

Delta takes off with HP quality software

Automation reduces test times by 52%; improved insight into defect and security issues supports application quality



“HP Quality Center software gives us the information we need to support quality across the development cycle. We can now do much more than simply catch defects. We can reduce the risk of defects in the first place, streamline development processes, and do it all with fewer resources while supporting more software applications than ever before.”

—David Moses, QA manager, delta.com, Self-Service & CRM - Delta Air Lines, Inc.

HP customer case study

HP Quality Center, QuickTest Professional, LoadRunner and WebInspect software allow QA team to deliver better, more timely information to developers

Industry transportation

Objective

Support applications quality testing and drive QA process improvements without adding staff

Approach

Implement HP software tools to enable automated testing and more timely, useful insights into defect, security and performance issues

IT improvements

- Testing times reduced by 52%
- Full regression of the web site reduced from 5 days to 1.5 hours
- Testers can now devote 90% of time looking at new code, a higher-value task than rechecking old code
- Automation enables test engineers to focus on new functionality while ensuring current functions work as before
- Security reports provide actionable detail, suggest fixes, streamlining developer workflows

Business benefits

- Defects can be fixed earlier in development cycles, when they are less costly and troublesome to address
- Defect information is more useful, supports efforts to improve quality and development processes, resulting in reduced risk of applications issues
- Improved ability to accommodate business fluctuations
- Improved employee morale helps stabilize work force



For the airline industry, market fluctuations are a fact of life. Factors out of an airline's control, such as economic downturns and travel trends, can strip away profit margins seemingly overnight. A single penny-per-barrel fuel cost increase is enough to add millions per year to an airline's operational overhead.

That's why Delta Air Lines, Inc. embraces a lean philosophy. "The airline business is a business of feast or famine," notes David Moses, Quality Assurance manager for the self-service group within Delta's technology organization. "We have to run our business efficiently to be prepared for times when margins are slim."

How did Moses achieve efficiency within his Quality Assurance (QA) organization?

By implementing HP Quality Center software, QuickTest Professional (QTP), LoadRunner software, and WebInspect software in an integrated, end-to-end approach to application, performance, and security testing.



Best-in-class testing solution

Delta's self-service technology is key to the airline's business model. It is the technology that enables Delta customers to purchase tickets and manage their itineraries via the Internet, mobile devices, and self-service kiosks. Because these applications are customer-facing and critical to Delta's sales processes and cash flow, ensuring application quality is a business-critical task.

Ensuring application quality is also a significant challenge from a process management standpoint. The self-service technology QA team maintains a variety of testing scripts, including sanity and regression scripts for two different testing environments and sanity tests for its production environment. Each of these must accommodate a variety of platforms and third-party software applications. Scripts for applications running on the Delta website, for instance, must accommodate half a dozen different Internet browsers.

Moses and his colleague John Bell, senior test engineer at Delta, both joined the self-service group in early 2008—and both recognized immediately that automation technology had the potential to further boost the value and productivity of the self-service group.

"In the past, we drove improvement in our QA processes by working harder and smarter," Moses explains. It was a strategy that worked—but with only 11 people in the group (a number Moses estimates is extremely low by industry standards) and no funds to add more testing resources, Moses needed other options as well.

So Delta turned to HP technology to automate and streamline the group's testing operations.

The self-service group was already familiar with HP's quality solutions. It was running a legacy HP product (HP TestDirector for Quality Center [QC] software), although in a very limited capacity: "The only thing we used was the defect tab," Moses recalls. Test cases were stored in Microsoft® Word or Excel files. The team didn't run reports, and none of its test cases were reusable.

So after performing a gap analysis, Moses and Bell decided to upgrade from the legacy HP testing tool to a full implementation of HP Quality Center software.

250 reusable, automated scripts

Today, the team uses HP Quality Center to build tests and to manage test planning, requirements, and releases.

The team automates about 250 reusable test scripts, running via HP's QuickTest Professional tool. The software, which took the team about six months to implement, supports a highly automated approach to software testing, from running the test scripts through managing defects.

The team uses HP QuickTest Professional with Quality Center to write reusable test scripts; these can then be pulled out, shopping-cart style, and assembled into full-blown automated tests.

Another advantage of HP Quality Center is that scripts can run remotely using PCs located in a test lab—rather than tying up testers' primary workstations. "We can kick off scripts remotely and schedule them to run in the middle of the night," Bell says. "People don't have to be there while the scripts run."

If a defect is discovered via the automated scripts, a tester can run it manually in HP Quality Center to gather additional data about the issue.

Customer solution at a glance

Primary application

Quality assurance, security, and performance testing

Primary software

HP IT Performance Suite—Application Lifecycle Management

- HP Quality Center software
- HP QuickTest Professional
- HP LoadRunner software
- HP WebInspect software

As a result of automating so much of its testing, plus formulating a new approach to their testing process, the group has reduced its test run times by 52%. This, in turn, means it can do more testing than before, including taking on testing of kiosk and mobile devices, and adding WebInspect security scanning and more.

“We can do more with less,” Moses says. The improved productivity delivers value to Delta in a number of ways. The self-service team can more easily accommodate increased business demands—such as the merger with Northwest Airlines—without adding staff. It is able to absorb additional pieces of Delta’s applications QA, including, most recently, its customer loyalty applications.

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John Bell, senior test engineer, Delta Air Lines, Inc.

Another benefit is better employee morale in an industry that can have many cyclical challenges. “We don’t want to hire people and then lay them off every cycle,” Moses says. “Our goal is to have a solid team that we don’t have to increase or decrease. Automating our testing with HP Quality Center and QuickTest Professional helps us do that.”

Less time rechecking old code

HP Quality Center also helps the team better support application quality. It frees testers to focus on more important tasks. One example: testers now spend less time rechecking old code. “For every three things you fix, you end up breaking one,” Bell explains. As a result, before implementing HP Quality Center, the testers spent about half of their time looking at old code to make sure it still worked after new code had been added.

Now they use HP Quality Center test scripts to recheck older code. “Today, we spend 90% of our time looking at new code,” Bell says.

This lets the testers focus on code that breaks new ground, where real-time human attention can deliver more insight into code quality and functionality.

Managing testing from requirements through release

HP Quality Center is more than a testing environment: it also delivers a more integrated, end-to-end view into quality issues. “With HP Quality Center, we look at more than just testing,” explains Bell. “We look at the entire development process.” The solution’s dashboard allows the team to generate statistics and reports, and view trends that enable Delta’s software team to better identify opportunities to improve its software development processes.

In the past, for instance, the group only knew how many defects were related to a particular piece of code. “Now we can tell which requirements led to particular defects,” Bell explains. “We have the information we need to do a better job gathering and writing requirements.” This helps drive quality improvements more broadly and deeply within the development organization, and reduces the risk of defects later in the development cycle when they are more bothersome and costly to address.

Load testing to validate performance

To further enhance the usefulness of HP Quality Center, Delta’s self-service technology group integrated it with two other HP software applications. One is HP LoadRunner software, which it deployed for performance testing. “We use HP LoadRunner to load test any new functionality that changes the level of demand on our systems,” Bell says.

HP LoadRunner proved particularly critical as the team prepared to integrate Delta and Northwest’s customer-facing applications. “We ensured our test goals represented the capacity we would need once we were serving both airlines’ customers, doubled that number, and used HP LoadRunner to test all of our systems against those goals,” Moses says. As a result of this load validation, he continues, “we’ve had no capacity issues. We were fully prepared for the additional traffic.”

Security checks that suggest fixes

Another HP solution the team integrated with HP Quality Center is HP WebInspect software, which the self-service group uses to perform security code scans. “We used to run security checks in our production support environment only,” Bell explains. “Now we don’t wait. We do security testing at multiple points, so we’re able to identify and correct security flaws earlier in the development cycle.”

The team is extremely happy with HP WebInspect functionality and results. “We used another vendor’s application previously. It was a frustrating experience,” Moses notes, because that tool didn’t provide what the developers needed to truly understand the nature of the security defect. Developers were spending too much time trying to understand its reports. “It was costing us more than it was delivering, because it was taking weeks to get issues resolved after tickets were entered into the system. Since using WebInspect, we have been getting specific reports for each user type and resolving anything it might find almost immediately.”

HP WebInspect software not only identifies the defect, but also provides specific information on what produced the error and, best of all, suggests a possible fix. “The developers love it,” Bell says. “With the old tool, we had to sit with them and go through the report trying to figure out what it was telling us. With HP WebInspect, we can generate customized reports from an executive overview right down to a geek level.”

QA no longer a bottleneck

HP Quality Center software has done more than support improvements to QA processes: it has enabled Delta’s self-service technology testers to more effectively

support the development group. “Today, when someone comes in and asks if we can test a new release, we can answer ‘yes,’” Moses says. “We’re more confident that we will not become a bottleneck.” Moses adds that the team can perform sanity checks on production code in less than 30 minutes. These automated scripts, which are run after new code is pushed to production, verify that no major functions have been negatively impacted by the new code release.

The QA team is also able to provide feedback to the developers earlier in the testing cycle. “In the past, we might be several days into regression testing before we discovered significant errors that required code rebuilds. Today, we’re more likely to find these kinds of defects earlier—so we can fix it earlier in the development cycle.” For instance, in one release that went to Delta’s test environment, a booking change caused an error when the user viewed their itineraries in another part of the web site. By running the automated scripts, the team was able to see this error within the first hour of testing.

Faster testing cycles and more timely and useful information on defects, in turn supports a higher standard in application quality. “We can deliver more to our developers and we can deliver it faster,” Moses concludes. “Test time reductions like we’ve achieved using HP Quality Center are worth their weight in gold.”

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