

Phase 5: Performance Testing

Field	Details
Date	9 November 2025
Team ID	NM2025TMID00719
Project Name	Medical Inventory Management
Maximum Marks	4 Marks

1. Preparation and Environment Setup

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

The screenshot shows a web-based application interface for managing medical inventory. At the top, there's a navigation bar with links for Products, Purchased Orders, Inventory Transactions, Suppliers, Reports, and Dashboards. Below the navigation is a search bar and a toolbar with various icons. The main content area displays a product detail page for 'citricin - 250gm'. The product information includes:

- Product ID:** MED-003
- Product Name:** citricin - 250gm
- 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

Below the product details, there are tabs for 'Related' and 'Details', with 'Details' being the active tab.

2. Critical Inventory Test Scenarios

Test Type	Inventory Scenario	Performance Focus
Load Testing	Simultaneous Scanning/Issue: Simulate 100+ concurrent nurses/techs scanning and recording consumption from supply closets (creating Transaction records) during a shift change.	Response time for a single Transaction create; Governor limits (CPU time, DML statements) in trigger/automation.
Spike Testing	Receiving a Bulk Shipment: 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.	Stability under sudden, intense load; batch processing speed; database write performance.
Volume Testing	High-Volume Report Generation: Test running the monthly "Inventory Valuation Report" or the "Expired Inventory	SOQL query efficiency; index usage; report run time;

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	Alert" report against the full production data volume.	View State issues in Visualforce/Apex.
Endurance Testing	Continuous Reorder Processing: 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).
Integration Testing	EHR Charge Capture: 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, 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 includes summary statistics: Total Records (3), Total Order Count (0), and Total Total Order Cost (\$60,000.00). The data is presented in a table with columns for Supplier ID, Purchased Order ID, Order Count, and Total Order Cost. The table shows data for two suppliers: SUP-002 and 0029. The data is further broken down into purchase order details like PO-003 and PO-002, and subtotals for each supplier. At the bottom of the report, there are checkboxes for Row Counts, Detail Rows, Subtotals, and Grand Total.

Supplier ID	Purchased Order ID	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.

