The Business Value of VMware Cloud Foundation

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Executive Summary

Cloud computing has become the de facto platform for innovation. The ability to quickly provision resources, scale on demand, and deploy globally has changed how enterprises build, manage, and secure applications.

Think of the cloud as an operating model, not a location. In addition to hyperscale datacenters, cloud platforms are increasingly deployed on premises, in colocation facilities, and in edge locations such as factories, warehouses, and retail stores. The ubiquitous nature of the cloud is the foundation for both traditional enterprise software and AI-enhanced modern applications.

IDC assessed VMware Cloud Foundation's impact by interviewing organizations using it to establish and run private and hybrid clouds. Interviewed VMware customers described benefiting from having a more flexible and high-performing IT infrastructure with VMware Cloud Foundation, which also optimizes direct infrastructure costs and staff time required to manage, secure, and support the infrastructure.

Based on interviews, IDC calculates that interviewed organizations will realize benefits worth an annual average of $111,100 per 100 VMs ($16.8 million per organization) by doing the following:

- **Enabling organizations to establish flexible hybrid and multicloud environments** that optimize spending on IT infrastructure and reduce their hardware footprints
- **Facilitating significant efficiencies for IT infrastructure and security teams,** which increases their productivity levels and allows for a focus on strategic IT and business initiatives
- **Facilitating more agile and effective development activities** by minimizing infrastructure-related friction and choke points affecting development processes, thereby increasing overall development throughput and aligning development activities with business objectives
- **Increasing overall business productivity** through faster deployment of IT resources and applications, improved application performance and availability, and enhanced security and compliance in a complex threat landscape

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BUSINESS VALUE HIGHLIGHTS

564%
three-year ROI

10 months
to payback

34%
lower infrastructure costs

53%
infrastructure team efficiencies

52%
security team efficiencies

42%
lower three-year cost of operations

61%
faster to deploy new VMs

6%
higher net developer productivity

98%
less unplanned downtime

Situation Overview

The introduction of cloud computing sought to simplify application development and deployment. Instead of managing the complexities of the underlying infrastructure, developers and IT professionals could focus on adding value to the business. In fact, many cloud providers envisioned a future where all workloads would migrate to hyperscale datacenters.

Today, most enterprises will agree that the cloud is anything but simple. Infrastructure has become more distributed and complex. Private clouds — where a single organization manages the computing resources — remain relevant, and these environments are increasingly integrated with public cloud infrastructure to create hybrid clouds. In many industries, clouds have even been extended to remote edge locations to solve local performance and security issues.

Organizations are realizing that the public cloud is not always the right choice for every workload. Two-fifths of respondents to IDC's recent *U.S. Cloud Migration Survey* indicated that they performed or initiated repatriation of workloads from public cloud to dedicated environments in 2023, and 42% said they plan to repatriate some workloads in 2024. Security, data privacy, cost management, and performance are the top reasons companies engage in repatriation activities.

To address evolving infrastructure needs, IDC predicts that by 2025, 75% of organizations will favor technology partners that can provide a consistent application deployment experience across cloud, edge, and dedicated environments (see *IDC FutureScape: Worldwide Cloud 2023 Predictions,* IDC #US48602322, October 2022).

VMware Cloud Foundation Overview

VMware Cloud Foundation is a full-stack, private cloud platform that supports digital transformation initiatives by enabling organizations to accelerate developer productivity, and embracing cloud-native and AI technologies to deliver apps and services to market faster.

Offering a robust and reliable solution for private cloud deployment, VMware Cloud Foundation streamlines resource management and accelerates innovation, reducing technological debt and increasing operational efficiency for customers.

The Cloud Foundation platform aims to address three key areas:

- **Modern infrastructure:** VMware Cloud Foundation is crucial in transforming traditional IT infrastructures into a more agile and adaptable private cloud environment. This transformation is key to enabling organizations to deploy core private cloud use cases that deliver strategic outcomes, lower ownership costs, and increase productivity. VMware Cloud Foundation provides organizations with a uniform infrastructure layer that results in a consistent cloud operating model across cloud endpoints, combined with automation and orchestration to standardize and simplify the entire infrastructure life cycle, including day 0 deployment, day 1 provisioning, and day 2 patching and updates.
- **Cloud experience for developers:** To keep continuous development pipelines running at peak efficiencies, it's critical to ensure that developers have frictionless access to application code, infrastructure services, runtime environments, system tools, libraries, and registries. VMware Cloud Foundation includes an embedded, upstream-compliant Kubernetes runtime via Tanzu Kubernetes Grid, combined with the Cloud Consumption Interface and a set of infrastructure and automation services, including infrastructure as code, software configuration management, and infrastructure pipelines.
- **Security and resilience:** VMware Cloud Foundation provides a consistent, secure platform with the ability to extend the security architecture even further with intrusion detection and recovery, addressing key challenges such as ransomware threats, disaster scenarios, and the need for advanced security architectures.

As a complete cloud platform, VMware Cloud Foundation provides a set of software-defined services for compute, storage, network, container, and cloud management:

- **VMware Cloud Foundation Infrastructure Stack** incorporates VMware's industry-leading infrastructure solutions — vSphere for compute, vSAN software-defined storage, and NSX software-defined networking.
- **SDDC Manager** automates the installation, operation, and life-cycle management of the SDDC stack, thereby streamlining the deployment, configuration, and update processes.
- **Management and Orchestration** delivers comprehensive operations, automation, and analysis across the full-stack infrastructure platform.
- **Hybrid Cloud Extension** enables seamless migration, workload rebalancing, and disaster recovery across private, edge, and public clouds.

VMware Cloud Foundation delivers a unified and automated platform, simplifying the deployment of a fully integrated infrastructure-as-a-service stack. Enabling consistent, secure, and agile operations across private and public clouds, VMware Cloud Foundation

ensures that organizations can flexibly scale their infrastructure to meet evolving business needs. It consolidates disparate functions into a single, integrated platform, significantly reducing the complexity and overhead typically associated with private cloud deployments.

The Business Value of VMware Cloud Foundation

Study Firmographics

Table 1 presents the firmographics of the VMware customers interviewed for this study. IDC designed the interviews, which were in-depth in nature, to understand the impact of the use of VMware Cloud Foundation for VMware customers in quantitative and qualitative terms. The study sample included mostly large, enterprise-level organizations, with an average number of employees of 58,731 (median of 34,000) and an average annual revenue of $11.73 billion (median of $7.83 billion). Study participants were based in North America (3) and several Europe, the Middle East and Africa (EMEA) markets, namely the United Kingdom (2), France, the Netherlands, and Switzerland. They shared their experiences of using VMware Cloud Foundation from the perspective of diverse industry verticals, namely the healthcare (2), banking, government, higher education, IT services, retail, and telecom sectors. For additional information about the study participants, please see **Table 1.**

TABLE 1

Firmographics of Interviewed Organizations

	Average	Median
Number of employees	58,731	34,000
Number of IT employees	1,358	650
Number of business applications	1,141	700
Annual revenue	$11.73B	$7.83B

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Countries	United States (3), United Kingdom (2), France, the Netherlands, Switzerland
Industries	Healthcare (2), banking, government, higher education, IT services, retail, telecom

n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

Choice and Use of VMware Cloud Foundation

Study participants described varied reasons for choosing VMware Cloud Foundation as their core IT platform for their VMware-based private and hybrid cloud environments, but they focused on its strong functionality, ability to centralize core operations, and inherent flexibility. They realized they needed to establish more efficient and flexible IT infrastructures to run their core business activities but struggled to define and standardize their IT environments. They saw VMware Cloud Foundation as the missing piece in allowing them to establish and maintain robust, efficient, and high-performing infrastructures that would provide the performance, flexibility, and cost-effectiveness they would require going forward.

Interviewed VMware customers provided specifics about their decision criteria:

Centralized IT and VMware environments, stronger IT platform for business (EMEA Healthcare):

"Prior to VMware Cloud Foundation, we were split over three separate geographical locations, and we had four separate VMware environments … We wanted to bring together those separate environments, introduce site resiliency, and make our IT into a stronger platform."

Core component of IT modernization (North America Government):

"We deployed VMware Cloud Foundation as part of our modernization efforts … We want to centralize and consolidate our IT into a more affordable and effective platform. This was one key initiative with VMware Cloud Foundation — a centralized on-premises cloud offering of connectivity, elasticity, and everything to the cloud."

Consistent, standardized approach (EMEA Healthcare):

"We deployed VMware Cloud Foundation for standardization … We're supporting multiple different business units within our organization with our virtual infrastructure, and we need standardization. Before we had VMware Cloud Foundation, everyone had their own approaches, but we now have clear requirements."

Foundation for hybrid, multicloud infrastructure (North America Higher Education):
"We wanted to move to a more hybrid model, create a personal cloud with our datacenters, have a balance with private cloud with our Azure environment, and connect into our AWS environment. These factors propelled us to choose VMware Cloud Foundation."

Table 2 provides an overview of how study participants are using VMware Cloud Foundation as a primary infrastructure platform for running their business operations. The significant scale of their VMware Cloud Foundation environments is reflected in metrics such as having an average of 1,006 physical servers, 11,525 on-premises VMs, and 3,597 public cloud VMs on the platform. This infrastructure runs distributed business operations that require performance and scalability regardless of location, as shown by the use of VMware Cloud Foundation for an average of 63 edge locations and 756 business applications and databases. For additional information about study participants' use of VMware Cloud Foundation, please see **Table 2.**

TABLE 2

VMware Cloud Foundation Use by Interviewed Organizations

	Average	Median
Number of on-premises servers	1,006	450
Number of on-premises VMs	11,525	8,000
Number of public cloud VMs	3,597	100
Number of edge locations	63	30
Number of business applications/databases	756	381
Number of internal IT users	31,394	5,000

n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

Business Value and Quantified Benefits of VMware Cloud Foundation

Study participants described how they have used VMware Cloud Foundation to establish secure, agile, and cost-effective private and hybrid infrastructures that serve their business strategies better than their legacy infrastructure environments. With VMware Cloud Foundation, they implement more flexible, adaptable hybrid cloud infrastructures and optimize infrastructure costs and staff time requirements while positively influencing on business activities through more effective development, greater scalability, and stronger performance.

Interviewed VMware customers described the most significant areas of impact and benefits related to their use of VMware Cloud Foundation:

Ability to establish overall cloud for business operations (EMEA Telecommunications):
"VMware Cloud Foundation provides us with a platform portfolio of products coming from VMware, which allows us to build a full cloud from the OS to all the products that provide advanced features."

Greater speed to market and strong manageability (EMEA Healthcare):
"VMware Cloud Foundation has helped us quickly deploy workloads and spin up environments to test applications and get them into use. VMware Cloud Foundation has also helped us centrally manage our platforms."

Flexibility to match IT and business needs (North America Retail):
"VMware Cloud Foundation has helped us address varied opportunities … We needed the flexibility to have all the different pieces of critical software to run on any platform, and VMware Cloud Foundation was the only platform for this."

Ease of management and agility across larger application environment (EMEA IT Services):
"The main advantages of VMware Cloud Foundation are that it is software defined and the only solution with a full-service provider level, enterprise-level stack in terms of manageability. This allows us to move workloads between clouds and have a single pane of glass across a larger estate."

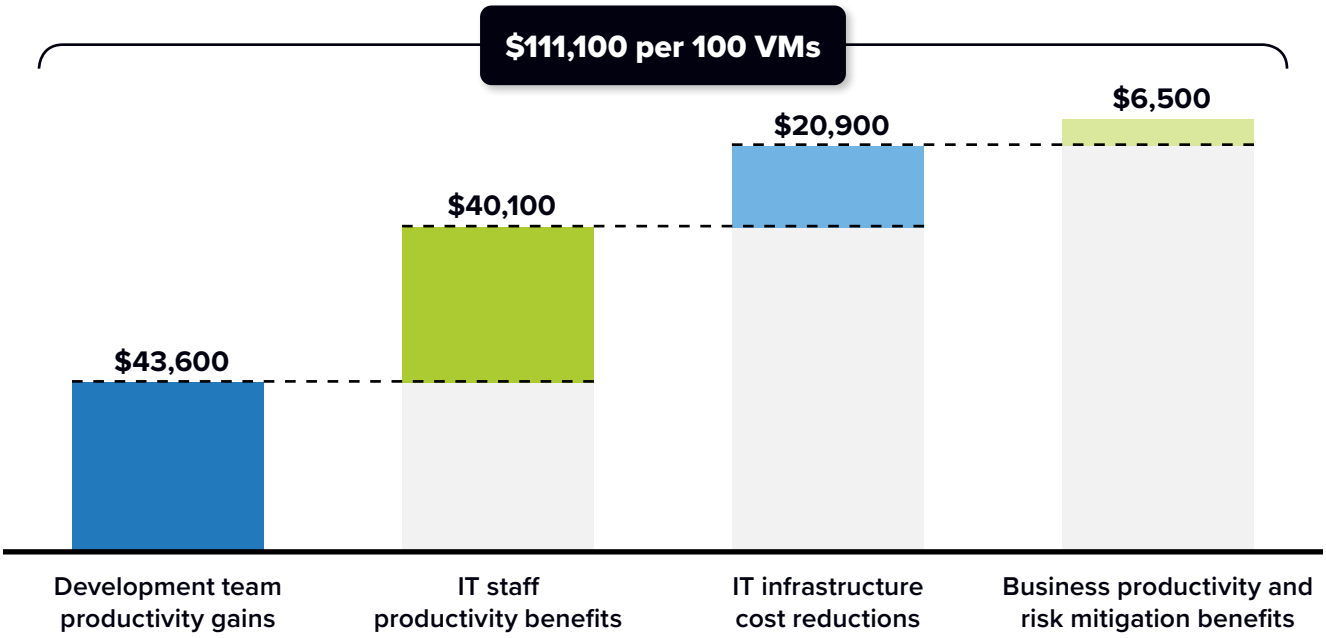
Based on interviews with organizations that are currently using VMware Cloud Foundation to run their private and hybrid cloud environments, IDC projects that these VMware customers will realize benefits worth an annual average of $111,100 per 100 VMs ($16.8 million per organization) in the following areas of value (see Figure 1, next page):

- **Development team productivity gains:** Development teams gain from improved access to capacity to build, test, and deploy applications and features, allowing them to deliver new software functionality more readily. IDC estimates the annual value of higher development team productivity at $43,600 per 100 VMs ($6.60 million per organization).
- **IT staff productivity gains:** Teams responsible for managing, supporting, and securing their VMware environments gain from having a more centralized, automated, and efficient platform. IDC calculates that study participants will realize time savings and efficiencies for these teams worth an annual average of $40,100 per 100 VMs ($6.06 million per organization).
- **IT infrastructure cost reductions:** Organizations require less infrastructure capacity and hardware when they can easily run workloads in the most cost-effective infrastructure environment, whether on premises or in the public cloud. IDC calculates that study participants will reduce infrastructure costs by an annual average of $20,900 per 100 VMs ($3.16 million per organization).
- **Business productivity and risk mitigation benefits:** Organizations benefit from having more scalable and reliable access to key business applications and services. IDC puts the value of higher productivity and revenue at an annual average of $6,500 per 100 VMs ($0.98 million per organization).

FIGURE 1

Average Annual Benefits per 100 VMs

($ per interviewed organization)



n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

For an accessible version of the data in this figure, see Figure 1 Supplemental Data in Appendix 3.

IT Infrastructure Cost Optimization

Study participants reported that VMware Cloud Foundation has enabled them to optimize and rightsize their approaches to provisioning infrastructure resources to support their businesses. They noted that while they benefited from virtualization and the use of public cloud resources, they struggled to establish truly integrated and unified infrastructure environments that provided the levels of flexibility, agility, and choice their increasingly digital businesses require.

The foremost benefit for study participants of using VMware Cloud Foundation from an infrastructure perspective is that it has allowed them to use both on-premises and cloud infrastructure as appropriate to ensure the right approach from the perspectives of cost, access, and performance. Thus, they have made strides in establishing more flexible, secure, and elastic IT infrastructures that can more readily align with their business priorities and needs. Further, the ability to establish a standardized VMware-based environment across private and hybrid environments has been instrumental in optimizing infrastructure costs and enabling application and business modernization efforts to proceed.

Specifically, study participants reported that VMware Cloud Foundation enables them to provision infrastructure resources more efficiently, including retiring or avoiding physical servers, and more cost-effectively provisioning public cloud capacity. Further, because they have access to unified management across their VMware environments, they can more readily leverage comprehensive virtualization and base decisions on where to run applications on factors other than cost and ability to readily deploy and manage.

Interviewed VMware customers provided specific examples of infrastructure-related benefits achieved with VMware Cloud Foundation:

Streamlined, more efficient infrastructure (North America Retail):
"VMware Cloud Foundation allows us to have a smaller infrastructure footprint — in terms of carbon footprint and, for sure, hardware footprint … We have seen a heavy reduction in power and cooling needs. We also better utilize our hardware with VMware Cloud Foundation. Being able to do significant virtualization and have that foundational piece was key to unlocking some of that value and potential."

Value of analytics across sizable IT estates (North America Government):
"Analytics with VMware Cloud Foundation can now look at servers and tell us about technical debt and performance levels. These analytics really help us manage the life cycle, demand capacity planning, and integrations. There's a big difference in being able to do that in a larger pool of servers with VMware Cloud Foundation."

Benefits of creating on-premises cloud environment (North America Government):
"The biggest bang for the buck with VMware Cloud Foundation has been creating an on-premises cloud with older infrastructure. VMware Cloud Foundation has allowed us to remove some of the traditional dependencies by allowing us to virtualize the network and leap over some of the older technology."

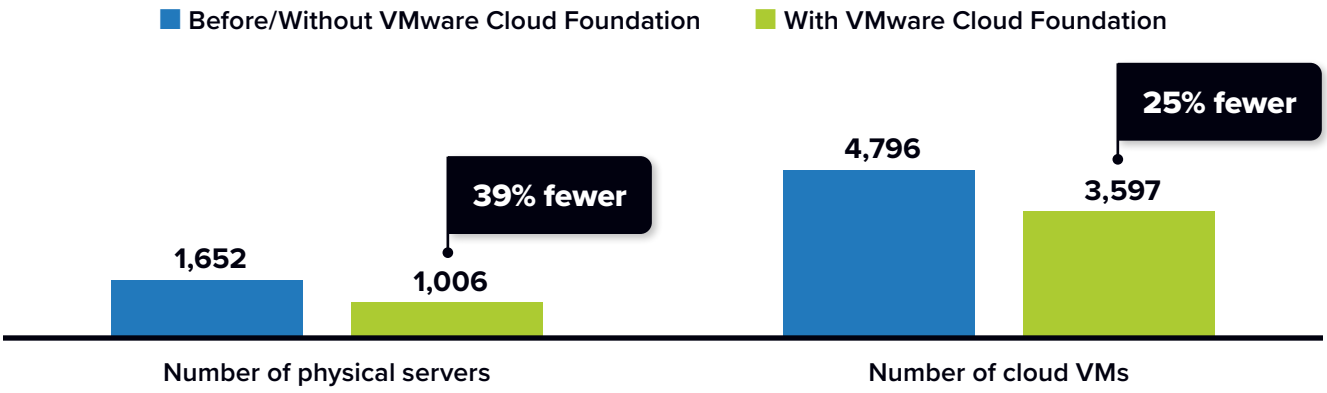
Benefits of infrastructure as code (EMEA Financial Services):
"VMware Cloud Foundation has allowed us to offer infrastructure as code via APIs to request, manage, and remove resources. Additionally, micro-segmentation has meant more secure applications."

Figure 2 (next page) shows the significant impact that VMware Cloud Foundation has had on study participants' ability to optimize and rightsize their IT infrastructure requirements. As they deepen virtualization across their IT environments and choose the most efficient infrastructure environment, they require less physical hardware and less cloud-based capacity. As shown, IDC calculates that they need 39% fewer physical servers and 25% fewer cloud VMs with VMware Cloud Foundation, establishing the predicate for more cost-effective IT infrastructure environments overall.

FIGURE 2

Infrastructure Efficiencies

(Number per organization)



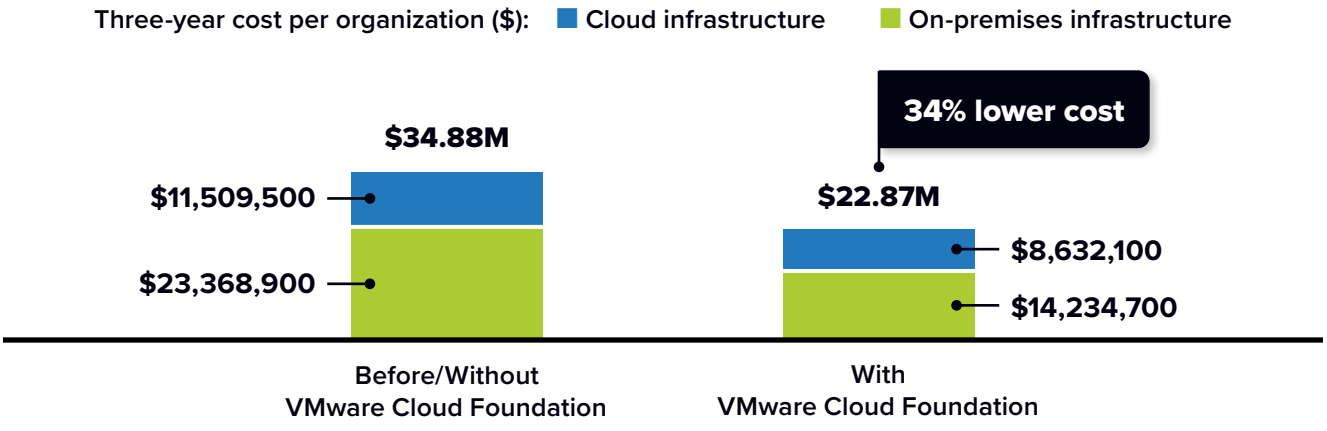
n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

For an accessible version of the data in this figure, see Figure 2 Supplemental Data in Appendix 3.

As shown in **Figure 3,** study participants' ability to deploy applications and services to the right infrastructure environment, depending on factors such as performance and capacity requirements, enables them to capture significant infrastructure-related cost efficiencies. IDC projects that they will save an average of 34% across on-premises and cloud environments to run equivalent applications and workloads with VMware Cloud Foundation, representing cost savings of more than $12 million per organization over three years.

FIGURE 3

Three-Year Cost of Infrastructure



n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

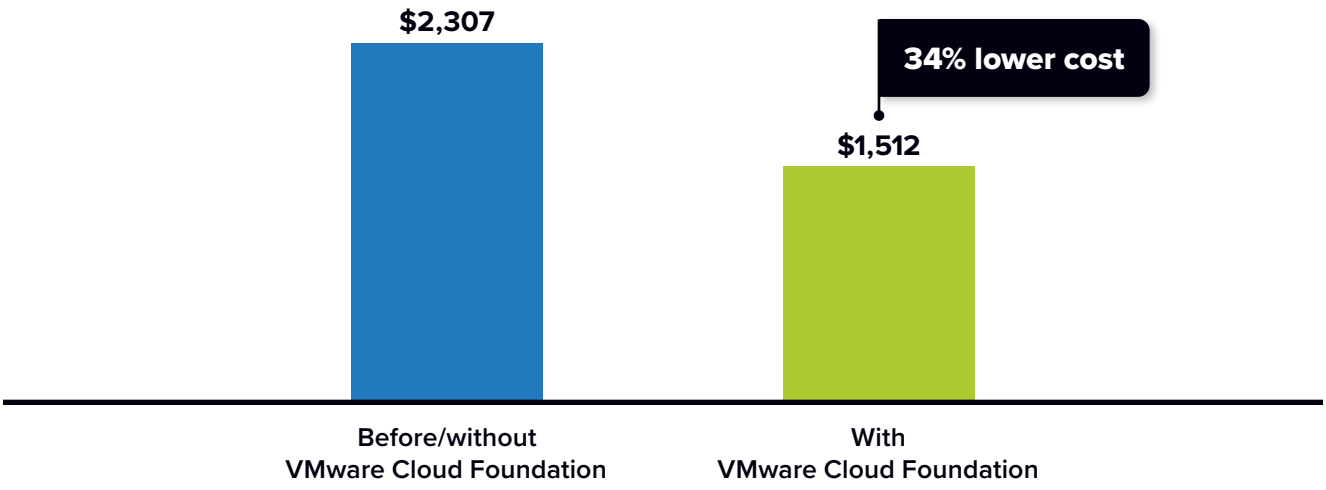
For an accessible version of the data in this figure, see Figure 3 Supplemental Data in Appendix 3.

These cost savings resonate at a more atomized level as well. **Figure 4** breaks these cost savings down to a per VM basis (based on on-premises and cloud VMs), showing that study participants will save almost $800 per VM in infrastructure costs with VMware Cloud Foundation. Across tens, hundreds, or even thousands of VMs in private and hybrid cloud environments, these cost efficiencies result in savings of hundreds of thousands — or even millions — of dollars per year for VMware customers.

FIGURE 4

Three-Year Cost per VM

(Cost per VM, three years)



n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

IT Staff Efficiencies and Productivity Gains

Study participants linked significant efficiencies for teams responsible for managing, supporting, and securing their organizations' infrastructure environments to VMware Cloud Foundation. Interviewed VMware customers explained that their previous environments too often created challenges and inefficiencies due to silos in management and security and challenges in applying common approaches and automation across their on-premises and cloud environments. They credited VMware Cloud Foundation with providing a means of implementing more effective life-cycle management for their compute, storage, and networking resources, focusing especially on its impact in reducing the burden of patching, upgrading, and monitoring. They noted that their IT teams are more proactive and less reactive on a day-to-day basis, resulting in more time being spent on IT and business enablement.

Interviewed VMware customers described the day-to-day impact of VMware Cloud Foundation on their teams responsible for ensuring the quality and availability of their IT infrastructures:

Significant improvement in day-to-day operational efficiencies (North America Higher Education):

"We've had nearly a 25% improvement in overall operational efficiency with VMware Cloud Foundation. Our IT teams are far more productive, and we have fewer headaches on normal break-fix and other day-to-day activities."

Staff efficiencies by allowing for greater coverage (EMEA IT Services):

"Before VMware Cloud Foundation, networking changes went to a separate networking team, and hand-offs took time. Using VMware Cloud Foundation has really reduced timescales because one team can configure the whole stack without having to go outside of that core team."

Value of ease of manageability (EMEA Healthcare):

"Standardization with VMware Cloud Foundation brings simplification and reduces management overhead. You trigger it from one location — patches, updates, etc. — making it easier to support the environment."

Table 3 (next page) underscores the significant day-to-day impact from an infrastructure management perspective for study participants using VMware Cloud Foundation. As shown, study participants can manage their VMware-based infrastructures 53% more efficiently, which yields significant value in time freed up and operational efficiency, given their substantial VMware environments. Looking at things differently, the use of VMware Cloud Foundation allows each infrastructure management team member to look after and support more than two times as many VMs (113% more, on average).

TABLE 3

Hybrid Cloud Infrastructure Management Team Efficiencies

Efficiencies, FTEs per Organization	Before/ Without VMware Cloud Foundation	With VMware Cloud Foundation	Difference	Improvement
Equivalent FTEs required for same workloads	80.4	37.8	42.6	53%
Value of equivalent FTE time required ($ per organization per year)	$8.04M	$3.78M	$4.26M	53%
Number of VMs per FTE	188	400	212	113%

n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

Teams responsible for securing their organizations' VMware environments benefit from similar efficiencies with VMware Cloud Foundation. Specifically, the ability to establish more standardized and repeatable security requirements and approaches across IT environments opens up time for these teams to focus on improving actual security results. The interviewed government customer in North America explained: *"With a world that's so federated and fragmented, we needed a tool such as VMware Cloud Foundation to create segregation and pockets of IT where we needed it by virtue of virtualization. The type of data that sits in there is so sensitive that we need controls and audit functions to be able to maintain it."* The 52% average efficiency that interviewed VMware customers reported represents an efficiency of 11.9 FTEs per organization (see **Table 4,** next page).

TABLE 4

Security Team Efficiencies

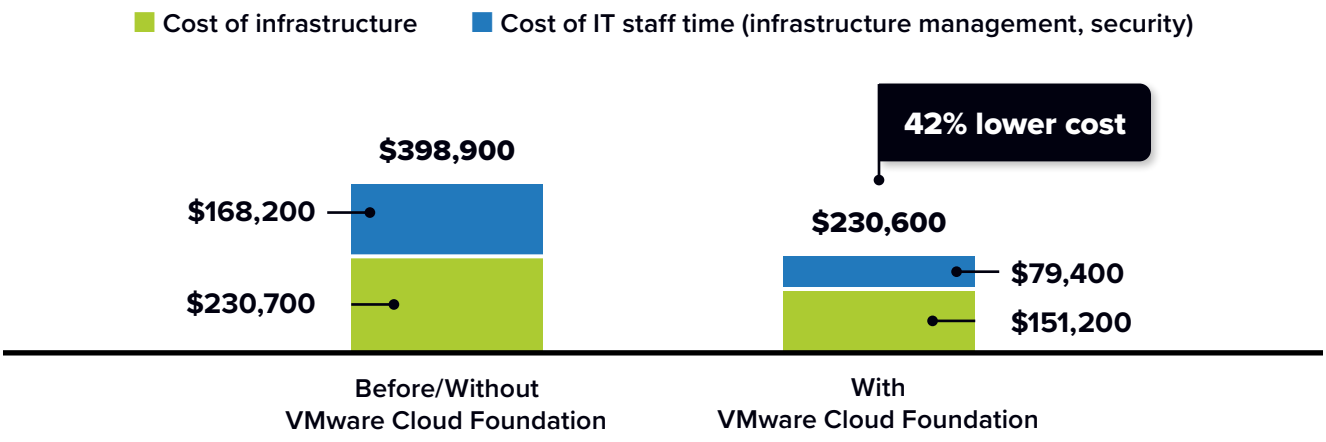
Efficiencies, FTEs per Organization	Before/ Without VMware Cloud Foundation	With VMware Cloud Foundation	Difference	Improvement
Equivalent FTEs required for same workloads	22.9	11.0	11.9	52%
Value of equivalent FTE time required ($ per organization per year)	$2.29M	$1.10M	$1.19M	52%

n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

These infrastructure costs and IT staff efficiencies create a compelling value proposition for using VMware Cloud Foundation from a cost-of-operations perspective. As shown in **Figure 5,** IDC calculates that study participants can run equivalent applications and workloads at a 42% lower cost on average over three years, representing an average cost-of-operations savings of $168,300 per 100 VMs over that time frame.

FIGURE 5

Three-Year Cost of Operations per 100 VMs



n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

For an accessible version of the data in this figure, see Figure 5 Supplemental Data in Appendix 3.

While not included in the above cost-of-operations analysis, interviewed customers consistently attributed efficiencies in application management to their use of VMware Cloud Foundation.

In particular, interviewed customers noted capabilities such as greater self-service access and enhanced understanding of application performance through analytics as driving gains in this area:

Efficiencies of self-service access to applications (EMEA Healthcare):
"Our application management teams have seen an improvement in the ability for application owners to use self-service for managing applications with VMware Cloud Foundation. For example, it used to take around six hours to add VM extensions; now, with VMware Cloud Foundation, it takes 20 minutes."

Value of analytics in identifying and resolving performance issues (EMEA Healthcare):
"Reporting and monitoring with VMware Cloud Foundation has been good for us. We can troubleshoot far more effectively. We had an issue where a VM started to run very slowly, and we were getting terrible latency. We could use VMware Cloud Foundation analytics to prove that latency was happening, down to the minute it started, and get back to the vendor to fix the problem."

Table 5 presents IDC's findings in terms of application management efficiencies with VMware Cloud Foundation for study participants. IDC calculates that these teams will realize average efficiencies of 21%, demonstrating how VMware Cloud Foundation enables more streamlined and efficient management activities.

TABLE 5

Application Management Team Efficiencies

Efficiencies, FTEs per Organization	Before/ Without VMware Cloud Foundation	With VMware Cloud Foundation	Difference	Improvement
Equivalent FTEs required for same workloads	93.7	74.4	19.4	21%
Value of equivalent FTE time required ($ per organization per year)	$9.37M	$7.44M	$1.94M	21%

n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

Agility and Development Benefits

Interviewed organizations consistently described increased agility, flexibility, and elasticity as among the most important benefits of using VMware Cloud Foundation. They explained that it has enabled them to establish unified, cohesive IT operations across VMware-based on-premises and cloud environments, which allows them to draw from compute, storage, and networking resources that best meet the needs of individual applications or development efforts.

Study participants noted that VMware Cloud Foundation ties together disparate infrastructure environments and provides automation capabilities that further minimize friction associated with accessing and provisioning IT resource capacity. This means that VMware Cloud Foundation customers can access the IT resources they need promptly, far more often, which minimizes the likelihood that provisioning delays will negatively affect development or business efforts.

Study participants provided examples of how VMware Cloud Foundation has instilled greater agility and flexibility across their private and hybrid cloud environments:

Automation for deployment and development purposes (North America Higher Education):

"Automation is an important benefit of VMware Cloud Foundation. One of my favorite things when we move to a new application is to ask how much we can automate on the fly. With VMware Cloud Foundation, we've been able to get VMs and applications up in minutes rather than hours."

Much faster and easier provisioning of new compute resources (EMEA IT Services):

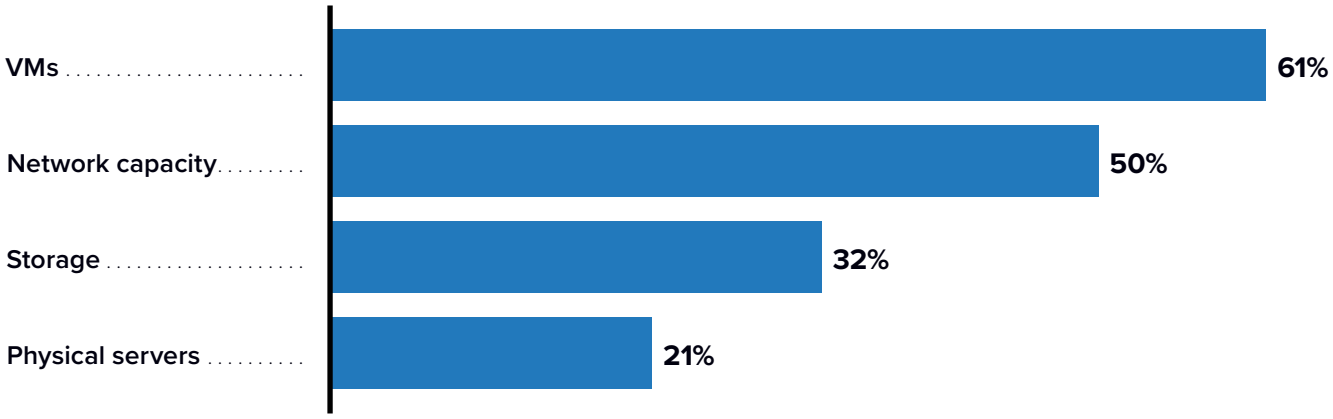
"With VMware Cloud Foundation, we're taking a hyperconverged approach, so it's much easier to add another node. This makes adding capacity much easier than it was in the old models. There's probably about a 70% saving in terms of effort when commissioning."

Figure 6 (next page) provides IDC's findings on the impact of VMware Cloud Foundation on the time required to deploy IT resources. As shown, VMware Cloud Foundation has had a substantial positive impact across IT provisioning efforts, with efficiencies topping out at an average of 61% for deploying new VMs, with significant efficiencies also seen in terms of deploying network capacity (50% more efficient), storage (32%), and physical servers (21%).

FIGURE 6

Impact on Agility

(Percentage improvement with VMware Cloud Foundation)



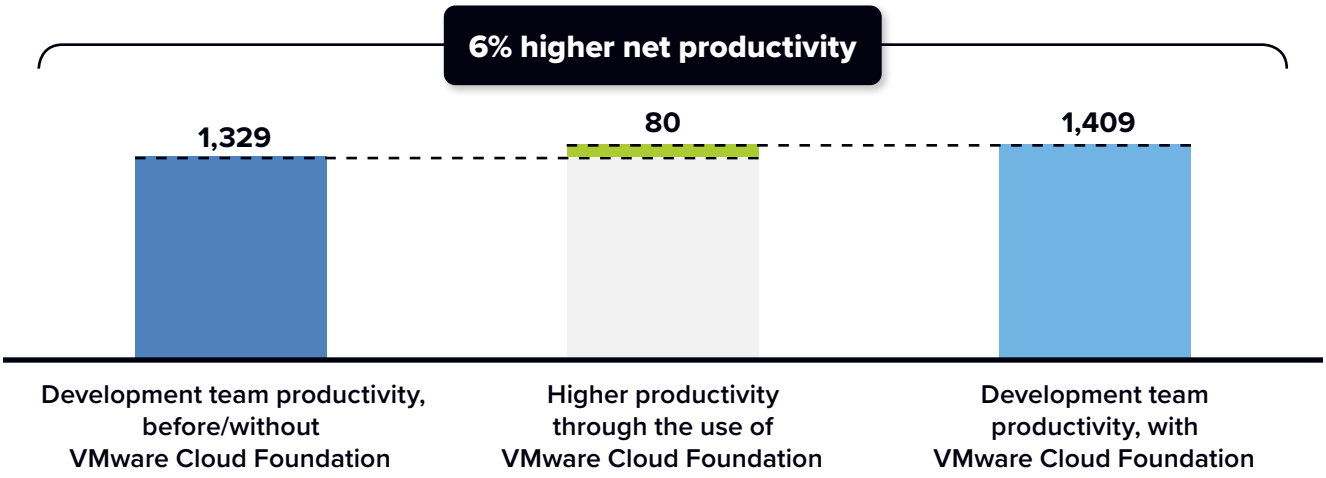
n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

While study participants attributed gains in effectiveness across their organizations to the enhanced agility achieved with VMware Cloud Foundation, they noted development enablement as a core benefit. They explained that their development teams can perform far more effectively when the underlying infrastructure they rely upon is readily available and maintains high performance. When this happens, developers can move faster to carry out the development, coding, testing, and deployment required to deliver new applications and software functionality to users and customers. As **Figure 7** (next page) shows, IDC calculates that across substantial development activities that rely on an average of 1,329 developers, study participants will realize 6% net productivity improvements for these teams (40% gross productivity gain), resulting in significant development-related value achieved through the use of VMware Cloud Foundation.

FIGURE 7

Impact on Development Team Productivity

(Equivalent productivity, FTEs per organization)



n = [#]; Source: IDC Business Value In-Depth Interviews, [Month Year]

For an accessible version of the data in this figure, see Figure # Supplemental Data in Appendix 3.

Performance and Business Benefits

Study participants described how they view VMware Cloud Foundation as a platform that enables their business activities. They focused on its positive impacts on security, reliability, and performance, all of which are critical elements of delivering robust digital-based services to their customers. They reported that their disaster recovery and data protection activities have become more efficient, with faster recovery times, and that they have strengthened their security and compliance postures, thereby improving their ability to manage security threats and compliance requirements. These risk-related benefits have helped them mitigate operational risk and ensure business continuity across their private and hybrid infrastructure environments.

Interviewed VMware customers provided specific examples of how they have established more reliable infrastructure foundations for their businesses with VMware Cloud Foundation:

Improved IT resiliency and availability (EMEA Healthcare):

"Before VMware Cloud Foundation, an outage that affected a datacenter would have been catastrophic for the business and interrupted our delivery of services. However, when there was a problem with VMware Cloud Foundation, we didn't even know we had a network failure — I discovered it by accident that evening."

Reliable infrastructure foundation (EMEA Healthcare):
"Before VMware Cloud Foundation, there was a lack of confidence in the availability of our platform, so when we had outages, they were impactful, shut down departments, and caused business interruptions — so we needed to remedy this. We brought in VMware Cloud Foundation to create a virtualized datacenter with our own private cloud with more resilience and site tolerance."

Table 6 demonstrates the extent to which study participants have removed operational risk related to outages with VMware Cloud Foundation. On average, they reported experiencing 98% less impactful downtime, which has helped them significantly minimize both productivity and revenue losses associated with unexpected business interruptions or lack of access to important business applications and services. This improvement also comes back to some of the other factors addressed by VMware Cloud Foundation, including:

- Single platform across hybrid/cloud environments means less likelihood of mistakes that lead to outages
- Strong management capabilities that are reflected in IT team efficiencies often lead to avoiding issues that could otherwise occur
- More efficient disaster recovery/data recovery capabilities
- The simple impact of having a more modern platform for running applications that better meets the demand created by these applications

TABLE 6

Impact on Unplanned Downtime

Average per Organization	Before/ Without VMware Cloud Foundation	With VMware Cloud Foundation	Difference	Improvement
Number of hours of impactful outages per year	22.7	0.5	22.2	98%
Productivity loss per year in FTEs per organization	12.5	0.3	12.2	98%

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Average per Organization	Before/ Without VMware Cloud Foundation	With VMware Cloud Foundation	Difference	Improvement
Value of lost productivity time per organization per year	$876,700	$19,300	$857,400	98%
Value of lost revenue per organization per year	$2.27M	$50,000	$2.22M	98%

n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

Study participants also attributed other business and operational gains to their use of VMware Cloud Foundation, including:

- Achieving a positive overall impact on business productivity through faster IT deployment times and timely response to business demand
- Ensuring that IT operations can meet business challenges in terms of network automation, segmentation, and infrastructure delivery
- Extending IT operations to non-central locations more readily, contributing to business growth and strategic efforts
- Providing a high-performing platform for delivering virtual desktop infrastructure services to employees, increasing their productivity levels

The interviewed North American retail company summarized the significant positive impact of VMware Cloud Foundation on its business as follows: *"We have a wide range of applications, use cases, and locations because we're so varied in our business. We run everything from places out in the middle of nowhere as well as from downtown business offices. We needed flexibility to have that hybrid approach while still looking at a single pane of glass for all our utilization needs, and this is what VMware Cloud Foundation provides."*

ROI Summary

Table 7 (next page) provides IDC's analysis of the financial benefits and investment costs related to study participants' use of VMware Cloud Foundation. As shown, IDC calculates that they will realize discounted benefits over three years in terms of infrastructure cost savings, IT team efficiencies, development productivity gains, and higher user productivity and revenue worth an average of $39.93 million per organization ($264,100 per 100 VMs). Achieving these benefits will require total three-year discounted investments of an average of $6.01 million per organization ($39,800 per 100 VMs). These respective benefits and investment costs would result in a strong three-year average ROI of 564%, with the average VMware customer in this study's sample breaking even on their investment 10 months after beginning deployment of VMware Cloud Foundation.

TABLE 7

ROI Analysis

	Three-Year Average per Organization	Three-Year Average per 100 VMs
Benefit (discounted)	$39.93M	$264,100
Investment (discounted)	$6.01M	$39,800
Net present value	$33.92M	$224,300
ROI (net present value/investment)	564%	564%
Payback	10 months	10 months

Challenges/Opportunities

Interest in AI and large language models (LLMs) has put a spotlight on public cloud service providers. The vast amount of computing power needed to train LLMs is a natural fit for hyperscale datacenters designed for high power and cooling demands.

However, enterprises worry about the privacy and security of their data in the public cloud, especially in the context of AI. As the private cloud continues to be relevant as a counterbalance to the public cloud, private AI has emerged to address these concerns.

VMware has created a private AI ecosystem along with NVIDIA to create a platform specifically addressing the need for generative AI called VMware Private AI Foundation.

The VMware Private AI Foundation with NVIDIA is a platform consisting of integrated VMware and NVIDIA solutions for generative AI. This solution runs on top of VMware Cloud Foundation to support the data scientist's environment, utilizing the automation and orchestration capabilities of the underlying platform to streamline and simplify workload management in a self-service manner. By providing deep learning VMs, a vector database, and example workflows for implementing retrieval augmented generation, the Private AI solution provides a complete turnkey environment to support LLMs. This solution runs on Kubernetes-orchestrated containers running alongside VMs for large-scale development, scaling, and production operations.

Conclusion

As enterprises continue to adopt cloud technology, they are increasingly looking for more flexibility and control over how they deploy it. This has led to a resurgence in private cloud infrastructure that can integrate in a hybrid fashion with public cloud resources. VMware Cloud Foundation seeks to help enterprises migrate to a modern infrastructure environment, deliver a cloud experience for developers, and maintain the security and resilience required for mission-critical applications.

This study highlights the impact for interviewed organizations of their strategic decision to adopt VMware Cloud Foundation for their private and hybrid infrastructure environments. It shows how VMware customers have used VMware Cloud Foundation to address their need for flexibility, scalability, and infrastructure optimization across diverse operational locations. Significant benefits reported across interviewed VMware customers include enhanced infrastructure agility, cost optimization, and application development enablement.

Overall, the deployment of VMware Cloud Foundation has enabled these organizations to better meet their strategic business goals and growth, underscoring the substantial business value and operational efficiencies that VMware Cloud Foundation offers as they navigate the complexities of modern IT environments. IDC's finding that study participants will realize an average three-year return on investment of 564% through their use of VMware Cloud Foundation emphasizes the significance of the operational and business benefits they reported achieving.

Appendix 1: Methodology

IDC's standard ROI methodology was utilized for this project. This methodology is based on gathering data from current users of VMware Cloud Foundation as the foundation for the model.

Based on interviews with organizations using VMware Cloud Foundation, 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 VMware Cloud Foundation.** 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 VMware Cloud Foundation 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 VMware Cloud Foundation over a three-year period. ROI is the ratio of the net present value and the discounted investment. The payback period is when cumulative benefits equal the initial investment.

IDC bases the payback period and ROI calculations on several 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 for IT staff members and an average fully loaded salary of $70,000 for non-IT staff members. IDC assumes 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, as using VMware Cloud Foundation 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.

Appendix 2: Business Value Calculations

Table 8 provides a detailed view of the quantified benefits that study participants will achieve through their use of VMware Cloud Foundation, which IDC puts at an annual average of $16.8 million per organization.

TABLE 8

Average Annual Benefits

Category of Value	Average Quantitative Benefit	Calculated Average Annual Value*
IT infrastructure cost savings	39% lower on-premises infrastructure costs, saving $9.13M over three years; 25% lower cloud costs, saving $959,100 per year	$3.16M
IT infrastructure team efficiencies	53% efficiency worth 42.6 FTEs, $100,000 salary assumption	$3.49M
IT security team efficiencies	52% efficiency worth 11.9 FTEs, $100,000 salary assumption	$0.98M
IT application management team efficiencies	21% efficiency worth 19.4 FTEs, $100,000 salary assumption	$1.59M
Application development team productivity gains	40% overall productivity gain, 15% margin, 6% net productivity gain worth 80 FTEs, $100,000 salary assumption	$6.60M
Higher productivity, unplanned downtime	98% less unplanned downtime, 12.2 FTEs higher productivity, $70,000 salary assumption	$0.70M
Higher net revenue, unplanned downtime	98% less unplanned downtime, $2.22M per year revenue loss avoided, 15% margin, $330,400 net revenue loss avoided per year	$0.27M
Total average annual benefits per organization	**$16.8M**	

n = 8 (*includes 6.5 months deployment time in year 1); Source: IDC Business Value In-Depth Interviews, May 2024

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

Appendix 3: Supplemental Data

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

FIGURE 1 SUPPLEMENTAL DATA

Average Annual Benefits per 100 VMs

	$ per interviewed organization
Development team productivity gains	$43,600
IT staff productivity benefits	$40,100
IT infrastructure cost reductions	$20,900
Business productivity and risk mitigation benefits	$6,500
Total	**$111,110 per 100 VMs**

n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

Return to original figure

FIGURE 2 SUPPLEMENTAL DATA

Infrastructure Efficiencies

	Before/Without VMware Cloud Foundation	With VMware Cloud Foundation	Difference
Number of physical servers	1,652	1,006	39% fewer
Number of cloud VMs	4,796	3,597	25% fewer

n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

Return to original figure

Appendix 3: Supplemental Data (continued)

FIGURE 3 SUPPLEMENTAL DATA

Three-Year Cost of Infrastructure

	Before/Without VMware Cloud Foundation	With VMware Cloud Foundation
On-premises infrastructure	$23,368,900	$14,234,700
Cloud infrastructure	$11,509,500	$8,632,100
Total	**$34.88M**	**$22.87M**
Difference	**n/a**	**34% lower cost**

n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

Return to original figure

FIGURE 5 SUPPLEMENTAL DATA

Three-Year Cost of Operations per 100 VMs

	Before/Without VMware Cloud Foundation	With VMware Cloud Foundation
Cost of infrastructure	$230,700	$151,200
Cost of IT staff time (infrastructure management, security)	$168,200	$79,400
Total	**$398,900**	**$230,600**
Difference	**n/a**	**42% lower cost**

n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

Return to original figure

Appendix 3: Supplemental Data (continued)

FIGURE 7 SUPPLEMENTAL DATA

Impact on Development Team Productivity

	Productivity
Development team productivity, before/without VMware Cloud Foundation	1,329
Higher productivity through the use of VMware Cloud Foundation	80
Development team productivity, with VMware Cloud Foundation	1,409
Difference	**6% higher net productivity**

n = 8; Source: IDC Business Value In-Depth Interviews, May 2024

Return to original figure

About the IDC Analysts

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Dave McCarthy is Research Vice President within IDC's worldwide infrastructure research organization and global research lead for the cloud and edge services practice. Dave leads a team of analysts covering research on shared (public) cloud, dedicated (private) cloud, edge deployments, services, adoption trends, vendor strategies, and market dynamics. Benefiting both technology suppliers and IT decision-makers, Dave's insights delve into ways hybrid and distributed cloud platforms provide the foundation for next-generation workloads, enabling organizations to innovate faster, automate operations, and achieve digital resiliency.

More about Dave McCarthy

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Matthew is responsible for carrying out custom business value research engagements and consulting projects for clients in several technology areas, focusing on determining the return on investment of their use of enterprise technologies. Matthew's research often analyzes how organizations are leveraging investment in digital technology solutions and initiatives to create value through efficiencies and business enablement.

More about Matthew Marden

Message from the Sponsor

vmware® by Broadcom

VMware Cloud Foundation is a comprehensive private-cloud platform that empowers IT operations to deliver the right developer ready infrastructure for applications.

Purpose-built to modernize and future-proof data center infrastructure to combine the scale and agility of public cloud with the security and performance of private cloud, and offers an industry-leading TCO as demonstrated by this business validation study.

Learn more about how VMware Cloud Foundation delivers integrated, enterprise-class compute, networking, storage, management, and security across all endpoints. With maximum visibility, organizations can continuously optimize performance and costs, protect the business from threats, and enable the business to focus on outcomes instead of operations.

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