

# Data Warehouse

## User Detailed Functional Specifications

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# 1 Introduction

The Data Warehouse (DWH) is a common component. It collects business information and data derived from services and common components. The DWH is designed to support business decisions by allowing data consolidation and reporting at different aggregation levels. Data is populated into the DWH through the processes of extraction, transformation and loading.

Both modes (application-to-application (A2A) and user-to-application (U2A)) are available for the DWH. However, as regards the A2A interface no A2A requests and answers with xml messages are foreseen. Instead of that functionality is provided, allowing users to receive [\(predefined\) reports](#) [▶ 17] and also user defined DWH reports on the basis of a prior configuration (in U2A mode) in the scheduler.

To enable the access to the DWH via U2A, a Graphical User Interface (DWH GUI) is available. The DWH GUI gives a business-oriented view of the data. Detailed information is provided in the User Handbook (UHB) for the DWH, including, e.g. presentation of data structure and possible filter criteria.

For both modes (A2A and U2A delivery of the scheduled reports) the DWH is using the Eurosystem Single Market Infrastructure Gateway (ESMIG). Data access depends on which services/components are used and is available for central banks (CBs), ancillary systems (AS) and payment banks. Authorised users can access their data according to their access rights (which depend on the given [user profile](#) [▶ 16]) and their own data scope.

The collected information is kept for at least ten years.

## 2 Data Warehouse scope

The aim of the DWH is to consolidate information from the Central Liquidity Management (CLM), the Real-Time Gross Settlement (RTGS), TARGET2-Securities (T2S<sup>1</sup>), the Common Reference Data Management (CRDM), Billing, Contingency Services and the component managing the business day.



**Figure 1 - High level DWH coverage**

Each component of the T2 Service and T2S has its dedicated production database. The DWH consolidates the content of those production databases into a single database for operational and statistical purposes for the operator, CBs, ancillary systems and payment banks. It is ensured that the provision of data from production databases to the DWH does not influence the functioning and availability of the T2/T2S Services and the respective underlying production databases.

### Access to historical data

The historical data for T2 can be queried using the four specific historical predefined reports: TRH01, IDH02, IDH03, IDH05. These should be used for querying all data before and including 17.03.2023. For data after this date, the regular predefined reports should be used. Therefore, combining historical and current data for T2 is not possible. However, for T2S, the data is loaded into the same tables, allowing simultaneous querying of historical and current data via the regular predefined reports, which can be output in a single report.

<sup>1</sup> For T2S DWH there is no latest time defined by when the data shall be available.

In order not to disrupt data analysis after the migration, access to historical data from TARGET2 is provided for CBs via the DWH.

### **Data availability**

Data is propagated from the services and common components after end of each business day. As a consequence, the DWH depends on the timely end-of-day (EoD) processing in the feeding (settlement) services concerning the availability of data of the previous business day. Normally, data of the previous business day shall be available in T2 DWH as of the start of the new calendar day (00:00 CET) at the latest.

Within the DWH no currency conversion is done. Hence, currency amounts are always displayed in the currency they have been processed by the respective service/component.

The processes and the availability of data for queries in CLM and RTGS (i.e. not via DWH) are described in the CLM User Detailed Functional Specifications (UDFS) chapter "*Query management for CLM*" and RTGS UDFS chapter "*Query management for RTGS*".

### **Opening times**

The DWH common component is open with the exception of DWH closing days and maintenance window times.

DWH closing days are those days, where all of the following services/components are closed for all currencies:

- | CLM;
- | RTGS;
- | T2S.

The following maintenance window times are relevant for the DWH:

- | optional maintenance window on Tuesdays, Wednesdays, Thursdays and Fridays: Starting at a planned time of 03:00 CET and ending at a planned time of 05:00 CET on each of the aforementioned days (only if it is activated).

## 3 Data Warehouse features

### 3.1 Overview

The DWH provides a DWH GUI where authorised users have different options for their research. Depending on the profile of the user, they can use predefined DWH reports, adapt predefined DWH reports and create own user defined DWH reports.

#### **Aggregation level**

Additionally, users have the possibility to execute or configure (only advanced user profile) certain DWH reports by choosing one of the following aggregation levels (in ascending order):

- | party level;
- | group level:
  - Account Monitoring Group level;
  - Banking Group level.
- | service level:
  - CLM level;
  - RTGS level;
  - T2S level.
- | overall level:
  - CLM, RTGS and T2S.

#### **Data scope**

The data scope in the DWH follows the following rules:

Users have access to their party's data based on the data scope according to the hierarchical model.

- | For CBs: Each CB has access to granular data (e.g. account balances, transaction details etc.) for all parties belonging to its system entity. Moreover, each CB has access to aggregated data of all system entities.
- | For PBs and AS: Each payment bank and AS has access to granular data (e.g. account balances, transaction details etc.) for its own party.

#### **DWH communication**

DWH ad-hoc reports can be requested in the GUI via U2A mode. More information on ad-hoc reports (including the search/output criteria and report examples) are provided in the DWH UHB.



Moreover, the DWH offers a scheduler function allowing the configuration and delivery of (recurring) reports with individual settings. The configuration is done in U2A whilst the delivery can be done via U2A (storing in a folder) or A2A (file delivery). For more information as regards the A2A delivery of DWH reports, please refer to the chapter [Examples for A2A delivery of DWH reports](#) [▶ 13].

As regards the response/the data output the DWH offers the following possibilities using ESMIG:

- | the user receives an ad-hoc DWH report result on the GUI screen (U2A mode);
- | the report result is stored in a folder and can be viewed U2A;
- | the scheduled report result is delivered via A2A mode.

In the latter case, the functional specifications and limitations (e.g. as regards the maximum file size) for ESMIG apply accordingly. Further information can be found in the ESMIG UDFS.

Please note, that due to the authorisation process via ESMIG the user will be known in the DWH without DN information. Therefore the user and his party will be used for the determination of the data scope and the determination of the technical address for SNF file channel, the communication is sent to. It is therefore not possible, that e.g. a Co-manager generates a report and has it sent to the Co-managee via A2A – the report will always be sent to the default party technical address of the Co-manager. For more details on DNs, technical addresses and the setup of routing, please consult the CRDM UDFS.

### **Format**

The results of DWH reports can be displayed on-screen and from there downloaded to various file types (html, pdf, csv, xlsx, xml) in U2A mode. As regards the A2A delivery of reports the following file types are applicable based on the individual configuration the user selects within the scheduler function: csv, xlsx, xml. This allows the further processing of data in other applications.

Please note, that when choosing ‘XML’ or ‘CSV’ as export format for reports having more than one list as report output, only the first list is exported in the chosen format.

### **Structure of the A2A message**

In order to transport all three file formats (csv, xlsx, xml) via A2A xml-message, the message content (see examples in [Examples for A2A delivery of DWH reports](#) [▶ 13]) is embedded within an xml-envelope as BLOB (binary large object) using CDATA. The BLOB is neither compressed nor encrypted. This envelope contains the additional fields that enables report receivers to correctly route the report within their system. Following additional fields are used:

Tag	Description	Format/length
<DWHRptRcptID>	BIC of the report recipient party	CHAR(11)
<DWHUsr>	User login name of the user, that scheduled the report. It is the same as used in ESMIG for logging in.	CHAR(35)

Tag	Description	Format/length
<DWHRptName>	Name of the report (first 35 characters). For predefined reports it is the name of the report as described in chapter <a href="#">Predefined reports</a> [▶ 17], for user-defined report it is the name provided by the user when setting up the report in the DWH.	CHAR (35)
<DWHRptFileName>	File Name of the report which is a free text that can be provided by the user in the DWH and used for internal routing on customer side	CHAR(85)
<DWHExecTime>	Execution Time of the DWH report	CHAR(28)
<DWHRptID>	This field contains a page number in total in format '02/03" (meaning page 2 of 3). This will be applied together with the file split functionality which facilitates, that also reports exceeding the 90MB file size limit can be sent via A2A as described in the DWH UDFS.	CHAR(35)
<DWHRptCont>	Contains the report itself in the chosen format.	BLOB

**Table 1 - A2A message envelope contents**

For the different parts of the message and the message itself, following data set encodings are used:

Object	Encoding
XML-message	UTF-8 (ISO20022 Standard)
BLOB (embedded in XML message)	UTF-8 (ISO20022 Standard)
Content of the BLOB:	

Object	Encoding
CSV (BOM at the beginning of the file, TAB-delimited, LF at the end of each row, quotation marks used only for special characters)	UTF-16 Little Endian
XLSX	UTF-8 (Microsoft Standard)
XLM	UTF-8 (ISO20022 Standard)

Table 2 - A2A message encoding

**Example:**

```
<?xml version="1.0" encoding="UTF-8"?>
  <DWHEnvelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="
DWHReport.xsd">
  <DWHHdr>
    <DWHRptRcptID>AAAAE8BBXXX</DWHRptRcptID>
    <DWHUsr>5874569852</DWHUsr>
  </DWHHdr>
  <DWHRpt>
    <DWHRptName>IDC04 - Credit line/IDC averages an</DWHRptName>
    <DWHRptFileName>DWH report IDC04_DEPT_Z110-STAT</DWHRptFileName>
    <DWHExecTime>Tue Feb 16 16:38:00 CET 2022</DWHExecTime>
    <DWHRptID>A6758727899gf53856hgik875Frt654i8F5</DWHRptID>
    <DWHRptCont><![CDATA[BLOB-Report]]></DWHRptCont>
  </DWHRpt>
</DWHEnvelope>
```

**Scheduler function**

With the scheduler function it is possible for the user to configure DWH reports for unique or periodic (e.g. daily, weekly, monthly, quarterly and yearly) provision at any given date and time. In addition, it offers the possibility to configure DWH reports for a specific event. This event informs about the completion of the data propagation to the DWH, which means the report is generated after all data from the data source for the previous business day has been loaded and stored in the DWH.

In the scheduler the report data (selected via the filter criteria) optionally can be refreshed each time the report is generated (e.g. for a DWH report that is delivered on every day at 8:00 Central European Time (CET) and shows the transactions of all parties of a CB from the previous business day, the filter “date” is changed automatically with the respective new value of the last business day and the output data is refreshed accordingly).

### 3.2 Types, sharing and storage of Data Warehouse reports

Depending on the given profile a user can use the following three different types of DWH reports:

### **Predefined**

For predefined DWH reports a fixed number of parameters are given. The parameter values are selectable for the user.

The list of predefined reports can be found in chapter [Predefined reports](#) [▶ 17].

### **Adaptable**

All predefined DWH reports can serve as a basis for adapted reports. For the use of this functionality the report needs to be copied first to the individual or shared user dedicated folder and the advanced user profile must be granted (which is however only applicable for CB users). This profile allows adapting the standard criteria, i.e. remove or add search criteria. The parameter values are selectable in the same way as for the predefined DWH reports.

### **User defined**

Advanced users are allowed to create new DWH reports from scratch. Those DWH reports can be freely designed, i.e. the user can choose from a range of parameters. The values of the parameters are selectable and variable.

Therefore, the user has the option to define the data objects he wants to display/return. The user has the possibility to join different data sources (e.g. CLM and RTGS). The user can set conditions for executing the DWH report (e.g. Business Identifier Code (BIC), account).

Further information on how to build user defined DWH reports and information as regards the available search and output criteria are part of the DWH UHB.

### **Sharing and storage of reports**

All adaptable and user defined DWH reports can be stored for later adaptation and use. CB advanced users can store these reports in an individual or shared dedicated folder.

CB advanced users are allowed to share (user defined) reports with all other users within their CB in a folder dedicated to each CB. It is also possible to share (user defined) reports with other CBs in a dedicated folder.

**Note:** Shared reports are not write-protected. This means, that each CB advanced user may adapt the reports stored in this folder.

Results of scheduled reports are automatically stored within DWH. For results of reports on the DWH GUI it is not possible to store them within DWH. In case of need, the results may be exported and stored locally by the DWH user.

### 3.3 Examples for A2A delivery of DWH reports

The following represents examples of a report delivered via A2A in csv, xlsx and xml-format, in this case the predefined DWH report TRN01(Transactions 01 – cash transfer (order) search and details).

Flag	Sender/Receiver Party	BIC	Transaction Reference	Number	Sender Message Reference	Message Type	Service Type	Status	Debited Account Number	Debited Account BIC	Credited Account Number	Credited Account BIC	Amount		
Sender	PBABKMD0XXX201814143329		329	not provided	pac.009RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D01	PBABKMR001	PBABKWR001	X361800.68		
Sender	PBABKMD0XXX201814143329		4	not provided	pac.010RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D01	PBABKMR001	PBABKWR001	X144720.27		
Sender	PBABKMD0XXX201814143329		6	not provided	pac.998RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D01	PBABKMR001	PBABKWR001	X434160.82		
Sender	PBABKMD0XXX201814143329		6	not provided	pac.008RTGS	Removed	RTGS	DC	PBABKMD0XXX	UR0D01	PBABKMR001	PBABKWR001	X5788.81		
Sender	PBABKMD0XXX201814143330		1	not provided	pac.009RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D01	PBABKMR001	PBABKWR001	X361800.69		
Sender	PBABKMD0XXX201814143330		2	not provided	pac.010RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D01	PBABKMR001	PBABKWR001	X144720.28		
Sender	PBABKMD0XXX201814143330		3	not provided	pac.998RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D01	PBABKMR001	PBABKWR001	X434160.83		
Sender	PBABKMD0XXX201814143330		4	not provided	pac.008RTGS	Removed	RTGS	DC	PBABKMD0XXX	UR0D01	PBABKMR001	PBABKWR001	X5788.81		
Sender	PBABKMD0XXX201814143330		5	not provided	pac.009RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0A01	PBABKMR001	PBACKWR001	X361800.17		
Sender	PBABKMD0XXX201814143330		6	not provided	pac.010RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0A01	PBABKMR001	PBACKWR001	X144720.07		
Sender	PBABKMD0XXX201814143330		7	not provided	pac.998RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0A01	PBABKMR001	PBACKWR001	X434160.2		
Sender	PBABKMD0XXX201814143330		8	not provided	pac.008RTGS	Removed	RTGS	DC	PBABKMD0XXX	UR0A01	PBABKMR001	PBACKWR001	X5788.8		
Sender	PBABKMD0XXX201814143330		9	not provided	pac.009RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	PBAAPR001	X361800.82		
Sender	PBABKMD0XXX201814143331		1	not provided	pac.010RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	PBAAPR001	X144720.33		
Sender	PBABKMD0XXX201814143331		2	not provided	pac.998RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	PBAAPR001	X434160.98		
Sender	PBABKMD0XXX201814143331		3	not provided	pac.008RTGS	Removed	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	PBAAPR001	X5788.81		
Sender	PBABKMD0XXX201814143331		4	not provided	pac.009RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	PBADKPR001	X361801.08		
Sender	PBABKMD0XXX201814143331		5	not provided	pac.010RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	PBADKPR001	X144720.43		
Sender	PBABKMD0XXX201814143331		6	not provided	pac.998RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	PBADKPR001	X434161.3		
Sender	PBABKMD0XXX201814143331		7	not provided	pac.008RTGS	Removed	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	PBADKPR001	X5788.82		
Sender	PBABKMD0XXX201814143331		8	not provided	pac.009RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	XRTGSDCPBAEKMD0XXX	UR0A01	PBACKMR001	X361800.75
Sender	PBABKMD0XXX201814143331		9	not provided	pac.010RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	XRTGSDCPBAEKMD0XXX	UR0A01	PBACKMR001	X144720.3
Sender	PBABKMD0XXX201814143331		0	not provided	pac.998RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	XRTGSDCPBAEKMD0XXX	UR0A01	PBACKMR001	X434160.89
Sender	PBABKMD0XXX201814143332		1	not provided	pac.008RTGS	Removed	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	XRTGSDCPBAEKMD0XXX	UR0A01	PBACKMR001	X5788.81
Sender	PBABKMD0XXX201814143332		2	not provided	pac.009RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	XRTGSDCPBAEKMD0XXX	UR0D11	PBAEKMR001	X361801.48
Sender	PBABKMD0XXX201814143332		3	not provided	pac.010RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	XRTGSDCPBAEKMD0XXX	UR0D11	PBAEKMR001	X144720.59
Sender	PBABKMD0XXX201814143332		4	not provided	pac.998RTGS	Settled	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	XRTGSDCPBAEKMD0XXX	UR0D11	PBAEKMR001	X434161.78
Sender	PBABKMD0XXX201814143332		5	not provided	pac.008RTGS	Removed	RTGS	DC	PBABKMD0XXX	UR0D11	PBABKMR001	XRTGSDCPBAEKMD0XXX	UR0D11	PBAEKMR001	X5788.82

Figure 2 - Example for A2A delivery of predefined DWH report TRN01 (csv-format)

This example represents the predefined DWH report in CSV format and opened in Excel. The next figure represents a predefined DWH report in CSV format opened with notepad.

Figure 3 - Figure x: Example for A2A delivery in csv format and opened in notepad

The csv format support Unicode data across many client operating systems and are UTF-16 Little Endian data encoded. It includes a BOM (Byte Order Mark) at the beginning of the file and is Tab-delimited. The csv format do not enclose strings in quotation marks and use a new line character to delimit rows. The character set and delimiter are fixed and can not be changed.

You can open reports saved in CSV format using a variety of spreadsheet software applications. By default, reports produced in CSV format will appear in the application associated with the .csv file type.

Flag	Sender/Receiver	Party BIC	Transaction Reference	Number	Sender Message Reference	Message Type	Service Type	Status	Debited Account Number	Debited Account BIC	Credited Account Number	Credited Account BIC	Amount
	Sender PBABKMD0XXX		2018141433293	not provided		pacs.009	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBABKWR001X	361,800,68
	Sender PBABKMD0XXX		2018141433294	not provided		pacs.010	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBABKWR001X	144,720,27
	Sender PBABKMD0XXX		2018141433295	not provided		pan.998	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBABKWR001X	434,160,82
	Sender PBABKMD0XXX		2018141433296	not provided		pacs.008	RTGS	Removed	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBABKWR001X	5,788,81
	Sender PBABKMD0XXX		2018141433301	not provided		pacs.009	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	361,800,69
	Sender PBABKMD0XXX		2018141433302	not provided		pacs.010	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	144,720,28
	Sender PBABKMD0XXX		2018141433303	not provided		pan.998	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	434,160,83
	Sender PBABKMD0XXX		2018141433304	not provided		pacs.008	RTGS	Removed	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	5,788,81
	Sender PBABKMD0XXX		2018141433305	not provided		pacs.009	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	361,800,17
	Sender PBABKMD0XXX		2018141433306	not provided		pacs.010	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	144,720,07
	Sender PBABKMD0XXX		2018141433307	not provided		pan.998	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	434,160,2
	Sender PBABKMD0XXX		2018141433308	not provided		pacs.008	RTGS	Removed	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	5,788,8
	Sender PBABKMD0XXX		2018141433309	not provided		pacs.009	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	361,800,82
	Sender PBABKMD0XXX		2018141433310	not provided		pacs.010	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	144,720,33
	Sender PBABKMD0XXX		2018141433311	not provided		pan.998	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	434,160,98
	Sender PBABKMD0XXX		2018141433312	not provided		pacs.008	RTGS	Removed	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	5,788,81
	Sender PBABKMD0XXX		2018141433313	not provided		pacs.009	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	361,801,08
	Sender PBABKMD0XXX		2018141433314	not provided		pacs.010	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	144,720,43
	Sender PBABKMD0XXX		2018141433315	not provided		pan.998	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	434,161,3
	Sender PBABKMD0XXX		2018141433316	not provided		pacs.008	RTGS	Removed	RTGSDCPBABKMD000000EUR0001	PBABKMR001X		PBAEKWR001X	5,788,82
	Sender PBABKMD0XXX		2018141433317	not provided		pacs.009	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X	RTGSDCPBAEKMD000000EUR0001	PBAEKWR001X	361,800,75
	Sender PBABKMD0XXX		2018141433318	not provided		pacs.010	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X	RTGSDCPBAEKMD000000EUR0001	PBAEKWR001X	144,720,3
	Sender PBABKMD0XXX		2018141433319	not provided		pan.998	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X	RTGSDCPBAEKMD000000EUR0001	PBAEKWR001X	434,160,89
	Sender PBABKMD0XXX		2018141433320	not provided		pacs.008	RTGS	Removed	RTGSDCPBABKMD000000EUR0001	PBABKMR001X	RTGSDCPBAEKMD000000EUR0001	PBAEKWR001X	5,788,81
	Sender PBABKMD0XXX		2018141433321	not provided		pacs.009	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X	RTGSDCPBAEKMD000000EUR0001	PBAEKWR001X	361,801,48
	Sender PBABKMD0XXX		2018141433322	not provided		pacs.010	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X	RTGSDCPBAEKMD000000EUR0001	PBAEKWR001X	144,720,59
	Sender PBABKMD0XXX		2018141433323	not provided		pan.998	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X	RTGSDCPBAEKMD000000EUR0001	PBAEKWR001X	434,161,78
	Sender PBABKMD0XXX		2018141433324	not provided		pacs.008	RTGS	Removed	RTGSDCPBABKMD000000EUR0001	PBABKMR001X	RTGSDCPBAEKMD000000EUR0001	PBAEKWR001X	5,788,82
	Sender PBABKMD0XXX		2018141433325	not provided		pacs.009	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X	RTGSDCPBAEKMD000000EUR0001	PBAEKWR001X	361,800,28
	Sender PBABKMD0XXX		2018141433326	not provided		pacs.010	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X	RTGSDCPBAEKMD000000EUR0001	PBAEKWR001X	144,720,11
	Sender PBABKMD0XXX		2018141433327	not provided		pan.998	RTGS	Settled	RTGSDCPBABKMD000000EUR0001	PBABKMR001X	RTGSDCPBAEKMD000000EUR0001	PBAEKWR001X	434,160,33
	Sender PBABKMD0XXX		2018141433328	not provided		pacs.008	RTGS	Removed	RTGSDCPBABKMD000000EUR0001	PBABKMR001X	RTGSDCPBAEKMD000000EUR0001	PBAEKWR001X	5,788,8

Figure 4 - Example for A2A delivery of predefined DWH report TRN01 (xlsx-format)

Excel render report output in native Excel XML format, also known as XLSX. This format provides a fast way to deliver native Excel spreadsheets. Excel provides fully formatted reports for use in Microsoft Excel.

```

<?xml version="1.0" encoding="utf-8"?>
<dataset xmlns="http://developer.cognos.com/schemas/xmldata/1/" xmlns:xs="http://www.w3.org/2001/XMLSchema-instance">
<!--
<dataset
  xmlns="http://developer.cognos.com/schemas/xmldata/1/"
  xmlns:xs="http://www.w3.org/2001/XMLSchema-instance"
  xs:schemaLocation="http://developer.cognos.com/schemas/xmldata/1/ xmldata.xsd"
>
-->
<metadata>
  <item name="Flag" type="xs:string" length="18"/>
  <item name="Sender/Receiver Party BIC" type="xs:string" length="24"/>
  <item name="Transaction Reference Number" type="xs:decimal" precision="16"/>
  <item name="Sender Message Reference" type="xs:string" length="90"/>
  <item name="Message Type" type="xs:string" length="34"/>
  <item name="Service Type" type="xs:string" length="34"/>
  <item name="Status" type="xs:string" length="72"/>
  <item name="Debited Account Number" type="xs:string" length="70"/>
  <item name="Debited Account BIC" type="xs:string" length="24"/>
  <item name="Credited Account Number" type="xs:string" length="70"/>
  <item name="Credited Account BIC" type="xs:string" length="24"/>
  <item name="Amount" type="xs:decimal" scale="2" precision="31"/>
</metadata>
<data>
  <row>
    <value>Sender</value>
    <value>PBABKMD0XXX</value>
    <value>2018141433293</value>
    <value>not provided</value>
    <value>pacs.009</value>
    <value>RTGS</value>
    <value>Settled</value>
    <value>RTGSDCPBABKMD0XXXEUR0D01</value>
    <value>PBABKMR001X</value>
    <value xs:nil="true" />
    <value>PBABKWR001X</value>
    <value>361800.68</value>
  </row>
  <row>
    <value>Sender</value>
    <value>PBABKMD0XXX</value>
    <value>2018141433294</value>
    <value>not provided</value>
    <value>pacs.010</value>
    <value>RTGS</value>
    <value>Settled</value>
    <value>RTGSDCPBABKMD0XXXEUR0D01</value>
    <value>PBABKMR001X</value>
    <value xs:nil="true" />
    <value>PBABKWR001X</value>
    <value>144720.27</value>
  </row>
  <row>

```

Figure 5 - Example for A2A delivery of predefined DWH report TRN01 (xml-format)

This example represents the formatted table from the predefined DWH report TRN01, where the <metadata> section contains the information about the columns with their titles and the content in the <data> section respectively represents the result data per row. Hence, the number of <row> blocks is equal to the number of transactions that have been retrieved with the corresponding search/input criteria. These criteria are dependent on the users input during the setup of the A2A DWH report delivery in the scheduler.

**Note:** The A2A delivery format/structure for user defined and adapted DWH reports depends on the individual design the user has defined for the DWH report during the creation/editing process (structure) and the selected scheduling settings (format). Hence, no universally valid A2A delivery example for these kind of DWH reports can be provided. However, the logic for the A2A delivery of these kind of DWH reports is the same as shown in the example above.

---

## 3.4 User profiles

Access to the DWH depends on the user's profile which ensures that the user is allowed to perform the requested action (e.g. execute or configure DWH report and download results). The user profiles ("normal user" and "advanced user") at the same time correspond to the DWH privileges granted in CRDM by the respective party. More details on (granting) these DWH privileges can be found in the CRDM UDFS chapter „Access rights“.

The user has access to the data of his party based on the data scope according to the hierarchical model.

The DWH user profiles are defined as follows:

**I** normal user:

- access to predefined DWH reports;
- use available parameters and filter criteria on predefined DWH reports;
- execute predefined DWH reports;
- execute user defined reports<sup>2</sup>;
- configure the scheduling of DWH reports;
- download DWH report results.

**I** advanced user:

- access to predefined DWH reports;
- use available parameters and filter criteria on predefined DWH reports;
- adapt predefined DWH reports;
- create user defined DWH reports;
- execute all types of DWH reports;
- configure the scheduling of DWH reports;
- download DWH report results;
- store adaptable/user defined DWH reports in an individual dedicated folder;
- share (user defined) DWH reports with all other users within their CB or with other CBs in a dedicated folder.

This is not applicable for T2S.

The advanced user profile is available for CB users only. The normal user profile is available for all party types.

More details on the configuration of DWH reports can be found in chapter [Types, sharing and storage of Data Warehouse reports](#) [► 11].

---

<sup>2</sup> Only possible for CB users and in case the respective report has been shared by a CB advanced user.



## 3.5 Predefined reports

This chapter provides an overview of predefined DWH reports that can be accessed by authorised users and which are available in A2A and in U2A (through the scheduler function) mode. Depending on the DWH report and the profile of the user, aggregated or detailed (e.g. transaction level) data can be retrieved. For aggregated data it is ensured that the user cannot see any personal or party-specific information (e.g. name and address of parties) which are out of his data scope. In general, for every predefined DWH report, a user will only see results in accordance with his data scope.

The following tables include for each report a short name, a long name, a description with the aim to reflect the content of the report from a business perspective and an indicator for which party type(s) it is available. The detailed report descriptions (including the search/output criteria and report examples) are provided in DWH UHB.

### **Predefined DWH reports (ancillary system)**

Short name	Long name of the DWH report	Available for
ANS01	ANS 01 - Overview of AS transfer orders	CB/ Ancillary system
ANS02	ANS 02 - Daily average of AS transfers	CB

**Table 3 - Predefined DWH reports (ANS)**

### **Predefined DWH reports (business day)**

Short name	Long name of the DWH report	Available for
BDY01	BDY 01 – Business day event/delay information and settlement opening time	CB/ Ancillary system / payment bank

**Table 4 - Predefined DWH reports (BDY)**

### **Predefined DWH reports (billing)**

Note: These reports also contain billing data referring to the TIPS service.

Short name	Long name of the DWH report	Available for
BIL01	BIL01 – Consumption data	CB
BIL02	BIL02 – Monitoring the invoicing activity	CB
BIL03	BIL03 – Audit of critical billing data	CB

Short name	Long name of the DWH report	Available for
BIL04	BIL04 – Detailed consumption	CB
BIL05	BIL05 - Detailed participation	CB
BIL06	BIL06 – PDF invoice list	CB

**Table 5 - Predefined DWH reports (BIL)**

**Predefined DWH reports (Business transaction pattern monitoring (BPM))**

Short name	Long name of the DWH report	Available for
BPM01	Business transaction pattern monitoring - Submission time on T2 opening days	CB
BPM02	Business transaction pattern monitoring - Submission time on T2 closing days	CB
BPM03	Business transaction pattern monitoring - New parties	CB
BPM04	Business transaction pattern monitoring – Failed transactions	CB
BPM05	Business transaction pattern monitoring - Daily volumes and value	CB
BPM06	Business transaction pattern monitoring - Overview of alerts triggered	CB

**Table 6 - Predefined DWH reports (BPM)**

**Predefined DWH reports (contingency)**

Short name	Long name of the DWH report	Available for
CON01	CON 01 – Cash transfers settled during contingency processing and final contingency account balances	CB
CON02	CON 02 – Contingency processing – end of procedure account balances per CB	CB

**Table 7 - Predefined DWH reports (CON)**

**Predefined DWH reports (data extraction)**

Short name	Long name of the DWH report	Available for
DXE01	DXE 01 - Monitor data extraction request(s)	CB
DXE02	DXE 02 - Data extraction request	CB
DXE03	DXE 03 – Data extraction reports: Cash account aggregation group	CB
DXE04	DXE 04 – Data extraction reports: Data extraction reports: Cash account balance and liquidity	CB
DXE05	DXE 05 – Data extraction reports: Cash transfer orders	CB
DXE06	DXE 06 – Data extraction reports: Business day event	CB

**Table 8 - Predefined DWH reports (DXE)**

**Predefined DWH reports (intraday credit)**

Short name	Long name of the DWH report	Available for
IDC01	IDC 01 – Daily Intraday credit (IDC) community indicators	CB
IDC02	IDC 02 – Credit line/IDC daily reporting	CB
IDC03	IDC 03 - Credit line/IDC averages and maxima (account level)	CB/ Ancillary system / payment bank
IDC04	IDC 04 - Credit line/IDC averages and maxima (community level)	CB
IDC05	IDC 05 - Maximum of credit line used	CB/ Ancillary system / payment bank
IDC06	IDC 06 – Credit line and IDC use at system level	CB

**Table 9 - Predefined DWH reports (IDC)**

**Predefined DWH reports (invoice data)**

Note: This report also contains billing data referring to the TIPS service.

Short name	Long name of the DWH report	Available for
INV01	INV 01 - Reporting revenues	CB

**Table 10 - Predefined DWH reports (INV)**

**Predefined DWH reports (minimum reserve)**

Short name	Long name of the DWH report	Available for
MIR01	MIR 01 – Minimum reserve information	CB/payment bank
MIR02	MIR 02 – Minimum reserve requirements per country	CB

**Table 11 - Predefined DWH reports (MIR)**

**Predefined DWH reports (TARGET Multilateral Balances (MLB))**

Short name	Long name of the DWH report	Available for
MLB01	TARGET Multilateral Balances	CB

**Table 12 - Predefined DWH reports (MLB)**

**Predefined DWH reports (participation)**

Short name	Long name of the DWH report	Available for
PAR01	PAR 01 - Critical participants	CB
PAR02	PAR 02 - List of active Direct and Indirect Participants according to RTGS Directory	CB/ Ancillary system / payment bank
PAR03	PAR 03 - Parties subject and not subject to minimum reserve	CB
PAR04	PAR 04 - List of ancillary systems	CB
PAR05	PAR 05 - Aggregation group list	CB
PAR06	PAR 06 - Number of participants per CB	CB

**Table 13 - Predefined DWH reports (PAR)**

**Predefined DWH reports (statements)**

Short name	Long name of the DWH report	Available for
STA01	STA 01 - Statement of account (single account)	CB/ Ancillary system / payment bank
STA02	STA 02 - Statement of account (co-managed accounts)	CB/payment bank

**Table 14 - Predefined DWH reports (STA)**

**Predefined DWH reports (standing facilities)**

Short name	Long name of the DWH report	Available for
STF01	STF 01 - Standing facilities information	CB/payment bank

**Table 15 - Predefined DWH reports (STF)**

**Predefined DWH reports (transactions)**

Short name	Long name of the DWH report	Available for
TRN01	TRN 01 – Cash transfer (order) search and details	CB/ Ancillary system / payment bank
TRN02	TRN 02 - Monthly overview of domestic and cross-border payments	CB/payment bank
TRN03	TRN 03 – Monthly peak day and peak hour in terms of volume and value of cash transfer orders	CB/payment bank
TRN04	TRN 04 - Cash transfers per time band and per CB	CB
TRN05	TRN 05 - Monthly overview of cash transfer orders per party	CB/payment bank
TRN06	TRN 06 - Monthly share of Indirect Participant, addressable BIC and multi-addressee payments as part of total Direct Participant's activity	CB/payment bank
TRN07	TRN 07 - Cash transfers between two accounts of different parties	CB
TRN08	TRN 08 - Business activity of a party/parties	CB/payment bank

Short name	Long name of the DWH report	Available for
TRN09	TRN 09 – RTGS Account Holder activity	CB
TRN10	TRN 10 - Monthly value and volume of cash transfers in CLM/RTGS (according to T2 statistical framework)	CB
TRN11	TRN11 - Monthly value and volume of cash transfers between system entities	CB

**Table 16 - Predefined DWH reports (TRN)**

### 3.5.1 CLM/RTGS inbound XML messages available in the DWH

The following list contains all xml message types available in the DWH which were processed in CLM or RTGS as inbound messages. Query messages as well as all outbound messages are not transferred to the DWH.

Source	Message type	Description
CLM	camt.048	Modify reservation
CLM	camt.049	Delete reservation
CLM	camt.050	Liquidity credit transfer
CLM (CB specific)	camt.056	FtoFI Cancellation request
CLM (CB specific)	camt.998	Modify credit line, Authorize penalty MR, Insert value of MR, Insert balance MR
CLM (CB specific)	pacs.009	FI Credit transfer
CLM (CB specific)	pacs.010	FI Direct debit
RTGS	camt.007	Modify transaction
RTGS	camt.011	Modify limit
RTGS	camt.012	Delete limit
RTGS	camt.048	Modify reservation
RTGS	camt.049	Delete reservation
RTGS	camt.050	Liquidity credit transfer
RTGS	camt.056	FtoFI Payment cancellation request
RTGS	pacs.004	Payment return
RTGS	pacs.008	Customer credit transfer

Source	Message type	Description
RTGS	pacs.009	FI Credit transfer
RTGS	pacs.010	FI Direct debit
RTGS	pain.998	AS transfer initiation (ASTI)

**Table 17 - List of CLM/RTGS inbound messages**

### 3.6 T2S predefined reports

This chapter provides an overview of T2S predefined DWH reports that can be accessed by authorised users and which are available in A2A and in U2A (through the scheduler function) mode. Depending on the DWH report and the profile of the user, aggregated or detailed (e.g. transaction level) data can be retrieved. For aggregated data it is ensured that the user cannot see any personal or party-specific information (e.g. name and address of parties) which are out of his data scope. In general, for every predefined DWH report, a user will only see results in accordance with his data scope.

The following tables include for each report a short name, a long name, a description with the aim to reflect the content of the report from a business perspective and an indicator for which party type(s) it is available. The detailed report descriptions (including the search/output criteria and report examples) are provided in DWH UHB.

#### **Predefined DWH reports (T2S Cash account)**

Short name	Long name of the DWH report	Available for
SCT01	SCT 01 - Finalised matched instructions	CB
SCT02	SCT 02 - Detailed matched settlement	CB
SCT03	SCT 03 - Follow up by time slot of settlement	CB
SCT04	SCT 04 - Comparison of settlement activity between two time periods	CB
SCT05	SCT 05 - Follow-up by time slot of cash postings	CB

**Table 18 - Predefined DWH reports (SCT)**

**Predefined DWH reports (T2S Securities account)**

Short name	Long name of the DWH report	Available for
SST01	SST 01 – Finalised matched instructions	CSD
SST 02	SST 02 – Detailed finalised matched instructions	CSD
SST 03	SST 03 – Follow-up by time slot of securities	CSD

**Table 19 - Predefined DWH reports (SST)**

**Predefined DWH reports (Instructions)**

Short name	Long name of the DWH report	Available for
INX01	INX 01 – Individual settlement detailed report	CSD
INX02	INX 02 – Multi-criteria search of a set of settlement instructions	CSD
INX03	INX 03 – Individual restriction detailed report	CB/ CSD
INX04	INX 04 – Multi-criteria search of a set of settlement restrictions	CB/CSD
INX05	INX 05 – Liquidity transfers	CB
INX06	INX 06 – Multi-criteria search of a set of business cancellations	CB/CSD
INX07	INX 07 – Multi-criteria search of a set of amendment instructions	CB/CSD
INX08	INX 08 – Multi-criteria search of a set of hold and release instructions	CSD
INX09	INX 09 – Multi-criteria search of a set of liquidity transfers	CB

**Table 20 - Predefined DWH reports (INX)**

**Predefined DWH reports (T2S Restrictions)**

Short name	Long name of the DWH report	Available for
RES01	RES 01 - Detailed cash restrictions	CB
RES02	RES 02 - Detailed securities restrictions	CSD

**Table 21 - Predefined DWH reports (RES)**



**Predefined DWH reports (T2S Credit line)**

Short name	Long name of the DWH report	Available for
CMB01	CMB 01 – Journaling of limit utilisations of primary CMB	CB

**Table 22 - Predefined DWH reports (CMB)**

**Predefined DWH reports (T2S Collateral instructions)**

Short name	Long name of the DWH report	Available for
COL01	COL01 – Follow-up by time slot of settled collateralisation instructions	CSB

**Table 23 - Predefined DWH reports (COL)**

**Predefined DWH reports (Technical instructions)**

Short name	Long name of the DWH report	Available for
RAL01	RAL 01 – Detailed realignment and other technical instructions	CSD

**Table 24 - Predefined DWH reports (RAL)**