



# Point of Sale (POS) Testing

**Author:**

**Divya Madaan**

Practice Head – Retail

**Aspire Systems Consulting PTE Ltd.**

60, Paya Lebar Road, No.08-43,

Paya Lebar Square, Singapore – 409 051.

**aspire**   
**SYSTEMS**  
*attention. always.*

- Testing Challenges in POS
  - Long Test Cycles
  - Multiple Build Releases
  - Multiple Configuration Settings
  - Manual Backend Verification & Missing Transaction Validation
  - Customized feature Complexity
  - Testing POS on multiple platforms
  - Peripheral issues
  - Security & Regulatory Compliance
- Solution through Test Automation
- Designing an Automation Framework
- Challenges in POS Automation
  - Interaction with Peripheral devices
  - Custom UI Objects
  - Dynamic UI
  - Multiple Configuration and Interaction with other interfaces
- Conclusion

# Point of Sale (POS) Testing

## Introduction

A POS (point of sale) is a computer which is connected to a receipt printer, cash drawer, credit/debit card reader and a bar code scanner etc. Retailers use an automated retail system where the store cash registers are linked to computer processing systems. Merchandise is ticketed with coloured bar code tags, which are read with wand readers at the checkout counter. The computer accumulates sales transaction information on magnetic tape for daily input into the computer memory bank or storage system. It is input into the sales journal, which is rolled up into the stock ledger.

## Testing Challenges in POS

Testing a POS software package manually can pose many challenges

### ➡ Long Test Cycles

The world of retail is dynamic; retailers have to be on their toes to meet the market demand and stay ahead in the competition. Manual testing leads to long regression test cycles which prolongs the time to hit the market.

### ➡ Multiple Build Releases

Rapid technological advancements necessitate frequent hardware and software upgrades which require more testing effort hence slowing down the QA build certification process.

Testing Point-Of-Sale systems can be challenging for the QA team for various reasons. This paper discusses the testing challenges surrounding POS systems and how a comprehensive test strategy can be developed to help retailers in achieving their quality goals.

### ➡ Multiple Configuration Settings

Testing a POS application with different settings and configurations is a cumbersome task. Test cases pertaining to user profiles and access levels should be designed covering each and every scenario (positive or negative) in detail. Therefore, significant budget and effort needs to be put in testing of such applications to prevent any major issues at the customer end.

### ➡ Manual Backend Verification & Missing Transaction Validation

The POS transaction verification is incomplete without validating the data at the backend i.e. in the database and in the Journal application. Testers need to validate that the data correctly gets stored at the backend and additionally there should not be any missing transactions. This verification requires time and is prone to human error.

### ➡ Customized feature Complexity

Integration of POS System involves numerous interconnected systems and third party elements which poses testing challenges to the QA.

### ➡ Testing POS on multiple platforms

As most of the retailers are now moving to mobile POS, effort of testing increases as the system has to be tested on desktop and mobile-OS combinations.

### ➡ Peripheral issues

The peripheral issues may be related to devices which are connected to a POS like barcode scanners, scales, printers, towers and cash drawers.

### ➡ Security & Regulatory Compliance

As customer's sensitive data is being processed during the transactions, it's critical to test POS system as per the regulatory compliances.

# Point of Sale (POS) Testing

## Solution through Test Automation

To ensure quality of POS software, proper testing of the application is crucial. Talking about software testing, automation testing has gained a lot of mileage over the last decade. Automation Testing is nothing but a software development process that lends itself to test software. Automation testing practices if implemented efficiently can yield effective results in delivering high quality software while keeping the cost at bay. Studies have proved that, companies that increase the proportion of automated testing have a decisive advantage over their competitors. To save manual testing time, a sound test automation strategy is paramount and an automation framework can be built. It is proven that automation testing has an edge over manual testing because it provides enhanced test coverage, saves testing time and cost, gives objective testing evidence in the form of customized reports, easy defect tracking for faster troubleshooting.



While most of the POS testing challenges can be overcome by automation, security testing can be a tricky area to deal with. Care must be taken to adopt PCI-compliant, tamper-proof infrastructure at all POS terminals to protect cardholder data and identity.

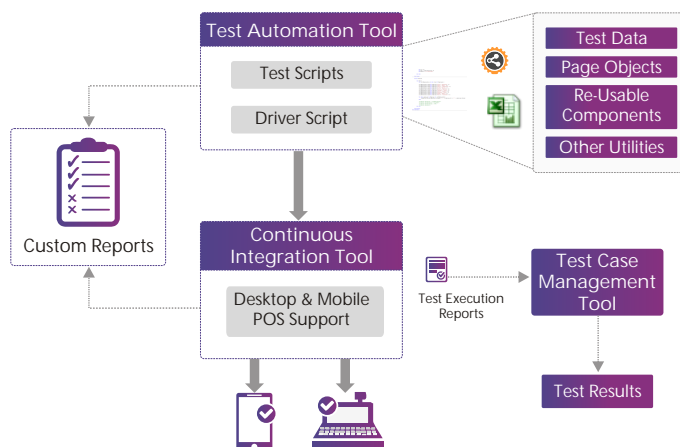
Let's now see how an effective test automation solution can be developed for POS.

## Designing an Automation Framework

For automating the test cases of POS software, a test automation tool is required which can recognize the UI controls of the application. Selecting an appropriate automation test tool for a given application involves a step-by-step process. Without a proper process being followed, one might end up in either wastage of effort or selecting inappropriate tool(s) for the application under test (AUT). There are plenty of commercial and open source automation test tools available in the market. A proof-of-concept (PoC) exercise can be performed to select the best-suited tool for the POS application.

The framework for POS should be designed using best practices of automation testing coupled with the needs to test the POS systems effectively. The architecture and design of the automation framework decides its effectiveness. Just to name a few of the best practices – Page object model, Test data and UI elements externalization, implementing easy to interpret and informative Test Reports, integrating the framework with test case management tool and continuous integration tool etc.

An automation framework can be designed on the lines depicted in the diagram below:





# Point of Sale (POS) Testing

The first & foremost is an **Automation Tool** – It can be Open Source or commercial tool that best suits the POS system under test. There can be various parameters to judge a tool e.g. it's capability to identify the UI elements in the application, whether it supports automation on multiple platforms or not, what languages does it support, cost and post-sales support etc.

Second component is the **Test Case Management Tool** – As the name suggests, a test case management tool can be used to store the test cases. This tool should be integrated with the automation tool so that after test execution, the status of test cases like Pass/Fail/Not run etc should get updated in the test case management tool itself.

Thirdly, a **Continuous Integration Tool** – It's an important component of an effective automation solution. This tool can enable the user to kick-start execution by just the click of a button and after the execution the reports can be delivered to the inbox of the stakeholders.

And lastly the **Test Reports** – An integral component of the framework, is easy to interpret and informative test report. The test reports helps you to understand useful information of the test cases executed like Pass/Fail%, Test Coverage, screenshots of the failure which is very critical to understand what went wrong during the execution.

In a nutshell, all of these components can be combined to build an integrated solution. In order to get the maximum ROI from automation testing, it's utmost important to design the framework keeping the simplicity, usability, flexibility and scalability parameters in mind.

## Challenges in POS Automation

While developing test automation strategy for POS one might face few challenges:

### ➔ Interaction with Peripheral devices

The scenarios covering scanning a bar-code, swiping a card, pin-pad-entry, opening and closing cash-drawer etc involve peripheral devices which require human intervention. Such scenarios are difficult to automate and automation of peripheral devices can be managed only to a certain level.

### ➔ Custom UI Objects

Incompatibility of the automation tools with non-standard objects on the UI poses lot of challenges. In such situations, an automation engineer has to look for workarounds to overcome such technical challenges. With expertise and experience such technical barriers can be overcome.

### ➔ Dynamic UI

The UI is often highly dynamic to allow it to cater to the changing business needs. Also, business processes are frequently modified and the cost and time required maintaining an automated regression test suite increases steeply. This can become a challenge if the framework is not designed well. If the framework is designed as per automation best practices, the code can be managed easily.

### ➔ Multiple Configuration and Interaction with other interfaces

POS application generally interfaces with the external systems such as Sales Audit, CRM, E-Commerce etc. The test cases require interacting with such applications as well which increases the challenge and the complexity. Also, POS vendors might have multiple versions/formats of POS hardware and software. So, maintaining the scripts for different versions and configurations becomes difficult and needs prior planning.

Best-in-class automation testing frameworks and solutions would do well to cater to the needs of the retailers in overcoming their challenges.

# Point of Sale (POS) Testing

## Conclusion

For complicated and business critical systems like POS, test strategy can be a combination of automation and manual testing. Also one should understand that testing of POS systems is different from other software and requires in-depth understanding of POS-specific challenges. To overcome such challenges and mitigate risks, the subject matter expert should carefully design the test strategy and approach in order to achieve their quality goals.



### ABOUT ASPIRE

Aspire Systems is a global technology service firm serving as a trusted technology partner for its customers. The company works with some of the world's most innovative enterprises and independent software vendors, helping them leverage technology and outsourcing in Aspire's specific areas of expertise. Aspire System's services include Product Engineering, Enterprise Solutions, Independent Testing Services, Oracle Application Services and IT infrastructure & Application Support Services. The company currently has over 2,400 employees and over 100+ customers globally. The company has a growing presence in the US, UK, Middle East, Europe and Singapore. For the eighth time in a row, Aspire has been selected as one of India's "Best Companies to Work For" by the the Great Place to Work® Institute, in partnership with The Economic Times.

SINGAPORE  
+65 3163 3050

NORTH AMERICA  
+1 630 368 0970

EUROPE  
+44 203 170 6115

INDIA  
+91 44 6740 4000

MIDDLE EAST  
+971 50 658 8831

For more info contact  
[info@aspiresys.com](mailto:info@aspiresys.com) or visit [www.aspiresys.com](http://www.aspiresys.com)

