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Horizon Spot Review - Response

SR01: Debit Cards – Cash Withdrawals and GIRO Payments

1. Executive Summary

This Spot Review does not demonstrate any failing in Horizon.

This Spot Review principally asks whether a SPMR will be properly notified about automatic reversals of transactions when Horizon is unable to connect to the Data Centre. The analysis below shows that Horizon does provide adequate notification.

Further, in the particular case raised in the Spot Review, the root cause of the difficulties suffered by the SPMR was his failure to follow the on-screen and printed instructions given by Horizon. Post Office Limited is confident that the SPMR knew that some transactions had been automatically reversed because:

- The branch had been suffering connectivity issues in the run up to the incident in question.
- When the transactions in question first failed to be processed (because Horizon could not get a response from the Data Centre), Horizon asked the SPMR whether he wished to cancel or retry the transactions. The SPMR opted to retry the transactions.
- When the transactions failed again, the SPMR opted to cancel the transactions.
- Horizon then automatically disconnected and printed a "disconnect" receipt that showed the transactions that had been automatically reversed. A sample "disconnect" receipt is included the appendix to this response.
- A standard customer receipt was not produced – this would tell the SPMR that the full transaction had not proceeded.
- Following the disconnect, the SPMR was required to log back on to Horizon and duly did so.
- Following the log on, and as part of the standard recovery process, Horizon printed a "recovery" receipt which again showed the transactions that had been reversed and those that had been recovered. A sample "recovery" receipt is included in the appendix to this response.

2. Introduction

This spot review relates to an issue raised by John Armstrong the SPMR in Lepton Branch (FAD Code 1913204) relating specifically to transactions carried out on Horizon Online on 4th October 2012. The issue is headed “Debit Cards – Cash Withdrawals and GIRO payments”.

This report provides information as to what was alleged by the SPMR (see section 3) and a detailed analysis of what actually occurred as shown in the system logs (section 4). Section 5 then describes how recovery operates on Horizon and Section 6 identifies those points in the report which are not supported by the Logs. Finally section 7 addresses the question of access to raw transaction data.

3. The SPMR’s view of what happened

The following is an extract from the Spot Report saying what the SPMR says happened:

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> The SPMR reports that there were intermittent internet connectivity problems (also reported to Chesterfield) on 4 October 2012. Online payments and withdrawal transactions were sometimes successful but also failed on occasions. It is possible that Horizon was partially operating through its back-up (mobile phone) connection. Some card payments had to be attempted two or three times before being accepted. At approximately 10:32 a customer tried to pay his £76.09 BT phone bill with his LTSB card but was not successful. The customer then withdrew £80.00 cash and used this to pay the phone bill. The SPMR stamped the customer's phone bill to evidence receipt of the cash, returning change of £3.91. Several weeks later, the customer returned from holiday to find his phone had been cut off due to non-payment. The SPMR's examination of the Transaction Log showed that all components of the transaction had been reversed. The SPMR did not initiate those reversals nor did he receive any reversal notifications. The SPMR raised this as an issue with Chesterfield but was told that due to cost issues Horizon transaction data could not be requested. It was implied that the SPMR had stolen the money and he was told to make good the shortage. This meant that 2 people had paid the phone bill (the customer, who handed cash to the SPMR and the SPMR on instructions from Chesterfield). The SPMR was informed that he should have a surplus of £76.09 due to the reversal of the transactions. The SPMR disputes this conclusion, but the more important issue here is the automated, unreported, reversal of the transactions.

This Spot Review presents the following issues for consideration:

- When Horizon cannot get a response from the Data Centre, are automatic transaction reversals notified to SPMRs?
- Why is raw transaction data not provided to SPMRs? It is noted that this second issue does not raise a question about an error in Horizon. Rather, it is focussed on Post Office's procedures and processes.

4. What the System Logs show

Note that the system logs show all times in GMT rather than local time. On 4th October 2012, GMT was 1 hour behind Local Time (ie BST). The times quoted in this review relate to the system logs. Therefore the mention of 10:32 by the SPMR above relates to 09:32 in the logs.

There do appear to be 2 cases on 4th October where the system had a forced Log Out that resulted in a recovery Log On being required. This supports the statement above: "The SPMR reports that there were intermittent internet connectivity problems (also reported to Chesterfield) on 4 October 2012". The two "Recovery Log Ons" occurred at 08:51:40 (when no recovery was required) and at 09:37:20 when recovery was required as will be described later in this report.

The following table looks at the number of online requests for either Banking or Credit / Debit Card Payments that appear to have timed out:

Date	Total
04/10/2012	13
05/10/2012	4
08/10/2012	11
10/10/2012	2
11/10/2012	2
16/10/2012	1
17/10/2012	2

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Date	Total
18/10/2012	2
19/10/2012	3
22/10/2012	1
23/10/2012	1
25/10/2012	2
Grand Total	**44**

This supports the comment regarding intermittent connectivity problems on 4th October. I note that there were similar problems on 8th October.

There are 4 examples prior to 09:30 where either a Banking withdrawal or a Credit / Debit card payment initially failed and was successful on the second attempt. There was also one example where there were two failures for a card and presumably the customer or the SMPR gave up. This supports the statements that "Online payments and withdrawal transactions were sometimes successful but also failed on occasions" and that "Some card payments had to be attempted two or three times before being accepted".

The raw logs do have statistics regarding times taken to connect to the Data Centre and also an indication of the type of Comms currently in use. From these it can be seen that the Branch normally operates using ADSL, but at the time of the failure that is being examined it appears to be using a mixture of O2G and O3G (ie mobile networks) presumably due to a failure of the main ADSL connection. This supports the statement that "It is possible that Horizon was partially operating through its back-up (mobile phone) connection". This may have been visible to the user as a slower than normal response time.

The key transactions are those described as occurring at 10:32 (ie 09:32 GMT).

This analysis starts at 09:26 and shows the sequence of baskets (meaning the group of individual transactions undertaken during a single customer visit) processed between that time and 09:40.

1. 09:26:30: Session 537799 contained two transactions: A Card Account Withdrawal (Withdraw Limit) for £271.54 and a corresponding Cash Settlement.
2. 09:27:34: Session 537800 contained three transactions: A failed Card Account Withdrawal (Withdraw Limit) immediately (09:28:13) followed by a successful Card Account Withdrawal for £141.80 using the same card and a corresponding Cash settlement.
3. 09:29:27: Session 537801 contained a single transaction: A failed Visa Debit card payment. This payment had been requested for £141 and had failed due to no response having been received by the counter within the timeout period (33 seconds). Clearly an attempt had been made to purchase something or pay for a service for £141, but when the Debit card payment failed, the original transaction was voided and the basket completed.
4. 09:31:56: Session 537802 contained 2 transactions. A Halifax Current Account Withdrawal for £200 followed by the corresponding cash settlement. It would appear that the card used here was the same as the one used in the previous session when the Debit Card payment failed.
5. 09:32:52: Session 537803 contained 3 transactions. A bill payment to BT for £76.09 followed by a Cash Withdrawal for £80 using a Lloyds TSB card and £3.91 cash for the difference.

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6. 09:37:19: User JAR001 Logged On again
7. 09:37:44: Session 537805 generated by the system as part of the Recovery that takes place during Log On and contains 3 transactions. The first 2 are the Reversals for the BT Bill Payment and Cash transactions in session 537803, and the 3rd is a Cash balancing transaction for £80 to correspond to the £80 cash withdrawal which should have been treated as successful at the time of failure. This is why "The SPMR's examination of the Transaction Log showed that all components of the transaction had been reversed."

   It should be noted that the above comment is not correct. The Banking Withdrawal for £80 has **not** been reversed.
8. 09:40:19: Session 537806 contained 2 transactions. A Card Account Withdrawal (Withdraw Limit) for £229.72 and a corresponding Cash Settlement.

It should be noted that there was no Session 537804. There are a number of circumstances under which there are gaps in Session Sequence Numbers and in general they are not expected to be contiguous. In fact they are based on an underlying Journal Sequence Number which are contiguous and relate to any record that has been audited.

In this case the "missing" number relates to the Journal Sequence Number used in the Log On Request, but there are a number of other circumstances that can result in a Journal Sequence Number being used where there is no corresponding Basket.

Looking at the statistics recorded with the Recovery basket at Point 7 above, it can be seen that there were a number of issues during session 537803:

a. The Authorisation for the Cash Withdrawal was successful and was done on a 3G comms Connection.
b. The subsequent attempt to update the Recovery information in the basket after completing the Banking Transaction failed due to a timeout on a 2G comms connection
c. There are then 4 attempts (at roughly 45 second intervals) to store the completed basket to the Data Centre. The first 2 use a connection type of 2G and the other 2 use a 3G comms connection. From the branch's records, they are all marked as having failed.
d. From the Data Centre's perspective, one of the attempts did result in all the data in that basket being successfully saved in the Data Centre but, due to the connectivity issues, the branch did not receive a confirmation from the Data Centre. The branch will therefore record this as a failure.

Moving on to the end of the day the following Cash Declarations were made:

A. At 16:31:27 a Declaration was made for £22,160.54 followed by a variance check which indicated a discrepancy (loss) of £1,237.16.
B. At 16:32:46 a second cash Declaration was made for £23,460.54 followed by a variance check which indicated a discrepancy (gain) of £64.84.

Looking forwards, the following variance check discrepancies were recorded:

Date	Variance Check Discrepancy	Loss or Gain
04/10/2012	£62.84	Gain
05/10/2012	£66.15	Gain
06/10/2012	£76.98	Gain
08/10/2012	£71.91	Gain

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Date	Variance Check Discrepancy	Loss or Gain
09/10/2012	£69.05	Gain
10/10/2012	£63.99	Loss

The Stock Unit (ie. the cheques) was Balanced (ie. by the SPM manually correcting or making good the discrepancy) and rolled over from Balance Period 3 into Balance period 4 on 10th October 2012 and the Discrepancy committed to the accounts. (There was also a £37.75 discrepancy Gain on stamps at the same time.)

5. Explanation of Recovery

The fact that a Log On (and Recovery) occurred at point 6 above indicates that there must have been a failure just before that point and the User would have been informed of a Forced Log Off. The fact that Recovery reversed most of the last Session recorded prior to the recovery indicates that the following sequence of events occurred. This is confirmed by the statistics described above at point c in section 4 above.

The user must have been aware that there was a problem in this circumstance. What they would have observed was the following:

1. Having completed the Bill Payment and Cash Withdrawal, the User would have either selected the "Settle" or "Fast Cash" option from Horizon. If Settle was selected then they would again have selected either "Cash" (and keyed in the amount) or selected Fast Cash.
2. This would have completed the Basket and attempted to save the basket to the Data Centre.
3. Following a failure of the first attempt, the system would automatically carry out a retry and attempt to save the basket to the Data Centre again.
4. Following the failure of the second attempt, a message would have been displayed to the User informing them that there was a failure to contact the Data Centre and did they wish to Retry or Cancel.
5. The fact that there were 4 attempts to contact the Data Centre, indicates that the User must have selected Retry and so the system would have made a 3rd attempt to save the basket to the Data Centre.
6. Following a failure of the third attempt, the system would automatically carry out a retry and attempt to save the basket to the Data Centre yet again.
7. Following the failure of the fourth attempt, a message would have been displayed to the User again informing them that there was a failure to contact the Data Centre and did they wish to Retry or Cancel.
8. The fact that there were only 4 attempts to contact the Data Centre indicates that the user must have selected Cancel this time. This would have resulted in a Forced Log Out. This means:
    a. Horizon would cancel those transactions that could be cancelled. In this case, the BT Bill and the Cash "change" could be cancelled because those transactions do not get processed until the basket completes and in this instance the basket had failed.
    b. The cash withdrawal transaction for £80 could not be cancelled. Prior to the disconnect, Horizon had already contacted the customer's bank to confirm

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that a cash withdrawal could be made from the customer's account. The customer's bank had therefore already registered the withdrawal from the customer's account and this transaction could not be cancelled.

c. Horizon would then re-calculate the basket showing that the customer should have £80. This is because the only remaining transaction would have been the irreversible cash withdrawal for £80.

d. Horizon would then have printed out 3 copies of the Disconnected Session Receipt which would indicate this (one for Customer, one for Branch records and one to attach to the till to aid with recovery).

e. It would **not** have printed out the customer receipt for the BT Bill.

f. Horizon would then have logged out and disconnected.

9. The SPMR should then have made sure that, in accordance with the Disconnect Receipt, the Customer had been given cash to the sum of £80. It is at this point that the SPMR failed to follow the instructions from Horizon in that he did not ensure that the customer had received £80.

10. The system would then display the Log On screen.

11. Again the User must have been aware of this as at 09:37:19 they Logged On again

12. As part of the Log On process, the system checks the identity of the last basket successfully saved at the Data Centre (which appears to be 537803) and compares it with the identity of the last Basket successfully processed by the counter (in this case 537802). As the last basket saved in the Data Centre has a higher number than that considered to be the last successful basket processed by the counter, the recovery process at the Counter would then repeat the process that the counter had carried out at the point of failure at step 8 above. This would have generated the Recovery Basket stored at 09:37:44 as Session 537805 (ie. the reversal of both the BT Bill and the cash "change" but a valid transaction for the Cash Withdrawal). A Recovery receipt would have been printed reflecting these transactions.

6. What the Logs don't support

There are some parts of the initial statement that are not supported by the logs. Specifically:

1. "At approximately 10:32 a customer tried to pay his £76.09 BT phone bill with his LTSB card but was not successful. The customer then withdrew £80.00 cash and used this to pay the phone bill."

   Although the LTSB card used for the Banking withdrawal was a Debit Card, there is no record of any attempt to use that LTSB card as a Payment card. Also, when checking for a failed card transaction in an earlier basket (point 3 in section 4), the value of the failed payment was £141 and not £76.09. Therefore this couldn't be the failure referred to.

   It would appear that the only attempt to pay this BT Bill was with the withdrawn cash.

2. "The SPMR stamped the customer's phone bill to evidence receipt of the cash, returning change of £3.91.". This may be what the SPMR did. However if so he was

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not following the instructions provided by Horizon as outlined in section 5 (ie. to ensure the customer received the total sum of £80).

As explained in section 5, there were a number of indications that the transaction was not successful, and so the Bill payment had not been recorded:

a. The fact that the SPMR was asked twice by Horizon about Retrying after failed Data Centre interactions

b. The fact that 3 copies of the Disconnected Session Receipt would have been printed out on the counter printer, which should have showed the transaction reversals.

c. The fact that no customer receipt to confirm payment of the Bill was printed as would normally happen.

d. The fact that the User had to Log On again and a Recovery Receipt was printed.

It is recognised that the bill may well have been stamped prior to the Disconnected Session Receipts being produced.

3. "The SPMR did not initiate those reversals nor did he receive any reversal notifications." The SPMR did not initiate the reversals but he would have been notified. When Recovery was carried out (point 7 in section 4) a Receipt would have been printed. Also messages are displayed to the User during the recovery process.

4. "The SPMR raised this as an issue with Chesterfield but was told that due to cost issues Horizon transaction data could not be requested. It was implied that the SPMR had stolen the money and he was told to make good the shortage." This is addressed in section 7 below.

5. "This meant that 2 people had paid the phone bill (the customer, who handed cash to the SPMR and the SPMR on instructions from Chesterfield)." The logs show that if the customer has paid the bill, this payment was not recorded on Horizon. This means that the phone bill had not been paid as intended at the time of transaction. If in fact the SPMR had received the payment and not recorded it on Horizon, then there should be a corresponding surplus of cash at the branch.

   It was to instigate the bill payment that Financial Service Centre raised the Transaction Correction.

6. "The SPMR was informed that he should have a surplus of £76.09 due to the reversal of the transactions." The figures in section 4 relating to cash declaration indicate that there was a surplus of around £63 that day.

7. "The SPMR disputes this conclusion, but the more important issue here is the automated, unreported, reversal of the transactions." The Automated Reversal is explained in section 5. That section also explains that the reversals would have been notified to the SPMR.

7. FSC's Input

"The decision by P&BA not to examine the Horizon detailed transaction data on cost grounds delayed or denied the SPMR the opportunity to process the transactions correctly or understand what happened."

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- It is noted that this is not an issue with Horizon but rather a question around Post Office Ltd's processes for investigating disputes raised by SPMRs.
- Horizon does retain full transaction logs. There is no question of this information not being available or being somehow inaccurate.
- These logs are not however readily accessible by Post Office and must requested from Fujitsu at a cost. P ost Office therefore only accesses the logs when it is proportionate to do so and when an issue cannot be resolved using other available information.
- In the case raised in this Spot Review, there was no need to access the transaction logs. First, it was possible to determine what had happened in the branch from the "disconnect" and "recovery" receipts alone.
- Secondly, the transaction logs would not have assisted the SPMR. The transaction logs would only show the reversal of a transaction, not the method or reasons for that reversal. The logs would therefore not show that the reversals were automatic responses to a disconnect scenario.
- Thirdly, to extract any meaningful information from the Horizon records requires the "raw" transaction data to be interrogated. This cannot be done without technical expertise therefore incurring significant cost.
- Fourthly, the above analysis proves that Post Office's assessment, based on the information available at the time, was correct and its approach justified.

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Appendix – sample receipts

The receipts below are examples generated from a test environment. The transaction information shown on the receipts has been designed to approximately replicate the information that would have been seen by the SPMR. However, these are only examples and are not the receipts actually created in the branch in question.

Disconnection receipt example:

```
            Post Office Ltd.
              Your Receipt
                              FAD: 230704
Greenisland
8 Glassillan Court
Carrickfergus
County Antrim
BT38 8TD

        VAT REG No. GB 243 1700 02
     Date of Issue: 24/04/2013 07:14
           SESSION: 1-109290


          DISCONNECTED SESSION
         Recovery Code: 1092834
       Do not attempt to reverse
       any transaction from this
       session, until this counter
       has been successfully
       recovered.

BT Retail
0      @      75.00                  0.00
CA CASH VDL
1-     @      75.00                 75.00-

TOTAL DUE TO CUSTOMER               75.00

Cash              TO CUSTOMER       75.00
BALANCE                              0.00

    Please retain for future reference

                Thank You
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Recovery receipt example

Post Office Ltd.
Your Receipt
FAD: 197206

Wrenbury
61 Nantwich Road
Wrenbury
Nantwich
Cheshire
CW5 8EW

VAT REG No. GB 243 1700 02
Date of Issue: 24/04/2013 12:17
SESSION: 2-100842

Recovery Successful.
Systen Correction

BT Retail			
1-	@	75.00	75.00-
TOTAL DUE TO CUSTOMER			75.00
Cash		FROM CUSTOMER	5.00
Cash		TO CUSTOMER	80.00
BALANCE			0.00

Please retain for future reference

Thank You