Performance Test Strategy & Initial Plan (ACOP)

Phase: Project Planning (Pre-Execution) **Date:** February 1, 2026 **Prepared By:** Quality Assurance (QA) Lead **Document Status:** Approved (Baseline)

1.0 Purpose and Scope

This plan serves as the baseline strategy for the Performance Testing sub-phase, ensuring the Automated Customer Onboarding Platform (ACOP) can handle production loads.

1.1 Scope

Performance testing will focus exclusively on the **User Authentication** and the **Customer Data Submission/Validation** critical path. The CRM system (external dependency) will be mocked or simulated to isolate ACOP performance.

1.2 Success Criteria

A successful performance test execution is defined by:
1. All Key Performance Indicators (KPIs) in Section 2.0 being met or exceeded during the Load Test.
2. No critical errors (5xx status codes) occurring during the Stress Test.
3. Application server CPU utilization (NFR-1) remaining below 70% during the sustained Load Test.

2.0 Key Performance Indicators (KPIs)

These metrics directly address and validate the Non-Functional Requirements (NFR-1).

Metric	Target (Success)	Failure Criteria
Average Response Time	**< 3 seconds** (for key transactions)	Any average response time exceeding 5 seconds.
Throughput	**100 Transactions per Minute**	Throughput drops by 20% or more while system resources are available.
Error Rate	**< 1%** (Application/Server Errors)	Sustained error rate above 5% during the steady-state load.
Resource Utilization	**< 70%** (Application CPU)	CPU/Memory utilization exceeds 90% for a period > 5 minutes.

3.0 Test Environment and Tools

- **Test Environment:** A dedicated **Staging Environment** must be provisioned that is a 1:1

replica of the planned production environment in terms of hardware configuration and network topology.

- **Test Data:** A data set representing at least **1,000 unique, realistic customer profiles** will be created, ensuring data randomness and validity for submission forms.
- **Testing Tool: Apache JMeter** will be used for generating virtual user load and collecting performance data.

4.0 High-Level Test Scenarios

The following scenarios will be executed to cover the range of system behavior:

Scenario Name	Objective	Load Profile	Duration
Load Test	Validate performance under expected peak load.	**250 Concurrent Users** (Steady State)	30 Minutes
Stress Test	Determine the system's true breaking point.	Ramping up load from 250 to **800 users** until failure.	Variable
Endurance Test	Check for memory leaks and performance degradation over time.	**150 Concurrent Users** (Sustained)	4 Hours