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Bank Muscat – T24 Islamic & Channels Performance Test Strategy

**Date: 05-June-2022**

**Reference and Source Documentation**

|  |  |  |  |
| --- | --- | --- | --- |
| # | Document | Version | Date |
| 1 | Bank Muscat – T24 – Islamic Banking Performance Testing Service (RFP) | 8.0 | 01-Apr-16 |
| 2 | Bank Muscat – Islamic T24 & Channels Performance Testing - Technical Proposal | 2.0 | 01-April-21 |

**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| Author | Date | Version | Comments |
| Vinod Jackson C | 09-Mar-22 | 0.1 | Draft Version |
| Vinod Jackson C | 18-Mar-22 | 0.2 | Updated IB MB Transactions & workload |
| Vinod Jackson C | 05-Apr-22 | 0.3 | Updated T24 Transactions, Workload & NFR parameters |
| Vinod Jackson C | 07-Apr-22 | 1.0 | Updated the MB Transaction scope & Volume, Support Required, Batch File processing design & execution |
| Vinod Jackson C | 18-Apr-22 | 1.1 | Updated T24, MB & other channels transaction scope & volume, WBS |
| Vinod Jackson C | 21-Apr-22 | 1.2 | Updated PT overall scope table |
| Vinod Jackson C | 04-May-22 | 1.3 | Updated T24, Meethaq IB MB & other channels Workload. Included Corporate IB Transactions in scope, volume & other review comments |
| Vinod Jackson C | 24-May-22 | 1.4 | Updated Architecture Details, Workload & SLA |
| Vinod Jackson C | 30-May-22 | 1.5 | Updated Meethaq IB & MB SLA |
| Vinod Jackson C | 01-June -22 | 1.6 | Updated Support Required, Key Consideration & Assumption section |
| Vinod Jackson C | 05-June -22 | 1.6.1 | Updated Performance Engineering tool, WBS & Support Required Sections as per the review comments provided by BM-IT Team |

**Approved By**

|  |  |  |  |
| --- | --- | --- | --- |
| Approvers | Date | Version | Designation |
| Ganesh Chandramouli | 08-May-22 | 1.2 | Head Digital Transformation |
| Natrajan | 08-May-22 | 1.2 | PMO |
| Thirukumaran M | 08-May-22 | 1.2 | Tech Lead |
| Aswani Kumar | 08-May-22 | 1.2 | IT Manager |

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# Introduction

## Project Overview

Bank Muscat is in the process of transforming their legacy digital channels - Internet and Mobile Banking solution to Finacle Omni Channel (OCH) banking solution along with the implementation of new age Temenos T24 (Transact) R21 Islamic core banking solution. In this process, Bank Muscat is intended to benchmark reliability, scalability & performance of both Core banking solution & the Islamic IB MB application. Understanding the expectations of the Bank, Maveric offers Performance testing & performance engineering services.

## Purpose of the Document

The purpose of the document is to enable the project team and all stakeholders to understand the scope of performance testing, test design and execution approach, entry and exit criteria of each phase in testing life cycle, schedule of the testing activities, the personnel responsible for each task, and the critical assumptions, risk & mitigations associated with this planned engagement. The intended audience for this document is Business Team, IT management and Maveric delivery management. Bank Muscat IT management & Business Team will review the Test strategy document and signoff.

## Performance Testing Objective

Below mentioned are the performance test objectives derived based on the gathered requirements from Bank’s Business and IT stakeholders.

* To verify & fine tune the Islamic T24 TWS, MQ & App server performance as part of early performance test execution
* To verify the load handling capacity of T24 R21 core banking solution
* To identify the breakpoint of T24 R21 core banking solution application while the application is subjected to 100% T24 Web Browser Load, 100% Channels Load & Batch file processing
* To verify the performance of T24 R21 core banking solution for a prolonged test duration of 6 hours with 50% of the projected load & volume
* To measure the T24 COB Job performance during EOD, EOW, EOM and special day COB
* To measure the performance of the T24 core banking solution under the Branch environment
* To verify the load handling capacity of Meethaq Internet Banking & Mobile banking application
* To identify the breakpoint of Meethaq Internet Banking & Mobile banking application with 2X users & volume
* To verify the performance of Meethaq Internet Banking & Mobile banking application for a prolonged test duration of 6 hours with 50% of the projected load & volume
* To re-baseline the Meethaq Internet Banking & Mobile banking application and T24 R21 core banking solution for 100% load after the deployment of security software’s & post final UAT closure
* To measure application code & database query level performance of Meethaq IB & MB and T24 R21 core banking solution
* To monitor the server metrics not limited to CPU, Memory, Disk I/O & Network during execution and ensure the resources utilization are under threshold limits of 75%.

## Performance Testing – Overall scope

The following table represents the overall performance testing scope for T24 R21 core banking solution & Meethaq Internet Banking & Mobile banking application.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Application | Transaction List | Testing Types | Current Concurrent Users | Current Peak Vol (2022) | Projected Concurrent Users | Projected Peak Vol (2027) | Reference |
| T24 | * Account to Account Transfer * Cash Deposit * Cash Withdrawal * RTGS (Local Transfer) * SWIFT (Swift Transfer Single) * Deal Repayment Rescheduling * Single ACH transfer * Hold of Funds * Customer -360 * Account Creation * Entries for Given dates * Online Account Statement | * Load Test - 10%, 30%, 60% & 100% * Break Point Test - 200% of users & volume * Endurance Test - 50% load for 6 hours * Batch File - 10%, 30%,60% & 100% * COB Performance - EOD, EOW, EOM & Special day COB * Branch PT – 5% load   + Meethaq Ghubrah   + Meethaq Khoudh   + Meethaq Mutrah   + Mabella North   + Seeb * Re-baseline 100% Load (Post CEPS Installation) | 80 | 1463  Note: Current peak volume for Customer 360, Entries for given dates & online account statement are not available | 100 | 5595 | Section 2.2, 2.3 & 2.4 |
| Meethaq  Retail IB | * Account Summary * Internal Transfer – Within Meethaq * External Transfer – Within Oman | * Load Test - 10%, 50%, 100% * Break Point Test - 200% of users & volume * Endurance Test - 50% load for 6 hours * Re-baseline 100% Load (Post CEPS Installation) | 5 | 56 | 140 | 5907 | Section 2.8 |
| Meethaq  Corporate IB | * Account Summary * Internal Transfer – Within Meethaq * External Transfer – Within Oman | * Load Test - 10%, 50%, 100% * Break Point Test - 200% of users & volume * Endurance Test - 50% load for 6 hours * Re-baseline 100% Load (Post CEPS Installation) | 2 | 14 | 35 | 1477 | Section 2.10 |
| Meethaq MB | * Transfers - Within Meethaq * Transfers - Within Oman * Account Details * Account Summary * Login Attempts | * Load Test - 10%, 50%, 100% * Break Point Test - 200% of users & volume * Endurance Test - 50% load for 6 hours * Re-baseline 100% Load (Post CEPS Installation) | 110 | 6567 | 450 | 18840 | Section 2.12 |
| Other Channels -Webservices | **Transaction List** | **Testing Types** | **Current Peak Vol (2022)** | **Current TPS (2022)** | **Projected Peak Vol (2027)** | **Projected TPS (2027)** | **Reference** |
| PoS | * POS – Cash Advance | Load Test – 10%, 30%, 60% & 100% | 6855 | 1.90 | 33092 | 9.19 | Section 2.16 |
| CDM | * CDM- Cash deposit | 482 | 0.13 | 2328 | 0.65 |
| ATM | * ATM- Cash W/D * Balance enquiry | 5168 | 1.44 | 24950 | 6.93 |
| Meethaq IB MB | * CIF Details * Get CIF Accounts * Last N Transaction * Beneficiary List - Transfer * Get converted amount and exchange rate * Get Charge Amount * Account Summary * Account Details * Transfer - Within Meethaq * Transfer - Within Oman | 21715 | 6.03 | 69657 | 19.32 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **PT Environment** | **T24 – Hardware Details** | | | | | | |
| **System Details** | **Web Server** | **App Server** | **TWS Server** | **DB Server** | **FTP Server** | **MQ Server** |
| No of Nodes | 2 | 2 | 2 | 2 | 1 | 2 |
| CPU Model | XEON 2.2 GHz | XEON 2.2 GHz | XEON 2.2 GHz | XEON 2.2 GHz | XEON 2.2 GHz | IBM MQ 9 |
| CPU Cores | 3 vCPU | 9 vCPU | 3 vCPU | 10 vCPU | 2 vCPU | 3 vCPU |
| Software | Temenos T24 R21 UXP Browser WAS 9.0.5.5, Java 8 Update 281 | Temenos T24 R21 WAS 9.0.5.5, Java 8 Update 281 | Temenos TWS WAS 9.0.5.5, Java 8 Update 281 | Oracle 19 C | NA | IBM MQ 9 |
| OS | RHEL 8.x | RHEL 8.x | RHEL 8.x | RHEL 8.x | RHEL 8.x | RHEL 8.x |
| Memory | 128GB | 128GB | 128GB | 128GB | 32 GB | 64GB |
| Internal Drives | 250GB SSD | 750GB SSD | 250GB SSD | 1 TB | 750 GB | 500 GB |
| **Production** | No of Nodes | 2 | 2 | 2 | 2 | 2 | 2 |
| CPU Model | XEON 2.2 GHz | XEON 2.2 GHz | XEON 2.2 GHz | XEON 2.2 GHz | XEON 2.2 GHz | IBM MQ 9 |
| CPU Cores | 3 vCPU | 18 vCPU | 6 vCPU | 10 vCPU | 2 vCPU | 4 vCPU |
| Software | Temenos T24 R21 UXP Browser WAS 9.0.5.5, Java 8 Update 281 | Temenos T24 R21 WAS 9.0.5.5, Java 8 Update 281 | Temenos TWS WAS 9.0.5.5, Java 8 Update 281 | Oracle 19 C | NA | IBM MQ 9 |
| OS | RHEL 8.x | RHEL 8.x | RHEL 8.x | RHEL 8.x | RHEL 8.x | RHEL 8.x |
| Memory | 128 GB | 256 GB | 128 GB | 128 GB | 32 GB | 64 GB |
| Internal Drives | NA | NA | NA | NA | NA | NA |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Meethaq IB MB – Hardware Details** | | | | | |
| **PT Environment** | **System Details** | **Web Server** | **MADP Server** | **App Server** | **Database Server** |
| No of Nodes | 2 | 2 | 2 | 2 |
| Processor/CPU | 2 vCPU | 2 vCPU | 4 vCPU | 4 vCPU |
| RAM | 64 GB | 64 GB | 128 GB | 128 GB |
| HDD | 200 GB | 200 GB | 300 GB | 750 GB |
| Software | IBM HTTP Server 9.0.5.5, Java 1.8, | IBM Liberty Core 8.5.5.7, IBM Mobile First8.0, Java 1.8, | IBM Web Sphere 9.0.5.5, Java 1.8, Finacle OCH 11.2.8 | Oracle 19 C |
| OS | RHEL 8.x | RHEL 8.x | RHEL 8.x | RHEL 8.x |
| **Production** | No of Nodes | 4 | 4 | 4 | 4 |
| Processor/CPU | 2 vCPU | 2 vCPU | 8 vCPU | 4 vCPU |
| RAM | 64 GB | 64 GB | 256 GB | 128 GB |
| HDD | 200 GB | 200 GB | 300 GB | 1.5 GB |
| Software | IBM HTTP Server 9.0.5.5, Java 1.8, | IBM Liberty Core 8.5.5.7, IBM Mobile First8.0, Java 1.8, | IBM Web Sphere 9.0.5.5, Java 1.8, Finacle OCH 11.2.8 | Oracle 19 C |
| OS | RHEL 8.x | RHEL 8.x | RHEL 8.x | RHEL 8.x |

# Non-Functional Requirements

## T24 Transactions In-Scope

* The below mentioned are the finalized T24 web browser transactions arrived based on high volume transactions obtained from current IMAL production data shared by BM IT.
* Base line test will be performed for AA Transactions as a test execution prerequisite to arrive SLA

|  |  |
| --- | --- |
| End to End Transaction | User Actions |
| Common Transactions | Launch |
| Login |
| Logout |
| Account To Account Transfer | Navigate to Account Transfer menu under Retail Operations |
| Click Transfer between accounts |
| Enter Transaction details and Commit |
| Cash Deposit | Navigate to the Teller menu |
| Click LCY Cash deposit under Cash Transaction |
| Click on new deal |
| Enter Transaction Details and Commit |
| Cash Withdrawal | Navigate to the Teller menu |
| Click LCY Cash Withdrawal and Click under LCY Cash Withdrawals |
| Click on new deal |
| Enter Transaction Details and Commit |
| RTGS (Local Transfer) | Navigate to ACH/RTGS menu under Retail Operations |
| Click Input RTGS Credit Tfr (103.202) under RTGS Outward |
| Enter Transaction Details and Commit |
| SWIFT (Swift Transfer Single) | Navigate to payments menu under Retail Operations |
| Click Generate OT103 for FT under Outward Remittance |
| Enter Transaction details and Commit |
| Deal Repayment Rescheduling | Navigate to Credit Management under Credit Admin Input Menu |
| Click Find Finance |
| Enter Product Details & Search |
| Select a product & click new activity |
| Click change activity for schedule |
| Change Payment Frequency & Commit |
| Single ACH transfer | Navigate to ACH/RTGS menu under Retail Operations |
| Click on Input CBO-ACH Credit Tfr (102) under ACH outward |
| Enter Transaction Details and Commit |
| Hold Of Funds | Navigate to Block Funds under Cards Menu |
| Click on Block Funds |
| Enter Transaction Details and Commit |
| Customer -360 | Navigate to Enquiries Menu |
| Click on Customer 360 view under Enquiries Menu |
| Enter Customer ID and Search |
| Select Customer overview from dropdown & submit to view accounts tab |
| Click on Cust Position Tab |
| Click on Collateral Tab |
| Click on Collateral Discrepancy Daily Report Tab |
| Click on Liability Tab |
| Click on Customer Docs Tab |
| Click on Utility Info Tab |
| Click on FATCA details Tab |
| Select view customer details from dropdown |
| View customer details |
| Account Creation | Navigate to Welcome Kit process Menu |
| Click Add WK Creation Default Values |
| Click Find |
| Initiate a Welcome Kit upload |
| Enter Details & Commit |
| Navigate back to Welcome Kit process Menu |
| Click Initiate/Reverse Welcome Kit creation |
| Enter WKTTXNID and Search |
| Select Record and Initiate the Welcome Kit |
| Click verify the deal |
| Entries for given dates | Navigate to Enquiries under Personal Banker Menu |
| Click on Entries for Given dates under Account Enquiries |
| Enter Account No & Booking Date and search |
| Online Account statement | Navigate to Enquiries under Personal Banker Menu |
| Click on Online Account Statement under Account Enquiries |
| Enter Account No & Booking Date and search |

## T24 Workload Model

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | |  | |  | | Branch Peak | |  | |
| Transaction/ Functionality | **Peak hourly Volume (2022)** | **5 Years projection (2027)** | **Sanity** | | **30% Load** | | **60% Load** | | **100% Load** | | **Endurance**  **(6 Hours)** | |
| **Users** | **Vol.** | **Users** | **Vol.** | **Users** | **Vol.** | **Users** | **Vol.** | **Users** | **Vol.** |
| Account To Account Transfer | 33 | 101 | 1 | 10 | 1 | 31 | 1 | 61 | 2 | 102 | 1 | 306 |
| Cash Deposit | 83 | 250 | 1 | 25 | 1 | 76 | 2 | 152 | 4 | 252 | 2 | 756 |
| Cash Withdrawal | 46 | 137 | 1 | 14 | 1 | 41 | 1 | 83 | 2 | 138 | 1 | 414 |
| RTGS (Local Transfer) | 27 | 79 | 1 | 8 | 1 | 24 | 1 | 48 | 2 | 80 | 1 | 240 |
| SWIFT (Swift Transfer Single) | 12 | 35 | 1 | 4 | 1 | 11 | 1 | 21 | 1 | 35 | 1 | 108 |
| Deal Repayment Rescheduling | 32 | 95 | 1 | 10 | 1 | 29 | 1 | 58 | 2 | 96 | 1 | 288 |
| Single ACH transfer | 932 | 2782 | 6 | 280 | 13 | 845 | 30 | 1680 | 50 | 2800 | 30 | 8400 |
| Hold Of Funds | 143 | 426 | 1 | 42 | 2 | 128 | 5 | 255 | 8 | 424 | 4 | 1272 |
| Customer -360 | NA | 750 | 1 | 75 | 4 | 228 | 8 | 456 | 13 | 754 | 10 | 2262 |
| Account Creation | 155 | 463 | 1 | 46 | 2 | 140 | 5 | 280 | 8 | 464 | 4 | 1392 |
| Entries for Given dates | NA | 300 | 1 | 30 | 2 | 90 | 3 | 180 | 5 | 300 | 3 | 900 |
| Online Account Statement | NA | 150 | 1 | 15 | 1 | 45 | 2 | 90 | 3 | 150 | 2 | 450 |
| Total | **1463** | **5568** | **17** | **559** | **30** | **1688** | **60** | **3364** | **100** | **5595** | **60** | **16788** |

**Break Point Scenario:**

|  |  |  |  |
| --- | --- | --- | --- |
| Scenario # | Concurrent Users | Volume | Remarks |
| Scenario 1 | T24 users - 100 | 140525 | 100% Branch Peak + 100% Channels peak + Batch file processing |
| Scenario 2 | T24 users - 700 (Max.) | 276050 | 200% Branch Peak + 200% Channels peak + Batch File Processing |

Note:

1. Scenario 2 will be executed in case the system is able to withstand the break point scenario 1
2. 700 concurrent users are considered based on the total T24 license purchased by the Bank

## T24 Batch Processing Scope

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| E2E Transactions | Sanity | 30% load | 60% load | 100% load |
| BANK PAY | 500 | 1500 | 3000 | 5000 |

## Branch PT Scope

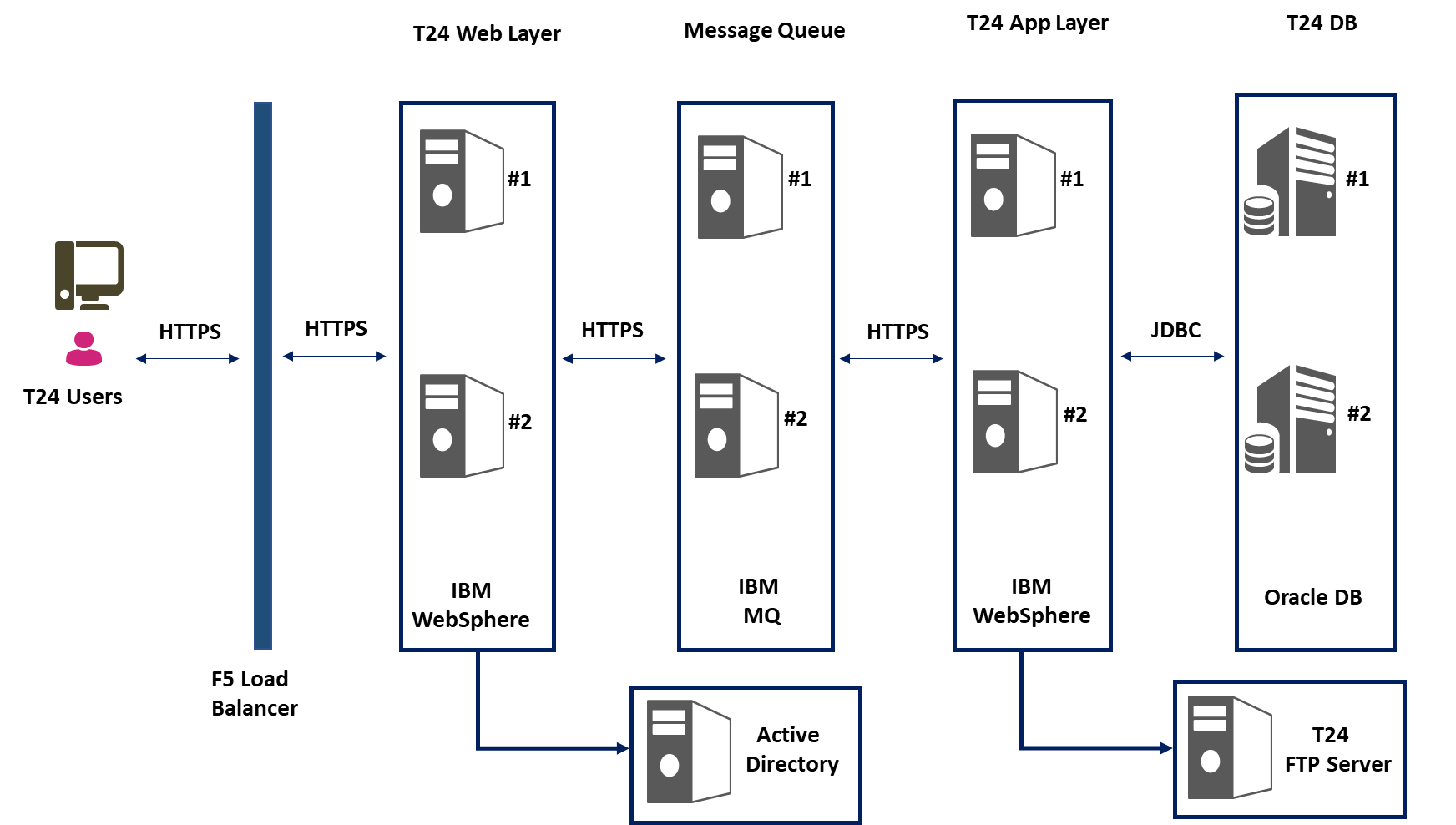
The below mentioned branches are identified based on the following assumptions agreed with BM-IT

* Considering the 2016-2020 yearly transaction count across all the Meethaq branches, High, Medium & Low volume branches are finalized for PT scope
  + Meethaq Ghubrah Br - High volume (3,722,275) - 1 Mbps
  + Meethaq Khoudh Br - Medium Volume (1,535,452) - 1 Mbps
  + Meethaq Mutrah Br - Low Volume (55,421) - 1 Mbps
  + Mabella - 2 Mbps/ 5 Mbps
  + Seeb - 2 Mbps/ 5 Mbps

|  |  |  |
| --- | --- | --- |
| Transaction/ Functionality | Branch PT | |
| **Users** | **Vol.** |
| Account To Account Transfer | 1 | 5 |
| Cash Deposit | 1 | 13 |
| Cash Withdrawal | 1 | 7 |
| RTGS (Local Transfer) | 1 | 4 |
| SWIFT (Swift Transfer Single) | 1 | 2 |
| Deal Repayment Rescheduling | 1 | 5 |
| Single ACH transfer | 1 | 140 |
| Hold Of Funds | 1 | 21 |
| Customer -360 | 1 | 38 |
| Account Creation | 1 | 23 |
| Entries for Given dates | 1 | 15 |
| Online Account Statement | 1 | 8 |
| Total | **12** | **258** |

Note: Above volume for Branch PT is derived from 5% of T24 web transactions volume.

## T24 Technical Architecture



## Meethaq Channels (IB & MB)

## Transactions In-scope - Meethaq Retail IB

|  |  |  |
| --- | --- | --- |
| **End to End Transaction** | **Sub Transaction / User Actions** | **Response time SLA** |
| **Common Transaction** | Launch | 400 milliseconds |
| Login page - Dashboard | 2000 milliseconds |
| Logout | 200 milliseconds |
| **Account Summary** | Click On Accounts Page | 1400 milliseconds |
| Click Detailed Statement | 300 milliseconds |
| Select Month & Get Statement | 700 milliseconds |
| **Internal Transfer – Within Meethaq** | Click On Transfers Page | 350 milliseconds |
| Select Within Bank Muscat | 500 milliseconds |
| Select Account Details | 800 milliseconds |
| Enter Transfer Details and Continue | 1100 milliseconds |
| Enter OTP and Confirm | 4200 milliseconds |
| **External Transfer – Within Oman** | Click On Transfers Page | 300 milliseconds |
| Select Within Oman | 700 milliseconds |
| Select Account Details | 600 milliseconds |
| Enter Transfer Details and Continue | 2200 milliseconds |
| Enter OTP and Confirm | 5500 milliseconds |

Note: As confirmed by BM-IT, 95th Percentile response time from shared Conventional IB results is considered as SLA for Meethaq Retail IB transactions

## Meethaq Retail IB Workload Model

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Transaction/ Functionality | Peak Hourly Volume (2022) | 5 Years Projection (2027) | Sanity | | 50% Load | | 100% Load | | Endurance (6 hours) | | Break Point | |
| **Users** | **Vol.** | **Users** | **Vol.** | **Users** | **Vol.** | **Users** | **Vol.** | **Users** | **Vol.** |
| Account Summary | 16 | 1472 | 4 | 148 | 18 | 738 | 35 | 1470 | 18 | 4428 | 70 | 2940 |
| Internal Transfer – Within Meethaq | 16 | 2830 | 6 | 282 | 33 | 1419 | 66 | 2838 | 33 | 8514 | 132 | 5676 |
| External Transfer – Within Oman | 24 | 1605 | 4 | 160 | 19 | 798 | 39 | 1599 | 19 | 4788 | 78 | 3198 |
| Total | **56** | **5907** | **14** | **590** | **70** | **2955** | **140** | **5907** | **70** | **17730** | **280** | **11814** |

## Transactions In-scope - Meethaq Corporate IB

|  |  |  |
| --- | --- | --- |
| End to End Transaction | Sub Transaction / User Actions | Response time SLA |
| Common Transaction | Launch | 400 milliseconds |
| Login page - Dashboard | 2000 milliseconds |
| Logout | 200 milliseconds |
| Account Summary | Click on Accounts Page | 1400 milliseconds |
| Click Current Accounts Tab | 1400 milliseconds |
| Enter Account details & search | 1400 milliseconds |
| Click Detailed Statement | 300 milliseconds |
| Select Month & Get Statement | 700 milliseconds |
| Internal Transfer – Within Meethaq Inputter | Click on Transfers Page | 350 milliseconds |
| Select Within Bank Muscat | 500 milliseconds |
| Select Account Details | 800 milliseconds |
| Enter Transfer Details and Continue | 1100 milliseconds |
| Enter OTP and Confirm | 4200 milliseconds |
| Internal Transfer – Within Meethaq Authorizer | Click on View Approval Queue Page | TBC |
| Enter Transfer Details and Search |
| Select the Transaction and Click on Approve |
| Enter OTP and Approve |
| Approval Confirmation Page |
| External Transfer – Within Oman  Inputter | Click on Transfers Page | 300 milliseconds |
| Select Within Oman | 700 milliseconds |
| Select Account Details | 600 milliseconds |
| Enter Transfer Details and Continue | 2200 milliseconds |
| Enter OTP and Confirm | 5500 milliseconds |
| External Transfer – Within Oman  Authorizer | Click on View Approval Queue Page | TBC |
| Enter Transfer Details and Search |
| Select the Transaction and Click on Approve |
| Enter OTP and Approve |
| Approval Confirmation Page |

Note: As confirmed by BM-IT, 95th Percentile response time from shared Conventional IB results is considered as SLA for Meethaq Corporate IB Inputter transactions. However, Baseline test will be performed for authorizer transactions as a test execution prerequisite to arrive response time SLA

## Meethaq Corporate IB Workload Model

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Transaction/ Functionality | Peak Hourly Volume (2022) | 5 Years Projection (2027) | Sanity | | 50% Load | | 100% Load | | Endurance (6 hours) | | Break Point | |
| **Users** | **Vol.** | **Users** | **Vol.** | **Users** | **Vol.** | **Users** | **Vol.** | **Users** | **Vol.** |
| Account Summary | 4 | 368 | 1 | 37 | 5 | 185 | 9 | 369 | 5 | 1110 | 18 | 738 |
| Internal Transfer – Within Meethaq | 4 | 708 | 2 | 72 | 9 | 360 | 17 | 714 | 9 | 2160 | 34 | 1428 |
| External Transfer – Within Oman | 6 | 401 | 1 | 40 | 4 | 196 | 9 | 396 | 4 | 1176 | 18 | 792 |
| Total | **14** | **1477** | **4** | **149** | **18** | **741** | **35** | **1479** | **18** | **4446** | **70** | **2958** |

The Meethaq Retail IB & Corporate IB workload model is derived based on the below inputs/assumptions provided by BM-IT Team

* As confirmed by BM-IT, Transactions volume are inherited from the strategy of FMS phase 3 project (Zylog - Meethaq IB channel)
* 50% of Meethaq MB projected user concurrency & volume is considered for overall Meethaq IB projected user concurrency & volume
* Overall Meethaq IB (Retail + Corporate IB) Projected User Concurrency (2027) = 175
* Overall Meethaq IB (Retail + Corporate IB) Projected User Concurrency (2027) = 7384
* 80% of the overall IB user & Volume is considered for Retail IB wherein the rest 20% of user & volume is given to Corporate IB (considering the less volume in current production)
* As confirmed by Business & BM-IT, peak business hour for Meethaq IB is considered as 2 hours/ day

## Transactions In-scope - Meethaq MB

|  |  |  |
| --- | --- | --- |
| End to End Transaction | Sub Transaction / User Actions | Response time SLA |
| Common  Transaction | User Login | 2050 milliseconds |
| Logout | 190 milliseconds |
| Transfers -  Within Meethaq | Enter Account Details and Continue | 1300 milliseconds |
| Enter Transaction Details and Continue | 1100 milliseconds |
| Enter OTP and Confirm | 5450 milliseconds |
| Transfers -  Within Oman | Enter Account Details and Continue | 1350 milliseconds |
| Enter Transaction Details and Continue | 1450 milliseconds |
| Enter OTP and Confirm | 6550 milliseconds |
| Account Details | Click View Details and Continue | 1750 milliseconds |
| Account Summary | Click Detailed Statement | 1020 milliseconds |
| Enter Date Range & View | 1550 milliseconds |

Note: As confirmed by BM-IT, 95th percentile response time from shared Conventional MB results is considered as response time SLA for Meethaq MB Transactions

## Meethaq MB Workload Model

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Transaction/ Functionality | Peak Hourly Volume (2022) | 5 Years Projection (2027) | Sanity | | 50% Load | | 100% Load | | Endurance  (6 hours) | | Break Point | |
| **Users** | **Vol.** | **Users** | **Vol.** | **Users** | **Vol.** | **Users** | **Vol.** | **Users** | **Vol.** |
| Transfers - Within Meethaq | 1465 | 7075 | 15 | 645 | 80 | 3440 | 163 | 7009 | 80 | 20640 | 326 | 14018 |
| Transfers - Within Oman (ACH) | 1050 | 4011 | 9 | 387 | 47 | 2022 | 93 | 3999 | 47 | 12126 | 186 | 7998 |
| Account Details | 205 | 410 | 2 | 92 | 5 | 230 | 9 | 414 | 5 | 1380 | 18 | 828 |
| Account Summary | 1840 | 3680 | 9 | 396 | 43 | 1892 | 85 | 3740 | 43 | 11352 | 170 | 7480 |
| Login Attempts | 2007 | 3664 | 10 | 370 | 50 | 1850 | 100 | 3700 | 50 | 11100 | 200 | 7400 |
| Total | **6567** | **18840** | **45** | **1890** | **225** | **9433** | **450** | **18862** | **225** | **56598** | **900** | **37724** |

## Meethaq IB MB Technical Architecture

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## Early PT / Other Channels (ATM, CDM & POS)

## Transactions In-scope – Early PT / Other channels

Below mentioned T24 processing time is obtained from Bank Muscat conventional T24 Application

|  |  |  |
| --- | --- | --- |
| Channel | Webservices / API | T24 Processing Time |
| POS | POS - Purchase / Cash Advance - Visa | <750 milliseconds |
| CDM | CDM- Cash deposit | <750 milliseconds |
| ATM | ATM- Cash W/D - Visa Issuing | <750 milliseconds |
| ATM | Balance enquiry | <750 milliseconds |
| Meethaq IB MB | CIF Details | 2 Seconds |
| Get CIF Accounts | 2 Seconds |
| Last N Transaction | 3 Seconds |
| Beneficiary List - Transfer | 2 Seconds |
| Get converted amount and exchange rate | 3 Seconds |
| Get Charge Amount | 2 Seconds |
| Account Summary | 3 Seconds |
| Account Details | 3 Seconds |
| Transfer - Within Meethaq | 3 Seconds |
| Transfer - Within Oman | 3 Seconds |

Note: As confirmed by BM-IT, 95th Percentile response time from shared postilion/ESB services results is considered as SLA for other channel services

## Early PT / Other channels Workload Model

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | |  | |  | | Channels Peak | |
| Channel | **Transaction/ Functionality** | **Peak Hourly Volume (2022)** | **5 Years Projection (2027)** | **10% Load** | | **30% Load** | | **60% Load** | | **100% Load** | |
| **Volume** | **TPS** | **Volume** | **TPS** | **Volume** | **TPS** | **Volume** | **TPS** |
| POS | POS | 6855 | 33092 | 3309 | 0.92 | 9928 | 2.76 | 19855 | 5.52 | 33092 | 9.19 |
| CDM | CDM- Cash deposit | 482 | 2328 | 233 | 0.06 | 698 | 0.19 | 1397 | 0.39 | 2328 | 0.65 |
| ATM | ATM- Cash W/D | 4290 | 20708 | 2071 | 0.58 | 6212 | 1.73 | 12425 | 3.45 | 20708 | 5.75 |
| ATM | Balance enquiry | 878 | 4235 | 424 | 0.12 | 1271 | 0.35 | 2541 | 0.71 | 4235 | 1.18 |
| Meethaq IB MB | CIF Details | 3848 | 11491 | 1149 | 0.32 | 3447 | 0.96 | 6895 | 1.92 | 11491 | 3.19 |
| Get CIF Accounts | 3513 | 10490 | 1049 | 0.29 | 3147 | 0.87 | 6294 | 1.75 | 10490 | 2.91 |
| Last N Transaction | 1805 | 5390 | 539 | 0.15 | 1617 | 0.45 | 3234 | 0.90 | 5390 | 1.50 |
| Beneficiary List - Transfer | 3963 | 11834 | 1183 | 0.33 | 3550 | 0.99 | 7100 | 1.97 | 11834 | 3.29 |
| Get converted amount and exchange rate | 2368 | 7070 | 707 | 0.20 | 2121 | 0.59 | 4242 | 1.18 | 7070 | 1.96 |
| Get Charge Amount | 1588 | 4742 | 474 | 0.13 | 1423 | 0.40 | 2845 | 0.79 | 4742 | 1.32 |
| Account Summary | 1860 | 5554 | 555 | 0.15 | 1666 | 0.46 | 3332 | 0.93 | 5554 | 1.54 |
| Account Details | 205 | 612 | 61 | 0.02 | 184 | 0.05 | 367 | 0.10 | 612 | 0.17 |
| Transfer - Within Meethaq | 1485 | 7170 | 717 | 0.20 | 2151 | 0.60 | 4302 | 1.20 | 7170 | 1.99 |
| Transfer - Within Oman | 1080 | 5214 | 521 | 0.14 | 1564 | 0.43 | 3128 | 0.87 | 5214 | 1.45 |
| Total | | **34220** | **129930** | **12992** | **3.61** | **38979** | **10.83** | **77957** | **21.65** | **129930** | **36** |

Note: 30% YOY growth has been considered for ATM, CDM, POS & Meethaq IB MB transfers webservices volume based on the assumptions provided by BM-IT Team

# Performance Test Approach

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## Performance Test Design Approach

Performance test design for the Applications & channels in scope will be carried out in the below ways.

## T24 Core Transaction

* The finalized E2E T24 web browser transactions will be converted into test scripts using performance testing tool and the same will be further enhanced to replicate for multiple user load & volume

## Channel Web Service

* The ESB webservices pertained to critical transaction identified from channels such as Islamic IB MB, ATM, CDM, POS would be gathered.
* The identified webservices will be scripted & enhanced further to generate bulk volume of requests to achieve target TPS towards Islamic T24 and measure the individual API’s performance as part of early performance testing

## E2E IB & MB Transaction

* The finalized Meethaq internet banking transactions will be accessed via recommended browser and the corresponding network traffic request/response will be captured in performance testing tool & the same would be converted as test scripts
* The finalized Meethaq Mobile Banking transactions will be accessed via android mobile device and the corresponding network traffic request/response will be captured in performance testing tool & the same would be converted as test scripts

## T24 COB Performance

* The batch jobs to be monitored as part of the COB are yet to be identified. Post identification of the job details/ stages a complete checklist will be prepared for data collection and analysis
* The T24 COB – EOD, EOW & EOM jobs would be triggered and the respective performance analysis would be measured by PT team

## T24 Batch Process Transaction

* The finalized batch processing transactions will be converted into encrypted file and the same will be placed in the host batch folders. The host file Encryption/Decryption and job scheduling will be done by BM IT for all rounds of performance testing.

## Performance Test Execution

## Early Performance Test Execution Approach

The objective of early performance test approach is to benchmark the performance of webservices/ API before the actual end-end performance of the transactions and provides an advantage to fine tune the channel services that are targeted to the core banking solution & improvise the potential performance parameters across the T24 server stack – TWS, MQ, T24 App server, T24 DB server.

Graphical user interface, application

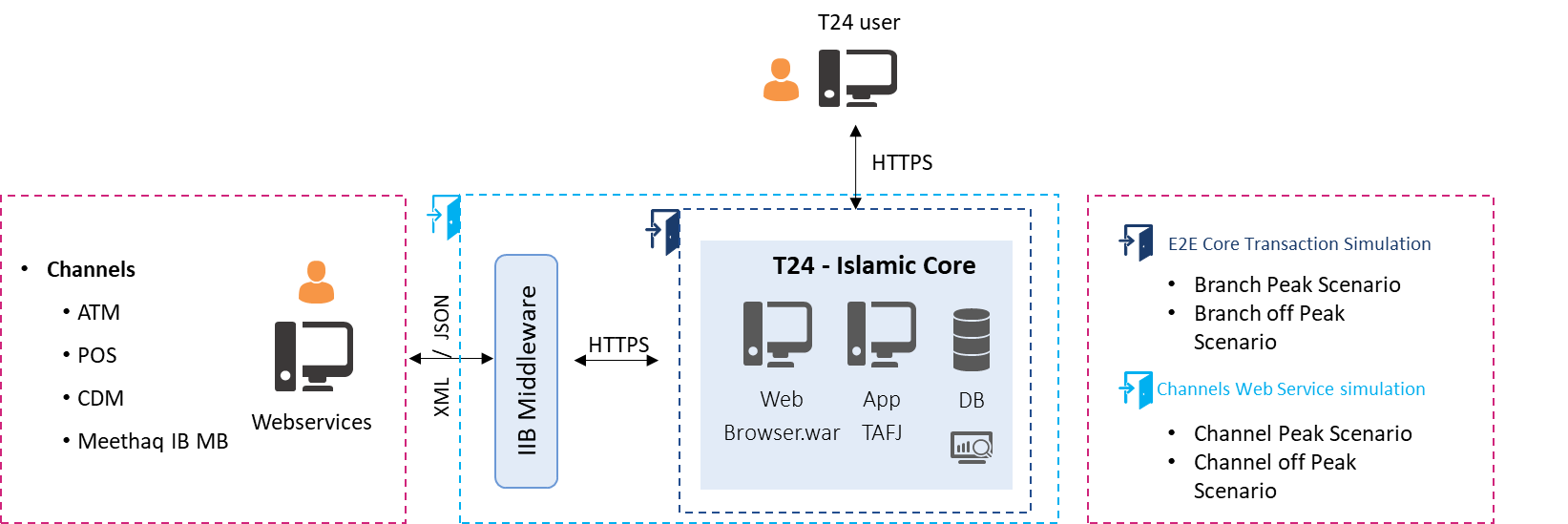
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| Test Factor | Target TPS | Load Pattern |
| --- | --- | --- |
| Load Test | 29 | Sanity, 30%, 60% & 100% |

Note: Refer Section 2.16 for Early PT workload model

## Islamic T24 Test Execution approach

The below execution approach for Islamic core banking is designed bringing in various real time scenarios & prior experience with similar implementation. The proposed real time scenario’s replicates the usage pattern of the core and digital channels in production.



**Load Test**

The load test scenario covers the peak & off-peak factors of E2E Core transaction simulation & the channels web service simulation,

* Branch Peak & Channels off Peak
  + Branch peak resembles the peak load of T24 related web browser transactions
  + Channels off peak resembles the off-peak load from identified channels (ATM, CDM, POS, Meethaq IB MB) as a webservice calls to T24 via ESB
* Branch off Peak & Channels Peak
  + Branch off peak resembles the off-peak load of T24 related web browser transactions
  + Channels peak resembles the peak load from identified channels (ATM, CDM, POS, Meethaq IB MB) as a webservice calls to T24 via ESB

The profiling approach would be adapted to simulate the load scenarios, the load pattern to be considered are 30%, 60% & 100% load

**Break Point Test**

The break pointtest covers the peak factor of both E2E Core transaction simulation & the channels web service simulation,

* Branch Peak & Channels Peak
  + Branch peak resembles the peak load of T24 related web browser transactions
  + Channels peak resembles the peak load from identified channels (ATM, CDM, POS, Meethaq IB MB) as a webservice calls to T24 via ESB

The 2X volume and a maximum of 2X user concurrency would be adapted to simulate the break point condition.

**Endurance Test**

The endurance test scenario covers the 50% of E2E Core transaction load & 50% of the channel’s web service load/ TPS for a prolonged duration of 6 hours.

| Test Factor | Scenario | Load Pattern |
| --- | --- | --- |
| Load Test | Branch Peak & Channels off Peak | 30%, 60% & 100% Load Pattern |
| Branch off Peak & Channels Peak | 60% of Branch Load + 100% of Channels load |
| Break Point Test | Branch Peak & Channels Peak | 100% of Branch load + 100% of Channels load |
| Branch Peak & Channels Peak | 200% of Branch load + 200% of Channels load |
| Endurance Test | 6 hours prolonged test | 50% of Branch load + 50% of Channels load |

Note: Refer Section 2.2 for Islamic T24 Workload Model

## Islamic T24 COB execution approach

Below are the various scenarios to be covered as part of the COB performance execution,

* **COB – EOD, EOW & EOM**
  + The COB comprises of various Batch process that defines the stage and sequence in which the jobs to be run, the same will be measured against respective SLA’s
  + Note: As requested by Bank, EOW will be executed only once during execution phase
* **Channels peak & EOD COB**
  + The COB performance would be monitored for the End of the Day COB while peak load from channels is injected to the Islamic T24
* **Special Day COB**
  + The COB performance would be monitored for the End of the Day COB executed post completion of break point scenario mentioned in the E2E T24 test execution approach

## Islamic T24 Batch Process execution approach

* In Batch process execution approach, the scheduled Bank pay - salary processing transactions will be executed for each load test scenarios and the same will be measured against respective SLA’S
* No of batch files stimulated in parallel for each load test scenario is based on the transactions volume count (i.e., for 100% load test – 5k Transactions would be stimulated in 10 parallel files)
* The time taken to process number of records during each round of execution (30%, 60% & 100%) in Islamic T24 CBS would be monitored

Graphical user interface, application

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Note: Refer Section 2.4 for Islamic T24 – Batch process Workload Model

## Branch PT approach

* Maveric will perform branch PT testing to measure the performance of the T24 core banking solution under the Branch environment.
* Below are the scenarios to be covered as part of the Branch PT execution
  + BOD Login - Login user action would be simulated from the identified branch wherein the maximum user load identified per branch would be logging into Islamic T24 at the same point in time to replicate the real time beginning of the day
  + Live branch peak scenario – The in-scope T24 transactions would be simulated from the identified branches during peak working hours of the branch in order to measure the impact on the network bandwidth and the other applications running in respective branch
  + Live branch off peak scenario - The in-scope T24 transactions would be simulated from the identified branches during non-working hours of the branch in order to measure the impact on the network bandwidth and the other applications running in respective branch

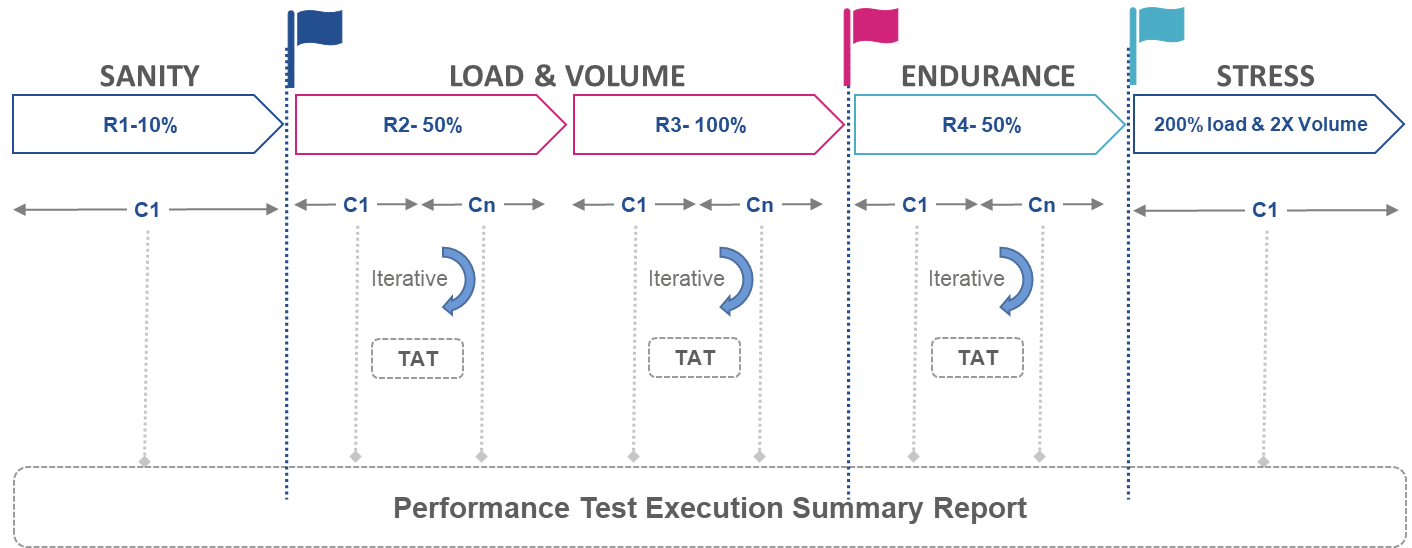
Note: Refer Section 2.5 for Islamic T24 - Branch PT Workload Model

## Meethaq IB & MB Execution Approach

The Meethaq IB MB execution would be conducted as a standalone test to fine tune the Finacle Omni channel components.

Diagram

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**Note**: (Following points are common for both T24 & Meethaq IB & MB execution approach)

* Each round of testing will have a re-run and it will be planned based on the fixes deployed in the performance test environment
* In case of clean run and if there are no performance issues, then we would conduct one more run to check the consistency of the results
* Maveric will execute more than 2 cycles of testing if a particular round requires additional cycles based on the test results. However, this is applicable if the cycles of testing fall under proposed effort & schedule. Anything beyond the proposed effort will follow a change management process and will considered as a Change Request (CR).
* To move to next cycle of testing, the current cycle should meet its exit criteria (95% of throughput achieved, <5% of error rate, 95% of the response time SLA are met & < resource utilization threshold SLA). This should also be agreed with respective stake holders of the project, we would communicate to the Bank Muscat before the start of every cycle of testing.

Note: Refer Section 2.8,2.10 & 2.12 for Meethaq IB & MB Workload Model

# Out of Scope

* Maveric will not test other applications/ channels & transactions apart from the agreed scope
* Surrounding system / interfaces/ 3rd party gateways will not be tested standalone
* Other Non-Functional testing including Database testing, Disaster Recovery, Fail-over / Fail Back, High Availability, Usability testing, Security Testing, Compatibility Testing across different browsers / OS, Data migration testing & Data Integrity Testing of migrated data along with base data volume creation in the database
* Performance testing in any other environment other than the finalized performance test environment will not be executed
* Environment setup, configuration and base data creation are out of scope
* Any browser rendering time will not be included as part of E2E transaction response time for both Meethaq IB MB & Islamic T24
* Client-side encryption, CAPTCHA, Email / SMS alerts, OTP and any other security level features will not be simulated as part of performance testing
* Performance tuning implementation would be out of scope
* Monitoring the third-party systems/ gateways using APM solutions will be out of scope
* **Less volume Transactions** – any Islamic T24 transactions/Functionalities having less than 30 volumes has been considered as out of scope for PT
* Branch PT will not be executed in other branches apart from branches mentioned in section 2.5
* Logistic arrangements for Branch PT would be out of scope

# Test Data Management & Responsibilities

|  |  |  |  |
| --- | --- | --- | --- |
| Applications/Channels | Test Data Requirements | Quantity | Ownership |
| Islamic T24 | Sample data like login credentials for T24 users, customers & accounts details should be provided for test design activities | 10 | Maveric |
| Current production data should be migrated & made available in PT test environment as part of base customer data/ volume | Database Volume should be equal to current PROD | BM IT |
| To create required number of customers in T24 for performance test execution | 1500 | Maveric |
| Login credentials for the T24 user Login should be provided with required Menu’s configured as similar to production with common password for PT execution | 700 | Maveric |
| Channels (Webservices) | Sample data for channels should be provided for test design activities | 10 | Maveric |
| Channels (E2E) | To register Meethaq IB & MB customers via admin portal | 1000 | Maveric |

# 

# Defect / Issue Management

Each round of execution will comprise of actual Test stage followed by defect RCA, defect triage, defect fixing and re-test stage as below

Diagram

Description automatically generated

* Defects and bottlenecks identified during the execution phase will be logged into Bank Muscat defect tracking tool –TFS and all the raised issues will be tracked till closure.
* Defect Fix cycle for the raised issues varies on the complexity & severity of the defect. However, defect fixing is expected within the agreed Turnaround time (TAT) of maximum 2 days. Any delay in the TAT will have an impact on schedule.
* Fixes/Solutions provided by the Development team, Bank Muscat IT, Database team for the raised issues will be captured and attached along with defect for future reference including observations

# Entry and Exit Criteria

|  |  |  |
| --- | --- | --- |
| Phase | Entry Criteria | Exit Criteria |
| Test Design | * Transactions in scope should be finalized along with user volume distribution. * Access to all the Applications under test (AUT) in workstations identified for performance testing. * No Critical (Showstopper) and High functional defects in the transactions / business processes that are in the scope of Performance Testing. * Test data required for design should be made available with pre-requisites. * Performance test environment availability. * Test environment should be integrated with all the necessary systems & interfaces. * Real Mobile device and latest version of Retail mobile banking application for MB scripting. * Password encryption, CAPTCHA, URL Encryption & OTP should be disabled in the IB & MB application for scripting. * Performance tool setup and workstation privileges. | * Test Scripts for all the transactions should be ready for execution * Verify scripts stability with multiple test data |
| Test Execution | * Performance Test Environment should be stable & be similar to production environment in terms of Architectural setup * As Agreed, Dedicated Performance Test Environment should be made available for execution. * Performance Test Environment should be dedicated to performance testing team & the same should not be shared with any other testing activities during execution timelines. * Defect fixes turnaround time to be agreed with stakeholders * Required amount of test data should be ready for execution * IBM Tool license should be installed on the required machines. * Support required from BM IT & other channels team would be made available for execution * Resource utilization logs & application logs setup to be ready. * AWR & ADDM logs should be configured in the Database. | * All the scheduled rounds of execution should be completed – 100% Execution completion * All the performance objectives should be met * Round wise execution summary report should be signed off by BM IT * Performance defects, if any, identified during the execution to be fixed / tuned / tested and closed. |
| Test Closure | * Completion of all the planned rounds of planned Performance Test Executions | * Outstanding low and medium defects should not be more than 5%, outstanding defect must also have an alternative workaround otherwise it must be fixed. Any deviations from this should be approved by Bank * Outstanding defect should not have any High / Critical defects. * Performance Testing Closure Report Sign Off |

Note: In case of any exit criteria are not met against the respective phases, the required approvals would be obtained from Bank Muscat Project Management team.

# Testing Tool

## Performance Testing Tool

Based on request from Bank, the Apache JMeter (open-source application) will be used for the performance script development. Any risk associated with the open-source application to be borne by Bank. Below are the technical challenges that were presented to the Bank,

* Enabling extensive logging mechanism will also impact the load generating capacity of JMeter
* In case if the Temenos/ Infosys vendor expects PT team to share the runtime generated server values such as session ID/ BwayParam (any unique reference for transactions) it cannot be extracted unless the extensive logging is enabled
* There is no recognized technical support available for Apache JMeter
* JMeter need to be executed in command line mode during execution & there is no straight forward approach to monitor the live traffic, throughput, response time, hits per sec, detailed error message about point of failure and functionality wise failure stats

## Performance Engineering Tool

***Applicare APM Solution***

Maveric has alliance with Arcturus Technologies on Applicare - Application monitoring tool (APM) and would like to use the same for this engagement. Applicare is a proactive Enterprise Application Performance Management suite designed to improve performance, scalability and stability of the applications. In addition to server performance, Applicare has ‘End User Experience Analyzer’ used to monitor the performance of Digital applications as experienced by actual end user. Applicare agents would be deployed in respective servers of Islamic T24 & Finacle IB MB stack and data metric would be collected by the agent in real time and stored in the Applicare controller Database to aid the analysis of KPI.

# Work Breakdown Structure

|  |  |  |  |
| --- | --- | --- | --- |
| **Activities** | **No. of Day(s)** | **Revised Date** | |
| **Start** | **Finish** |
| Publish Test strategy - Draft version | 1 | 09-Mar-22 | 09-Mar-22 |
| **Requirement Gathering & Planning** | **10** | **05-Apr-22** | **18-Apr-22** |
| Finalize test strategy & obtain sign off | 10 | 05-Apr-22 | 18-Apr-22 |
| **Pre-Design activities** |  | **16-Jan-22** | **20-Apr-22** |
| VPN enablement to offshore team | 15 | 16-Jan-22 | 05-Feb-22 |
| Test ID creation in Jump Server | 5 | 10-Apr-22 | 16-Apr-22 |
| Tool Installation & setup - JMeter | 2 | 19-Apr-22 | 20-Apr-22 |
| In-scope Functionality Health check in SIT Env. | 1 | 19-Apr-22 | 19-Apr-22 |
| Sample test data readiness in SIT Environment | 2 | 19-Apr-22 | 20-Apr-22 |
| **Design Activities** | **28** | **21-Apr-22** | **30-May-22** |
| Stage 1 - Webservices (Early PT) | 10 | 21-Apr-22 | 04-May-22 |
| Stage 2 - Islamic T24 Web Transactions | 20 | 05-May-22 | 01-Jun-22 |
| Stage 3A - Meethaq IB | 15 | 10-May-22 | 30-May-22 |
| Stage 3B - Meethaq MB | 15 | 10-May-22 | 30-May-22 |
| **Pre-Execution Activities** |  | **09-Jun-22** | **16-Oct-22** |
| PT Environment Heath check | 5 | 09-Jun-22 | 15-Jun-22 |
| T24 Test Data Creation in PT Environment | 10 | 09-Jun-22 | 22-Jun-22 |
| IB MB User Registration in PT Environment | 10 | 23-Jun-22 | 06-Jul-22 |
| Infra Setup for finalized branches | 15 | 26-Sep-22 | 16-Oct-22 |
| **Performance Test Execution Activities** | **121** | **23-Jun-22** | **30-Nov-22** |
| **Early PT - Webservice Simulation** | 10 | 23-Jun-22 | 06-Jul-22 |
| **Islamic T24 Execution** | **74** | **07-Jul-22** | **24-Nov-22** |
| Sanity Test | 2 | 07-Jul-22 | 10-Jul-22 |
| Load & Volume Test | 42 | 11-Jul-22 | 06-Sep-22 |
| ·       Branch Peak & Channels off Peak | 40 | 11-Jul-22 | 04-Sep-22 |
| ·    30% Load Test & Performance fixes | 15 | 05-Sep-22 | 25-Sep-22 |
| ·    60% Load Test & Performance fixes | 15 | 26-Sep-22 | 16-Oct-22 |
| ·    100% Load Test & Performance fixes | 10 | 17-Oct-22 | 30-Oct-22 |
| ·       Channels Peak & Branch off peak | 2 | 31-Oct-22 | 01-Nov-22 |
| ·    60% of Branch + 100% Channels Load Test | 2 | 31-Oct-22 | 01-Nov-22 |
| Endurance Test + Performance Fixes | 15 | 31-Oct-22 | 20-Nov-22 |
| Stress Test | 15 | 06-Nov-22 | 24-Nov-22 |
| Branch PT | 15 | 31-Oct-22 | 20-Nov-22 |
| COB Execution | 30 | 26-Sep-22 | 24-Nov-22 |
| **IB & MB Execution** | **58** | **21-Jul-22** | **09-Oct-22** |
| Sanity Test | 2 | 21-Jul-22 | 24-Jul-22 |
| ·       Load & Volume Test | 40 | 25-Jul-22 | 18-Sep-22 |
| ·    50% Load Test & Performance fixes | 20 | 25-Jul-22 | 21-Aug-22 |
| ·    100% Load Test & Performance fixes | 20 | 22-Aug-22 | 18-Sep-22 |
| Endurance Test | 10 | 19-Sep-22 | 02-Oct-22 |
| Stress Test | 5 | 03-Oct-22 | 09-Oct-22 |
| **Baseline Meethaq IB MB post installation of security software** | **5** | **10-Oct-22** | **16-Oct-22** |
| **Baseline T24 post installation of security software** | **5** | **25-Nov-22** | **30-Nov-22** |
| **Test Closure** | **2** | **30-Nov-22** | **03-Dec-22** |

# Support Required

The below table provides the details on the support required from BM IT & other project teams.

|  |  |
| --- | --- |
| Team | Support Description |
| BM IT | Support in fulfilling the test data responsibilities that are tagged to BM-IT in Section 5 |
| Review and sign off for Test plan, WLS, Execution summary reports & Closure |
| Support for workstations setup, Tool installation & providing access to all the Applications under Test |
| Support in getting the confirmation from Application teams on the defect fix TAT of 2 days (maximum) |
| BM IT to configure the required security software in order to baseline both Islamic T24 & Meethaq application post installation of the security software |
| Support in providing procedure to trigger T24 COB jobs in PT environment and assist Maveric team in case of any issue faced with COB jobs |
| Infra Team | Support in providing resource utilization reports for required server-side metrics at the end of each round of execution |
| Support in clearing log files & ensure server configurations are optimal for execution on need basis |
| T24 Team | Support in scheduling the COB jobs for Islamic T24 to monitor the performance of the COB jobs (In UAT3 Environment) |
| Support in providing the Login credentials for the T24 user login with required Menu’s configured as similar to production with common password for PT execution |
| Support in providing the Application logs (MQ, TWS & App Server logs) |
| Infosys Team | Support in providing static OTP for Meethaq IB MB application - SIT & PT Environment |
| In case of Vasco secure token involved in IB MB customer registration journey via Admin portal, the same need to be bypassed, required support from Infosys team & BM IT team to achieve the same. |
| To supress the security feature associated with BwayParam in Meethaq IB - SIT & PT Environment |
| To share debug version of mobile if in case the mobile traffic (request/ response) proxy sniffing is blocked in Mobile .apk file |
| Support in providing the Application logs for each round of execution |
| ESB Team | Dedicated support in providing ESB Interface logs to back-end systems post each round of execution |
| To support in any technical challenges faced during the Webservice scripting (in terms of SSL handshake, WSDL/ WADL file, endpoint details, client-side certificates etc.) |
| DBA | Configuring required DB reports (AWR & ADDM) for monitoring & analysis |
| Dedicated support to set up the restore point (before execution) in DB and to perform flash back (after execution) to avoid recreating the test data required for PT execution |
| Loading base data/ migrated data volume in the required databases in PT environment |

# Key Considerations & Assumptions

|  |  |
| --- | --- |
| Area | Assumptions |
| Environment | * The performance test environment would be closer or similar to production environment in terms of configuration & hardware sizing. * Any downtime in the performance testing environment would be communicated to Maveric team. * No other testing activities would happen in the performance test environment during execution timeline and it will be isolated for performance testing team. * As Agreed, SIT environment should be made available for test design activities and Performance Test environment should be available for execution activities. Any code level changes in the performance test environment would lead to redesign of scripts which in-turn would increase the effort and impact the overall project schedule. * As Agreed, any fix related to critical defect, security etc. would be deployed across all the environments. However, any functional defects with lower severity would be deployed in PT environment post discussion with Maveric PT team * Benchmark and performance test results are subjected to the environment setup. Any changes to the setup might vary the results. * As Agreed, any hindrance observed during COB job performance monitoring in PT environment should be sorted out by Bank’s T24 Team |
| Application | * There are no Critical (Showstopper) and High functional defects in the transactions / business processes that are in the scope of Performance testing. * Any changes / code deployment in the performance test environment would be informed in prior to Maveric. * Application / Environment down time should be negligible throughout the course of engagement. * There should not be any code level changes related to application request/response format, additional client requests, updating XML data / schema etc. during test design & execution. If there are any such changes that have impact on developed test scripts, then the script maintenance effort would be analyzed and it will be added to the existing schedule & timeline * Response time SLA’s, TPS (Transactions per Second) and resource utilization limit will be agreed with BM business & respective teams and the test will be conducted against the same. * Encryption and other security level challenges (CAPTCHA, Security URL parameters, OTP) at the front-end e-channels would be either disabled or necessary support is required to capture and replay. |
| Test Data | * Test data for execution will be populated by performance team in the migrated data with the support from BM IT & channels team. * Necessary database to be loaded with migrated data volume for performance testing. * The proposed schedule and its timelines & effort will have an impact if no proper test data is available for Performance Testing. |
| Fix Turn Around Time | * Turnaround time for defect fixing during execution should not exceed more than 2 days. * The root cause analysis will be done with the support of BM IT, BM DBA & Product owners |

# Communication Strategy

The primary communication channel within the team and between the team and BM would be by e-mails. Depending on the criticality of the situation, meeting request, verbal communication and discussion would be done, followed up by confirmatory mails.

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| --- | --- | --- |
| Name | Role | E-mail address |
| Rohini Kumar Gondappareddy | Delivery Partner | rohinik@maveric-systems.com |
| Vinoth C | Head of NFT | vinothc@maveric-systems.com |
| Saravanan Kalivaradhan | Delivery Manager | saravanank@maveric-systems.com |
| Mareeswaran B | NFT - Technical Manager | mareeswaranb@maveric-systems.com |
| Vinod Jackson C | NFT - Test Lead | vinodjacksonc@maveric-systems.com |

|  |  |  |
| --- | --- | --- |
| Name | Role | E-mail address |
| Ganesh Chandramouli | Head Digital Transformation | GaneshC@bankmuscat.com |
| Natrajan | PMO | gopalakrishnang@bankmuscat.com |
| Thirukumaran M | Tech Lead | Thirukumaranm@bankmuscat.com |
| Aswani Kumar | IT Manager | Aswani@bankmuscat.com |

# Annexure

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| NFR Parameters |  |