Spirent **DevOps Solution**
Accelerating Build and Test Cycles

Customer challenge

A global network benchmarking organization, the company manufactured a complex product coupling firmware and hardware with complex large scale software (exceeding 36 million lines of code). They had five development centers with separate branches and labs which resulted in distributed silos, long serial development, test and release process and inconsistent metrics. The company's business pains translated into less than two releases per year, which were often late, rising escalations and defects, as well as deferred features. The majority of QAs team's time was spent on corrective work as CapEx and OpEx expenditures soared. Intellectual property security was unreliable. They recognized the need to implement critical changes in their development, test process and infrastructure.

Challenges overview:

With the existing test automation system:

- Build acceptance test coverage was minimal; build tests failed 50% of the time causing software versions to be reverted due to unit and integration test failures

- QA teams finding growing number of errors resulted in 75% of the development team time involved in reworking, creating costly delays

- Exisiting results and lack of visibility did not deliver enough usable reporting data to provide actionable details

Solution delivery criteria

The organization sought a solution targeting goals to assure on-time monthly releases, with an increase of 20% or more new features per year, as well as 50% fewer escalations, customer defects and corrective work per year. Process visibility and security of intellectual property were requirements. They also needed to stabilize and control CapEx & OpEx spending. Spirent test automation experts developed a customized and Continuous Integration (CI) DevOps solution to meet the following criteria:

- **Products –** CI framework enabling developers to build & test software code changes daily; Stable & scalable automation framework facilitating extensible testing; Robust, reliable tool supporting QA automated testing, enabling developers to write sustainable automated tests, reusable for regression testing; Optimize capabilities to spin up/down of build & test resources

- **Process –** Standardize software merge & integration testing with a single team for developing & maintaining it; Implementation of CI & test automation best practices; Optimize & automate testing for all test teams; Ability to quickly isolate & correct software problems; Deliver a system with clear performance goals & metrics with effective monitoring to track progress against goals

- **People –** Qualified expertise to deploy the solution & provide engaged consulting for solution success; Post solution delivery training; Support of agnostic off-the-shelf traffic generation tools

Customer pains

- 75% of engineers' time spent correcting bugs delaying releases, adding excessive costs

- Current test automation solution was inflexible, unintegrated and unstable

- Test coverage not as comprehensive as required with process holes across development and QA teams

Solution requirements

- **Product –** Comprehensive test case & test suite automation and easy-to-use generation, scheduling, centralized report monitoring & storage

- **Process –** Optimized test team collaboration; Implementation of proven CI best practices & automation test methodologies

- **People –** Qualified professional consultation, delivery expertise, training & support through engagement

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SPIRENT®

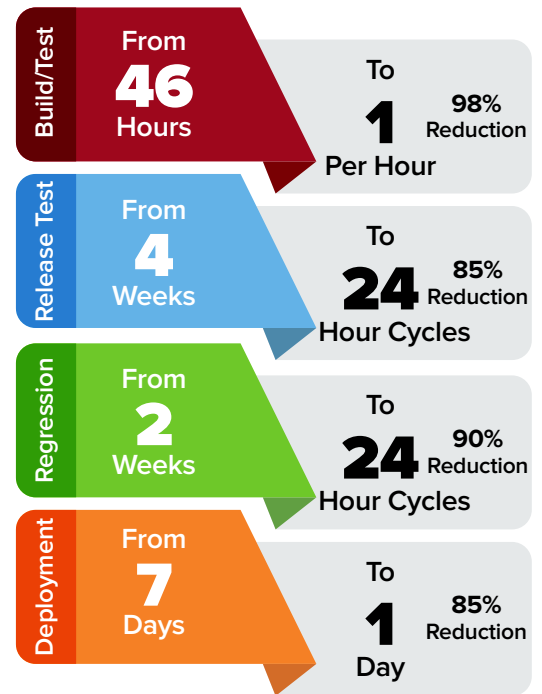## Solution delivery components

- DevOps specialist implementation team to design and implement solutions
- Modular tools and processes for builds, tests and delivery infrastructure components
- Integration and automation of disparate engineering, test and delivery processes and teams
- Implementation of CI management server and test automation
- Implementation of an artifact storage server and software code revision control server
- Implementation of centralized test report database with both online and physical dashboards
- Develop initial automated test suites as well as extend existing automated tests
- Weekly release changes aligning to infrastructure test best practices
- Monthly deployments to the production infrastructure
- Implement code coverage reporting
- Training and transfer of solution information and best practices for CI and test automation

Solution outcome & benefits

- **Surpassed target goal for automated build, test and release process**
  Where 95% was the goal, 99% was achieved

- **Re-engineered and virtualized**
  All build process jobs (all layers), test suites and test reports

- **Accelerated builds and tests**
  From 46 hours to 1 hour, delivering 98% reduction

- **Re-engineered test strategy**
  From one smoke test and a separate large regression suite into four test cycles: build, integration, nightly, full

- **Fewer escalations and defects**
  70% reduction after the second year

- **Faster release test cycles**
  From 4 weeks to 24 hour cycles bringing an 85% reduction

- **Collapsed dev branches**
  To a single integration trunk and created a separate branch for each release

- **Implemented commit controls**
  And system monitoring tools to safe-guard the input of changes

- **Regression testing streamlined**
  From 2 weeks to nightly 8 hour regression testing, achieving a 90% reduction

- **Streamlined and optimized global team processes**
  Delivering optimal workflows and resource sharing

- **Rapid deployment delivered**
  From 7 days to 1 day resulting in an 85% reduction

With Spirent Automation 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 of test cases maximizing time and freeing test team for innovation
- **Visibility –** Increase insight into testing progress &identify resource bottlenecks

Build/Test
From **46** Hours
To **1** Per Hour
98% Reduction

Release Test
From **4** Weeks
To **24** Hour Cycles
85% Reduction

Regression
From **2** Weeks
To **24** Hour Cycles
90% Reduction

Deployment
From **7** Days
To **1** Day
85% Reduction

"**Not only did we achieve our business goal, we also experienced unexpected reductions in OpEx expenses, which multiplied our productivity**"
— *T&M NEM,*

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