

The Business Value of ChromeOS **for VDI**



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Business Value Highlights

Click each highlight below to navigate to related content within this document.

VDI Benefits:

- ↑ **31%**
higher productivity of employees using VDI
- ↑ **150%**
more VDI applications deployed per year
- ↑ **43%**
faster deployment of new VDI applications and features

Overall Value of ChromeOS Devices:

- **\$3,901**
three-year total savings per ChromeOS device
- ↑ **245%**
three-year ROI
- ↓ **44%**
lower three-year cost of operations
- ↓ **37%**
lower weighted device costs
- ↑ **36%**
more efficient device management
- ↓ **24%**
fewer security attacks
- ↓ **77%**
higher productivity, faster reboots

Executive Summary

Virtual desktop infrastructure (VDI) has increasing importance as enterprise IT teams transition to more hybrid and remote work models. Virtual desktop infrastructure displays the complete graphical user interface (GUI) of a computing environment within virtual desktop client solutions. This includes application experiences, with support for keyboard, mouse, and selected peripherals. Specialized protocols are used to deliver and optimize VDI delivery from VDI platform providers including Citrix Workspace and VMware Horizon.

The promise of delivering an end user's entire desktop experience remotely is appealing to enterprise IT teams from a manageability and security perspective. According to IDC's April 2022 *Future of Work Global Survey*, 37% of enterprises globally have deployed VDI to create technology parity for all workforce members across onsite, remote, and hybrid workstyles.

While virtual by nature, VDI requires a physical endpoint device (the thin client) for end users to interact with and use. A range of dedicated thin client devices exists on the market purely to access VDI environments, though it is also possible to deliver VDI to full-featured devices, such as PCs and tablets, and employees' own personal devices (known as BYOD, or bring your own device). Deploying this endpoint technology to remote/hybrid workers can be especially challenging for IT organizations due to the requirement for separate equipment procurement and end-user training.

IDC interviewed four organizations and surveyed 146 organizations that provide ChromeOS on devices that were not specifically thin clients for employees to access virtual desktop infrastructure applications and workloads. Study participants reported that ChromeOS and ChromeOS devices provide a cost-effective, secure, and reliable means of accessing virtualized applications and desktops for their employees. This is especially important as the use of VDI continues to grow.

Customers participating in IDC's research described achieving many benefits from using ChromeOS, including:

- **31% increase in the productivity of employees who use VDI** by ensuring strong VDI application performance, enabling faster delivery of new VDI applications and features, and enhancing access to VDI as organizations move toward the cloud
- **150% more VDI applications deployed each year**, which delivers access to more application functionality via virtualized environments
- **43% faster deployment of new VDI applications and features**, which means less staff time required to deploy, manage, and support devices
- **Highly secure VDI environments and endpoints** that reduce operational risk associated with security breaches, prevent ransomware attacks, and minimize outages affecting VDI workloads

Overall, study participants who used ChromeOS for VDI workloads saw many benefits, including increased employee productivity, lower device costs, improved security, and better performance and staff efficiencies.

The Business Value of Devices Running ChromeOS for Access to VDI Workloads

Use of Devices Running ChromeOS for Access to VDI Workloads

Study participants considered factors such as cost, security, ease of use, and the user experience in selecting devices running ChromeOS for employees accessing VDI applications and desktops. They concluded that ChromeOS provided a cost-effective path to providing more employees who use VDI with new devices that would fully meet security and performance requirements.

Interviewed Google customers detailed these selection criteria:

Strong VDI access without security-related concerns (IT director, education, Singapore):

“Chromebooks have everything for VDI and employees don’t have to worry about security, antivirus and all that stuff.”

Ease of deployment with swift rollout (manufacturing, United States):

“Licensing for [other devices] is getting more and more expensive ... security and ease of use/deployment/management, all compared against [other devices]. We had a specific use case two years ago, needing to roll out a solution for WFH [work from home], and it took us less than three months with Chromebooks. We couldn’t have accomplished that with [other devices].”



Chromebooks have everything for VDI and employees don’t have to worry about security, antivirus and all that stuff.”

Minimal IT support (head of IT, technology, United States):

“We’re expanding really fast. ... decided that the best way to support our remote workers was to give them ChromeOS devices. This way, they can do the work with minimal IT support.”

Figure 1 (next page) shows survey participants’ leading responses for the most significant benefits and outcomes from using ChromeOS devices for VDI. Their choices show the breadth of device considerations for VDI as well as the ability of ChromeOS to meet VDI-specific requirements. In terms of the most significant benefits, survey participants chose benefits that clearly reflect supporting remote workers, mobility, and VDI performance, along with improved user interface and enhanced collaboration.



Survey participants’ choices show the breadth of considerations when choosing devices for their VDI users as well as the ability of ChromeOS devices to meet VDI-specific requirements. In terms of the most significant benefits, survey participants chose benefits that clearly reflect supporting:



Facilitate remote work



Mobility



VDI performance

All of which are closely associated with:



Effective VDI use



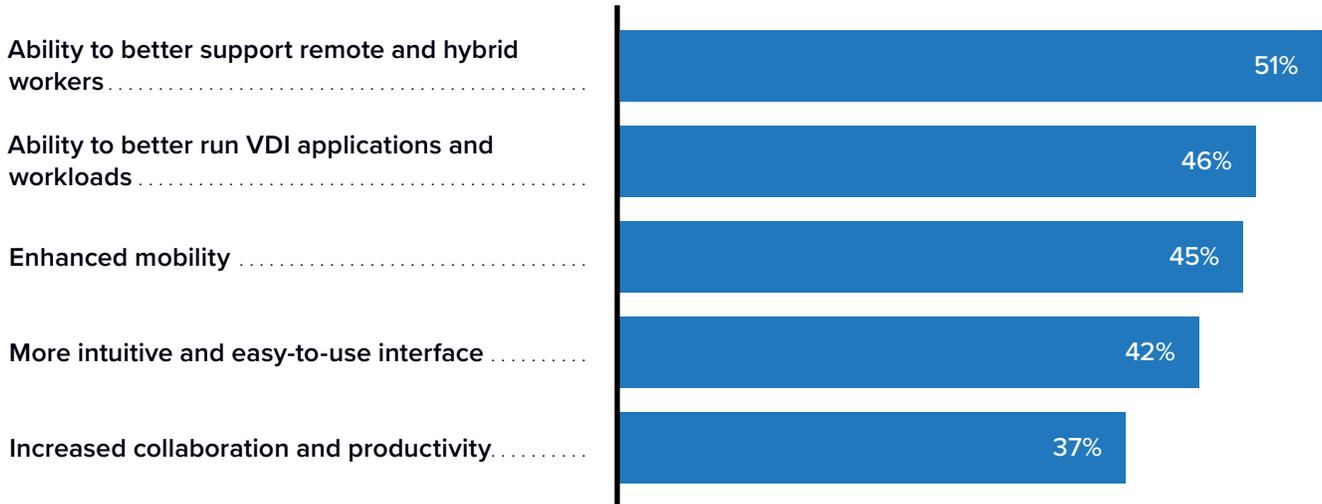
Improved user interface



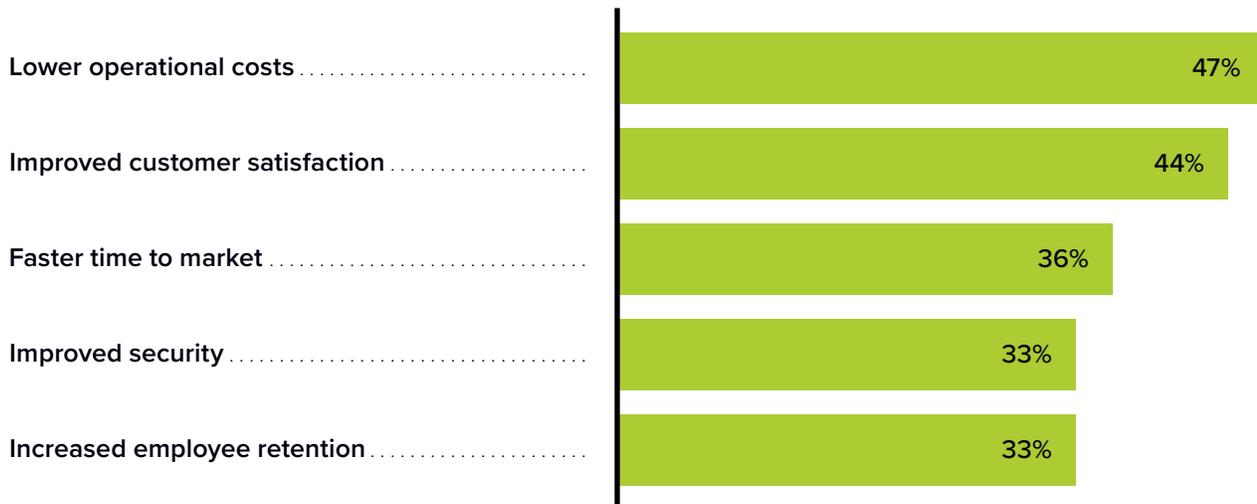
Enhanced collaboration

FIGURE 1
Benefits and Improved Outcomes from Using ChromeOS Devices — Organizations Using for VDI
(% of respondents)

Most significant benefits



Most significant improved outcomes



n = 146, Source: IDC Business Value Research, June 2022

For additional details about the organizations interviewed using ChromeOS devices for their employees to access VDI workloads, see [Appendix B: Firmographics](#).

VDI-Specific Value

Study participants reported that their organizations can better provide access to high-performing applications and desktops leveraging leading VDI solutions such as Citrix Workspace and VMware Horizon with ChromeOS devices. As a result, more employees can take advantage of VDI functionality to do their jobs, which not only helps them do their jobs better but also positions these organizations to better address business demand and meet customer needs.

Interviewed ChromeOS customers provided examples of how ChromeOS has become core to extending VDI use:

Better access because of enhanced/efficient security (IT director, education, Singapore):

“With better access to VDI applications, our employees are able to perform their tasks much faster with ChromeOS compared to previously by streamlining unnecessary steps, before getting to where they need to be and perform the task.”

Foundation for virtualization (head of IT, technology, United States):

“Everywhere we’re deploying applications to support the business, we look to virtualization first. That may change as we continue developing and scaling. ChromeOS are a driving force behind increased access because it’s so easy.”

Component of modernization strategy because of agility and cloud-first design (manufacturing, United States):

“ChromeOS devices are part of our modernization strategy. Some of these applications weren’t virtualized before. There’s more remote working and more support for those users on a standardized platform.”

Lower Device Costs for VDI Workloads

Organizations must constantly assess device costs even as they look to upgrade devices to provide employees improved functionality. This is especially the case when significant groups of employees require devices for similar purposes such as VDI access. Study participants noted that one of the most important benefits of ChromeOS has been minimizing the impact of device cost on these types of decisions. They reported that the lower comparative cost of ChromeOS devices has enabled them to not only realize tangible cost savings but also provide access to devices that run VDI.



Everywhere we’re deploying applications to support the business, we look to virtualization first. That may change as we continue developing and scaling. ChromeOS is a driving force behind increased access because it’s so easy.”



The most significant benefit of ChromeOS is supporting the workforce through high growth. This means we need fast deployment, which Chrome offers, at low cost. We used to have to invest \$2,000 for a laptop, monitor, and the works; we’ve got that down to \$400 to \$800 with Chromebooks to run all your operations.”

They provided examples of these cost benefits:

Fast deployment and cost effective (head of IT, technology, United States):

“The most significant benefit of ChromeOS devices is supporting the workforce through high growth. This means we need fast deployment, which Chrome offers, at low cost. We used to have to invest \$2,000 for a laptop, monitor, and the works; we’ve got that down to \$400 to \$800 with Chromebooks to run all your operations.”

Right device for distributed employee base (vice president of IT, real estate, United States):

“We had a distributed training base we wanted to provide tablets to for training in the field. The application for the training ran on ChromeOS on the tablet. There was another application we were able to leverage because they already had these ChromeOS devices.”

IDC’s research shows that ChromeOS devices cost 37% less on average to purchase than other devices. These types of cost savings are especially impactful when considered across hundreds or thousands of employees accessing VDI. These savings don’t even take into account ChromeOS Flex, a no-cost service that allows you to upgrade your existing fleet of PCs and Macs to achieve the benefits of ChromeOS on non-ChromeOS devices. By converting their fleet with ChromeOS Flex, IT administrators can get more mileage out of their existing devices while improving performance.

Higher Productivity for Employees Using VDI

Study participants reported that the most significant area of value from using ChromeOS devices for VDI solutions has been increased employee productivity levels. Employees using VDI require devices that can ensure uninterrupted, secure, and high-quality access to virtualized applications and desktops. When their devices suffer security breaches, perform unevenly, or cannot effectively run VDI, employees find it more challenging to leverage virtual access to applications and desktops to their advantage.



With ChromeOS we have the ability to sync the desktop to the cloud; wherever employees log in, they have the same user experience. On security, we’ve seen the benefits: we had cybersecurity events recently and ChromeOS devices weren’t impacted.”

With this in mind, study participants described how their organizations have found that ChromeOS devices offer the right capabilities and functionality for running VDI:

Same user experience for all employees accessing VDI (manufacturing, United States):

“With ChromeOS devices, we have the ability to sync the desktop to the cloud; wherever employees log in, they have the same user experience. On security, we’ve seen the benefits: we had cybersecurity events recently and ChromeOS devices weren’t impacted.”

Single ecosystem and strength of security (head of IT, technology, United States):

“With ChromeOS devices and Chrome, we have a single ecosystem for all our needs ... while looking to virtualization first. ... The platform itself is very lightweight, so you don’t need high-powered hardware. This is well integrated with our videoconferencing through Google Meet, which is natively supported. Security on Chromebooks was the best for us to manage.”

Ensuring business continuity by avoiding impactful attacks (manufacturing, United States):

“We find that ChromeOS devices are unaffected by attacks that take down [other] devices; this helps maintain business continuity during disaster recovery.”

Another important way that ChromeOS enables more effective VDI use is by providing study participants with devices that encourage the use of new applications and features and reduce the time required for delivery. As shown in **Figure 2** (next page), study participants reported that they can better respond to user demand for improved access to virtual applications and features with ChromeOS by increasing the number of applications available by 2.5 times and reducing the time required to deploy a new application or feature by 43% on average.

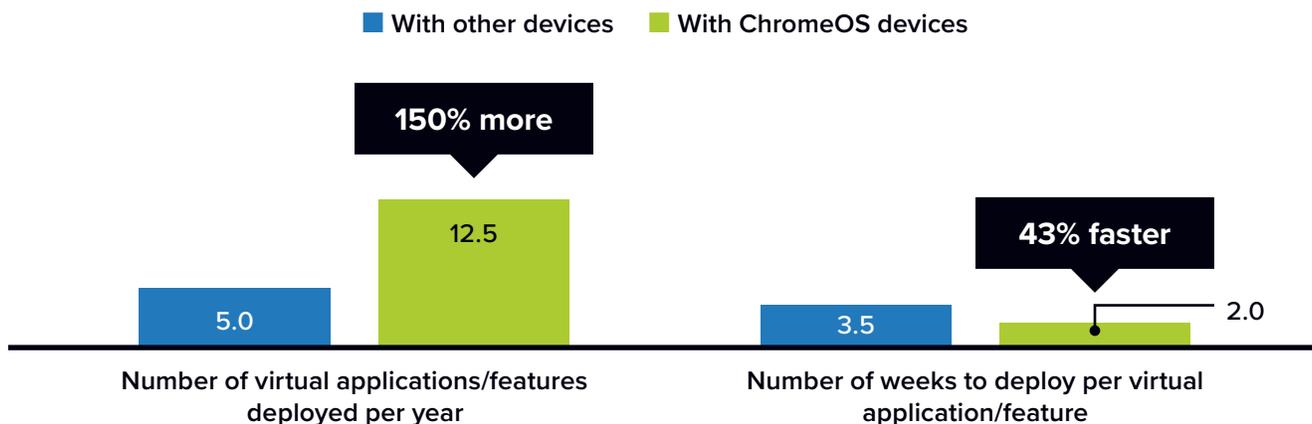


Study participants reported that they can better respond to user demand for improved access to virtual applications and features with ChromeOS by increasing the number of applications available by **2.5 times** and reducing the time required to deploy a new application or feature by **43% on average**.

FIGURE 2

Impact of ChromeOS Devices on Deployment of New VDI Applications and Features

(Number)



For an accessible version of the data in this figure, see Data from [Figure 2](#) in Appendix C. n = 4 for in-depth interviews, n = 146 for survey. Source: IDC Business Value Research, June 2022

These advantages of ChromeOS devices for VDI lead to substantial productivity gains. Study participants described general improvements in employee performance as they can better leverage virtualized applications and desktops to do their jobs as well as specific examples. For example, a U.S. real estate company commented on how ChromeOS devices have allowed it to offer more training by separating out training workflows and sequestering transaction data in a sensitive, highly regulated environment: *“We found VDI on ChromeOS devices to be a simple, straightforward solution with a better end-user experience that allowed us to conduct more training onsite and at the same time created a secure platform separate from our transactions that’s lower-risk and PCI-compliant.”*

Table 1 (next page) shows the productivity benefits that IDC calculates for interviewed organizations using ChromeOS devices for VDI workloads. On average, study participants put the productivity gain for these employees at 31%, meaning that 1,600 VDI users of ChromeOS devices could do the work that would require almost 2,100 employees with legacy or other devices. For purposes of its financial analysis, IDC applies a 15% margin assumption to this overall productivity gain, resulting in a still-significant average net productivity gain of 5%.



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TABLE 1

VDI Productivity Benefits

Average per Organization	Before/ Without ChromeOS Devices	With ChromeOS Devices	Difference	Improvement
Equivalent productivity of employees using VDI (FTEs)	1,600	2,098	498	31%
Value of equivalent productivity per organization per year	\$112.0M	\$146.9M	\$34.9M	31%
Net increase in value of equivalent productivity per organization per year	\$112.0M	\$117.3M	\$5.3M	5%

n = 4 for in-depth interviews, n = 146 for survey, Source: IDC Business Value Research, June 2022

Deployment and Manageability Benefits

Study participants reported that the ease of deploying, managing, and supporting ChromeOS devices has proven beneficial in supporting VDI use cases. As noted, they are often using hundreds or thousands of ChromeOS devices running VDI, which puts a premium on efficiency in terms of day-to-day operations. This is especially the case as employees accessing virtualized applications and desktops are often less desk-based than other employees, which can create greater strain in terms of supporting these employees.

Interviewed ChromeOS customers described these types of deployment and manageability benefits of ChromeOS devices for their VDI environments. ChromeOS provides organizations with capabilities such as zero-touch deployment, management from the cloud, and API-EMM integration that reduce the touch points and burden of device deployment.



ChromeOS devices came packaged and installed; we can put them in a case and ship it out at low cost and low risk. They are easy to implement, with a quick turnaround.”

On average, study participants put the productivity gain for employees at 31%, meaning that **1,600 VDI users of ChromeOS devices could do the work that would require almost 2,100 employees** with legacy or other devices.

A U.S. real estate company commented on the ease of deployment: “*ChromeOS devices came packaged and installed; we can put them in a case and ship it out at low cost and low risk. They are easy to implement, with a quick turnaround.*” Meanwhile, a U.S. manufacturing company explained how automation with ChromeOS devices enables more efficient management and greater device agility: “*[Other] devices require patching; with ChromeOS, it’s all automated. Chrome was born in and designed for the cloud. ... We’re also able to scale deployment easily in response to business demand, as in the case of the increase in remote work during the pandemic, or during a disaster recovery situation in a 24 x 7 production environment. This increased agility is a key benefit.*”

IDC’s research shows that study participants realize various benefits in terms of deployment, management, and support, including that ChromeOS devices require 36% less staff time to manage than previous or other devices.

Security Benefits

Study participants cited the ability to have employees access VDI applications and workloads in a completely secure fashion as a core benefit of using ChromeOS. As with many organizations, they have particular concerns about data integrity and security breaches for employees accessing data and systems from outside their firewalls, and ChromeOS devices have helped them mitigate these concerns. The interviewed educational organization in Singapore explained: “*Security is the essential benefit of ChromeOS devices because we use our own productivity solution for employees accessing data. We can just put the data there and do work on the VDI using the Chromebook. The security is much better enhanced because as far as we have seen, there are fewer attacks on Chromebooks compared with [other devices].*”

IDC’s research shows positive outcomes in terms of security for Google customers in a variety of areas. For example, they reported experiencing an average of 24% fewer security attacks than on legacy or other devices, a 29% lower overall security risk, and 29% more efficient device security teams.

IDC’s research shows that study participants realize various benefits in terms of deployment, management, and support, including that ChromeOS devices require **36% less** staff time to manage than previous or other devices.



Security is the essential benefit of ChromeOS devices because we use our own productivity solution for employees accessing data. We can just put the data there and do work on the VDI using the Chromebook.”

Customers reported experiencing:

↓ an average of **24% fewer** security attacks than on legacy or other devices

↓ a **29% lower** overall security risk

↑ **29% more** efficient device security teams

Challenges/Opportunities



Validate support for peripherals and end-user workspace environment technologies.

Organizations that have deployed dedicated thin clients with associated peripherals and supporting devices should test and validate existing technology with ChromeOS devices to ensure compatibility and usability when considering a shift to ChromeOS devices for VDI endpoint delivery. To that end, several programs exist to help validate compatible technologies, including Chrome Enterprise Recommended (CER), and similar resources from VDI technology solutions such as Citrix Workspace.



Ensure support for VDI with existing software and/or cloud service technology providers.

IT organizations should look to their providers of VDI solutions to ensure support for ChromeOS devices as VDI clients. Organizations hosting their own VDI environments, or using cloud desktop service providers, should ensure the back-end delivery of VDI environments to ChromeOS devices meets all employee and/or contractor use case requirements and workload scenarios.



Plan for ChromeOS device management functions.

While ChromeOS devices can offer lower cost and efficiency in terms of deployment and support, enterprises should ensure that the endpoints are managed and configured correctly for VDI usage. Organizations with existing endpoint device management tools and services must ensure these platforms can support ChromeOS endpoints or plan to add this capability through third-party resources.

Conclusion

These benefits result in a strong value proposition for ChromeOS, for both accessing VDI, especially in terms of significant user productivity gains. IDC calculates that study participants on the whole will realize total savings with ChromeOS devices of \$3,901 per device over three years, which would result in lower cost of operations over three years of 44% and a three-year ROI of 245%.

Appendix A: Methodology

IDC's standard Business Value/ROI methodology was utilized for this project. This methodology is based on gathering data from organizations currently using ChromeOS devices as the foundation for the model.

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

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

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 manager productivity savings. For purposes of this analysis, based on the geographic locations of the interviewed organizations, 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.
- IDC applies a net margin assumption (15%) for most user productivity gains and additional gross revenue attributed to interviewed organizations' use of ChromeOS devices resulting in the net productivity and revenue calculations applied to IDC's model.

Appendix B: Firmographics

Table 2 provides details about the organizations interviewed for this study that have provided ChromeOS devices for their employees to access VDI workloads.

TABLE 2
Demographics and Use of ChromeOS Devices by Interviewed Organizations

	Average
Number of employees	39,875
Number of IT staff	687
Number of business applications	411
Revenue per year	\$5.5B
Number of employees using ChromeOS devices for VDI access	1,600
Number of virtualized applications on ChromeOS devices	10
Growth rate of virtualized applications on ChromeOS devices	16%
Countries	United States (3), Singapore
Industries	Education, manufacturing, real estate, technology

n = 4 for in-depth interviews, Source: IDC Business Value Research, June 2022

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

Appendix C: Supplemental Data

The table in this appendix provides an accessible version of the data for the complex figure included in this Use Case Brief. By clicking “Return to original figure” below the table, you can quickly get back to the corresponding data figure.

DATA FROM FIGURE 2

Impact of ChromeOS Devices on Deployment of New VDI Applications and Features

	With other devices	With ChromeOS devices
Number of virtual applications/features deployed per year	5.0	12.5
Number of weeks to deploy per virtual application/feature	3.5	2.0

[Return to original figure](#)

n = 4 for in-depth interviews, n = 146 for survey, Source: IDC, June 2022

About the IDC Analysts



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Phil is the program vice president on IDC's Enterprise Mobility team. His research provides insights into how enterprises deploy mobile devices and applications, as well as management and security platforms. Key markets he covers include enterprise mobility management (EMM) and enterprise mobile security, including mobile data and threat protection, and mobile device security technologies.

[More about Phil Hochmuth](#)



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Linn tracks market trends and industry developments that impact the worldwide and U.S. markets for PCs, thin clients, and monitors. He participates in cross-research streams that cover all device categories.

[More about Linn Huang](#)



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Matthew is responsible for carrying out custom business value research engagements and consulting projects for clients in a number of technology areas with a focus on determining the return on investment (ROI) 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](#)



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