UMSUG – CMS Sub-Group – Considerations and Recommendations

Tuesday, 07 September 2021

Contents

1. Introduction

1.1. Purpose

This document captures a series of considerations and recommendations from the CMS sub-group established following consideration of paper 03 at UMSUG 128 in June 2020.

Prior to developing change proposals to amend BSCP520 or to amend the test specifications it is necessary to understand the problems the group is seeking to resolve and agree the proposed solutions.

The comments below are in note form at this stage of consideration.

1.2. Goals

- To ensure CMS systems work correctly at the time of approval
- To ensure CMS systems continue to work correctly following approval
- Ensure settlement data is accurate

1.3. BSCP Obligations

BSCP520 says:

> **4.6.3.3 Functions of a Dynamic Meter using CMS Data**
>
> A dynamic meter may use the detailed switching and load information recorded and reported by a Central Management System to allocate Half Hourly consumption data. In this case the CMS itself may be operated by the MA or the Customer, however the MA system (the system that is used to calculate the consumption), must be operated by a Meter Administrator Qualified in accordance with BSCP537, who retains the overall Settlement responsibility for the quality of the data submitted by the Customer via the CMS.

This puts the obligation under the BSC on the Meter Administrator (MA) to ensure that a CMS is operating correctly, however some of the issues causing settlement errors are outside the control of the MA.

2. Operational issue - excessive CMS under reports

2.1. Problem

1. The inventory submission is clearly wrong by quoting CMS Unit References in the Control File that do not appear in the daily Event Logs. There may be corresponding Over Reports, i.e. CMS Unit References in the Event Log not in the Control File.
2. The CMS system produces invalid Event Log data that the MA cannot process.
3. The CMS does not produce subsequent Event Logs (i.e. Version 2, etc) that capture missing events missing from Version 1 of the log, although this may not always cause high under reports.
4. CMS provider generates invalid Event Logs – incorrect format, truncated files, check sum, etc.
5. The MA is failing to process the event logs successfully

2.2. Suggested remedy and rationale

1. At the end of each month the MA prepares a count of Under Reports for a day at the beginning of the month, and compares this to the total number of CMS items in the most recent Control File for the Sub Meter. Waiting to the end of the month for a day at the start of the month allows for any updated Control File and late Event Logs to be processed.
2. Report any CMS Sub Meters to the UMSO with an excessive number of Under Reports, say more than [5]%, of under reports of CMS items in each CMS Sub Meter Control File. For

example, 1,000 under reports from an inventory of 10,000 is 10% failure, 1,000 failures from 100,000 is a 1% failure.

3. Add an obligation into BSCP520 to require UMSOs to follow up with the customer, identify cause and agree an action plan to resolve.
4. The UMSO has the obligation to verify the customers inventory for accuracy. If an excessive number of under reports is identified then the inventory does not reflect the installed equipment correctly, a breach of the connection terms.
5. A new inventory(ies) is prepared by the customer reducing the failure rate in line with the agreed action plan.
6. This remedy should acknowledge that there will always be a small number of CMS failures on a daily basis.

2.3. Recommendation

The sub-group were supportive of the suggested remedy to reduce the number of under reports.

The sub-group recommends:

➤ Adopting the suggested remedy by amending BSCP520 accordingly.

3. Improve the CMS approval process

3.1. Problem

1. It is suspected that some CMS providers may have 'fudged' the test evidence and witness testing.
2. Evidence in the test report may be unclear.
3. Testing has not been completed on a fully working pre-production system.
4. CMS event logs have been produced based on BST in the summer.
5. Some new CMS Providers are using an 'existing approved system' which has not been subject to testing under their control. Upon "going live" it becomes apparent that they do not know how the system works, or properly understand the operational requirements, or have not configured it correctly.

3.2. Suggested remedy

1. Testing to be carried out by an Qualified MA rather than Elexon.
2. Each new applicant should be required to provide relevant hardware to a MA who will perform the standard test scenarios, and any other testing that they determine to be required.
3. Hardware to be available to the MA includes:
    a. Lighting CMS - lamp, node, segment controller;
    b. mCMS – charging cable, vehicle emulator, in-street hardware.
4. MA to be given access to the CMS to programme a node (lighting) using pre-production software.
5. Witness the lamp switch at the programmed on/off/dim times.
6. Configure load on mCMS hardware at defined times and levels.
7. Download an event log from the pre-production operational system, that has been generated by the system automatically, via FTP the following day.
8. The MA will run a sequence of tests – (test scenarios to be revisited).
9. Issues/concerns will be raised with the CMS provider by the MA to enable problems to be fixed prior to completion of the tests.
10. A report of the CMS system performance will be prepared by the MA, evidencing real data from a pre-production system.
11. This report is reviewed by Elexon/UMSUG.
12. Elexon may choose to witness any of the tests.
13. The MA is responsible for the performance of the MA system (including the CMS as stated in BSCP520 4.6.3.3) so they are vouching for the correct system performance by reporting that the tests have passed.

14. The challenge will be to ensure the rigor of the testing vs. the commercial desire to allow a CMS provider to pass.

3.3. Approaches

Two approaches were considered by the sub-group:

1. approve the CMS for use by all accredited MAs, or

2. approve the CMS for use by a specific MA using that MA's approved Equivalent Meter (EM).

3.3.1. Approve the CMS for all MAs under the BSC

1. The CMS system is approved for use with all MAs and their associated EM.
2. This means an MA not involved in the testing is given an 'approved system'.
3. Once successfully tested, other MAs may repeat the tests, this would be at their cost. However, if they found issues they would need the power to be able to escalate to Elexon.
4. The subsequent MAs will provide a report of the issue(s) to Elexon who will review and query with the initial MA why aspects of the CMS apparently fail. This could indicate a failure in testing rigor.

3.3.2. Approve the CMS for use with a specific MA & their EM only

1. The initial MA testing the system will inevitably spend time explaining and highlighting and resolving any issues with the CMS provider.
2. Once successfully tested, other MAs may repeat the tests, but this should be minimal time as the 'bugs' will have already been eliminated and the tests should run through quickly first time.
3. The subsequent MAs will provide their reports to Elexon who will review and add to approval list, or query with the initial MA why aspects apparently fail.

3.4. Recommendation

The sub-group were supportive of this suggested remedy to testing of new CMS systems.

The sub-group recommends:

➤ Adopting the suggested remedy.
➤ Adopting approach 1. i.e. approving the CMS for use with all accredited MAs.
➤ Developing BSCP520 and making Test Specification changes to reflect this approach.

4. CMS with suspect or incorrect data

4.1. Problems

1. The CMS does not produce subsequent Event Logs (i.e. Version 2, etc) that capture missing events missing from Version 1 of the log, although this may not always cause high under reports.
2. CMS provider generates invalid Event Logs – incorrect format, truncated files, check sum, etc.
3. CMS provider ceases to operate (goes bust) or defaults everything to day-burning (e.g Harvard administrators).
4. Switching events reported in BST during the summer when they should be UTC throughout year.
5. The time of communication with the node is reported as the time of a switching event, rather than when the item actually switched.

4.2. Suggested remedy

1. If the MA identifies erroneous CMS event data, the MA should make the CMS provider and customer fully aware of the concern.
2. If not resolved within [x] days, the MA reports the concern to Elexon.
3. Elexon to approach CMS provider to require resolution of the issue. If the issue is not resolved, Elexon can recommend under the BSC to ultimately remove the CMS provider approval, and/or instruct UMSO or MA to take certain action to improve settlement data (for example cease to use CMS event data and default to a specific switch regime).
4. Revise BSCP520 to allow CMS approval to be revoked under the BSC where it is determined a CMS is no longer providing accurate data.
5. The CMS Provider may work with an MA to obtain re-approval of the CMS.

4.3. Recommendation

The sub-group recommends:

> ➤ Adopting the suggested remedy

5. Improve the assurance of CMS systems during their life

5.1. Problem

1. Over time the CMS software may be updated without providing assurance through a re-approval process that it continues to meet the CMS approval requirements.
2. For example, Mayflower has been updated to a version 2 that includes 2 way communication, whilst it was still thought to be a "broadcast switching events only" system. Mayflower: Complete Lighting Control Systems (mayflowercontrol.com)
3. In addition, the nodes/on-street equipment will be updated with the introduction of new updated hardware.
4. A CMS system can be sold to new operators who do not have the necessary expertise to operate it in line with BSCP520 requirements.
5. The CMS Operator's staff change such that there is no understanding/knowledge of how the CMS operates undermining the effective operation.

5.2. Suggested remedy

1. Where a material change to the CMS is identified, it may be appropriate for an MA to retest the CMS to positively report that the system still operates, repeating the current defined set of tests.
2. The testing would be performed against the current test requirements. If a system fails to pass a test or will not be updated as it is being phased out, then Elexon can give a temporary dispensation.
3. This will either provide assurance that the equipment continues to operate as intended or will highlight failures which will require addressing.
4. If the failures are not resolved then the CMS approval may be removed.

5.3. Recommendation

The sub-group were not supportive of this proposed approach to re-testing of CMS systems. It is unclear whether the risk warranted the cost/effort of the retest considering that the CMS system is presumed to be in operational use and any issues will have been identified as per Section 4 above.

The sub-group recommends:

> ➤ Not adopting the suggested remedy

6. Document review

6.1. Problem

The following documents are not clear or accurate and require review:

Central Management Systems - Customers

Central Management System Equivalent Meter Test Specification The title of this document is misleading it is the specification for a lighting CMS.

Central Management Systems – Manufacturers

Measured Central Management System Test Specification

The BSC CMS unmetered web pages

6.2. Suggested remedy

1. Use the mCMS test specification as the basis for future development. The mCMS document has been updated a few times in recent years whereas the lighting CMS document has not. This makes the mCMS document is a better document to build upon. On initial review the lighting and mCMS documents could be combined, with possibly different scenarios for mCMS & lighting, although some of the scenarios may be the same.
2. Review, amend, combine and generally improve the documents.
3. Some of these changes can be made immediately, others require implementation with any other agreed changes.
4. Determine how to keep the test specification aligned with changes to BSCP520 over time. It may be necessary to make it a configured document at the appropriate level. For example, the Operational Information Document has the status of being an appendix to BSCP520.

6.3. Recommendation

The sub-group recommends:

➤ Adopting the suggested remedy

7. BSCP520 changes

7.1. Problem

1. The test specification document should set out the tests and process for approval of a lighting CMS or mCMS. Reference to the requirement for CMS/mCMS approval before use should be documented in BSCP520. This will ensure that the test specification confirms the requirement for compliance with BSCP520 (quoting relevant section numbers as necessary). However, the test specification cannot introduce new requirements.
2. Some of the operational issues identified with CMS could also be addressed by improving reference to inventory validation by UMSOs as described at Section 2 of this document.

7.2. Suggested remedy

1. Include the need for the MA to report inventory issues to the UMSO, and for the UMSO to resolve with the customer, if there are more than x% of CMS failures, again as described in section 2 above.
2. Ensure that the CMS system is designed to generate no more than [2] event logs by the CMS system each day. There have been cases where CMS systems generate ten's of files a day which become difficult to process.
3. Clarify the need for the CMS system to support equipment in multiple DNO areas. This is an aspect of much confusion, the mCMS test spec was updated to explain this concept, but it needs turning into a explicit requirement in the BSCP. It would also lead to a suitable test scenario to demonstrate compliance.

4. Add an explicit obligation on the UMSO to check the accuracy of CMS Unit References in the detailed inventory. Also, to verify if there are a significant number of changes of CMS Unit References from one inventory submission and the next.
5. Changing the default Switch Regime for under reports for Switch Regime 999 from defaulting to 205 could be changed to 206 to provide a greater commercial incentive to resolve CMS under reports. The group considered this and do not recommend making the change as the problem should be progressed under section 2 above.
6. Include in the BSCP clear process steps for CMS approval and/or removal for non-compliant systems.

7.3. Recommendation

The sub-group recommends:

➤ Adopting the suggested remedies numbered 1-4.

8. Next Steps

Subject to UMSUG agreement to the above recommendations, the subgroup recommends:

➤ Review the test scenarios, add, amend and revise to ensure they are comprehensive.
➤ Seek SVG approval to raise a CP to amend BSCP520 to include the above recommendations.