

# ACHIEVING PARALLEL TEST EXECUTION IN AUTOMATION

## TESTING IS NO LONGER A NICE-TO-HAVE... IT'S A MUST.

Particularly as organizations are expected to provide flawless customer experiences at unprecedented rates. With quality and speed key to getting new releases out the door, parallel test execution is central to easily adopting automated testing best practices and achieving CI/CD.

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At some point, every organization runs into a common problem: too many automated UI tests taking too long to execute. A common solution: add more validations per test. But this approach is actually counter-productive to speeding up test suite execution because run time and feedback can only be as fast as the slowest test. Larger tests also have many web interactions. Increasing the chance for test failure and instability.

To successfully execute automated functional tests, they must be run in parallel. The Sauce Continuous Testing Cloud is optimized for testing in parallel, and at any scale, across many different browser, OS and device combinations...accelerating tests by up to 10x. Plus, Sauce Labs is the only continuous testing cloud that enables testing across virtual desktops, real devices, as well as mobile emulators and simulators.

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*WITH SAUCE LABS, WE ARE ABLE TO DO THE WORK OF 30K ENGINEERS IN ONE DAY. -WALMART*

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The power of Sauce Labs in conjunction with the following best practices for testing in parallel, organizations no longer need to be limited by internal resources or infrastructure (and all the maintenance that goes with). Instead, they can realize the full potential of parallel test execution in automation.

**Shorter is Better.** Placing focus on conducting shorter tests, instead of increasing the number of validations per test allows for more tests that are more stable to be run in parallel. Dramatically reducing the time (and resources) spent on debugging, while meeting the demands of scaling to any test suite size. Think: tens, if not hundreds, of thousands of tests each day.

Total Number of Tests	Test Run Time	Number of Parallel VMs	Total Time to Suite Feedback	Performance Difference	How Easy to Debug	Stability
100	1 min	100	1 min	Gold Standard	Easy	Most Stable
20	30 min	100	30 min	<b>3,000% slower</b> no matter how many VMs you throw at it	Hard	<b>Unstable</b> (every interaction with the browser is a chance for an error)

**Atomic Testing.** The testing of individual features within the application that equate to end-to-end testing when combined. A 'must do' for ultimate time savings in parallel test execution.

**Make Tests Autonomous.** An autonomous automated test is one that doesn't rely on the outcome of another test. Not forcing tests to run based on the outcome of the test prior means tests aren't bound by a particular order. Thus, any failures can be addressed without holding up other tests. Saving precious time organizations no longer have to spare.

**Manage Test Data.** Utilize just-in-time to manage test data. This is the creation of test data before the test starts, the use of that test data in the test case, and then the deletion of the test data directly after the test ensuring an always clean test environment.

**DID YOU KNOW:** Because Sauce Labs provides virtual machines free of session and cookie information for each instance, our customers receive a clean and pristine virtual machine each and every time. Meaning Sauce Labs customers never have to worry about false positives and failures that can occur when virtual machines are not scrubbed before their next use.

**Avoid the static keyword.** A static browser key word makes it impossible to run multiple tests at the same time as each test will try to run using the same object. One test might be trying to open a browser, while another might be trying to locate an element. Causing the different actions to interfere with each other because they are acting on the same exact object.

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**In a Nutshell:** Sauce Labs equips and guides organizations for releasing quickly and often. With Sauce, our customers can drive new business, while promoting retention and loyalty in today's highly competitive customer centric marketplaces.