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The Business Value of Standardizing on Red Hat Enterprise Linux

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Business Value Highlights

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$373,000 in average annual benefits per 100 VMs

313% three-year ROI

12-month payback period

34% reduction in Linux-based distributions

26% reduction in physical servers

32% reduction in three-year total cost of operations

34% more efficient IT infrastructure teams

33% more efficient security teams

48% faster on-premises virtual server deployment

46% quicker to complete security updates

43% quicker cloud-based virtual server deployment

Business Value Highlights (continued)

47% quicker to respond to security vulnerability

33% more productive developers

48% more applications developed per year

54% reduction in unplanned downtime

76% improvement in MTTR

19% more productive compliance teams

Executive Summary

Organizations continue to find themselves at odds with striking the balance between maintaining their Linux operating system environments and the workloads that they support, all while being stretched for time and resources. Making matters more complex is the proliferation of the cloud and next-generation workloads such as AI and ML. As a result, IT departments often find that their Linux environments have become quite unwieldy in terms of the number of distributions that require their support. This support generally includes day-to-day tasks such as provisioning, patching, and updating their Linux footprints and continuously monitoring them to make sure they are correctly configured, up to date, and secure. Automation capabilities have helped with this to an extent, but many organizations are still finding themselves struggling to integrate these capabilities across their fleet of operating systems.

This ultimately raises the question of why organizations do not standardize on a particular Linux distribution more often. In this Business Value white paper, we delve into organizations' Linux estates as they relate to their standardizations on the Red Hat Enterprise Linux (RHEL) operating system and the benefits they can expect to achieve by doing so. For the purposes of this study, we define RHEL "standardization" as an initiative undertaken by an organization to deploy more RHEL in its environments that increases the portion of its total deployments running the operating system to 50% or more.

IDC spoke with organizations that have standardized on RHEL between their on-premises and cloud infrastructure environments, with many running Red Hat Lightspeed, formerly known as Red Hat Insights, in tandem. They cited numerous benefits that they realized from their standardization efforts, including higher efficacies and efficiencies of their IT, developer, and security teams; improved oversight and risk management of their environments; better compliance; reduced downtime; faster go-to-market efforts; and better confidence in their infrastructures to support digital transformation efforts. Further, many of these operational benefits helped save staff time, which in turn allowed them to undertake net new projects thanks to these time savings.

IDC conducted research that explored the value and benefits for organizations standardizing on RHEL to simplify the deployment and management of Linux-based workloads and environments.

Based on an extensive data set and employing a specialized Business Value methodology, IDC calculates that these customers will achieve benefits worth an annual average of $26 million on a per-organization basis ($3.7 million per 100 VMs) and a three-year ROI of 313% by:

- Standardizing IT operations to Red Hat Enterprise Linux to simplify their VM management and the management of their Linux-based workloads
- Improving the overall performance and productivity of IT infrastructure, application development, and other teams
- Upleveling risk management profiles by improving overall security postures and the performance of security teams
- Improving application development operations to better support business operations
- Better managing business risk by reducing the impacts of unplanned downtime and optimizing regulatory compliance

Situation Overview

For various reasons, enterprises have continued to acquire and deploy a variety of operating systems in their IT environments over time, with technology demands and resulting market dynamics pointing toward Linux as the platform of choice for many of them. Given its open-source roots, Linux is relatively easy and, in many cases, free to acquire, and customers generally regard it as highly performant, scalable, secure, and flexible in terms of where it can be deployed and on what types of architectures and infrastructure platforms. For these reasons, organizations have understandably continued to deploy various Linux distributions in their environments as their workloads and use cases have demanded, which over time has caused them to accumulate quite a number of them.

While some might see this as convenient, IDC's research identifies an inherent cost by doing so in terms of their provisioning, configuring, management, and support. To make matters more complex, we regularly see organizations struggling to hire the Linux skill sets they need to operate and support their expanding fleet of distributions, which opens them up to further risk around security, compliance, and application downtime. This is just the tip of the iceberg. Additionally, as developers play an increasingly important role in enterprise strategy and decision-making, they stand to benefit by writing and testing code and deploying their applications on the same OS platform that they will use in production environments.

Simultaneously, businesses are ramping up their use of AI-powered applications and demanding operating systems that can fully support computationally intensive AI models and accelerated computing platforms. As predictive and generative AI workloads are more widely deployed, operating systems are required to dynamically optimize hardware acceleration, memory management, and data handling and include support for major accelerator hardware drivers and APIs. The open source community is helping to define a wide range of AI models, agents, APIs, and communication protocols, such as A2A and MCP. The rapid evolution of AI-optimized operating systems will create a number of operational challenges for organizations that want to quickly integrate these capabilities into their existing infrastructure operations and DevOps environments. This is where Red Hat comes into play. With over 30 years of experience in the infrastructure software space, Red Hat is a well-proven and trusted provider that is held in high esteem by customers.

With its flagship operating system Red Hat Enterprise Linux, customers can expect to enjoy benefits such as:

- Hardened, commercially available software that includes adaptations of the Linux kernel and further code additions and/or edits to ensure RHEL operates robustly, scales appropriately, and functions as expected regardless of deployment mechanism or environment
- 24 x 7 enterprise-grade customer support with OS scalability for mission- and business-critical enterprise applications as organizations continue to grow and develop their IT environments
- "Always on" security through built-in features such as live kernel patching and a trusted and secure software supply chain
- A performance-rich and consistent IT experience from the core to the cloud and to the edge that spans the spectrum of hardware architectures (x86 and non-x86, including Arm, IBM Power, IBM Z, and IBM LinuxOne)
- A predictable RHEL product road map and a 10-year support life cycle for each major version
- An extensive partner ecosystem of thousands of hardware, software, and services providers, including cloud service providers

Standardization on RHEL takes this one step further. By providing a singular Linux operating system environment to its users, organizations can provide a common platform across its IT, developer, and security functions that can unlock a variety of operational and business-related benefits, which this white paper details. Additionally, while excluded from our calculations, standardization on RHEL can combine with the use of other Red Hat products, such as Red Hat OpenShift and Red Hat Ansible Automation Platform, to further enhance both the current and future business outcomes that organizations desire.

Standardizing on RHEL Overview

This IDC Business Value study covers the following Red Hat products:

- **Red Hat Enterprise Linux:**
  Red Hat Enterprise Linux is Red Hat's flagship operating system product. Since the company first introduced it to the market over 30 years ago, RHEL has amassed a substantial customer installed base around the world and across the industry gamut. In fact, IDC's research frequently identifies RHEL as the most widely deployed commercial Linux server operating system, with roughly an 80% share within the market segment. Customers often choose RHEL given its long-standing and accomplished product history; deep levels of engineering, security, performance, and flexibility (in on-premises and public cloud environments as well as across a variety of x86 and non-x86 hardware architectures); and strong track record when it comes to customer support. For these reasons, it should be little surprise that RHEL is a frequently chosen operating system platform for organizations undergoing digital modernization and transformation efforts, particularly in support of next-generation workloads such as AI.

- **Red Hat Lightspeed:**
  Red Hat Lightspeed aims to improve risk management and streamline Linux administration across an organization's Red Hat environments. Bundled with the RHEL operating system, Red Hat OpenShift, and Red Hat Ansible Automation Platform, Red Hat Lightspeed combines predictive AI and generative AI to monitor system health, optimize security, simplify tasks, and troubleshoot issues. Red Hat Lightspeed proactively helps IT operations teams better manage their Linux environments by adding analytics and a centralized dashboard. It can also integrate with Red Hat Ansible Automation Platform's playbooks to better streamline and deliver automation capabilities across private, public, physical, and virtual infrastructures. Acting as an interactive assistant, Red Hat Lightspeed helps developers with automation and configuration while at the same time serving as an advisor for risk detection and security. Further, Red Hat Lightspeed can identify configuration mismatches and missing security patches that could otherwise lead to compliance issues. Its ability to look across private and public clouds as well as physical and virtual infrastructure instances gives Red Hat Lightspeed complete visibility into the enterprise landscape. Drawing from over 20 years of engineering experience, Red Hat Lightspeed can help address the skills gap problem by providing guidance designed to scale expertise across IT teams to better foster innovation while maintaining a reliable enterprise-grade Linux platform.

The Business Value of Standardizing on RHEL

Study Firmographics

IDC conducted research that explores the value and benefits for organizations that have standardized at least 50% of their Linux-based infrastructure on RHEL. The project included seven interviews with organizations that have standardized on RHEL and have experience with and/or knowledge about the benefits and costs of this standardization. During the interviews, IDC asked companies a variety of quantitative and qualitative questions about the offering's impact on their IT infrastructure operations, core businesses, and costs.

Table 1 (below) presents the study firmographics. The organizations that IDC interviewed had an average base of 111,643 employees and total average annual revenues of $68 billion. On average, these companies had IT teams of 9,177 staff members managing 1,848 business applications. Four companies had headquarters in the United States, and the remainder were in EMEA. The interviewees represented a variety of vertical markets, namely the financial services (2), healthcare (2), manufacturing (2), and telecommunications sectors.

Table 1

Firmographics of Interviewed Organizations

Firmographics	Average	Median	Range
Number of employees	111,643	80,000	16,000–250,000
Number of IT employees	9,177	9,000	42–20,000
Number of business applications	1,848	2,250	87–3,000
Annual company revenue	$68B	$41B	$2B–$281B
Countries	United States (4), EMEA (3)		
Industries	Financial services (2), healthcare (2), manufacturing (2), telecommunications		

n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

Choice and Use of RHEL

The organizations that IDC interviewed described the decision criteria involved in their selection of RHEL to simplify the deployment and management of Linux-based workloads and environments. They provided detailed comments about the key factors that informed their decision. Study participants discussed how having a large number of Java applications coupled with pressures to accelerate digital transformation was a major driver. Additional drivers were the need for infrastructure modernization and the desire for reduced costs. The interviewees cited the ability to rely on commercial support for an open-source OS as a strong determinant.

Study participants elaborated on their selection criteria:

Java applications (financial services):

"The amount of Java applications my organization had was the primary reason for needing to standardize on RHEL. We were also in the process of digital transformation and were using Fabric and OpenShift container platforms as well as Red Hat Ansible Tower. We really wanted to facilitate our DevOps pipeline, too."

Commercial support (financial services):

"The main reason for standardizing is the support we get from Red Hat. Being able to get commercial support for an open source OS and gain access to the enterprise-grade features and functionality provided by Red Hat is a big advantage."

Support for new technology (healthcare):

"The main reason to standardize on RHEL was its support for the newer technologies, which are disruptive technologies for better use cases and capacity. They offer strong cloud service provider support and end-user technical support, which was a big benefit. In addition, RHEL's road map is very active in terms of AI adoption, GenAI adoption, adaptability, and security."

Simplification (telecommunications):

"My organization decided to standardize on RHEL to simplify management and reduce maintenance overhead and costs. We needed to be able to swiftly meet security standards and execute timely patching."

Centralization (healthcare):

"The decision to standardize on RHEL came from the continued efforts to centralize and standardize as much as possible, across our technology organization, for operating, performance, and cost efficiencies."

Table 2 (below) provides a quantitative view of the organizational usage of RHEL across all companies at the time of interviews. On average, there were 831 physical servers in use with 5,198 on-premises VMs, both supporting 1,085 business applications. In addition, RHEL supported 63% of the total annual revenue in the survey base, indicating broad use of the platform. Table 2 presents additional metrics.

Table 2

Organizational Usage of RHEL

RHEL Environment	Average	Median
Physical servers	831	360
On-premises VMs	5,198	500
Cloud instances/cloud VMs	1,781	350
Business applications	1,085	350
Revenue supported	63%	80%

n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

Business Value and Quantified Benefits

IDC's Business Value model expresses the benefits for organizations using RHEL to simplify the deployment and management of Linux-based workloads and environments. IDC applied interview data from Red Hat customers to this model to arrive at an array of quantified post-deployment benefits. Using this methodology, IDC found that these customers realized significant value and were able to maximize their return on investment in the platform.

IDC's data shows that these companies were able to improve the overall performance and productivity of IT infrastructure, application development, and other teams. They also were able to uplevel their risk management profiles by improving overall security postures and the performance of security teams. Another key benefit related

to improving application development operations to better support business operations. Further, study participants found that after RHEL adoption, they could better manage business risk by reducing the impacts of unplanned downtime and optimizing regulatory compliance. IDC's quantified data sets show that all of these benefits combined to help these companies improve end-user productivity and contributed to better business results.

Study participants offered these comments on the most significant benefits of RHEL:

IT operations (healthcare):

"Since starting the process to standardize on RHEL, my organization is in a better negotiation position, receives strong technical support, and has achieved higher IT staff efficiency levels."

IT costs (financial services):

"My organization has reduced costs from standardizing on RHEL. There is less training cost with the standardized RHEL environment; training is more unified. We have also reduced licensing fees and optimized resource utilization."

Application development (telecommunications):

"Standardizing on RHEL has made a difference for developers in my organization because they don't have to learn several different platforms; they can develop once and deploy many. This process has provided simplification and time savings."

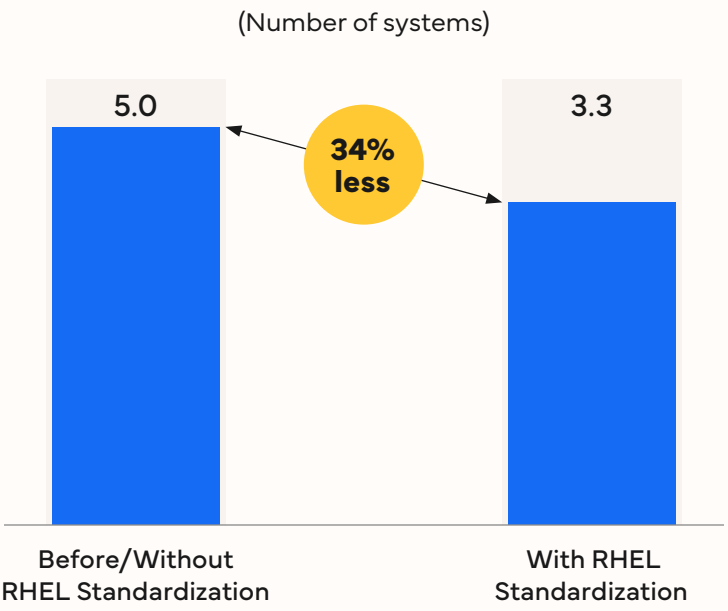
Business benefits (financial services):

"Standardizing supports revenue generation because most of the apps running on RHEL are customer-facing applications. We're a SaaS company, so it's the infrastructure for our revenue production."

Interviewed organizations noted additional benefits from the simplicity that came from standardizing on RHEL and reducing the number of Linux-based OSs in use by 1.7. Quite a few organizations noted that they expect this number to increase in the near term, as they were in the process of identifying — or had identified — OSs that they wish to retire. **Figure 1 (next page)** illustrates this 34% reduction.

Figure 1

Number of Linux-Based Operating Systems (Including RHEL)



n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

The rest of this paper will detail the specific IDC calculations of the cumulative customer benefits that interview participants achieved from standardizing on RHEL.

As shown in Figure 2 (next page), participants achieved significant average annual benefits of $26 million per organization ($373,000 per 100 on-premises and cloud-based VMs that are standardized on RHEL) in the following categories:

- **IT staff benefits:**
  This category of benefits comprises IT infrastructure, security, development, and software applications management team efficiencies.
  (Details on page 15)

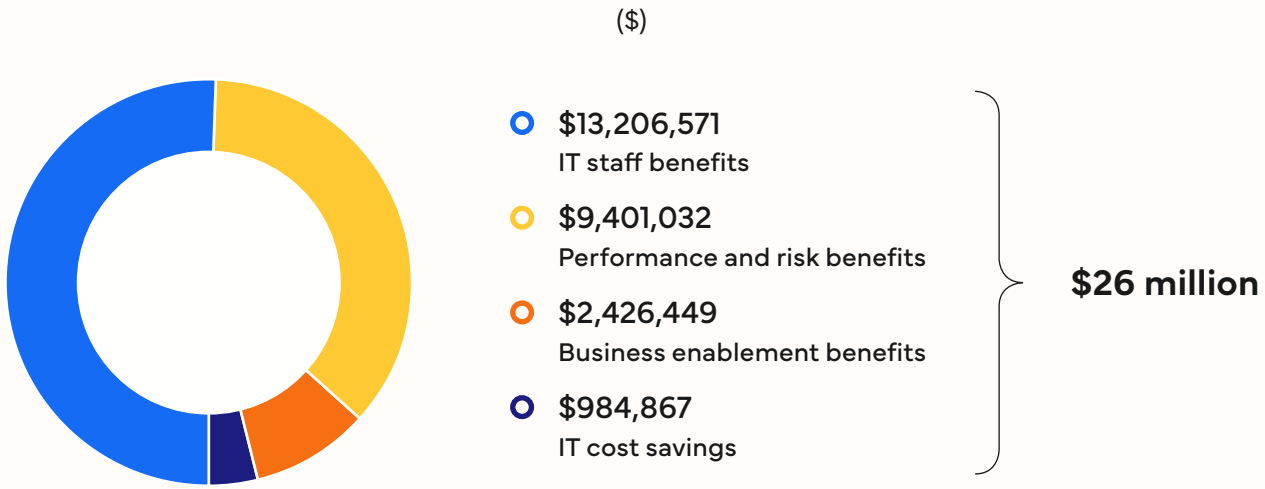
- **Performance and risk benefits:**
  Interviewed organizations significantly reduced the impact of unplanned downtime and increased the productivity of their compliance teams.
  (Details on page 23)

- **Business enablement benefits:**
  Study participants noted that standardization enabled them to gain a competitive edge in their operations that results in additional net revenue.
  (Details on page 27)
- **IT cost savings (ROI Summary):**
  Standardization enabled interviewed organizations to virtualize more services and increase virtualization density, resulting in IT cost savings.
  (Details on page 29)

Figure 2

Average Annual Benefits Per Organization

See Figure 2 data in an accessible table format.



n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

IT Staff and Cost Benefits of Standardizing on RHEL

As a next-generation cloud services platform, Red Hat designed RHEL to cost-effectively run any application or workload faster and more securely. Red Hat also designed the platform to accelerate enterprise workload migration while providing better reliability and performance for business-critical and other applications. Interviews with study participants broadly confirmed these and other aspects of RHEL's value proposition. In their detailed comments to IDC, interviewed companies validated that the platform served to simplify management while reducing overall system complexity. They also noted that it radically reduced the time required for patching while simplifying kernel modifications and centralizing policy controls. They further called out the value of automation, better scalability, and access to RHEL expertise.

Study participants elaborated on these benefits:

Simplified IT management (financial services):

"Standardizing on RHEL has simplified management, which has provided increased operational efficiencies by creating uniform systems and reduced complexities."

Easier patching and security controls (healthcare):

"Standardizing on RHEL has cut down on the massive time associated with patching and has given us better security controls. Kernel modifications, centralized controls for identifying policies, and access control have become much easier. We also use built-in tools to make authentication and authorization more simplistic. Insights, monitoring, and proactive management are also much easier for a single OS and platform. We have deployed automation for consistency and repetitive task management. Overall orchestration is easier."

Automation and scalability (financial services):

"Automation has definitely been an improvement. The resources to scale on demand have changed the way that we deploy applications and push applications to market, which is much faster. End users can create their accounts, for example, on mobile applications, in real time compared with the past, which involved some type of batch processing."

Strong support (financial services):

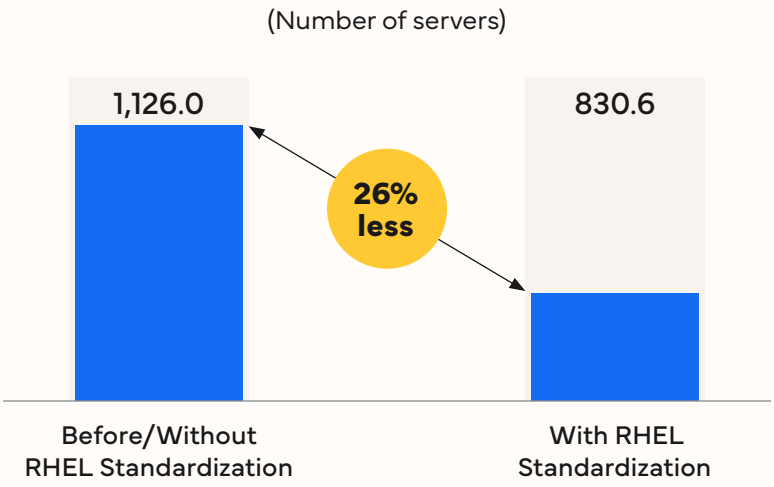
"My organization has taken advantage of the better automation capabilities that have come from standardizing on RHEL. In addition, it is easier to find RHEL experts when we need help. Standardization also helps with prepackaged software — most of those solutions have a RHEL image."

Patch and security automation (telecommunications):
"It takes less time to manage servers with the standardized RHEL because security and patch management are automated. A big benefit is that patching takes a fraction of the time that it used to take. It was a very manual process before we standardized on RHEL. There are also tools that help us select the necessary security patches rather than us having to manually do that work."

IDC validated these comments by quantifying benefits in a variety of key areas, starting with impacts on servers. Study participants reported that standardizing on RHEL helped interviewed organizations virtualize more servers and increase virtualization density **(Figure 3, below).** This meant reductions in physical server infrastructure and the associated costs, resulting in a 26% reduction and a three-year annualized savings of $984,867.

Figure 3

Physical Server Impact



n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

IDC also looked at post-adoption impacts on various IT teams. RHEL standardization increased the agility of IT infrastructure administration management teams by consolidating OSs, automating highly manual tasks such as scaling and provisioning, and decreasing the complexity of deployments. As a result, infrastructure teams spent 26% more time on business and infrastructure innovation. As one study participant

working in the financial services sector noted: *"Our IT teams have become much more efficient since we standardized on RHEL. There is less overhead; it's easier to turn off features and functionality at the operating system level that you are not using and strip it down to something that requires less hardware overhead."*

Table 3 (below) quantifies these benefits. After adoption, interviewed companies saw a 34% efficiency boost. This meant that interviewed organizations needed about 53 fewer FTEs to manage their IT environments, thereby allowing their staff to better scale with organizational growth. This improvement resulted in an annual business value of $5.3 million for each organization.

Table 3

Infrastructure Team — Administration and Management Efficiency Gain

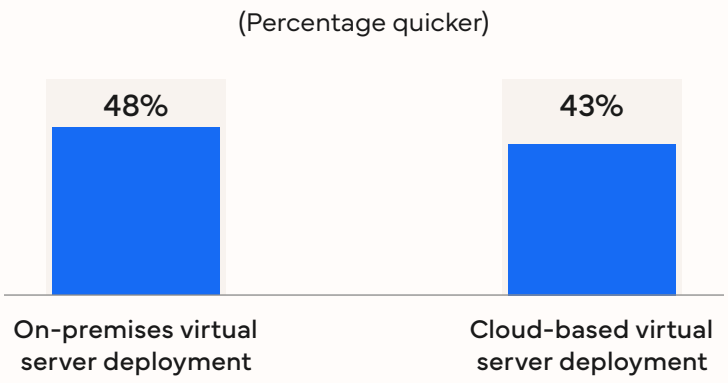
Efficiency Gain	Before/ Without RHEL Standardization	With RHEL Standardization	Difference	Benefit
Total FTE count	154.4	101.7	52.7	34% gain
Value of staff time per year	$15.4M	$10.1M	$5.3M	34% gain

n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

IDC then shifted the focus to server resource deployment. Study participants reported that the OS standardization that RHEL offered simplified the provisioning and scaling of resources, which greatly impacted the speed of on-premises/cloud deployments. To validate this, IDC developed granular performance data by identifying and measuring a series of key performance indicators (KPIs) associated with virtual server resource deployment. As shown in **Figure 4 (next page),** after standardizing on RHEL, on-premises virtual server deployment improved by 48%, and cloud-based deployment improved by 43%.

Figure 4

Deployment KPIs



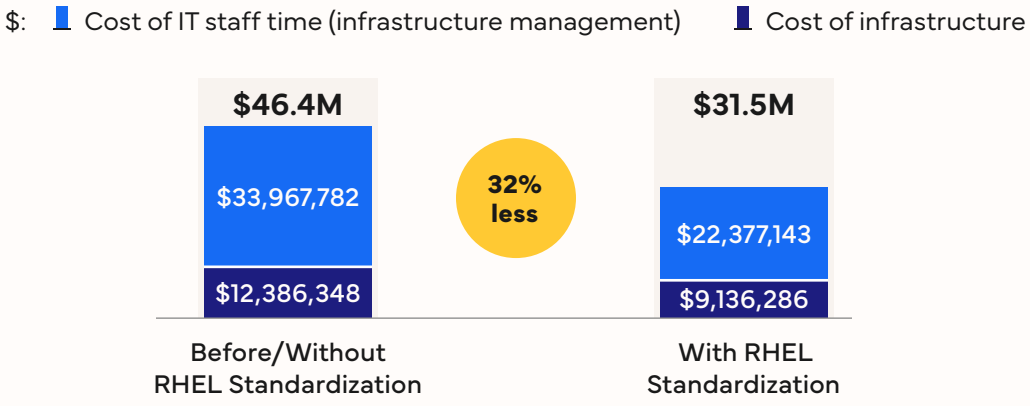
n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

IDC also looked at the cumulative cost of operations for surveyed organizations. These calculations factored in both IT staff management and IT infrastructure costs. As shown in **Figure 5 (below),** IDC calculated that, for interviewed companies, the total annual three-year cost of operations was 32% lower after the adoption of RHEL.

Figure 5

Total Three-Year Cost of Operations

See the figure data in an accessible table format.



n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

Security teams also experienced positive impacts. These teams benefited from RHEL standardization and Red Hat Lightspeed's automation of time-consuming tasks (i.e., patching, risk detection, and response). In addition, they also found that they were able to create consistent security policies because of the centralization of the environment. As one study participant working in the financial services market noted: *"My organization has found that standardizing on RHEL has been super easy to ensure the consistent deployment of things such as patches across all virtual machines. The automation tools that are available ensure the deployment of those patches on all instances with a consistent process. As a result, we can deliver those patches a lot faster."*

After adoption, interviewed companies saw a 33% efficiency gain **(Table 4, below).** This meant that interviewed organizations needed 27.4 fewer FTEs with RHEL standardization to manage the equivalent environment of their previous approach. This improvement resulted in an annual business value of $2.7 million for each organization.

Table 4

Security Team Efficiency Gain

Efficiency Gain	Before/ Without RHEL Standardization	With RHEL Standardization	Difference	Benefit
Total FTE count	81.9	54.6	27.4	**33% gain**
Value of staff time per year	$8.2M	$5.5M	$2.7M	**33% gain**

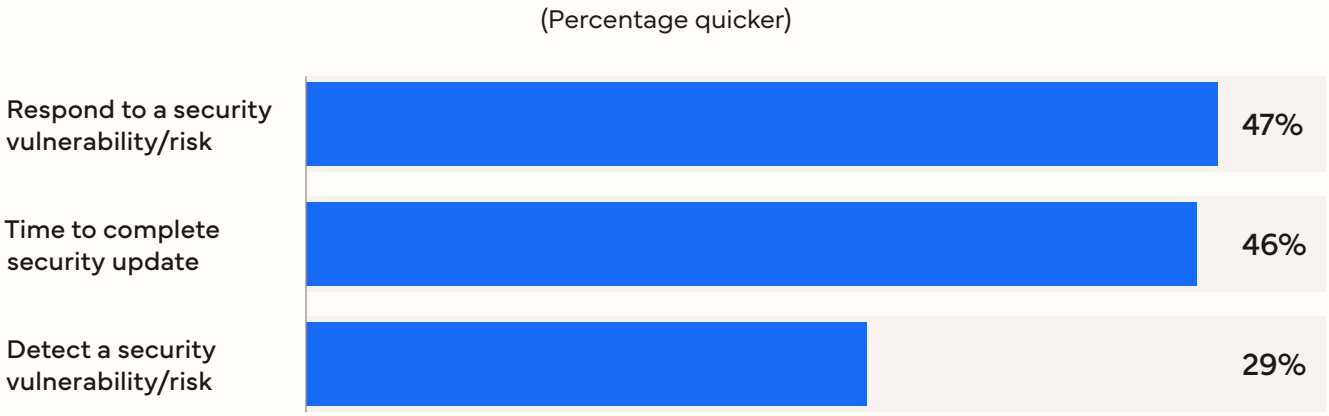
n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

IDC further evaluated these benefits by identifying and measuring a series of KPIs commonly associated with security operations. One comment from a study participant working in the manufacturing sector had particular relevance: "*Standardization on RHEL has helped my organization be more proactive in how we monitor our environment, especially with the tools that Red Hat provided. It's better when we are standardized because we achieve more uptime from proactive, real-time monitoring.*"

As shown in **Figure 6 (below),** after adoption, the greatest improvements were in responding to a security vulnerability/risk (47% faster), time to complete security update (46% faster), and detecting a security vulnerability/risk (29% faster).

Figure 6

Security KPIs



n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

IDC then shifted the focus to application development teams. Developers appreciated that they did not need to learn and become familiar with several different platforms when creating, scaling, provisioning, and deploying applications/features. As a result, they were able to be more agile and could create more Linux-based applications and features. As one study participant working in the financial services market noted:

"Standardization on RHEL has given my organization more agility and the ability to innovate. Our standardized environment allows us to adopt and integrate new technologies with more ease. We have had major cloud deployments, and this has helped us improve our collaboration and our ability to foster a DevOps culture."

After adoption, interviewed companies saw a 33% productivity increase **(Table 5, next page).** To put it differently, teams of 228 developers could now work at the equivalent productivity level of having 76 additional FTEs. This resulted in an annual productivity-based business value of $7.6 million for each organization.

Table 5

Development Team Productivity Gain

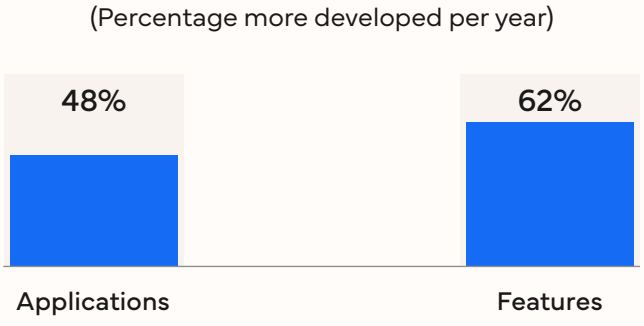
Productivity Gain	Before/ Without RHEL Standardization	With RHEL Standardization	Difference	Benefit
Equivalent productivity level, FTEs	228.3	304.5	76.2	33% gain
Value of staff time per year	$22.8M	$30.4M	$7.6M	33% gain

n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

Continuing to look at developer impacts, interviewed companies reported that the simplification from standardization enabled developers to create significantly more applications and features annually. As one study participant working in the telecommunications market noted: *"When my organization standardized on RHEL, there was a big difference for our developers. They don't have to learn several different platforms. This enables them to develop once and deploy many times. It has really provided simplification and time savings."* **Figure 7 (below)** shows application development KPIs indicating that standardization on RHEL allowed for the development and release of48% more applications, accompanied by a 62% increase in features for those applications.

Figure 7

Application Deployment KPIs

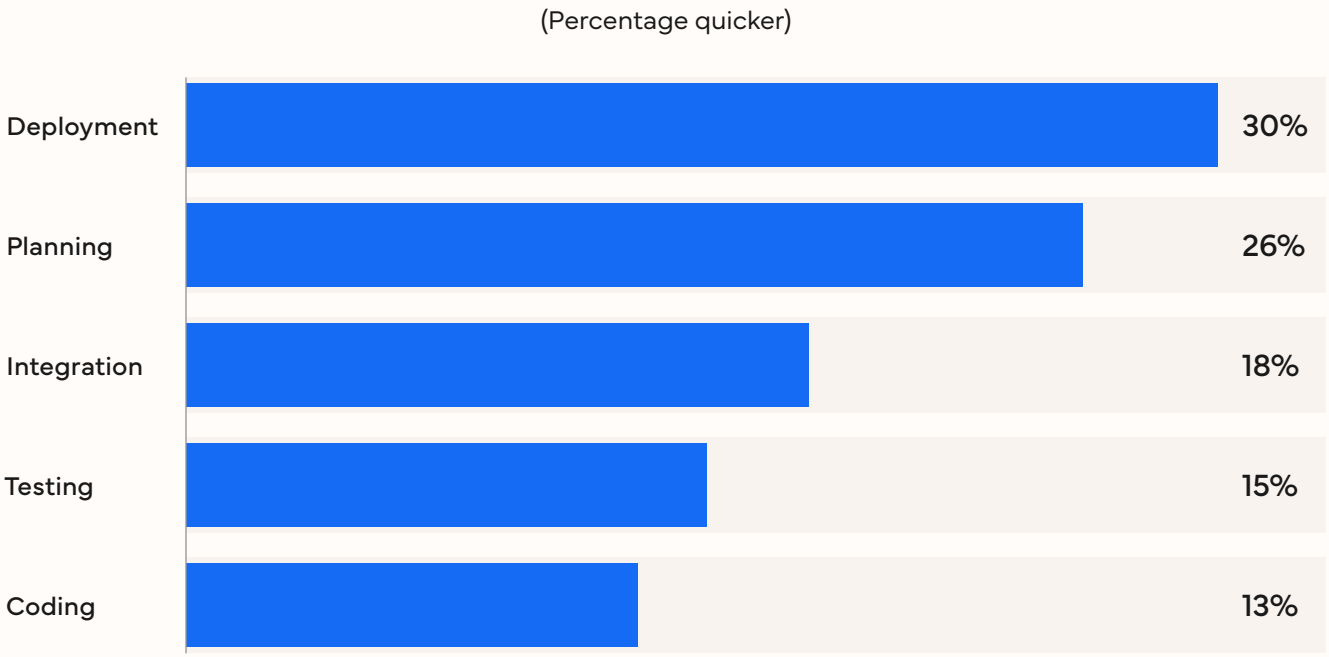


n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

Interviewed companies additionally reported that standardizing on RHEL enabled developers to work with greater speed, especially when planning and deploying applications. One study participant working in the healthcare market offered this observation: *"The orchestration from standardization makes it easy to deploy Kubernetes, OpenShift, and scale applications. It is easier because of the containerization and microservices support from RHEL. Also, you can get to the root cause much faster because RHEL supports various programming languages and tools. It's also much easier to standardize coding, which helps reduce time. RHEL does a nice job with overall support and enhancements. They are streamlined."* **Figure 8 (below)** presents additional development KPIs. The greatest improvements in speed and responsiveness were in deployment (30%), planning (26%), and integration (18%).

Figure 8

Security KPIs



n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

Continuing with application development impacts, interviewed organizations noted that those charged with managing software applications and configurations found that it was 93% faster to complete change/configuration to production applications. As one study participant working in the financial services market noted: *"A great aspect of standardizing on RHEL is that it only takes minutes to complete a change or configuration to a production application; it is all automated."* After adoption, interviewed companies saw a 14% productivity enhancement, resulting in an annual productivity-based business value of $2.3 million for each organization **(Table 6 below).**

Table 6

Software Application Management Team Productivity Gain

Productivity Gain	Before/ Without RHEL Standardization	With RHEL Standardization	Difference	Benefit
Equivalent productivity level, FTEs	165.8	189.6	23.8	14% gain
Value of staff time per year	$16.6M	$19.0M	$2.4M	14% gain

n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

Performance and Risk Benefits from Standardizing on RHEL

In the current environment, a major challenge for companies in a variety of vertical industries relates to risk management. This typically encompasses two critical areas: regulatory compliance and the avoidance of unplanned downtime, the second of which can drain productivity and radically impair market response. Interviewed companies reported that the enhanced system performance that their standardization on RHEL offered was a significant factor in the ability to minimize and mitigate productivity disruption resulting from unplanned downtime events and also referenced compliance benefits.

In their detailed conversations with IDC, study participants more specifically discussed how their organizations benefited from significantly less turnaround time to resolve

revenue-impacting downtime issues and having fewer compliance and regulatory concerns. They also reported fewer occasions of security controls being breached.

Study participants explained:

Quicker issue resolution (healthcare):
"In standardizing on RHEL, my organization has achieved lower overall cost of support and improved KPIs. There is far less turnaround time to resolve issues and fewer compliance and regulatory issues."

Fewer incidents (healthcare):
"Standardization has helped in monitoring and automation orchestration, so deployments are faster. There are fewer issues, so fewer incidents. There are also fewer occasions of security controls being breached, so fewer alerts, too."

Less revenue-impacting downtime (telecommunications):
"Since my organization has standardized on RHEL, we've gained revenue back by lowering the downtime. This is a direct benefit to the sales channel and contact center. We are probably gaining back revenue of $1 million–$2 million per year."

To fully evaluate this benefit category, IDC first looked at impacts on unplanned downtime. Interviewed organizations confirmed that standardization on RHEL created an environment that was easier to manage, patch, and update. As a result, unplanned downtime outages occurred less frequently, and outages took far less time to resolve. For interviewed companies, this enabled greater end-user productivity levels.

IDC calculated a substantial reduction in the annual frequency of downtime events, declining from 15 to 6.9, a reduction of 54% **(Table 7, next page).** In addition, the time required to resolve downtime events when they did occur reduced by 76%. Considered together, these two improvements enabled greater end-user productivity levels (89%), translating into an annual business value of lost productive time of $11.1 million. Table 7 presents additional granular metrics.

Table 7

Unplanned Downtime — End-User Impact

Impact	Before/ Without RHEL Standardization	With RHEL Standardization	Difference	Benefit
Number of outages per year	15.0	6.9	8.1	54% reduction
MTTR, hours	10.0	2.4	7.6	76% reduction
Users impacted by downtime	5,063	5,063	N/A	N/A
% of productivity loss factor	44%	44%	N/A	N/A
Productivity loss per organization per year in FTEs	178.1	19.74	158.4	89% reduction
Value of lost productive time per year	$12.5M	$1.4M	$11.1M	89% reduction

n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

IDC then examined revenue impacts from these improvements in unplanned downtime. As a result of standardization on RHEL, interviewed organization significantly reduced the revenue impact of outages. Using data from **Table 8 (next page),** IDC calculated the total revenue loss value per organization at $8.8 million. After applying an operating margin of 15%, IDC modeled this revenue loss avoidance value at $1.3 million per organization.

Table 8

Unplanned Downtime — Revenue Impact

Impact	Before/ Without RHEL Standardization	With RHEL Standardization	Difference	Benefit
Number of outages per year	15	6.9	8.1	**54%**
Percent of outages impacting revenue	39%	39%	N/A	N/A
Revenue loss per outage	$1.7M	$499,167	$1.2M	71%
Total revenue loss value per organization	**$10.1M**	**$1.3M**	**$8.8M**	**87%**
Total revenue loss value, IDC model	**$1.5M**	**$202,323**	**$1.3M**	**87%**

n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

Compliance teams also recognize positive impacts from RHEL standardization. As the result of having a less complex and more resilient and consistent Linux environment, compliance teams could demonstrate that interviewed organizations met regulatory demands with greater ease and accuracy. **Table 9 (next page)** these benefits. After adoption, interviewed companies saw a 19% gain in productivity. This resulted in an annual productivity-based business value of $417,182 for each organization.

Table 9

Compliance Team Productivity Gain

Productivity Gain	Before/ Without RHEL Standardization	With RHEL Standardization	Difference	Benefit
Equivalent productivity level, FTEs	31.8	37.7	6.0	19% gain
Value of staff time per year	$2.2M	$2.6M	$417,182	19% gain

n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

Business Enablement Benefits of Standardizing on RHEL

The final evaluation area that IDC addressed relates to business enablement benefits. Interviewed companies reported that the benefits they experienced from adopting RHEL fostered improved business operations and results. IDC found that this linked directly to both enhanced IT infrastructure and OS performance and IT team and specialized team benefits, as described in this white paper.

In general, companies attained higher revenue by better addressing business opportunities. They reported specific benefits to their organizations, including an increase in end-user efficiency with a customer-facing standardization process that better supported revenue generation. They pointed out that, since standardizing on RHEL, the business side was more agile in their ability to meet customer requirements, and as a result, this increased the overall speed to market for products and services.

Study participants elaborated on these benefits:

Increased end-user efficiency (financial services):

"Most of our applications that are running on RHEL are customer facing, so this standardization process has supported revenue generation. We're a SaaS company, so it's the infrastructure for our revenue production."

More agility to meet demands (healthcare):
"My organization is much more agile since standardizing on RHEL. We can meet organization and customer demands much faster."

Faster to go to market (financial services):
"A standardized platform makes it easier for everyone in my organization. We have achieved faster development, which makes us faster to go to market. It's a competitive advantage."

Quick go-to-market deployments (telecommunications):
"Standardization on RHEL is good for the business because we can introduce changes and new features faster. The overall deployment and change cycle time is shorter. So, it's a shorter time to market for applications."

IDC validated these anecdotal observations by quantifying revenue increases. Interviewed organizations found that standardizing on RHEL provided a competitive edge to their operations by enabling innovation, agility, and reduced time to market. **Table 10 (below)** shows total business enablement revenue improvements. On a per organization basis, IDC's calculations for revenue recognized from business enablement amounted to $22.1 million in total additional gross annual revenue. Additionally, IDC's financial model applies a 15% operating margin assumption, resulting in net revenue gains of an average of $3.3 million per interviewed organization.

Table 10
Business Enablement — Higher Revenue

Revenue	Per Organization	Per 1,000 VMs
Total additional gross revenue per year	**$22.1M**	**$3.2M**
Assumed operating margin	15%	15%
Total additional net revenue, IDC model	**$3.3M**	**$474,097**

n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

ROI Summary

Summing up the financial and business-related benefits presented for study participants' standardization on RHEL, IDC calculated the average return on investment. As shown in **Table 11 (below),** IDC projects that these companies will achieve three-year discounted benefits worth an average of $60 million per organization through better IT management, enhanced staff efficiencies, improved risk management, and improved business results. These benefits compare with total three-year discounted costs of $14.5 million per organization. IDC projects these levels of benefits and investment costs to result in an average three-year ROI of 313% and a payback period of 12 months.

Table 11

Three-Year ROI Analysis

ROI Analysis	Per Organization	Per 1,000 VMs
Discounted benefits	$60.0M	$8.6M
Discounted investment	$14.5M	$2.1M
NPV	$45.5M	$6.5M
ROI	**313%**	**313%**
Payback	**12 months**	**12 month**
Discount factor	12%	12%

n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

Challenges/Opportunities

In light of these business value results, Red Hat (as well as other commercial Linux suppliers) still routinely face a number of challenges. That said, by strategically positioning its offerings and highlighting its key differentiators, Red Hat can overcome these marketplace challenges and take advantage of the opportunity that exists.

These key challenges and opportunities include:

- **Challenge: A variety of other Linux alternatives are still accepted and commonly used.** Respondent organizations that were part of this Business Value study ran an average of five Linux distributions before undergoing their standardization efforts, and they ran an average of 3.3 distributions after standardizing, which are figures that exclude these other types of operating system platforms. Other IDC research finds that these pre-standardization counts of Linux distributions that were running in respondents' environments are largely consistent with organizations' operating system footprints at large, with the most frequently cited reasons for maintaining multiple platform types being repeated and often failed prior standardization attempts, business unit silos, M&A activity, shadow IT, and distributed workload strategies. Additionally, we find that many of these organizations can be hesitant to make changes to their operating system environments for fear of application incompatibilities and associated downtime after making changes and for lack of time and skill sets needed to do so.

- **Opportunity: Offer additional value beyond operating system standardization.** Red Hat offers many additional products and benefits for customers beyond RHEL. The company also offers a variety of other software ecosystem products that can combine with RHEL, such as Red Hat OpenShift and Red Hat Ansible Automation Platform, which can act as additional force multipliers when it comes to IT and developer productivity. RHEL is the foundational operating system that Red Hat OpenShift and Red Hat Ansible Automation Platform can run on top of. Additionally, the benefits that RHEL customers can expect by partnering with Red Hat (for example, access to hardened commercial code, 24 x 7 support, well-defined product road maps, and long product life cycles) can extend to Red Hat OpenShift and Red Hat Ansible Automation Platform customers. Organizational decision-makers should also note that the company continues to invest in and innovate around AI, with offerings such as Red Hat OpenShift AI and RHEL AI.

- **Challenge: The commoditization of server operating system products continues.** The enterprise server operating systems market continues to be commoditized by free options, most of which are Linux variants. This includes when cloud service providers develop their own offerings that they include and support with other as-a-service offerings.

- **Opportunity: Showcase what differentiates RHEL.** Red Hat is one of the market's most well-established players in the commercial open source software space since its founding over 30 years ago. Since then, it has continuously proven its leadership with a strong track record when it comes to its agility, flexibility, and compatibility in meeting customer demands in an ever-changing IT landscape. Further, it is one of a small handful of vendors that can combine its long-standing technical expertise with a deep product portfolio and the levels of support needed to create a fully cross-platform experience, which is a noteworthy differentiator for the company. It is important to note that most organizations' IT environments span a variety of deployment types (on premises, private cloud, public cloud, hybrid cloud, multicloud, and edge) and workload environments (bare metal, virtual machines, and containers) — all of the above, in some cases. As technology demands continue to evolve and necessitate the use of more of these deployment scenarios and mechanisms, such as those listed, Red Hat is one of the few providers that can feasibly address all of them. By comparison, free/nonpaid Linux distributions often lack the technical capabilities, certifications, and/or support that organizations require, while distributions developed by cloud service providers are often limited to the specific vendor platforms and services they were designed to support, which inherently can create lock-in.

Conclusion

Over time, organizations have continued to acquire various Linux distributions in their IT environments to meet their ever-changing workload and business demands. As their footprints have continued to grow and have become more technically complex, many find themselves struggling to maintain their Linux environments in terms of securing them and keeping them patched and updated between their on-premises datacenters and the cloud, all while controlling costs. Our research shows that for many of them, this "just in time" framework is not working as they are routinely understaffed, underskilled, and underfunded while doing so. Instead, we show that they stand to benefit from Linux standardization on Red Hat Enterprise Linux as the foundational layer for their current and future IT initiatives.

This IDC Business Value white paper quantifies the benefits that businesses can expect to achieve by standardizing on RHEL, which, for the organizations we surveyed, resulted in an average annual value of $26 million per organization and a three-year ROI of 313%. This study further defines and breaks down these figures into IT staff benefits, performance and risk benefits, business enablement benefits, and IT cost savings categories, with each benefit category showing significant results. By partnering with Red Hat and standardizing on RHEL, other customers also likely can expect to achieve these types of benefits on a similar scale.

Appendix 1: Methodology

Table 12 (below) presents a summary of IDC's Business Value calculations.

Table 12

Specific Calculations: Benefits from Standardizing on RHEL

Category of Value	Average Quantitative Benefit	15% Margin Applied	Calculated Average Annual Value*
Virtualization server impact	$984,867 in three-year annualized cost reductions	No	$984,867
Infrastructure team — administration and management efficiency gain	34% more efficient, worth 52.7 FTEs, $100,000 salary	No	$3.9M
Security team efficiency gain	33% more efficient, worth 27.4 FTEs, $100,000 salary	No	$2M
Development team productivity gain	33% higher productivity, worth 76.2 FTEs, $100,000 salary	No	$5.6M
Software application management team productivity gains	14% higher productivity, worth 23.8 FTEs, $100,000 salary	Yes	$1.7M
Unplanned downtime, end-user benefit	87% productivity loss avoidance, worth 158.4 FTEs, $70,000 salary	No	$8.1M
Unplanned downtime, revenue benefit	87% revenue loss avoidance, worth $1.3M	Yes	$964,080
Compliance team productivity gain	19% higher productivity, worth 6 FTEs, $70,000 salary	No	$305,933

Table 12 continued next page

Appendix 1: Methodology (continued)

Table 12 continued

Category of Value	Average Quantitative Benefit	15% Margin Applied	Calculated Average Annual Value*
Business enablement — higher revenue	$3.3M in additional net revenue	Yes	$2.4M
Total average annual benefits	**$26M per organization per year**		

*includes 10.6 months deployment time in year 1
n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

IDC used its standard ROI methodology for this project. This methodology is based on gathering data from current users of RHEL as the foundation for the model.

Based on interviews with organizations using RHEL, IDC performed a three-step process to calculate the ROI and payback period:

1. **Gathered quantitative benefit information during the interviews using a before-and-after assessment of the impact of RHEL.** In this study, the benefits included IT cost reductions and avoidances, staff time savings and productivity benefits, and revenue gains.
2. **Created a complete investment (three-year total cost analysis) profile based on the interviews.** Investments go beyond the initial and annual costs of using RHEL and can include additional costs related to migrations, planning, consulting, and staff or user training.
3. **Calculated the ROI and payback period.** IDC conducted a depreciated cash flow analysis of the benefits and investments for the organizations' use of RHEL over a three-year period. ROI is the ratio of the net present value and the discounted investment. The payback period is the point at which cumulative benefits equal the initial investment.

Appendix 1: Methodology (continued)

IDC bases the payback period and ROI calculations on a number of assumptions, which are summarized as follows:

- Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and productivity savings. For the purposes of this analysis, IDC has used assumptions of an average fully loaded salary of $100,000 per year for IT staff members and an average fully loaded salary of $70,000 per year for non-IT staff members. IDC assumes that employees work 1,880 hours per year (47 weeks x 40 hours).
- The net present value of the three-year savings is calculated by subtracting the amount that would have been realized by investing the original sum in an instrument yielding a 12% return to allow for the missed opportunity cost. This accounts for both the assumed cost of money and the assumed rate of return.
- Further, because RHEL requires a deployment period, the full benefits of the solution are not available during deployment. To capture this reality, IDC prorates the benefits on a monthly basis and then subtracts the deployment time from the first-year savings.

Note: All numbers in this document may not be exact due to rounding.

Appendix 2: Accessible Data Tables

This appendix provides an accessible version of the data for any complex figures in this document. Click "Return to figure" to get back to the original figure.

Figure 2 Accessible Data

Average Annual Benefits Per Organization

Benefits	$ Per Interviewed Organization
IT staff benefits	$13,206,571
Performance and risk benefits	$9,401,032
Business enablement benefits	$2,426,449
IT cost savings	$984,867
Total	**$26 million**

n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

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Figure 5 accessible data

Total Three-Year Cost of Operations

Cost of Operations	Before/ Without RHEL Standardization	With RHEL Standardization
Cost of IT staff time (infrastructure management)	$33,967,782	$22,377,143
Cost of infrastructure	$12,386,348	$9,136,286
Total	**$46.4M**	**$31.5M**
Difference	**32% less**	

n = 7; Source: IDC Business Value In-Depth Interviews, July 2024

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About the IDC Analysts

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Ryan Caskey is Research Manager within IDC's worldwide infrastructure research organization and part of the infrastructure software platforms practice. Ryan covers a variety of infrastructure hardware and software markets including server operating systems, storage software, converged and hyperconverged infrastructure, purpose-built backup appliances (PBBA) and magnetic tape systems. Ryan has functional ownership of key systems infrastructure software markets in IDC's Software Tracker and provides data quality checks for IDC's Enterprise Infrastructure Trackers. He takes keen interest in technology and industry trends that impact IT investments in on-premises and cloud infrastructure. Ryan has particular interest in the open source developer community. He also oversees IDC's BuyerView operations. In his role, he acts as a liaison to the BuyerView partner analyst team for data analytics needs. He also provides data-driven insights using advanced analytics techniques to support quarterly and annual reporting.

More about Ryan Caskey →

Megan Szurley

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Megan Szurley is manager for the Business Value Strategy practice, responsible for creating custom business value research that determines the ROI and cost savings for enterprise technology products. Szurley's research focuses on the financial and operational impact of these products for organizations once deployed and in production. Prior to joining the Business Value Strategy practice, Szurley was a consulting manager within IDC's Custom Solutions division, delivering consultative support across every stage of the business life cycle: business planning and budgeting, sales and marketing, and performance measurement. In her position, Szurley partners with IDC analyst teams to support deliverables that focus on thought leadership, business value, custom analytics, buyer behavior, and content marketing. These customized deliverables are often derived from primary research and yield content marketing, market models, and customer insights.

More about Megan Szurley →

Message from the Sponsor

Red Hat's proprietary research has shown that more than 50% of RHEL customers are supporting multiple different Linux distributions.

This study validates the opportunity for those customers to save time and money by reducing the number of distributions they need to support by standardizing on RHEL.

Learn more

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