

## Phase 5: Performance Testing

Field	Details
Date	9 November 2025
Team ID	NM2025TMID02588
Project Name	Medical Inventory Management
Maximum Marks	4 Marks

### 1. Preparation and Environment Setup

Aspect	Key Action	Salesforce Context
<b>Test Environment</b>	Use a <b>Full Sandbox</b> or a <b>Partial Copy Sandbox</b> .	<b>Crucial:</b> Performance results in Developer Sandboxes are not representative of production performance due to resource limitations.
<b>Data Volume</b>	Populate the sandbox with <b>production-like data volumes (LDV)</b> .	Simulate years of inventory history (millions of records for Inventory Item, Lot/Serial, and Transaction objects). This is vital for testing SOQL efficiency.
<b>Salesforce Approval</b>	<b>Notify Salesforce</b> of your intent to conduct load testing.	Salesforce requires advance notification (typically <b>two weeks</b> ) to approve and monitor external load tests to prevent accident
<b>Tooling</b>	Use approved third-party tools (e.g., JMeter, LoadView) or dedicated Salesforce tools like <b>Scale Test</b> and <b>Scale Center</b> .	The tools must be capable of authenticating via API and simulating real user/integration load.

The screenshot shows a Salesforce Product Detail page for a product named "citricin - 250gm". The product ID is MED-003. Key details include:

- Unit Price:** \$500.00
- Current Stock Level:** 20
- Minimum Stock Level:** 5
- Owner:** PRAKASH N.
- Created By:** PRAKASH N., 11/7/2025, 7:53 AM
- Last Modified By:** PRAKASH N., 11/7/2025, 7:53 AM

## 2. Critical Inventory Test Scenarios

Test Type	Inventory Scenario	Performance Focus
<b>Load Testing</b>	<p><b>Simultaneous Scanning/Issue:</b> Simulate 100+ concurrent nurses/techs scanning and recording consumption from supply closets (creating Transaction records) during a shift change.</p>	Response time for a single Transaction create; Governor limits (CPU time, DML statements) in trigger/automation.
<b>Spike Testing</b>	<p><b>Receiving a Bulk Shipment:</b> Simulate 5-10 concurrent warehouse users uploading a large inbound shipment via API or Data Loader that creates thousands of new Lot/Serial records at once.</p>	Stability under sudden, intense load; batch processing speed; database write performance.
<b>Volume Testing</b>	<p><b>High-Volume Report Generation:</b> Test running the monthly "Inventory Valuation Report" or the "Expired Inventory</p>	SOQL query efficiency; index usage; report run time;

Test Type	Inventory Scenario	Performance Focus
	Alert" report against the <b>full production data volume</b> .	<b>View State</b> issues in Visualforce/Apex.
<b>Endurance Testing</b>	<b>Continuous Reorder Processing:</b> Run the nightly automated reorder process (Flows/Batch Apex) continuously over a 6-8 hour period.	Memory leaks or growing resource consumption in Batch Apex jobs; performance degradation over time (soak test).
<b>Integration Testing</b>	<b>EHR Charge Capture:</b> Simulate the bulk asynchronous API call sending daily consumption records to the EHR/Billing system.	API response time under load; MuleSoft or other integration platform performance; error handling.

The screenshot shows a Salesforce report interface. At the top, there's a navigation bar with links for Products, Purchased Orders, Inventory Transactions, Suppliers, Reports (which is currently selected), and Dashboards. Below the navigation is a search bar and a toolbar with various icons. The main area displays a report titled "Purchase Orders based on Suppliers". The report summary shows 3 total records, 0 total order count, and a total order cost of \$60,000.00. The report table has columns for Supplier ID, Purchased Order, Order Count, and Total Order Cost. It lists two suppliers: SUP-002 and 0029, each with one purchase order. The table includes subtotals for each supplier and a grand total at the bottom. At the bottom of the report area, there are checkboxes for Row Counts, Detail Rows, Subtotals, and Grand Total.

Supplier ID	Purchased Order	Order Count	Total Order Cost
SUP-002 (2)	PO-003 (1)	0	\$25,000.00
	Subtotal	0	\$25,000.00
	PO-002 (1)	0	\$15,000.00
	Subtotal	0	\$15,000.00
	Subtotal	0	\$40,000.00
0029 (1)	001 (1)	0	\$20,000.00
	Subtotal	0	\$20,000.00
	Subtotal	0	\$20,000.00
Total (3)		0	\$60,000.00

### 3. Common Optimization Focus Areas

- SOQL Optimization:** Review all custom queries (SOQL). Ensure they are **selective** and utilize custom or standard indexes. Avoid unselective queries on large objects like Inventory\_c or Lot\_Serial\_c.
- Apex Bulkification:** Verify that all Apex triggers and classes handle data in bulk (e.g., operating on lists of 200 records) to avoid exceeding DML limits.

- **Governor Limits:** Closely monitor CPU time, heap size, and DML statements, as inventory processes (especially calculations like on-hand quantity) are resource-intensive.
- **Custom Sharing/Security:** Test the performance impact of complex sharing rules and custom permissions on large data sets, as these can severely slow down record retrieval.

