SIDC OPSCOM report on Critical Incident

Experienced on 25th of July 2022

External version

18/08/2022

Executive summary

The report informs the Stakeholders on global critical incident at SIDC that happened on 25th July after a message from XBID core failover was received and Shared Order Book (SOB) WebGUI, was impossible to access, which is the backend of SOB platform capable of major functionalities like Market Halt. XBID System was automatically halted. The incident happened because of the missing validation of quantity when modifying an iceberg order. Herewith mentioned missing validation is the check that quantity adheres to lot size If an Iceberg order is matched in a way that it tries to route the invalid quantity that cannot be divided by the applicable lot size, it crashes the core. The issue resulted in 46 minutes of unexpected outage in the XBID operation.

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1. Introduction

This report serves to fulfill the obligation under CACM on reporting of unexpected downtimes of Market towards Stakeholders.

This report is structured as follows. In Chapter 2, SIDC is described. In Chapter 3, the normal operational process as covered in the operational procedures with respective timings. In Chapter 4, the incident management process applied when critical incident occurs is described. In Chapter 5, a description of the incident, including inter alia the timing and the root cause. Finally, in Chapter 6, the mitigation measures to resolve the issue, and the lessons learnt are presented.

2. Single Intraday Coupling

SIDC creates a single EU cross-zonal intraday electricity market. In simple terms, buyers and sellers of energy (market participants) are able to work together across Europe to trade electricity continuously on the day the energy is needed.

An integrated intraday market makes intraday trading more efficient across Europe by:
- promoting competition
- increasing liquidity
- making it easier to share energy generation resources
- making it easier for market participants to allow for unexpected changes in consumption and outages

As renewable intermittent production such as solar energy increases, market participants are becoming more interested in trading in the intraday markets. This is because it has become more challenging for market participants to be in balance (i.e. supplying the correct amount of energy) after the closing of the day-ahead market.

Being able to balance their positions until one hour before delivery time is beneficial for market participants and for the power systems alike by, among other things, reducing the need for reserves and associated costs while allowing enough time for carrying out system operation processes for ensuring system security.

The first go-live wave was in June 2018 and included 15 countries. A second go-live with seven further countries was achieved in November 2019, a third go-live including Italy in September 2021. The picture below depicts the countries in first, second and third waves and the expected extension for the fourth wave.

Countries coupled Intraday with 4ᵗʰ SIDC Go-Live

■ Countries coupled in 1ˢᵗ, 2ⁿᵈ and 3ʳᵈ go-live

■ Countries to be coupled in 4ᵗʰ go-live (end 2022)
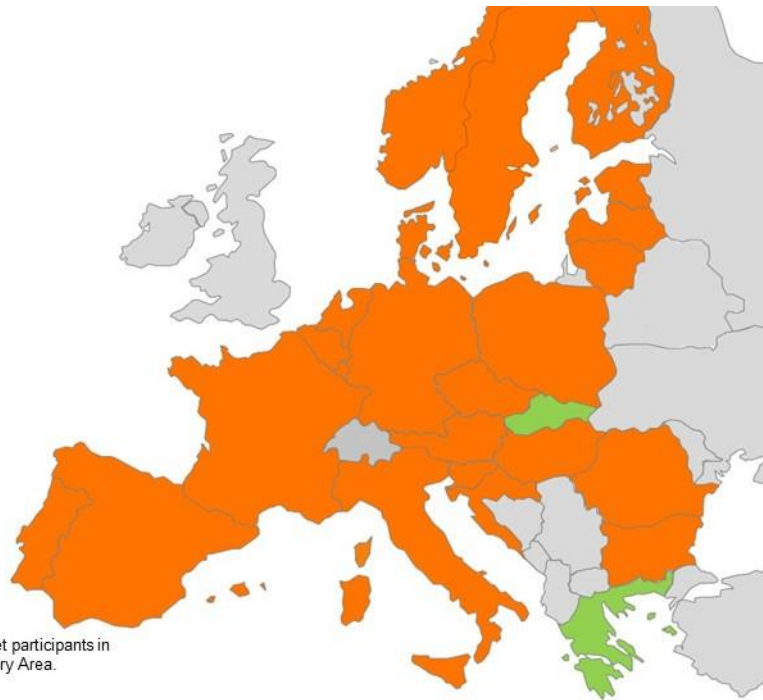
Note: Luxemburg is part of the Amprion Delivery Area. Market participants in Luxemburg have access to SIDC through the Amprion Delivery Area.
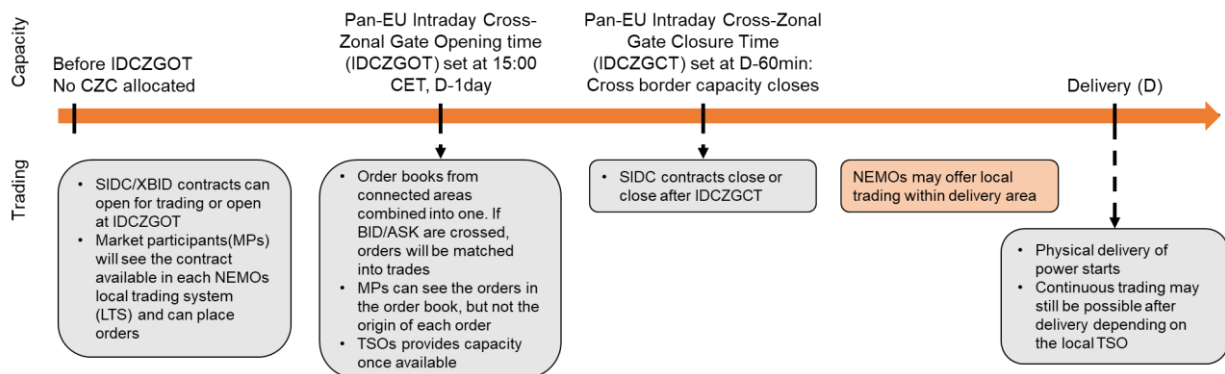
See for more information the following websites:
- ENTSO-E: https://www.entsoe.eu/network_codes/cacm/implementation/sidc/
- NEMO Committee: http://www.nemo-committee.eu/sidc

3. Normal Operational Process

This section describes normal operational process and how the incidents are resolved following incident management process.

The normal operational process is described in the timeline below:

Capacity

Before IDCZGOT
No CZC allocated

Pan-EU Intraday Cross-Zonal Gate Opening time (IDCZGOT) set at 15:00 CET, D-1day

Pan-EU Intraday Cross-Zonal Gate Closure Time (IDCZGCT) set at D-60min: Cross border capacity closes

Delivery (D)

Trading

- SIDC/XBID contracts can open for trading or open at IDCZGOT
- Market participants(MPs) will see the contract available in each NEMOs local trading system (LTS) and can place orders

- Order books from connected areas combined into one. If BID/ASK are crossed, orders will be matched into trades
- MPs can see the orders in the order book, but not the origin of each order
- TSOs provides capacity once available

- SIDC contracts close or close after IDCZGCT

- NEMOs may offer local trading within delivery area

- Physical delivery of power starts
- Continuous trading may still be possible after delivery depending on the local TSO

4. Incident Management Process

An incident is an unwanted event in the XBID system (SIDC's IT solution), local NEMO or TSO systems connected to XBID or the communications channels connecting them. An incident that requires triggering an IC call has the following characteristics: the issue(s) causing the incident cannot be solved through a (Local) Backup procedure and can thereby breach a deadline (e.g. gate closure or gate opening) of the Single Intraday Market Coupling.

The operational parties agreed to follow the Incident Management procedure to handle incidents. The Incident Management procedure assumes that communication to relevant 3rd parties (e.g. CCP, Shipping Agent, Explicit Participants, etc.) is done by the involved TSOs and NEMOs by following their local procedures.

As a general principle, the Incident Management procedure describes the handling of incidents, which includes the operation of the Incident Committee (IC), the fallback solution to be applied

following the procedures, e.g. closing and re-opening of Interconnectors, closing and restarting of market or delivery area(s) or trading service and corresponding local procedures.

The IC is only to be triggered for the management of a critical or major incident of the XBID system, critical or major incident of a Transit Shipping Agent Systems and Shipping Agent default. Any other incident only can trigger the IC when the incident fulfils the pre-defined criteria. In order to prevent the IC call to be triggered for incorrect reasons, the parties perform an initial internal check and a cross check with other parties on the incident before raising the incident as a central issue

As soon as an incident occurs that impacts any of the Single Intraday Market Coupling processes, an Incident Committee (IC) needs to be started, which will be convened by the IC SPOC.

Participants to the IC identify the issue(s), assess and agree on potential solutions. The IC SPOC tracks all relevant information on the incident, the discussions during the IC and the decision taking during the IC call.

At the start of the IC the IC SPOC and/or the incident reporter presents the issue. The parties discuss actions already taken by the affected party and immediate actions deemed necessary. The parties further consider correct classification of the incident.

The parties discuss potential solutions for the incident, where needed on recommendation of the service provider. Once a solution has been identified the parties decide on the application of the agreed solution.

During the IC the parties also decide on communication to the Market Participants deemed necessary.

Within typically 2 hours after closing the IC the IC SPOC will create/finalize the IC report and makes the IC report to all NEMOs and TSOs. The involved parties need to review, and if applicable, update the IC report.

5. Incident Description

Incident was reported after a message from XBID core failover was received and SOB WebGUI was impossible to access.

5.1 Timeline

System failure	2022/07/25 14:34
Triggering of I Incident Committee	2022/07/25 14:44
System recovered	2022/07/25 15:10
Green light from Supplier	2022/07/25 15:10
Green light from all parties to start trading	2022/07/25 15:10
Restart of trading	2022/07/25 15:20

5.2 Course of Event

On 25/07/2022 at 14:34, a message from XBID core failover was received and SOB WebGUI was impossible to access. The Webgui is the backend of the Shared Order Book platform, accessible by the NEMOs, from where the whole XBID market or different market areas can be halted or set to trading, amongst other major configurational settings. At 14:44 an ICCC was opened and every NEMO confirmed that they were having issues in their connection to XBID. System was automatically halted. Supplier said that they were investigating the issue. Between

14:35 and 15:08 messages about core being down and being recovered were received. At 15:10, Supplier announced that the system was stable. After checking that everyone could connect to XBID (apart from EPEX who seemed to have some issues with the reconnection) it was agreed to set the system to trading at 15:20. At 15:20 was set to trading and with the approval of every NEMO, ICCC was closed.

5.3 Root Cause

The issue happened because of the missing validation of qty when modifying an iceberg order. The issue is reproducible by the modification of ICEBERG order qty to a value that does not adhere to the lot size of the product. In this particular case, a lot size of 100. where the order quantity has been modified to 8140 which is not divisible by 100. The error of modifying to the invalid quantity of 8140 came from the market participant who placed the ICEBERG order. However, there should have been a validation check of the order modification on the XBID systems, which should have marked this modification as invalid, and prevented it from being effective. This means that, added to the human error, there was a bug on XBID Shard Order Book.

The faulty request (see *qty* attribute):

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:OrdrModify        xmlns:ns2="http://www.deutsche-boerse.com/m7/v1"
ordrModType="MODI"><ns2:StandardHeader marketId="XSOB"/>
<ns2:OrdrList>
<ns2:Ordr         ordrId="2052542027"              clOrdrId="e1-
market1_1658748711198_4383_14" px="XXXX" qty="8140" displayQty="5000"
ordrExeRestriction="NON" type="I" validityRes="GFS" revisionNo="1"/>
</ns2:OrdrList>
</ns2:OrdrModify>
```

If the ICEBERG is matched in a way that it tries to route the invalid quantity, it crashes the core. Note that this might not happen in all cases, as the order might get matched only partially with qty which is correct, from the lot size's perspective.

Root Cause: Missing validation.

5.4 Impact

Downtime	46 minutes
Critical business process impacted	Matching/Order entry or order modification
Procedural impact	N/A

On 26/07 TSO Capacities for Germany were not available.

In the first dedicated ICCC, triggered by EPEX, TSOs were not aware that they could manually publish capacities and said that only CMM Central Admin could manually publish the capacities. When approached, CMM Central Admin said they weren't able to do it either.

However, Amprion triggered a second dedicated ICCC two hours later. There, Amprion announced they had found out how to manually publish capacities. AMP and the rest of German TSOs updated them accordingly, and trading across German areas was possible again.

Based on the Supplier's Root Cause Analysis the system functioned as designed. Manual publishing of capacity should be performed if a core down event occurred around the pre-set auto-publishing times.

For Germany's interconnectors, automated publishing occurs 15 minutes before the gate opening for the next day. That means that at 14:45 CEST (every day), the capacity for the next day is published. However, this first auto-publish will not happen after the gate is open. In this case after 15:00.

The timeline for 25/07:

System failure	2022/07/25 14:34
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At this point automated publish will not happen and publish needs to be done manually. However, manual publishing of capacities for Tuesday, 26/07. was done on Tuesday 26/07 at 16:34 CEST, instead of on 25.07 when the core was recovered. This means that for 16h and 34 minutes, no Cross border capacity between German areas was available on 26.07.

6. Mitigation measures and lessons learnt

To ensure successful restoration of the operations the following measures have been taken:

Supplier's Short-term Solution	XBID Core was restored
Supplier's Long-term Measures	Fix to be developed and deployed. The Fix will assure that there's a validation check whenever an Iceberg order is modified, so that if the new quantity doesn't adhere to the lot size, the change will be invalid and won't be effective, preventing the matching of the invalid quantity.
SIDC Project Lessons Learned	TSOs using auto-publish functionality were reminded that manual upload of capacities is necessary after XBID crash (first auto-publish will not happen after the gate-opening).