A Forrester Total Economic Impact™
Study Commissioned By Veracode
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SaaS vs. On-premises: The Total Economic Impact™ of Veracode's SaaS-based Application Security Platform

Cost Savings And Business Benefits Enabled by Veracode's Cloud-Based Application Security Platform With IDE Scan Real-time Scanning

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Table Of Contents

Executive Summary 1
- Key Findings 2
- TEI Framework And Methodology 5

The Veracode Application Security Platform Customer Journey 6
- Interviewed Organizations 6
- Key Challenges 6
- Solution Requirements 7
- Key Results 7
- Composite Organization 8

Analysis Of Benefits 9
- Improved Speed To Scale 9
- Improved Speed To Market 10
- Legacy On-Premises Application Security Solution Cost Avoidance 11
- Security Flaw Identification Process Improvement 12
- Baseline Veracode Benefits 13
- Flexibility 14

Analysis Of Costs 15
- Veracode Platform And Support Costs 15
- Implementation And Deployment Costs 16

Financial Summary 18

Veracode Application Security Platform: Overview 19

Appendix A: Total Economic Impact 20

Appendix B: Endnotes 21

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ABOUT FORRESTER CONSULTING

Forrester Consulting provides independent and objective research-based consulting to help leaders succeed in their organizations. Ranging in scope from a short strategy session to custom projects, Forrester's Consulting services connect you directly with research analysts who apply expert insight to your specific business challenges. For more information, visit forrester.com/consulting.

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Key Benefits

Improved speed to market due to identifying security flaws in real time:

$2,208,325

Security flaw identification process improvement leading to a reduction in security team workload:

$4,379,844 savings

Legacy on-premises application security solution cost avoidance due to moving to the cloud:

$3,931,713

Executive Summary

As an automated and integrated cloud-based application security platform, Veracode helps its customers scale their application security programs on demand and create a competitive advantage through secure software.

As businesses undertake complex digital transformations, applications become critical touchpoints for driving revenue, growth, and innovation. However, as the importance of applications grow, so do the risks of cyberattacks caused by the exploitation of software vulnerabilities.[1] Having an application security program that can quickly grow and scale with your organization is vital to ensuring that DevOps processes continue to run smoothly and your organization operates safely. Forrester found that Veracode's cloud-based application security platform not only rapidly enables secure software delivery and scales with organizations, but it also does so on demand, without the delays of setup and integration required by on-premises solutions. In an interview, one customer stated, "It takes less than 10 minutes to onboard onto Veracode, to plug into your CI/CD pipeline, and get a risk posture." For organizations to win, serve, and retain customers, it's imperative that applications are secure, fast, and able to provide customers with the capabilities they need.[2] In this environment, speed to market is essential to creating and maintaining a competitive advantage. With Veracode's IDE Scan solution providing real-time scanning, organizations' can shift their security testing to earlier in the development process, thereby enabling their developers to identify and remediate security flaws rapidly with 90% accuracy. This cloud-based platform with real-time scanning creates a competitive advantage for any organization, as stated by an interviewee, "We were able to reduce our DevOps process by three months . . . releasing a product eight months before our competition, which generated $250 million."

Veracode commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential ROI enterprises may realize by deploying Veracode's cloud-based Application Security Platform. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of the cloud-based platform with real-time scanning versus an existing on-premises application security solution that lacks real-time features.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed several customers with years of experience using Veracode. The Veracode cloud-based Application Security Platform covers testing across the entire software development lifecycle: IDE Scan, Static Analysis (SAST), Software Composition Analysis (SCA), Interactive Analysis (IAST), Dynamic Analysis (DAST), and Manual Penetration Testing (MPT). The software-as-a-service (SaaS) platform integrates throughout the development pipeline to allow developers to focus on fixing vulnerabilities, not just finding them.

Prior to using Veracode's Application Security Platform, the customers had a variety of on-premises application security solutions. These solutions required servers within a data center or environment to host the solution, which created bottlenecks when more capacity was needed, or when new data centers were acquired. Yet, these costly solutions didn't perform as well as Veracode. As one customer stated, "We previously saw between 1,000 to 2,000 false positives per week per product, but now [we see] 20 to 30 per week per product." For this customer, this equates to an 85% to 90% decrease in false positives.

Migrating to Veracode's cloud-based Application Security (AppSec) Platform removed scaling bottlenecks, reduced the overall cost of ownership, and resulted in several other substantial benefits.

Key Findings

Quantified benefits. The following risk-adjusted present value (PV) quantified benefits are representative of those experienced by the companies interviewed:

- **As a cloud-based AppSec platform, Veracode saves over 200 hours per server, annually.** As customers grow their application security programs, the need to provision new servers and set up security applications behind the firewall is avoided because Veracode is a cloud-based platform. The interviewed organizations told Forrester that, on average, they previously spent 33 hours setting up each AppSec server and 216 hours each year maintaining it. With an average annual cost of $10,000 per server, this results in $450,000 to $650,000 of annual savings for an organization using 23 to 35 servers. Over three years, Veracode's cloud-based AppSec solution saves $1.3 million in server cost avoidance.
- **Improved speed to market leads to $888,000 per year in additional profit.** Veracode IDE Scan enables developers to identify and correct security flaws in real time as they were coding, shifting the risk management process left in the DevOps cycle and reducing the time-to-market for deployments. Using an on-premises solution, organizations spent up to three months during their DevOps process identifying security flaws long after they were implemented and updating code. With Veracode's IDE Scan solution, this three-month process is eliminated, speeding up the release process and getting products and updates to market faster. Assuming an organization has 1,600 developers working on 800 applications annually, they would invest $150 million in application development. By capturing three additional months of value at 3% annual return, $2.2 million of profit can be realized over three years.
- **Legacy application security technology costs of $1.86 million are avoided per year.** Operationally, Veracode's cloud-based AppSec solution was 20% less expensive than that of an on-premises set of solutions. Consolidating application security onto one platform reduced the overall cost of operations, while operating in the cloud provided ongoing cost savings. Over three years, $3.9 million is saved.
- **Real-time security flaw identification reduced developer rework, saving $4.4 million over three years.** Veracode IDE Scan helps to identify known security flaws or issues in real time during the coding process, enabling developers to actively resolve code contamination. This also reduces the workload on security teams during the DevOps testing process. Overall, this leads to $4.4 million in productivity savings over three years.

Baseline Veracode benefits. These benefits are not included in the ROI calculation as this study is focused on the value of a cloud-based AppSec platform compared to on-premises deployments. The following benefits are inherent to Veracode, but are not necessarily attributed to the fact that it is based in the cloud:

ROI
162%

Benefits PV
$11.8 million

NPV
$7.3 million

Payback
<3 months

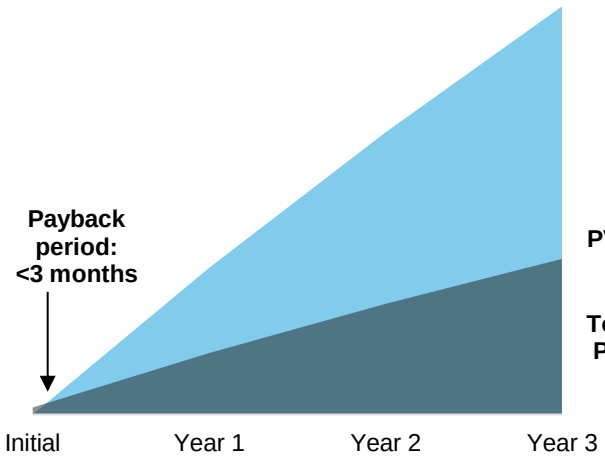
- **Veracode reduced the number of false positives by 75%.** Veracode automation helps to decrease the false-positive rate experienced in security flaws during deployment of code by catching those flaws in real time during the development process.
- **Reduced known security flaws per line of code by 80%.** With 80% of known flaws per line of code being identified during the development process, Veracode helps reduce the risk of security vulnerabilities in production environments.
- **Reduced the potential risk of code licensing violations by 50%.** Veracode automates the process of discovering licensing breaches within code as it's scanned or added to the platform. This helps reduce the risks and costs associated with legal license compliance violations.

Costs. The interviewed organizations experienced the following risk-adjusted PV costs:

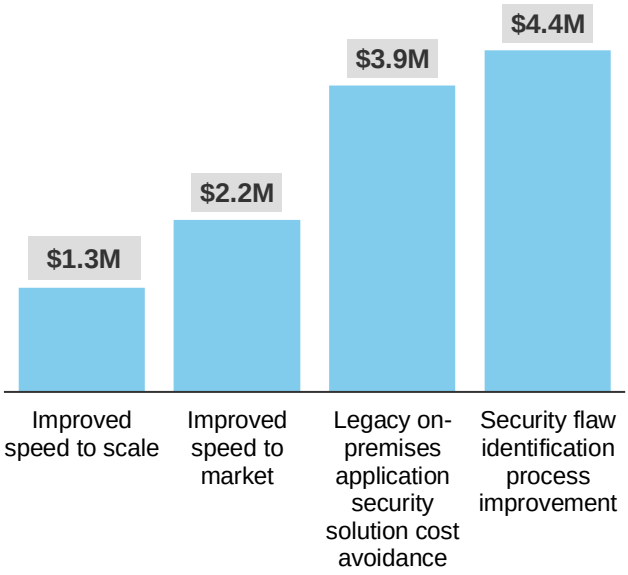
- **Veracode platform and support costs of $1.7 million per year.** For a company with 1,600 developers and 800 applications spread across 12 geographies worldwide, the total three-year PV cost for Veracode subscription fees was $4.5 million. This includes the entire platform of Veracode application security products, including IDE Scan.
- **Implementation and deployment costs are $55,220.** The implementation and deployment costs for the cloud-based platform are very low. Essentially, $50,000 upfront in Veracode professional services and about 5 FTE hours are required for implementation. It is important to note that IDE Scan requires developers to install integrations directly into the integrated development environment (IDE). Every developer must do this, and it typically requires a developer to enter Veracode credentials then download and add the repository based on the proper URL.

Forrester's interview with existing customers and subsequent financial analysis found that a representative composite organization based on these interviews experienced benefits of $11.8 million over three years versus costs of $4.5 million, adding up to a net present value (NPV) of $7.3 million and an ROI of 162%.

Financial Summary



Benefits (Three-Year)



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TEI Framework And Methodology

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing the Veracode Application Security Platform.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that the Veracode Application Security Platform can have on an organization:

The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

DUE DILIGENCE
Interviewed Veracode stakeholders and Forrester analysts to gather data relative to Application Security Platform.

CUSTOMER INTERVIEWS
Interviewed four organizations using the Veracode Application Security Platform to obtain data with respect to costs, benefits, and risks.

COMPOSITE ORGANIZATION
Designed a composite organization based on characteristics of the interviewed organizations.

FINANCIAL MODEL FRAMEWORK
Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewed organizations.

CASE STUDY
Employed four fundamental elements of TEI in modeling Veracode Application Security Platform's impact: benefits, costs, flexibility, and risks. Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves to provide a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

The Veracode Application Security Platform Customer Journey

BEFORE AND AFTER THE APPLICATION SECURITY PLATFORM INVESTMENT

Interviewed Organizations

For this study, Forrester conducted four interviews with Veracode Application Security Platform customers. Interviewed customers include the following:

INDUSTRY	REGION	NUMBER OF DEVELOPERS	NUMBER OF APPLICATIONS
Business services	Global, headquartered in Europe	8,000	4,000
IT & IT-enabled services	India	25	Less than 50
Healthcare	United States	20	Less than 50
High-tech products	United States	Not provided	Less than 50

Key Challenges

As organizations rapidly expand their application development environment, the need for scalable application security platforms rise.

- **As new data centers were acquired, the timeline and costs for setting up on-premises AppSec solutions became too high.** One interviewee's biggest question was, "How do we increase our speed to market [and] at the same time reduce the friction which is created by the complexity and diversity of the environment?" In order to expand an on-premises solution, an organization must significantly increase its existing software and hardware implementations, as well as hire additional people and resources to manage the added complexity. These organizations needed a way to address scaling an AppSec program while keeping added costs and time to a minimum.
- **Within the DevOps process, companies spent three months on application security issues, lengthening release times.** One interviewee stressed the need for a platform that simplified the process of deploying a product to market. In a world in which speed has become so much of a competitive advantage and a critical aspect of success, it was imperative for companies to eliminate security as a friction point in deployment. Developers needed to reduce risk in their applications while maintaining the speed of development DevOps demands, i.e., they needed to ensure secure code was synonymous with clean, high-quality code.

> "We needed a platform that took away all the heavy lifting for us, and allowed us to focus on risk management, which is what we wanted to do. We are not in the business of running and deploying infrastructure in data centers and collecting data. That brings us away from our core focus, which is to maintain the trust of our consumers."
>
> *Chief product security officer, business services*

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- **Downtime and response time caused delays with on-premises application security solutions.** One interviewee noted the issue of downtime of infrastructure and long scan times as key detriments to deployments on-premises, “Scan results need to be instant — you can’t wait 30 seconds.” It was necessary to create an environment in which an organization does not have to worry about capacity management and load balancing. These companies were looking for a platform that could scan code and help developers remediate issues in real time without incurring the hefty fee that would be attached to bringing in a similar solution on-premises.

Solution Requirements

The interviewed organizations searched for a solution that:

- Was cloud-based and would allow them to scale at speed.
- Operated across multiple geographies, languages, and brands.
- Empowered developers and reduced the friction between security and development teams within the development process.

Key Results

The interviews revealed that key results from an investment in the Veracode Application Security Platform include:

- **The ability to scale on demand, eliminating several weeks of setup time.** While some organizations were growing through acquisitions, others were expanding their continuous integration and continuous delivery (CI/CD) pipelines. One interviewed company had 90+ pipelines and operated 69 data centers across the world. Previously, it had to deploy two to four servers or virtual machines, load the software, and then all development environments had to be connected and maintained. On average, it took three to six weeks to get a single server up and running due to firewall restrictions. Veracode’s cloud-based platform circumvented this entire process, allowing the company to get a new data center up and running on Veracode within 10 minutes. Developers simply integrate into their IDE, input credentials, and access the URL because the platform operates in the cloud.
- **Having a single platform across multiple geographies, languages, and brands that streamlines application security and increases speed to market.** Veracode provides a single platform allowing organizations to understand their risk postures across an entire ecosystem, not just in one data center or environment at a time. This capability offers a holistic view of software security risk across the organization. Furthermore, it generates incentive for application owners to improve their risk posture, as they can understand where they ranked amongst peers.

> “[Veracode] drives very mature, risk-management-focused conversations due its transparency. It really empowers data centers and the security management of these data centers.”
>
> *Chief product security officer, business services*

- **Speeding up DevOps process, allowing for faster releases, and enabling organizations to get to market ahead of their competition.** Veracode IDE Scan empowers developers to identify and remediate security flaws in real time. This capability removes the back and forth between security and developers during the DevOps process shortening the amount of time it takes to release updates and new applications. For one interviewed company, this meant they were able to identify a market opportunity, build the application, and get it to market eight months before their competitors. Shortening their DevOps process by three months created a competitive advantage leading to the creation of hundreds of millions of dollars in new product revenue.
- **Improving the overall security posture by reducing known application security flaws.** Through shifting the risk-management process left with IDE Scan, developers could make code changes instantly, reducing the amount of cycle time needed to remediate known code flaws. One interviewed company said that after deploying Veracode IDE Scan, it was able to identify 96% of security flaws in real time, reducing the time and friction the risk management process incorporated into the release cycle. Furthermore, the number of false positives with Veracode was greatly reduced, compared to its previous on-premises solution. One interviewed company stated they had 1,000 to 2,000 false positives per product per week, but with Veracode, that dropped to 20 to 30 per product per week, saying: "It was unmanageable whack-a-mole. [There were] 21 people dedicated, but now only six people are required." The organization went on to say that those resources were redeployed to consult on other areas of security, improving overall code quality.

"[Veracode has] eliminated all the friction of onboarding, all the friction of selling security, all the traditional roadblocks companies go through."

Chief product security officer, business services

Composite Organization

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected. The composite organization is representative of the four companies that Forrester interviewed and is used to present the aggregate financial analysis in the next section. The composite organization Forrester synthesized from the customer interviews has the following characteristics:

Description of composite. This US-based financial organization with global operations maintains a large suite of applications, both for internal/external use. The organization supports 800 applications. The development teams have transitioned to a DevOps environment with a CI/CD pipeline. Prior to investing in Veracode, the organization used on-premises application security solutions.

Deployment characteristics. The organization has an application security team of 20 employees who assist 1,600 developers. The organization is growing through acquisition and expanding its application security needs to cover new geographies worldwide, making it a critical component of its development lifecycle for the entire organization. It currently operates across 12 geographies. As part of the implementation phase, the organization dedicates four application security developers to integrate Veracode into the organization's software development lifecycle. The security developers integrated Veracode's API to trigger a static scan whenever developers committed code to a build server. The developers further leveraged Veracode's defect tracking integrations to automatically create defect tickets, update them, and close them based on retests.

Key assumptions:

- 1,600 developers
- 800 applications
- 12-15 geographies

Analysis Of Benefits

QUANTIFIED BENEFIT DATA AS APPLIED TO THE COMPOSITE

Total Benefits

REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	Improved speed to scale	$432,516	$538,764	$645,012	$1,616,292	$1,323,063
Btr	Improved speed to market	$888,000	$888,000	$888,000	$2,664,000	$2,208,325
Ctr	Legacy on-premises application security solution cost avoidance	$1,581,000	$1,581,000	$1,581,000	$4,743,000	$3,931,713
Dtr	Security flaw identification process improvement	$1,761,200	$1,761,200	$1,761,200	$5,283,600	$4,379,844
	Total benefits (risk-adjusted)	$4,662,716	$4,768,964	$4,875,212	$14,306,892	$11,842,945

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of more than $11 million.

Improved Speed To Scale

Being able to scale on demand was a critical requirement for the composite organization. As it expanded both organically and through M&A activities, the need to ensure new applications and environments were secure grew. Historical on-premises application security solutions became too time-consuming and difficult to support globally. The organization's growth created delays in getting to market and left applications exposed to threats. One interviewed company said it previously took them three to six weeks to get one server provisioned and running in its data center due to firewall restrictions. This equated to between 25 and 40 hours of work over those three to six weeks. Furthermore, it would cost them roughly $10,000 per server per year to maintain its on-premises application security solution. Having more than 65 data centers globally created unnecessary complexities to manage as compared to Veracode's SaaS-based application security platform.

The composite organization initially had 18 servers across 12 geographies worldwide, and it scaled to 35 servers in 15 geographies over three years. Being able to scale on demand with Veracode allowed it to avoid 33 hours of setup costs and 216 hours of annual maintenance for each server. In addition, the organization no longer had to spend the $10,000 per year per server. With average hourly admin costs of $40, these avoidances resulted in $240,000, growing to $360,000 by Year 3 of cost avoidance.

These cost avoidances will vary from organization to organization depending on the following risks:

- Number of hours spent to set up and maintain application security servers.
- Average hourly data center admin rate.
- The number of servers required for application security.

To account for these risks, Forrester adjusted this benefit downward by

33 hours
of setup costs and
216 hours
of annual maintenance per server avoided with Veracode

Impact risk is the risk that the business or technology needs of the organization may not be met by the investment, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for benefit estimates.

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5%, yielding a three-year, risk-adjusted total PV of $1,323,063.

Improved Speed to Scale: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Initial number of servers required for application security platform		18	24	30
A2	Average new number of servers for application security per year		6	6	6
A3	Average hours per server setup avoided		33	33	33
A4	Average annual maintenance hours avoided per server		216	216	216
A5	Average hourly cost per FTE, implementation and maintenance	$82,500 annual salary	$40	$40	$40
A6	Average annual cost per server avoided	(A1+A2)*$10,000	$240,000	$300,000	$360,000
At	Improved speed to scale	A2*A3*A5+(A1+A2)*A4*A5+A6	$455,280	$567,120	$678,960
	Risk adjustment	↓5%			
Atr	Improved speed to scale (risk-adjusted)		$432,516	$538,764	$645,012

Improved Speed To Market

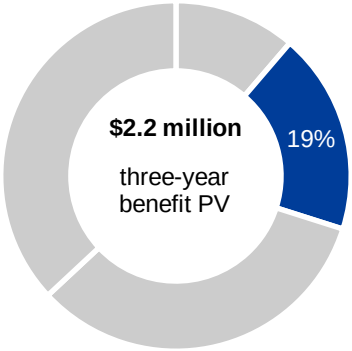
Some primary needs identified by the interviewed organizations were to increase the number of releases per year and speed up their time-to-market. To satisfy these requests, they sought to shift the risk management process to the left and empower developers to have real-time insights into known code security flaws. Veracode IDE Scan allowed the organization to use real-time code scanning which gave developers the ability to make security improvements on the fly. One interviewed company found that, historically, this risk management process would take up to three months, but with Veracode, it was all but removed. According to one interviewee, “Veracode enables you to eliminate friction points and as a result, security is a non-factor in delivery to market.”

For the composite organization, Forrester assumes that:

- Three months were saved in the development cycle for releases.
- The average annual application investment was $148 million.
- The average rate of return on projects was 3%.
- Improved speed to market is measured by capturing three months of accelerated benefits in the return on $148 million in annual investments.

The improved speed to market benefit will vary with:

- The average annual application investment.
- The corporate rate of return required for projects.



Improved speed to market: 19% of total benefits

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› The amount of time it previously took for the risk management process in the development cycle.

To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV of $2.2 million.

Improved Speed To Market: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Amount of time spent on risk management in DevOps cycle prior to Veracode	3 months	0.25	0.25	0.25
B2	Corporate "hurdle rate," i.e., rate of return on projects		3%	3%	3%
B3	Annual developer investment budget	1,600 developers* $92,500 salary	$148,000,000	$148,000,000	$148,000,000
B4	Percent improvement from Veracode		100%	100%	100%
Bt	Improved speed to market	B1*B2*B3*B4	$1,110,000	$1,110,000	$1,110,000
	Risk adjustment	↓20%			
Btr	Improved speed to market (risk-adjusted)		$888,000	$888,000	$888,000

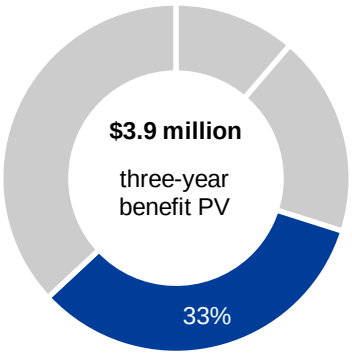
Legacy On-Premises Application Security Solution Cost Avoidance

The interviewed organizations realized an overall cost savings between 5% and 40% when comparing the cost of their historical on-premises application security solutions and Veracode's cloud-based solution. Overall, on average, Veracode costed 20% less than their on-premises solutions.

For the composite organization, being able to consolidate onto one platform provided cost savings and risk management value. It could now look across its entire company to understand its risk posture and discover which geographies were more at risk than others. To calculate this benefit, Forrester assumed that the composite organization was spending $1.86 million per year on application security solutions and that the entire cost would be avoided once they moved onto Veracode's cloud-based AppSec solution.

It's important to note that the cost of on-premises solutions can vary greatly depending on the solution set and providers. Organizations should assess their own existing costs against that of Veracode's to understand their cost savings opportunity.

To account for this variability, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of $3,931,713.



Legacy on-premises application security solution cost avoidance: 33% of total benefits

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Legacy On-Premises Application Security Solution Cost Avoidance: Calculation Table					
REF.	**METRIC**	**CALC.**	**YEAR 1**	**YEAR 2**	**YEAR 3**
C1	Legacy on-premises annual license cost		$1,860,000	$1,860,000	$1,860,000
Ct	Legacy on-premises application security solution cost avoidance	C1	$1,860,000	$1,860,000	$1,860,000
	Risk adjustment	↓15%			
Ctr	Legacy on-premises application security solution cost avoidance (risk-adjusted)		$1,581,000	$1,581,000	$1,581,000

Security Flaw Identification Process Improvement

Veracode IDE Scan scans and alerts developers of known security flaws in real time during the coding process. This allows developers to actively resolve code contamination while writing code leading to reduced remediation workload during the risk management process. In speaking to the interview organizations, it was reported that in using Veracode IDE Scan, the number of flaws per line of code were reduced by 96%. This meant that the organization could have more confidence in its products' security, allowing for the focus to shift to other important risk management conversations.

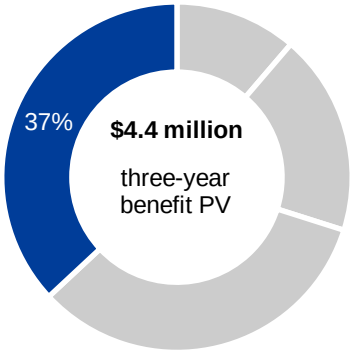
For the composite organization, it was assumed that it wouldn't be able to replicate this real-time capability using its existing on-premises environment without making a significant investment in capacity. Furthermore, the following assumptions were made:

- Eighty percent of flaws identified per line of code in real time.
- One thousand and six hundred (1,600) developers were employed and dedicated to application development projects.
- The average developer spends 3.5% of his or her time remediating security code flaws after identification during risk-management process.
- Developers would be able to realize 50% of the productivity improvement and repurpose that time on more productive activities.
- The average developer's salary is $92,500 per year including benefits.

The productivity savings may vary based on an organization's existing on-premises and real-time flaw identification capability. Additional risks include:

- Fewer flaws being identified per line of code.
- Increase or decrease in the percent of time already spent on remediation activities.
- The average salary of developers being unique to every organization.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of $4,379,844.



Security flaw identification process improvement: 37% of total benefits

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Security Flaw Identification Process Improvement: Calculation Table					
REF.	**METRIC**	**CALC.**	**YEAR 1**	**YEAR 2**	**YEAR 3**
D1	Number of developers		1,600	1,600	1,600
D2	Average amount of a developer's time spent remediating security code flaws after identification during testing		3.5%	3.5%	3.5%
D3	Percent of flaws identified per line of code in real time with Veracode		80%	80%	80%
D4	Developer productivity improvement savings capture rate		50%	50%	50%
D5	Average fully burdened developer salary	$92,500 fully burdened salary	$92,500	$92,500	$92,500
Dt	Security flaw identification process improvement	D1*D2*D3*D4*D5	$2,072,000	$2,072,000	$2,072,000
	Risk adjustment	↓15%			
Dtr	Security flaw identification process improvement (risk-adjusted)		$1,761,200	$1,761,200	$1,761,200

Baseline Veracode Benefits

Additional baseline benefits attributed to utilizing Veracode were reported by interviewed organizations. However, since this study is focused on the value of a cloud-based AppSec platform compared to on-premises, the following benefits were not included in the ROI. For further information on the full benefits of Veracode, please read The Total Economic Impact™ Of Veracode Application Security Platform.[3]

- **Reduction in false positives.** It was reported that organizations that adopted Veracode experienced an improvement in the quality of scans. Veracode, as a cloud-based solution, learns from every scan its customers run. This essentially results in a smarter engine, reducing the number of false positives identified. One interviewed organization went from an over 50% false-positive rate to less than 25%. Another company previously had between a 26% and 50% false-positive rate, which was reduced to less than 5% after adopting Veracode. One organization stated that with its previous AppSec solution, they averaged 1,000 to 2,000 false positives per product per week which was completely unmanageable. Twenty-one resources were dedicated to dealing with these false positives, but after adopting Veracode, they were able to redeploy 15 of those 21 resources to other areas to help improve code quality. Ultimately, the remaining six resources worked on about 20 to 30 false positives per week per product that were more material and richer in feedback for scanning.

Veracode reduced the number of false positives by 75%.

Veracode reduced up to 96% of known security flaws in lines of code.

Veracode reduced the potential risk of code licensing violations by 50%.

- **Reduction in known security flaws in code.** It was reported that Veracode helped reduce the number of known security flaws in each line of code by 70% to 96% prior to being scanned, helping to reduce the overall risk of security vulnerabilities in production environments. This was supported by another organization that said they reduced identified vulnerabilities per month by 70% with Veracode. Another interviewed company said that outside of the zero-day threats and other unknown vulnerabilities, it measures known vulnerabilities in its scans. With Veracode, they reduced the number of known security flaws per line of code by 96%.
- **Reduction in potential code licensing violations.** It was reported that Veracode helped identify compliance and licensing breaches within new code. This reduced the risk of costly fines and litigation. One interviewee told Forrester that with Veracode, its legal team can look at open source licensing violations for every code source that goes through Veracode. Real-time alerts can be set up for the legal team to get ahead and prevent legal ramifications. Another customer said they were spending 20% to 30% less time on security compliance with Veracode. This is even more important as organizations go through acquisitions where they are investing in internet protocol (IP). If that IP is out of compliance, they could be at risk of licensing violations. With Veracode, they can quickly scan the acquired code to identify any issues. One customer told us, "The largest violation we've seen cost us between $4 million and $5 million." Forrester found that Veracode reduced the risk of potential licensing violations by 50%.

Flexibility

The value of flexibility is clearly unique to each customer, and the measure of its value varies from organization to organization. There are multiple scenarios in which a customer might choose to implement Veracode's application security products and later realize additional needs for other Veracode application security products. For this analysis, Forrester assumed the composite organization invested in all the following Veracode application security products:

- IDE Scan.
- Static Analysis (SAST).
- Software Composition Analysis (SCA).
- Interactive Analysis (IAST).
- Dynamic Analysis (DAST).
- Discovery.

If an organization were to implement a subset of Veracode's products, a flexibility option could also be quantified for later purchasing other products within Veracode's Application Security Platform (described in more detail in Appendix A).

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for a future additional investment. This provides an organization with the "right" or the ability to engage in future initiatives but not the obligation to do so.

Analysis Of Costs

QUANTIFIED COST DATA AS APPLIED TO THE COMPOSITE

Total Costs

REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Etr	Veracode platform and support costs	$142,084	$1,738,792	$1,738,792	$1,738,792	$5,358,460	$4,466,202
Ftr	Implementation and deployment costs	$55,220	$0	$0	$0	$55,220	$55,220
	Total costs (risk-adjusted)	$197,304	$1,738,792	$1,738,792	$1,738,792	$5,413,680	$4,521,422

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of more than $4.5 million.

Veracode Platform And Support Costs

Interviewed organizations reported a large range of subscription costs paid to Veracode annually, based on the following factors:

- Products subscribed to in Veracode's Application Security Platform.
- Number of applications and size of applications scanned per month.
- Number of developers utilizing Veracode's platform.

For the composite organization, which is a company with 800 applications, 1,600 developers, and a global footprint across 12 to 15 geographies worldwide, they purchased the entire Veracode Application Security Platform which included: IDE Scan, Static Analysis (SAST), Software Composition Analysis (SCA), Interactive Analysis (IAST), Dynamic Analysis (DAST), and Discovery. The annual cost for Veracode was $1,550,000. Additional costs included the internal FTE hours for ongoing support. Forrester assumed:

- Approximately 64 hours per month would be needed to support the platform.
- The average FTE hourly rate including benefits load was $40.

Forrester found that the Veracode subscription costs would vary depending on products and usage and therefore risk-adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of $4,466,202.

20%

average overall cost savings using Veracode's cloud-based platform when compared to on-premises application security solutions

Implementation risk is the risk that a proposed investment may deviate from the original or expected requirements, resulting in higher costs than anticipated. The greater the uncertainty, the wider the potential range of outcomes for cost estimates.

Veracode Platform And Support Costs: Calculation Table						
REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
E1	Veracode annual subscription fees		$129,167	$1,550,000	$1,550,000	$1,550,000
E2	FTE hours per year required for ongoing support	64 hours per month		768	768	768
E3	Average hourly FTE cost	$82,500 annual salary		$40	$40	$40
E4	Annual ongoing FTE support cost	E2*E3		$30,720	$30,720	$30,720
Et	Veracode platform and support costs	E1+E4	$129,167	$1,580,720	$1,580,720	$1,580,720
	Risk adjustment	↑10%				
Etr	Veracode platform and support costs (risk-adjusted)		$142,084	$1,738,792	$1,738,792	$1,738,792

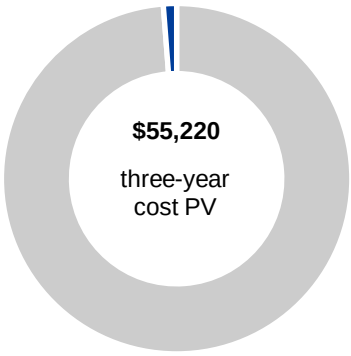
Implementation And Deployment Costs

Interviewed organizations reported that Veracode could be onboarded within a development environment within a day. One interviewed customer said that historically they had to deploy a server or VM, load the software, and then from all development environments build a connection and maintain that connection. With Veracode IDE Scan, however, the customer can just download and integrate into its IDE by pointing to the URL, since it's all in the cloud. They went on to say it only took 10 minutes to get a data center up and running on Veracode.

For the composite organization, Forrester assumed:

- Fifty thousand dollars ($50,000) would be required in upfront professional services costs to help customize and integrate Veracode to its environments.
- Five (5) FTE hours would be needed to deploy the platform across its 12 data centers.
- The average FTE hourly rate including benefits load was $40.

Establishing an AppSec program can be made complicated based on previous environments and the incremental costs that may be incurred for decommissioning legacy on-premises solutions. Furthermore, the amount of professional services and internal resource time required for implementation may vary from organization to organization. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of $55,220.



Implementation and deployment costs: 1% of total costs

10 minutes

to get data center up and running on Veracode

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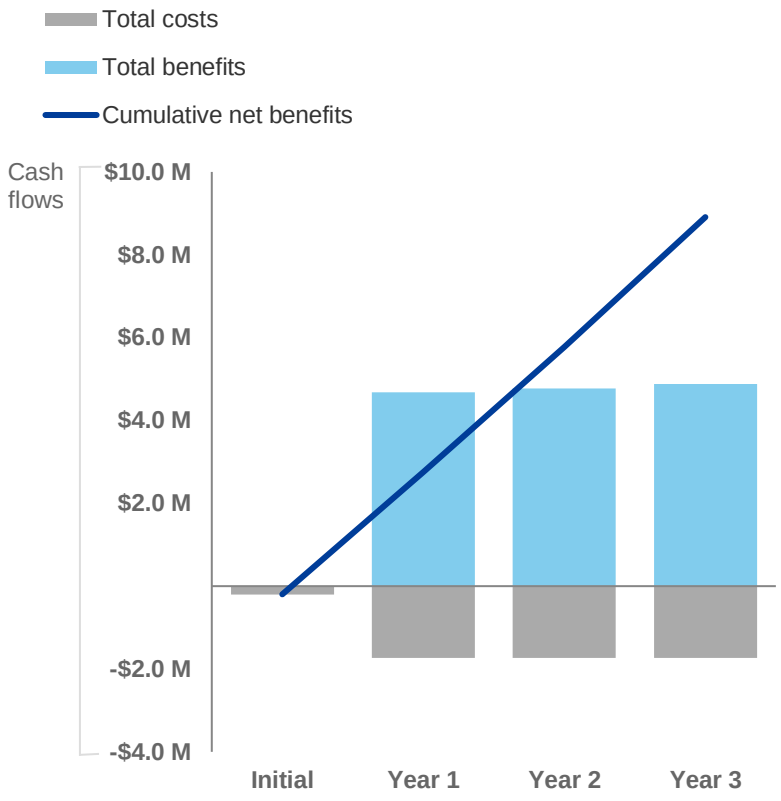
Implementation And Deployment Costs: Calculation Table						
REF.	**METRIC**	**CALC.**	**INITIAL**	**YEAR 1**	**YEAR 2**	**YEAR 3**
F1	Veracode upfront professional service costs		$50,000			
F2	FTE hours spent to deploy Veracode		5			
F3	Average hourly FTE cost	$82,500 annual salary	$40			
Ft	Implementation and deployment costs	F1+(F2*F3)	$50,200	$0	$0	$0
	Risk adjustment	↑10%				
Ftr	Implementation and deployment costs (risk-adjusted)		$55,220	$0	$0	$0

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Table (Risk-Adjusted)

	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	($197,304)	($1,738,792)	($1,738,792)	($1,738,792)	($5,413,680)	($4,521,422)
Total benefits	$0	$4,662,716	$4,768,964	$4,875,212	$14,306,892	$11,842,945
Net benefits	($197,304)	$2,923,924	$3,030,172	$3,136,420	$8,893,212	$7,321,523
ROI						162%
Payback period						<3 months

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Veracode Application Security Platform: Overview

The following information is provided by Veracode. Forrester has not validated any claims and does not endorse Veracode or its offerings.

Veracode gives companies a comprehensive view of security defects so they can create secure software and ensure the software they are buying or downloading is free of vulnerabilities. As a result, companies using Veracode are free to boldly innovate, explore, discover, and change the world.

With its combination of automation, integrations, process, and speed, Veracode helps companies make security a seamless part of the development process. This allows them to both find and fix security defects quickly so that they can use software to achieve their missions.

Companies collaborating with Veracode are able to create comprehensive application security programs that focus on reducing risk, achieving compliance with industry regulations and customer requirements, increasing the speed of secure software delivery, and making secure software a competitive advantage.

The Veracode Verified Program allows customers to provide attestation of their secure development processes, demonstrating their commitment to creating secure software.

Securing software is a priority for any company looking to change the world. With Veracode, companies can start securing their software immediately, without the need for additional staff or equipment.

Veracode serves more than 2,300 customers worldwide across a wide range of industries. The Veracode Platform has assessed more than 10 trillion lines of code and helped companies fix more than 46 million security flaws.

Learn more at www.veracode.com.

Appendix A: Total Economic Impact

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

Total Economic Impact Approach

Benefits represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.

Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.

Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.

Present value (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.

Net present value (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

Return on investment (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.

Discount rate

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.

Payback period

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

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Appendix B: Endnotes

[1] Source: “Forrester Analytics: Application Security Solutions Forecast, 2017 To 2023 (Global),” Forrester Research, Inc., August 7, 2018.
[2] Source: “Innovate And Transform With Technology To Drive Business Value,” Forrester Research, Inc., October 4, 2019.
[3] Source: “The Total Economic Impact™ Of Veracode Application Security Platform,” Forrester Consulting report prepared for Veracode, March 2019.