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Analyzing the Economic Benefits of ChromeOS and Cameyo

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Executive Summary

As hybrid work continues to proliferate in businesses of all types, IT departments are challenged to provide their end users with an experience that can keep them productive wherever they work. Additionally, they struggle to maintain a high-level of security, scalability, and end-user support without access to the user, their device, and their network. Organizations are now embracing virtual application delivery (VAD) and secure devices as a solution.

One increasingly popular example of this has come through the combination of ChromeOS and Cameyo's VAD solution. Together, ChromeOS and Cameyo are supporting hybrid and remote work environments by enabling secure access to business-critical applications so that all employees can be productive from anywhere. Companies using ChromeOS and Cameyo report that enabling hybrid and remote workers with an effective VAD platform provides a positive return on investment while increasing security, reducing complexity, and providing greater flexibility.

TechTarget's Enterprise Strategy Group (ESG) validated that ChromeOS with Cameyo introduces companies to the technology required for their evolving hybrid and remote workforce needs. ChromeOS with Cameyo delivers Windows, Linux, SaaS, and internal web applications virtually to any device connected to a browser without the need for additional infrastructure or software. Organizations that have leveraged ChromeOS with Cameyo were able to deploy business-critical applications within hours with less risk to the business and with the added flexibility to optimize resources and strategies further as they saw fit. ESG's economic analysis shows how companies can save significant time and money while delivering a superior digital workspace solution.

Introduction

This Economic Validation from Enterprise Strategy Group (ESG) focused on the quantitative and qualitative benefits organizations can expect when deploying Cameyo's VAD solution and ChromeOS devices to empower their hybrid and remote workforces. In particular, for this Economic Validation, ESG spoke with organizations that had previously relied on traditional virtual desktop technologies like VDI and DaaS but discovered that those technologies had cost, complexity, and security issues when attempting to deploy them at scale.
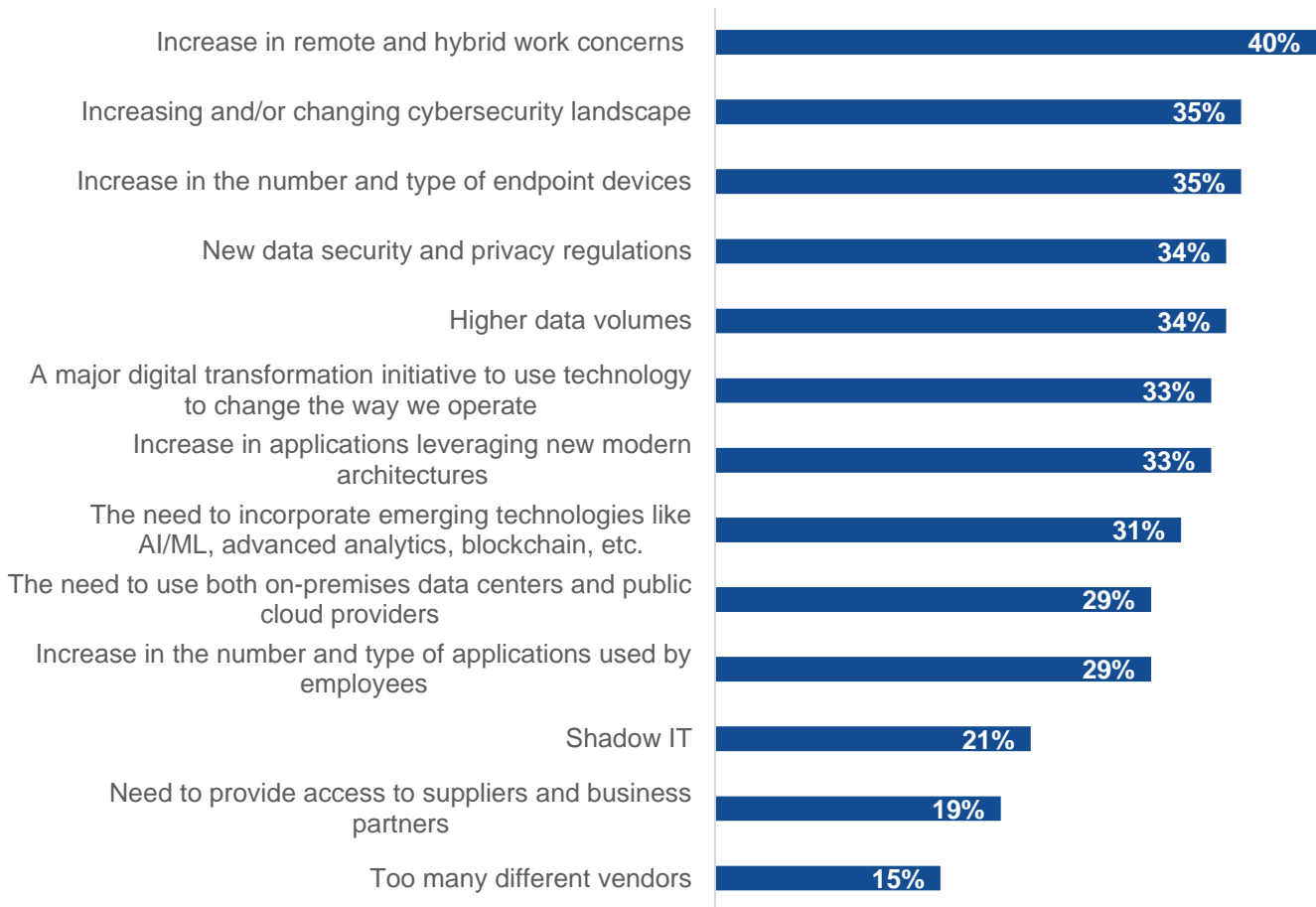
Challenges

In a post-pandemic world, where hybrid and remote workers are now the new normal, it is essential for IT organizations to have a flexible, seamless, and secure cloud-based solution for delivering virtual applications to their users–as well as highly secure, manageable devices that enable them to work from anywhere. The constant state of change in today's workforce has added a layer of complexity to an already complex environment. According to Enterprise Strategy Group (ESG) research, 53% of organizations feel that their company's IT environment is more or significantly more complex than it was two years ago.[1] Forty percent of respondent IT organizations attributed this increased complexity in their IT environment to the surge of remote and hybrid work. Further contributing factors included the changing cybersecurity landscape, the increased number and type of endpoint devices, new data security and privacy regulations, and higher data volumes (see Figure 1). In general, the complexity of an IT environment can have significant negative impacts on an organization, including increased costs, decreased efficiency, and reduced security.

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[1] Source: Enterprise Strategy Group Research Report, *2023 Technology Spending Intentions Survey*, November 2022. All Enterprise Strategy Group research references and charts in this economic validation report are from this research report.

Figure 1. Remote and Hybrid Work Concerns Continue to Create IT Complexity

What do you believe are the biggest reasons your organization's IT environment has become more complex? (Percent of respondents, N=392, five responses accepted)

Increase in remote and hybrid work concerns	40%
Increasing and/or changing cybersecurity landscape	35%
Increase in the number and type of endpoint devices	35%
New data security and privacy regulations	34%
Higher data volumes	34%
A major digital transformation initiative to use technology to change the way we operate	33%
Increase in applications leveraging new modern architectures	33%
The need to incorporate emerging technologies like AI/ML, advanced analytics, blockchain, etc.	31%
The need to use both on-premises data centers and public cloud providers	29%
Increase in the number and type of applications used by employees	29%
Shadow IT	21%
Need to provide access to suppliers and business partners	19%
Too many different vendors	15%

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

To address these complexity-related issues, IT leaders have identified improving cybersecurity, customer experience, business process, and digital collaboration capabilities as their justification for IT investment over the next 12 months.

At the same time, the rise in the number of hybrid and remote workers has made security, the user experience, and collaboration more difficult. This has created the need for virtualization solutions and secure devices that enable employees to access all the applications and data they need to be productive, regardless of where they happen to be working that day. It is more important than ever for organizations to manage, support, and secure their virtual applications.

The Solution: ChromeOS with Cameyo's Virtual App Delivery (VAD)

Cameyo's Virtual App Delivery (VAD) product enables organizations to deliver all of their applications–Windows, Linux, SaaS, and internal web apps–on any device and operating system (OS) as either progressive web apps

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(PWAs) or in any HTML5 Browser. Cameyo's VAD platform is a cloud-native solution designed from the ground up to enable the simple, ultra-secure, cost-effective, and flexible delivery of applications to a device from any browser.

Cameyo's VAD is also a Chrome Enterprise Recommended virtualization solution and integrates deeply with ChromeOS and Google Admin console to provide a completely native and seamless application experience on ChromeOS devices. In addition to integration with ChromeOS and Google Admin console, Cameyo also integrates with Google Workspace and Google Cloud, enabling customers to move entirely to Google or alleviate vendor lock-in by running one or more Google solutions. With Cameyo's software development kit (SDK), the Google ecosystem can integrate its products with Cameyo, allowing Google to deliver a full-stack solution to customers instead of point products (see Figure 2).

Figure 2. ChromeOS + Cameyo's Virtual App Delivery Platform
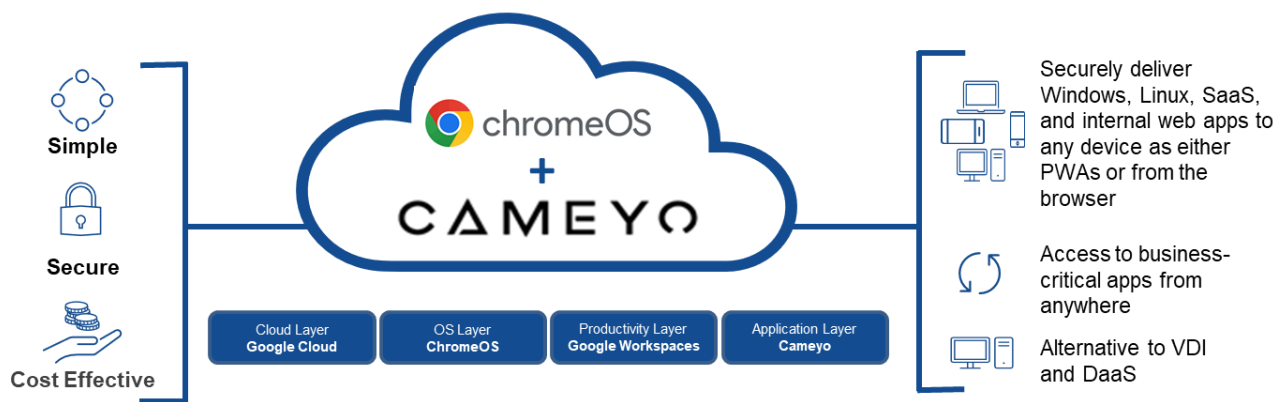
Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Enterprise Strategy Group Economic Validation

Enterprise Strategy Group (ESG) completed a quantitative economic analysis of Cameyo's Virtual App Delivery (VAD) platform. The focus was placed on the economic benefits organizations can expect when leveraging ChromeOS with Cameyo as opposed to ChromeOS with VDI solutions.

ESG's Economic Validation process is a proven method for understanding, validating, quantifying, and modeling a product's or solution's economic value propositions. The process leverages ESG's core competencies in market and industry analysis, forward-looking research, and technical/economic validation. ESG conducted an economic validation consisting of in-depth interviews with industry analysts, subject matter experts, and joint ChromeOS + Cameyo customers to better understand and quantify how ChromeOS with Cameyo can impact organizations, particularly in comparison with other VDI solutions. The different qualitative and quantitative findings were used to audit economic models comparing these virtualized desktop solutions' expected costs and benefits.

ChromeOS with Cameyo Economic Overview

The Enterprise Strategy Group (ESG) economic analysis revealed that ChromeOS with Cameyo can greatly benefit companies tasked with providing an end-user computing environment that empowers their employees to reach their business goals. ESG found that customers can expect to see savings and benefits in the following categories:

- **Increased Business Agility** – ChromeOS with Cameyo provides employees with a cloud desktop solution in hours instead of the weeks or months that traditional virtual desktops (VDI/DaaS) require, accelerating the time to value and enabling organizations to capitalize on trends and short-term opportunities faster.

- **Reduced Complexity** – ChromeOS with Cameyo simplifies an organization's application delivery process by eliminating infrastructure, streamlining business operations, and maximizing resources.

- **Reduced Cost and Risk** – Using ChromeOS with Cameyo to virtualize applications keeps data and application files secure with a zero trust security model, strengthening the security posture while lowering the costs of hardware, software, licensing, and administrative expenses when deploying, managing, supporting, and maintaining an organization's IT environment.

Increased Business Agility

Changes in an enterprise that enable employees to create value often drive the overall success of a business. Enterprise Strategy Group (ESG) found that Cameyo delivers employees a quality user experience for business-critical applications and enables organizations to deploy capabilities that address business needs rapidly.

- **Less Infrastructure –** Unlike VDI products that increase the amount of infrastructure an organization needs to manage, Cameyo's cloud-native platform helps organizations reduce infrastructure by managing everything from the cloud. Cameyo's fully hosted solution (which runs in Google Cloud by default) eliminates the need for companies to manage any infrastructure for the delivery of cloud desktops and virtual applications. Companies wanting to self-host the platform can still reduce their infrastructure by simply deploying Cameyo's self-hosted server in their own data center, or in any cloud of their choice. This dramatically simplifies the delivery of cloud desktops and applications to any device, even when managing it on-premises or in hybrid environments.

> **"People were very used to the software that we used to run and begged us not to change it. Cameyo allowed us to upgrade and modernize the application and then deliver it quickly and safely while maintaining a great end-user experience."**

- **Faster Application Deployment –** Rolling out traditional virtual desktops can take three to six months and often longer for a larger enterprise. Cameyo is traditionally deployed for companies of all sizes in a matter of days. Customers who choose to self-host Cameyo in their own environment find that configuration and deployment can be done in a matter of hours. All applications, even full, legacy Windows applications, run either as progressive web apps (PWAs) or in a simple web browser tab, eliminating the complexities of installing and deploying every component and dependency required for the software to run, regardless of whether it is needed or not. One Cameyo customer stated, "**It took a team of three people six hours to deploy everything for Cameyo for my entire company, including learning and QA."**

- **Faster Employee Onboarding –** The combination of ChromeOS and Cameyo allows IT admins to quickly provision and deploy virtual applications to new employees on highly secure ChromeOS devices that—upon initial login—provides the new user with access to all of the apps that users need to be productive, regardless of their location. This eliminates the need for time-consuming installations and configurations on individual devices, enabling new employees to access the applications that they need within minutes. Furthermore, Cameyo allows employees to access their virtual applications from any device with an internet connection. This means new employees can start working immediately, even if they don't yet have access to a company-issued device at the time of application access.

- **Improved End-user Productivity –** The traditional VDI experience requires that users access a separate virtual desktop before accessing the applications they need, often resulting in performance issues. Using Chrome OS with Cameyo, the specific application settings and files follow the user from session to session, ensuring a seamless experience for virtual applications. Users, therefore, have nothing new to learn because Cameyo enables them to experience the full desktop version of their applications either as progressive web apps (PWAs) or directly from the browser.

> **"Cameyo gave us an end-user experience that was smoother and less disjointed than our previous virtual desktop infrastructure."**

- **Reduced Help Desk Tickets –** ChromeOS and Cameyo help standardize operations for an organization's IT environment to reduce help desk tickets. Having fewer tickets reduces the strain on support teams, and less complex resolutions of tickets can be handled by junior resources. One Cameyo customer said, **"Without Windows, ChromeOS and Cameyo allow us to standardize things in such a way that we reduced help desk tickets by 40%."**

Reduced Complexity

With the workforce becoming increasingly mobile, Cameyo reduces complexity by providing its end users with consistent access to all the apps and data they need to be productive from anywhere. Cameyo makes it easier to:

- **Deploy and Update –** Cameyo centralizes application management by integrating with the Google Admin console, allowing IT admins to deploy applications to their end user's ChromeOS devices in minutes. Additionally, companies can patch and update both the OS and any application at any time. **"We saved so much on indirect costs alone simply by not having to spend time doing updates since ChromeOS does it for you."** ChromeOS devices automatically update without any interaction from IT or the end user, and application updates can be pushed by IT directly to ChromeOS devices and will happen instantly in the background without interrupting user workflows.

> **"It's the closest thing to magic I have ever seen."**

- **Access Applications –** Customers reported that they had a lot of trouble context switching between the applications in their traditional VDI environment, **"It's like they were living in two completely separate worlds that had difficulty communicating with each other."** Cameyo is a Chrome Enterprise-Recommended solution and is deeply integrated with ChromeOS, Google Admin console, and Google Cloud to provide a native application experience. Furthermore, Cameyo's PWA implementation gives users access to their applications by clicking the application icon from the ChromeOS shelf or taskbar, which runs in its own window as if it is a locally installed program.

- **Scale –** Cameyo's cloud-based platform has built-in elasticity and usage optimization, dynamically spinning servers up and down as needed, based on demand. This enables organizations to quickly and easily scale their application delivery as needed without any additional infrastructure or hardware.

- **Support Legacy Applications –** Legacy VDI products lack the flexibility to run in most environments and require additional on-premises technologies when attempting to make it work. Cameyo helps organizations deliver their legacy applications to any device via the browser or as PWAs. With Cameyo for Linux, Cameyo ensures that all future applications, including web applications that don't require a Windows server, are efficiently delivered to any device from the same platform without performance issues.

- **Secure –** VDI consists of many disparate components that expand the cyber-attack surface. Often, firewalls, HTTP, HTTPS, and RDP ports are open, creating one of the most common means of attack. Furthermore, traditional VDI solutions rely on providing the user access through a VPN. However, while VPNs can provide a secure channel for remote workers to access internal resources, they can also introduce vulnerabilities that can be exploited by attackers. Cameyo utilizes a zero trust security model that prevents the need to expose firewall and server ports to the internet. Cameyo is also a VPN-less solution that keeps employees off the corporate network and removes the possibility of misconfigurations or outdated software. One customer said, **"Since implementing ChromeOS and Cameyo, we no longer require additional security products since security is already built in."**

> **"Our employees can now securely access applications from home without having to introduce the complex security measures and technologies like VPNs that really disrupt the end-user experience."**

Figure 3. ChromeOS and Cameyo Reduce Complexity in Your IT Environment
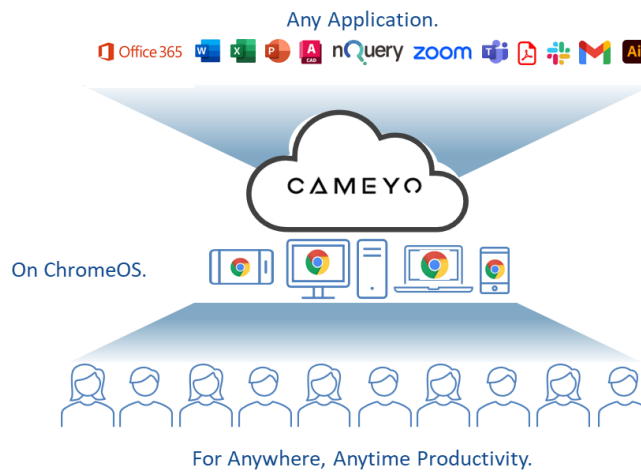
Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Reduced Cost and Risk

Cameyo's Virtual App Delivery (VAD) solution reduces organizational costs and security risk by offering a modern and straightforward application delivery model that grants organizations higher security and control of their IT environment without investment in infrastructure and reduces the cyber-attack surface. Cameyo helps to reduce:

- **Infrastructure Costs –** Through customer interviews, Enterprise Strategy Group (ESG) validated that Cameyo helps organizations lower infrastructure costs, including hardware, software, licensing, and maintenance costs. Cameyo's Virtual App Delivery (VAD) platform operates in the cloud (or can be self-hosted in any environment), eliminating the need for additional hardware appliances and other costly physical infrastructure. Cameyo provides access to applications on a per-named-user basis that saves IT from needing to purchase licenses for each device, significantly reducing software costs. Customers we spoke to stated that **25% of their total IT savings were attributed to reducing licensing costs.**

- **Operational Costs –** Traditional VDI administrators require a different skill set to keep various parts of the solution running in order to deliver quality performance and reliability. Cameyo's cloud-native platform requires very little infrastructure maintenance. It eliminates the need for IT admins to install, configure, and update the software on each

Why This Matters

Many companies depend on Windows frameworks for applications, security, authentication, and overall workflows. However, as more people join the hybrid and remote workforce, the corporate network's ability to safeguard its assets has significantly deteriorated.

Because Cameyo operates autonomously from the Windows operating system, end users can access their Windows applications through ChromeOS, thereby eliminating the need to manage or secure a Windows desktop. Furthermore, Cameyo's Linux capabilities enable organizations to deliver all applications that don't require a Windows server on Linux servers, which have less overhead than Windows servers.

individual device, which can be time-consuming and costly. This helps reduce the number of IT admins an enterprise would typically require to manage the solution. Additionally, Cameyo does not require third-party tools or consultants to operate. Through ESG interviews, customers stated that "the **ChromeOS and Cameyo combination lowered our operational complexity so much that we were able to reduce the number of IT admins needed for virtualization by 50%,** allowing them to focus on other strategic initiatives.

"The quality of Cameyo's support is excellent. We were able to save so much time by not having to run individual patches, updates, or any of the regular maintenance we did with our previous solution."

- **Management and Support Costs –** Cameyo's fully hosted service is designed to be easy to use and manage. IT admins have the ability to deploy and manage applications from the cloud, eliminating the need for organizations to manage any infrastructure. Additionally, Cameyo's support of all applications, including Windows, Linux, SaaS, and internal web applications, provides a seamless Cloud Desktop experience for end users and reduces the cost of support for cloud desktops and virtual applications.

- **Reduced Risk –** Cameyo greatly reduces your company's risk of cyber threats by providing data security while simultaneously maintaining flexibility. At its core, Cameyo is built with a zero trust security model that augments ChromeOS and Google Cloud security features. With Cameyo's Virtual App Delivery (VAD) solution, sessions and resources are isolated. Therefore, end users never make contact with an enterprise's network or data. Instead of jeopardizing an organization's network or data with open HTTP, HTTPS, and RDP ports, Cameyo dynamically opens and closes those ports to authenticated remote users, hybrid users, and allowlisted IP addresses, while concomitantly delivering applications without opening firewall ports. Additionally, any multifactor authentication that an organization has established with a single sign-on provider integrates with Cameyo. Lastly, Cameyo's non-persistent servers fully wipe end-user data at the end of each session.

Figure 4. Business Benefits with ChromeOS with Cameyo

Enterprise Strategy Group Analysis

Enterprise Strategy Group (ESG) leveraged the information collected through vendor-provided material, public and industry knowledge of economics and technologies, and the results of customer interviews to review, audit, and contribute to a Cameyo total cost of ownership (TCO) model that compares the costs and benefits of using ChromeOS with Cameyo instead of traditional VDI. ESG's interviews with customers who have recently made the transition to Cameyo, combined with experience and expertise in economic modeling and technical validation of ChromeOS with Cameyo, helped to form the basis for our contributions to the administrative benefits within the modeled scenario.

ESG examined an economic model, which assumed that an organization was looking to modernize its existing VDI and transition its IT environment to Cameyo's Virtual App Delivery (VAD) platform. The four categories examined were: licensing, hardware, operational, and subscription fees. The results of this model aligned with what was reported in customer interviews.

ESG's model calculated the expected savings when deploying and maintaining Cameyo's VAD solution compared to the cost of deploying traditional VDI. The model found that the annual costs for implementing Cameyo are far less when compared to those of traditional VDI. According to ESG's economic analysis, **an organization could recognize a 54% reduction in TCO** by utilizing Cameyo instead of VDI**.** As part of this reduction in TCO, organizations can realize the following:

- **75% reduced license/application costs –** Traditional application deployment methods require the purchase of a separate license for each device the application is installed on. Cameyo's process of providing access to applications on a per-named-user basis helps companies reduce their licensing and application costs by enabling each user to access their applications on any device, without needing a license for each device. Cameyo's practice of delivering applications also reduces IT overhead and indirect support and maintenance costs.

- **82% reduced hardware costs –** VDI typically has increased infrastructure requirements, whereas Cameyo's Virtual App Delivery (VAD) platform is cloud-native, reducing hardware costs. When paired with the economic benefits of ChromeOS—63% lower cost of administration, 43% lower cost of hardware, and 52% lower TCO of devices compared to Windows devices (as validated in a previous Enterprise Strategy

Group Economic Validation report)—the combined hardware savings of Cameyo and ChromeOS are significant.[2]

- **53% reduced operational costs –** Conventional VDI solutions require additional technical support and resources to manage the infrastructure. Cameyo's cloud-native solution combined with ChromeOS eliminates many of the tasks typically required to operate a virtual desktop, such as configuring applications for each desktop, provisioning, patching, and updating those devices, which reduces the number of resources needed to manage the IT environment over time.

- **35% lower subscription fees –** Cameyo's cloud-based delivery, simplified management, and flexible pricing allow for lower subscription fees. Cameyo representatives are able to assist organizations in choosing the correct subscription based on their needs.

Figure 5. Expected Savings with Cameyo
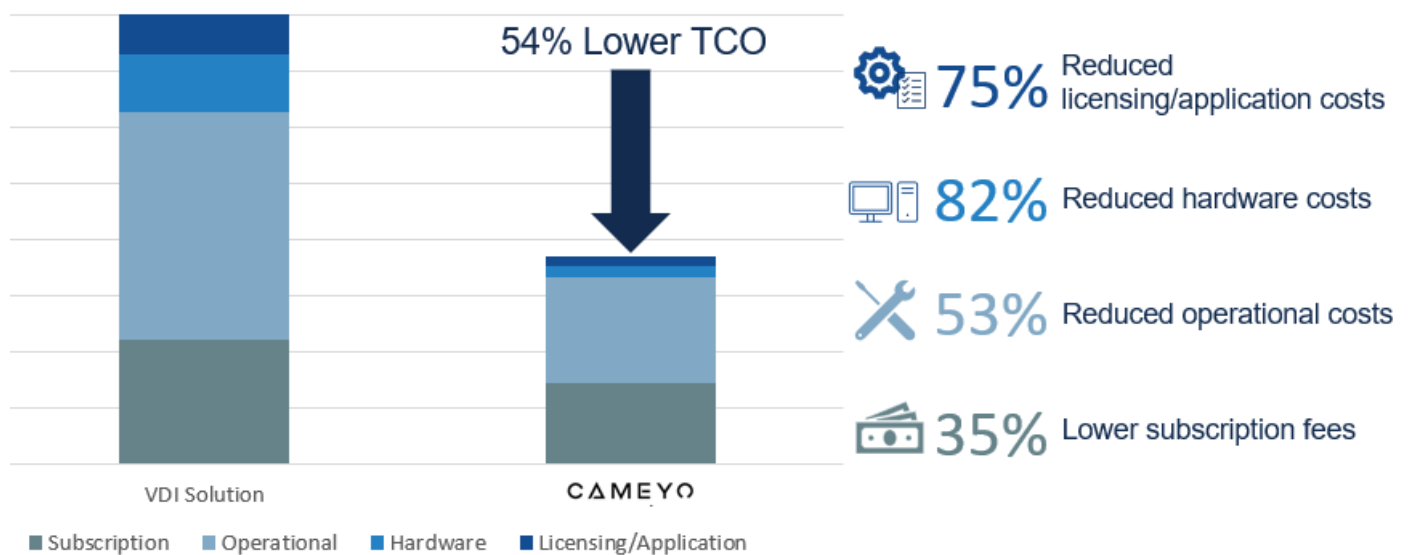
Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Issues to Consider

While our models are built in good faith upon conservative, credible, and validated assumptions, no single modeled scenario will ever represent every potential environment. The requirements for most organizations differ, and your particular savings may vary; Enterprise Strategy Group recommends that each organization consider the categories and potential benefits and savings outlined in this report to perform their own analysis to better understand the potential savings.

Conclusion

With the evolution of hybrid and remote work, businesses are looking to adopt a more flexible, seamless, and secure solution to provide access to business-critical applications without complex network configurations. The problem companies face is finding a simple and secure solution that provides the same user experience that workers expect as if they were on the corporate network. Traditional VDI solutions allow users access to their desktops and applications from remote devices. However, traditional VDI solutions can be difficult and costly to

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[2] Source: Enterprise Strategy Group Economic Value Validation, *Quantifying the Value of Google Chromebooks with Chrome Enterprise Upgrade*, June 2018.

configure, implement, and maintain and can introduce a host of security risks through exposed firewall and server ports and VPN connections. Cameyo's cloud-native Virtual App Delivery (VAD) platform offers a seamless, secure, and simple solution to deliver all applications to any device, anywhere, as long as there is an internet connection, and without the use of VPNs or virtual desktops.

Enterprise Strategy Group (ESG) verified that Cameyo could help lower costs by up to 54% while increasing business agility, reducing complexity, and lowering the risk of cyber threats while enabling worker productivity. Cameyo empowers employees by seamlessly providing the tools and applications they need to remain productive from anywhere. One customer summed it up during an interview by saying, **"The difference Cameyo made for us was absolutely groundbreaking."**

If your organization is looking for a flexible virtualization solution that enables all of your people to be productive from anywhere while cutting costs and increasing security, ESG recommends exploring Cameyo's Virtual App Delivery (VAD) platform. And if your organization is looking to deploy more secure, easier to manage, and more cost-effective devices, utilizing ChromeOS devices with Cameyo can compound the economic impact and deliver even greater TCO.

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