
TEST AUTOMATION: IN-HOUSE ISN'T THE ANSWER

A CASE STUDY
BY ETALIQ INC.

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Previous Automation System Abandoned. **ETA** Selected as Replacement

Background

The subject is a small telecommunications startup hardware manufacturer with 50 engineers. Their primary product is short-haul, last-mile, optical switches.

After searching for a commercial off-the-shelf automation tool, they elected to build in-house. They attempted on two separate occasions to create their own telecommunications test automation system; They spent 6 and 9 person months of effort, respectively.

In total they spent \$125,000 and over a year of development engineering time on the system. It was over 25 K lines of code (LOCs), using a mix of C, Perl, and Tcl/Expect; yet, it only ran 30 tests, and only supported 30% of the predefined requirements. Worse, it required high maintenance and was very fragile, frequently aborting due to minor script errors or subtle environment changes. Being a system built, maintained and supported by only one individual, management felt it was too much risk to continue.

Executive Summary

Who

- Telecom hardware start-up
- 50 engineers

Challenge

- Rapid black-box device testing
- Long term regression tests
- Broad coverage

Solution

- Old Linux server
- ETA Client and Server install
- A Student Engineer

Result

- Useful tests immediately
- 140 tests in less three months
- Protocol errors corrected
- Impressive customer feedback

Due to the single resource risk, lack of flexibility, reliability and ease of use, the project was abandoned.

“After two attempts at an in-house automation system costing over \$125,000, they reverted to manual testing only.”

Requirement

Their test system was slowing down their development process and tying up valuable human resources. They needed a new system. One that was easy enough to use that their junior test engineers could carry the bulk of the work. One that had a minimal learning curve. One that could begin useful testing of the product before it started shipping to clients. One that could keep testing future versions to maintain compatibility.

The new system needed to be able to communicate with the device using TL1, over both IP and Serial links. It needed to be able to configure the nodes to suit the tests. It needed to be able to connect to multiple nodes simultaneously, and to a couple Unix workstations that would communicate across the nodes.

By word-of-mouth, they heard of Etaliq’s Easy Test Automation (ETA) system. After brief presentations and demos to staff they elected to trial ETA in a pilot project. The objective was set.

“Hire a junior test engineer to create 50 automated tests in 3 months.”

Solution

They elected to trial the product for 6 months and committed an old spare Linux workstation to act as the ETA server. With the server installed, the pilot project was underway. Etaliq added a new device class with the specifications for their node. These included; prompt definitions, response timers, alarm

layout definitions, and various node behavioral configurations to ETA. The install completed and was verified for proper operation. *Total time: 4 hours.*

They hired a recent graduate, with some basic familiarity with ETA, as a junior test engineer. After one day training on their local environment, including basic training on their product, they gave him the test plan. It took only two days to begin running basic tests against real hardware using ETA. He was not made aware of the objective and as such had no preconceived notions about automated testing.

Automation proceeded with regular progress reporting and review, as well as periodic audits of test case content and log results.

Result

Periodic review of his tests and automated results showed very good progress. They were impressed with the readability of the test cases using the ETA verb language commands. Reviews also included an audit of logs and results to ensure the objectives of each test were met. Again, the reviews went very well. Review staff and management were surprised at the ease of use and especially liked the simple log review process.

After a month, progress was very good; He had 40 automated tests that had been reviewed, audited and moved to a production regression status. *Impressive!*

“After only a month, on a brand new system, on a brand new product, using a new junior test engineer with limited product and automation experience, 40 automated tests, reviewed, audited, and running regression.”

*“Impressive! Amazing!!! Astounding!!!!
Remarkable!!!!!!!”*

In less than three months, they had one test plan containing 140 automated test cases, and only 7 K LOCs. All tests were running regularly in regression; providing valuable pass/fail

results and finding bugs. The system required little maintenance, all of which was performed by a junior test engineer. The ETA system was very robust.

Inspired by this success, two existing engineers began using the system. They were fully functional in only two days.

During this trial period, the automated test suite detected several defects that were undetected by manual test engineers. By the end of the pilot project, coverage on each test image was tripled using the ETA regression runs.

Most critically, ETA automation found that the device was in violation of TL1 protocol under a small number of circumstances. This problem was corrected during the development cycle, prior to discovery by any of their clients.

Customer Feedback

At the end of the Trial, this company became the first Etaliq ETA licensed client. They provided the following immediate feedback:

Manager, Testing:

“It is unbelievable that a student, straight out of school was able to successfully build this number of tests in such a short period of time. Especially due to the fact that he was learning our product at the same time.”

Test Engineer:

“Its very simple to learn and use. I was writing my own automation within an hour.”

The manager provided the following additional feedback, after using the product for an additional 3 months with other intermediate and senior engineers.

Manager, Testing:

“We did not understand the power of ETA until we had used it for a few months. It is so easy to add even very complex testing scenarios.”

