



The ROI of Sauce Labs

ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) RESEARCH REPORT
BY STEPHEN D. HENDRICK
JANUARY 2020

SPONSORED BY



Table of Contents

Executive Summary.....	1
Introduction	4
ROI Results	5
Sample Demographics.....	6
Net Benefits.....	7
Breakeven	8
ROI Matrix.....	9
Benefit Models.....	9
Impact on the Customer Experience.....	10
Impact on Number of OS/Browser/Device Combinations Supported	12
Impact on Code Defects Found in Production.....	14
Impact on Time to Deliver a Project Into Production	16
Impact on Project Team Productivity	18
Impact on Infrastructural Spending.....	20
Impact on Test Infrastructure Spending.....	20
Impact on Test Infrastructure Management	23
Total Benefits	24
Cost Model.....	25
ROI Methodology	26
The Advantages of Empirically-Driven ROI.....	26
The Advantages of Using Advanced Analytics to Calculate ROI	27

Executive Summary

Sauce Labs is known for its abilities in continuous testing, automated testing, and live testing. As enterprises shift left, there is a greater emphasis on faster development, delivery, and deployment. Sauce Labs supports this model by providing OS, browser, and physical/virtual mobile device test environments on demand.

This analytic ROI study shows that Sauce Labs delivers compelling benefits across the software development lifecycle (SDLC). More importantly, these benefits also scale over time and as organizations increase the number of development projects they complete each year. This means that the ROI of Sauce Labs likewise increases over time, with increasing project volumes as the enterprise leverages its Continuous Testing Cloud pervasively across its pipeline.

The Sauce Labs ROI model that EMA developed is based on a survey of 111 Sauce Labs enterprise customers. The survey asked these customers to quantify the impact that Sauce Labs drove across their SDLC in key areas including customer experience, product quality, product deployment speed, product development (CI/CD), and test environment resourcing. The Sauce Labs ROI dataset enabled EMA to use predictive analytics to calculate the economic value of each of these benefits. This dataset also enables each benefit and cost model to be inferred over time (four years) and annual project volume (10-500 projects per year). The resulting ROI matrix becomes an effective tool for understanding the expected ROI Sauce Labs delivers to an enterprise in year one, and then projecting how this ROI will grow in years two, three, and four.

Project volumes varied considerably across the sample of enterprise customers, with 90 projects per year as the average. At 90 projects per year, a Sauce Labs user can expect an ROI of 185% in year one rising to 353% in year four. The breakeven point for an investment in Sauce Labs occurs after just five months, with the net benefits starting at \$233,000 in year one and rising to \$779,000 in year four.

90

Average number of
Projects per Year

185%-353%

Year 1-4 ROI
90 Projects per Year

5

Months to Breakeven
90 Projects per Year

\$233K-\$779K

Year 1-4 Net Benefits
90 Projects per Year

The ROI of Sauce Labs

The ROI of using Sauce Labs increases as project volumes and time increase, which makes a strong case for migrating to the company's cloud platform sooner than later. Based on project volume, the year one total benefits delivered by Sauce Labs range from \$78,000 at 10 projects up to \$1.5 million at 500 projects. By the fourth year as a Sauce Labs customer, these total benefits increase to \$208,000 at 10 projects and \$4.1 million at 500 projects. This ROI in year four also ranges from 47% at 10 projects up to 561% at 500 projects.

EMA's analysis of the ROI enterprises typically achieve with Sauce Labs uncovered six primary benefits as described in Figure 1. These six benefits are described as follows for an "average" enterprise that completes 90 development projects per year. Values may not be exact due to rounding.

\$78K-\$1.5M

Year 1 Total Benefits
10-500 Projects per Year

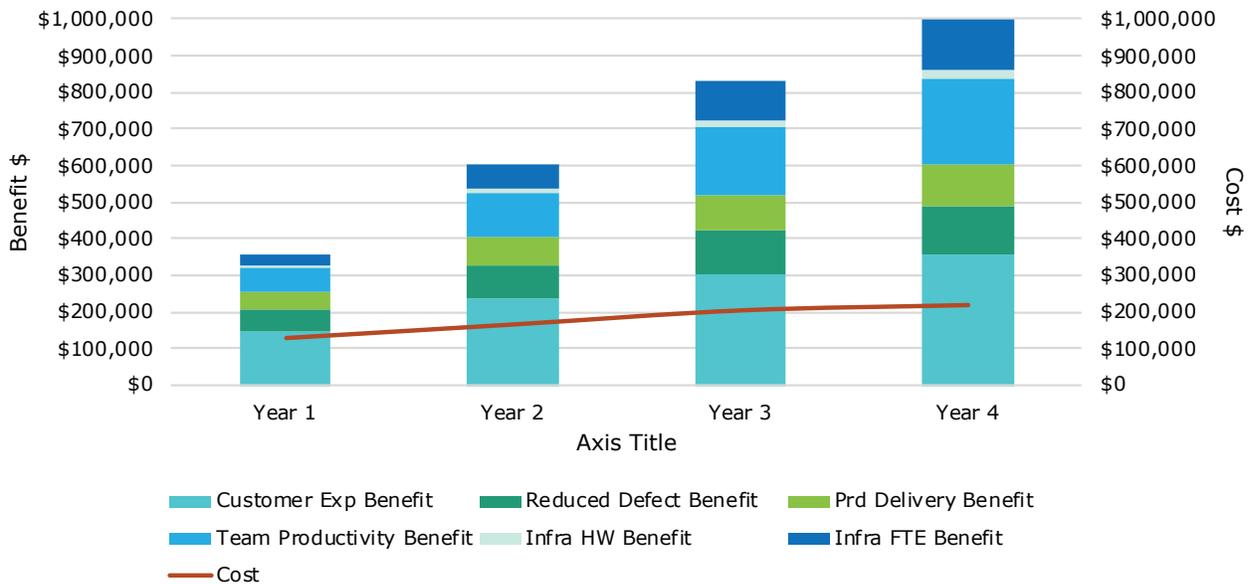
\$208K-\$4.1M

Year 4 Total Benefits
10-500 Projects per Year

47%-561%

Year 4 ROI
10-500 Projects per Year

Figure 1: Comparing the costs and benefits of using Sauce Labs



Source: Sauce ROI Model, December 2019

- **Improvements to the customer experience.** Better production code drives improved customer experience, which most tangibly manifests itself in the generation of fewer trouble tickets. At 90 projects per year, which is the average number of projects across the sample, this benefit drives \$149,000 in year one, \$237,000 in year two, \$305,000 in year three, and \$356,000 in year four. The cumulative benefit over four years is just over \$1M.
- **Reduced defects in production code.** The use of Sauce Labs also means fewer defects found in production releases. At 90 projects per year, this benefit drives \$57,000 in year one, \$91,000 in year two, \$117,000 in year three, and \$137,000 in year four, with a cumulative benefit over four years of \$402,000.
- **Reduced time to deliver a project into production.** Customers report that Sauce Labs enables them to find bugs faster, and that the company's ability to provide a wider variety of testing resources on demand is a more efficient approach to testing than the one they used prior. Sauce Labs therefore drives higher-quality code, which in turn reduces deployment cycle times. At 90 projects per year, this benefit drives \$47,000 in year one, \$75,000 in year two, \$97,000 in year three, and \$113,000 in year four, for a cumulative benefit over four years of \$332,000.
- **Increased team productivity.** Sauce Labs makes project teams more productive by making CI/CD more efficient. This reduces the time it takes to develop a release and can reduce the size of the project team, thus allowing organizations to redeploy resources to other areas of need. At 90 projects per year, this benefit is \$70,000 in year one, \$121,000 in year two, \$186,000 in year three, and \$233,000 in year four, with a cumulative benefit over four years of \$610,000.
- **Reduced spending on test infrastructure hardware and devices.** Sauce Labs customers can downsize or eliminate their spending on virtual and physical test environments because the company's Continuous Testing Cloud curates a far more expansive stack of OS/browser combinations, as well as virtual and physical devices, and makes these resources available on demand. At 90 projects per year, the test infrastructure hardware benefit was \$6,000 in year one, \$14,000 in year two, \$19,000 in year three, \$24,000 in year four, with a cumulative benefit over four years of \$63,000.
- **Reduced spending on test infrastructure management.** The cost of managing test infrastructure resources in-house can be significant. By providing easy, on-demand access to such a wide range of OS/browser/device combinations, Sauce Labs makes many aspects of in-house test infrastructure management mute, again enabling organizations to redeploy resources, including FTEs, to higher-value activities. At 90 projects per year, this benefit is \$31,000 in year one, \$65,000 in year two, \$105,000 in year three, and \$137,000 in year four. The cumulative benefit over four years is \$338,000.
- **The cost of using Sauce Labs.** For the purposes of this ROI analysis, the cost of using Sauce Labs has been conservatively estimated based on the company's enterprise pricing plan and direct input from survey participants. At 90 projects per year, costs are predicted to be \$126,000 in year one, \$165,000 in year two, \$205,000 in year three, and \$221,000 in year four.

Comparing benefits to costs means that at 90 projects per year, Sauce Labs delivers an ROI of 185% in year one rising to 353% in year four. These ROI figures have also been conservatively developed because 93% of customers report that the expanded OS/browser and device support enabled by testing with Sauce Labs often directly drives new channels of revenue (attributable revenue growth averaged 28% and reached as high as 75%, as discussed in Figure 9). While the granularity of EMA's survey did not permit this benefit to be quantified in the core ROI model, the strong positive response across customers suggests that it is indeed a very real benefit. Anecdotally, some Sauce Labs customers reported increased incremental revenues due to this expanded OS/browser/device support in the millions of dollars.

Introduction

The pressure to deliver applications faster has never been higher. Application development teams are expected to deliver applications that support finer-grained customer segments, function on demand and in real time, and operate continuously 24x7x365. The reactive and proactive capabilities of these applications make them strategically important, and enterprises are constantly searching for ways to deliver applications faster, with higher quality, more efficiently.

Software testing is an important attribute of the SDLC. The demands to deliver software applications faster are changing the way enterprises test applications. Continuous testing is now largely the norm, and automated testing helps accelerate testing activities. Testing helps ensure that applications behave as intended, and identifying defects sooner enables the delivery of higher-quality applications faster. Enterprises that approach testing in a modern and more agile way can improve the customer experience, increase channels for revenue generation, improve quality and reduce defects, reduce the time to deliver applications in production, improve project team productivity, and reduce infrastructural spending.

Given these market characteristics and trends, and their decade-long track record, Sauce Labs believed their Continuous Testing Cloud delivered high value to their customers. To validate this, the company asked EMA to quantify the ROI of their Continuous Testing Cloud.

EMA performed an analytic ROI assessment in the fall of 2019. This assessment included an empirical study of Sauce Labs enterprise customers, which in turn drove the development of a multidimensional predictive ROI model. This approach ensured that the ROI results would be comprehensive, reliable, and transferable. These characteristics were cemented by a robust sample size of 111 enterprise respondents in the ROI dataset, from which linear/nonlinear regression models were developed for each primary benefit and cost.



ROI Results

The two most important dimensions of this ROI analysis are time and scale.

The time dimension of this model encompasses four years. Time is important because the larger the enterprise, the more time it takes to fully embrace and assimilate changes to the SDLC and IT culture. Therefore, an important aspect of this ROI model is phasing in benefits over time. The time it takes to phase in benefits is contingent upon enterprise size, the scale of application development, and DevOps maturity.

The number of annual development projects completed by the enterprise drives the scale dimension of this model. EMA purposely did not provide a definition for what a project was, but based on enterprise responses and demographics, the scope of a project does vary based on culture, how agile the enterprise is, and how far along the enterprise is in embracing microservices and modern application development techniques, like event-driven architectures and FaaS. While EMA did see significant differences in what a project meant to an enterprise, the utility in building this ROI model around projects is that this measure is relevant to every enterprise.

Discussions with Sauce Labs customers focused the ROI model on the following benefits and costs:

1. The impact on the customer experience
2. The impact on the number of OS/browser/device combinations supported
3. The impact on the number of defects found in production releases
4. The impact on the time needed to deliver a project into production
5. The impact on project team productivity
6. The impact on physical hardware spending for testing infrastructure and devices
7. The impact on resources, including FTEs, needed to manage this testing infrastructure
8. The cost of the Sauce Labs Continuous Testing Cloud

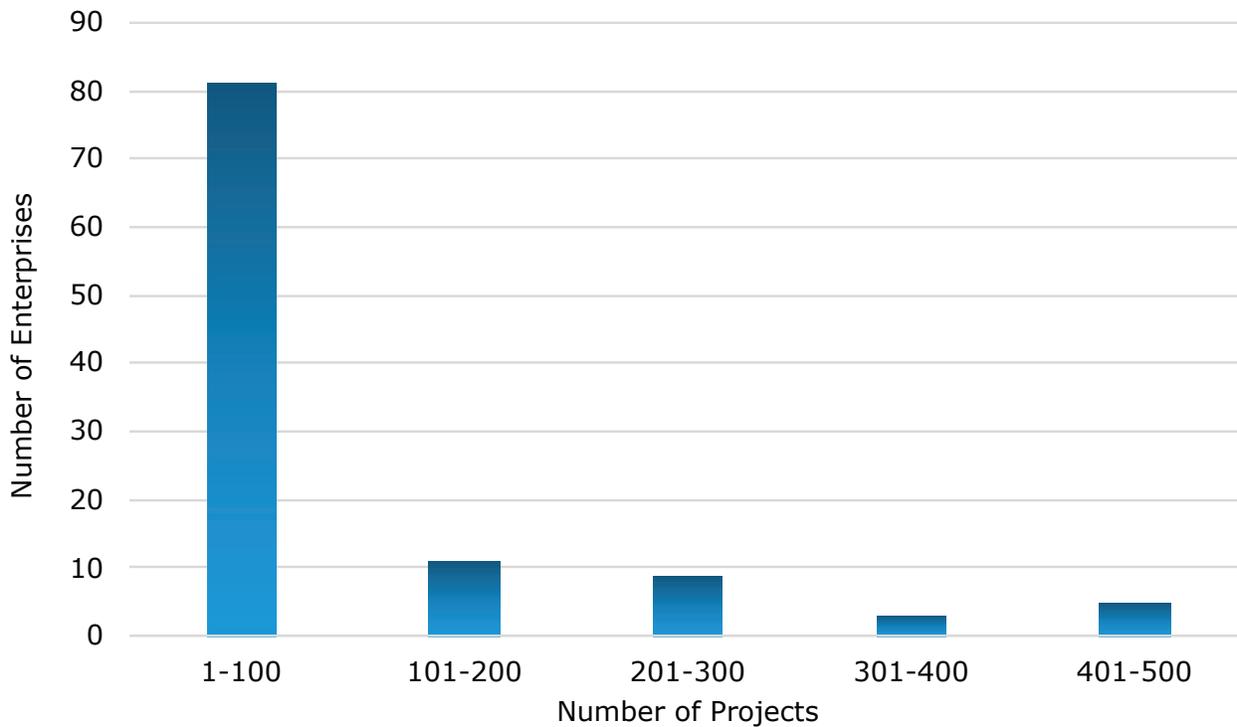
Each benefit was defined in terms of its positive or negative economic impact. In this model, a benefit is defined as a cost avoided because of the efficiency or productivity that Sauce Labs provides to the enterprise relative to how they were testing before using Sauce Labs.

The outputs of this ROI model are ROI values for Sauce Labs by project and by year. The model calculates an ROI value for any number of projects between 10 and 500 across each of the four years. The resulting ROI matrix is especially useful because most enterprises are increasing their IT budgets and the annual number of projects completed. The model therefore provides a reliable way for an enterprise to predict how the ROI delivered by Sauce Labs will change over time, with their changing scale of application development.

Sample Demographics

The annual number of projects across enterprises in the sample is shown in Figure 2. The distribution is a long tail with a minimum value of one project and a maximum value of 500 projects. The average annual number of projects across the sample of 111 enterprises was 90.

Figure 2: The Sauce Labs distribution of enterprise respondents by annual number of projects



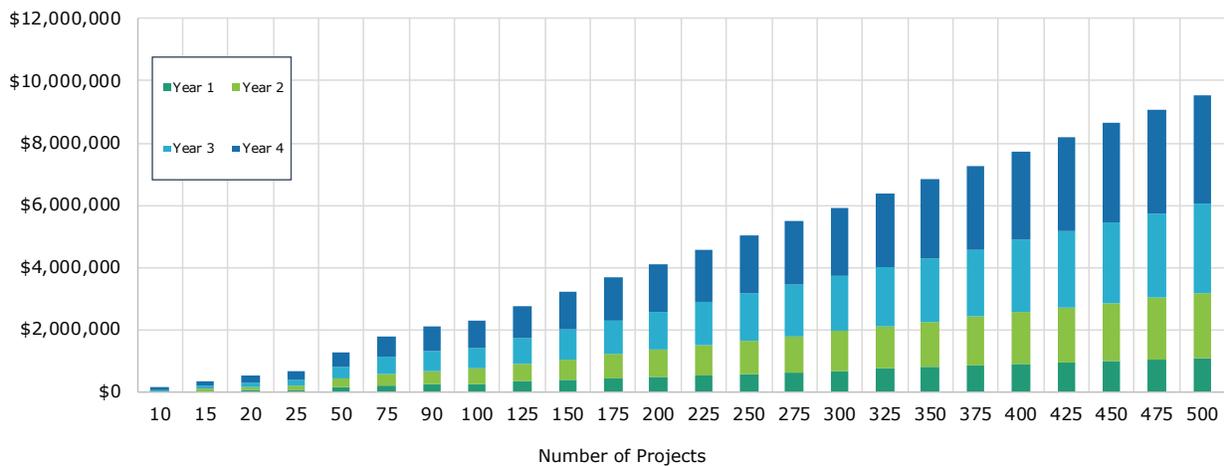
Source: Sauce ROI Survey Nov 2019, N=111

This distribution shows that 74% of respondents have annual project counts between one and 100. This distribution also suggests (and is backed by demographics) that those enterprises with higher project counts have a higher level of agile and DevOps maturity.

Net Benefits

The net benefit of Sauce Labs is defined as the total quantifiable economic benefits minus the cost to deliver those benefits by project and by year. Figure 3 shows the cumulative net benefits provided by Sauce Labs as a stacked column for selected project counts. This enables users to get a sense of how benefits are being phased in over time, as well as how well Sauce Labs delivers economic benefit at scale.

Figure 3: The Sauce Labs cumulative net benefits



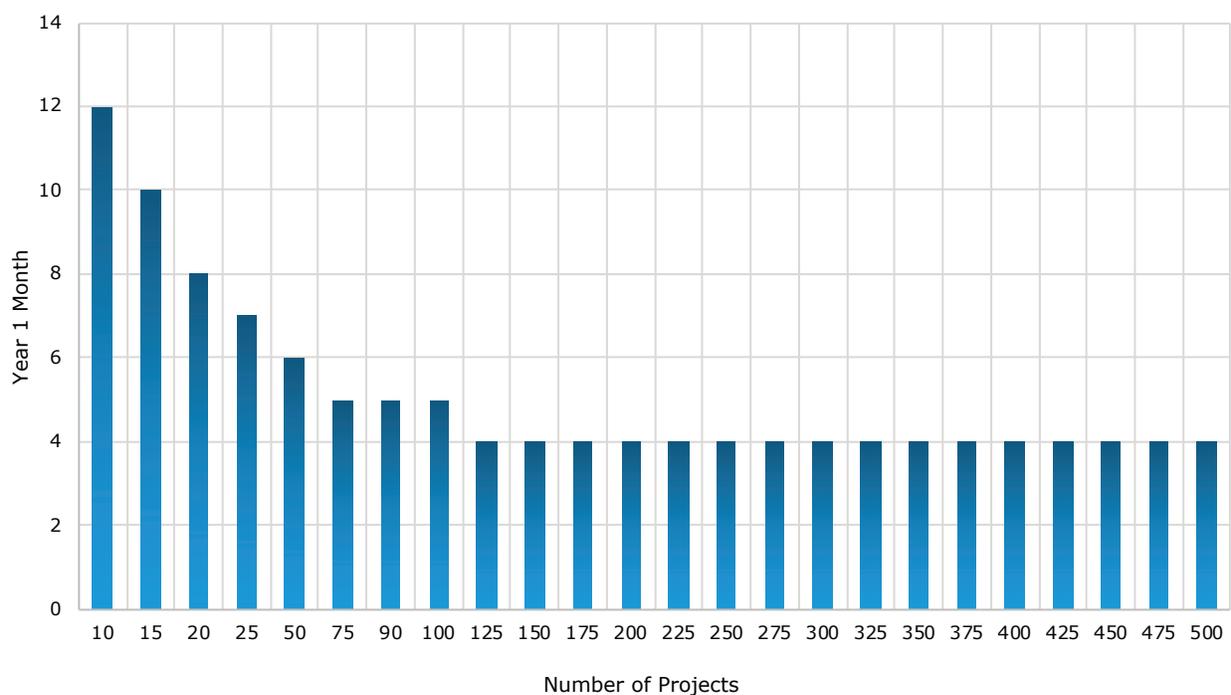
Source: Sauce ROI Model, December 2019

The most compelling message in Figure 3 is that a positive net benefit is delivered at every level of project activity between 10 and 500. What this means is that Sauce Labs will always deliver a positive ROI for project activities at and between these thresholds. While the net benefits and ROI increase with scale, Sauce Labs delivers a positive ROI experience and is adept at scaling up and down, accommodating a wide variety of development styles and usage models.

Breakeven

The positive net benefit across projects and years means that breakeven would occur in year one. Because net benefits increase at scale, there is an inverse relationship between benefits and breakeven months. Figure 4 is a breakeven analysis of Sauce Labs across project volumes. Breakeven months in year one vary from 12 months at 10 projects per year down to four months at volumes greater than 125 projects per year.

Figure 4: The Sauce Labs year one breakeven analysis



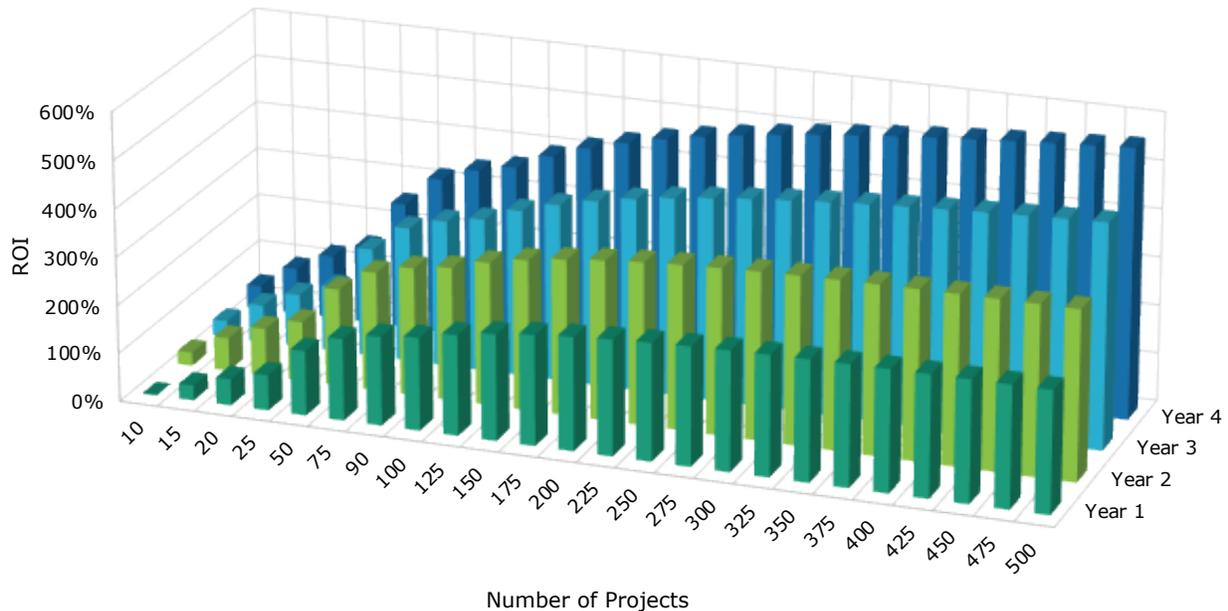
Source: Sauce ROI Model, December 2019

Keep in mind that EMA elected to use enterprise pricing values as reported by Sauce Labs customers. However, enterprise pricing may not be the best fit for organizations with modest project development activities. It is likely that the company's monthly online pricing plan might be a more cost-effective solution at very small project volumes, which further reduces the number of months to breakeven.

ROI Matrix

The ROI results shown in Figure 5 include the ratio of net benefits to cost at each project value and year. This ROI matrix clearly shows positive ROI for every project/year data point. EMA elected to use a phase-in of ROI benefits over time that is more conservative at higher project levels.

Figure 5: The Sauce Labs ROI matrix



Source: Sauce ROI Model, December 2019

ROI benefits range from breakeven at 10 projects to 253% at 500 projects in year one. In year two, ROI varies from 28% at 10 projects to 353% at 500 projects. This escalation continues, with ROI increasing from 34% at 10 projects to 468% at 500 projects in year three. Finally, in year four, ROI ranges from 47% at 10 projects to 561% at 500 projects.

While EMA purposely employed a conservative phase-in strategy to derive these Sauce Labs ROI results, enterprises that are well into their DevOps journeys and are experts in agile development can expect to achieve year three and four ROI results far more rapidly than stated in this model. The year four ROI is based on 100% phase-in of all benefits and costs. Therefore, year four represents the ROI customers can expect when fully utilizing the Sauce Labs Continuous Testing Cloud.

Benefit Models

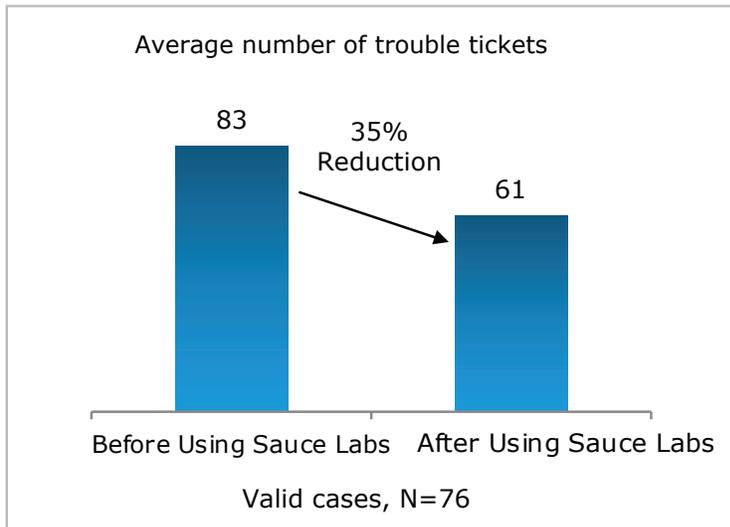
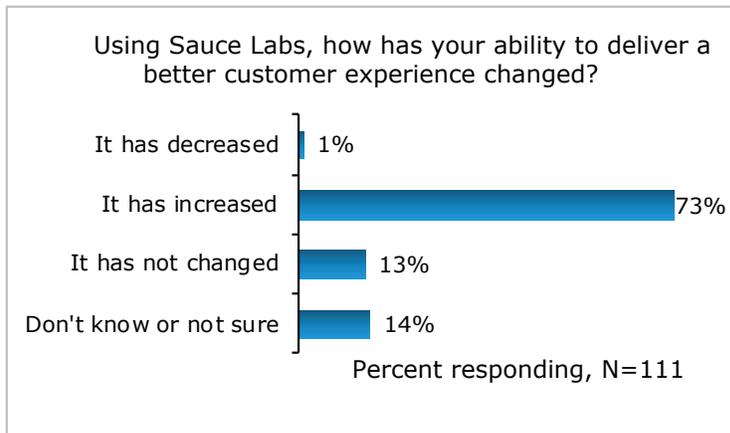
In the Sauce Labs ROI survey, EMA asked a series of questions to each respondent to identify and quantify the impact of the Sauce Labs Continuous Testing Cloud on their SDLC activities. This impact could be positive, negative, or no change, and these scenarios are factored into the ROI model.

Impact on the Customer Experience

The Sauce Labs focus on OS/browser/device combinations means that their Continuous Testing Cloud should be highly effective at helping organizations deliver a high-quality experience to their users. To better understand this impact, EMA asked respondents how Sauce Labs had impacted their ability to deliver a better customer experience. The first panel in Figure 6 shows the responses to this question, with 73% saying that their ability to deliver a better customer experience had increased, compared to just 1% who said it had decreased.

Figure 6: The Sauce Labs impact on delivering a better customer experience

How many trouble tickets do you typically encounter on average in a release now that you are using Sauce Labs, and what percentage of improvement is this?



Average hours to resolve a trouble ticket

19 Hours

Valid cases, N=76

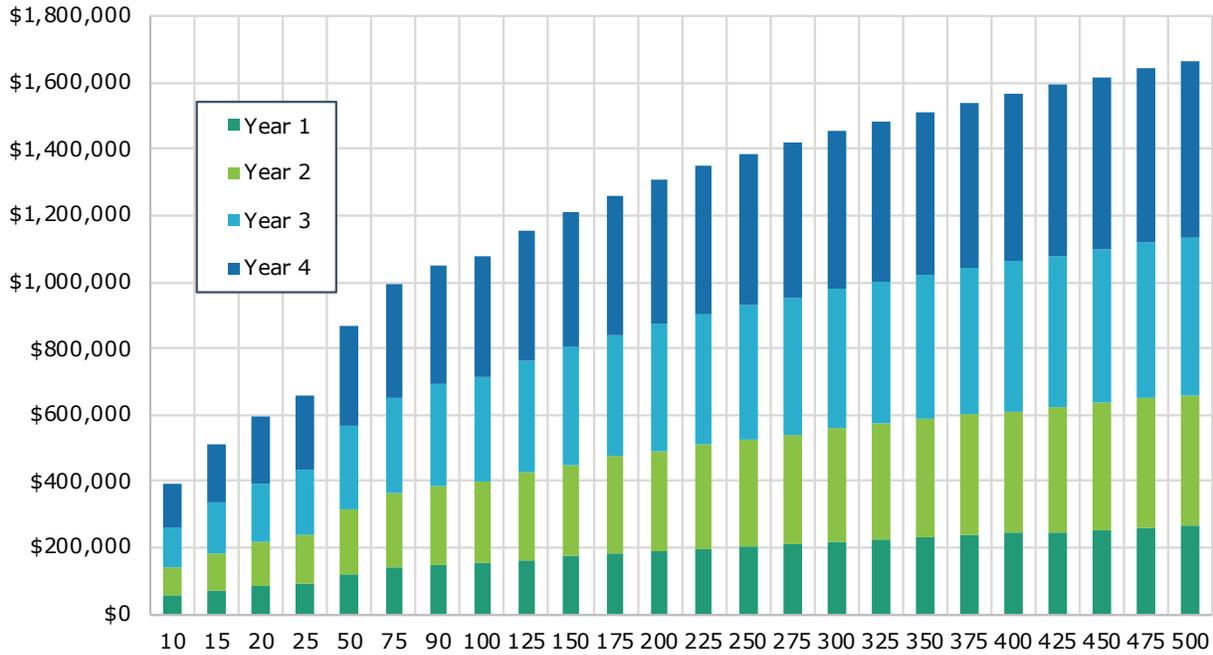
Source: Sauce ROI Survey Nov 2019

EMA evaluated the impact on the customer experience by understanding how Sauce Labs had impacted the number of trouble tickets being generated. The second panel in Figure 6 shows that, on average, Sauce Labs was able to drive a 35% reduction in trouble tickets (from an average of 83 tickets to 61). At an average of 19 hours to resolve each trouble ticket based on respondent input, this adds up to about 65% of an FTE for the average enterprise.

The ROI of Sauce Labs

To model this customer experience benefit, EMA looked at the distribution of actual trouble ticket savings compared to annual projects completed using nonlinear regression. The results of this model are shown in Figure 7.

Figure 7: The Sauce Labs cumulative customer experience benefits



Source: Sauce ROI Model, December 2019

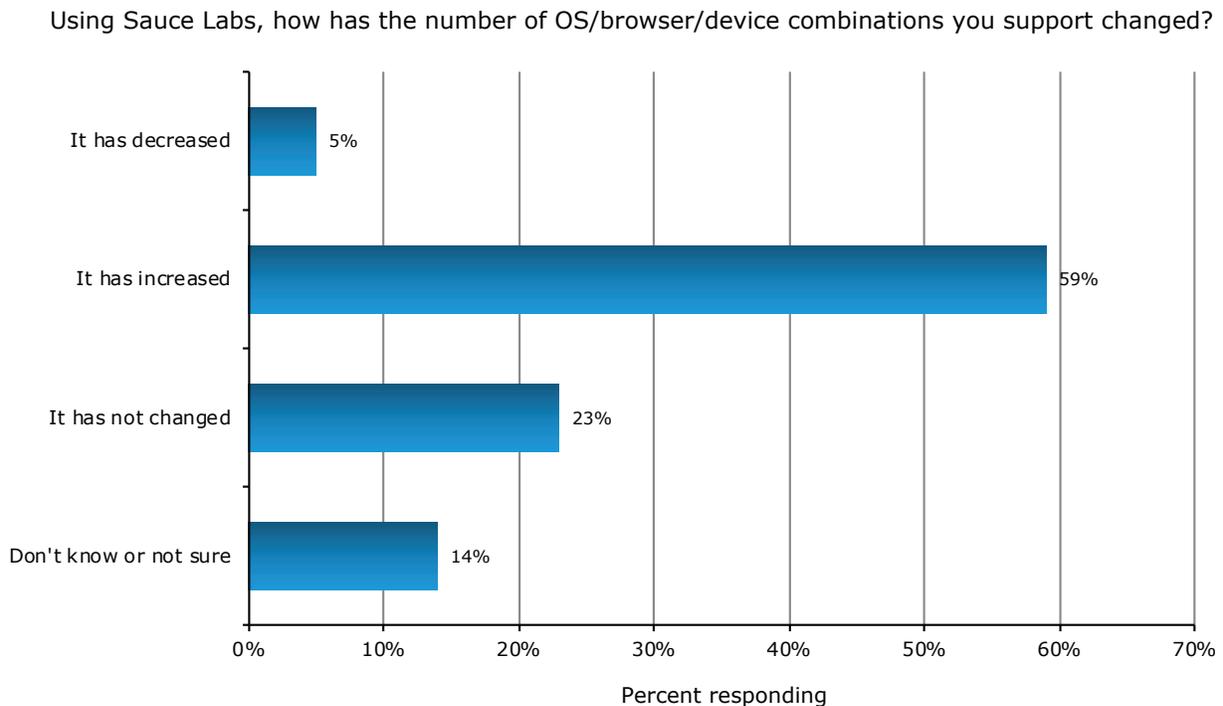
Figure 7 shows the cumulative customer experience benefits from using Sauce Labs. This benefit ranges between \$54,000 and \$349,000 in year one, depending on the number of projects. At 90 projects per year, this benefit is \$149,000 in cost avoidance in year one, \$237,000 in year two, \$305,000 in year three, and \$356,000 in year four, with a cumulative benefit over four years of just over \$1M. The four-year benefit at 500 projects per year can rise to well over \$1.6M.

Impact on Number of OS/Browser/Device Combinations Supported

One of the most compelling benefits of Sauce Labs is its extensive support for OS/browser combinations and physical/virtual mobile devices. These combinations can run well into the thousands and have become too onerous for most enterprises to manage in-house. An all-too-common consequence of this sprawl in mobile and web operating environments is that an enterprise decides to support just the most popular environments and forgo customer relationships and revenue associated with environments that are not mainstream. Decisions like these might have been expedient in the past but are no longer necessary.

To gain an understanding of the impact that Sauce Labs has on the number of OS/browser/device combinations supported, EMA asked ROI survey respondents how the number of OS/browser/device combinations had changed since using Sauce Labs. Figure 8 shows that 59% of Sauce Labs customers increased the number of OS/browser/device combinations supported, compared to just 5% who decreased the number of OS/browser/device combinations supported. Although adding additional OS, browser, and device channels is nontrivial, Sauce Labs makes the incremental testing against these environments easy.

Figure 8: The Sauce Labs impact on number of OS/browser/device combinations supported



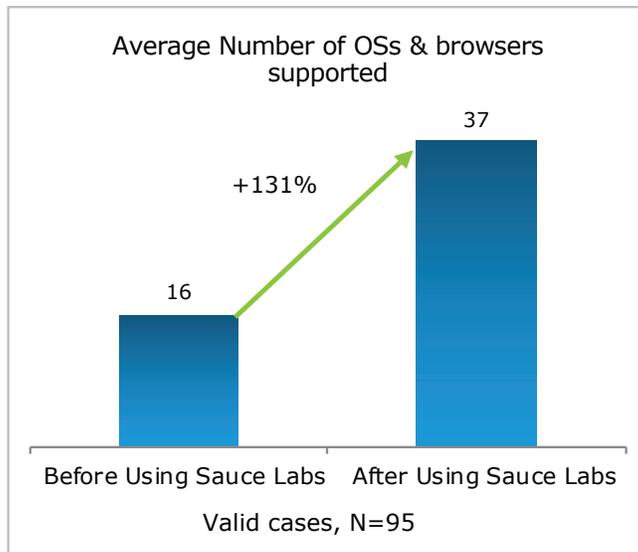
Source: Sauce ROI Survey Nov 2019, N=111

The ROI of Sauce Labs

In the ROI survey, EMA then drilled down into the changes facilitated by using Sauce Labs. Figure 9 shows that the average number of OS/browser/device combinations supported prior to Sauce Labs was 16. After using Sauce Labs, the average number of OS/browser/device combinations increased to 37, an increase of 131%.

Figure 9: The Sauce Labs comparison of changes in OS/browser/device combinations supported

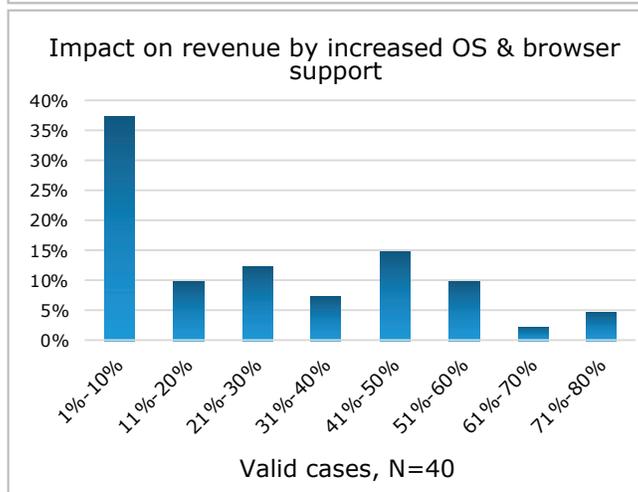
Comparing how many OS/browser/device combinations enterprises test across before and using Sauce Labs.



Percent of enterprises who feel that supporting an increased number of OSs & browsers has a positive impact on revenue



Valid cases, N=70



Source: Sauce ROI Survey Nov 2019

Figure 9 also shows that of those enterprises in which Sauce Labs increased the number of OS/browser/device combinations supported, 93% said that this increased support has a positive impact on revenue. Finally, Figure 9 also shows the distribution of revenue impact. Customers reported that by supporting more OS/browser/device combinations, they gained access to more customers and that revenues increased from 1% to 75%, with an average increase of 28%. While the nature of the survey is such that the ROI model does not factor in the increase in revenue that Sauce Labs drives on account of this increased support, these qualitative findings are nevertheless compelling and represent another key benefit customers can rightly expect from using the Sauce Labs Continuous Testing Cloud.

Impact on Code Defects Found in Production

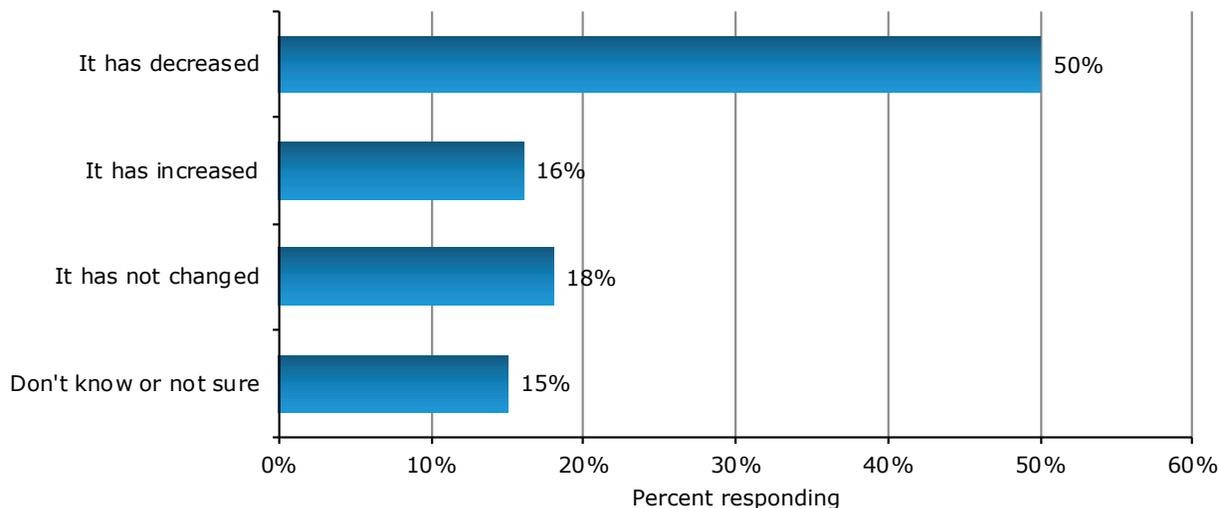
Though Sauce Labs drives a positive impact on the quality of software development and software delivery, once a product is in production, additional developer or project team time is required to address any defects found. In order to better understand this potential benefit, EMA asked survey respondents if they saw a change in the number of defects found in production code after using Sauce Labs.

Figure 10 shows the impact of Sauce Labs on the number of defects found in production code. In EMA's sample, 50% said that the number of production defects had decreased, 16% said they had increased, and 18% said there was no change. When EMA asked why the number of production code defects had decreased:

- 75% said that Sauce Labs enables the development and delivery of higher-quality software, which means fewer defects found in production code.
- 70% said that Sauce Labs makes it easier to do more detailed testing, which also results in higher-quality software.

Figure 10: The Sauce Labs impact on number of defects found in production code

Using Sauce Labs, how has the number of defects found in production code changed?



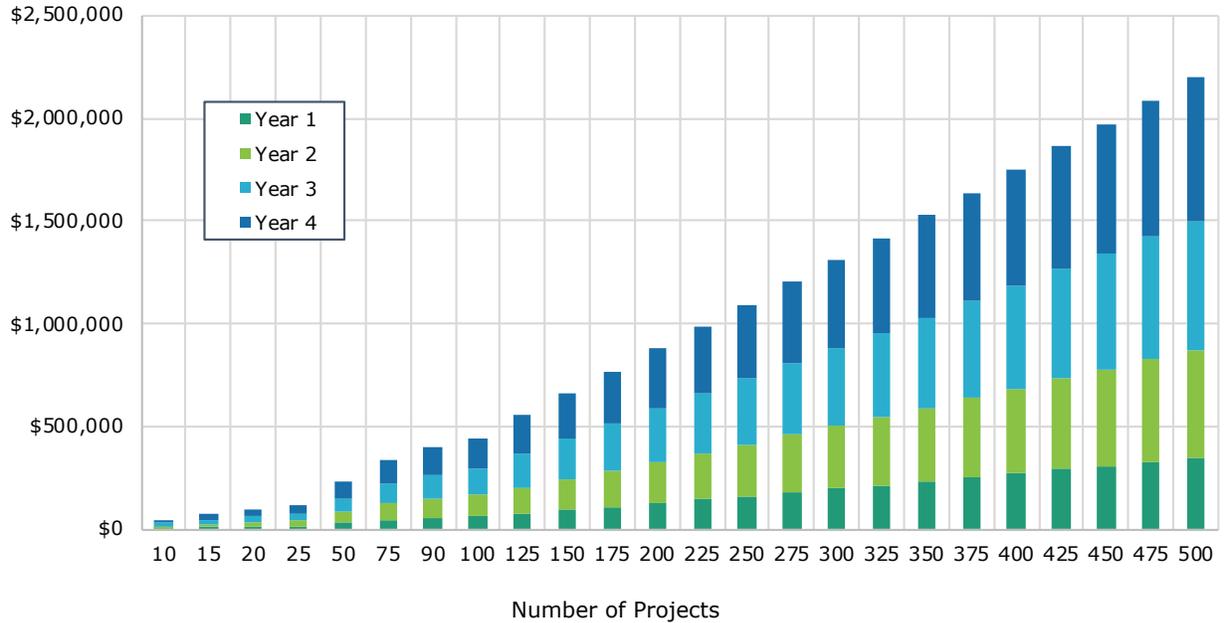
Source: Sauce ROI Survey Nov 2019, N=111

For the 16% of respondents who said that the number of production code defects had increased, over 90% said that Sauce Labs helped them increase the scope of their testing, which in turn enabled them to find more defects. This is again a win for customers because of the efficiency gained when bugs are proactively uncovered.

The ROI of Sauce Labs

Figure 11 shows the cumulative reduced production defect benefit from using Sauce Labs. This benefit ranges between \$7,000 and \$349,000 in year one, depending on the number of projects. At 90 projects per year, this benefit is \$57,000 in year one, \$91,000 in year two, \$117,000 in year three, and \$137,000 in year four, for a cumulative benefit over four years of \$402,000. The four-year benefit at 500 projects per year can rise to well over \$2M.

Figure 11: The Sauce Labs cumulative reduced production defect benefit



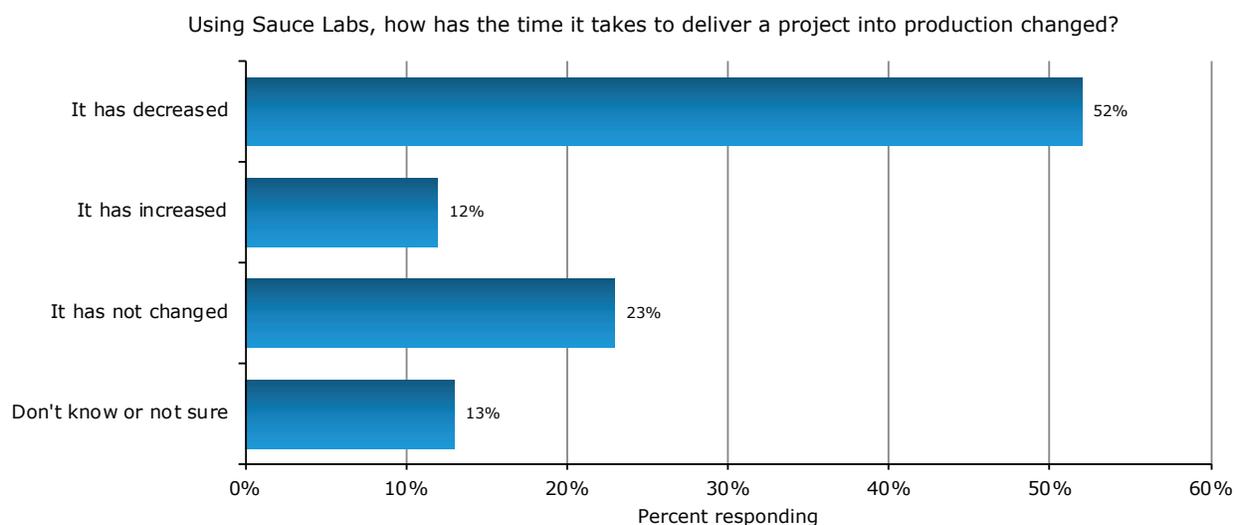
Source: Sauce ROI Model, December 2019

Impact on Time to Deliver a Project Into Production

While project development and CI/CD address product delivery, product deployment into production is often a separate activity because most enterprises have not yet reached an SLDC maturity that includes continuous deployment. EMA's hypothesis here was that an increased focus on testing would improve the quality of applications relative to the environments where they would be deployed.

To test for this, EMA asked survey respondents whether using Sauce Labs impacted the time it takes to deliver the product into production. Figure 12 displays the responses to this question and shows that the time it takes to deliver a product into production decreased for 52% of the sample, increased for 12%, and did not change for 23%. This aligns with EMA expectations.

Figure 12: The Sauce Labs impact on time to deliver a project into production



Source: Sauce ROI Survey Nov 2019, N=111

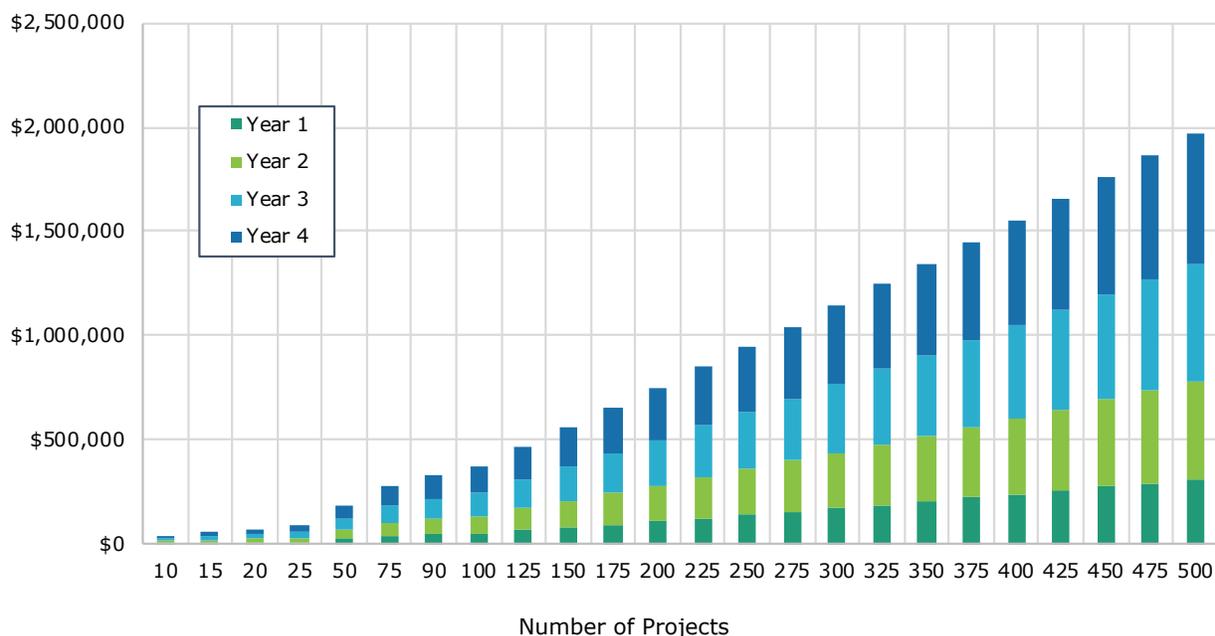
Of the 52% of respondents who said that the time it takes to deliver a project into production decreased, the reasons are as follows:

- 65% said that Sauce Labs enables them to find bugs faster.
- 58% said that the ability to provide a wider variety of testing resources on demand was a more efficient model that they used previously.
- 10% said that even though they do more testing now, with the use of Sauce Labs, this testing still goes faster than before.

The ROI of Sauce Labs

Figure 13 shows the cumulative product delivery benefits from using Sauce Labs. This benefit ranges between \$5,000 and \$313,000 in year one, depending on the number of projects. At 90 projects per year, this benefit is \$47,000 in year one, \$75,000 in year two, \$97,000 in year three, and \$113,000 in year four. The cumulative benefit over four years is \$332,000, and the four-year benefit at 500 projects per year can rise to nearly \$2M.

Figure 13: The Sauce Labs cumulative product delivery benefits



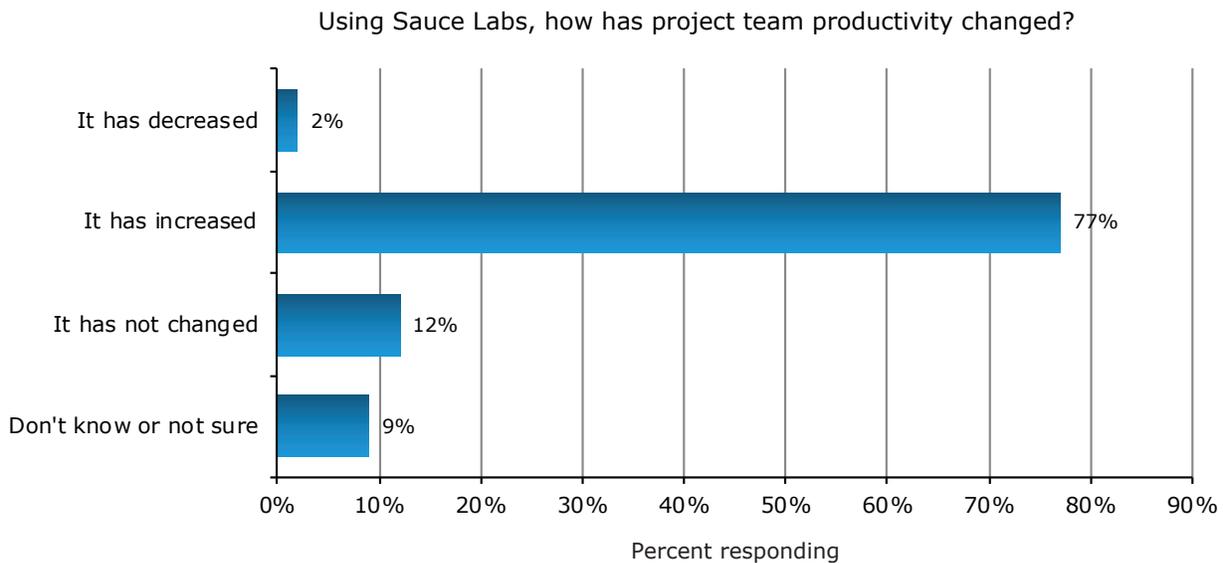
Source: Sauce ROI Model, December 2019

Impact on Project Team Productivity

Project development teams are generally cross-functional and include members who have development, business analyst, testing, and documentation capabilities. Most CI/CD processes require a significant emphasis on testing at the unit and system levels to address functionality, performance, and usability. Therefore, EMA's expectation was that Sauce Labs would have a significant impact on project team productivity.

To initially gauge the impact that Sauce Labs has on project team productivity, EMA asked ROI survey respondents how team productivity had changed now that they were using Sauce Labs. Figure 14 shows that just 2% of the sample said project team productivity had decreased, while 77% said that project team productivity had increased. This finding fits with the hypothesis that Sauce Labs would have a positive impact on project team productivity. The primary reason for this is the availability of testing resources on demand without the scheduling, waiting, or configuration problems teams typically face with in-house solutions. This means that testing takes less time, which shortens cycle times and, in some cases, reduces the size of the project team and enables resources to be deployed elsewhere.

Figure 14: The Sauce Labs impact on project team productivity

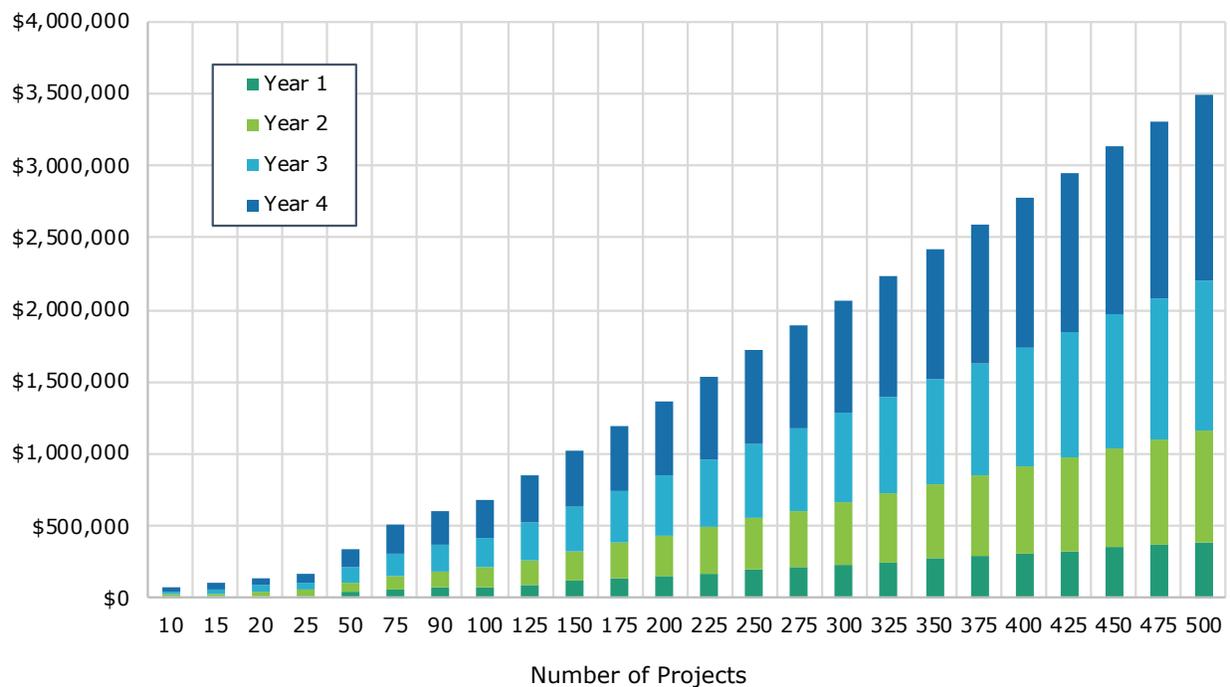


Source: Sauce ROI Survey Nov 2019, N=111

The ROI of Sauce Labs

Figure 15 shows the cumulative development team productivity benefit from using Sauce Labs. This benefit ranges between \$8,000 and \$388,000 in year one, depending on the number of projects. At 90 projects per year, this benefit is \$70,000 in year one, \$121,000 in year two, \$186,000 in year three, and \$233,000 in year four, and a cumulative benefit over four years of \$610,000. The four-year benefit at 500 projects per year can rise to \$3.5M.

Figure 15: The Sauce Labs cumulative development team productivity benefit



Source: Sauce ROI Model, December 2019

The development team productivity benefit can become quite significant at higher project volumes. At 150 projects per year, the four-year benefit jumps to just over \$1 million and doubles to \$2 million at 300 projects per year.

Impact on Infrastructural Spending

Modern applications are typically configured to run on browsers or mobile devices. From a testing standpoint, this creates a challenge because the version of the browser or mobile operating system can't be controlled. This means that an application must be tested against a wide variety of browser, operating system, and device combinations that can number in the thousands. Enterprises that support an on-premises private strategy for sourcing and managing this test infrastructure struggle to keep up with an ever-increasing number of infrastructure and device permutations.

To better understand the impact on infrastructural spending for managing test VMs and devices, EMA first wanted to know if the use of Sauce Labs had changed test infrastructure spending. The hypothesis was that leveraging the company's portfolio of VMs and devices would decrease the spending on internal test infrastructure, as well as the human effort to manage this test infrastructure.

However, spending on test infrastructure and device farms is a given if enterprises are serious about ensuring a better customer experience. The only question is how to address this spending most cost-effectively.

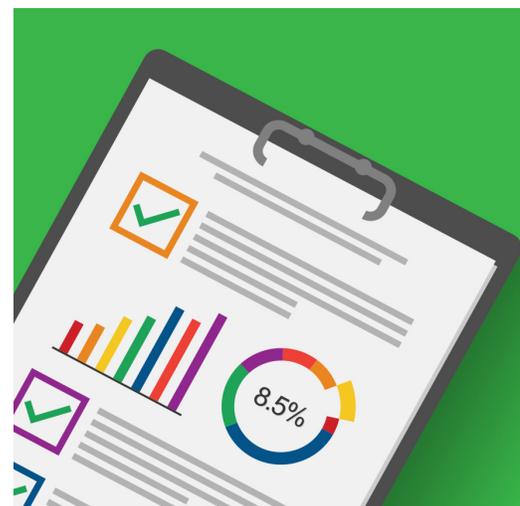
Impact on Test Infrastructure Spending

Figure 16 shows how test infrastructure spending changed as a result of using Sauce Labs. Twenty-eight percent of enterprises said that their test infrastructure spending had decreased compared to 35% that said their spending had increased.

Across the 28% that said their spending on testing infrastructure had decreased, 65% said the reason was that they no longer had to provision their own hardware and devices. Many of the same enterprises also mentioned that they were shifting left, meaning they were embracing a more structured approach to CI/CD.

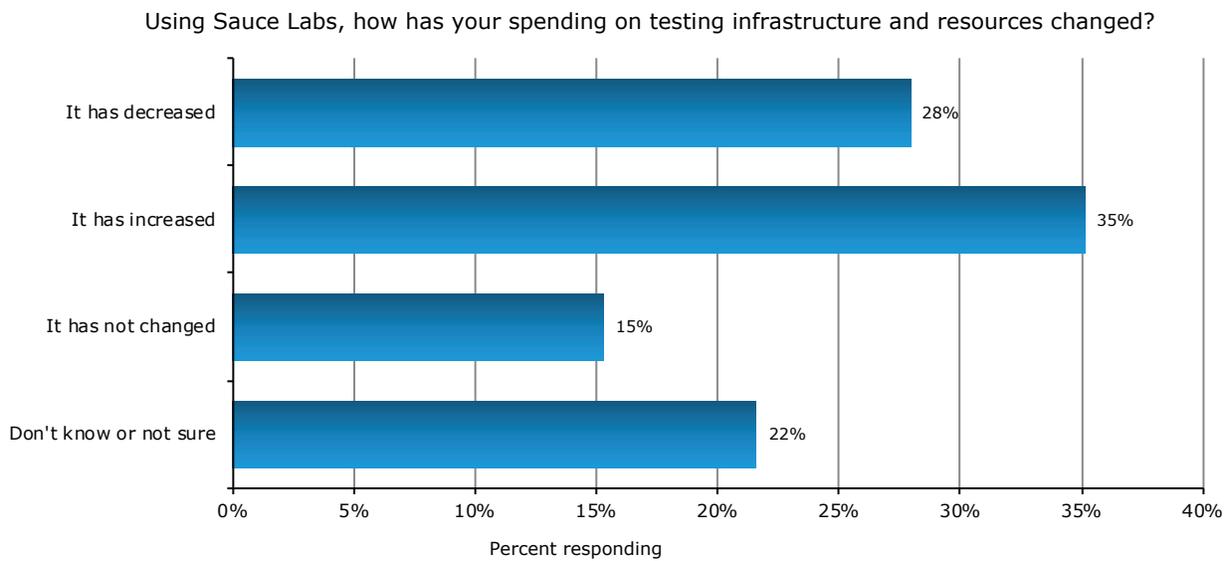
A closer examination of why spending on test infrastructure would increase showed that 72% of those with increased spending were now doing significantly more testing as a result of using Sauce Labs. EMA considers this a huge win for customers because more testing equates to higher quality, reduced cycle times, fewer defects, and faster time to market even if it means more test time.

Eighteen percent of those with increased spending reported that they were new Sauce Labs users and had yet to retire any legacy test infrastructure. A further 23% of those with increased spending intended to retire legacy test infrastructure, but simply had not done so. The multiple-response nature of evaluating the reasons why test infrastructure spending would increase means that these percentages will add up to more than 100%.



EMA was a little surprised initially to see that spending on test infrastructure had increased for more enterprises than decreased. Ultimately, the reason enterprises invest in Sauce Labs is to ensure delivery of a flawless customer experience—not to save nominally on infrastructure costs. The increased spending on test infrastructure that showed up in this analysis was most often driven by the fact Sauce Labs makes it dramatically easier for organizations to test at scale, and more importantly, by the fact that the customer experience benefit derived from that additional testing is so significant. For that reason, EMA considers infrastructure spend the least critical component of this ROI model, and the least compelling reason for an organization to invest in testing.

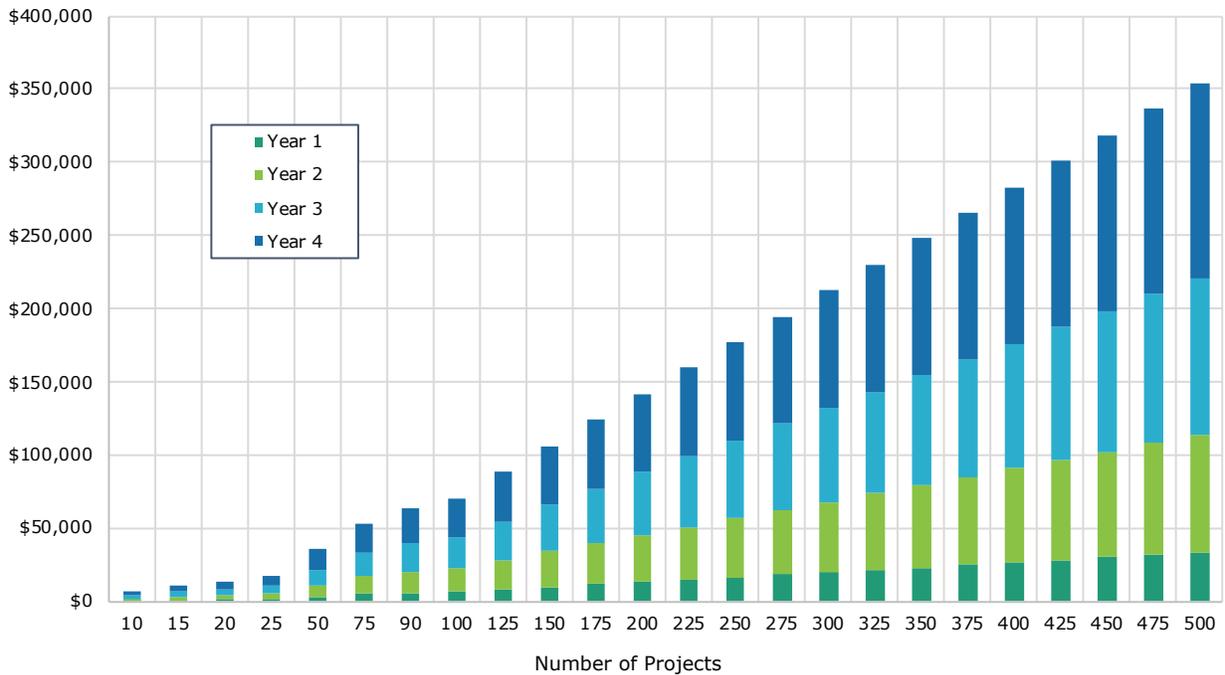
Figure 16: The Sauce Labs impact on test infrastructure spending



Source: Sauce ROI Survey Nov 2019, N=111

The variability in test infrastructure spending (some increased and some decreased) reduces the magnitude of this benefit. Figure 17 shows the cumulative test infrastructure hardware benefit, which ranges from a few thousand dollars at 10 projects per year up to \$134,000 at 500 projects in year four.

Figure 17: The Sauce Labs cumulative test infrastructure hardware benefits



Source: Sauce ROI Model, December 2019

At 90 projects per year, which is the average across this sample, the test infrastructure hardware benefit was \$6,000 in year one, \$14,000 in year two, \$19,000 in year three, and \$24,000 in year four, for a cumulative benefit over four years of \$63,000. The four-year benefit at 500 projects per year can rise to over \$350,000.

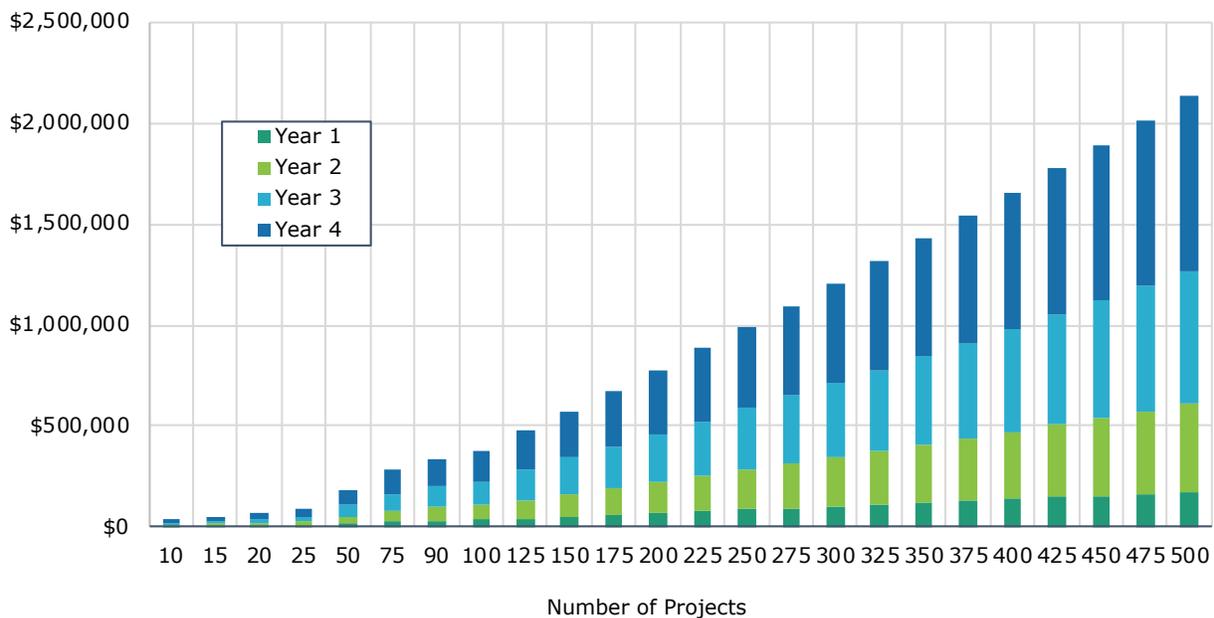
Impact on Test Infrastructure Management

Given the large number of permutations when it comes to operating systems, browsers, and devices, large enterprises have traditionally reserved hundreds or even thousands of on-premises test environments for use by their project teams. Managing this many test environments can involve a surprisingly large number of FTEs.

Because Sauce Labs alleviates this need with their Continuous Testing Cloud, which makes virtually any OS/browser/device combination available on demand, large enterprises can now reduce their portfolio of test environments and devices to a very small number. Consequently, this also means that many FTEs can be redeployed to activities that deliver higher value.

Figure 18 shows the cumulative test infrastructure management benefit from using Sauce Labs. These benefits range between \$3,000 and \$174,000 in year one, depending on the number of projects. At 90 projects per year, this benefit is \$31,000 in year one, \$65,000 in year two, \$105,000 in year three, and \$137,000 in year four. The cumulative benefit over four years is \$338,000, and the four-year benefit at 500 projects per year can rise to over \$2M.

Figure 18: The Sauce Labs cumulative test infrastructure management benefits

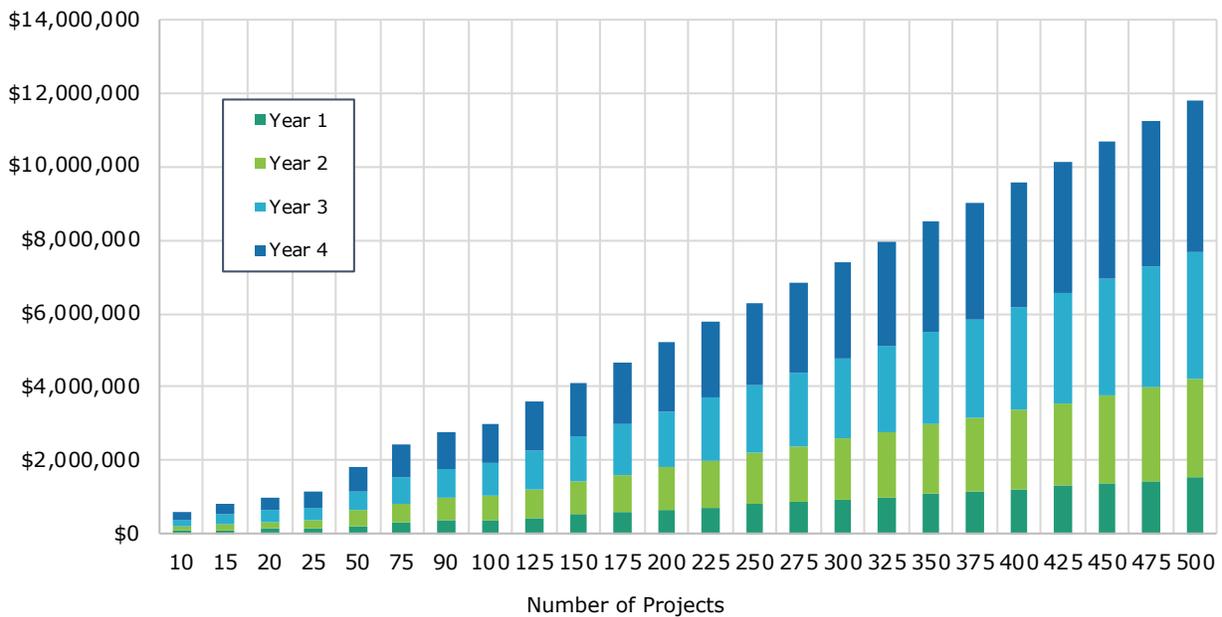


Source: Sauce ROI Model, December 2019

Total Benefits

The total benefits of using the Sauce Labs Continuous Testing Cloud is the sum of the six quantifiable benefits described in this paper. Figure 19 shows the cumulative total benefits being delivered by Sauce Labs by year and number of annual projects. The utility of understanding total benefits delivered by Sauce Labs is to gain an appreciation for the magnitude of total benefits delivered.

Figure 19: The Sauce Labs cumulative total benefits



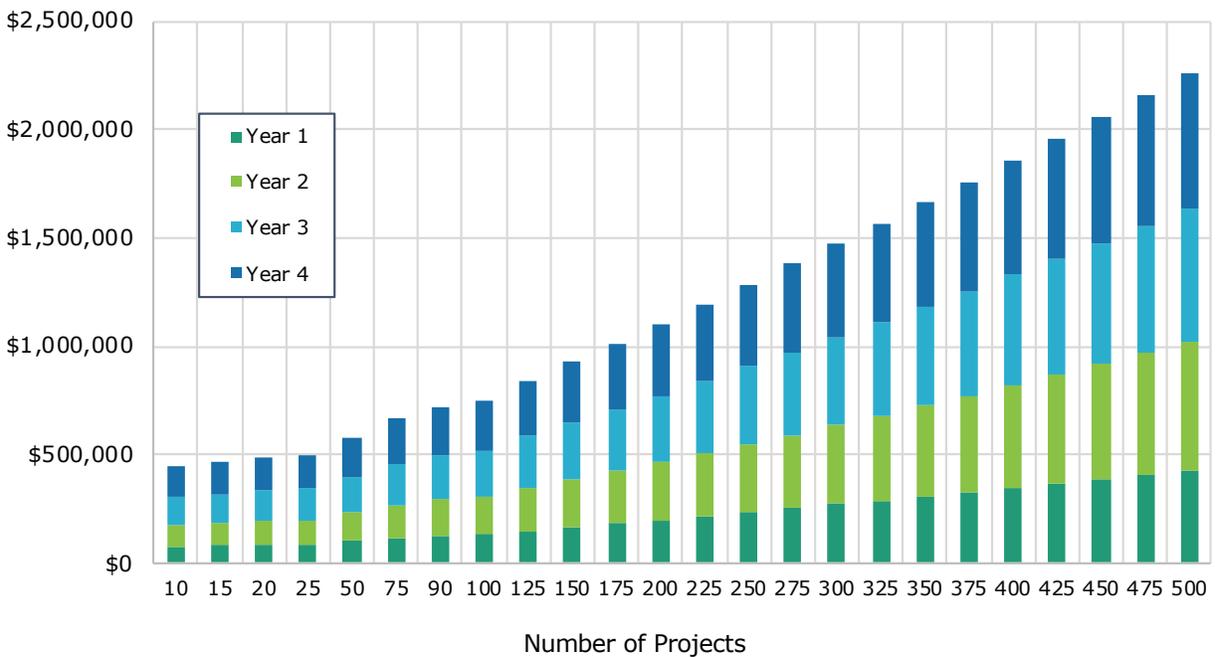
Source: Sauce ROI Model, December 2019

The total benefit ranges between \$78,000 and \$1.5M in year one, depending on the number of projects. At 90 projects per year, this benefit is \$360,000 in year one, \$605,000 in year two, \$830,000 in year three, and \$999,000 in year four, for a cumulative benefit over four years of \$2.8M. The four-year benefit at 500 projects per year can rise to nearly \$12M.

Cost Model

For the purposes of this ROI analysis, the cost of using Sauce Labs was estimated based on the company's enterprise pricing plan as reported by enterprises in the survey. The result is a conservative cost model because of the impact that several very large customers made on the predictive model. Actual customer costs are likely to be less than those stated in the model. The cumulative cost model over four years is shown in Figure 20.

Figure 20: The Sauce Labs cumulative total costs



Source: Sauce ROI Model, December 2019

Total costs range between \$78,000 and \$431,000 in year one, depending on the number of projects. At 90 projects per year, costs are predicted to be \$126,000 in year one, \$165,000 in year two, \$205,000 in year three, and \$221,000 in year four, and a cumulative cost over the four years of \$717,000.

This pricing model also reflects enterprise pricing. Therefore, customers with small project volumes could pursue the company's monthly online pricing plan and find it to be more cost-effective.



ROI Methodology

The ROI approach used here evaluates the differential benefits and costs to calculate ROI. This is a comparative methodology that looks at the specific costs and benefits compared to the prior approach used. Generally, the prior approach involved internally-managed infrastructure. The net benefits found using this approach speak to the quantified improvements found by switching to Sauce Labs, and the net costs are based on enterprise pricing.

This ROI approach is unique in the way that data is collected, and advanced analytics are used to develop predictive models, making this approach truly data-driven and able to deliver multidimensional results. This provides a far more detailed, accurate, and nuanced approach to ROI that is both unmatched in the industry and unparalleled in its ability to explain how a product will deliver ROI over time and at scale.

The Advantages of Empirically-Driven ROI

The ROI approach used here is also based on empirical data and advanced analytics. Both characteristics are a significant departure from most ROI approaches, which are based on a handful of reference account interviews. The empirical data used in this analysis is based on a sample of 111 large enterprises in which Sauce Labs is the primary product used for testing. These 111 large enterprises were all Sauce Labs enterprise accounts and were specifically asked to participate in an ROI survey. Using an empirical approach to ROI with a larger sample size provides two unique advantages over traditional ROI interview-based analysis.

A larger sample significantly improves the accuracy of the results. Error margins based on this sample of 111 respondents are 4-6x smaller than the usual 3-5 interviews often employed by other firms that build ROI models. Shrinking the error margin ensures that the results are more trustworthy and reliable.

A larger sample also means that the results are more readily transferable to users, rather than just being representative of the enterprises interviewed. This means that a user's results in using Sauce Labs will more closely align with the results presented in this report, in comparison to traditional interview-based ROI models.

The Advantages of Using Advanced Analytics to Calculate ROI

The ROI approach used here is described by EMA as “analytic ROI” because it uses advanced analytics to develop predictive models for each benefit and cost. Each predictive model is optimized regarding its choice of an independent variable and the type of model to create. Each predictive model has an equation that is developed using regression, where the dependent variable is a benefit or cost data and the independent variable is the annual number of projects completed. The type of regression model developed (linear or nonlinear) is based on the specific quantitative use case for the benefit or cost, whether the equation must pass through the origin, the goodness of fit (R^2) for the model, the logical fit of the model, and the dispersion of the data points driving the model.



EMA also builds a four-year time horizon into analytic ROI models. This is done because benefits and costs are typically phased in or phased out over time. A four-year time horizon ensures that the analytic ROI model can stabilize by year three or year four.

A distinct advantage of this analytic ROI model is that the benefits, costs, and ROI typically vary relative to the measure of scale that is in use. Analytic ROI can predict the ROI that an enterprise will experience based on their level of project/product activity and by year. The added dimensionality of this matrix of ROI results enables a far more detailed and nuanced understanding of the economic benefits, ROI, and scalability provided by the vendor. In summary, analytic ROI is unique in its ability to deliver the following capabilities:

- Multidimensional ROI results that provide far greater insight into how a product delivers benefits at scale and over time.
- Multidimensional results of analytic ROI that provide a more precise way to predict the benefits and ROI users can expect from the product.

For more information about this ROI report and the methodology behind it, please contact EMA.

To speak to a Sauce Labs representative and receive a custom assessment of the ROI your organization can achieve with the Sauce Labs Continuous Testing Cloud, please contact solutionsspecialists@sauce.com.

About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that provides deep insight across the full spectrum of IT and data management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help EMA's clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise line of business users, IT professionals, and IT vendors at www.enterprisemanagement.com or blog.enterprisemanagement.com. You can also follow EMA on [Twitter](#), [Facebook](#), or [LinkedIn](#).

This report in whole or in part may not be duplicated, reproduced, stored in a retrieval system or retransmitted without prior written permission of Enterprise Management Associates, Inc. All opinions and estimates herein constitute our judgement as of this date and are subject to change without notice. Product names mentioned herein may be trademarks and/or registered trademarks of their respective companies. "EMA" and "Enterprise Management Associates" are trademarks of Enterprise Management Associates, Inc. in the United States and other countries.

©2020 Enterprise Management Associates, Inc. All Rights Reserved. EMA™, ENTERPRISE MANAGEMENT ASSOCIATES®, and the mobius symbol are registered trademarks or common-law trademarks of Enterprise Management Associates, Inc.

Corporate Headquarters:

1995 North 57th Court, Suite 120

Boulder, CO 80301

Phone: +1 303.543.9500

Fax: +1 303.543.7687

www.enterprisemanagement.com

3926.01202020