

Spirent DevOps Solution

Global Network Equipment Manufacturer

Customer challenge

A global network equipment manufacturer was using a waterfall quality assurance process with test engineers implementing automated test cases only after development. The resulting GUI test scripts were unstable and developers were not equipped to help expand automated test coverage.

Challenges overview:

With the prior test automation system:

- Development teams were expending 40% of their time on defect correction largely due to inefficient hand-offs from QA, resulting in schedule delays for new product releases
- Build tests were failing 50% of the time, resulting in costly reverts. Automated test results lacked actionable details which made analysis effort inefficient
- Acceptance test coverage was insufficient resulting in excessive defects escaping into customer releases

Solution delivery criteria

The customer's goal was to improve automated test coverage to 65% for every subsystem and implement a strategy defining clear ownership of test automation development, execution and results analysis. Spirent professional services team together with partners developed a DevOps solution which included integrating continuous integration (CI) and continuous test (CT), monitoring and delivery capabilities to meet the following requirements:

- **Products** – CI framework enabling developers to build & test software code changes daily; Stable & scalable automation framework facilitating expanded & extensible testing; Robust, easy-to-use reliable tool supporting QA automated testing to enable developers to write sustainable automated functional tests, reusable for regression testing; Maximize virtualization capabilities to optimize dynamic spinning up/down of build & test resources as needed for optimal sharing
- **Process** – Unify the software merge & integration testing with a single team responsible for developing & maintaining it; Implementation of CI and CT best practices; Optimize & automate testing for all test teams; Ability to quickly isolate & correct software problems early in development integration cycle; Deliver a system with clear performance goals & visible, actionable metrics to assure goal achievement
- **People** – Expertise and professional services to perform assessments and guide implementations that ensured solution success; Post-sales solution training; Support of agnostic off-the-shelf traffic generation tools and optical taps

Customer pains

- Up to 40% development effort was expended on finding and fixing defects causing product release delays and excessive cost increases
- Automation testing solution was unstable, not integrated and not expandable
- Customers began to complain of product failures due to important defects found in releases

Solution requirements

- **Product** – Comprehensive test case & test suite automation and easy-to-use generation, scheduling, centralized report monitoring & storage
- **Process** – Implementation of proven best practices & evolving test methodologies
- **People** – Professional Services consultation, delivery expertise & training & support through engagement

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Solution delivery components

- Proof of Concept (PoC) trials and demonstrations to various customer teams
- Professional Services consultation, adoption advocacy and delivery expertise throughout the engagement
- Implementation of hypervisor and cloud management
- Creation of build and test server VMs (Virtual Machines) and of DUT/SUT VMs
- Implementation of Jenkins and virtual server infrastructure for CI, CT and DevOps system management
- Implementation of an artifact storage server and software code revision control server
- Implementation of centralized test report database
- Develop initial automated test suites as well as extend existing automated tests
- Implementation of code static analysis, automated unit testing and code coverage analysis
- Training and transfer of solution information and best practices for CI and test automation

Solution outcome & benefits

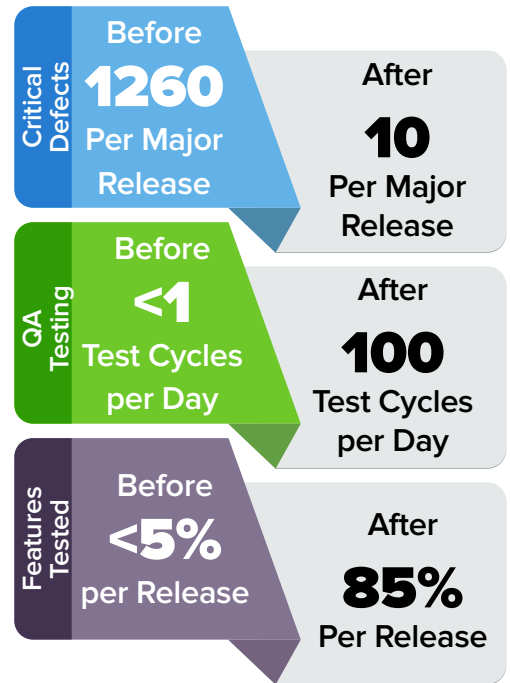
- **Comprehensive DevOps framework**
Productivity increased due to improved team collaboration and automation
- **Accelerated builds and tests**
Software code changes delivered more frequently and more reliably
- **Maximized virtualization utilization**
For optimal build and test processes facilitating dynamic effective use of the entire VM server farm
- **Optimized efficiencies**
Achieved through stable and flexible automation framework for reliable reporting processes, improved process reliability and visibility
- **Accelerated fault isolation**
Facilitating the accelerated identification and correction of relevant code problems
- **DevOps solution extension plan implementation**
Following the first phase of the validated solution delivery in the United States, it was then expanded to include the customer's European and Asia Pacific manufacturing facilities

Performance metrics

Metric	Before DevOps	After DevOps
Major release frequency	2 per year	4 per year
Minor/errata release frequency	Monthly	Every 2 weeks
Average # of new features per year	110	150+
Average reported critical defects per major release	1260	10
Average complete system (main) builds per day	<1	10
Average complete system QA test cycles per day	<1	100
Average module builds per day	N/A	100
Average module QA test cycles per day	<1	100
Features tested using automation	<5%	85%

With Spirent DevOps Solutions realize more...

- **Profitability** – Accelerate defect detection, earlier and increase revenue by getting products to market faster
- **Customer satisfaction** – Reduce released defects with expanded test coverage & speed time to market
- **Productivity** – Automate repetitive tasks, reuse test cases while removing integration and test process bottlenecks freeing team for more innovation
- **Visibility** – Increase insight into testing progress & identify resource bottlenecks



“Spirent’s solution proved its value at our facilities in the US and we then adopted it at our locations in Europe and Asia with the same results”

— T&M NEM,
V.P. Operations

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