Zebra Technologies

Accelerating complex end-to-end user acceptance and performance testing projects for global ERP systems with OpenText™

Who is Zebra Technologies?

Zebra Technologies Corporation offers devices, software and services that empower workers to make the most of every minute, every piece of real-time data, and every decision. Its customers include some of the largest players worldwide in retail, manufacturing, healthcare, logistics and field operations. With 9,800 employees across 55 countries generating more than $5 billion in annual sales, Zebra is the global number one in rugged mobile computing, data capture, barcode printing and mobile RFID solutions.

Keeping Business Moving

Zebra's complex and fast-moving global operations depend on the smooth and reliable running of several major business systems including Oracle ERP, Siebel and Salesforce

CRM. The internal IT team is responsible for keeping these systems updated with the latest patches and features—which entails significant testing before the new software is released to business users.

Gunjan Arya, Manager Information Systems at Zebra Technologies, explains the organization's requirements: "We're increasingly focused on end-to-end, enterprise-level testing that cuts across all verticals. Most of our common workflows span multiple systems and teams across the globe, so it's vital that we're able to manage correspondingly broad test scenarios."

A Zebra employee in the US may create a sales opportunity in Salesforce, another employee may then create a related order in Siebel, and the process flow will continue through various ERP, logistics and finance systems—potentially involving up to 35 distinct functional teams.

"When we test new or updated software, we want to be sure that it works in the context of all the upstream and downstream processes," says Arya. "That means coordinating and tracking all testing and approval processes across multiple systems and teams in different locations and time zones. And of course, we want to do that as quickly and efficiently as possible, without sacrificing any visibility."

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>
> **GUNJAN ARYA**
> Manager Information Systems
> Zebra

At a Glance

■ **Industry**
Manufacturing

■ **Location**
United States

■ **Challenge**
Zebra must rigorously test its enterprise software, to ensure that end-to-end processes run efficiently and that systems can handle the expected demands.

■ **Products and Services**
ALM/Quality Center SaaS
LoadRunner Enterprise SaaS

■ **Success Highlights**
+ Enables seamless testing of process flows across applications
+ Accelerates testing while minimizing effort and maximizing visibility
+ Supports both legacy and modern systems
+ Provides detailed real-time analytics to enable rapid resolution

Powerful End-to-End Test Management

For system integration testing and user acceptance testing, Zebra relies on ALM/Quality Center by OpenText™ as its key solution for managing test scenarios and results.

"The main area where ALM/Quality Center helps is the end-to-end testing of scenarios spanning multiple teams," says Arya. "As soon as one testing stage is complete, the workflows we build in ALM/Quality Center automatically trigger a notification to the next person in the chain, including all the required information for them to take action. We have integrated the solution with our automation tool, so that we can automatically run the appropriate tests at each stage and then pull the evidence back into ALM/Quality Center, giving us an audit trail of actions and approvals."

Zebra uses ALM/Quality Center to classify scenarios into sets of tests, then assigns the resulting test scripts to different teams. Each team is responsible for completing all the tests in the test set(s) assigned to them. The execution of tests is usually sequential, with ALM/Quality Center automatically triggering instructions and reminders to the relevant people when a stage is completed—but in some cases, processes run in parallel. At the end of each multi-step testing run—spanning multiple test teams, potentially in different countries and regions—the relevant business process owner can review the audit trail in ALM/Quality Center and provide final sign-off. The system makes it easy to see pending and overdue activities, and to review identified software defects by their level of criticality.

"When it comes to making sure end-to-end processes are working, a tool like Jira is not the answer," says Arya. "When testing cuts across multiple teams, that's where the power of ALM/Quality Center comes into play. The real-time

reporting through the Excel Plug-in is especially powerful for pinpointing bottlenecks in our testing flows. We can easily see how many scripts are pending with each team, how we are performing against the plan, what kinds of defects we're finding, and so on. The Micro Focus (now part of OpenText™) solution gives us excellent visibility into the progress of testing."

Zebra also values the flexibility of ALM/Quality Center, which enables the organization to write custom workflows rapidly and easily, and then edit them for new requirements. "The customization is very useful, as are the plug-ins for Microsoft Excel," says Arya. "Once we've built the charts and reports we want, we can easily refresh the data from ALM/Quality Center and see all the latest metrics."

Having used an on-premises implementation of ALM/Quality Center for more than a decade, Zebra recently migrated it to OpenText™ SaaS. The SaaS model significantly reduces Zebra's costs associated with buying, maintaining and managing its own infrastructure, as well as providing non-disruptive patching and ongoing functional upgrades at zero additional cost.

"When we were on-premises, every upgrade would require going to tender with an external partner," says Arya. "With the ALM/Quality Center SaaS, those costs are gone, and the whole process is fast, easy and secure."

A Uniquely Robust Solution

In addition to managing system integration testing and user acceptance testing for end-to-end business workflows spanning multiple systems, Zebra must also ensure that the underlying systems are sufficiently performant and scalable for current and projected needs. Here, the challenge is to automate performance and load testing across multiple protocols spanning both legacy and modern technologies.

Zebra's strategic solution is OpenText™ LoadRunner Enterprise. "We have explored other tools in the market, but I can say with confidence that there is no better alternative than LoadRunner Enterprise for automation," says Arya. "It offers something very robust and unique, and it's very hard to match."

LoadRunner Enterprise is used by the quality assurance team and multiple other technical teams within Zebra, including networking, database administrators, and the server and storage teams. While the focus is on testing on-premises applications, Zebra also uses LoadRunner Enterprise for performance and load testing for several of its cloud applications.

"For volume testing, we might do something like booking 15,000 sales orders in one hour with 500 concurrent users, and see what impact this has on the infrastructure," says Arya. "We'll typically go beyond any realistic load so that we have confidence in the scalability of our solutions to meet any unexpected spikes in demand."

Zebra uses the in-built analytics tools in LoadRunner Enterprise to drill down into performance, overlaying software metrics such as transaction response times with infrastructure metrics such as CPU and memory utilization. "By overlaying the various data points, we can easily pinpoint where and when any performance issues begin, which makes them much faster to resolve," says Arya. "LoadRunner Enterprise works equally well across legacy applications and modern web applications, so we can do everything in a single solution. It also has no problems working in our modern security environment."

Saving Months of Manual Labor

Gunjan Arya sees ALM/Quality Center and LoadRunner Enterprise as the "backbone" of the software quality center of excellence at

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Zebra. ALM/Quality Center provides end-to-end traceability for all processes involved in system integration testing and user acceptance testing, bringing speed, transparency and automation to complex testing projects that span multiple teams and geographies.

"The workflow and process customizations in ALM/Quality Center are so powerful that nearly all processes tied to test-script development, test execution, defect management, reporting and notifications can be automated to a great degree," says Arya. "ALM/Quality Center helps us with large and complex software testing projects where we have teams located in different places, saving significant time and effort while keeping all activities coordinated."

With performance testing automated through LoadRunner Enterprise, Zebra can ensure that its most critical systems are always able to meet demand from internal users. "Writing good test code manually from scratch might take a whole team several months," says Arya. "With LoadRunner Enterprise, we record the transactions and the solution generates the code automatically. For our legacy applications,

we sometimes then need to do a small amount of manual correlation to debug the code, but the intervention is minimal, saving us a huge amount of time. We typically have ready-to-run code within an hour."

Zebra also values the longevity and licensing flexibility of the OpenText™ solutions. Arya comments: "There is a lot of experience in the market and a very solid user community, so we can easily access the resources we need. And the flexibility of the licensing means that we can choose the most cost-effective option for us depending on what systems we're currently testing."

He concludes: "Our experience of working with Micro Focus (now part of OpenText™) over the years is overwhelmingly positive. The support is easy to access, especially through our customer success managers, and we've appreciated the ability to work directly with the R&D team at times to get customizations into the product."

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