CASE STUDY

Test harness for custom product installation

STAG's test harness for custom installation of product components on distributed machines and multiple operating systems cuts down the test effort by 50% for a global provider of business intelligence products and solutions.

▶ Domain -
Business Intelligence

▶ Technology - Java, PERL/Python, Java scripts, Shell scripts, JSP/Tomcat, FTP, TCP/IP and Silk 2008

CUSTOMER AND PRODUCT BACKGROUND

The customer is a global provider of business intelligence products and solutions. The product is a flexible, scalable, and reliable solution used to deliver powerful and interactive reports to end users across an Intranet, Extranet, the Internet, or a corporate portal. Its uses include distributing weekly sales reports, integrating critical information into corporate portals, or providing customers with personalized service offerings.

The product suite runs on multiple platforms – Windows (2003 and XP), Solaris (versions 9 and 10), AIX (5.2 and 5.3), Linux (Redhat and SUSE), and HP - UNIX. On each of the platforms, multiple machines are required to deliver the suite. The product suite also supports 13 different languages.

PROBLEM STATEMENT

The client was unable to automate the final install validation of the multi-platform distributed product. While they had been able to automate the testing of the individual components of the product using SilkTest, they were facing a problem in unifying them all and running them off a central console on multiple platforms simultaneously. Another critical element was the time factor: considering each platform-combination took about a day, the approximate timeframe for the final installation build validation for a release was about two months. The problem with this was that by the time they were done with one release, the next one was already in the pipeline!

The product has different types of installations:

▶ Full/New installation: Installs the complete product suite, including all required client, server, and optional components, by default, in one machine that has a database and Web Component Adapter

- Custom installation: Allows user to choose the components to be installed in the distributed environment. In this type of installation, distributed installation happens in two stages:

    i. Installing only the server and client components, which is done on the machine where the product components will reside

    ii. Installing only the Web Component Adapter, which is done on the machine with the web server

12 languages automated for both Windows/UNIX

Certified for 25 combinations of installation

- Expand installation: Can include horizontally scaled systems (product components are installed on multiple machines) as well as vertically scaled systems (product server components run on the same machine). It allows distribution of workload by creating CMS clusters or increasing the available resources.

- Silent/Command line installation: Includes all types of installations – full/new, custom, expand, and also upgrade installation through console.

The in-house team was spending almost 40%-50% of the total time testing just the custom installation type, one of the reasons for this being the multi-lingual availability of the product. After detailed analysis, the in-house QA team realized the complexity of the issue and decided to call in a specialist.

SOLUTION

After spending almost four weeks in an intense deep-dive session, a two-member team from STAG came up with a test infrastructure architecture based on the master-slave model. This architecture allowed a central console, the master, to schedule various jobs for the slaves using a custom-developed control and monitoring protocol. The solution was designed using multiple technologies – Java-Swing, PERL Expect, and also adapters that could handle Silk scripts.

The custom solution was designed across multiple platforms as well, with some parts on the Windows platform and others on UNIX. This custom infrastructure allowed for scheduling of parallel test runs, automatic allocation of machines from a server farm, mapping the installation schedule so appropriate components were installed on the appropriate machines, configuration of these machines, and finally, monitoring the progress of the validation exercise through a web console.

The team also developed workarounds to address issues related to the following:

- Manipulation of tree-view elements in the install shield for Windows

- Security concerns in modifying the client machine's Hosts.equiv file

The team was able to achieve the user interface (UI) automation for Windows using SilkTest and for UNIX (character-based UI) using PERL Expect. It also provided a UI-based harness to configure the combinations to be installed and monitor the results.

OUTCOME AND VALUE ADDITIONS

STAG delivered a solution that automated the installation of product components on distributed machines (on Windows and UNIX platforms) and enabled control from a single host machine using Java-based socket implementation framework. This enabled multiple combinations to be installed parallely across multiple operating systems. The test harness brought about a 50% reduction in test cycle time.