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Abstract: This document details the approach, resource and schedule for counter performance within the V&I Test team

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0 Document Control

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0.2 Document History

Version No.	Date	Summary of Changes and Reason for Issue	Associated Change - CP/PEAK/PPRR Reference
0.1	13/11/08	Initial Version	
0.2	05/01/09	Changes to reflect strategy regarding Video Benchmarking	
0.3	10/03/09	Changes to schedule to reflect strategy regarding V&I testing on VOL rig rather than V&I rig. Changes to content based on Counter Assessment meetings, creating a distinction between counter performance testing and formal Transaction Benchmarking (forms part of acceptance)	
0.4	15/06/2009	Changes after review comments	
1.0	19/08/2009	Document Approved	

0.3 Review Details

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0.4 Associated Documents (Internal & External)

Reference	Version	Date	Title	Source
PGM/DCM/TEM/0001 (DO NOT REMOVE)			Fujitsu Services Post Office Account HNG-X Document Template	Dimensions
CS/SER/010			Horizon: Transaction Benchmark Service: Service Description	PVCS
TSTGENSTD0003			Performance Model for Testing	Dimensions
PA/PER/033			Horizon Capacity Management and Business Volumes	PVCS
DES/APP/HLD/0110			HNG-X Counter Applications: Transaction benchmarking High Level Design	Dimensions
CS/TSC/003			Horizon Benchmarking Scripts	PVCS
CS/PER/046			Horizon: Counter Transaction Performance - Measurement and Results	PVCS
ARC/PER/ARC/0001			HNG-X System Qualities Architecture	Dimensions
SVM/SDM/PRO/00 17			HNGX: Transaction Benchmark Service: Service Description	Dimensions

Unless a specific version is referred to above, reference should be made to the current approved versions of the documents.

0.5 Abbreviations

Abbreviation	Definition
APOP	Automated Payments Out Payments
APS	Automated Payment Service
CAPO	Card Account at Post Office
CIT	Component Integration Test
DR	Disaster Recovery



Abbreviation	Definition
DVLA	Driver Vehicle Licensing Authority
EPOSS	Electronic Point of Sale Service
FJS	Fujitsu Services
HLD	High Level Design
HLTP	High Level Test Plan
HNG-X	Horizon Next Generation (plan X)
LLTS	Low Level Test Script
MGRM	Moneygram
PAF	Postal Address File
PAT	Product Acceptance Test
PO Ltd	Post Office Ltd
SORN	Statutory Off-Road Notice
ST	System Test
SV&I	Solution Validation & Integration
TDN	Test Design Note
TESQA	Transaction Enquiry Service Query Analyser
TPOC	Testing Proof Of Concept

0.6 Glossary

Term	Definition

0.7 Changes Expected

Changes

0.8 Accuracy

Fujitsu Services endeavours to ensure that the information contained in this document is correct but, whilst every effort is made to ensure the accuracy of such information, it accepts no liability for any loss (however caused) sustained as a result of any error or omission in the same.

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1 Introduction

This document is the High Level Test Plan (HLTP) that represents the independent testing that will take place for counter performance.

The production of the HLTP will be a two-phase process. The first phase will include the Scope and Objectives of the testing (all sections up to the Appendix). The second part of the document is to be listings / reports of the planned testing that is to take place.

This paper defines the approach and method to be followed, and identifies some of the issues to be resolved, to ensure that counter performance is carried out at appropriate stages during the deployment of HNG-X. The testing of counter performance scenarios will be performed as part of V&I testing on the VOL rig and therefore part of the Non-Functional Testing Work Package 5.

VOL Rig

It is not possible in the project plan to complete all HNGX volume tests pre-pilot (in Volume Test cycles 1-4), therefore HNGX volume testing will continue alongside HNGX pilot. The V&I rig is required to be re-provisioned for the HNGX 'live' environment, and therefore there is a need for a test rig to accommodate outstanding volume tests. CP0341

The VOL rig is the test environment created in IRE19 to facilitate outstanding HNGX Volume testing. The VOL rig is built as close to the 'live' environment as possible from the Release Validation Accreditation (RVACC) and Release Migration test rigs (RVMIG).

The design of the VOL rig is outlined in DEV/GEN/SPE/0007, and the activities involved are described in CP0291 and CP341

1.1 Objectives

The objectives of counter performance are to provide information to assess the performance of the HNG-X counter and to provide an input of information into the Formal Transaction Benchmarking Process

The formal Transaction Benchmarking Process is outlined in SVM/SDM/PRO/0017

The basket mix for performance acceptance is outlined in SVM/SDM/PRO/0017

The method of generating information for the formal Transaction Benchmarking Process is outlined in SVM/SDM/PRO/0017

1.



2 Scope

2.1 Requirements Coverage

5460 SVC-856	<p>During testing New Video Benchmarks shall be conducted on Baseline Horizon and equivalent Video Benchmarks shall be conducted on the System, in accordance with the process described in "HNG-X Test Strategy - HX/STR/001 and assessment made Req5460</p> <p>TDN: The testing of this requirement is dependant of the strategy defined by the formal Transaction Benchmarking document.</p>	<p>During testing New Video Benchmarks shall be conducted on Baseline Horizon and equivalent Video Benchmarks shall be conducted on the System, in accordance with the process described in "HNG-X Test Strategy - HX/STR/001 and assessment made according to the Video Benchmarking Tolerances agreed therein.</p>
5462 SVC-858	<p>It shall be possible for the System Measurement of the Counter to be switched on in the Live Estate, but central collection and analysis of such data shall only be performed for diagnostic purposes. Req5462</p>	<p>It shall be possible for the System Measurement of the Counter to be switched on in the Live Estate, but central collection and analysis of such data shall only be performed for diagnostic purposes.</p>
5465 SVC-860	<p>The System shall measure the Duration and record the Response for each Third Party Transaction Request from the time the request leave the Fujitsu Domain for routing to the external party (e.g. Financial Institution, DVLA) to the time the r Req5465</p> <p>TDN: Covered by TSTSOTHTP0003 – Not specific to HNGX Counter</p> <p>During Volume testing as outlined in TSTSOTHTP0003 this requirement will be covered by checking that responses are recorded by the system in the HNGX Performance database</p>	<p>The System shall measure the Duration and record the Response for each Third Party Transaction Request from the time the request leave the Fujitsu Domain for routing to the external party (e.g. Financial Institution, DVLA) to the time the response is received back from the Third Party.</p>
5468 SVC-862	<p>The response and duration measurement for all Third Party Transmission Requests shall be made available in the response to the initiating Online Transaction request from the Counter in order that the end-to-end timings and the System Time component can be calculated and recorded by the Counter and reported in system testing and subsequently for diagnostic purposes. Req5468</p> <p>TDN: Covered by this document by inspecting the transaction log on counter</p> <p>During Volume testing as outlined in TSTSOTHTP0003 this requirement will be covered by checking that responses are recorded by the system in the HNGX Performance database</p>	<p>The response and duration measurement for all Third Party Transmission Requests shall be made available in the response to the initiating Online Transaction request from the Counter in order that the end-to-end timings and the System Time component can be calculated and recorded by the Counter and reported in system testing and subsequently for diagnostic purposes.</p>
5470 SVC-815	<p>The end-to-end performance of Banking and related Transactions shall be no worse than set out in the Service Level Target described in the Data Centre Operations Service document. Req5470</p> <p>TDN: Covered by this document by the measurement of banking transaction on the counter</p> <p>Covered by TSTSOTHTP0003 by generating volumes of banking transactions and timing how long those transactions take</p>	<p>The end-to-end performance of Banking and related Transactions shall be no worse than out in the Service Level Target described in the Data Centre Operations Service document.</p> <p>TDN: See section 3.1.3.1 of System Qualities Architecture (ARC/PER/ARC/0001). This requirement translates to the following response time target (SLT): "- Network Banking transactions will take on average 2.5 seconds or less within the total of the HNG-X systems and infrastructure. This is the total time to and from the counter, excluding the time in the banks' infrastructure and systems."</p>



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<p>5471 SVC-816</p>	<p>The end-to-end performance of the Basket Settlement transaction shall be no worse than that set out in the Service Level Target described in the Data Centre Operations Service document. Req5471</p>	<p>The end-to-end performance of the Basket Settlement transaction shall be no worse than that set out in the Service Level Target described in the Data Centre Operations Service document.</p>
	<p>TDN: Although settlement transactions will be measured from the counter in this document this requirement is largely covered by TSTSOTHTP0003</p>	<p>TDN: See section 3.1.3.1 of System Qualities Architecture (ARC/PER/ARC/0001). This requirement translates to the following response time targets (SLTs): "- Settlements will take on average 2 seconds or less. - No Settlement within the 95th Percentile will take 7 seconds or more."</p>
<p>5474 SVC-817</p>	<p>The Time taken to complete Branch Administrative or Back Office Transactions shall meet Design Targets (if specified) in "HNG-X Capacity Management and Business Volumes"</p>	<p>The Time taken to complete Branch Administrative or Back Office Transactions shall meet Design Targets (if specified) in "HNG-X Capacity Management and Business Volumes"</p>
	<p>TDN: Although Branch Administrative/Back Office transactions will be measured from the counter in this document this requirement is largely covered by TSTSOTHTP0003</p>	
<p>5475 SVC-818</p>	<p>The time taken for Stock Unit and Branch Reports shall meet Design Targets (if specified) in HNG-X Capacity Management and Business Volumes</p>	<p>The time taken for Stock Unit and Branch Reports shall meet Design Targets (if specified) in HNG-X Capacity Management and Business Volumes</p>
	<p>TDN: Although Stock Unit and Branch Reports will be measured from the counter in this document this requirement is largely covered by TSTSOTHTP0003</p>	
<p>5476 SVC-819</p>	<p>The time taken to retrieve Help pages shall meet Design Targets (if specified) in "HNG-X Capacity Management and Business Volumes"</p>	<p>The time taken to retrieve Help pages shall meet Design Targets (if specified) in "HNG-X Capacity Management and Business Volumes"</p>
	<p>TDN: The help design has changed since this requirement was created, there is no longer an online help service however, the retrieval of help pages will be conducted as tests within this document</p>	



2.1.1 In Scope

The following items are in scope of HNGX Counter Performance Testing:

- Counter performance testing a set of transactions for providing performance information on those transactions
- Counter performance testing settlement of items in a basket with different basket sizes for providing performance information on those settlements
- Assessing the affect on performance of a set of transactions while there is traffic from up to 20 counters using the same Branch Router access to the HNGX data centre for performance information purposes
- Testing on ADSL connections only
-
- Counter Performance Testing an agreed set of transactions as an input to the Formal Transaction Benchmarking Process outlined in SVM/SDM/PRO/0017

2.2 Features not to be tested

2.2.1 Out of Scope

- Any Horizon Counter performance
- Counter performance testing in any migrated state is out of scope.
- Counter performance testing via ISDN or Wireless VSAT connections is out of scope
- Testing the functionality of performance logging
- Re-Video Benchmark of Horizon
- Video Benchmarking of HNG-X (although out of scope of testing, this may required to be performed by FJS CS within a test cycle as an input to the Formal Transaction Benchmark Process outlined in SVM/SDM/PRO/0017)



3 Risks

3.1 Software Risk Issues

Completing Counter performance testing will depend on the following factors:

- A full range of working transactions on a counter on the VOL rig – Full Counter code / fully operational test rig
-
-
- Availability to generate a load on the HNGX data centre while counter performance tests are being performed.
- Availability of the Winrunner tool as there are only 2 licenses for all test teams. i.e. if SV&I testing are using 2 Winrunner licenses for regression testing, counter performance testing cannot be performed.
-

3.2 Planning Risks and Contingencies

-
- Volume testing of Horizon PCI transactions will be performed within the data centre (not using a counter) and should give confidence of Horizon PCI transactional performance



4 Quality

The Test Cases and the design requirements from which they were derived will be recorded in Quality Centre. Within Quality Centre the requirement will include a reference to the document (Reference Number, Version and Section Number) from which it was derived. If a document, from which a design requirement was derived is changed the requirement, Test Case and Test Case reference to the requirement will need to be reviewed and possibly changed.

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5 Approach

5.1 General

The process, guidelines and governance for HNG-X V&I Test is defined in V&I Test Definition and Process [TST/GEN/PRO/0004].

The structure and contents of a HLTP are defined in [TST_GEN_PRO_0003]

The approach to non-functional testing is defined in [TST_GEN_PRO_0012].

The generic Test Entry and Exit Criteria are defined in [TST_GEN_PRO_0001].

Defect management is defined in [TST_GEN_PRO_0010].

The extraction of Test Case definitions from Quality Centre for input to a HLTP is defined in [TST_GEN_PRO_0006].

5.2 Outline Timescales

The POA Level 3 plan will contain the up to date timescales for planned activities for Counter Performance Testing. The testing will take place in the second phase of the two distinct performance test phases

- Phase 2 on the VOL in IRE19 at the same time as pilot.

The cycles in which this testing will be performed has yet to be decided.

PHASE 2

Activity	Start	End	Notes
			A cycle of environment suitability testing will commence prior to cycle 1 and is referenced as VI Blitz. This will check that the rig and all the tools needed for test execution and reporting, work as required. Amendments to the rig and tools will be made as required before commencement of the VI C1.

Note: If changes are made to the VOL Rig prior to the start of testing on any particular cycle, a period of VOL Blitz may be required.



5.3 Test Case Analysis

The appropriate document will be analysed by a members of the VI Test Team, to identify the performance requirements that should be met by the defined design or development. From these performance requirements the analyst will derive Test Cases that can be executed to demonstrate conformance to that performance requirement.

All identified performance requirements and Test Cases will be recorded in Quality Centre.

5.4 Test Case Execution

VI Team members in BRA01 using a WAN connection to the data centre in IRE19 will execute the test cases.

This information will be recorded against the Test Case within Quality Centre and graphs of the Performance Model for testing.

As per the HNG-X Testing Strategy [3], test prioritization will be driven by requirements and the risk analysis of those requirements.

5.5 Test Case Results and Evidence

The VI team member that executes the Test Case is responsible for updating the Test Case in Quality Centre with the result (Pass or Fail) of the attempt to execute that Test Case.

Failed Test Cases will require evidence to be added to the defect that is raised.

5.6 Call Logging Process

A basic overview of the HNG-X incident handling procedures is defined in [ISN001486].

This procedure covers the routing of the following: -

- Any issue that the POA test team require Development or another POA team to investigate
- Any Backup / Restore requests from the POA test team to IS
- Any issue that IS require POA to investigate
- Any issue that IS identify that needs further investigation within IS

The process for managing defects raised during the independent testing phases of HNG-X is defined in [TST/GEN/PRO/0010].

Note: for any failed test there must be an associated defect stored in Quality Center.

5.7 Escalation Process

An escalation process for use by the HNG-X Test Manager and IS Support Teams is defined in [ISN001487].



5.8 Approach to Testing

- Different types of testing will be performed within counter performance. All the testing will be performed on the VOL rig. All testing will be performed on one counter of the 20-counter outlet of the VOL rig. Each counter will be setup per section 6.

Each of the transactions performed in Appendix 4 will be performed and accessed for performance.

1. HNGX Counter Performance Testing

- a. HNG-X Counter testing using a *Winrunner* tool to simulate user actions and record the time they take. Scenarios defined in Appendix 4 will be conducted using the *Winrunner* tool.

Winrunner has been selected to perform counter performance testing for the following reasons:

- Winrunner can simulate user actions on the counter and time how long actions take, in particular system actions. (E.g. how long it takes from selecting a button to a screen appearing)
- Using Winrunner we have the capability of testing counter performance early, on CIT rigs/system test rigs for early feedback on performance, as outlined in the test strategy.
- Transactions can be tested on the counter as and when they become available
- Negates the time and cost for multiple iterations of Video benchmarking and/or manual timings

Transactions in Appendix 4 will be performed when there is no or small amount of load on the HNGX data centre and also when there is a peak load being performed on the HNGX data centre. The results will be compared.

Transactions in Appendix 4 will also be combined to produce multi baskets (more than one item per basket) to discover if there is any affect on basket size and settlement time. From previous Horizon analysis the most frequent baskets are highlighted in Appendix 5.

- b. HNG-X Branch Router testing. This test will be performed to see the performance affect of the transactions outlined in Appendix 4 when there is more than one counter trading at the same time at an outlet.

The transactions outlined in Appendix 4 will be performed using on a counter using the Winrunner tool whilst there are 5, 10 and 15 counters trading at the time on the same outlet. The results will be compared to tests performed in 1a to determine any differences.

- c. Any testing required to produce information as input into the formal Transaction Benchmark Process



6 Instrumentation

Counter performance testing using Winrunner will record the end-to-end time for the designated business transaction. Within the end-to-end timing, individual timings for various actions will also be collected. These individual timings will incorporate 'system processing times'. System processing times are defined as the time it takes to process an action on the system. An example of the times that Winrunner will record are detailed below.

Process Flow: Purchase £5 Saving Stamp

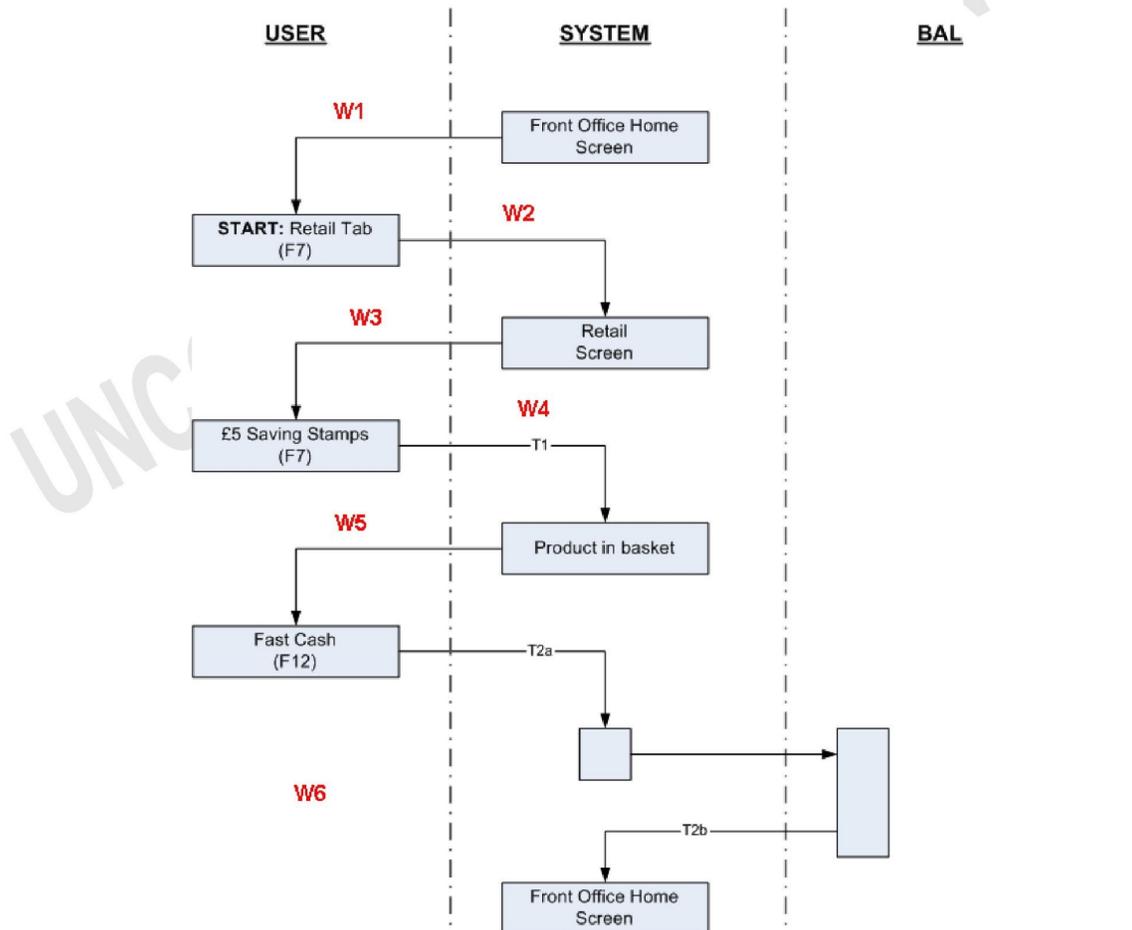


Figure 1 Process Flow for buying a saving stamp Winrunner captured timings are shown as W1, W2, W3, W4, W5, W6



7 Environmental Needs

For HNGX Counter performance testing a 20-counter branch is required on the VOL rig with at least one counter having the following specification.

TDN: The 20 counters are required for testing the affect of a set of transactions on 1 counter whilst the other counters are also performing transactions via the branch router. (Counter performance branch router testing)

- PC Base Unit (400MHz Pentium II with 256Mbytes of memory and a PCI card providing multiple serial connections)
- Touch Screen (touch element connected via a serial connection to PC)
- LIFT Keyboard incorporating a Magnetic Swipe and Smart Card reader (serial connection for card reader)
- BAR Code Scanner (Serial Connection)
- Slip and Tally Roll Printer (Serial Connection)
- Weigh Scales (serial connection – normally shared between two counters with both counters having a separate serial connection).
- PIN Pad (Serial Connection)

A single back office printer is required for the outlet.

The branch must be connected to the data centre via a branch router.

Video recording equipment for recording HNGX transactions for calibration of timings from Winrunner and the counter performance logs.



8 Dependencies

- The High Level test plan has been approved.
- The Low Level test scripts have been written.
- The rig design has been approved.
- Completion of RVACC and RVMIG testing so that Vol rig can be built
- The complete VOL rig has been built and is operational in IRE19.
-

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9 Schedule

TDN: Schedule on the VOL rig still to be defined

Test Group	Description	No. Tests	Pty	Iterations by Cycle				Notes
				C1	C2	C3	C4	
C01	Counter performance tests	40	H					To be run against background HNG-X load
R01	Branch Router Tests	4	H					Sub-set of counter tests for 1, 5, 10 & 20 counters

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10 Resources

The following resource needs have been identified to effectively undertake counter performance testing:

- There is a requirement for a specialist in WinRunner to develop the automated test scripts
- There is a requirement for support from Customer Services to provide guidance on previous Horizon video benchmarking
- HNG-X Performance Architect

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11 Entry Criteria

Whilst Counter Performance Testing will be conducted separately from SV&I as a discrete testing stage, the entry criteria is governed by the relevant section of the HNG-X Testing Process Entry and Exit Criteria document [9] pertaining to Solution Validation and Integration.

11.1 Relevant Factors to Be Considered At Handover

The following factors are to be considered at a 'Handover Review Meeting':

- On the assumption that delivery of a tested product from one Test Stream to the next Test Stream may be Modular in form (i.e. parts of the system will be delivered as and when they have completed testing), any requirements for a specific delivery sequence (of modules) to the Performance Test Stage must have been discussed, understood and agreed as part of the Entry Criteria.
- At the time of writing, a 'Critical Defect' is deemed to be a Level 1 or 2 defect. Although it is possible that lower level defects may also prevent a specific deliverable from being passed into the next Testing Stream. This decision will be made by the Testing Stream Manager(s) at the time of a Handover Review.
- Although it is possible to move a deliverable from one test stage / stream to the next with some testing (Test Cases) outstanding (e.g. from CIT to System Test), no deliverable should be allowed to move into a subsequent stage with testing still outstanding from 2 stages previous (e.g. Testing outstanding in CIT will allow a module to move into System Test, but (if still outstanding) will prevent it moving into Performance Test from System Test).

11.2 General Considerations for Entry

11.2.1 Dependency on earlier testing

- Are delivery plans in place to clear all necessary defects in time for the subsequent tests that may be dependent on them?
- Remaining tests in earlier stage(s) planned and on track to keep pace with (stay ahead of) plans for this stage.

11.2.2 Dependency on other pre-requisites

- Test Environment ready and available
 - If part ready but not complete, or if complete but not yet proven/stable, then assess likely disruption and weigh against benefits to be gained from starting before stable.
 - Would this activity assist or hinder stabilising the environments.
 - Is the necessary environment support on hand to mitigate issues?
 - If multiple environments needed, should start be made with just one first to fully prove the configuration prior to replication?
- Test Scripts/Data ready
 - Sufficient completed and available to support initial planned tests, and planned work for completion on track to keep pace with (stay ahead of) planned test execution.



- If Scripts/Data produced, but not reviewed/approved, then assess likely rework, which may result and weigh against benefits to be gained from starting without approval.

11.2.3 Other relevant factors

- External bodies/third parties (where involved) ready and available (including any equipment/systems concerned).
- Project priorities/imperatives understood – cost vs. elapsed time vs. quality.

11.3 Specific Criteria for Entry to Performance Test Stage

- There is an agreed low-level plan available for Performance Test Stage.
- HLTP (this document) has been approved.
- LLTS's have been finalised and reviewed. I.e. A set of re-useable test cases have been prepared in Quality Centre and related to pertinent test Objectives (Objective Driven Testing) and Requirements.
- Details of versions of all deliverables must be available.
- All the critical defects for the module being delivered, from previous test stage (CIT and / or PAT) have been cleared.
- There are no defects outstanding (of any Priority) that will affect the initial (high risk) testing that will take place in this test stream.
- All testing for contents of the module have been completed in System Test (if not, is it viable for the module to begin Performance Testing?).
- Resources are available.
- All training has been identified and delivered.
- TPOC for any test tooling and methods has been satisfactorily completed.
- Test Tools and licences for those tools have been obtained, installed and configured for use.
- Redelivery of components and modules – Evidence must be available for regression testing that has been carried out for defect fixes applied to re-delivered software.
- Suitable Reference Data is available.
- The exit criteria values for this test stage are known and agreed.



12 Exit Criteria

Whilst Counter Performance Testing will be conducted within V&I and therefore separately from SV&I as a discrete testing stage, the exit criteria is governed by the relevant section of the HNG-X Testing Process Entry and Exit Criteria document [9] pertaining to Solution Validation and Integration.

- All the Requirements and testing objectives (Objective Driven Testing) have been met in full or non-compliance has been agreed and signed off.
- All the Objectives (Objective Driven Testing) designated for the Performance Test Stage have been covered within the testing cycles.
- All the System Acceptance Criteria have been met in full or non-conformances has been agreed and signed off.
- All critical defects have been resolved*.
- All non-critical defects have been resolved*.
- Test Reports have been produced.

*Note that in some cases there is scope to hand over testing with outstanding defects (both critical and non-critical). This can only occur where the impact has been assessed and full agreement is achieved between stakeholders.



13 Test Pass / Fail criteria

13.1 Test 'Pass' Status

A test will be deemed to have been 'passed' if the 'Actual Result' matches the 'Expected Result' in the Test Plan steps - either individually or all depending on the type of test being undertaken. In some tests, it may be possible to continue past a defect and satisfy the remaining steps within the test.

A test will also be deemed to have 'passed' if the actual result does not equal the expected result, but it is subsequently found that the expected result (as per the test plan) has been specified incorrectly (as sometimes happens). In which case, this must be annotated in the test plan / set and any defects that were raised for it, annotated similarly and closed. Any test modified in this way will require a review against the HLTP and HLD. It must also adhere to version control rules

13.2 Test 'Fail' Status

A test will be deemed to have failed if the actual results deviate from the expected results. In all instances a defect will be raised. The cause of the deviation, the test failure, must then be assessed.

Fixing of a defect (or other agreement to close) will allow a retest of the test plan and pass, if no further defects are raised.

13.3 Test 'No Run' Status

It may not be possible to run a test if there is an unresolved defect against the area under test. In this case the test will remain as 'No Run' in Quality Centre until the defect has been cleared.

Where it is not possible to run a test in its original form (due to outstanding defects), it may be necessary or possible to reform the test in order to approach from a different perspective. This must be done only by agreement with all parties concerned in which case; the original test may be abandoned and discarded.



Appendix 1 – Planned Testing

The following list constitutes the planned tests to be carried out.

Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M01_HNG-X CAPO Balance Enquiry & Withdrawal	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858 5465 - SVC-860 5468 - SVC-862 5470 - SVC-815
C01	NFUN_SVC_M02_HNG-X A&L Business Deposit	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858 5465 - SVC-860 5468 - SVC-862 5470 - SVC-815
C01	NFUN_SVC_M03_HNG-X NS&I Cash Withdrawal	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858 5465 - SVC-860 5468 - SVC-862 5470 - SVC-815



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M04_HNG-X Purchase E-Top Up	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858 5465 - SVC-860 5468 - SVC-862
C01	NFUN_SVC_M05_HNG-X Purchase Phone Card	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858 5465 - SVC-860 5468 - SVC-862
C01	NFUN_SVC_M06_HNG-X Tax a vehicle for 12 months no VAT	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858 5465 - SVC-860 5468 - SVC-862



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M07_HNG-X SORN with vehicle address changes	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858 5465 - SVC-860 5468 - SVC-862
C01	NFUN_SVC_M08_HNG-X Purchase postal order	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858 5465 - SVC-860 5468 - SVC-862
C01	NFUN_SVC_M09_HNG-X Encash postal order	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858 5465 - SVC-860 5468 - SVC-862



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M10_HNG-X Payment by Debit-Credit card	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858 5465 - SVC-860 5468 - SVC-862
C01	NFUN_SVC_M11_HNG-X Address Lookup	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M12_HNG-X Purchase Saving Stamp	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M13_HNG-X Purchase 1st Class Stamps	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M14_HNG-X Purchase Pure Air Sure Europe Stationary	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M15_HNG-X Purchase Scratchcard	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M16_HNG-X Purchase Electricity Tokens	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M17_HNG-X Purchase Premium Bonds	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M18_HNG-X Purchase 1 Day Fishing License	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M19_HNG-X Post Special Delivery Small Letter	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M20_HNG-X Post Large Letter	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M21_HNG-X Post Letter USA Weighting	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M22_HNG-X Packet	<OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings. <PREREQ> <NOTES>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M23_HNG-X Bulk Post	<OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings. <PREREQ> <NOTES>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M24_HNG-X Pay Bill	<OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings. <PREREQ> <NOTES>	H	5460 - SVC-856 5462 - SVC-858



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M25_HNG-X Freedom Passes	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M26_HNG-X Moneygram	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858 5465 - SVC-860 5468 - SVC-862
C01	NFUN_SVC_M27_HNG-X Travel Insurance	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M28_HNG-X Purchase Foreign Currency	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M29_HNG-X Purchase Foreign Currency in Travellers Cheques	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M30_HNG-X Purchase Pre-Order Foreign Currency	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M31_HNG-X Foreign Currency Buy Back	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M32_HNG-X Remittance Acceptance	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M33_HNG-X Remittance Rejection	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M34_HNG-X Transaction Correction for a Remittance Shortage	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M35_HNG-X Spoiled Postal Orders	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M36_HNG-X Stock Unit Reports	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M37_HNG-X Office Reports	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M38_HNG-X Logon	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
C01	NFUN_SVC_M39_HNG-X Logoff	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
C01	NFUN_SVC_M40_HNG-X Help	<p><OBJECTIVE> To demonstrate that the End-to-End Transaction time for the Scenario is no greater than the equivalent Horizon transaction timings.</p> <p><PREREQ></p> <p><NOTES></p>	H	5460 - SVC-856 5462 - SVC-858
R01	NFUN_SVC_M01_Branch Router Performance 1 counter	<p><OBJECTIVE> Transaction Performance via Branch Router with 1 Counter To demonstrate that there is no degradation in the End-to-End Transaction time for the following scenarios conducted on 1 counter via a branch router.</p> <p>The following transactions will be performed:</p> <p><PREREQ></p> <p><NOTES> ****Transaction Yet To Be Defined*** 22/01/2008 PL TDN: Reuse of Counter Performance Tests</p>	H	5460 - SVC-856
R01	NFUN_SVC_M02_Branch Router Performance 5 counter	<p><OBJECTIVE> Transaction Performance via Branch Router with 5 Counters To demonstrate that there is no degradation in the End-to-End Transaction time for the following scenarios conducted on 1 counter of a trading 20 counter branch via a branch router.</p> <p>E.g. The branch router is not affecting transactions running on one counter by transactions running on the other 4</p> <p>The following transactions will be performed:</p> <p><PREREQ></p> <p><NOTES> ****Transaction Yet To Be Defined*** 22/01/2008 PL TDN: Reuse of Counter Performance Tests</p>	H	5460 - SVC-856



Test Group	Test Name	Description	Priority H/M/L	Requirement ID
R01	NFUN_SVC_M03_Branch Router Performance 10 counter	<p><OBJECTIVE> Transaction Performance via Branch Router with 10 Counters To demonstrate that there is no degradation in the End-to-End Transaction time for the following scenarios conducted on 1 counter of a trading 20 counter branch via a branch router.</p> <p>E.g. The branch router is not affecting transactions running on one counter by transactions running on the other 9</p> <p>The following transactions will be performed:</p> <p><PREREQ></p> <p><NOTES> *****Transaction Yet To Be Defined*** 22/01/2008 PL TDN: Reuse of Counter Performance Tests</p>	H	5460 - SVC-856
R01	NFUN_SVC_M03_Branch Router Performance 20 counter	<p><OBJECTIVE> Transaction Performance via Branch Router with 20 Counters To demonstrate that there is no degradation in the End-to-End Transaction time for the following scenarios conducted on 1 counter of a trading 20 counter branch via a branch router.</p> <p>e.g. The branch router is not affecting transactions running on one counter by transactions running on the other 19</p> <p>The following transactions will be performed:</p> <p><PREREQ></p> <p><NOTES> *****Transaction Yet To Be Defined*** 22/01/2008 PL TDN: Reuse of Counter Performance Tests</p>	H	5460 - SVC-856



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Appendix 3 – Horizon Video Benchmark Results

Service/Measured Item	Target Times by Software Release						
	B13	S40	S50	S60	S70-75	S80	S90-92
EPOSS							
Product Menu Display - Other	0.26	0.3	0.28	0.26	0.26	0.45	0.35
Product Menu Display – Item	0.2	0.25	0.23	0.22	0.2	0.32	0.18
Fee Screen Display – Item	0.33	0.36	0.42	0.35	0.38	0.58	0.47
Amount Screen Display - Item	0.19	0.24	0.27	0.26	0.26	0.37	0.19
Product Sale Display – Item	0.26	0.29	0.35	0.3	0.34	0.45	0.23
Settlement Menu Display - Item	0.2	0.22	0.21	0.21	0.22	0.36	0.19
Main Menu Display	0.37	0.32	0.41	0.48	0.46	1.08	0.67
APS							
Swipe Magnetic Card	1.2	0.98	0.95	1.27	1.09	1.13	1.68
Insert SMART Card	4.05	4.37	4.48	4.47	4.29	4.23	4.27
Input Monetary Amount	0.12	0.12	0.12	0.32	0.29	0.3	0.32
Cash Payment Select	3.67	3.89	3.97	3.45	3.47	3.13	3.68
Print Office Receipt – 1	4.57	4.99	5.2	5.22	4.93	5.17	5.02
Tear Off Print Report – 1	4.63	5.02	5.29	2.4	5.07	5.27	5.01
Print Customer Receipt – 2	3.92	4.07	4.34	3.27	3.14	3.09	3.26
Tear Off Print Report – 2	0.13	0.17	0.19	0.17	0.25	0.35	0.59
Customer Serve Screen Refresh	0.34	0.37	0.37	0.64	0.62	0.68	0.63
NBS							
Cash Deposit	7.21	8.19	8.92	10.78	9.79	10.16	10.27
Cash Withdrawal (Signature)							
Cash Withdrawal (PIN)	10.16	9.73	11.92	12.79	12.09	13.11	13.32
Cash Withdrawal, with Balance (Signature)							
Cash Withdrawal, with Balance (PIN)	13.38	9.79	11.59	12.18	12.59	12.68	13.13
Cash Withdrawal to Limit (PIN)							
Balance Enquiry (Signature)							
Balance Enquiry (PIN)	9.28	12.13	11.15		11.8	12.6	12.83
Change of PIN	11.7		10.28		11.45	12.18	



HNGX Counter Performance High Level Test Plan

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Mailes	Bureau De Change	Back Office	Reports	User Management	AP - ADC	EPOSS	Network Banking
Post 1 Special delivery small letter	Purchase 200 US Dollars	Accept a remittance	Stock Unit Reports	Logon/Logoff	Moneygram	Purchase saving stamp £5	NS & I Cash Withdrawal
Post 1 large letter	Purchase 500 US Dollars in travellers cheques	Reject a remittance	Office Reports	Help Service	Freedom Passes	Purchase 4 x 1stclass stamps	CAPO Balance Enquiry and Withdraw all
Post 1 letter to USA weighting	Purchase 200 US Dollars in pre-order currency	Transaction Correction for cash remittance shortage			Travel Insurance	Purchase Pure Air Sure Europe Stationary	A&L Business Deposit
Post 1 packet (280g)	Bureau Buy Back	Spoiled postal orders				Purchase 2 x £2.00 scratchcard	
Mail 6 items using bulk post facility						Purchase £10 electricity tokens	
						Purchase £5000 Premium Bonds	
						Purchase 1 Day fishing license	



HNGX Counter Performance High Level Test Plan

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Appendix 4 - HNGX Transactions Coverage

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Appendix 5 - Horizon Basket analysis

The top 25 basket sessions derived from analysis on the live Horizon system which equate for 86.12% of the overall baskets

Rank	Description	Eposs	DCS	APS	BDC	NBA	Mails	ETA	Settle	Sessions	%	Cum %
1	Withdrawal	1	0	0	0	1	0	0	1	3,384,717	18.50%	18.50%
2	Buy 1 item - cash	2	0	0	0	0	0	0	1	3,255,256	17.79%	36.28%
3	Pay 1 Bill - cash	1	0	1	0	0	0	0	1	2,399,215	13.11%	49.40%
4	Buy 2 item - cash	3	0	0	0	0	0	0	1	1,108,882	6.06%	55.46%
5	Mail 3 items - cash	1	0	0	0	0	0	3	0	774,441	4.23%	59.69%
6	Mail 2 Items - cash	1	0	0	0	0	0	2	0	604,040	3.30%	62.99%
7	Balance + Withdrawal	1	0	0	0	2	0	0	1	415,738	2.27%	65.26%
8	Pay 2 Bills - cash	1	0	2	0	0	0	0	1	341,519	1.87%	67.13%
9	Stamps?	1	0	0	0	0	0	0	1	333,307	1.82%	68.95%
10	Withdrawal + Pay 1 Bill	1	0	1	0	1	0	0	1	326,830	1.79%	70.73%
11	Buy 3 Items - cash	4	0	0	0	0	0	0	1	286,579	1.57%	72.30%
12	Pay 1 bill - Debit card	0	1	1	0	0	0	0	1	282,569	1.54%	73.84%
13	Pay 1 bill + buy Item - cash	2	0	1	0	0	0	0	1	272,057	1.49%	75.33%
14	Balance	0	0	0	0	1	0	0	1	228,568	1.25%	76.58%
15	Mail 4 Items - cash	1	0	0	0	0	0	4	0	213,526	1.17%	77.75%
16	e-Topup - cash	1	0	0	0	0	0	0	1	183,585	1.00%	78.75%
17	Mail 3 Items + Buy 1 Item - cash	2	0	0	0	0	0	3	0	182,322	1.00%	79.75%
18	Mail 2 Items + Buy 1 Item - cash	2	0	0	0	0	0	2	0	181,855	0.99%	80.74%
19	No charge AP	0	0	1	0	0	0	0	1	177,878	0.97%	81.71%
20	Currency - cash	1	0	0	2	0	0	0	1	173,239	0.95%	82.66%
21	Withdrawal + Pay 2 Bills	1	0	2	0	1	0	0	1	156,302	0.85%	83.51%
22	Withdrawal + Buy 1 Item	2	0	0	0	1	0	0	1	146,925	0.80%	84.32%
23	Buy 4 Items - cash	5	0	0	0	0	0	0	1	137,297	0.75%	85.07%
24	Mail 6 Items - cash	1	0	0	0	0	0	6	0	108,361	0.59%	85.66%
25	Pay 3 Bills - cash	1	0	3	0	0	0	0	1	101,410	0.55%	86.21%