# Monitoring Strategy for Inventory Automation Bot

## 1. Telemetry Emission

The automation bot emits structured JSON logs using Python's built-in logging module. Each action is logged with timestamp, status, duration, and result type (success, error, warning). Additionally, metrics such as batch processing time and queue size are exposed using Prometheus-compatible exporters.

## 2. Data Storage

Logs are stored as rotating JSON log files in the /logs directory. Metrics are served via a Prometheus HTTP endpoint at port 9100 using prometheus\_client. These metrics are scraped periodically by a Prometheus instance.

## 3. Visualization & Alerts

While external dashboards are not used, simulated alerting is implemented using Python script thresholds. For example, when batch durations exceed 0.2s or error rates surpass 5%, an alert is triggered (simulated via print/log output).

## 4. Key Performance Indicators (KPIs)

- Batch Processing Duration (seconds)  
- Error Rate (%)  
- Queue Size  
- Daily Transaction Volume  
- CPU Time per Batch  
- Failed Retry Counts

## 5. Synthetic Data Policy

Synthetic logs and metrics are generated using Python scripts in the /scripts directory. These simulate operational conditions under varying loads and support visualization and ROI estimation.