



## THE FUTURE OF TEST SERIES

# A New Paradigm for Salesforce Testing

## The Path to Advantage with AI-powered Low-Code and No-Code Testing

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## PREFACE: THE GOLIATH IN THE CLOUDS

A shortage of developers should never stand in the way of ensuring that your Salesforce apps delight your customers. Salesforce embraces this truth by embracing low-code. In a piece appearing on [Business Insider](#), Ryan Ellis, SVP of Product Management at Salesforce notes that he thinks that the pandemic has created a “tipping point in awareness [about low-code]” and he is “confident that adoption that we see in low-code is just going to continue to accelerate long after this crisis is over.”

Just as low-code and no-code development tools are transforming velocity for the new ways that we work, low-code and no-code testing tools are also helping companies ensure that increased velocity does not equate to reduced quality. Whether building a Salesforce tool from scratch or enhancing an existing Salesforce tool, the marriage of low and no-code development with low and no-code testing tools is vital to shipping with confidence. Custom app providers must be able to deliver the future of customer experience across all Salesforce tools in the face of growing competition.

In this white paper, gain insight from Sauce Labs engineers and product managers about what it takes to ship low-code and no-code releases with digital confidence every time. First, we start by examining the full scope of Salesforce’s complexity, revealing why low and no-code approaches make more sense than trying to constantly solve for a shortage of developers who can design, build, and test with the right know-how.

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## ENTER INTO THE SALESFORCE WEB OF PRODUCTS

Salesforce has been at the forefront of cloud computing for over twenty years ever since Marc Benioff, Parker Harris, Dave Moellenhoff, and Frank Dominguez recognized that businesses were becoming increasingly more comfortable using the internet to accomplish tasks. MIT Researcher [John McCarthy](#) was the first to coin the term “Software-as-a-Service” (otherwise known as “SaaS”), a business model that sold the promise of software that’s available to the masses 24/7, over a global cloud computing infrastructure. Salesforce took this model and became one of the first to create an entire ecosystem around it.

With more than 150,000 customers and \$17B in revenues, Salesforce is more than a CRM tool. It has evolved into various product lines including their Marketing, Service, Sales, Commerce, and Experience Clouds and industry

specific products in the finance, healthcare, and government sectors, just to name a few. In 2020, Salesforce stands as one of the paramount computer software companies in the world with a market cap of [\\$156B](#).

Here's a quick overview—and by no means an exhaustive list—of the Salesforce cloud software ecosystem:

- **Salesforce Cloud Products include:** Service Cloud, Marketing Cloud, Sales Cloud, Commerce Cloud, Experience Cloud, IoT Cloud, and App Cloud
- **Salesforce Industry-specific Products include:** Health Cloud, Government Cloud, Financial Service Cloud, Philanthropy Cloud, Communications Cloud, Media Cloud, Energy and Utilities Cloud
- **Salesforce Classic vs. Salesforce Lightning (1):** a new user interface (Lightning) has been integrated into Salesforce, but the company has the Classic UI for customers that may not have the ability to make the switch. New features such as comprehensive sales data, integrated emails, and email templates are available in the new Lightning UI, but not in Classic.
- **Visualforce:** small, reusable pieces of functionality—think UI elements, panels, widgets etc.—that allows for the development of strong and reusable interfaces. The Visualforce framework lets developers create customized software
- **Mulesoft:** provides a complete integration platform that can connect a variety of data sources and applications on premise or on the cloud, all available through a single interface
- **Salesforce AppExchange:** an enterprise market offering more than 4,000 cloud-computing apps. [According to the 2019 Salesforce Annual Report](#), 95% of Fortune 100 companies use at least one product from the AppExchange.

Salesforce is one of the biggest names in cloud computing thanks to its robust marketplace, pre-built, native solutions, and its customizability. With a technology surface area this big, what does this mean for customers using and building on-top of Salesforce products?

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## DOWN THE RABBIT HOLE: TESTING SALESFORCE

With guts come glory, but every once in a while, being big opens you up to a new set of challenges for you and your customers. Salesforce is a top-tier enterprise tool with a highly customizable environment that can be

configured to fit any situation. However, all the native functionality built into the product paired with bespoke customization means a large surface area that has to be battle tested on a consistent basis.

Specific Salesforce Testing-challenge include:

- **Citizen Development vs. Citizen Testing:** Citizen developers can use Salesforce as a low-code application platform (LCAP), but traditional test automation frameworks do not have low-code capabilities that can be used to citizen-test. The discrepancy is difficult to reconcile in the software development lifecycle, and often ends up leading to more unintended costs.
- **Breadth and Depth of Salesforce:** The magnitude of customizations and integrations possible with Salesforce makes it harder for managing your test assets. Also, many critical workflows that the business depends on (Quote to Cash, Hire to Retire, etc.) rely on the stability of these business structures.
- **Updates, Updates, and More Updates:** Salesforce deploys updates to its core product three times per year. That means integrating any third-party product from the AppExchange into a custom app requires exhaustive testing with complex test case updating by Salesforce app product owners. Additionally, organizations most likely push their own set of updates on a periodic basis. A frequent and constant stream of changes further increases the need for constant testing that outpaces manual and traditional testing efforts.
- **Dynamic Content and Advanced Features:** Elements such as Salesforce forms are dynamic in nature, which makes it difficult for a Salesforce tester to depend on XPath or selectors when writing their scripts. Due to this, testing an environment that doesn't have a static ID, name, class, or CSS attribute is a lot tougher since the elements can't be hardcoded. Furthermore, it's not easy to test advanced features like Visualforce, a UI that allows for the development of strong and reusable interfaces. This can lead to unstable test scripts that have to be maintained on an ongoing basis
- **Shadow DOM and Pop-up Windows:** Elements available in the new Lightning UI like Shadow DOM (Document Object Models), and pop-up windows are difficult to test using Selenium. Complex DOM structures using objects make it extremely difficult to validate with traditional testing frameworks

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## SETTING THE STAGE FOR A NEW TESTING HORIZON

The future of Salesforce testing has unleashed AI-powered, low-code/no-code testing solutions that enable businesses to reduce the technical headache when creating and maintaining their Salesforce applications. These new processes and tools empower product owners to transform testing intent into test cases without requiring the traditional technical know-how to write or edit code.

No-code/Low-code testing tools additionally empower citizen testers with unmatched workflow flexibility to:

- **Perform Rapid SFDC End-to-End Testing:** Product owners can access hundreds of prebuilt test cases across the Salesforce module and add them to any test scenario with a single click. These test cases may be written in plain English when using natural language processing (NLP) to manage critical business processes such as Quote to Cash, Record to Report, or Procure to Pay.
- **Autonomously Identify Objects and Self-heal:** Ideally, modern Salesforce testing tool must be able to self-heal dynamic objects and frames using machine learning, thereby reducing test script maintenance by over 80%. Regression suites in Salesforce must stay up-to-date after each release regardless of being performed by Salesforce, third-party integrations, or internal product teams.
- **Automate Seamless API Testing:** You can increase the coverage and reliability of API testing with low/no code testing by ensuring that powerful API tools work in parallel to precisely detect and diagnose bugs. This orchestration significantly accelerates time to resolution. Ultimately, Salesforce app owners gain the confidence to accelerate releases and integrate APIs across the Salesforce landscape with reduced risk.

AI-powered low-code/no-code testing can drive out a tremendous amount of technical challenges when innovating and delivering new products using Salesforce. We are talking about the opportunity to drive out a major structural cost center—technical debt – and replace it with an infrastructure that is not only more efficient, but more effective in terms of scalability, coverage, awareness of change, actionability to change, and all the downstream impacts that will accrue thereto, including the holy grail of end user customer delight and digital confidence.

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## THE PATH TO COMPETITIVE ADVANTAGE

The status quo demands that the current path to scale and economic viability runs through the territory of the cloud. However, this is an uncertain proposition for many reasons that are all too familiar with executives and managers that have reached the scale of their digital endeavors given the proverbial glass ceiling established by the scarce talent pool.

The ever-shrinking global landscape is rapidly eroding the margins of labor arbitrage, as the market for elite knowledge workers tightens month-by-month. As a proposition of scarcity and cost, business leaders are looking for a more manageable growth strategy. [The U.S. Bureau of Labour Statistics](#) calculated in 2020, that the unemployment rate of software professionals was 1.9%.

Competitive advantage in this territory will go to the organizations who drive their variable costs structures to zero utilizing cloud technology, while incrementally scaling their coverage and reducing their exposure to change disruption. This positions Salesforce as a product that will continually see adoption while posing a challenge to customers who need to find ways to sustainably maintain their growing technical infrastructure, non-technically.

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## SOFTWARE TEAMS, REIMAGINED

From now on, organizations will define and predict their own success to the degree they challenge themselves to master complexity and complex systems. Above all, this will mean mastering outcomes, not tasks.

Software innovation will be driven by creative problem solvers while circumventing traditional software designers and developers, and highly technical QA personnel. Conspicuously, these teams will not only not be able to afford the complexity of Selenium Script Developers, they simply do not have time to sustain this inefficiency in their current Salesforce environments.

Early adopters have begun laying down the blueprints for successful transformation when building with Salesforce - necessary capabilities include:

1. **Low Code:** Systems that only require the user to possess basic knowledge of the intent, and the user story development.
2. **Smart Systems:** Change detection and autonomous script correction and healing intelligence.

- 3. High Leverage IP:** Allow for greater exposure and inclusion of Business Analysts into development processes. As the demand for technical skills is supplanted by a demand for business acumen during critical steps of development to ensure that shippable products support the business case.

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## TODAY, TOMORROW

The winning formula in 2021 will remove bottlenecks to innovation and delivery by encouraging simplicity in an environment overwhelmed by complexity. Furthermore, it will unflinchingly deliver an elevated user experience and digital confidence that delivers on customer expectations, surprises them exclusively on the positive side, and drives community expansion, resilience, and growth.

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## ABOUT SAUCE LABS AND AUTONOMIQ

As the engine of low/no code testing in the Sauce Labs DevOps Testing Toolchain, AutonomIQ empowers citizen testers, and IT professionals to automate their functional testing and thoroughly test both the UI and APIs in their Salesforce applications. With our AI-driven and codeless studio, our customers and partners can significantly shorten test sprints, improve code quality, achieve running full regression cycles, and keep the regression suite up-to-date after each release.

AutonomIQ delivers transformation projects faster without compromising quality. You can deploy AutonomIQ locally on-premises or in the cloud or hybrid cloud. AutonomIQ is available out-of-the-box with preset Salesforce-specific test assets, and offers unmatched workflow flexibility.



## ABOUT SAUCE LABS

Sauce Labs is the leading provider of continuous testing solutions that deliver digital confidence. The Sauce Labs Continuous Testing Cloud delivers a 360-degree view of a customer's application experience, ensuring that web and mobile applications look, function, and perform exactly as they should on every browser, OS, and device, every single time. Sauce Labs is a privately held company funded by Toba Capital, Salesforce Ventures, Centerview Capital Technology, IVP, Adams Street Partners and Riverwood Capital. For more information, please visit [saucelabs.com](https://saucelabs.com).



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