer query ^z	GetTransaction (camt.005) [Error! Bookmark not defined.]	ReturnTransaction (camt.006) [Error! Bookmark not defined.]	ReturnTransaction (camt.006) [Error! Bookmark not defined.]
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Footnote: "This query is available in full and delta set."

11.6 Delta set retrieval functionality for cash transfer (order)s

11.6.1 Overview

New and changed items can be requested within a delta set query referring to a previously sent delta set initialisation query and its defined search and return criteria. The query response will contain new items and items with changed status.

Modifications of settlement priority or requested execution time do not represent a change of a cash transfer status and will therefore not be reported in delta set query responses.

A set of delta set queries with defined search and return criteria are linked by the query name (message element <QryNm>) which is assigned by RTGS in response on the delta set initialisation query.

I **New** cash transfers or cash transfer orders in RTGS since the last delta set query with the same query name are included in the delta set query response message.

I **Changed** cash transfer orders, which have already been reported in response of a previous delta set (initialisation) query can be included in another delta set query response in case the cash transfer status has changed in the meantime compared to the previous delta set query response. This includes cash transfer orders where the status changed from an intermediate to another intermediate or to a final status (i.e. settled, rejected or revoked). Cash transfers with a final status are reported only once since a final status not changes anymore.

I There is no further distinction between new items and changed items (with a changed status) in the delta set query response.

Note: Each change of cash transfer status (see RTGS UDFS section 5.6.1.3.5 Cash transfer status) is provided as part of delta set after the change of the cash transfer status has taken place.

11.6.2 Initialisation of the delta set query

The initialisation query for the delta set retrieval functionality requires its indication by using code word « INIT » in element <RequestType> and the requested search and return criteria.

Within the delta set initialisation query response, the user receives an identifier i.e. the query name provided in element <QueryName>. The query name serves as identifier to match data for subsequent delta set queries. It needs to be provided in element <QueryName> in the requests following the delta set initialisation query. No additional entries in <SearchCriteria> are allowed. A subsequent modification of search and return criteria of a delta set query is not possible. For this purpose a new delta set initialisation query needs to be sent to RTGS.

There is no limitation regarding the number of delta set queries during a business day. With the start of a new business day the business sender needs to initialise new delta set queries because RTGS deletes the delta set queries during the end-of-day processing.

Sequence of activities

Step 1 –delta set initialisation query:

The provisioning of a delta set retrieval functionality requires a delta set initialisation query. A delta set initialisation query request is flagged with code "INIT" in element <RequestType>. If code is not used in the camt.005 Get Transaction message the query is not considered as a delta set initialisation query and thus not stored in RTGS for subsequent delta set queries. The code word "INIT" triggers the generation of a query name provided in element <QueryName> of related delta set initialisation query response.

The delta set initialisation query also provides the search and return criteria to be applied on all subsequent delta set queries. In case no search and return criteria are provided in the delta set initialisation query the subsequent delta set query responses will consider full data scope of the business sender and will return all available information for each returned item.

All cash transfers to be reported based on the specified search criteria and their status are stored in RTGS at the time of the delta set initialisation query. The stored cash transfer status serves as basis for comparison with updated cash transfer status at the time of a newly received delta set query.

Step 2 –delta set initialisation query response:

RTGS sends a delta set initialisation query response camt.006 ReturnTransaction with a query name in element <QueryName>. This query name is the reference to the stated cash transfer search criteria. The query name remains the same for all related delta set query responses. Each subsequent request that refers to this query name invokes at RTGS a delta set query based on the stored search criteria.

Step 3 –delta set query:

One or several delta set query request(s) is/are sent by the same user sending a camt.005 GetTransaction with the relevant query name in element <QueryName>.

Examples:

<u>Scenario</u>	<u>Response to delta set initialisation query</u>	<u>Response to delta set query n</u>	<u>Response to delta set query n+1</u>	<u>Response to delta set query n+2</u>
<u>Cash transfer order A has been submitted between the delta set initialisation query and the delta set query n. A has been queued and settled between delta set query n+1 and delta set query n+2</u>	<u>---</u>	<u>A (as new item with cash transfer status queued)</u>	<u>---</u>	<u>A (due to change of cash transfer status from queued to settled)</u>

<u>Cash transfer order B has been included in the delta set initialisation query response. B has been queued. The settlement takes place between delta set query n and delta set query n+1.</u>	<u>B (with cash transfer status queued)</u>	<u>---</u>	<u>B (due to change of cash transfer status from queued to settled)</u>	<u>---</u>
<u>Cash transfer order C is submitted between the delta set initialisation query response and the delta set query n. C has been queued and revoked between the delta set query response n and the delta set query n+1.</u>	<u>---</u>	<u>C (as new item with cash transfer status queued)</u>	<u>C (due to change of cash transfer status from queued to revoked)</u>	<u>---</u>
<u>Cash transfer order D is reported in the delta set initialisation query response. D has been queued and is rejected between the delta set query response n+1 and the delta set query n+2.</u>	<u>D (with cash transfer status queued)</u>	<u>---</u>	<u>---</u>	<u>D (due to change of cash transfer status from queued to rejected)</u>

12.2.3 Get Transaction (camt.005)

12.2.3.1 Overview and scope of the message

The GetTransaction message provides the possibility to perform a delta set requests. The reported information is reduced to the modifications of cash transfer status relatively to the previous delta set query. For detailed information please check chapter 11.6 Delta Set Retrieval Functionality.

12.2.3.2 Schema

Request Type

The request type code "INIT" is used to trigger the storage of cash transfer orders at the point of receiving the delta set initialisation camt.005 GetTransaction request. In addition, RTGS generates a <QueryName> to enable the identification of the related delta set query and cash transfer order data.

QueryName

Recalls the criteria (search and return criteria) defined in the delta set initialisation query.

The message in business context

<u>x-path</u>	<u>Annotation</u>
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<u>Request Type</u> <u>GetTx/MsgHdr/ReqTp/Prtry/Id</u>	<p>For set up of delta set retrieval requests the Code "INIT" must be used. The code word "INIT" triggers the generation of a query name which is provided in element <QueryName> of the related query response message.</p> <p>The code "INIT" is also provided in the related response message of the delta set initialisation query.</p>
<u>Query Name</u> <u>GetTx/TxQryDef/TxCrit/QryNm</u>	<p>The query name recalls the criteria (search and return criteria) defined in the delta set initialisation query. The query name, which serves as an identifier for a delta set retrieval, is provided within the previously returned ReturnTransaction message element <QueryName>.</p>

12.2.4 Return Transaction (camt.006)

12.2.4.1 Overview and scope of the message

In case of use of delta set retrieval functionality the reported information is reduced to the modifications of cash transfer order status relatively to the previous delta set query. For detailed information please check chapter 11.6 [Delta Set Retrieval Functionality](#).

12.2.4.2 Schema

Message Header

Request Type

The request type code "INIT" is only provided in response of the delta set initialisation camt.005 GetTransaction request. It indicates a confirmation that the initial delta set request is stored in RTGS.

QueryName

Provides the query name to be used for processing of subsequent delta set queries.

The message in business context

<u>x-path</u>	<u>Annotation</u>
<u>Request Type</u> <u>GetTx/MsgHdr/ReqTp/Prtry/Id</u>	<p>The code "INIT" is provided only in response of the delta set initialisation query.</p>
<u>Query Name</u> <u>/Document/RtrTx/MsgHdr/QryNm</u>	<p>The query name is provided only for delta set requests.</p>

CLM UDFS v2.1

5.7.3.3 Query management for CLM including a new section "5.6.3.4 Specificities for delta set queries"

[Same text like for RTGS UDFS](#)

9.25.1.2 Messages (Send CLM query)

Cash transfer query ^x	GetTransaction (camt.005)	ReturnTransaction (camt.006)	ReturnTransaction (camt.006)
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Footnote: [“This query is available in full and delta set.”](#)

11.6 Delta Set Retrieval Functionality

[Same text like for RTGS UDFS with reference to CLM and “see CLM UDFS section 5.7.1.3.4 Cash transfer status”](#)

12.2.3 Get Transaction (camt.005)

[Same text like for RTGS UDFS](#)

12.2.4 Return Transaction (camt.006)

[Same text like for RTGS UDFS](#)

MyStandards change camt.005 CLM and RTGS

x-path	Annotation	T2 data type (MyS only)
Request Type GetTx/MsgHdr/ReqTp/Prtry/Id	For set up of delta set retrieval requests the Code “INIT” must be used. The code word “INIT” triggers the generation of a query name which is provided in element <QueryName> of the related query response message. The code “INIT” is also provided in the related response message of the delta set initialisation query.	TARGET_ QueryTypeCode “INIT”
Query Name GetTx/TxQryDef/TxCrit/QryNm	The query name recalls the criteria (search and return criteria) defined in the delta set initialisation query. The query name, which serves as an identifier for a delta set retrieval, is provided within the previously returned ReturnTransaction message element <QueryName>.	TARGET_ RestrictedFINXMax35 Text

MyStandards change camt.006 CLM and RTGS

x-path	Annotation	T2 data type (MyS only)
Request Type GetTx/MsgHdr/ReqTp/Prtry/Id	The code “INIT” is provided only in response of the delta set initialisation query.	TARGET_ QueryTypeCode “INIT”
Query Name /Document/RtrTx/MsgHdr/QryNm	The query name is provided only for delta set requests.	TARGET_ RestrictedFINXMax35 Text

High level description of Impact:

Impacts on other projects and products:

Outcome/Decisions:

			Process	User Interaction	Business Data Definition	Non-functional Requirements
CENTRAL LIQUIDITY MANAGEMENT (CLM)	GENERAL	CLM Payment Order				
		CLM Liquidity Transfer Order				
		CLM Liquidity Reservation				
	CENTRAL BANK SERVICES	Modify Credit Line				
		Connected Payments				
		Overnight Deposit				
		Marginal Lending				
		Minimum Reserve Management				
		EoD General Ledger Files				
	REAL-TIME GROSS SETTLEMENT (RTGS)	GENERAL	RTGS Payment Order			
Queue Management						
RTGS Liquidity Transfer Order						
RTGS Liquidity Reservation						
RTGS Services for Ancillary Systems (AS)						
CB SER-VICES						
COMMON COMPONENTS	GENERAL	ESMIG				
		CRDM				
		Business Day				
		User Roles and Access				
		Information and Reporting	X			
		Data Warehouse Services				

	CENTRAL BANK SERVICES	Billing				
		Legal Archiving				
		Contingency Settlement				
4CB internal categories		Operational Tools				
		Automation				

Impact on major documentation		
Document	Chapter	Change
Impacted UDFS chapter	<p>RTGS UDFS v2.1</p> <ul style="list-style-type: none"> • Chap 5.6.3 Query management for RTGS including a new section "5.6.3.4 Specificities for delta set queries" • Chap 9.22.1 Send RTGS query • Chap 11.6 Delta Set Retrieval Functionality • Chap 12.2.3 Get Transaction (camt.005) • Chap 12.2.4 Return Transaction (camt.006) <p>CLM UDFS v2.1</p> <ul style="list-style-type: none"> • Chap 5.7.3.3 Query management for CLM including a new section "5.6.3.4 Specificities for delta set queries" • Chap 9.25.1 Send CLM query • Chap 11.6 Delta Set Retrieval Functionality • Chap 12.2.3 Get Transaction (camt.005) • Chap 12.2.4 Return Transaction (camt.006) 	<ul style="list-style-type: none"> • Provision information about delta set retrieval functionality <ul style="list-style-type: none"> ○ Purpose ○ How to use ○ Restrictions ○ Example delta set processing sequences of delta set queries in RTGS/CLM ○ Amendment message scope camt.005/006 and reopening elements to be used
Additional deliveries for Message Specification/ MyStandards	MyStandards for CLM and RTGS: Get Transaction (camt.005) Return Transaction (camt.006) Including examples	
UHB		
External training materials		
Other documentations		
Links with other requests		

Links	Reference		Title	
OVERVIEW OF THE IMPACT OF THE REQUEST ON THE T2SYSTEM AND ON THE PROJECT				
Summary of functional, technical, operational, stakeholder, financial and interoperability impacts				
<p>Delta set retrieval foresees A2A only cash transfer queries on RTGS and CLM, i.e. neither U2A/GUI nor DWH feature foreseen.</p> <p>Because of the possible high workload it is deemed necessary to investigate by a POC if and how the short response time requirements of the real-time request can be fulfilled.</p> <p>With the delta set retrieval complex queries will reach the system with possible high impact on the resource consumption of the system. To assess the consumption and optimise the system, a row of performance tests are necessary.</p>				
Summary of dependencies				
None				
Summary of project risk				
None				
Security analysis				
No potential adverse effect was identified during the security assessment				