Insights on Message subscription and Routing configuration

Created date - March 2014

Updated – April 2016

T2S Programme Office
European Central Bank

EUROPEAN CENTRAL BANK
EUROSYSTEM

Message subscription and Routing configuration
An Introduction

- Message subscription is a rules-based configuration to specify the business elements which T2S uses to identify the outgoing messages to be sent to the relevant T2S Actor.

- Routing configurations specify the technical elements which T2S uses to send a given outgoing message to the relevant T2S Actor

- This presentation explains the concepts of message subscription and routing configuration in T2S

- First half of the presentation gives details about setup of message subscription and it also includes specific scenario to explain usage of message subscription

- Second half of the presentation gives details about setup of routing configuration and explains various parameters to be used in routing configuration in detail

EUROPEAN CENTRAL BANK
EUROSYSTEM

The presentation aims to address following key questions on Message subscription and Routing configuration

- How is message subscription set up?

- Who can setup message subscription?

- Who can receive messages from T2S?

- Are there any limitations while setting up message subscription?

- What is the concept of routing configuration?

- Which are the different types of transfer services?

- How is routing configuration set up?

EUROPEAN CENTRAL BANK

EUROSYSTEM

Table of contents

EUROPEAN CENTRAL BANK

EUROSYSTEM

4

What is…

- The **"message subscription"** defines if a message has to be sent or not to a given T2S Actor.

- The message subscription does not define to which technical address of a recipient (i.e. T2S Actor) the message is actually delivered

- The **"routing configuration"** specifies the technical elements (i.e. a technical address) T2S uses to send a given outgoing message to the relevant T2S Actor.

- Routing configuration does not specify the actual set of messages T2S has to send to a T2S Actor.

- All participating CSDs, Central Banks and their participants [as directly connected parties (DCPs)] in T2S need to have the flexibility to choose the messages they **do or do not** wish to receive, so as to handle their daily business activities.

- **"Message subscription" service** of T2S offers a free choice for selecting which outbound messages a T2S Actor intends to receive from T2S.

- It also offers T2S Actors the possibility to subscribe to copies of messages from a pre-defined list.

- E.g. Copies of an inbound message such as a settlement instruction.

EUROPEAN CENTRAL BANK

EUROSYSTEM

Message subscription
Setup

- Each participating CSD and Central Bank can define for itself and its participants which messages and copies of messages have to be received.

- The "message subscription" for T2S Actors is a configurable item in the T2S Static data with its set of rules.

- All outbound messages from T2S will be sent out to the T2S Actor according to their message subscription setup in T2S, except

    - Technical acknowledgements*

    - Reactions on erroneous inbound message after technical validations by T2S*

    - Query results*

    - Reports (set-up via report configuration)

    - Invoice and Invoice Cancellation

    - Floor/Ceiling notification

    - Outbound liquidity transfer messages

sent as a response by T2S or its infrastructure to the technical address from which the inbound message is received

EUROPEAN CENTRAL BANK
EUROSYSTEM

Message subscription
Setup

- **The set-up is to be done via the T2S GUI (U2A)**
  - T2S actors are able to maintain the message subscription only as of a future date

- **The CSD/NCB creates a rule set with the following**
  - Validity period (i.e. Valid From date & Valid Till date)
  - Positive / Negative parameter defining whether a match to a rule in a rule set should trigger T2S sending of the message or not
  - Name and description for the Rule set
  - Set of rules: Using a set of pre-defined parameters *(Detailed in the next slides)*
    - *Valid From/To for each rule*
  - A rule set is linked to one or more T2S Parties (e.g. recipients)

- **Possibility to reuse an existing rule set and link it to other Parties (e.g. "profile")**

EUROPEAN CENTRAL BANK
EUROSYSTEM

Message subscription - Setup
Interested parties & copies (T2S_0333_URD)

- The potential list of recipients of a message from T2S are referred to as **"Interested Parties"**

- The CSD and the Central Bank can set up the interested parties (i.e. third parties*) via the T2S GUI (U2A).

- The list of interested parties depends on the type of outbound message

- E.g.: For a confirmation of a settlement instruction the following parties can be interested parties

  - CSD

  - Account owner (Securities account)

  - Business sender, Instructing party

  The CSD will configure if these parties should receive copies of instruction, statuses (and copies), confirmations

  - *Third party*

  - NCB of the DCA owner

  The NCB will configure if these parties should receive Debit/Credit notifications for instructions involving cash movements

  - Payment Bank owning the DCA

A third party that is not an interested party for a given message can be entitled to receive copies.

EUROPEAN CENTRAL BANK
EUROSYSTEM

Message subscription - Setup
Parameter types available for message subscription

Parameter type	Description	Applicable to	Example
Message Type	Specifies the type of message	All messages	PartyStatusAdvice
Instruction Type	Specifies the type of instruction included in the message	Settlement instruction, status, confirmation and BankToCustomerDebitCreditNotification	DFoP, RFoP , DVP, RVP, DWP, RWP, PFoD-CRDT and PFoD-DBIT
Message status	Specifies the status of the request included in the message	Subset of messages (e.g. outbound statuses) *Differs between the messages.*	For instance ProcessingStatus for a static data status advice, while SettlementStatus for LT
Party	Specifies the party referenced in the message	Subset of messages	BIC of CSD Participant
T2S Securities account number	Specifies the securities account in the message	Subset of messages	SECAC123 in a settlement instruction
ISIN	Specifies the financial instrument in the message	Subset of messages	DE0006231004 in an intra-position movement
T2S Dedicated Cash account number	Specifies the DCA referenced in the message	Subset of messages	CASH123 in a settlement instruction
Instruction status	Specifies the status of the instruction	Subset of messages (status of settlement instructions, restrictions, maintenance instruction)	CSD Hold status
Transaction code	Specifies the ISO transaction code for the instruction	Settlement instruction, status and confirmation	CORP, TRAD etc…
Currency	Specifies the currency code referenced in the message	Subset of messages	EUR
Already Matched Flag	specifies whether to select only one side of the reporting for "already matched" instruction in T2S.	Subset of messages	TRUE

- A subset of messages are available for copies to the interested parties
(Refer to approved change request T2S_0333_URD)

sese.023	SecuritiesSettlementTransaction	Incoming
semt.013	IntraPositionMovement	Incoming
camt.066	IntraBalanceMovement	Incoming
acmt.010	AccountRequestAcknowledgement	Outgoing
reda.016	PartyStatusAdvice	Outgoing
reda.008	SecurityCreationStatusAdvice	Outgoing
reda.029	SecurityMaintenanceStatusAdvice	Outgoing
reda.030	SecurityDeletionStatusAdvice	Outgoing
reda.020	SecuritiesAccountStatusAdvice	Outgoing
reda.028	CollateralDataStatusAdvice	Outgoing
reda.044	EligibleCounterpartCSDStatusAdvice	Outgoing
reda.047	SecurityCSDLinkStatusAdvice	Outgoing
reda.051	AccountLinkStatusAdvice	Outgoing
camt.025	Receipt	Outgoing
camt.054	BankToCustomerDebitCreditNotification	Outgoing
semt.014	IntraPositionMovementStatusAdvice	Outgoing
semt.015	IntraPositionMovementConfirmation	Outgoing
sese.024	SecuritiesSettlementTransactionStatusAdvice	Outgoing
sese.025	SecuritiesSettlementTransactionConfirmation	Outgoing
sese.027	SecuritiesTransactionCancellationRequestStatusAdvice	Outgoing
sese.028	SecuritiesSettlementTransactionAllegementNotification	Outgoing
semt.020	SecuritiesMessageCancellationAdvice	Outgoing
sese.029	SecuritiesSettlementAllegementRemovalAdvice	Outgoing
sese.031	SecuritiesSettlementConditionsModificationStatusAdvice	Outgoing
camt.067	IntraBalanceMovementStatusAdvice	Outgoing
camt.068	IntraBalanceMovementConfirmation	Outgoing
sese.032	SecuritiesSettlementTransactionGenerationNotification	Outgoing
camt.073	IntraBalanceMovementModificationRequestStatusAdvice	Outgoing
camt.075	IntraBalanceMovementCancellationRequestStatusAdvice	Outgoing

Depending on the Type of message and its particular usage, a given list of interested parties applies

T2S will **compare the content** of the message field to the value of a parameter in a rule of a message subscription rule set.

Note: T2S enriched fields (such as a T2S DCA when not specified in a settlement instruction) may not be used to send an outbound copy of the inbound settlement instruction, though the T2S DCA could be a parameter setup in the message subscription.

CSD/CB can configure the message subscription features on the basis of rule-based models, i.e. sets of rules combining group of parameters selected in a number of possible parameter types.

The following limits have been defined for maximum overall number of group of parameters for the active rule sets and distinct values for each parameter within each rule
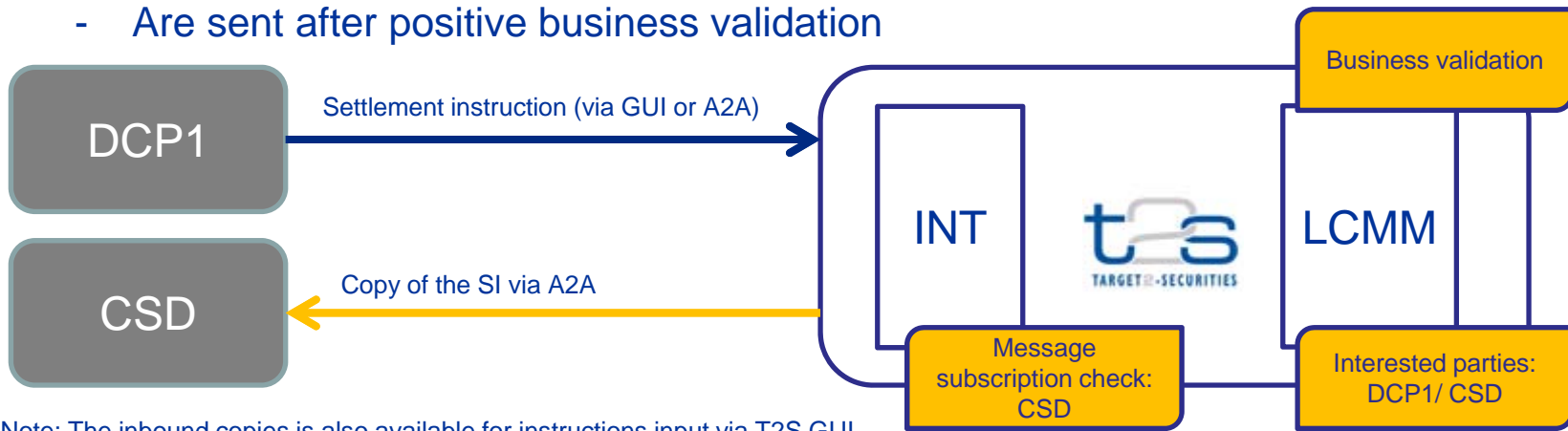
i.Rules: **max 1500**

ii.Distinct parameter values per parameter type: **max 50**

EUROPEAN CENTRAL BANK
EUROSYSTEM
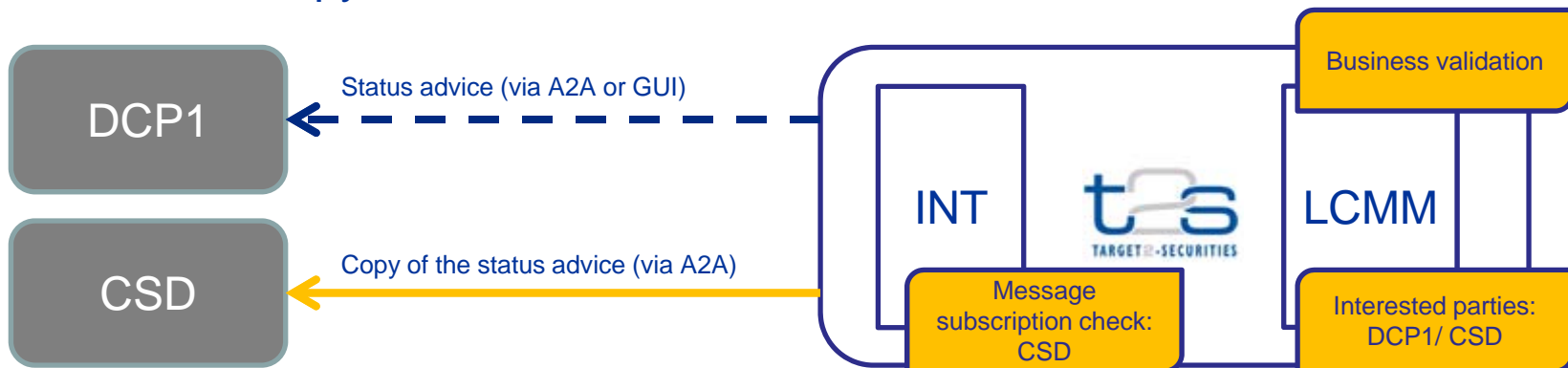
- Inbound copy of a message (e.g. a settlement instruction/ restriction)

    - Are sent after positive business validation

Note: The inbound copies is also available for instructions input via T2S GUI

- Outbound copy

Note: Even if the DCP1 does not subscribe to the status, other interested parties can receive it
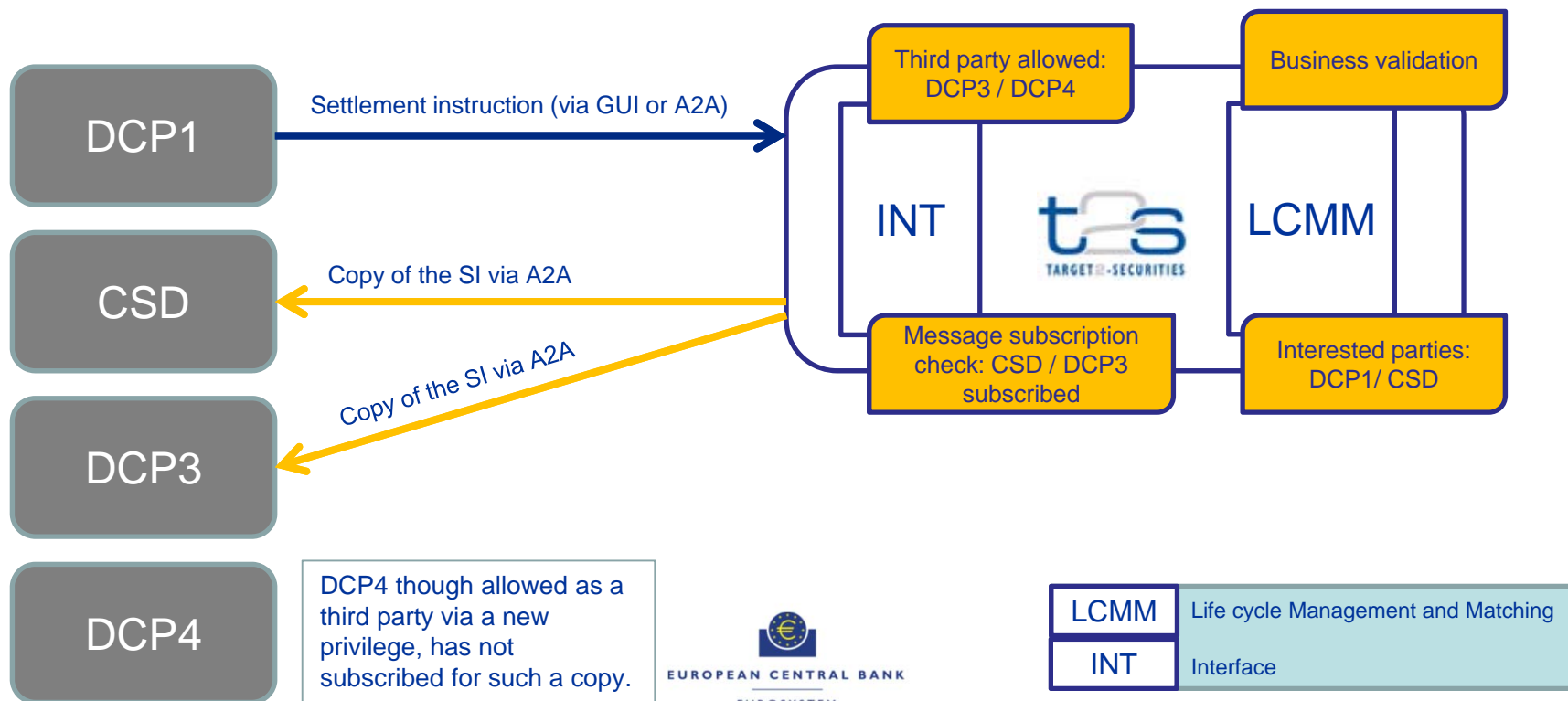
LCMM would identify a potential list of interested parties based on the information in the underlying settlement instruction

| LCMM | Life cycle Management and Matching |
| INT | Interface |

- A third party that is not an interested party for a given message can be entitled to receive copies

- This is available via the privilege "Third party receipt"
    - The privilege applies to the object type "Party"
    - When LCMM identifies that a Party is an Interested Party, INT will further check if any other interested party (i.e. third party) is granted this privilege
   - Then INT will check whether this Third Party has subscribed to the message

DCP1

Settlement instruction (via GUI or A2A)

CSD

Copy of the SI via A2A

DCP3

Copy of the SI via A2A

DCP4

DCP4 though allowed as a third party via a new privilege, has not subscribed for such a copy.

Third party allowed: DCP3 / DCP4

Business validation

INT

LCMM

Message subscription check: CSD / DCP3 subscribed

Interested parties: DCP1/ CSD

EUROPEAN CENTRAL BANK
EUROSYSTEM

LCMM	Life cycle Management and Matching
INT	Interface

Message subscription
Example: Intra-CSD scenario

Business scenario

-Party A delivers to Party B

-Party A owns (linked to) Sec.AC.PtyA

-Party B owns (linked to) Sec.AC.PtyB

-Party C provides custody services for Party B and wants to monitor transactions of Party B

-e.g. the privilege was granted by CSDA to Party C so that it can receive copies when the interested party is Party B

CSD A

Party A   Party B   Party C

Sec.AC.PtyA   Sec.AC.PtyB
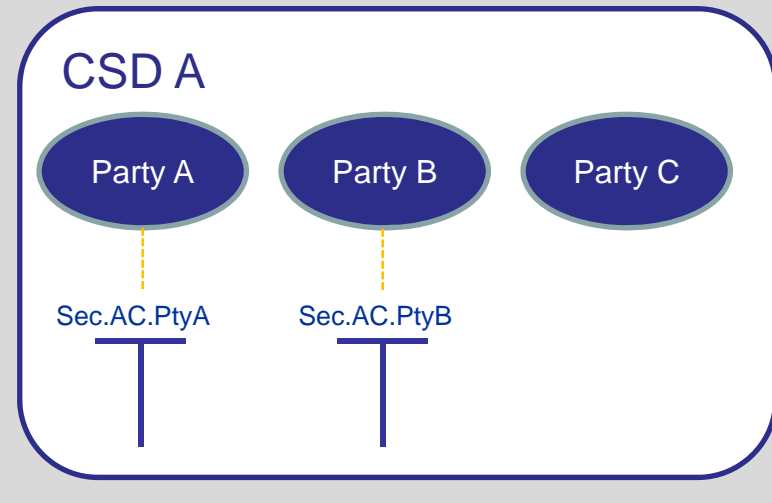
Message subscription configuration (Configured by CSDA for its participants)

Rule Set Id	Rule Id	Recipient	Message Type	Safekeeping account	Instruction Status	Positive / Negative parameter
Rule Set 1	111	Party A	Status advice	-	Accepted	No
Rule Set 2	112	Party A	Settlement confirmation	-	n/a	Yes
Rule Set 3	333	CSDA	Settlement confirmation	-	n/a	Yes
Rule Set 4	444	Party C	Settlement confirmation	Sec.AC.PtyB		Yes

EUROPEAN CENTRAL BANK
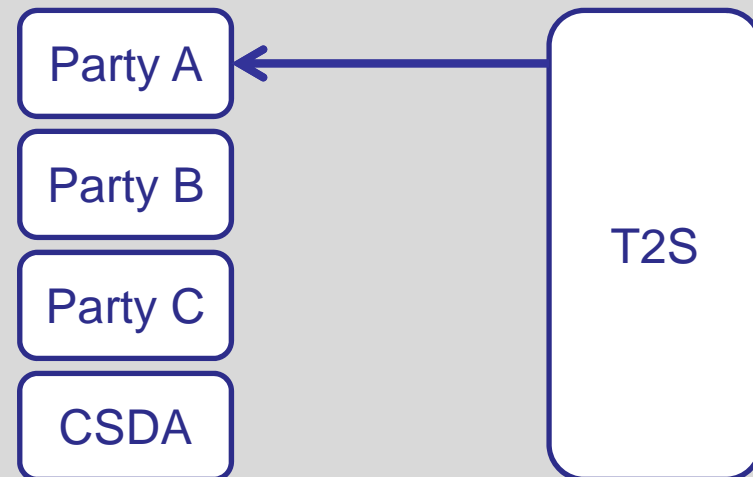EUROSYSTEM

Message subscription - Example
Intra-CSD scenario (Focus on Party A)

Rule Set Id	Rule Id	Recipient	Message Type	Safekeeping account	Instruction Status	Positive / Negative parameter
Rule Set 1	111	Party A	Status advice	-	Accepted	No
Rule Set 2	112	Party A	Settlement confirmation	-	n/a	Yes
Rule Set 3	333	CSDA	Settlement confirmation	-	n/a	Yes
Rule Set 4	444	Party C	Settlement confirmation	Sec.AC.PtyB		Yes

T2S will address the following to Party A

All status advices except the acceptance (e.g. it will receive the rejection notifications, matching notifications, eligibility failure notifications etc…)

All settlement confirmations for which Party A is an Interested Party

Party A ← T2S

Party B

Party C

CSDA

Message subscription - Example
Intra-CSD scenario (Focus on CSD A)

Rule Set Id	Rule Id	Recipient	Message Type	Safekeeping account	Instruction Status	Positive / Negative parameter
Rule Set 1	111	Party A	Status advice	-	Accepted	No
Rule Set 2	112	Party A	Settlement confirmation	-	n/a	Yes
Rule Set 3	**333**	**CSDA**	**Settlement confirmation**	**-**	**n/a**	**Yes**
Rule Set 4	444	Party C	Settlement confirmation	Sec.AC.PtyB		Yes

T2S will address the following to CSD A

All settlement confirmation for which CSDA is an interested party

Party A

Party B

Party C

CSDA

T2S

EUROPEAN CENTRAL BANK
EUROSYSTEM
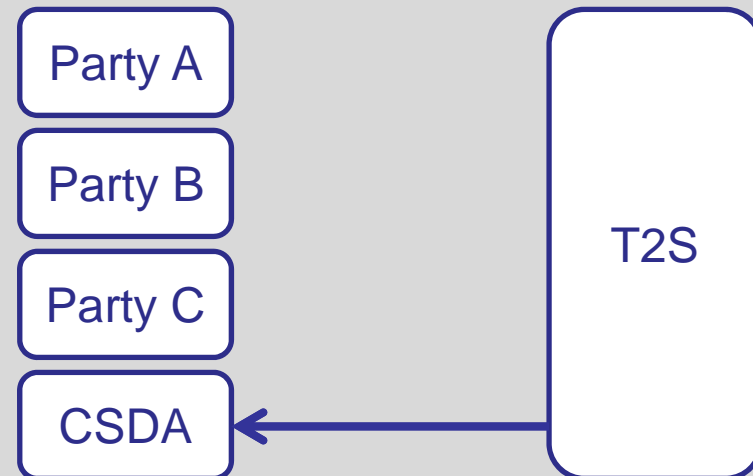
Message subscription - Example
Intra-CSD scenario (Focus on Party C)

Rule Set Id	Rule Id	Recipient	Message Type	Safekeeping account	Instruction Status	Positive / Negative parameter
Rule Set 1	111	Party A	Status advice	-	Accepted	No
Rule Set 2	112	Party A	Settlement confirmation	-	n/a	Yes
Rule Set 3	333	CSDA	Settlement confirmation	-	n/a	Yes
Rule Set 4	**444**	**Party C**	**Settlement confirmation**	**Sec.AC.PtyB**		**Yes**

T2S will address the following to Party C

All settlement confirmations related to transactions involving Sec.AC.PtyB securities account

(Pre-condition: privilege granted by the CSDA to Party C, when the interested party is Party B)
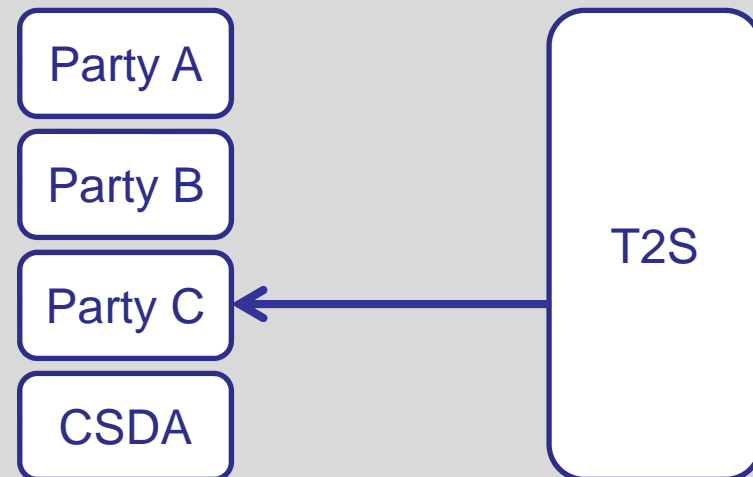
Party A

Party B

Party C

CSDA

T2S

Table of contents

EUROPEAN CENTRAL BANK

EUROSYSTEM

19

- Any outbound communication from T2S, after the message subscription check, has to be routed (i.e. sent) to the appropriate technical address of the intended T2S Actor as a recipient.

- Any outbound communication generated by T2S must reach the intended T2S Actor in due time (or its network provider if the network provider guarantees delivery).

- An outbound communication may need to be sent to a technical addresses of a T2S Actor.

EUROPEAN CENTRAL BANK

EUROSYSTEM

- Outbound communication via A2A mode: T2S actors can exchanges messages and files by means of two types of transfer service

  - **Real time:** it requires that both parties, i.e. the sender and the receiver, are available at the same time to exchange the relevant data. In case of unavailability of the receiver, no retry mechanism is foreseen. For real-time transfers, T2S exchanges messages and files in push mode only;

  - **Store and forward:** it enables the sender to transmit messages or files even when the receiver is not available. In case of temporary unavailability of the receiver, the connectivity services provider stores messages and files and delivers them as soon as the receiver becomes available again.

Routing
Transfer service

T2S Business data exchanges	Inbound communication	Outbound communication
Settlement related messages Static data updates	Message based – Store and forward File based – Store and forward	Message based – Store and forward File based – Store and forward
Queries/Report (pull)	Message based – Real time File based – Real time	Message based – Real time Message based – Store and forward File based – Real time File based – Store and forward
Reports (push)	n/a	Message based – Store and forward File based – Store and forward

Routing configuration
Set-up

- The setup of routing configurations includes the configuration of the following Static Data objects in T2S:
  - Network services
  - Party technical addresses
  - Links between network services and party technical addresses and
  - Default and conditional routings.

- Hereunder is detailed how the set-up is done and by whom:

Static data object	Responsible T2S actor	Mode
Network service	T2S Operator	U2A
Party technical address	T2S Operator, CSD, CB	U2A/A2A (via PartyCreationRequest)
Link between network service and Party technical address	T2S Operator, CSD, CB	U2A
Default and conditional routing	CSD, CB, CSD Participant, Payment Bank	U2A

- Network service corresponds to one messaging service of one of the accredited connectivity services providers.

- T2S stores in Static Data all the Network services allowing technical connectivity between T2S Actors and T2S

- T2S Operator creates the following parameters for every network service:

  - Network service name

  - Textual description of network service

  - Type of technical address for the network service

EXAMPLE 52 – NETWORK SERVICE DEFINITION

Network Service

Service Name: NSP_X – Service ABC
Service Description: Message-based, store-n-forward network service provided by X.
Technical Address Type: Distinguished Name

EUROPEAN CENTRAL BANK
EUROSYSTEM

- CSDs and Central Banks, when creating their T2S Parties (i.e. their participants), are required to provide the technical addresses in T2S

  - T2S will use these to address the T2S Party for outbound A2A communication

  - Different types of technical addresses could be provided in T2S. Examples: BIC, Distinguished Name, IP address, etc. (depending on the Network providers requirements)

EXAMPLE 53 – PARTY TECHNICAL ADDRESS AND NETWORK SERVICES

Party

Short Name: BK Bank
Long Name: Black Knight Banking Corporation
Type: Payment Bank
Central Bank BIC: BITAITRRXXX
BIC: BKBANKCCXXX

Opening Date: 25-03-2015
Closing Date: -

Address: Charles Drive Square, 1
Country Name: Italy

Technical Addresses	
Service A	DN=ABCD
Service A	DN=EFGH
Service B	DN=XXYZ
Service C	DN=INTR
Service D	DN=OPQA

EUROPEAN CENTRAL BANK
EUROSYSTEM

- Each Party Technical Address has to be linked to the relevant Network Service, so that T2S can use them to route outbound communication.

- Different network services may use the same technical address type, which means that the same Party Technical Address may be used to exchange data using different Network Services.

- Consequently, there is a **many-to-many** association between the catalogue of Network Services and the set of Party Technical Address defined in T2S.

Note:
The linked Network Service identifies the type of Party Technical Address. Consequently, if a Party Technical Address is linked to <u>multiple</u> Network Services, then all the Technical Address Types shall be the same

EUROPEAN CENTRAL BANK
EUROSYSTEM

- T2S applies a mandatory routing for the following outbound communication (i.e. T2S does not allow defining different routing configurations for these kinds of messages).

  - Acknowledgement of receipt;

  - Reactions on erroneous inbound messages;

  - Query responses.

- This means that the Network service and Party technical address used for the inbound message will be used for the above-mentioned outbound communications

- For all other type of outbound communication (i.e. message-based/file- based, real-time/store-n-forward), the T2S Actors can define either

  - A default routing (OR)

  - One or more conditional routings (based on a set of parameters)

TABLE 23 – EXAMPLE OF NETWORK SERVICES FOR OUTBOUND COMMUNICATION

NETWORK SERVICE NAME	NETWORK SERVICE FEATURES	TECHNICAL ADDRESS TYPE
NetSrvA	Message-based, store-n-forward	Distinguished Name
NetSrvB	File-based, store-n-forward	Distinguished Name

EUROPEAN CENTRAL BANK

EUROSYSTEM

- When configuring a default routing configuration, the T2S Actor (e.g. CSD, Central Bank, DCP) has to specify the following:
  - the routing description;
  - the network service T2S has to use for the default routing;
  - the party technical address T2S has to use for the default routing;
  - a compression setting, if T2S must compress the relevant data before sending them to the recipient.

TABLE 24 – DEFAULT ROUTING CONFIGURATIONS

ROUTING DESCRIPTION	NETWORK SERVICE	PARTY TECHNICAL ADDRESS	COMPRESSION
Default 1	NetSrvA	<ou=dept_123, o=prtyccttxxx, o=netprv>	No
Default 2	NetSrvB	<ou=dept_123, o=prtyccttxxx, o=netprv>	ZIP

EUROPEAN CENTRAL BANK
EUROSYSTEM

- When configuring a conditional routing configuration, the T2S Actor (CSD, Central Bank, DCP) specifies the following:

  - the sequence number of the conditional routing, specifying the order according to which T2S tries to match the current outbound message with one of the conditional routing configuration;

  - a set of conditions specifying the criteria on which the routing is defined:

    - the type of the message,
    - the size boundaries (i.e. the minimum and the maximum size of the message),
    - the currency of the message;

  - a Boolean information specifying whether the set of conditions represents a positive or a negative list.

TABLE 26 – CONDITIONAL ROUTING CONFIGURATIONS

SEQUENCE	ROUTING DESCRIPTION	MESSAGE TYPE[66]	SIZE	CURRENCY	NETWORK SERVICE	PARTY TECHNICAL ADDRESS	COMPRESSION
1	Conditional 1	-	-	DKK	NetSrvA	<ou=dept_987, o=prtyccttxxx, o=netprv>	ZIP
2	Conditional 2	-	-	DKK	NetSrvB	<ou=dept_987, o=prtyccttxxx, o=netprv>	ZIP
3	Conditional 3	NTSRM[67]	-	DKK	NetSrvA	<ou=dept_987, o=prtyccttxxx, o=netprv>	ZIP
4	Conditional 4	NTSRM	-	DKK	NetSrvB	<ou=dept_987, o=prtyccttxxx, o=netprv>	ZIP

EUROPEAN CENTRAL BANK

EUROSYSTEM

- If the size of the outbound communication is <u>smaller than 2KB</u>, then T2S does <u>not compress</u> the data, regardless of compression setting specified in the matched routing configuration.

- If the outbound communication is a <u>report</u>, then <u>T2S compresses the data</u> regardless of compression setting specified in the matched routing configuration.

- For all other types of outbound communication, T2S compresses the data only if this is required by the compression setting specified in the matched routing configuration.

- T2S Actor can choose: "no compression" or "compression using ZIP algorithm"

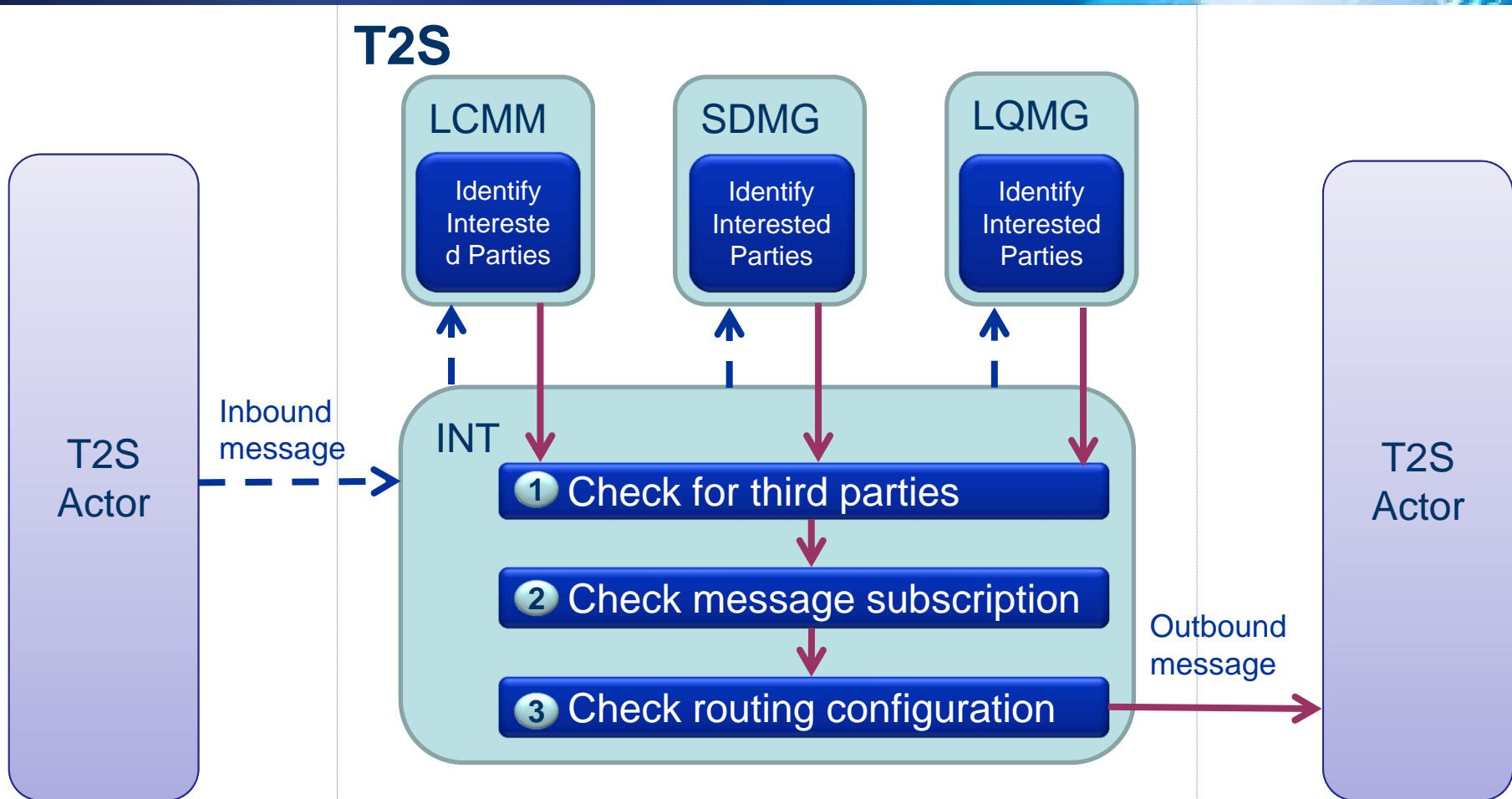| SETTLEMENT DAY PERIOD	MATCHED ROUTING CONFIGURATION	OUTBOUND COMMUNICATION	COMPRESSED DATA
Real-time settlement	Default 1	All individual messages <= 32KB	No
	Default 2	All individual messages > 32KB	Yes
Night-time settlement	Default 1	All individual messages not listed in Table 20<= 32KB	No
		Files of messages included in Table 20 <= 32KB	No
	Default 2	All individual messages not listed in Table 20 > 32KB	Yes
		Files of messages included in Table 20> 32KB	Yes

- During Night Time settlement T2S will send the following message usages grouped into files (even if routing specifies use of message based service)

TABLE 22 – SETTLEMENT-RELATED MESSAGES SENT GROUPED INTO FILES

ISO MESSAGE	MESSAGE USAGE
sese.024	CoSD hold, eligibility failure, intraday restriction, provision check failure, partial settlement (unsettled part).
sese.025	Full settlement, partial settlement (settled part), last partial settlement.
semt.014	Eligibility failure, under intraday restriction, provision check failure, partial settlement (unsettled part).
semt.015	Full settlement, partial settlement (settled part), last partial settlement, partial execution.
camt.054	Cash Posting Notification
camt.067	Eligibility failure, under intraday restriction, provision check failure, partial settlement (unsettled part).
camt.068	Full settlement, partial settlement (settled part), last partial settlement, partial execution.

- The other message usages will be sent as individual messages, as during the real-time settlement period

EUROPEAN CENTRAL BANK
EUROSYSTEM

T2S

LCMM	SDMG	LQMG
Identify Interested Parties	Identify Interested Parties	Identify Interested Parties

INT

Inbound message

T2S Actor

1. Check for third parties
2. Check message subscription
3. Check routing configuration

Outbound message

T2S Actor

Note 1: SETTlement domain does not identify any interested party
Note 2: Any outbound message sent by OPSR (e.g. Scheduler) services would also comply to the above processes

SDMG	Static Data Management
LQMG	Liquidity Management

EUROPEAN CENTRAL BANK
EUROSYSTEM

LCMM	Life cycle Management and Matching
INT	Interface

Thank you for your attention

www.t2s.eu

- INT would specify if the outbound message is a DUPL or COPY or CODU.
- This specification is independent of the message subscription

- If provided in Inbound messages both CopyDuplicate and PossibleDuplicate fields will be ignored
- T2S use of CopyDuplicate
  - The DUPL code will be set if a message is requested via the "Resend" function
  - The COPY code will be set if an incoming/outgoing message is being sent as a copy to another recipient than the original recipient (e.g. Instructing Party)
  - The CODU code will be set if a an incoming/outgoing message is being sent as a copy to a party other than the original recipient and that the message is a duplicate of a message previously sent.
- T2S use of PossibleDuplicate
  - The indicator will be set to True if the message being sent is requested via the resend function or if a copy of the message is sent to a party other then the original recipient

BusinessApplicationHeaderV01

Fr
From

To
To

BizMsgIdr
BusinessMessageIdentifier

MsgDefIdr
MessageDefinitionIdentifier

AppHdr

This message definition implements the coexistence rules. Some data types are restricted to ensure interoperability between ISO 15022 and 20022 users.

18/07/2011

CreDt
CreationDate

CpyDplct
CopyDuplicate

CODU
COPY
DUPL

PssblDplct
PossibleDuplicate

True/False indicator

EUROPEAN CENTRAL BANK
EUROSYSTEM