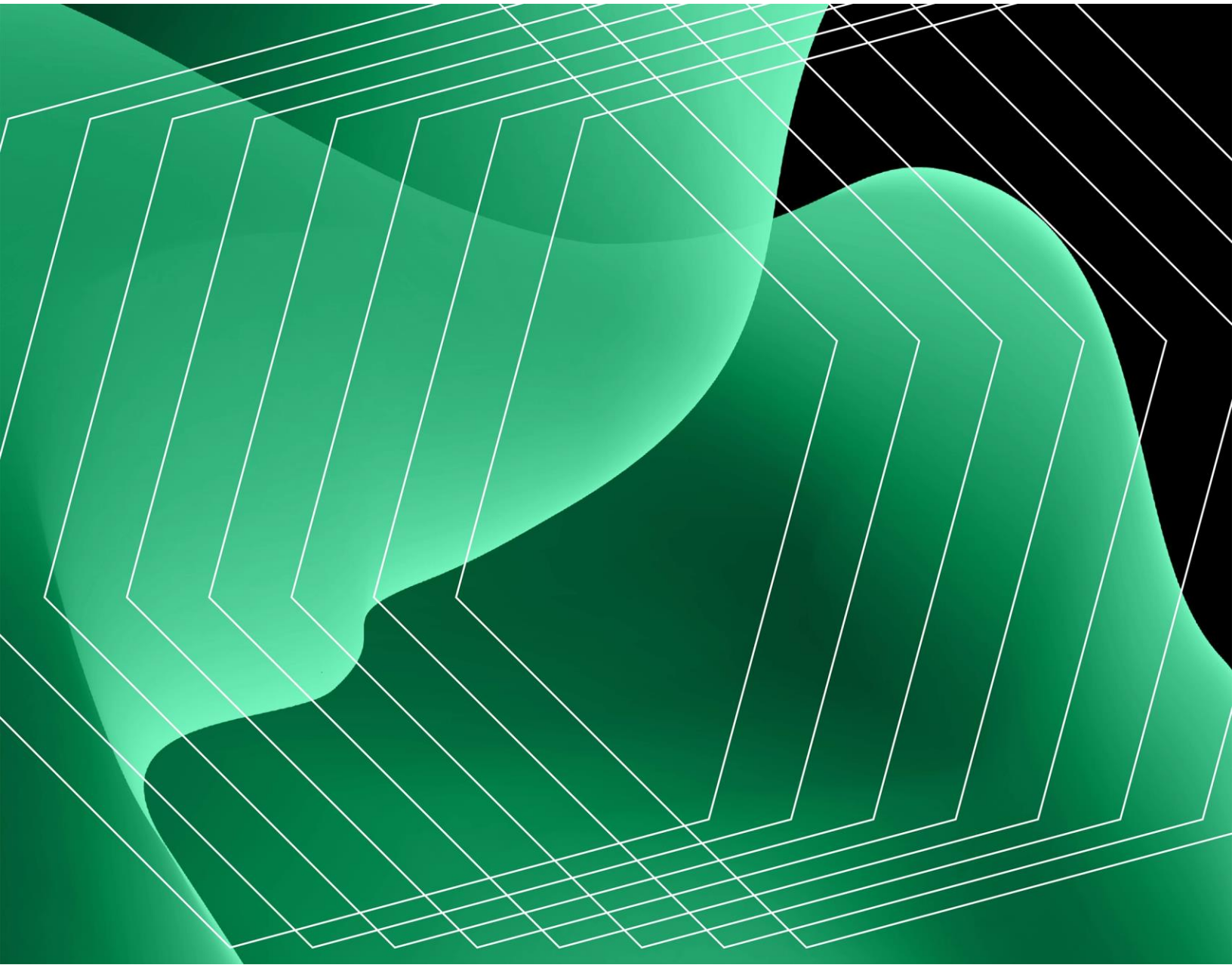
FORRESTER®

The Total Economic Impact™ Of Red Hat Consulting For OpenShift

OpenShift Adoption Speed, Efficiency, and Optimization Enabled By Red Hat Consulting

A FORRESTER TOTAL ECONOMIC IMPACT™ STUDY
COMMISSIONED BY RED HAT, SEPTEMBER 2024



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Consulting Lead:

Benjamin Brown

Executive Summary

Organizations must adopt a Kubernetes-based strategy for cloud-native modernization to take advantage of the cloud as an innovation platform.[1] Today's enterprise-grade Kubernetes platforms can support virtual machines (VMs), support mature DevOps automations and integrations, enable critical AI workloads, and provide strong security across cloud and on-premises environments.[2] Nonetheless, sound organizational strategy and expertise is essential for successfully adopting Kubernetes at scale.[3]

Red Hat OpenShift is a comprehensive hybrid cloud platform for building and scaling applications using Kubernetes-based containers and virtualization available in several self-managed and cloud services editions. Red Hat Consulting offers professional services that help organizations architect and operationalize OpenShift, migrate VMs, modernize applications, manage cloud-native apps, and implement automation and AI. These services range from strategy guidance and best practices to leading or partnering with internal teams to minimize costs, time, and risks.

Red Hat commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by leveraging Red Hat Consulting to deploy Red Hat OpenShift.[4] The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Red Hat Consulting to help deploy Red Hat OpenShift at their organizations.

Return on investment (ROI)
213%

Net present value (NPV)
$4.53M

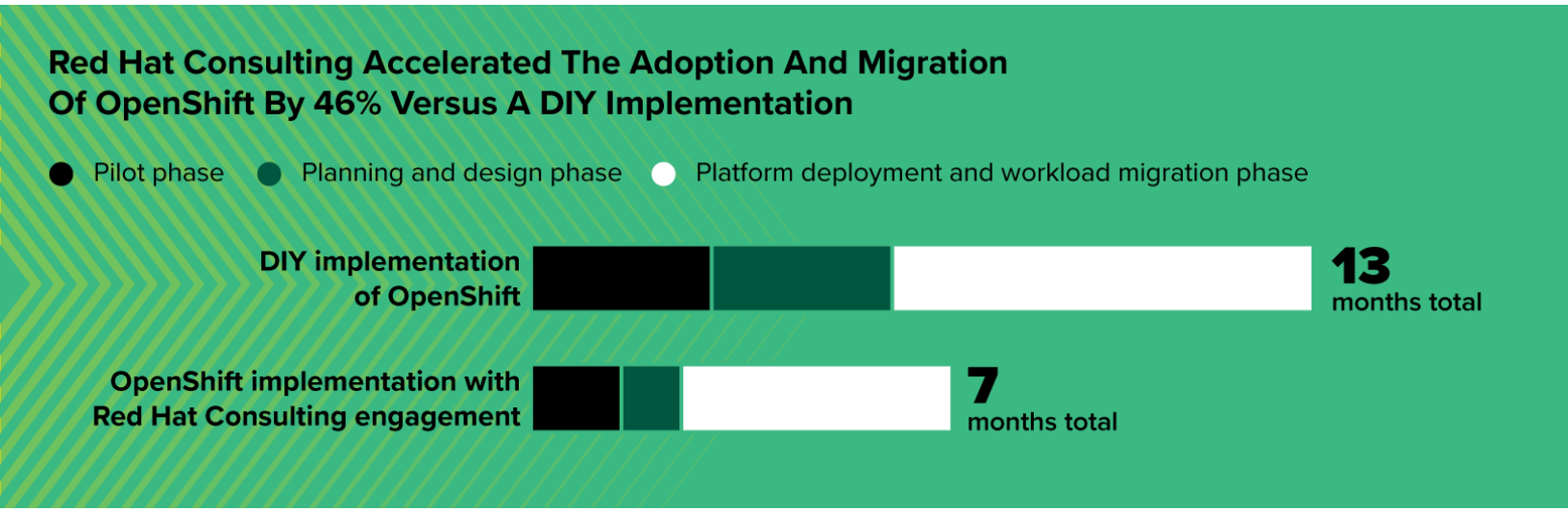
To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed seven representatives from five organizations that leveraged Red Hat Consulting to help deploy Red Hat OpenShift. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a composite organization that uses Red Hat Consulting to deploy Red Hat OpenShift in

a self-managed hybrid cloud environment, migrate existing VMs and containers to OpenShift from legacy solutions, and help rearchitect monolithic apps running on VMs into modern, containerized microservices. The composite organization has an annual spend of $2 million for OpenShift Platform Plus and is based in the United States.

This analysis contrasts the financial impact of deploying OpenShift with Red Hat Consulting versus a purely in-house (DIY) implementation of OpenShift, measuring only the incremental costs and benefits attributable to the Consulting-led deployment and migration. Baseline costs and benefits of adopting OpenShift itself are omitted.

Prior to engaging Red Hat Consulting to deploy OpenShift, interviewees' organizations leveraged multiple VM and container platforms in on-premises and cloud environments. These siloed, disparate tools added up to overall excess platform and infrastructure costs while they also lacked key functionality and could not be managed collectively, leading to excess labor, costs, issues, and lost opportunities.

The interviewees' organizations engaged Red Hat Consulting to deploy OpenShift as the application platform to run both their VM and container workloads across their hybrid environments. Red Hat Consulting helped them complete the migration, adoption, and modernization more quickly and with architectural best practices and guidance, leading to more rapid savings realization and an overall value improvement from OpenShift.



KEY FINDINGS

Quantified benefits. Red Hat Consulting streamlined and accelerated the implementation of Red Hat OpenShift and the migration of applications in virtual machines (VMs) and containers from legacy environments from 13 months to seven months, reducing migration costs and labor while accelerating recognition of benefits. This resulted in the following three-year, risk-adjusted present value (PV) quantified benefits for the composite organization:

- **Forty-six percent faster implementation with Red Hat Consulting, reducing the 13-month expected length to seven months and leading to a net 18.3% cost savings of $435,000.** Relative to anticipated labor needs for a DIY implementation, engaging Red Hat Consulting shortened the pilot phase by 50% with 67% fewer internal FTEs, shortened the planning and design phase by 67% with 50% fewer internal FTEs, and shortened the deployment and migration phase by 36% with 50% fewer internal FTEs. This benefit measures the entire $2.38 million in avoided labor costs anticipated for the DIY approach, which are offset by $1.94 million in deployment and migration costs with Red Hat Consulting that are modeled in the cost section of this study.
- **Faster legacy contract cancellation and improved platform efficiency, saving $1.85 million in platform costs attributable to Red Hat Consulting.** Accelerated deployment and migration allows the composite to avoid legacy vendor costs by ending contracts earlier, while improved architecture and design of the platform thanks to Red Hat Consulting's guidance enables 10% to 30% lower platform fees than expected from a DIY OpenShift implementation.
- **Faster and more effective app modernization, saving $354,000 in infrastructure costs attributable to Red Hat Consulting.** Red Hat Consulting helps the composite organization modernize apps into containerized microservices at a faster rate, realizing infrastructure utilization efficiencies earlier. It also helps design containerized applications more efficiently and effectively to reduce the composite's resource consumption.
- **Faster and more effective adoption of automation and orchestration, saving $673,000 in IT and DevOps labor attributable to Red Hat Consulting.** Red Hat Consulting expedites and improves the setup of management, reporting,

automation, and orchestration for the self-managed OpenShift deployment, leading to immediate, larger-than-anticipated productivity gains that free IT and DevOps teams to focus on innovative work. Note that this benefit would not apply to customers adopting Cloud Services editions of OpenShift as this work is entirely handled by the managed services.

- **Faster and more effective adoption of platform tools, saving $1.13 million in developer labor attributable to Red Hat Consulting.** Red Hat Consulting helps the composite organization adopt best practices for application delivery using OpenShift, containers, and microservices; automates processes to accelerate application time to market; and helps modernize apps. This leads to immediate, larger-than expected productivity gains for the composite's developers compared to a DIY implementation.
- **Improved availability and performance, saving $76,000 in lost labor attributable to Red Hat Consulting.** Red Hat Consulting helps the composite organization more quickly and effectively leverage OpenShift to improve performance and availability, which saves time for employees, enhances satisfaction, and reduces business risks compared to a DIY OpenShift implementation.
- **Shortened time to market for OpenShift-enabled business opportunities by two quarters, accelerating revenue and gaining market advantage that increase profits by $200,000 attributable to Red Hat Consulting.** OpenShift facilitates growth and reduces risks by enabling data and tool integration, demand-based scaling, enhanced compliance and security, and improved availability and performance. Red Hat Consulting expedites these opportunities, allowing revenue to be accrued earlier and increasing projected revenues by extending competitive advantage and time in market.

Faster total OpenShift implementation due to Red Hat Consulting

46%

> "If we deployed OpenShift ourselves, we projected a three-year ROI of 20% to 30%. With [Red Hat Consulting], the ROI was going to be 200%. That's the advantage of experts who understand what we are trying to do."
>
> **EXECUTIVE DIRECTOR OF BUSINESS UNIT TECHNOLOGY, FINANCIAL SERVICES**

Unquantified benefits. Red Hat Consulting enabled additional benefits that could not be quantified for this study, including improved:

- Employee experience (EX) and hiring ability.
- Customer experience (CX) and business growth.
- Business profit margins.
- Software quality and reduced vulnerabilities.
- Ability to secure and monitor environments.
- Ability to meet and show adherence to regulatory compliance requirements.

Flexibility. Flexibility options available to Red Hat OpenShift customers with guidance from Red Hat Consulting that could enable future use cases and benefits include:

- Utilizing additional OpenShift capabilities and Red Hat offerings to enable more use cases with guidance from Red Hat Consulting.
- Testing and adopting AI, including generative AI, using native and integrated third-party solutions.
- Leveraging the ability to scale, innovate, and adopt cloud services with infrastructure portability to adapt based on future business needs.
- Building or refactoring a larger portion of applications using Red Hat OpenShift to gain further benefits from containerization.

Costs. Three-year, risk-adjusted PV costs of engaging Red Hat Consulting for the composite organization include:

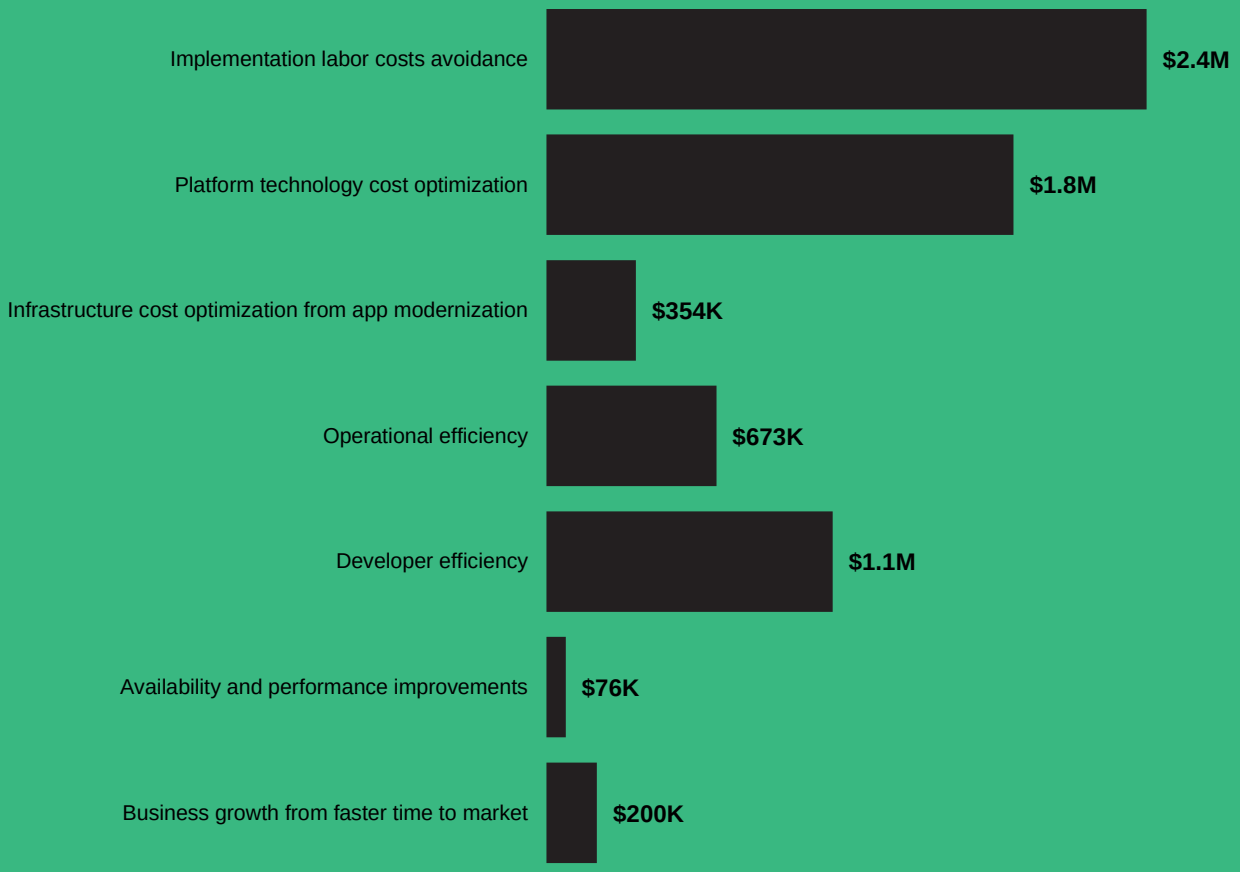
- **Red Hat Consulting costs worth $1.29 million.** The composite organization incurs professional services fees for Red Hat Consulting engagements, which vary based on licensing agreements and OpenShift scale and complexity. This estimate includes Red Hat Consulting involvement for pilot, planning and design, deployment and migration, and application modernization phases.
- **Internal labor costs for implementation worth $842,000.** The composite implements OpenShift in seven months with Red Hat Consulting, a shorter period with fewer overall resources than the DIY implementation modeled in Benefit A.
- **No costs or benefits attributed to OpenShift itself or other Red Hat offerings.** This study specifically focuses only on the incremental cost and benefit of Red Hat Consulting. This means neither the costs nor the benefits attributable to other factors, such as OpenShift licensing, services like Red Hat Technical Account Managers (TAMs), infrastructure, or other internal labor, are included. Please see Appendix B, which lists other TEI studies that examine some of these related investments.

Synopsis. The representative interviews and financial analysis found that a composite organization experiences benefits of $6.66 million over three years versus costs of $2.13 million by investing in Red Hat Consulting to deploy and migrate to OpenShift rather than a DIY implementation, adding up to a net present value (NPV) of $4.53 million and an ROI of 213%.

> "Red Hat Consulting was 20% to 30% cheaper to deploy OpenShift than doing it ourselves. … Bringing in experts offsets costs. It takes a lot of money, resources, and time to stand up a full system alone."
>
> CIO, FINANCIAL SERVICES

Return on investment (ROI)	Benefits PV	Net present value (NPV)	Payback period	Reduced cost of OpenShift adoption
213%	**$6.7M**	**$4.5M**	**<6 months**	**18%**

Benefits (Three-Year)



TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in Red Hat Consulting for OpenShift.

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 Red Hat Consulting can have on an organization.

DISCLOSURES
Readers should be aware of the following:

This study is commissioned by Red Hat and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.

Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the study to determine the appropriateness of an investment in Red Hat Consulting for OpenShift.

Red Hat reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.

Red Hat provided the customer names for seven of the nine interviews, and Forrester independently sourced the other two customers. Red Hat did not participate in the interviews.

1. Due Diligence
Interviewed Red Hat stakeholders and Forrester analysts to gather data relative to Red Hat Consulting for OpenShift.

2. Interviews
Interviewed thirteen representatives from nine organizations using Red Hat Consulting for OpenShift to obtain data about costs, benefits, and risks.

3. Composite Organization
Designed a composite organization based on characteristics of the interviewees' organizations.

4. 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 interviewees.

5. Case Study
Employed four fundamental elements of TEI in modeling the investment impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

The Red Hat Consulting For OpenShift Customer Journey

Drivers leading to partnering with Red Hat Consulting to adopt OpenShift

Interviews (2024)

Role	Industry	Region	Revenue	OpenShift Annual Spend	Deployment Model
Director of information systems engineering	Technology	Global, based in the United States	Over $50B	$1M to $1.9M	On-premises
Container platform product owner	Technology	Global, based in the United States	Over $50B	$1M to $1.9M	On-premises
Executive director of business unit technology	Financial services	Global, based in the United States	Over $50B	$1M to $1.9M	• On-premises • Multiple self-managed clouds
Senior director, head of DevOps practice	Financial services	Global, based in the United States	$1B to $10B	$2M to $3M	On-premises
DevOps architect	Financial services	Global, based in the United States	$1B to $10B	$2M to $3M	On-premises
Director of private cloud	Financial services	United States	$1B to $10B	$3M to $4M	• On-premises • Self-managed cloud
CIO	Financial services	United States	$500M to $1B	$1M to $1.9M	Red Hat OpenShift cloud services

Prior Interviews (2022)

Role	Industry	Region	Revenue
Head of section, DevOps platform	Government	EMEA	Less than $500M
Director of infrastructure engineering	Healthcare	United States	$1B to $10B
Director of application and support, database, and middleware engineering	Healthcare	United States	$1B to $10B
VP of infrastructure, planning, and engineering	Financial services	Canada	$10B to $25B
Director of PaaS, application platform, and database services	Financial services	Canada	$10B to $25B
Head of CTO compute architecture	Media and technology	Global	$10B to $25B

KEY CHALLENGES

Prior to engaging Red Hat Consulting to deploy OpenShift, interviewees' organizations struggled with digital transformation initiatives and faced common challenges, including:

- **Rising costs of legacy solutions and infrastructure.** Some interviewees struggled with continually rising costs for their legacy VM and container environments both in vendor fees and the infrastructure demands to run them. Rising demand and fees combined to leave interviewees' organizations struggling to rein in excess spending. The director of private cloud at a financial services company explained, "Our costs were going up and we needed to get off the [legacy solutions]." The most important aspect of their company's business case for OpenShift was to reduce costs and avoid future increases, and Consulting was engaged to help get them there faster.
- **Difficulty maintaining, managing, and securing open-source or bespoke environments.** Purely open-source Kubernetes environments and bespoke platforms required substantial labor and additional tooling to maintain, upgrade, manage, and secure. This sapped internal resources and slowed application development and modernization. A head of CTO compute architecture for a media and technology firm explained: "There were a lot of bespoke platforms that we built…. [with] integration of various components. This required a lot of help and continuous maintenance and updates." A DevOps architect at a financial services company elaborated: "We were on vanilla Kubernetes for almost six years. We wanted to go with a vendor-managed product to remove all the operational challenges. Whenever we wanted to upgrade, we had to upgrade the ecosystem. That prevented us from being a pure product team."
- **Technical challenges and lacking features for orchestration and automation.** The interviewees' organizations struggled with manual work and functionality limitations in some legacy environments that led to excess operational overhead and impaired organizational speed, agility, and innovation. The executive director of business unit technology at a financial services company shared: "We were using containerization without orchestration. Container management, monitoring, and maintenance was done by native tools and manual work. We needed to scale and move to the cloud, but we could not

do this because we needed an army of production support staff just to keep the containers we had alive. … To scale, we wanted an automated orchestration tool like OpenShift."

- **Inability to scale to meet business demands.** The interviewees noted their organizations were constricted by on-premises hardware and the need for overprovisioning VMs to run existing apps, and the apps could not be scaled to meet market demand without significant increases in infrastructure investment. IT teams struggled to provide environments and resources quickly for developers and lacked essential tooling, hampering the speed and potential of innovation and growth. A financial services CIO shared: "We had capital [to grow the business], but we did not have scalability to utilize it. We could not do [the required processes] and the money was unused. We didn't want that."
- **A lack of common standards and practices.** Interviewees said development teams worked in silos, often using different tools and standards that caused myriad operational issues and difficulties in completing transformational projects. A director of application and support, database, and middleware engineering for a healthcare firm shared: "We had 14 different containerized platforms running in various locations. It was extremely painful." Similarly, a director of infrastructure engineering for a healthcare firm said: "We had a bunch of different development teams developing in different containerized platforms [and] not following any standards, policies, or procedures. So, we were seeing really mixed results in our efforts towards containerization."
- **Siloed environments and data that prevented the interviewees' organizations from discovering and taking advantage of business opportunities.** Data usage was limited, and analytics and visibility of the whole environment was impossible, which limited governance, compliance, and security. The interviewees' organizations could not take advantage of opportunities for improving customer experience, enhancing services, or executing innovation, such as AI. A CIO for a financial services company shared, "Our two key business units were disconnected, which [led to missed profits]." An interviewee from a technology company said their organization had well over 100 users working in different ways with no single pane of glass to protect it or to take advantage of opportunities by connecting the workloads and data.

- **Unsatisfactory legacy performance and downtime.** Prior environments often could not maintain service-level agreements (SLAs), had poor responsiveness, and struggled with downtime. An interviewee from a technology company noted that their organization had lower than 99% availability with weekly crashes in its prior environment, which disrupted users, disgruntled employees, and added significant legal and financial risks due to workarounds and neglected governance during the downtime. The executive director of business unit technology at a financial services firm explained the importance of improving uptime and performance, saying, "We have mission-critical applications with many millions of transactions, and we need to maintain particular SLAs."
- **Failed internal containerization and modernization projects.** Interviewees' organizations attempted to modernize and migrate legacy applications with middling results. Legacy tools and a lack of institutionalized DevOps practices extended timelines and hindered results. Lacking internal expertise and capacity made leaders hesitant to invest in future modernization efforts. A VP of infrastructure, planning, and engineering for a financial services firm said: "We seriously considered stopping altogether. It was incredibly stressful because it was a major commitment, and we could not get the stability we wanted. The entire project was at risk. It would have led to abandonment and just going back to the sort of traditional use and developing use of environments."

> "One of our CEO's big drivers is to make all applications cloud-ready within our hybrid environment. … We need to see how we can containerize certain workloads, modernize applications, and set up CI/CD [continuous integration and continuous delivery] pipeline capabilities. … And we need to [eliminate wasted] capacity and shift left developers. … We need to use Kubernetes, but we don't want to be locked into vendors for specific products or native cloud services."
>
> DIRECTOR OF PRIVATE CLOUD, FINANCIAL SERVICES

BUSINESS OBJECTIVES FOR MIGRATION AND MODERNIZATION

The interviewees' organizations selected Red Hat OpenShift based on the following:

- Strategic shift to future-oriented cloud readiness and adoption.
- Adopt containerization and modern app development and deployment methods.
- Reduce operational costs and labor.
- Shift-left staff to higher-value activities and innovate without excess hiring.
- Ensure security, compliance, and governance with a certified and supported container platform.
- Improve user experience and employee experience for admins and developers.
- Ensure portability to avoid lock-in risk for the platform or underlying infrastructure.
- Enable scalability to meet demand and avoid wasted costs and resources.
- Gain flexibility to leverage integrated data, automation, and AI in the future.

SELECTION CRITERIA FOR OPENSHIFT

The interviewees' organizations selected Red Hat OpenShift based on the following:

- Ability to run VMs and containers on bare-metal servers, virtualized data centers, cloud environments from many vendors, and edge environments all using the same platform with workload portability.
- Availability of advanced tools for orchestration, automation, visibility, and notifications.
- Strong security, compliance, and governance capabilities and reputation.
- Cost effectiveness and flexibility of tools, bundles, and managed offerings.
- Red Hat's reputation and partnership.

> “The idea behind bringing in OpenShift as the orchestrator is that it grants us a single pane of glass to manage, monitor, secure, and scale. It also allows us to run where we need to run. It opened up the public cloud or private cloud, and it gives us agnosticism when it comes to where something is running. If it runs on OpenShift, it can run wherever we have OpenShift. It gave us a level of flexibility, resiliency, and scalability that we didn’t have in the past.”
>
> DIRECTOR OF INFRASTRUCTURE ENGINEERING, HEALTHCARE

> “We picked OpenShift after running multiple proof-of-concepts because it provided a supported ecosystem of all the control plane components like service mesh, observability, monitoring, and more. It let us adopt the GitOps concept and let us deploy on bare metal for low latency applications.”
>
> DEVOPS ARCHITECT, FINANCIAL SERVICES

SELECTION CRITERIA FOR RED HAT CONSULTING

These organizations then selected Red Hat Consulting to help them adopt OpenShift based on the following criteria:

- Top-notch guidance and expertise directly from Red Hat to do the work quickly and accurately with a smooth process.
- Ensure maximum possible benefits from OpenShift with trust that they had done their full diligence.
- Access to Red Hat expertise's regarding niche and nuanced situations and the engineering team to influence future improvements or fix challenges.
- Avoid hiring and training a large number of staff before adoption that would then need to be maintained or reallocated after implementation was complete.
- Ability to meet aggressive timelines.

> "We worked with Red Hat Services to do the move as painlessly as possible. This process had to be absolutely done in the correct way with the optimizations. … We could have done trial and error, but it leads to frustration and wondering if we have the right solution in place. We would always have been wondering if we reached the destination or if we were only halfway there."
>
> EXECUTIVE DIRECTOR OF BUSINESS UNIT TECHNOLOGY, FINANCIAL SERVICES

> “Our journey would have been more stressful [without Red Hat Consulting]. Our goal wasn’t just to get things done, it was to build a platform team … and we got access to a team that had done this with other clients, and we could tap into that experience.”
>
> DEVOPS ARCHITECT, FINANCIAL SERVICES

> “Every technology product has a spectrum of possibilities, and companies have to figure out where they belong. … Consulting is the way to go to do it right and avoid creating a big resource set that could become a big payroll issue someday.”
>
> CIO, FINANCIAL SERVICES

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an ROI analysis that illustrates the areas financially affected. The composite organization is representative of the interviewees' organizations, and it is used to present the aggregate financial analysis in the next section.

Composite characteristics. The composite organization is an enterprise based in the United States that employs 40 IT admins and DevOps engineers and 300 developers. It operated a fragmented legacy IT environment before engaging Red Hat including:

- On-premises data centers running monolithic apps in virtual machines (VMs).
- A cloud environment running monolithic apps in VMs.
- A cloud environment running containerized microservices using an alternative Kubernetes container platform.

OpenShift platform and services strategy. Leaders at the composite organization decide to migrate its legacy environments and pilots several potential options for new VM and Kubernetes container platforms. It selects Red Hat OpenShift Platform Plus and decides to engage Red Hat Consulting for deployment and workload migration after comparing this professional services model to hiring and completing all work with internal resources in a DIY approach.

Implementation characteristics. The composite organization leverages Red Hat Consulting to deploy Red Hat OpenShift Platform Plus as a self-managed platform within a hybrid cloud environment. The organization's subscription is $2 million per year for the platform, including applications that run in VMs using OpenShift Virtualization and containers using the OpenShift Container Platform. The migration process commenced with a lift-and-shift approach, where VMs and containerized applications were moved from the previous environment to the new OpenShift platform. Subsequently, the composite organization leverages the capabilities of OpenShift with guidance from Red Hat Consulting to refactor existing applications and develop new applications using modern, containerized microservices in OpenShift.

Key Assumptions

Enterprise based in the US

Leverages Red Hat Consulting to deploy OpenShift and migrate VMs and containers from legacy environments

Spends $2M per year on OpenShift Platform Plus subscriptions, which runs as a self-managed platform in a hybrid cloud environment

This financial model measures only the incremental cost and benefit of Red Hat Consulting versus a DIY implementation of OpenShift

Analysis Of Benefits

Quantified benefit data as applied to the composite

Total Benefits							
Ref.	**Benefit**	**Initial**	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Atr	Implementation labor costs avoidance	$2,376,000	$0	$0	$0	$2,376,000	$2,376,000
Btr	Platform technology cost optimization	$0	$1,260,000	$360,000	$540,000	$2,160,000	$1,848,685
Ctr	Infrastructure cost optimization from app modernization	$0	$156,188	$148,750	$119,000	$423,938	$354,329
Dtr	Operational efficiency	$0	$542,880	$217,152	$0	$760,032	$672,992
Etr	Developer efficiency	$0	$775,710	$517,140	$0	$1,292,850	$1,132,579
Ftr	Availability and performance improvements	$0	$68,988	$16,232	$0	$85,220	$76,131
Gtr	Business growth from faster time to market	$0	$220,000	$0	$0	$220,000	$200,000
	Total benefits (risk-adjusted)	$2,376,000	$3,023,765	$1,259,274	$659,000	$7,318,040	$6,660,716

IMPLEMENTATION LABOR COSTS AVOIDANCE

Evidence and data. Red Hat Consulting helped the interviewees' organizations implement Red Hat OpenShift much more quickly and effectively than if they had done it fully themselves. Consulting helped interviewees accelerate and streamline each phase: the initial pilot that validated capabilities and compared options; the design and planning phase which included architecture design, securing funding, and aligning resources; and the deployment and migration phase where the platform was stood up and all VM and container workloads were migrated from prior environments. Not only was each phase faster, but each required fewer internal resource hours as fewer internal employees needed to be involved than in a DIY implementation and some resources could dedicate fewer hours to the effort. This also meant the interviewees' organizations avoided the significant upfront and long-term costs of hiring and training additional new employees that would have been needed otherwise and continued operations with less disruption. Overall, despite the costs of Red Hat Consulting, interviewees reported an 18.3% reduction in total implementation cost combined with much faster time to market.

18.3%

Net cost savings for OpenShift pilot, planning, deployment, and migration with Red Hat Consulting vs. DIY deployment

- The CIO of a financial services company reported that, using Red Hat Consulting, they deployed OpenShift in three to four months at 20% to 30% less cost than the expected six to eight months for a DIY implementation. This efficiency avoided significant hiring expenses and long-term commitments. Red Hat Consulting streamlined the architecture development and best practices, completing 60% to 70% of the deployment work. The CIO noted their previous company deployed OpenShift without Red Hat Consulting over 10 months for 115 people; with Red Hat Consulting, they believed it could have taken half the time with their pilot achievable in six to seven weeks instead of three months.

- An interviewee from a different financial services company noted their firm accelerated its app and VM migration from one year to nine months due to Red Hat Consulting and found that the investment was also more affordable in time and material than using a third-party or only internal resources. Red Hat Consulting helped them overcome many technical challenges, which avoided delays and ensured they did it right without issues.
- One interviewee noted Red Hat Consulting helped their technology company successfully migrate its entire container environment in four months, beating their deadline by a month and enabling their organization to avoid renewal costs for their prior container platform. Red Hat Consulting helped with planning and architecture and kept the internal team accountable for their planned strategy and deadlines to ensure the desired outcome of the migration. They also provided critical insights, helped identity issues and bugs, and coordinated issue investigation, verification, and resolution.
- Another interviewee from a financial services company said they deployed approximately four months faster than projected due to an efficient process that avoided common pitfalls and quickly troubleshooted issues to accelerate adoption. The executive director of business unit technology shared: “If we had tried to do the same ourselves, two things could have happened. First, it would have taken longer because we lack experience and other similar organizations have also been unable to complete their journeys. Second, we would have been like a deer in the headlights and been running around in circles for a long time. We would have wasted time and resources, and it might have even resulted in cancellation because things might have gone nowhere. Instead, [with Red Hat Consulting], we were able to focus and count on experts who understood the architecture and how it should go. It was smoother and faster and ensured we followed all the rules. This was the only way to ensure we did it the correct way.” They elaborated, “We tend to be blindsided with technical transformations because we expect things to work in a certain way. We need expert opinions on the limitations, what we are doing wrong, and what we are doing right.”
- An interviewee at another financial services company brought in Red Hat Consulting after their proof of concept to help with implementation. They leveraged the expertise and experience of the Red Hat consultants to resolve

issues and challenges faster than relying on support tickets. Despite the company's preexisting skill from operating Kubernetes for six years, Red Hat's experience and direct access to resources was still valuable. Though their company didn't accelerate its timelines compared to doing it themselves, they still avoided critical delays. They were able to shift cost from internal to external resources and avoid long-term commitments and lag from hiring and training.

> "We would have been like a deer in the headlights and been running around in circles for a long time [if we deployed OpenShift ourselves]. We would have wasted time and resources, and it might have even resulted in cancellation."
>
> **DIRECTOR OF INFORMATION SYSTEMS ENGINEERING, TECHNOLOGY**

> "We wanted to deploy OpenShift quickly across the world. That's why we were leveraging Red Hat Consulting and Red Hat Training. … Using [Red Hat] Consulting was about reassuring that we can get things done, [it's] not just an experiment. It was more about building a platform practice and coaching."
>
> **DEVOPS ARCHITECT, FINANCIAL SERVICES**

Modeling and assumptions. Forrester's financial model for the composite organization assumes that the composite organization needs to conduct a 13-month process to deploy OpenShift and migrate its workloads using only internal labor. By leveraging Red Hat Consulting, the composite organization avoids all this labor and instead incurs Red Hat Consulting fees (shown in cost Table H) and a smaller amount of internal labor (shown in cost Table I). With Red Hat Consulting, the total time elapsed is reduced by 46% from 13 to seven months. This financial model also assumes the following:

- The avoided DIY implementation would have required a three-month pilot phase including 12 FTEs worth of internal labor hours across a team of 20+ employees, some fully and some partially dedicated to the effort. This phase is done concurrently as teams investigate other application platforms and includes learning about OpenShift, standing up a sandbox environment, integrating with enterprise tooling and processes, and evaluating capabilities. With Red Hat Consulting, this is reduced by 50% to 1.5 months for four FTEs (see Table I).
- The avoided DIY implementation would have required a three-month design and migration preparation phase including six FTE worth of labor hours. Key steps of this phase include architecture planning, employee training, and the hiring of additional skilled resources as needed. With Red Hat Consulting, this phase is shortened by 67% to one month for three FTEs (see Table I).
- The avoided DIY implementation would have required a seven-month deployment phase and migration wave including 30 FTEs worth of labor hours to stand up OpenShift and migrate workloads in VMs and containers. At least 10 employees would have needed to be hired and trained during the prior design and preparation phase. With Red Hat Consulting, this phase is shortened by 36% to 4.5 months with 15 FTEs (see Table I).
- Roles involved include a mix of internal IT admins and DevOps engineers. The average fully burdened annual salary for these resources is $120,000.

Risks. This benefit was widely reported by interviewees with mostly consistent timeline impacts, though the relative sizes varied. The following variability and risk factors could alter or reduce the realization of this benefit for organizations:

- Variance in legacy architecture, on-premises and cloud infrastructure, application code, and technology dependencies in prior environments.

- Variance in number of employees, hours, and their salaries that are influenced by environment size, industry, and region.
- Existing skill level and availability of in-house resources with OpenShift and Kubernetes will affect the potential speed and success of a DIY implementation.
- Timing of the Red Hat Consulting engagement can affect outcomes. Interviewees' organizations who engaged Consulting upfront during pilot and design phases achieved better time to market and cost savings benefits than those who only brought in Consulting for the deployment steps.
- Selected OpenShift deployment model and the potential additional alternatives considered versus this approach, such as third-party professional services and the relative cost and timeline for those approaches.
- Company- and industry-specific requirements, such as compliance and security.
- Strategic decisions or technical debt that could create unexpected delays.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $2.4 million.

Implementation Labor Costs Avoidance			
Ref.	**Metric**	**Source**	**Initial**
A1	Expected months needed for pilot with DIY implementation	Interviews	3
A2	Expected internal FTEs needed for pilot with DIY implementation	Interviews	12
A3	Expected months needed for preparation with DIY implementation	Interviews	3
A4	Expected internal FTEs needed for preparation with DIY implementation	Interviews	6
A5	Expected months needed for migration with DIY implementation	Interviews	7
A6	Expected internal FTEs needed for migration and implementation with DIY implementation	Interviews	30
A7	Fully burdened annual salary for a migration team resource	Composite	$120,000
At	Implementation labor costs avoidance	(A1*A2+A3*A4+ A5*A6)*A7/12	$2,640,000
	Risk adjustment	↓10%	
Atr	Implementation labor costs avoidance (risk-adjusted)		$2,376,000
	Three-year total: $2,376,000	**Three-year present value: $2,376,000**	

PLATFORM TECHNOLOGY COST OPTIMIZATION

Evidence and data. Red Hat Consulting helped the interviewees' organizations architect their OpenShift environment following best practices and expert guidance, leading them to design their platform in a way that was more efficient and effective for their needs. As a result, interviewees shared that they projected that OpenShift costs would have been 10% to 30% higher if they had deployed it themselves due to overprovisioned environments with excess licenses as well as environments that would not have scaled as efficiently and would have otherwise needed increases in contract size.

Further, the faster deployment and migration was critical in helping the interviewees' organizations sunset legacy solutions faster, reducing and eliminating redundant legacy costs and netting greater software cost savings initially. This was particularly important for those interviewees' organizations with upcoming software renewal cycles that would have locked them into multiyear spending contracts which would not have been tenable as a redundant cost to their Red Hat costs. Speed and confidence in on-time migration was paramount.

6 months

Faster migration off legacy application and virtualization environments to save costs and avoid contract renewals

- One interviewee noted Red Hat Consulting advised their financial services company to use a different architecture than expected, which led to significant licensing and infrastructure savings. The director of private cloud shared: "[Red Hat Consulting] guided us on what decisions to make, what to run, and how to combine VMs and microservices. They guided us to … run microservices and VMs in the same clusters to save capacity, and we have seen no issues or negative impact."

- An interviewee from a technology company noted their organization reduced licensing costs by 10% to 15% versus their prior container platform despite gaining more features and supporting larger usage ad demand. Red Hat Consulting was key to deploying the environment and helping them optimize usage. The interviewee noted their company continues to optimize app design to minimize resource usage and reduce the number of clusters without sunsetting apps and even while increasing the output of its workloads. The interviewee expected further savings as they look to migrate their VM environments to OpenShift Virtualization and then begin the containerization process after the initial move is completed.
- An interviewee reported their financial services company leveraged Red Hat Consulting to quickly and effectively migrate off its legacy solutions to avoid expensive contract renewals. They secured a multiyear agreement for locked-in costs with OpenShift that were more cost-effective than the prior environment, whereas the costs for the legacy solutions had been increasing substantially and were expected to increase further even as they worked to reduce consumption. Deployment and migration speed was paramount to reigning in operating expenses.
- An interviewee from an additional financial services company reported that Red Hat Consulting helped their organization implement a better architecture, allowing it to utilize OpenShift more efficiently.

> “The run rate with OpenShift [with the help of Red Hat Consulting] was cheaper than our [legacy platform]. We’ve saved 10% to 15% of our costs and we haven’t expanded our [OpenShift] licenses even with higher demand.”
>
> **DIRECTOR OF INFORMATION SYSTEMS ENGINEERING, TECHNOLOGY**

Modeling and assumptions. Forrester's financial model for the composite organization assumes the following:

- OpenShift Platform Plus subscription costs are $2 million annually for the composite when implemented with Red Hat Consulting's support and guidance. Without Red Hat Consulting, the architecture would be less optimal and OpenShift subscription costs would be 10% to 30% higher.
- Staying on the legacy VM and container platforms would have cost 20% to 60% more per year than OpenShift.
- Red Hat Consulting enables the composite organization to complete the entire migration process OpenShift in seven months instead of 13 months, allowing it to realize benefits six months earlier than with a DIY implementation.
- The benefit total includes only the incremental savings from avoiding six months of the legacy solution and the cost efficiencies gained from deploying Red Hat OpenShift with Red Hat Consulting versus a DIY implementation.

10% to 30% avoided OpenShift costs with optimization

Platform usage optimization due to Red Hat Consulting

20% to 60% costs avoided for legacy VM and container solutions

Platform cost savings due to Red Hat OpenShift with Red Hat Consulting

Risks. The following variability and risk factors could alter or reduce the realization of this benefit for organizations:

- Variance in scale and costs for legacy architecture depending on specific tools, infrastructure, and negotiated contracts.
- Company-, industry-, and app-specific requirements for technology features, architecture, tool dependency, compliance, and security.
- Skill level and quality of strategic decisions and architecture design done by a hypothetical all in-house OpenShift deployment team.
- Actual differential in implementation speed between DIY and Consulting-led deployment approaches as discussed in Benefit A.
- Risk of technical debt, migration roadblocks, or other unexpected challenges.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $1.8 million.

Platform Technology Cost Optimization					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
B1	OpenShift Platform Plus subscription costs (when implemented with support of Red Hat Consulting)	Composite	$2,000,000	$2,000,000	$2,000,000
B2	Expected legacy solution costs as a percentage of OpenShift subscription	Interviews	120%		
B3	Expected cost of legacy solution	B1*B2	$2,400,000		
B4	Expected months that OpenShift is in production with DIY implementation	12-(A1+A3+A5) +(I1+I3+I5)	6.0		
B5	**Subtotal: Avoided legacy solution costs with faster migration**	**B3*(1-B4/12)**	**$1,200,000**	**$0**	**$0**
B6	Expected cost of OpenShift Platform Plus with DIY implementation	Interviews	110%	120%	130%
B7	Expected cost of OpenShift with DIY implementation	B1*B6	$2,200,000	$2,400,000	$2,600,000
B8	**Subtotal: OpenShift cost avoidance due to better architecture with Red Hat Consulting implementation**	**B7-B1**	**$200,000**	**$400,000**	**$600,000**
Bt	Platform technology cost optimization	B5+B8	$1,400,000	$400,000	$600,000
	Risk adjustment	↓10%			
Btr	Platform technology cost optimization (risk-adjusted)		$1,260,000	$360,000	$540,000
	Three-year total: $2,160,000		**Three-year present value: $1,848,685**		

INFRASTRUCTURE COST OPTIMIZATION FROM APP MODERNIZATION

Evidence and data. Modernizing applications into containerized microservices with OpenShift allowed interviewees' organizations to significantly reduce resource requirements for apps and avoid overprovisioning that was otherwise needed in legacy apps using VMs. Interviewees typically did a lift-and-shift of apps in containers and VMs to OpenShift, and then worked to modernize the apps in VMs over time.

Red Hat Consulting helped the interviewees' organizations kickstart and accelerate the app modernization process while also helping them use optimal app and platform design that further reduced resource consumption. The faster migration of workloads also allowed their organizations to turn attention to modernization sooner. This higher velocity led to earlier and greater app modernization, leading to greater modernization savings immediately and higher rates and savings even three years into the investment.

Interviewees achieved greater infrastructure cost savings by engaging Red Hat Consulting to deploy OpenShift versus doing it by themselves:

- One interviewee noted their financial services company slashed resource consumption by 30% to 50% for application workloads by modernizing the apps from VMs to microservices. Further, OpenShift was less cost prohibitive for storage compared to the prior environment even without modernizing apps running in VMs.
- Another interviewee from a financial services company shared that Red Hat Consulting helped their organization achieve greater infrastructure utilization, attributing 20% cost savings on infrastructure over three years to Red Hat Consulting specifically.

> **10% higher modernization rate**
>
> Percentage of app stack modernized over three years due to Red Hat Consulting

> "We initially had a 10% cost increase [with OpenShift] because we were still overprovisioning. [Red Hat Consulting] helped us understand the costs associated with it to cut down the cost by 30% to 40%."
>
> EXECUTIVE DIRECTOR OF BUSINESS UNIT TECHNOLOGY, FINANCIAL SERVICES

Modeling and assumptions. Forrester's financial model for the composite organization assumes the following:

- The composite spends $3.5 million per year on infrastructure for the VM and container environment (including additional provisioning, hardware refreshes, hardware operational costs, and cloud consumption costs).
- Before the migration, 75% of apps were monolithic and ran in on-premises data centers in an alternative VM environment while 25% were structured as containerized microservices in an alternative cloud container platform.
- After the migration, the composite begins modernizing monolithic apps by refactoring them into containerized microservices. In the DIY implementation, the composite modernizes 5% of apps in Year 1, another 15% in Year 2, and another 15% in Year 3, reaching 60% modernized. By comparison, with Red Hat Consulting, the composite modernizes 15% of apps in Year 1, 15% in Year 2, and 15% in Year 3, reaching 70% modernized.
- Refactoring apps into containerized microservices allows the composite to utilize infrastructure more efficiently by avoiding overprovisioning and scaling to use only what it needs. The composite improves utilization by 30% in Year 1, 35% in Year 2, and 40% in Year 3 for modernized apps with a DIY approach as it gains learnings on how to be most effective year over year. By comparison, with guidance from Red Hat Consulting, the composite immediately achieves the 40% target efficiency gain for modernized apps in Year 1.

- Red Hat Consulting enables the composite organization to complete the entire migration process OpenShift in seven months instead of 13 months, allowing it to realize benefits six months earlier than with a DIY implementation.
- The benefit total includes only the incremental savings from modernizing more apps, modernizing apps faster, and reaching better cost efficiencies earlier by deploying Red Hat OpenShift with Red Hat Consulting versus a DIY implementation.

Risks. The following variability and risk factors could alter or reduce the realization of this benefit for organizations:

- Variance in scale and costs for legacy architecture depending on specific tools, infrastructure, and negotiated contracts.
- Company-, industry-, and app-specific requirements for technology features, architecture, tool dependency, compliance, and security that may impact their ability to be broken down into microservices and containerized and the actual reduction in resource requirements or overprovisioning for those apps.
- Actual differential in implementation speed and app modernization rates between DIY and Red Hat Consulting-led deployment approaches.
- Risk of technical debt, migration roadblocks, or other unexpected challenges.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $354,000.

Infrastructure Cost Optimization From App Modernization					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
C1	Annual infrastructure costs associated with VM and container environment	Composite	$3,500,000	$3,500,000	$3,500,000
C2	Percentage of apps modernized in legacy environment	Composite	25%	25%	25%
C3	Percentage of apps modernized with OpenShift with DIY implementation	Composite	30%	45%	60%
C4	Infrastructure cost optimization with containerized microservices in OpenShift with DIY implementation	Interviews	30%	35%	40%
C5	Expected months that OpenShift is in production with DIY implementation	B4	6.0	12.0	12.0
C6	**Subtotal: Expected infrastructure cost savings with DIY OpenShift**	**C1*(C3-C2)*C4*(C5/12)**	**$26,250**	**$245,000**	**$490,000**
C7	Percentage of apps modernized with OpenShift with Red Hat Consulting	Composite	40%	55%	70%
C8	Infrastructure cost optimization with containerized microservices in OpenShift with Red Hat Consulting	Interviews	40%	40%	40%
C9	**Subtotal: Infrastructure cost savings with OpenShift implementation supported by Red Hat Consulting**	**C1*(C7-C2)*C8**	**$210,000**	**$420,000**	**$630,000**
Ct	Infrastructure cost optimization from app modernization	C9-C6	$183,750	$175,000	$140,000
	Risk adjustment	↓15%			
Ctr	Infrastructure cost optimization from app modernization (risk-adjusted)		$156,188	$148,750	$119,000
	Three-year total: $423,938			**Three-year present value: $354,329**	

OPERATIONAL EFFICIENCY

Evidence and data. Red Hat Consulting helped interviewees' organizations set up the management, reporting, automation, and orchestration capabilities more quickly and effectively. IT admins and DevOps teams expected to achieve significant productivity savings with the adoption of OpenShift as a centralized hybrid cloud platform, replacing multiple prior environments that required more manual work and automation and lacked valuable tooling and consolidated views and interfaces. By accelerating and improving this adoption process, those teams recognized the productivity savings much earlier, allowing them to pivot their time to perform more valuable, innovative work therefore driving business success versus keeping the lights on.

- An interviewee noted Red Hat Consulting helped their technology company deploy Red Hat OpenShift with Red Hat Advanced Cluster Management (ACM), which automated and expedited deployment and management of clusters and workloads. Consulting helped their company use OpenShift's Operator Hub to transform high-touch manual operations involving four to five runbooks to a low-touch mode. Their company reallocated day-two operations labor into accelerating the company's modernization and innovation efforts to drive growth.
- An interviewee from a financial services company reported their organization significantly reduced operational overhead by migrating from a purely open-source Kubernetes environment to OpenShift. OpenShift was a more unified and scalable platform that enabled infrastructure as code (IaC) for better DevOps methodology. Savings came from the supported and certified control plane for OpenShift, which included service mesh, observability, monitoring, and role-based access control (RBAC) tools, along with templates and avoidance of upgrades and patching.

  The supported control plane with certified components and operators also reduced operational challenges and security risks of managing Kubernetes and its ecosystem. The DevOps architect explained: "Self-managed Kubernetes involved a lot more personnel. We treated OpenShift like a platform and rolled it out without a ton of time and research [thanks to Red Hat Consulting]." They continued: "We could use that additional time from those resources to do more

productive work in other areas. We found time savings overall versus homegrown."

- Interviewees noted savings could potentially extend to support personnel beyond the core IT and DevOps team. Another interviewee noted their financial services company ran a very large environment with mission-critical applications and needed an "army of production support" to do monitoring, problem-solving, maintenance, provisioning, and more. This made scaling impossible. With automation in OpenShift, the interviewee's company reallocated a substantial portion of its production support team from 500 to 300 personnel while also accelerating incident resolution. Though Red Hat Consulting played a minor role in these automations, the adoption speed and success they achieved helped the company experience these significant savings sooner.

29,120 hours saved

Incremental operational labor saved for IT admins and DevOps teams due to Red Hat Consulting

50%

Total increased productivity for DevOps and IT with both Red Hat OpenShift and Consulting

Modeling and assumptions. Forrester's financial model for the composite organization assumes the following:

- The composite employs 40 DevOps engineers and IT admins that support the OpenShift environment of VMs and containers. The fully burdened hourly rate for IT admins and DevOps engineers is $58.
- Productivity improvements are expected from the OpenShift DIY implementation, starting at 30% and increasing to 50% by Year 3. Productivity improvements with Red Hat Consulting are assumed to be higher than DIY, starting at 40% and reaching 50% for the last two years.
- Red Hat Consulting also enables the composite organization to migrate all workloads to OpenShift in seven months, allowing it to realize benefits six months earlier than with an expected 13-month DIY implementation.
- The model computes the hours saved from OpenShift with a DIY implementation versus with Red Hat Consulting and only includes the incremental savings attributable to Red Hat Consulting in the benefit total.
- A productivity recapture rate of 50% is applied to the hours saved to reflect that not all hours are reclaimed and utilized for productive work.

Risks. The following variability and risk factors could alter or reduce the realization of this benefit for organizations:

- Team size, skill level, role makeup, and salary levels.
- Company-, industry-, and app-specific requirements that may impact the operations environment, automation, and DevOps processes.
- Actual differential in implementation speed between DIY and Red Hat Consulting-led deployment approaches as discussed in Benefit A.
- Risk of technical debt, migration roadblocks, or other unexpected challenges.
- Risk of additional operational overhead when utilizing virtualization.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $673,000.

Operational Efficiency					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
D1	Number of DevOps engineers and IT admins supporting OpenShift environment	Composite	40	40	40
D2	Expected months that OpenShift is in production with DIY implementation	B4	6.0	12.0	12.0
D3	Expected productivity improvements from OpenShift with DIY implementation	Interviews	30%	40%	50%
D4	**Subtotal: Expected hours saved with OpenShift with DIY implementation**	**D1*D2/12*D3 *2,080**	**12,480**	**33,280**	**41,600**
D5	Months that OpenShift is in production with Red Hat Consulting	Composite	12	12	12
D6	Productivity improvements from OpenShift with Red Hat Consulting	Interviews	40%	50%	50%
D7	**Subtotal: Hours saved with OpenShift with Red Hat Consulting**	**D1*D5/12*D6 *2,080**	**33,280**	**41,600**	**41,600**
D8	Hours saved for DevOps engineers and IT admins attributable to Red Hat Consulting	D7-D4	20,800	8,320	0
D9	Productivity recapture rate	TEI standard	50%	50%	50%
D10	Fully burdened hourly rate for an IT admin and a DevOps engineer	Composite	$58	$58	$58
Dt	Operational efficiency	D8*D9*D10	$603,200	$241,280	$0
	Risk adjustment	↓10%			
Dtr	Operational efficiency (risk-adjusted)		$542,880	$217,152	$0
	Three-year total: $760,032			**Three-year present value: $672,992**	

DEVELOPER EFFICIENCY

Evidence and data. Interviewees worked with Red Hat Consulting to learn and adopt best practices to modernize and streamline application delivery by using Red Hat OpenShift, containers, and microservices. By adopting modern tools and DevOps processes, they broke free of manual processes and aligned stakeholders to accelerate the time to market for applications in their organizations' pipelines.

By aligning key stakeholders on a modern set of development tools and processes, the interviewees' organizations could automate and expedite the development, testing, and deployment processes for bringing new applications to market and for modernizing and containerizing legacy applications.

Interviewees said the application delivery benefits extended beyond the initial build into the application development lifecycle. The adoption of Red Hat OpenShift and partnership with Red Hat Consulting aided the interviewees' organizations in accelerating the time to market for new product features, updates, patches, and bug fixes. By harnessing the capability of containers to separate applications into granular microservices, these organizations accelerated release cycles by packaging, testing, and deploying components separately.

- The CIO for a financial services firm described how Red Hat Consulting helped their developers innovate faster, better, and more productively due to guidance and best practices. The DevOps structure, automation and pipelines, and other associated platform tools all enhanced these benefits. As a result, their company has already successfully conducted proof-of-concepts (PoCs) and stood up generative AI tools and models with the guidance of Red Hat Consulting that otherwise would have been much slower, less effective, or may not have occurred at all.
- Another interviewee noted that deploying OpenShift with the assistance of Red Hat Consulting helped their technology company automate and expedite the deployment and management of clusters and workloads through a GitOps approach and with the OpenShift Operator Hub. Developers achieved a significant improvement in productivity with their progress toward an instant-ready platform and with more features and functionality at the edge.

46,800 hours

Developer hours saved due to Red Hat Consulting

15%

Total increased productivity for developers
with both Red Hat OpenShift and Consulting

Modeling and assumptions. Forrester's financial model for the composite organization assumes the following:

- The composite employs 300 developers that work on apps in the OpenShift environment, and 60% of developers' time is spent on noncoding activities. The fully burdened hourly rate for developers is $65.
- Productivity improvements from OpenShift DIY implementation are anticipated to start at 5% and incrementally rise to 15% by Year 3. Productivity improvements with Red Hat Consulting are projected to be initially higher than DIY, starting at 10% and stabilizing at 15% for the last two years.
- Red Hat Consulting also enables the composite organization to migrate all workloads to OpenShift in seven months, allowing it to realize benefits six months earlier than with an expected 13-month DIY implementation.
- The model computes the hours saved from OpenShift with a DIY implementation versus with Red Hat Consulting and only includes the incremental savings attributable to Red Hat Consulting in the benefit total.
- A productivity recapture rate of 50% is applied to the hours saved to reflect that not all hours are reclaimed and utilized for productive work.

> "[OpenShift] definitely improves productivity. People are more confident using the system, it reduces frustration, and people have a better work experience."
>
> EXECUTIVE DIRECTOR OF BUSINESS UNIT TECHNOLOGY, FINANCIAL SERVICES

Risks. The following variability and risk factors could alter or reduce the realization of this benefit for organizations:

- Number of developers and their skill levels, responsibilities, existing processes and workflows, and average salaries.
- Company-, industry-, and app-specific requirements that may impact the development environment, automation, and DevOps processes.
- Actual differential in implementation speed between DIY and Red Hat Consulting-led deployment approaches as discussed in Benefit A.
- Change management to adapt developers to new processes, tools, and governance rules that may be more stringent.
- Risk of technical debt, migration roadblocks, or other unexpected challenges.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $1.1 million.

Developer Efficiency					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
E1	Number of developers	Composite	300	300	300
E2	Percentage of developer time spent on noncoding activities	Composite	60%	60%	60%
E3	Expected months that OpenShift is in production with DIY implementation	B4	6.0	12.0	12.0
E4	Expected productivity improvements from OpenShift with DIY implementation	Interviews	5%	10%	15%
E5	**Subtotal: Expected hours saved with OpenShift with DIY implementation**	**E1*E2*E3/12*E4 *2,080**	**9,360**	**37,440**	**56,160**
E6	Months that OpenShift is in production with Red Hat Consulting	Composite	12	12	12
E7	Productivity improvements from OpenShift with Red Hat Consulting	Interviews	10%	15%	15%
E8	**Subtotal: Hours saved with OpenShift, with Red Hat Consulting**	**E4*E5*E6/12*E7 *2,080**	**37,440**	**56,160**	**56,160**
E9	Developer hours saved attributable to Red Hat Consulting	E8-E5	28,080	18,720	0
E10	Productivity recapture rate	TEI standard	50%	50%	50%
E11	Fully burdened hourly rate for a developer	Composite	$65	$65	$65
Et	Developer efficiency	E9*E10*E11	$912,600	$608,400	$0
	Risk adjustment	↓15%			
Etr	Developer efficiency (risk-adjusted)		$775,710	$517,140	$0
	Three-year total: $1,292,850		**Three-year present value: $1,132,579**		

AVAILABILITY AND PERFORMANCE IMPROVEMENTS

Evidence and data. Interviewees noted that Red Hat OpenShift, as deployed by Red Hat Consulting, improved performance, increased availability, enhanced reliability, and streamlined operations. OpenShift's automation and orchestration features optimized cloud workloads, resulting in better scalability and more efficient operations. This led to a reduction in incidents and downtime that prevented wasted labor, ensured uninterrupted service, and minimized the risk of revenue loss. Interviewees also noted that OpenShift's deployment enhanced the overall stability and dependability of their IT infrastructure, improving customer satisfaction and enabling more productive developer workflows. OpenShift's ability to ensure low latency in mission-critical applications, even in complex server environments, was highlighted as a valuable feature.

Red Hat Consulting helped the interviewees' organizations maximize the performance and availability of the OpenShift environment by guiding on optimal architecture and capability usage. Further, by helping these organizations deploy OpenShift faster, Red Hat Consulting allowed interviewees' organizations to begin recognizing the benefits of availability and performance sooner. Interviewees shared the following examples:

- An interviewee noted their financial services organization moved some workloads to the cloud as they adopted OpenShift and, though initially the cloud latency decreased performance, Red Hat Consulting worked with them to make adjustments. Performance actually improved and scaling became more efficient. Further, availability significantly improved: incidents dropped from 10 to three per month with total downtime down from 20 hours to under 3 hours per month. This 50% reduction in duration and 70% decrease in incidents was credited to OpenShift's automation and orchestration features, which Red Hat Consulting helped to deploy. This improvement was crucial because previously, downtime of their mission-critical apps led to risky, blind decision-making or delays that could lead to loss of revenue. The implications could be catastrophic with possible losses that could threaten the entire business. With OpenShift, diagnosing issues was much faster as incident resolution reduced from 20 to 30 FTEs for 3 to 4 hours down to less than an hour for 10 or less people.
- Another interviewee noted OpenShift's investment significantly boosted their financial services company's performance and availability, raising the CIO's rating of their satisfaction from 2/5 to 4/5 and achieving over 99.5% reliability,

with no outages in nearly a year. This was a marked improvement from the legacy environment that had multiple outages per year, and it led to a more stable and dependable IT infrastructure.

- An interviewee from a technology company noted they markedly improved performance and availability by migrating to OpenShift. OpenShift offered greater reliability and eliminated frequent issues and outages that previously hindered developer productivity. With OpenShift, their company has experienced no downtime in the months since implementation, contrasting with the prior platform's less than 99% availability and weekly disruptions that included a total of 33 days where the legacy platform was completely unavailable and incurred substantial remediation labor. The impact of past downtimes included significant business costs, lost revenue, and a negative employee experience, with engineers forced to use alternative pipelines, resulting in hours of lost work for all the company's developers.
- Another interviewee from a financial services company needed to ensure extremely low latency for a mission-critical application despite having a large variety of different servers in their data center. By deploying OpenShift on bare metal across this environment, the interviewee's company achieved platform adoption with the desired benefits and management tools without sacrificing essential performance.

> "We weren't even running 99% availability [with our legacy platform]. We kept crashing. We were experiencing issues every week. [With Red Hat], we haven't had any issues."
>
> **DIRECTOR OF INFORMATION SYSTEMS ENGINEERING, TECHNOLOGY**

Modeling and assumptions. Forrester's financial model for the composite organization assumes the following:

- The composite faced 48 hours of unplanned downtime per year in the legacy environment (two outages lasting 2 hours each per month).
- A reduction in downtime is projected with OpenShift DIY implementation, starting at 65% and increasing to 85% by Year 3. The downtime reduction from OpenShift with Red Hat Consulting is higher, starting at 75% and remaining at 85% for the last two years.
- Though performance improvements are important and fundamentally related to availability, the incremental impact is not modeled for the composite in this table as the value cannot be accurately separated from the operational efficiency and developer productivity benefits modeled earlier in this study.
- Red Hat Consulting enables the composite organization to migrate all workloads to OpenShift in seven months, allowing it to realize benefits six months earlier than with an expected 13-month DIY implementation.
- The model computes the hours saved from OpenShift with a DIY implementation versus with Red Hat Consulting and only includes the incremental savings attributable to Red Hat Consulting in the benefit total.
- Developers cannot complete productive work during downtime, with 23.7% being online at a given time to be affected by an issue (assuming 2,080 hours worked per developer of 8,760 hours per year). The fully burdened hourly rate for developers is $65.
- A team of IT admins investigate, remediate, and report on issues incurring 50 labor hours for every one hour of downtime. The fully burdened hourly rate for IT admins is $58.
- A productivity recapture rate of 50% is applied to the hours saved to reflect that not all hours are reclaimed and utilized for productive work.

25.2 hours

Downtime avoided due to Red Hat Consulting

Risks. The following variability and risk factors could alter or reduce the realization of this benefit for organizations:

- Prior environment architecture, complexity, and stability.
- Number of developers and IT admins, their roles, and average salaries.
- Company-, industry-, and app-specific requirements that may impact architecture, resource demands, performance, and uptime.
- Actual differential in implementation speed between DIY and Red Hat Consulting-led deployment approaches as discussed in Benefit A.
- Risk of technical debt, migration roadblocks, or other unexpected challenges.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $76,000.

Availability And Performance Improvements					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
F1	Hours of unplanned downtime in legacy environment	Composite	48	48	48
F2	Expected months that OpenShift is in production with DIY implementation	B4	6.0	12.0	12.0
F3	Percentage reduction in downtime with OpenShift with DIY implementation	Interviews	65%	75%	85%
F4	**Subtotal: Expected downtime hours avoided with OpenShift with DIY implementation**	**F1*F2/12*F3**	**15.6**	**36.0**	**40.8**
F5	Months that OpenShift is in production with Red Hat Consulting	Composite	12	12	12
F6	Productivity improvements from OpenShift with Red Hat Consulting	Interviews	75%	85%	85%
F7	**Subtotal: Hours of downtime avoided with OpenShift with Red Hat Consulting**	**F1*F5/12*F6**	**36.0**	**40.8**	**40.8**
F8	Hours of downtime avoided attributable to Red Hat Consulting	F7-F4	20.4	4.8	0.0
F9	Average number of developers affected per hour of downtime	E1*2,080/8,760	71	71	71
F10	Fully burdened hourly rate for a developer	E11	$65	$65	$65
F11	Productivity recapture rate	TEI standard	50%	50%	50%
F12	**Subtotal: Avoided costs of lost developer productivity**	**F8*F9*F10*F11**	**$47,073**	**$11,076**	**$0**
F13	Total IT labor hours to investigate, remediate, and report on downtime per hour of downtime	Interviews	50	50	50
F14	Fully burdened hourly rate for an IT admin	D10	$58	$58	$58
F15	**Subtotal: Avoided costs for IT investigation and remediation**	**F8*F11*F13*F14**	**$29,580**	**$6,960**	**$0**
Ft	Availability and performance improvements	F12+F15	$76,653	$18,036	$0
	Risk adjustment	↓10%			
Ftr	Availability and performance improvements (risk-adjusted)		$68,988	$16,232	$0
	Three-year total: $85,220			**Three-year present value: $76,131**	

BUSINESS GROWTH FROM FASTER TIME TO MARKET

Evidence and data. Interviewees' organizations utilized Red Hat OpenShift to drive significant business growth and reduce business risks. They connected disparate data and tools to create new products with enhanced services and results; gained the ability to quickly and cost-effectively scale to meet business demand they previously could not handle; attracted new customers, investors, and partners through better compliance and security; and reduced risks of lost business and missed business opportunities driven by failures to innovate, by downtime, or by security or compliance breaches that could have caused reputational damage.

Interviewees noted Red Hat Consulting helped their organizations use OpenShift to build these solutions quickly and optimally, accelerating the innovation and ensuring they met their goals. Importantly, by deploying OpenShift faster, interviewees' organizations realized these business growth benefits sooner, which provided additional revenue and competitiveness in their marketplace while boosting shareholder value. Examples provided by interviewees included:

- One interviewee from a financial services company calculated that they cut the potential revenue loss from reputational risks by $600,000 to $700,000 with OpenShift. They also estimated that they were missing out on $800,000 in revenue due to their inability to scale up to meet transaction demands, leading to declined business with some customers. Improved scalability and speed was critical to mitigating financial risks and tapping into new financial possibilities.
- Another interviewee reported their financial services company connected systems to launch a new virtual product using OpenShift that increased volume of their primary analysis activity for customers, reduced the completion time from 21 to 10 days, and improved their margin of error from 5% down to 2%. The interviewee calculated that this OpenShift-enabled launch increased revenue by $10 million to $15 million per year while delivering better customer experience (CX), reducing COVID-19 exposure risks, and avoiding labor costs for sending staff to the field for analysis work.
- A third interviewee from a financial services company noted their organization connected critical data systems across business units with OpenShift and stood up a new, connected product offering that drove remarkable growth by attracting

tens of thousands of new customers and hundreds of investors and making it possible to scale to meet that demand. They tapped into a greater portion of inactive funds for loans to bolster profits, whereas before, their inability to scale rendered significant capital dormant leading to missed opportunities. The company also gained critical financial partners by demonstrating compliance with Consumer Finance Protection Board standards. Finally, the accelerated product delivery built on OpenShift and enabled by Red Hat Consulting allowed them to hit a critical, short-term period of high demand that ensured market relevance and timeliness to boost sales without missing the rare market opportunity.

Two quarters

Faster generation of revenue due to Red Hat Consulting accrued from new OpenShift-enabled revenue streams

Modeling and assumptions. Forrester's financial model for the composite organization assumes the following:

- The composite organization anticipates additional annual revenue of $10 million per year driven by new and improved offerings running in OpenShift. This estimate will vary significantly based on specific company and use case but is based on real estimates provided by interviewees and scaled to the equivalent size for the composite organization. This growth is attributed to a mix of new and improved products, better compliance and security adherence, and improved scalability allowing them to meet greater demand.
- Red Hat Consulting enables the composite organization to migrate all workloads to OpenShift in seven months, allowing it to realize benefits six months earlier than with an expected 13-month DIY implementation.
- Fifty percent of this accelerated revenue is considered incremental, which would not have been earned without the faster time to market enabled by Red Hat Consulting. The remaining revenue would have been earned in either scenario but is earned six months earlier with Red Hat Consulting. Though the present

value of this cash flow would be slightly higher, the differential is not large enough to be material to the model results and is excluded for simplicity.

- An operating profit margin of 11% is applied to this incremental revenue to determine its impact on business growth.[5]

Risks. The following variability and risk factors could alter or reduce the realization of this benefit for organizations:

- Company size, annual revenue, margin, product offerings, customer demands and expectations, and the competitive market environment.
- Specific use cases deployed and their relative revenue opportunities.
- Actual differential in implementation speed between DIY and Red Hat Consulting-led deployment approaches as discussed in Benefit A.
- Risk of technical debt, migration roadblocks, or other unexpected challenges.

Results. To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $200,000.

Business Growth From Faster Time To Market					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
G1	Additional annual revenue driven by OpenShift launch due to new apps, new compliance and security adherence, and ability to scale	Interviews	$10,000,000		
G2	Months of delay avoided with faster OpenShift deployment and migration	12-B4	6.0		
G3	Percentage of accelerated revenue that would not be earned without faster time to market	Composite	50%		
G4	Incremental revenue from faster time to market attributable to Red Hat Consulting	G1*G2/12*G3	$2,500,000		
G5	Operating profit margin	Research data	11%		
Gt	Business growth from faster time to market	G4*G5	$275,000	$0	$0
	Risk adjustment	↓20%			
Gtr	Business growth from faster time to market (risk-adjusted)		$220,000	$0	$0
	Three-year total: $220,000		**Three-year present value: $200,000**		

$2.5 million

Additional revenue attributable to faster deployment speed with Red Hat Consulting

UNQUANTIFIED BENEFITS

Interviewees described the following benefits that their organizations experienced as a result of OpenShift and Red Hat Consulting but were not able to quantify financially:

- **Improved employee experience (EX) and hiring ability.** OpenShift provided employees with robust tools, automated drudgery, and allowed them to focus on more interesting and valuable work which improved job satisfaction. It also provided valuable skill-building opportunities that helped employees' careers and allowed companies to more easily attract, hire, and retain employees. Red Hat Consulting influenced this benefit by accelerating realization, ensuring the system was set up optimally, and offering expert guidance. Red Hat Training and Certifications could potentially further help the interviewees' organizations upskill and retain employees while accelerating employees' careers.
    - The executive director of business unit technology noted their financial services company's employees gained confidence and reduced frustration with OpenShift, improving employee experience. Their company also could more easily hire and retain employees: "People don't want to work with old-fashioned technology. They need to be interested in the technology we are using and how they can upskill to keep them engaged and get them training to advance their careers."
    - The CIO at another financial services company reported OpenShift's adoption enhanced EX and user experience (UX), leading to new skill development, deeper work engagement, and improved job satisfaction and retention. The system's robustness and seamlessness elevated UX, which the CIO rated as 5/5. The previous system's clunkiness gave way to greater visibility and more robust functionality. Red Hat Consulting also

helped employees gain practical learning and participate in projects end-to-end with support and guidance, upskilling employees and fostering engagement while providing them trusted backing. This contributed to a low turnover rate as employees valued the learning and innovation opportunities. The CIO shared: “Everybody looks for a growth pattern for their themselves, and OpenShift [with Red Hat Consulting] became a job retention thing for us. We had very few people leave the company, in part because they got to learn more things.”

- The interviewees from a technology company found that Red Hat Consulting helped their company deploy OpenShift quickly and build valuable skills internally, helping employees upskill and improving their job satisfaction, which is expected to impact retention and their ability to hire.

> “Migrating platforms is a culture change. There are new restrictions and policies. [Even so], there has been no negative feedback from developers and [they value] the flexibility, availability, and performance. Our developers are super happy. There have been no complaints, and they are saying [OpenShift] is actually making their lives and day-to-day work easier. … As a team, we are more satisfied with what we’re doing every day.”
>
> CONTAINER PLATFORM PRODUCT OWNER, TECHNOLOGY

- **Improved customer experience (CX) and business growth.** The increased frequency of updates and releases improved product quality for customers and generated greater revenue opportunities. OpenShift itself enabled additional sales as discussed in benefit G beyond the acceleration measured in this study, and Red Hat Consulting helped companies determine how to leverage OpenShift

and accelerate value realization. The interviewees' organizations reported increased revenues from $1 million to over $15 million per year due to their new innovation opportunities, faster speed, better security and compliance, and better analytics and data to power apps and decision-making.

- **Improved business profit margins.** Interviewees noted OpenShift's accelerated app development may help drive end-user efficiencies or business cost savings in addition to revenue growth. For example, one interviewee's financial services company was able to avoid sending field staff for appraisals and instead conducted work remotely, saving labor and travel costs. The interviewee's organization further leveraged data joined via OpenShift from across environments to reduce the margin of error from 5% to 2% on appraisals and thus reduce risk and optimize margins.
- **Improved software quality and reduced vulnerabilities.** Having the ability to run code more frequently in small batches reduced the likelihood of deploying bugs, defects, and vulnerabilities to production.
- **Improved ability to secure and monitor environments.** OpenShift helped the interviewees' organizations leverage visibility, automation, and notifications to discover, track, triage, and resolve incidents quicker and more effectively. Critically, these benefits helped protect the interviewees' organizations during off-hours and holidays when security personnel were at minimal staffing levels. The platform security features and reputation also helped their companies prove their security posture in ways not possible with prior siloed tools and open-source options. Interviewees reported that Red Hat Consulting helped their organizations realize this value more fully by helping them stand up the environment and tools in a way that would optimize their security outcomes. It also accelerated the realization of these security benefits by achieving faster deployment time for the platform and capabilities.
    - A financial services company reported strengthening its risk management practices with OpenShift tools to allow for better tracking of incidents and system performance.
    - OpenShift streamlined security for another interviewee's financial services company, enabling pattern recognition and alerts for unusual activities,

which was particularly crucial during off-hours and holidays. Integration with a third-party security solution simplified notifications while covering the entire environment in a way not previously possible. These benefits enhanced security and thus protected brand reputation, which was key to attracting customers and investors and avoiding the risk of losses.

  - An interviewee from another financial services company stated their organization established a unified control plane with IaC using OpenShift that enabled it to ensure uniform security across data centers with better defense, notifications, reporting, and analysis.
  - The container platform product owner at a technology company shared: "Before, every customer had freedom to exercise their own cluster. We had like 150 different users working in 150 different ways. There was no way [to see] and control everything in an organized way. [Red Hat OpenShift with Red Hat Advanced Cluster Management (ACM)] gave us a single pane of glass, which is a very important component of IT security, to enforce policies in all our tenant and multitenant clusters."

- **Improved ability to meet and show adherence to regulatory compliance requirements.** OpenShift provided the critical opportunity to connect and centralize environments with automation, visibility, and consistent governance. This allowed creation and enforcement of standard policies across diverse apps and infrastructure, significantly improved monitoring and management, and streamlined audit processes while also adding higher-quality data. Red Hat Consulting helped the interviewees' organizations realize this value more fully by helping them stand up the environment and tools in a way that would optimize their compliance outcomes and accelerated the realization of these compliance benefits by achieving faster deployment time for the platform and capabilities.
  - An interviewee's financial services organization improved operational transparency within OpenShift, gaining clear visibility into system operations and facilitating easier identification and resolution of potential compliance issues. OpenShift's logging and monitoring tools significantly improved the interviewee's company's audit capabilities, providing detailed records and insights that support regulatory compliance and risk

management efforts with a streamlined process to demonstrate regulatory compliance and provide necessary documentation and evidence in audits.

- Investing in OpenShift allowed another interviewee's financial services company to meet stringent compliance and security requirements, which was crucial for gaining the confidence of investors and the Consumer Finance Protection Board. The platform provided robust data retention and auditability features, ensuring that personally identifiable information (PII) was securely managed throughout its lifecycle. This was particularly important given the sensitive nature of PII and the complexities involved in encrypting and decrypting data during transactions. The interviewee noted OpenShift's comprehensive platform facilitated an integrated cycle from application to decision-making, underwriting, and payments, all within a single ecosystem. This was then integrated with a third-party tool for audits, which allowed the interviewee's company to streamline data flow and enable precise tracking and reporting of actions.
- The interviewees at a technology company stated they enhanced platform governance and security by applying policies and standards across multitenant clusters using OpenShift ACM while gaining a single point of visibility for the entire environment. This resulted in increased accountability and a stronger governance framework compared to the prior approach, which had approximately 150 individual use cases done in different ways with no centralized oversight or policy enforcement capabilities. The implementation of ACM enabled their company to enforce policies, manage both tenant and multitenant clusters through a unified interface, and create standalone clusters that operate independently of the main hub.

FLEXIBILITY

The value of flexibility is unique to each customer. There are multiple scenarios in which a customer might leverage Red Hat Consulting to deploy OpenShift and later realize additional uses and business opportunities, including:

- **Expanding the usage of additional OpenShift capabilities and Red Hat offerings with guidance from Red Hat.** There are a myriad of Red Hat services and technologies that the interviewees' organizations could adopt to drive further value. Other OpenShift capabilities and other technologies from Red Hat could expand capabilities and benefits, while Consulting could help drive more value for those other technologies as could Red Hat Training and Certification and Red Hat Technical Account Managers. The director of information systems engineering at a technology company shared: "We will use more features and services as we modernize our whole lifecycle. We will expand [the OpenShift environment] to more sites and make sure everything is available at the edge where our engineers actually are, so it is easier for them. We are going to focus on modernizing dated tools in our platform and using the full [Red Hat] platform as we work to containerize our entire application lifecycle and make an 'instant ready' platform for developers." Examples include but are not limited to:
    - Red Hat Technical Account Managers (TAM) to provide ongoing support and expertise that is customized to customers' environments.[6]
    - Red Hat Training and Certification to provide formal training and learning to internal teams, helping them upskill and maximize impact.
    - Red Hat OpenShift cloud services, which offer the platform in a hosted, managed environment by Red Hat and public cloud providers, which could allow the interviewees' organizations to further focus on shifting left, accelerating innovation, and streamlining operations.[7]
    - Other tools within Red Hat OpenShift Platform Plus, which includes a suite of toolsets such as Red Hat Quay, Advanced Cluster Management (ACM), and Advanced Cluster Security for Kubernetes (ACS).[8]

> "We use [Red Hat] Training. The best way to learn is by having an [expert] sitting by and helping you."
>
> HEAD OF SECTION, DEVOPS PLATFORM, GOVERNMENT

- **Testing and adopting AI, including generative AI, using native and third-party solutions.** Implementing OpenShift helped position the interviewees' organizations with a suitable tech environment to test and adopt AI, while Red Hat Consulting could provide critical guidance and support to help test and build AI use cases. Interviewees' organizations could gain access to tools such as OpenShift AI, Red Hat Podman AI Lab, or RHEL AI directly from Red Hat.[9] These potential AI use cases with OpenShift could also be handled either in the cloud or on-premises, which could help control for spikes in cloud billing.[10] OpenShift also enabled the interviewees' organizations to connect data and apps across environments in a way that could feed AI solutions from a variety of vendors.
    - The CIO from a financial services firm noted their organization connected an on-premises environment from one business unit to data in two other cloud environments and a variety of tools using OpenShift with Red Hat Consulting's help. This data connectedness made it possible to test third-party generative AI technologies leveraging the data connected by the OpenShift environment. The interviewee's company has since deployed AI use cases that automate a variety of fundamental financial business processes and is working to build more. To achieve this goal, the CIO brought in Red Hat Consulting to provide guidance and best practices, and the services even helped do the work of standing up PoCs for three different generative AI models from third parties. They then selected and began deploying production use cases of AI that automated key financial business processes. The CIO reported that Red Hat Consulting was critical to helping them create ideas, build the right teams to execute, and execute efficiently with augmented resources. Not only did this enable

leading-edge innovation, but it also enabled staff to upskill on this emerging technology that will be critical to their careers and helped them be highly engaged in their jobs.

- The executive director of business unit technology at a financial services company explained that OpenShift with the guidance of Red Hat Consulting set the groundwork for their organization to test AI. They explained: “We are now in world where AI plays a big role. Our expectations are high … to use AI and generative AI capabilities in an automated way for optimizing workloads and understanding activity. IBM is no stranger to generative AI … so though the competition is high, Red Hat with the backing of IBM gives us confidence [in our future AI plans].”

- **Leveraging the ability to scale, innovate, and adopt cloud services with infrastructure portability to adapt based on future business needs.** Investing in OpenShift with the guidance of Red Hat Consulting provided the interviewees’ organizations with a scalable, agile platform that offered flexibility to develop apps and run them on-premises or in the cloud. Innovation could be done faster and more efficiently, governance could be enforced consistently, and innovation could be done without locking in to one type of infrastructure.

  - The executive director of business unit technology at a financial services company shared: “We are moving to distributed computing … for scalability and moving our workloads to the cloud. OpenShift is the biggest [part of this strategy]. Red Hat helps us on this path and makes our processes more dynamic.”

  - One interviewee from a financial services company used OpenShift in a hybrid environment of their on-premises data centers and clouds from two providers. The interviewee’s organization leveraged the infrastructure portability to shift workloads based on regulatory, business, and cost needs without fear of lock-in.

  - Another interviewee noted their financial services company leveraged OpenShift to use the GitOps methodology and IaC, which improved the automation and scalability of their platform compared to their prior open-source Kubernetes instance.

- **Building or refactoring a larger portion of applications using Red Hat OpenShift to gain further benefits from containerization.** Cloud-native or more agile companies may be comfortable adopting containers at a higher rate than modeled in this study, which could accelerate the recognition of benefits. As organizations modernize an increasing amount of their application stack they may find further gains in speed, efficiency, performance, cost, and CX.

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

> "Red Hat with the backing of IBM gives us confidence [in our future AI plans]."
>
> EXECUTIVE DIRECTOR OF BUSINESS UNIT TECHNOLOGY, FINANCIAL SERVICES

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**
Htr	Red Hat Consulting costs	$1,100,000	$110,000	$55,000	$55,000	$1,320,000	$1,286,777
Itr	Internal labor for implementation	$841,500	$0	$0	$0	$841,500	$841,500
	Total costs (risk-adjusted)	$1,941,500	$110,000	$55,000	$55,000	$2,161,500	$2,128,277

RED HAT CONSULTING COSTS

Evidence and data. Interviewees said their organizations paid Red Hat professional services fees for their Consulting engagements. Engagements varied widely in scope and cost, including phases such as pilot, design, platform deployment, migration, and app modernization. These costs varied based on specific licensing agreements and the scale and complexity of the OpenShift deployment. The Red Hat Consulting team typically included a lead architect plus solution engineers and a project manager.

Though the interviewees' organizations also incurred other costs associated with OpenShift, those are excluded from this case study as this study only measures specifically the costs versus benefits of deploying OpenShift using Red Hat Consulting versus a DIY model. All other costs would have been incurred in either scenario and are thus excluded, as are the potential benefits of those other elements.

> "The architect [from Red Hat Consulting] was top notch and their team brought a wealth of knowledge to start in the right direction."
>
> DIRECTOR OF PRIVATE CLOUD, FINANCIAL SERVICES

Modeling and assumptions. Forrester's financial model for the composite organization assumes the following:

- The composite incurs approximately $1 million in Red Hat Consulting costs for the OpenShift pilot, design, deployment, and migration phases, which is equivalent to 50% of its annual spend on OpenShift Platform Plus. These phases take seven months and are collectively considered the "Initial" period in this model.
- The composite incurs $50,000 to $100,000 in additional Red Hat Consulting costs for additional guidance and support in modernizing apps and iterating on its OpenShift environment.

- Other Red Hat costs are excluded, including the OpenShift Platform Plus subscription, Technical Account Manager services, and Training and Certification fees. These are excluded because this model specifically compares deploying OpenShift with Consulting versus a DIY approach, and thus these costs would have been incurred in either scenario. The associated benefits are also excluded.

Risks. The following variability and risk factors could alter or increase the amount and cost of Red Hat Consulting needed for the OpenShift implementation for organizations:

- Internal team size, skill level, and capacity for implementation work.
- Selected OpenShift deployment model and infrastructure.
- Need for migration of VM and/or container workloads.
- Scale and complexity of deployment and migration that is needed.
- Company-, industry-, and app-specific requirements for technology features, architecture, tool dependency, compliance, and security that may impact the time and cost of OpenShift deployment.
- Risk of technical debt, migration roadblocks, or other unexpected challenges.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $1.3 million.

Red Hat Consulting Costs						
Ref.	**Metric**	**Source**	**Initial**	**Year 1**	**Year 2**	**Year 3**
H1	Consulting fees for pilot, design, platform deployment, VM and container migration, and app modernization	Composite	$1,000,000	$100,000	$50,000	$50,000
Ht	Red Hat Consulting costs	H1	$1,000,000	$100,000	$50,000	$50,000
	Risk adjustment	↑10%				
Htr	Red Hat Consulting costs (risk-adjusted)		$1,100,000	$110,000	$55,000	$55,000
	Three-year total: $1,320,000			**Three-year present value: $1,286,777**		

INTERNAL LABOR FOR IMPLEMENTATION

Evidence and data. Interviewees' organizations dedicated internal resources to the OpenShift deployment and migration alongside Red Hat Consulting resources. The number of internal resources was much less significant than if they had deployed OpenShift without Consulting support.

- Interviewees generally reported dedicating labor worth 10 to 20 FTEs to the deployment process. This was estimated to be approximately 25% to 50% of the labor that would have been needed to deploy OpenShift with a DIY approach. The number of resources dedicated varied based on existing skill sets, team size and capacity, and the desired breakdown of work between Red Hat Consulting and internal labor.
- Overall time elapsed to deploy OpenShift and migrate VMs and containers with Red Hat Consulting ranged from four months to 11 months in most cases. One company conducted two longer waves of container adoption and VM migration.
- Deployments typically occurred in three phases: a pilot to evaluate if OpenShift could meet their needs; a preparation phase to plan the approach and architecture while securing funds and hiring employees for the full deployment; and a deployment and migration phase where the platform was stood up and all VMs and apps were migrated over from legacy environments.

7 months

Total time elapsed from pilot to complete deployment and migration

Modeling and assumptions. Forrester's financial model for the composite organization assumes the following:

- The composite deploys OpenShift in a hybrid cloud environment, migrating VMs in its data centers and containers in legacy Kubernetes solutions in the cloud.
- The composite conducts a 1.5-month pilot requiring four FTEs (a mix of fully and partially dedicated resources).
- The composite conducts a one-month design and preparation phase requiring three FTEs (made up of partially dedicated resources).
- The composite conducts a 4.5-month deployment and migration phase requiring 15 FTEs (a mix of fully and partially dedicated resources).
- Roles involved include a mix of IT admins and DevOps engineers. The average fully burdened annual salary for these FTEs is $120,000.

Risks. The following variability and risk factors could alter or increase the amount of labor required to deploy OpenShift with the help of Red Hat Consulting:

- Internal team size, skill level, and capacity for implementation work.
- Desired breakdown of Consulting services versus internal labor.
- Selected OpenShift deployment model and infrastructure.
- Scale and complexity of deployment needed.
- Company-, industry-, and app-specific requirements for technology features, architecture, tool dependency, compliance, and security that may impact the time and cost of OpenShift deployment.
- Risk of technical debt, migration roadblocks, or other unexpected challenges.

Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $842,000.

4.5 months

Platform deployment and workload migration phase

1.5 months

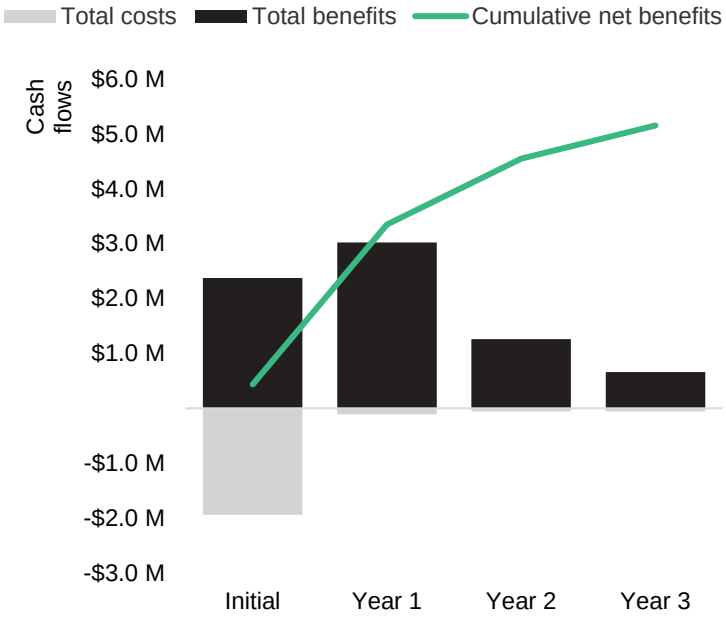
Length of OpenShift pilot

Internal Labor For Implementation			
Ref.	**Metric**	**Source**	**Initial**
I1	Months needed for pilot with Red Hat Consulting	Interviews	1.5
I2	Internal FTEs needed for pilot with Red Hat Consulting	Interviews	4
I3	Months needed for preparation with Red Hat Consulting	Interviews	1.0
I4	Internal FTEs needed for preparation with Red Hat Consulting	Interviews	3
I5	Months needed for migration with Red Hat Consulting	Interviews	4.5
I6	Internal FTEs needed for migration with Red Hat Consulting	Interviews	15
I7	Fully burdened annual salary for an IT admin and a DevOps engineer	Composite	$120,000
It	Internal labor for implementation	(I1*I2+I3*I4+I5*I6)*I7/12	$765,000
	Risk adjustment	↑10%	
Itr	Internal labor for implementation (risk-adjusted)		$841,500
	Three-year total: $841,500	**Three-year present value: $841,500**	

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 Analysis (Risk-Adjusted Estimates)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	($1,941,500)	($110,000)	($55,000)	($55,000)	($2,161,500)	($2,128,277)
Total benefits	$2,376,000	$3,023,765	$1,259,274	$659,000	$7,318,040	$6,660,716
Net benefits	$434,500	$2,913,765	$1,204,274	$604,000	$5,156,540	$4,532,439
ROI						213%
Payback period						<6 months

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."

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.

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.

APPENDIX B: SUPPLEMENTAL MATERIAL

Related Forrester Research

The Multicloud Container Platforms Landscape, Q2 2023, Forrester Research, Inc., June 21, 2023.

The Forrester Wave™: Multicloud Container Platforms, Q4 2023, Forrester Research, Inc., October 3, 2023.

Lee Sustar, et al., AI, Platforms, And Big Promises: Red Hat Summit Review, Forrester Blogs.

Getting Started With Kubernetes, Forrester Research, Inc., January 24, 2023.

Selecting Your Kubernetes Strategy, Forrester Research, Inc., April 27, 2023.

Best Practices: Kubernetes, Forrester Research, Inc., February 2, 2022.

Kubernetes: Your Innovation Platform, Forrester Research, Inc., March 7, 2023.

The ROI Of Kubernetes And Containers, Forrester Research, Inc., November 15, 2023.

Related Forrester Consulting Material

"The Total Economic Impact™ Of Red Hat OpenShift Cloud Services," a commissioned study conducted by Forrester Consulting on behalf of Red Hat, February 2024.

"The Total Economic Impact™ Of Red Hat OpenShift Platform Plus," a commissioned study conducted by Forrester Consulting on behalf of Red Hat, January 2023.

"The Total Economic Impact™ Of Red Hat Technical Account Managers," a commissioned study conducted by Forrester Consulting on behalf of Red Hat, March 2023.

APPENDIX C: ENDNOTES

[1] Source: Selecting Your Kubernetes Strategy, Forrester Research, Inc., April 27, 2023.

[2] Source: The Forrester Wave™: Multicloud Container Platforms, Q4 2023, Forrester Research, Inc., October 3, 2023.

[3] Source: Getting Started With Kubernetes, Forrester Research, Inc., January 24, 2023.

[4] 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.

[5] Source: Aswath Damodaran, Margins by Sector (US), New York University Leonard N. Stern School of Business, January 2024."

[6] Source: "The Total Economic Impact™ Of Red Hat Technical Account Managers," a commissioned study conducted by Forrester Consulting on behalf of Red Hat, March 2023.

[7] Source: "The Total Economic Impact™ Of Red Hat OpenShift Cloud Services," a commissioned study conducted by Forrester Consulting on behalf of Red Hat, February 2024.

[8] Source: "The Total Economic Impact™ Of Red Hat OpenShift Platform Plus," a commissioned study conducted by Forrester Consulting on behalf of Red Hat, January 2023.

[9] Source: Lee Sustar, et al., "AI, Platforms, And Big Promises: Red Hat Summit Review," Forrester Blogs.

[10] Source: Ibid.

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