



TARGET Services incident of 27th February 2025

Post-mortem Report

November 2025

EXECUTIVE SUMMARY

On 27 February 2025, TARGET Services encountered a major incident that made T2 and T2S unavailable for approximately 10 and 8 hours, respectively, while TIPS experienced partial disruptions for about 1 hour which resulted from the outage of T2. Consequently, the processing of securities settlement instructions, payments, ancillary system settlements, and liquidity transfers between TARGET Services was suspended for several hours.

Initially, the issue was suspected to originate from a database malfunction, which led to the decision to avoid an immediate failover to the secondary site, given the synchronized nature of database operations across sites. Later in the day, the true root cause was identified, a hardware failure involving a critical infrastructure component within the storage system. Subsequently, the decision was made to initiate a failover of both T2 and T2S to the secondary site. Due to the complexity of the hardware fault, comprehensive precautionary checks were necessary before operations could safely resume shortly after 18:00. The services ultimately closed in an orderly manner by midnight.

Further analysis confirmed that the disruption was due to the unexpected simultaneous failure of two redundant Ethernet ports on a storage control unit, preventing automatic isolation of the faulty component. According to the vendor, such a scenario was unprecedented globally across similar vendor-supported installations. The vendor already provided an update to address this vulnerability. In the interim, enhanced monitoring mechanisms have been established to swiftly detect and mitigate potential recurrences before a service impact occurs.

Communication with market participants and regulatory authorities throughout the incident was generally effective, though some improvements were identified, notably in providing earlier recommendations for halting message transmissions and clearer guidance on penalty calculations.

During the incident, contingency measures were effectively activated in T2 to facilitate the settlement of critical payments. However, the dual outage of T2 and T2S posed challenges for collateral mobilization, which somewhat delayed contingency payment processes. Actions have been identified and partly implemented to enhance contingency measures in the future.

Annex II provides a comprehensive list of follow-up actions. All follow-up actions are scheduled for completion by the end of the year, reinforcing the resilience and preparedness of TARGET Services. In addition, based on the second line of defence's assessment, additional risk controls have been identified and will be included in the scope of the next yearly T2S external examination exercise. The progress with the implementation of the overall action plan will be regularly monitored by the Market Infrastructure Board (MIB).

TABLE OF CONTENTS

1.	INTRODUCTION.....	1
2.	OVERALL TECHNICAL DESCRIPTION OF THE INCIDENT	2
3.	ROOT CAUSE	3
4.	MAIN TECHNICAL IMPACT OF THE INCIDENT ON THE DIFFERENT TARGET SERVICES	4
4.1.	IMPACT ON T2S	4
4.1.1.	PROCESSING OF MESSAGES	4
4.1.2.	OPERATING DAY	4
4.2.	IMPACT ON T2.....	5
4.2.1.	PROCESSING OF MESSAGES AND OPERATING DAY	5
4.2.2.	GUI UNAVAILABILITY	6
4.2.3.	PROCESSING OF ANCILLARY SYSTEM FILES	6
4.3.	IMPACT ON TIPS.....	6
5.	BUSINESS CONTINUITY AND CONTINGENCY.....	7
5.1.	EXECUTION OF THE SITE RECOVERY.....	7
5.2.	ECONS	8
5.2.1.	ACTIVATION OF ECONS II.....	8
5.2.2.	OPERATION OF ECONS II.....	8
5.2.3.	INJECTION OF LIQUIDITY IN ECONS II.....	9
5.2.4.	PROCESSING OF OTHER PAYMENTS THAN THE VERY CRITICAL ONES	9
5.3.	PREPAREDNESS FOR LONGER OUTAGES	10
6.	BUSINESS IMPACT OF THE INCIDENT	11
6.1.	PAYMENTS.....	11
6.2.	SECURITIES.....	12
6.3.	SHORT-TERM INTEREST RATES.....	14
6.4.	EUROSYSTEM BALANCE SHEET	14
6.5.	MEDIA	14
7.	TREATMENT OF FINANCIAL COMPENSATION CLAIMED BY MARKET PARTICIPANTS.....	15
7.1.	T2 CLAIMS.....	15
7.2.	T2S CLAIMS	15
8.	COMMUNICATION ASPECTS.....	16
8.1.	COMMUNICATION WITH NCBS AND CSDS	16
8.2.	COMMUNICATION WITH PARTICIPANTS.....	16
	ANNEX I: TIMELINE OF EVENTS AND COMMUNICATION	18
	ANNEX II: LIST OF FOLLOW-UP MEASURES	30

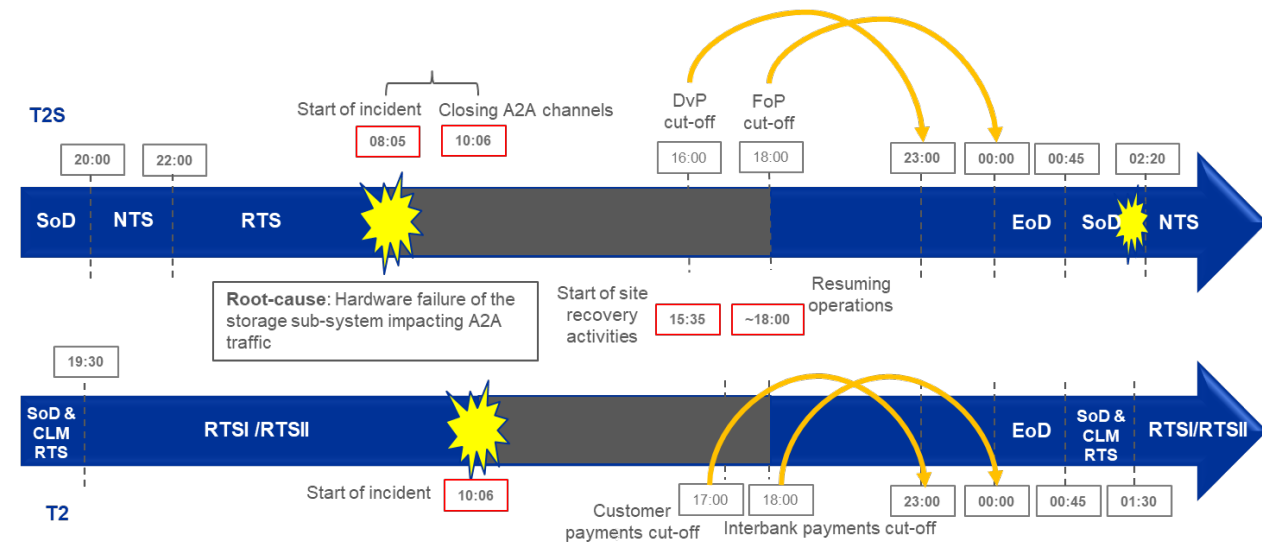
1. INTRODUCTION

This document aims at providing a comprehensive assessment of the incident occurred on 27 February 2025, resulting in a major outage of both T2S and T2 and having a knock-on effect also on TIPS. The infrastructural nature of the fault ultimately required the execution of a Site recovery for T2 and T2S to overcome the outage.

The document describes the sequence of events, the identified root cause and the impacts observed as well as the actions taken to recover from the outage. It also highlights several actions identified by T2/T2S users and by the 4CB in discussions in various *fora*.

A recap of all closed and ongoing actions, including the follow-up measures identified to prevent a reoccurrence and improve the existing operational procedures, completes the report.

2. OVERALL TECHNICAL DESCRIPTION OF THE INCIDENT



On 27 February 2025, shortly after 08:00 a disruption in the flow of A2A communication towards the NSPs was identified, which affected T2S only. The support teams identified a memory shortage affecting a DB2 group buffer pool¹ used for processing of messages and transactions but leaving the settlement engine unaffected (i.e. instructions already in the system were processed normally). Initial investigations assumed that the issue was caused by a disruption at the database level (DB2).

The support teams attempted to restore the buffer pool functionality by allocating additional space, but without success. Consequently, since incoming messages were not being processed, the Service Desk opted to close the A2A channels to the NSPs with the aim of minimizing the negative effects of the incident.²

Shortly after 10:00, similar issues with the processing of both inbound and outbound messages began affecting T2 as well and the same measure of closing of the A2A channels towards the NSPs was performed.³ The reason why the issue did not materialise simultaneously on both services is due to the fact that the buffer-pools are segregated by services, and they normally load and unload data automatically. The hardware failure caused the buffer pool to become saturated with different timings on the two TARGET Services.

During the restoration attempts, the support teams noticed a general slowdown of the system and widened the scope of the investigation to identify other potential root causes. At that point in time, assuming the issue was still of a software nature, the support teams deemed that a site or regional recovery would not solve the issue, as software issues are replicated into the secondary site/region by virtue of the copy mechanisms. The way forward was identified instead in a shutdown of the subsystems, which allowed to increase the allocated

¹ A buffer pool is an area of main memory that has been allocated by the database manager for the purpose of caching table and index data as it is read from disk.

² After 10 retries (amounting to 100 minutes), the NSPs will start aborting the messages that they are not able to deliver.

³ This action was only partially successful. See 4.2.

space but not to solve the issue, followed by a selective restart to single out the source of the malfunction.

The selective restart did not help the problem determination, and the analysis was refocused towards a possible hardware issue. Technical experts, together with the responsible external vendor, were then able to identify a failure of a hardware component of the control unit storage system. Only the physical replacement of the faulty component would resolve the issue. As a result, it was agreed to proceed with the recovery to the secondary site within the Production region where the infrastructure has an identical set-up. Site recovery activities were initiated at 15:35, after both T2 and T2S Crisis Managers provided their nihil-obstat.

The standard recovery procedure, that envisages a technical recovery time of 1 hour, could not be applied because consistency and integrity checks had to be performed in consideration of the nature of the fault (hardware failure involving disk storage subsystem).

The failover activities to the secondary site and the consistency and a set of additional integrity checks, necessary to guarantee an orderly restart of the operating day, were completed shortly after 18:00, when system operations finally resumed.

Lessons: *For the identification of the root cause, the 4CB needed several hours. Part of the reason for this, lays in the peculiarity of the incident and the root-cause residing in a unique failure of a hardware component qualified as “never happened before worldwide”. As usual, on the occasion of every incident, the 4CB work on the monitoring review, in this case in close cooperation with the vendor that has already put in place an ad hoc monitoring. This specific scenario will be considered by the vendor in the next versions of their product.*

Technical monitoring is a living body which is improved and adapted on a continuous basis. As such existing alarms are continuously reviewed and fine-tuned and the need to implement additional ones assessed, including new monitoring tools that could allow for an earlier detection of application and hardware failures.

3. ROOT CAUSE

The Incident report provided by the vendor provided a timeline of the events ultimately leading to the major service interruption and the measures identified for a timely detection in case of reoccurrence.

On the morning of 27 February 2025 initial slowdowns were observed, which worsened over time, leading to the unavailability of DB2 instances impacting the T2S and T2 services. This event was unexpected as a similar behaviour has not been previously detected in any of the similar components of the same kind worldwide.

The root cause was pinpointed in the faulty behaviour of a core component of the Storage solution, that was

eventually replaced. The nature of the fault made it impossible to avoid the impacts. Nevertheless, a technical investigation is ongoing on the vendor's side to evaluate how to tackle such specific failure situations. In the meantime, as a lesson learnt out of this previously completely unexpected scenario, a documented and dedicated process was created on the vendor's side to handle this extremely rare event at the point of initial occurrence to prevent end user impact before its manifestation.

The faulty component was replaced according to standard maintenance procedures on 28 February.

4. MAIN TECHNICAL IMPACT OF THE INCIDENT ON THE DIFFERENT TARGET SERVICES

4.1. IMPACT ON T2S

4.1.1. PROCESSING OF MESSAGES

The first impact that materialised shortly after 8:00 was a disruption in the flow of A2A communication between T2S and the NSPs.

After the initial attempts by the Support Teams to restore the functionality were not successful, the Service Desk decided to close the A2A channels to the NSPs to minimize the negative effects of the incident⁴. From that moment onwards, messages would be queued on the NSPs' side and processed after the restoring of full functionality in T2S – on the other hand, CSDs were informed that the messages that would have been aborted by the NSPs in the meantime, would need to be resent⁵.

The attempts by the support teams to overcome the issue, included proceeding with the restart of several sub-systems, which resulted also in the unavailability of the GUI.

Once the failover was completed, the backlog of incoming messages (either queued up at NSP level or parked in the internal back-out queues due to the DB unavailability) had to be processed (see next paragraph for more details).

4.1.2. OPERATING DAY

The long-lasting incident had an impact also on the processing of the Penalty Mechanism-related events

⁴ After 10 retries (amounting to 100 minutes), the NSPs will start aborting the messages that they are not able to deliver.

⁵ Some of the queued messages – while rejected by the NSP - were finally processed and generated the related notifications. For these messages one of the NSPs replied to the sender with a xsys.012 message – in such cases it is advisable to wait until the connection between them and T2S is reestablished before resending any messages.

and the Crisis Managers agreed to postpone the processing to the next business day – this decision was overruled by the Settlement Managers after the reopening of the service, as the processing was almost completed (an information that was not available at the time of the original decision due to the impossibility to query the DB) and it would not cause an impact on the ongoing operating day while preventing additional volumes on the processing of the following BD.

The incident also affected the scheduling of the operating day, and the Crisis Managers had to discuss and agree on several adjustments of the main cut-offs. The Delivery Versus Payment cut-offs (IDVP) for both EUR and DKK were postponed several times, from the scheduled 16:00 until 23:00 to ensure all the backlog of operations could be sent for settlement to T2S. An earlier decision to postpone IDVP to 22:00 had to be revisited with an additional delay to 23:00 because meanwhile it was identified that around 3.6 million messages were queued at different levels. While the remediation activities were already ongoing, the information was not yet available to the 4CB Service Manager in charge at the time of the previous SMs' call.

The operating day unfolded normally until the start of NTS, when event SDCR (Check End of SD Changes Revalidations) faced a blockage, which required a job to be restarted, ultimately leading to a further delay of the start of C1P0 of 30 mins.

A further issue with event CSDR was experienced, quickly solved by the support, which led to a delay in the start of C1S0 event after which the processing experienced no further issues.

4.2. IMPACT ON T2

4.2.1. PROCESSING OF MESSAGES AND OPERATING DAY

The malfunction caused a severe slowdown in both A2A and U2A processing and therefore, the queuing of a massive number of messages. To reduce the message queuing on the T2 side and to avoid messages being aborted by the NSPs⁶, it was deemed necessary to shut down the channels towards the NSPs on T2 side.

The action was executed but partially failed, with the result that some queues remained open until after the completion of the failover procedures. The result was that many transactions sent prior to the failover and then queued, reached T2 once the system was recovered but before the Operating Day schedule was adjusted and were rejected as a result.

Specifically, the partial failure in the closure of the queues initiated in the morning, caused transactions to

⁶ After 10 retries (amounting to 100 minutes), the NSPs will start aborting the messages that they are not able to deliver.

be presented for settlement prior to the CLM/RTGS internal clock received the update notification from BDM. The overall number of rejected messages was 11,898 (mainly pacs.008 and pacs.009). Newly sent instructions were being processed regularly. The reason for the partial closure of the channels is the inconsistent state of the system caused by the storage hardware failure.

The incident caused a severe delay of the Operating Day, i.e., cut-offs for customer payments and bank to bank payments were set to 23:00 and 00:00 respectively, while the business date change took place at 01:12 and RTGS RTS I was reached at 01:40.

4.2.2. GUI UNAVAILABILITY

The countermeasures applied by the support teams to mitigate the impact of the various issues (e.g. temporary closure and restart of the subsystems), resulted in the unavailability of the GUIs.

4.2.3. PROCESSING OF ANCILLARY SYSTEM FILES

At around 19:00 some central banks reported a delayed processing of Ancillary System files connected to some anomalies with the running of the algorithms. Such anomalies were solved via a last level intervention (LLI) at ~20:15 leading to the correct processing of the pending AS files.

4.3. IMPACT ON TIPS

At 14:50, the Service desk was informed by the support teams about potential slowdowns in the response time from TIPS for both Instant Payments and Liquidity transfers, caused by the missing responses from CLM to the outgoing liquidity transfers which triggered the interservice retry mechanism and the subsequent overload of the TIPS message nodes.

The support teams had been monitoring the effects on TIPS of this known T2 problem, using a dedicated dashboard implemented to identify and stop the application nodes experiencing communication issues with CLM.

This action reduced the impact on TIPS, both in terms of volume and duration, while the problem on T2 was being addressed. Due to the issue on T2 side, instant payments were correctly settled, but the notifications were sent out with some delay while customers investigations always provided a final status.

The possibility of impacts on TIPS had been anticipated, but the extent and details of those impacts could only be assessed ex-post. The analysis showed that the overall impact for SEK occurred between 14:01 and 14:05, with 262 instant payments (IPs) impacted and between 14:29 and 14:59, with 1,469 IPs impacted. The overall impact for the EUR currency was observed between 14:25 and 14:58, with 227 IPs

impacted.

5. BUSINESS CONTINUITY AND CONTINGENCY

5.1. EXECUTION OF THE SITE RECOVERY

As noted in section 2, 4CB initiated the site recovery activities at 15:35 after both T2 and T2S Crisis Managers provided their nihil-obstat. In this respect, it is observed that the conditions for requiring an approval / nihil-obstat from the Crisis Managers for this activity are not fully aligned in the TARGET Manual of Procedures and the T2S Manual of Operational Procedures. If the 4CB could have unilaterally decided to go ahead with the recovery activities when 4CB deem such an action as necessary following an appropriate technical assessment, the site recovery activities could have been initiated approximately 30 minutes earlier than what was the case on 27 February.

During the execution of the Site Recovery on 27 February, 4CB needed to perform additional checks to confirm the proper functioning of the disk storage and data integrity on the secondary site. This caused that the contractually agreed Recovery Time Objective (RTO) of 60 min could not be met. 4CB has already confirmed that the incident was described by the vendor as "*never previously encountered worldwide*". This fact alone sufficiently explains the unique nature of the event and justifies why the additional checks were necessary⁷. The collateral activities were intrinsically linked to that situation.

Although not related to the incident on 27 February, it is noteworthy that during a major incident on 5 May⁸, the detection of the hardware failure, the identification of site recovery as the required incident resolution activity, the approval / nihil-obstat from the Crisis Managers, and the completion of the site recovery activities all took place in less than two hours. It is also important to highlight that 4CB completed the site recovery activity within the agreed RTO. This illustrates the Eurosystem's general preparedness to manage critical hardware incidents.

Lessons: <i>ECB and 4CB to assess and discuss the alignment of decision-making practices across T2 and T2S for the site and regional recovery activities with the T2 and T2S governances.</i> <i>Business Continuity Management and the IT Service Continuity Management are both under the Continual Service Improvement process, which requests all the processes to be reviewed on a continuous basis to take on board the inputs gathered from their actual application. This</i>
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⁷ The additional activities and checks were directly related to the specific circumstances of the incident, notably the suspected track damage and repeated shutdowns of software components that occurred before confirming the issue as a hardware failure. Considering these measures as standard activities or checks following core failover procedures would be misleading, as it would incorrectly imply that actions taken exceptionally in this particular situation constitute a regular procedure.

⁸ T2 / T2S INC445701.

5.2. ECONS

5.2.1. ACTIVATION OF ECONS II

During the first T2 Settlement Managers call at 10:45, the possibility to use ECONS II was discussed, and the NCBs were invited to investigate whether there were pending very critical payments that shall be settled in contingency using ECONS II (i.e. CLS payments and CCP margin calls). The request to activate ECONS II was only formally made to the 4CB in the T2 Crisis Managers call at 11:30, upon confirmation from the NCBs that they had identified such transactions.

The activation of ECONS II was then almost immediate. The fact that ECONS II was not immediately activated once the outage broke out did not delay the processing of very critical payments as the activation of ECONS II is not on the critical path. The identification of pending transactions and the injection of liquidity are much more time consuming.

5.2.2. OPERATION OF ECONS II

Upon the activation of ECONS II, issues with the processing of U2A payments were reported. ECONS II was showing excessive memory usage compared to the allotted system capacity. The high number of active user sessions (~800 U2A users) during the opening time is the most likely root cause of the access disruptions experienced during the opening time. This issue was later solved at around 16:10 with a restart of a technical component which terminated all user sessions, thus unloading the system.

Overall, 146 payments were settled in ECONS II, out of which 25 liquidity transfers from NCBs to participants to inject liquidity and 121 payments. Out of the 121 payments processed in contingency, 94 were successfully settled, 25 failed to settle owing to lack of liquidity and 2 were rejected.

ECONS II was closed at 19:02 in a smooth and timely way. The balance of 55 contingency accounts in ECONS II was then transferred back to the CLM.

It should be noted that, after the incident, the accounting department of some NCBs requested that the closing balances of ECONS II accounts are made available in the T2 data warehouse. This is foreseen with the change request T2 CR-121. Such a change would be valuable, in particular in the event of a longer T2 outage during which ECONS II is used for several days.

Lessons: *Consider the opportunity of amending ECONS II to cope with a higher number of active user sessions during contingency.*

Priority shall be given to the implementation of T2 CR-121.

5.2.3. INJECTION OF LIQUIDITY IN ECONS II

As ECONS II opens with zero balance, NCBs shall inject liquidity on contingency accounts before the processing of payments may start. While most of the central banks acted quickly in providing liquidity and processing very critical transactions with their participants, a few NCBs had operational procedures for specific participants, which relied on the mobilisation of new collateral via T2S. As the outage also affected T2S, alternative means had to be used to supply liquidity. Some central banks relied on collateral already mobilised by participants but not yet used in their local collateral management system. Other participants made use of the possibility to transfer liquidity from their TIPS accounts to their ECONS II accounts. The difficulties experienced in supplying collateral, especially in the cases relying on T2S which was unavailable, significantly delayed the processing of some very critical payments.

Lessons: *Participants relying on T2S for the provision of collateral for settlement in ECONS II shall have back up plans to cover the scenario where T2S is not available. In addition, the Eurosystem will investigate further possible sources for liquidity injection to ECONS II accounts and make the necessary adjustments to the list of eligible options described in the TARGET MOP.*

Operational Readiness Tests involving ECONS II shall cover the scenario where T2S is not available.

5.2.4. PROCESSING OF OTHER PAYMENTS THAN THE VERY CRITICAL ONES

In principle, the contingency procedures foresee that once very critical payments have been processed, T2 crisis managers may decide to process as well critical payments. These correspond to the settlement of other SIPS, liquidity transfers to other TARGET Services or liquidity transfers needed to support critical transactions. Owing to the above-mentioned difficulties to inject liquidity in ECONS II, the last very critical payment was only completed at 16:33, time at which the failover to the secondary site had already been initiated. For that reason, the T2 crisis managers did not extend their decision to settle also critical payments in ECONS II once very critical transactions had been settled.

It should be noted that throughout the incident and prior to the decision to failover to the secondary site, the expected time for resolution was always indicating returning to the primary T2 system within a couple of hours (e.g. expectation at 13:00 was that T2 is recovered around 15:00). Considering the expected time for resolution, the manual and timely process of settling via ECONS II as well as the manual accounting adjustments that would be required following settlement in ECONS II, other SIPS expressed their preference to wait for the resuming of operations on T2 to submit their settlement.

The operational procedures were not completely followed as one NCB processed critical payments on ECONS II although this had not been agreed by the crisis managers, which calls for further reflections on how to define and process very critical and critical payments in ECONS II.

In discussions held with their National Central Banks following the incident, some T2 participants enquired why critical payments had not been considered more widely.

Lessons: *Participants shall be reminded of the different categories of transactions to be settled under contingency as well as the steps undertaken to process them sequentially when ECONS II is activated. Specific presentations could be prepared and shared with National Stakeholders Groups.*

T2 procedures shall be further enhanced to clarify that other critical transactions not clearly covered by the Very Critical /Critical definitions found in the TARGET Manual of Procedures (MOP) can be proposed for settlement in ECONS II during the crisis/settlement managers' conference calls and shall be assessed on a case-by-case basis.

Furthermore, the current definition of Very Critical/Critical transactions will be reviewed in view of the experience gathered from this incident.

5.3. PREPAREDNESS FOR LONGER OUTAGES

The incident prompted market feedback on long lasting outages that can be broadly split into two categories: (i) problems that long delays for critical operating day cut-offs imply on participants since they may not be able to delay their local systems accordingly (i.e. a problem that materialized during the 27 February incident); and (ii) request for assessing what could happen if the incident would have lasted much longer (i.e. a more hypothetical scenario to prepare for).

On the first point, by definition, an incident itself and the time required for the incident resolution activities to be completed are subject to considerable uncertainty. Therefore, while some guidance can be given during the incident to the market about the delays that can be foreseen on the operating day cut-offs, the T2 and T2S governances assess the need for such delays always on a case-by-case basis on the incident day. However, as part of this upcoming discussion with market participants, T2 and T2S governances shall identify what is the time beyond which participants cannot keep their back-office systems open any longer. Although the timing may vary from one participant to the other and may also be different for payments and securities settlement business, it would allow T2 and T2S crisis managers to assess the effectiveness of cut-off adjustments during long-lasting incidents (e.g., the latest appropriate cut-off time)⁹. Consequently, central banks could identify the latest point in time by which the settlement of critical payments in ECONS II should start to ensure their settlement.

On the second point, and concerning T2, participants asked whether and how critical payments would have been processed on ECONS II if the incident had lasted longer. It is indeed advisable to give more clarity to participants on how, under an extreme scenario, the Eurosystem would announce and organise the completion of the T2 business day in ECONS II. Concerning T2S, it was noted, during some follow-up exchanges with participants, that T2S does not have the possibility to rely on a (centralised) contingency

⁹ Depending on the outcome of the market questionnaire on the impact of long-lasting incidents on the staff availability and internal contingency procedures, the T2 and T2S governances may also be prompted to reflect on the need for other procedural manners to address long lasting outages than just cut-offs delays on the level T2 and T2S.

solution when the primary system is unavailable over a long period (i.e. like ECONS II for T2). It should be recalled that the assessment regarding the implementation of such a solution (i.e., a non-similar facility for securities settlement) had already been discussed in the past within the T2S governance. At that time, it was decided that the feasibility analysis for developing such tool would be put on hold and only undertaken after the implementation of the T2S recovery solution.

Lessons: ECB to collect detailed market feedback on the effectiveness of cut-off delays following a long-lasting outage and prepare with the T2 and T2S governances' general guidance for incident situations to support understanding the effectiveness of cut-off adjustments.

ECB to reflect with the T2 governance upon general guidance as to how longer incidents would typically be handled including extreme scenarios under which the completion of the business day would be executed on ECONS II. The outcome of this work should be shared with National Stakeholder Groups and reflected in the organisation of Operational Readiness Tests (ORTs).

6. BUSINESS IMPACT OF THE INCIDENT

6.1. PAYMENTS

Although, on 27 February, T2 only resumed normal operations at around 18:00, the number and total value of payments settled on that day turned out to be comparable to those of previous days. This indicates that, overall, participants were generally able to complete most of their interbank payment activities that day.

Chart 1: Cumulated settlement of T2 traffic in value (EUR bn)

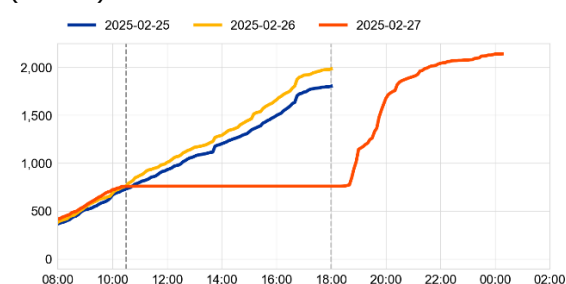
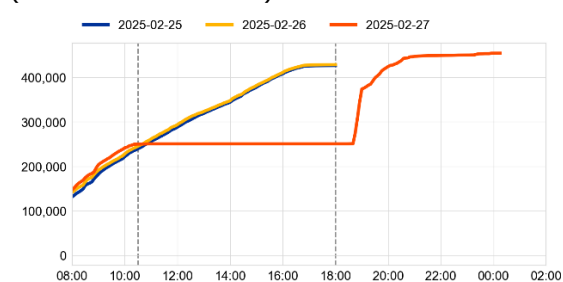


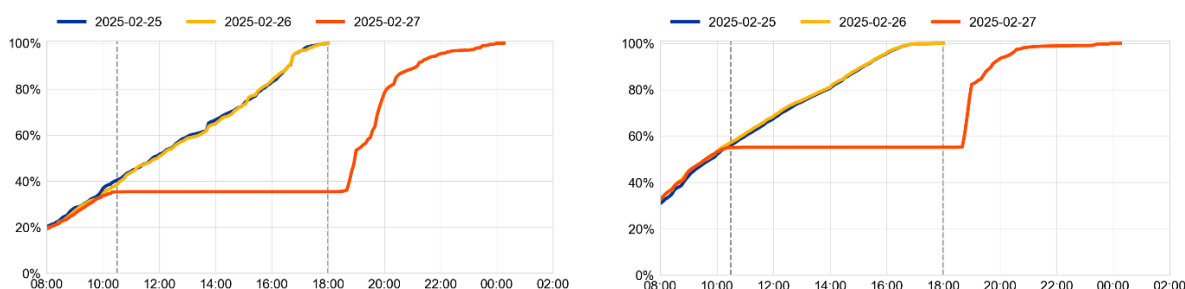
Chart 2: Cumulated settlement of T2 traffic in volume (number of transactions)



These graphs show that, at the time the incident occurred, T2 had only settled 55% of its volume and 35% of its value.

Chart 3: Cumulated settlement of T2 traffic in value (percentages)

Chart 4: Cumulated settlement of T2 traffic in volume (percentages)



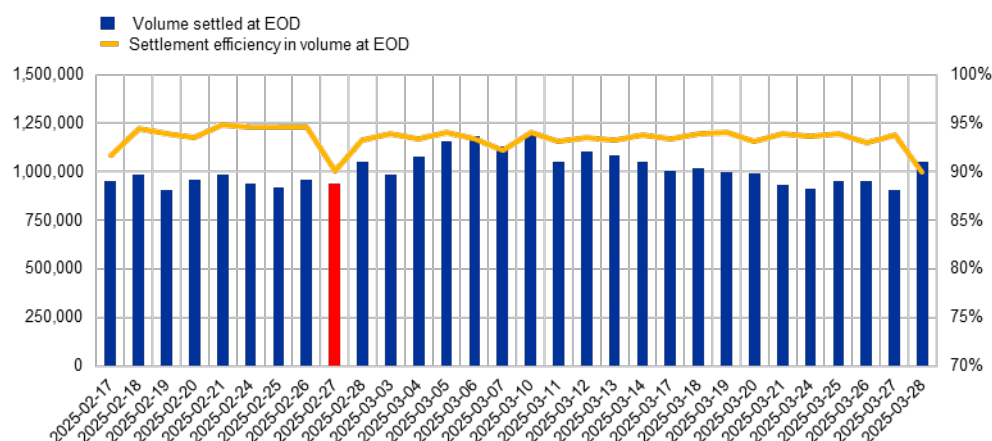
A few central banks reported that the payment of salaries and pensions may have been delayed in their communities as an indirect consequence of the incident. While the interbank (net) settlement of these retail systems did take place in T2 on 27 February, it took place later than usual in the afternoon and did not leave enough time to some participants to distribute the funds on beneficiaries' accounts in their own books. These transfers were however processed on the next calendar day.

Lastly, it should be noted that the outage on T2 had spill-over impacts on the other market infrastructures settling in T2. For instance, EURO1 and STEP2 settlement was postponed until after T2 resumed operations. Eventually both systems settled successfully (no payments/files rejected). CLS pay-outs in CAD, CHF, GBP, SEK and USD as well as in EUR were suspended for several hours. Lastly, the impact on CCPs was limited as initial margin calls had been settled before the incident and intraday margin calls were either settled in contingency or in other currencies.

6.2. SECURITIES

Although, on 27 February, T2S only resumed normal operations at around 18:00, the number of transactions settled on that day turned out to be comparable to those of previous days. However, settlement efficiency experienced a drop to 90.1 % on the incident day (the average settlement efficiency in 2024 stood at 94.4%) even if the magnitude of the drop was not unprecedented compared to other observed drops as part of the usual day-to-day evolution of settlement efficiency.

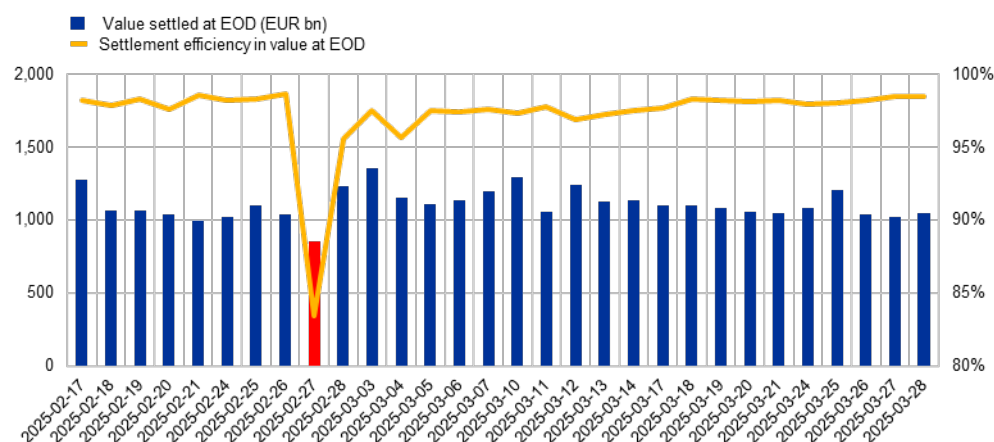
Chart 5: Total volume of settled transactions



In contrast to volume evolution, the value of transactions experienced an exceptional drop on 27 February. Settlement efficiency reached a low of 83.5% (the average settlement efficiency in 2024 stood at 97.7%).

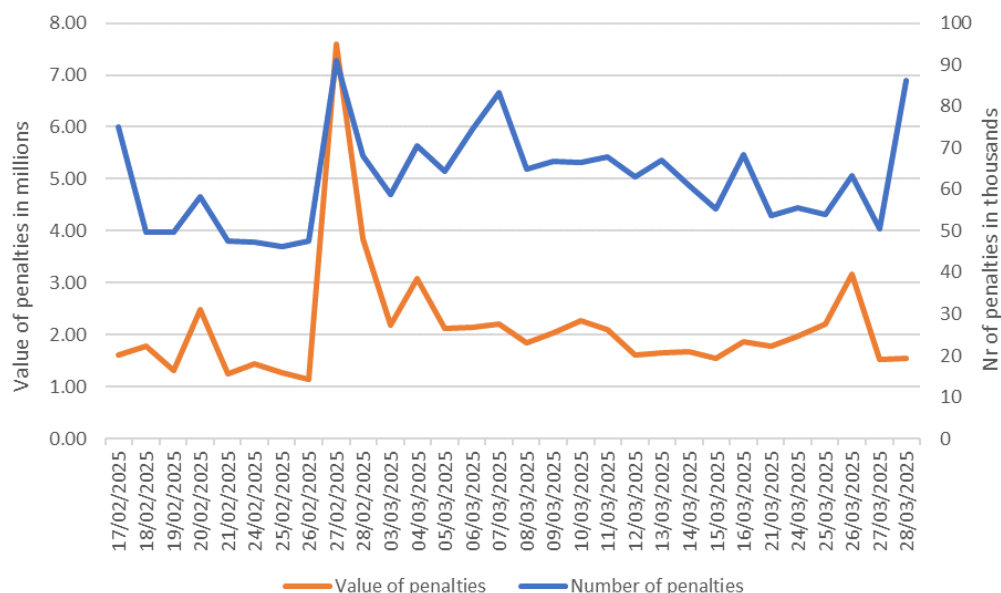
Furthermore, in contrast to the evolution of settlement efficiency for volume, the settlement efficiency for value took a few days before returning to the average levels.

Chart 6: Total value of settled transactions



The drop in settlement efficiency translated into a peak in the number and value of penalties with the detection date of 27 February peaked. The impact of the incident on the value of penalties was more profound than with volume with the latter level roughly tripling in magnitude compared to the average.

Chart 5: Total penalties (Late Matching Fail Penalties & Settlement Fail Penalties) for EUR per detection date



Given the implications on the penalties evolution following the incident, on 14 March 2025, ESMA published

a statement¹⁰ on the non-applicability of penalties with detection date 27 and 28 February 2025.¹¹ The 4CB developed a procedure, relying on already available functionality, to successfully remove the respective penalties during the week of 17 – 21 March 2025 with the T2S parameters for February penalties for the end of appeal period and the monthly reporting having been delayed to 25 and 26 March, respectively.¹²

Lesson: *ECB to discuss with ESMA and relevant national competent authorities the possibility to put in place a standard procedure for waving penalties after major incidents impacting settlement efficiency.*

6.3. SHORT-TERM INTEREST RATES

Despite its duration, the incident did not have any impact on short term rates and the €STR for that day had levels very similar to those of previous days.

6.4. EUROSISTEM BALANCE SHEET

The Eurosystem balance sheet for 27 February 2025 showed an increase of EUR 150 bn in current accounts and a decrease of EUR 200 bn in the deposit facility at the aggregate level. This suggests that some participants could not keep their systems open until the delayed closure of T2 at midnight. As a result, whenever these participants received late incoming payments, funds stayed on settlement accounts instead of being transferred to the deposit facility.

Lesson: *In line with the lesson noted in section 5.3, the ECB will collect detailed market feedback on the effectiveness of cut-off delays following a long-lasting outage and prepare with the T2 and T2S governances' general guidance for incident situations to support understanding the effectiveness of cut-off adjustments.*

6.5. MEDIA

The incident attracted media attention, both at international and national level, resulting in inquiries directed to the ECB. Articles covering the outage were published in almost all EU countries. However, neither the number of articles nor their tone compares to the ones in 2020, and reputational damage appears to be

¹⁰ www.esma.europa.eu/sites/default/files/2025-03/ESMA74-2119945926-3232_Statement_on_non-application_of_cash_penalties_due_to_major_incident_affecting_T2S_and_T2.pdf

¹¹ While multiple market participants had approached the ECB after the incident to waive penalties, the ECB in its role as the T2S operator is not competent to take any decision of not applying penalties, since (i) the regulatory obligations concerning penalties apply to CSDs and not to the providers of penalty mechanism service (i.e., not to the Eurosystem); and (ii) the Eurosystem has no competence as securities market regulator and/or supervisor'.

¹² It is noteworthy that, in contrast to the 27 February incident, there was no visible impact on the overall volume, value, settlement efficiency or penalties evolution for the business day of 14 March on which T2S was impacted by another major incident.

contained, also due to the apparent limited impact on end clients.

7. TREATMENT OF FINANCIAL COMPENSATION CLAIMED BY MARKET PARTICIPANTS

The incident may also trigger claims under both the TARGET Compensation Scheme and the T2S Framework Agreement.

7.1. T2 CLAIMS

The TARGET Compensation Scheme, as outlined in Appendix II of the TARGET Guideline, provides compensation for interest that could not be received, including covering the missed interest on funds that could not be placed as expected by the end of the day.

At this stage, the precise number of claims remains unknown. Under the TARGET Guideline, the deadline for submitting claims to the ECB is mid-May 2025.

7.2. T2S CLAIMS

T2S claims would encompass compensation for losses incurred. The procedure for such claims is detailed in the T2S Framework Agreement, Schedule 13 (Procedure for payment of claims), Section 1 (Procedure in respect of claims pursuant to Articles 32 and 33(1)(b)). As per the contractually agreed timeline, a letter indicating the intention to file a claim within 30 days of the incident was received. The participant now has up to 12 months to submit the claim itself.

Based on the MIB Mandate (see Annex 1, Section 2.2.L. of the MIB Mandate), the MIB is responsible for assessing claims submitted in accordance with Article 32 of the T2S Framework Agreement.

8. COMMUNICATION ASPECTS

8.1. COMMUNICATION WITH NCBs AND CSDs

Regular calls were organised throughout the incidents at settlement managers' or crisis managers' level. They allowed inter alia exchanging information about the 4CB progress, deciding on follow-up actions and agreeing on the communication to the market.

The tools used for holding such calls were technically stable with good audio quality. Difficulties were reported on some specific calls as the primary conference call provider had to roll-back the functionality to identify those participants that generated background noise. It should be noted that the new version of the tool, deployed after the incident, has already addressed this point and allows the organiser of the call to identify and mute any participant that creates background noise.

Although all central banks shall be in a position to hold T2 and T2S calls in parallel, this was avoided to the maximum extent. When needed, this allowed reporting on the outcome of the conference which had just taken place for the other service.

It was however noted that, when the decision to failover to the secondary site had to be taken, the sequential holding of the calls to the two groups has unnecessarily delayed the decision-making.

Lesson: *It should be assessed whether, in exceptional and pre-defined scenarios, joint T2 and T2S calls of settlement managers or crisis managers could be organised. For instance, when both services are affected by the same incident and decisions have to be taken jointly e.g. for activating an intra/inter-region failover or for activating a system recovery.*

8.2. COMMUNICATION WITH PARTICIPANTS

T2 and T2S participants were regularly informed about the incident and its evolution via the ECB website with more or less hourly updates. The communication published on the website was also reused by CSDs and NCBs via their proprietary channels. During the incident, the ECB and the NCBs made significant efforts to regularly update market participants on the status of the two services and the course of actions being taken to return to normal operations.

While acknowledging the improvements made to these regular communications compared to previous incidents, participants reported two difficulties. First, there was a misunderstanding on the T2S updates published as of 14:15 onwards and informing that, owing to the ongoing incident, the daily calculation of the penalties would be skipped and postponed to the following business day. Some participants misunderstood that the penalties had been waived for that day. Second, T2 participants would have appreciated earlier the recommendation to stop sending messages to the system during the incident. This recommendation came only at 13:00.

The T2 Crisis Communication Group (TC2) was activated, and three calls were held with T2 critical participants to provide further details on the situation and to facilitate the management of the incident on their end. Market participants appeared to have appreciated these efforts as well as the transparency provided. The only comment gathered ex post from critical participants on the activation of that group was the fact that they would have appreciated being prewarned (e.g. via SMS or email) some minutes ahead of the call.

The activation of the corresponding group on T2S side was considered during one of the first T2S crisis managers' calls on 27 February but was discarded since, at that moment, very little information could be exchanged with critical participants. The possibility of activating the group was not considered in later calls. In different discussions, market participants expressed disappointment with the fact that the T2S Crisis Communication Group was not activated despite the seriousness of the incident. It was acknowledged that, in the event of incidents affecting both services, the activation of one of the two groups shall trigger the activation of the second one, to avoid an asymmetry of information. Some of these considerations were taken into account already during the T2S incident occurred on 13-14 March, where the T2S Crisis managers, during each conference call, assessed the need to activate the T2S Crisis Communication Group. Due to the nature of the incident and limited spill-over across the TARGET Services, it was eventually decided not to activate the group, but instead rely on regular market communications published on the ECB webpage. Finally, during the major incident on 5 May, previously learned lessons and market feedback regarding crisis communication were effectively applied. Both crisis communication groups for T2 and T2S were activated to proactively inform market participants about the ongoing failover to the secondary site, including its impact on the business day and related cut-off times.

Lastly, the day after the incident, on 28 February at 17:00 CET, the Eurosystem posted a communication on the ECB website, which was confirming the root cause of the incident and the upcoming assessment.

Lessons: *The ECB to coordinate a review within the T2S governance of the T2S MOP standard communication templates based on the feedback from the market (e.g. especially with regard to proposing a clearer standard text when the T2S crisis managers decide to skip the daily calculation of penalties).*

The ECB to coordinate the update with the T2 governance of the T2 crisis management handbook so that the recommendation to stop sending (or to continue sending) is considered in the first T2 crisis manager calls.

The ECB will investigate how participants to T2 and T2S Crisis Communication Groups may be prewarned some minutes ahead of the launch of the call.

The ECB to elaborate criteria with the T2 and T2S governance which would guide the T2 and T2S crisis managers on the activation of the respective Crisis Communication Groups. These criteria will be shared with market participants.

ANNEX I: TIMELINE OF EVENTS AND COMMUNICATION

Date	Time	Service	Technical events	Communication
27/02/2025	8:05	T2S	Critical shortage of space in group buffer pool detected.	
	8:16	T2S	A2A issue in T2S detected by the Service Desk. The processing of A2A communication on the T2S side was stopped.	
	8:20	T2S		T2S Coordination desk informed about the unavailability of A2A traffic in T2S.
	8:35	T2S SM call		The T2S Service Desk reported about the issue with both A2A inbound and outbound communications impacting T2S since 08:07. This problem was affecting both Network Service Providers (NSPs).
	9:30	T2S SM call		The T2S Service Desk reported that the issue affecting A2A communication was still ongoing, with the root cause identified as a DB2 issue impacting both Network Service Providers (NSPs).
	9:40	T2S	DB2 colleagues informed the SD that increasing of the group buffer pool did not work and that they are investigating the root cause of this issue.	
	10:06	T2S	T2S channels to NSPs closed	
	10:08	T2	Critical shortage of space in group buffer pool detected.	
	10:15	T2	A2A processing stopped also in T2	
	10:15	T2S SM call		No further updates could be provided. CBFG claimed that the connection to the NSPs was closed by 4CB without informing the customers. It was decided to hold a Crisis Manager's call.
	10:17	T2		TARGET Coordination desk informed about the unavailability of A2A traffic in T2.

Date	Time	Service	Technical events	Communication
	10:30	T2S	Support teams attempted the orderly restart subsystems.	
	10:44	T2S CM call		The T2S Crisis Managers were informed of the issue affecting A2A inbound and outbound communication that had been occurring since 08:07. The root cause was supposedly a DB2 issue. The 4CB confirmed the closure of the communication channels with the Network Service Providers at 10:06. T2S Actors that had received rejections at Network Service Provider level may need to resend the messages once the issue is resolved (due to the retry mechanism). All new messages after the closure of the Network Service Provider channels would be queued on Network Service Providers' side. T2S Crisis Managers did not deem it necessary to contact the T2S Crisis Communication Group at this point in time. The T2S Crisis Managers took note that the ECB would inform the T2S Co-operative arrangement about the incident.
	10:46	T2 SM call		The 4CB confirmed that T2 also is facing an incident resulting in a slowdown in the processing of the Application-to-Application (A2A) transactions and User-to-Application (U2A) access to the CLM and RTGS graphical user interfaces (GUIs). There is no indication on when the issue can be solved. The issue is affecting the infrastructure and are not related to any NSP. The Settlement Managers agreed to escalate the issue to the Crisis Managers to assess the opening of ECONS II to process very critical payments.
	10:49	T2	T2 algorithms stopped.	

Date	Time	Service	Technical events	Communication
	11:30	T2 CM call		The CMs were debriefed on the issue which at that stage could not be confirmed to be related to the ongoing T2S issue. The 4CB would assess the possibility of a failover (Site recovery). The pending, highly critical CLS payments and margin calls would require the activation of ECONS II.
	11:49	T2	ECONS II was opened, as agreed in the T2 CM call.	
	11:40	T2	Request to stop the A2A communication with the NSPs by closing the T2 NSP channels	
	12:00	T2S	Restart of the T2S subsystems	
	12:00	T2S CM call		The T2S Crisis Managers were informed of the restart of the sub-systems. The T2S and common component Graphical User Interfaces became unavailable, and the penalty mechanism events were still running. The Crisis Managers agreed that during the next call potential contingency measures would be discussed.
	12:15	T2	Request to close NSP channels for T2 ended in error. Closure was not executed.	
	12:15	T2 SM call		The Crisis Managers agreed to: • Close A2A channels (inbound and outbound) (closed at 11:45) • Activate ECONS II exclusively for CLS payments and other very critical transactions (margin calls) (opened at 11:49)
	12:45	T2 SM call		The Central Banks were informed that there were some issues with the usage of ECONS II which were solved during the call. Furthermore, the CBs were informed that the A2A channels were NOT closed, contrary to what had been stated earlier.

Date	Time	Service	Technical events	Communication
	13:00	T2 CM call		The restart of the subsystems on T2 side to solve the underlying issue was supposed to be completed in ~2 hours (by 15:00). The cut-off for customer payments and the cut-off for interbank payments would be delayed by minimum 2 hours i.e. 19:00 and 20:00 CET respectively. The initial slowdowns in ECONS II were overcome. Some of the pending CLS transactions and margin calls were processed. The processing of the remaining ones would be verified in the course of the following Settlement Managers' call. At this stage 4CB explained performing a site/regional recovery would not be advisable until the nature of the issue remained unclear. The CMs were informed about the failure of the closure of the A2A queues. The Crisis Managers decided to activate the TARGET Crisis Communication Group at 14:30.
	13:00	T2S CM call		The T2S Crisis Managers were informed that the sub systems shutdown was successful which resulted in the buffer pools being enlarged. The next step in the resolution activities would be to restart the subsystems. The 4CB reported that this would require a minimum of two hours to complete. The T2S Crisis Managers agreed to delay the start of DVP by at least three hours for EUR and DKK.

Date	Time	Service	Technical events	Communication
	13:40	T2 SM call		The restarting of the subsystems ran into different technical issues but it was progressing, the process is expected to be completed by 15:00. Once the system is restarted, cut-offs would need to be adjusted as follows: The cut-off for customer payments and the cut-off for interbank payments will be delayed by minimum 2 hours i.e. 19:00 and 20:00 CET respectively. Slowdowns in ECONS II were overcome. The TARGET Crisis Communication Group will convene at 14:30 for the very first time. NCBs with outstanding CLS payments were requested to process the transactions ASAP with the support of the 4CB acting on their behalf. It was confirmed that ECONSII would remain open for as long as required. The 4CB will put in the parameter that allows the processing of liquidity transfers from TIPS to the ECB TIPS transit account in ECONS II (CR-11).
	14:00	T2S CM call		The T2S Crisis Managers were informed that restart of the subsystems was ongoing and activities foreseen to be finished by 15:00 as originally forecasted. Due to the delay, Crisis Managers agreed to apply the MOP procedure related to the skip and reschedule of the Penalty Mechanism related events. The T2S Crisis Managers would assess if a delay in the start of DVP cut-off for DKK is needed in the next Crisis Managers Conference Call.
	14:01	TIPS	Start of the slowdown in the response time for Instant Payments and Liquidity transfers.	
	14:30	TC2 call		The critical participants were informed on the main elements of the ongoing incident.

Date	Time	Service	Technical events	Communication
	15:00	T2S CM call		The T2S Crisis Managers were informed that the root-cause of the incident was found in a hardware component of the control unit storage system. In order to solve the incident a site recovery is required. Crisis Managers agreed to trigger a site recovery in T2S, and to coordinate with the TARGET Coordination Desk. Additionally it was proposed that the DKK IDVP cut-off would be postponed in line with the EUR IDVP cut-off by 3 hours.
	14:59	TIPS	Active monitoring from the support team allowed to overcome the issue by the restart of the nodes.	
	15:00	TIPS		TARGET Coordination desk informed about the issue in TIPS
	15:20	T2 SM call		The Central Banks were informed that: The ongoing issue in T2 has a negative knock-on effect on TIPS. In particular the impact is on the settlement of instant payments and liquidity transfers between TIPS and other services for both EUR and SEK. Slowdown in responses and rejections are possible.
	15:27	T2	ECONS II experienced again issues. It was detected that U2A messages were not processed correctly and were landing in the ECONS II BO queue.	
	15:30	T2 CM call		The 4CB informed about the latest information: The restart of the different partitions on T2 side did not solve the underlying issue. Contrary to the previous assumption performing a site recovery is now expected to fix the issue. The T2 Crisis Managers agreed with the site recovery. The Crisis Managers decided to activate the TARGET Crisis Communication Group. It would convene at 16:00.
	15:39	T2/T2S	Site recovery started, after the green light was given in the CM call.	

Date	Time	Service	Technical events	Communication
	16:00	TC2 call		The critical participants were informed on the main elements of the ongoing incident.
	16:11	T2	ECONS II issues were resolved after the application restart. The root cause was a JBOSS application, which needed a restart.	
	16:30	T2S CM call		The T2S Crisis Managers were informed that the failover activities to the secondary site were still ongoing due to the need to verify the consistency of data. A follow up Crisis Managers conference call would be organised at 17:15 to assess the status of the failover. The need to apply further delays of the IDVP cut-off also would need to be assessed (at that time scheduled at 19:00 for both EUR and DKK).
	16:50	T2 CM's call		The site recovery was taking longer than expected and normal operations were expected to resume by 17:30. A decision on further adjusting the cut-off times for customer and interbank payments would be made once normal operations have resumed. The Crisis Managers agreed not to activate the TARGET Crisis Communication Group to inform them for this additional delay.
	17:05	T2/T2S	Around 17:05 the system was re-starting in minimal mode due to the need perform consistency and integrity checks.	Around 17:05 the system was re-starting in minimal mode due to the need perform consistency and integrity checks.

Date	Time	Service	Technical events	Communication
	17:15	T2S CMs' call		The T2S Crisis Managers were informed that the failover activities to the secondary site were completed, and the system restarted in "minimal mode" - full availability would be reached in the following hour. T2S Service Desk estimation is that T2S normal operations should resume by 18:30. Crisis Managers agreed to further postpone the IDVP cut-off for EUR and DKK from 16:00 until 22:00 to ensure that the backlog of operations could be sent for settlement to T2S. During the call it was proposed by a Crisis Manager to discuss and agree what to do with the potential penalties that could be triggered due to the ongoing incident, this item was postponed to the next Crisis call.
	17:30	T2 CMs' call		The site recovery was technically completed at 17:15 but 4CB support teams were still performing the needed checks expected to be completed by 18:30. Shortly afterwards, normal operations were expected to resume. A decision on further adjustments of the cut-off times for customer and interbank payments would be made once normal operations have resumed. The Crisis Managers agreed not to activate the TARGET Crisis Communication Group to inform them for this additional delay.
	17:43	T2/T2S		Restarting of the system in full mode expected to last additional 15 minutes.
	18:17	T2/T2S		A2A channels reopened.
	18:20	T2	Customers are getting rejection messages with the E018 error code for those transactions, which were sent before the issues have started. The validation was already performed in the system and changing the schedule (moving the cut-off time) did not affect these transactions, so as soon as the channels were open, the rejections were sent out.	

Date	Time	Service	Technical events	Communication
	18:30	T2S CMs' call		The T2S Crisis Managers were informed that the site recovery was completed, and communication channels were successfully opened at 18:20. T2S Operations resumed. ECMS Crisis Managers agreed to follow up in an ad-hoc OMG call how to manage any potential spill overs in the number of penalties due to the current incident.
	18:30	T2 CMs' call		The precautionary integrity and consistency check from the 4CB support teams were completed at 17:50 and normal operations resumed at ~18:00. Several NCBs reported rejections with the reason "out of cut-off time". Participants were encouraged to monitor the rejections and resubmit those transactions before the cut-off is reached. It was agreed to close ECONSII.
	19:02	T2	ECONS II was closed.	
	19:28	T2S	Issue in outgoing flow in T2S detected.	
	19:30	TC2 call		The critical participants were informed that the site recovery was successfully performed and that T2 recovered operations. They were also informed about the changed cut-offs.

Date	Time	Service	Technical events	Communication
	20:00	T2S SMs' call		The T2S Coordinator debriefed the Settlement Managers on the outcome of the CM's call, and that the backlog of messages have been processed. Settlement Managers facing issues with messages processing should contact the T2S Service Desk bilaterally. T2S Settlement Managers agreed to process the penalty mechanism events, despite the fact that it was agreed at crisis managers level (not) to process them, understanding that their processing today is safe, and shall prevent issues during the following business day.
	20:03	T2S	Massive amount of messages in a LCMM BO which then triggered 300k+ incoming instructions to be processed and the relevant messages to be generated.	
	21:20	T2 SMs' call		The settlement managers were informed that, due to the earlier incident, several hundred thousand of messages were sent to a backout queue and being reinjected. The processing of the backlog was expected to be completed in ~20 minutes. Nonetheless, the number of outbound transactions was still increasing and therefore not expected to be completed before the IDVP cut-off at 22:00. As a result, a further 1-hour delay of the IDVP would be requested.
	21:38	T2S CM call		The Crisis Managers agreed to postpone the IDVP cut-off for EUR and DKK by 1 additional hour to be able to process the backlog of messages that have been impacted. Additionally, T2S Crisis Managers were updated that the T2S Settlement Managers, contrary to what was communicated, agreed that the T2S penalty mechanism processing for the business day of 27 February would need to be completed ahead of the Free-of-Payment (IFOP) cut-off, to avoid potential operational risks on the following day.

Date	Time	Service	Technical events	Communication
	23:00	T2S	RTS closure first cut-off (BD 27/02).	
28/02/2025	0:00	T2S	RTS closure last cut-off (BD 27/02).	
	0:02	T2	RTS closure first cut-off (BD 27/02).	
	0:19	T2	Successful Data Propagation (BD 27/02).	
	0:25	T2	RTGS closure of service (BD 27/02).	
	0:45	T2S	Business day change of date to 28/02.	
	0:57	T2S	SDCR blocked in T2S impacting the start of NTS.	
	1:04	T2	CLM closure of service last cut-off (BD 27/02).	
	1:12	T2	T2 Business day change of date to 28/02.	
	1:18	T2	CLM RTS opening.	
	1:35	T2S	Jobs were restarted to proceed with the SDCR event in T2S.	
	1:40	T2	RTGS RTS opening.	
	1:42	T2	T2 Liquidity Transfer settlement.	

Date	Time	Service	Technical events	Communication
	1:56	T2S SM call		The T2S Settlement Manager were informed about a longer duration of the event SDCR - Check End of SD Changes Revalidations. Shortly before the call the event closed at 01:53. C1P0 was expected to start at 2:45. If this was not the case another call would be scheduled.
	2:20	T2S	C1P0 event started at 02:20.	
	2:29	T2S SM call		It was announced that the NTS event C1P0 has started at 02:20.
	2:30	T2S	C1S0 event in T2S started and the issue finally resolved.	

ANNEX II: LIST OF FOLLOW-UP MEASURES

ITEM REF	ACTION	DEADLINE/COMPLETION DATE	OWNER	STATUS
1	Replacement of faulty physical component	28/02/2025	External Vendor	Completed
2	Detailed checklist for vendor's technical support, to be followed in case of the fault reoccurrence to prevent the impacts to manifest.	28/03/2025	External Vendor	Completed
3	Vendor to develop and deploy the update to address the occurred vulnerability.	Q2 2025	External Vendor	Completed
4	Enhancement of the existing alarm and the introduction of an automatic call to the relevant team.	19/03/2025	4CB	Completed
5	Assess and discuss the alignment of decision-making practices across T2 and T2S for the site and regional recovery activities with the T2 and T2S governances	September 2025 (for T2S) October 2025 (for T2) ¹³	ECB/4CB	To be started
6	Review the Business Continuity Management and the IT Service Continuity Management as a follow up of the incident.	09/04/2025	4CB	Completed
7	ECONS II to cope with a higher number of active user sessions than currently envisaged.	12/05/2025	4CB	Completed

¹³ The difference in the dates reported for T2 and T2S actions are due to the different finalisation dates for the relevant MOP versions for 2025 between the governances.

8	Swiftly implementation of T2 CR-121.	tbd ¹⁴	4CB	To be started
9	Participants relying on T2S for the provision of collateral for settlement in ECONS II shall have back up plans to cover the scenario where T2S is not available. In addition, the Eurosystem will be investigate further possible sources for liquidity injection to ECONS II accounts and make the necessary adjustments to the list of eligible options described in the TARGET MOP.	Q4 2025	ECB	To be started
10	Operational Readiness Tests involving ECONS II shall cover the scenario where T2S is not available.	Q4 2025	ECB	To be started
11	Participants shall be reminded of the different categories of transactions to be settled under contingency as well as the steps undertaken to process them sequentially when ECONS II is activated. Specific presentations could be prepared and shared with National Stakeholders Groups.	Q4 2025	ECB	To be started
12	T2 procedures shall be further enhanced to clarify that other critical transactions not clearly covered by the Very Critical /Critical definitions found in the TARGET Manual of Procedures (MOP) can be proposed for settlement in ECONS II during the crisis/settlement managers' conference calls and shall be assessed on a case-by-case basis. Furthermore, the current definition of Very Critical/Critical transactions will be reviewed in view of the experience gathered in this incident.	Q4 2025	ECB	To be started
13	Collect detailed market feedback on the effectiveness of cut-off delays following a long-lasting outage and prepare with the T2 and T2S governances' general guidance for incident situations to support understanding the effectiveness of cut-off adjustments.	Q4 2025	ECB	To be started
14	Reflect with the T2 governance upon general guidance as to how longer incidents would typically be handled including extreme scenarios under which the completion of the business day would be executed on ECONS II. The outcome of this work should be shared with National Stakeholder Groups and reflected in the organisation of Operational Readiness Tests (ORTs).	Q4 2025	ECB	To be started

¹⁴ The change request is currently under preparation and once finalised it will be allocated to one of the future T2 releases.

15	Discuss with ESMA and relevant national competent authorities the possibility to put in place a standard procedure for waving penalties after major incidents impacting settlement efficiency.	Q4 2025	ECB	Ongoing
16	Assess whether, in exceptional circumstances, joint T2 and T2S calls of settlement managers or crisis managers could be organised. For instance, when both services are affected by the same incident and decisions have to be taken jointly e.g. for activating an intra/inter-region failover or for activating a system recovery.	Q3 2025	ECB	To be started
17	Coordinate a review within the T2S governance of the T2S MOP standard communication templates based on the feedback from the market (e.g. especially with regard to proposing a clearer standard text when the T2S crisis managers decide to skip the daily calculation of penalties).	Q3 2025	ECB	To be started
18	Coordinate the update with the T2 governance of the T2 crisis management handbook so that the recommendation to stop sending (or to continue sending) is considered in the first T2 crisis manager calls.	Q4 2025	ECB	To be started
19	Investigate how participants to T2 and T2S Crisis Communication Groups may be prewarned some minutes ahead of the launch of the call.	Q2 2025	ECB	Ongoing
20	Elaborate criteria with the T2 and T2S governances which would guide the T2 and T2S crisis managers on the activation of the respective Crisis Communication Groups. These criteria will be shared with market participants.	Q3 2025	ECB	Ongoing