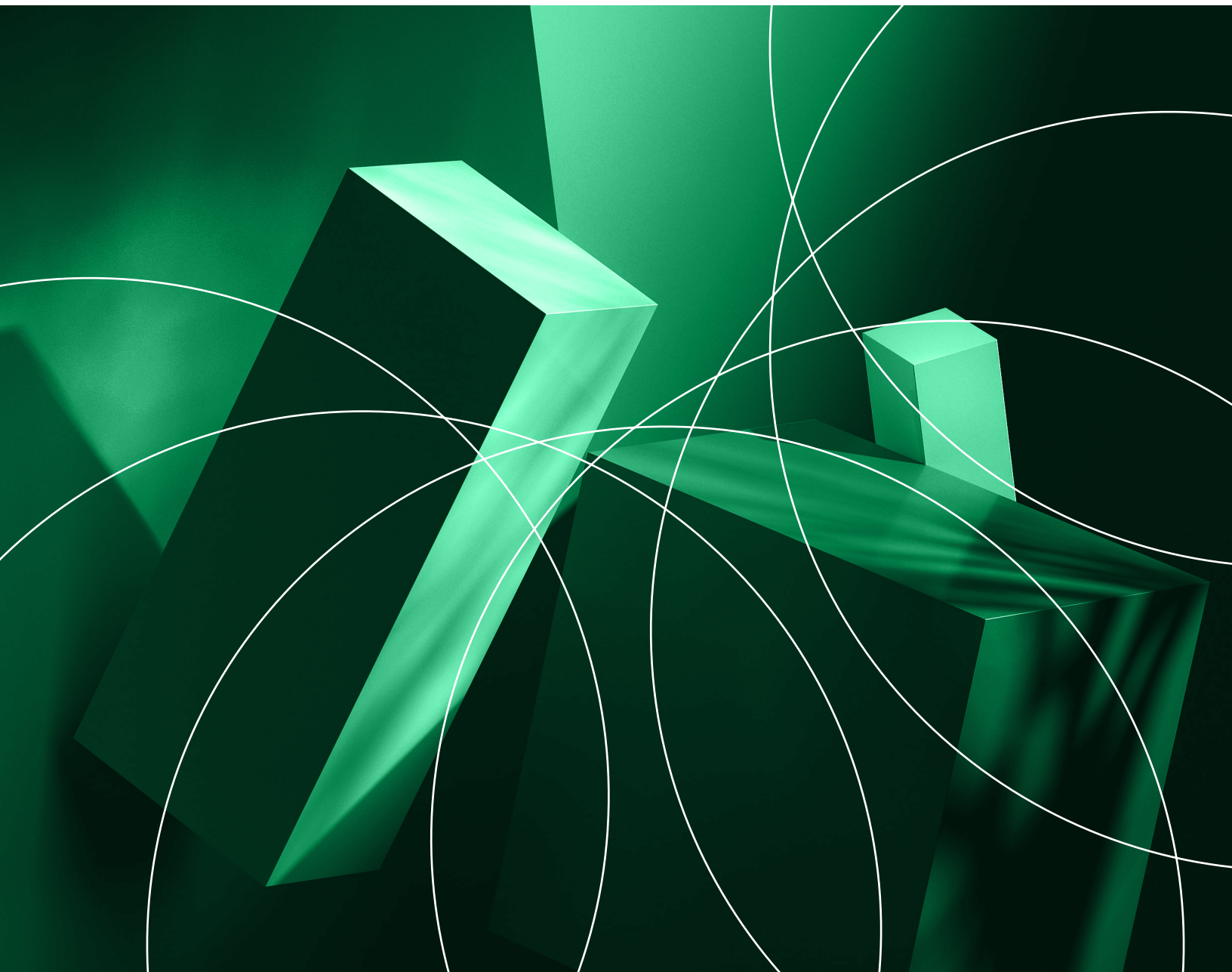


# Deliver A Next-Generation Endpoint

How AI, Web, And Cloud Will Drive The Transformation  
Of End-User Computing

A FORRESTER CONSULTING THOUGHT LEADERSHIP PAPER COMMISSIONED BY GOOGLE, APRIL 2024



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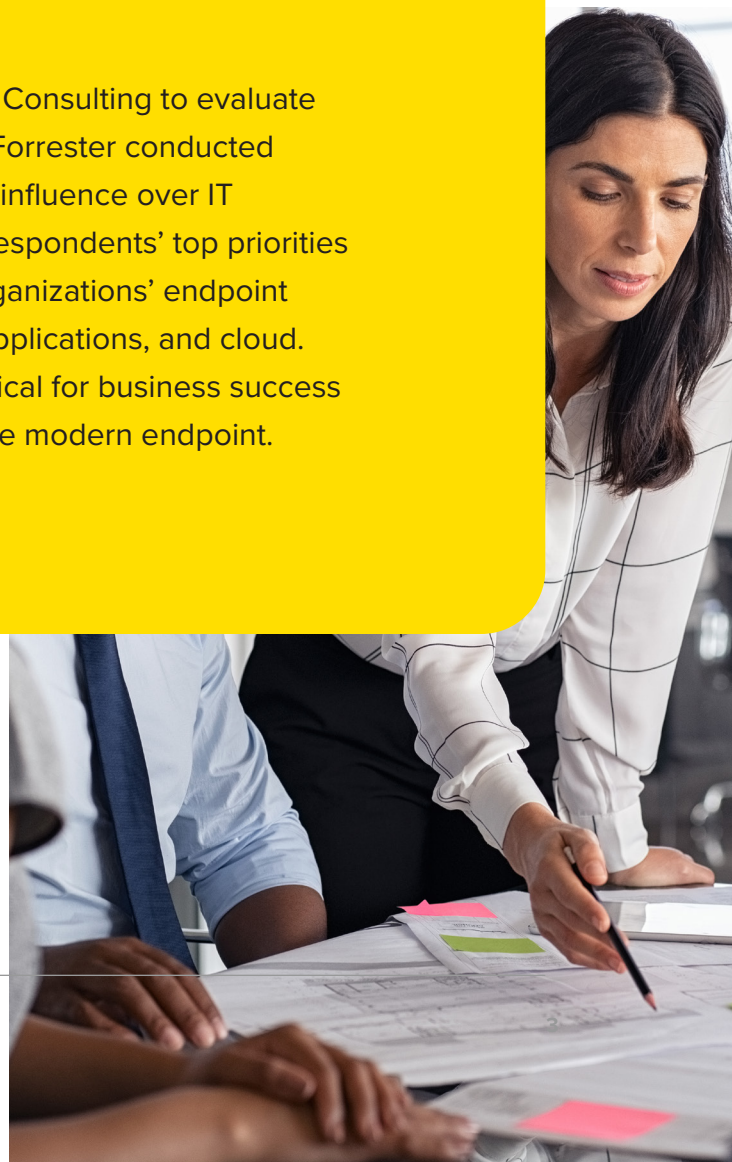


## Executive Summary

In today's digitally driven landscape, the importance of a modern endpoint strategy is often understated. With the increased prevalence of remote work, the rising costs of service delivery, and the proliferation of new security threats, the endpoint must evolve to meet the demands of the modern business. This study discusses the modern endpoint as a mix of multiple next-generation capabilities that center around artificial intelligence (AI), web-based applications, the cloud, and the integration of data.

As IT leaders attempt to harness the power of cloud and AI, they are revisiting their decades-old approach to end user computing to envision a better future. This future occurs on the web where endpoints update and secure themselves via self-healing, and where hardware and software operate independently, enabling maximum flexibility for IT and the end user. By embracing next-generation endpoint technologies, IT leaders hope to improve user experience, simplify management, increase security, and reduce costs.

In February 2024, Google commissioned Forrester Consulting to evaluate IT priorities and the state of the modern endpoint. Forrester conducted an online survey with 652 global respondents with influence over IT infrastructure and end-user computing and found respondents' top priorities this year are directly linked to modernizing their organizations' endpoint strategy with a particular focus on AI, web-based applications, and cloud. Respondents believed all of these priorities are critical for business success but see the web as the main catalyst to reaching the modern endpoint.



## Key Findings

**IT leaders are prioritizing initiatives that lead to a modern endpoint.** IT leaders are prioritizing AI, web-based applications, and endpoint management in the cloud because these initiatives are core to a modern endpoint and will allow businesses to evolve with their employees' and customers' needs.



**Endpoint security, management, and deployment are the top barrier to a modern endpoint.** Respondents said they spent on average 19% of their time managing endpoint security, 15% on endpoint management, and 14% on endpoint deployment. IT leaders must focus on these tasks first, before evolving to meet the mandate of the modern endpoint.



**Web applications are the key to a modern endpoint.** Respondents believed that web applications are a forcing function for endpoint modernization, indicating they offer a stronger user experience and more opportunity for innovation compared to client applications. As such, respondents said they are increasing their usage of web applications.



**Achieving a modern endpoint benefits the business.** A modern endpoint benefits more than IT. Respondents predicted it will improve enterprise security, reduce IT cost by an average of 19%, and increase employee productivity.



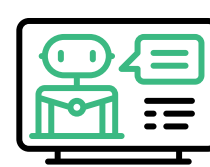
# Cloud, AI, And Web Will Unlock The Endpoint Of The Future

For all the transformation that enterprises have undergone over the last few years, many IT leaders still approach end-user computing from a legacy perspective today. As we move into the future of work, however, delivering a modern endpoint will be instrumental in enabling businesses to empower the hybrid workforce, harness the power of AI and automation, reduce operations complexity, and protect the enterprise from an ever-evolving threat landscape. But what is a modern endpoint, exactly? Respondents said they see the modern endpoint as a mix of multiple next-generation capabilities that center around four key areas: 1) artificial intelligence, 2) scalability to diverse and distributed computing environments, 3) cloud, and 4) integration of data to inform management (see Figure 1). The modern endpoint is so important because it's a key driver of how IT will achieve its top priorities for end-user computing, which include:

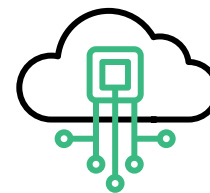
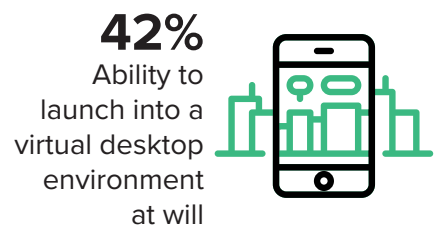
- **Enabling end users to use AI.** Respondents said their number-one priority over the next 12 months is to enable end users to take advantage of AI on the endpoint (see Figure 2). This could mean using AI to automate repetitive tasks, analyze data from endpoint devices to plan maintenance, or analyzing user behavior to create more personalized computing experiences. All of these activities would create higher productivity and efficiency for IT staff.

FIGURE 1

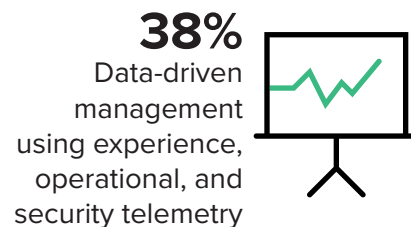
## Top Characteristics Associated With A Modern Endpoint



**47%**  
Generative AI embedded into the operating system



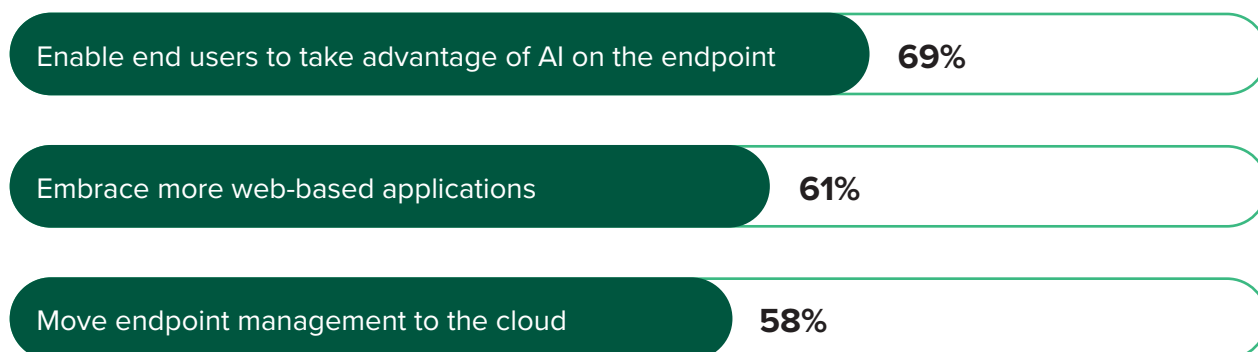
**40%**  
Cloud-based endpoint management



Base: 652 global IT infrastructure and end-user computing decision-makers  
Note: Showing top four responses  
Source: A commissioned study conducted by Forrester Consulting on behalf of Google, February 2024

FIGURE 2

## Top Priorities For End-User Computing Over The Next 12 Months



Base: 652 global IT infrastructure and end-user computing decision-makers

Note: Showing top three responses

Source: A commissioned study conducted by Forrester Consulting on behalf of Google, February 2024

Respondents said they are not just prioritizing predictive AI; they also want to embed generative AI into their operating system. Over 80% of respondents said embracing generative AI (genAI) is a key step to modernizing end-user computing, unlocking multiple benefits for end users spanning areas as diverse as content creation, meeting summarization, code development, and virtual assistance.

- **Increasing web-based applications.** Respondents said their second-highest priority over the next 12 months is to embrace more web-based applications. In fact, 81% of respondents said adopting web-based applications is a part of their organization's digital transformation goals. Web applications create a seamless user experience that scales across the business, enabling employees to access information from any operating system, browser, or location. Businesses that utilize web applications experience improved collaboration, enhanced security, and better user engagement.
- **Moving endpoint management to the cloud.** This was the respondents' third priority. Cloud-based endpoint management solutions can be accessed from anywhere with internet connection and scale with the business as they grow, removing costly server hardware and maintenance costs. Additionally, IT organizations that embrace cloud-based management can benefit from

the vast amount of telemetry that cloud solutions collect, enabling them to streamline operations, respond to security events faster, and maintain visibility over the user experience.

### ENDPOINT MANAGEMENT IS A BARRIER

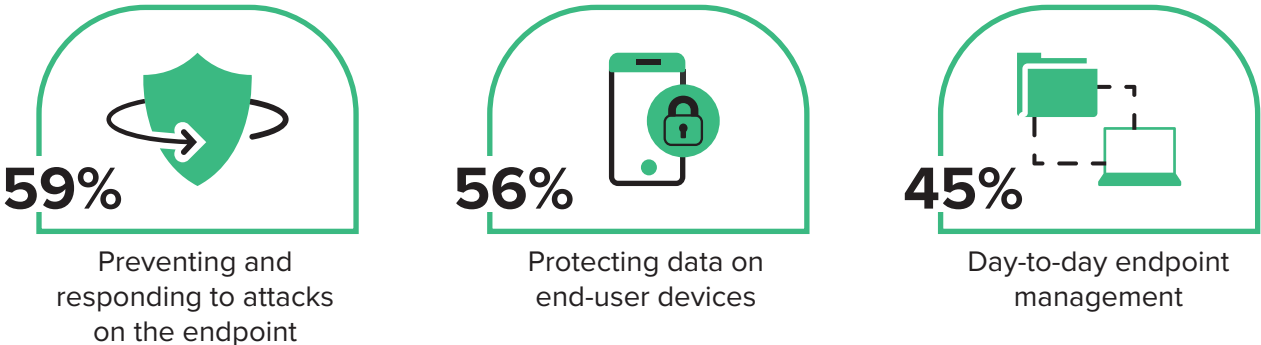
Despite the desire to modernize, IT leaders are too bogged down with day-to-day endpoint management and security tasks to effectively meet the mandate of the modern endpoint. Respondents indicated that managing and securing endpoints are the top challenges to achieving a modern endpoint.

On average, almost 50% of IT respondents' work week is dedicated to endpoint security, management, and deployment.

In addition, the most challenging elements of end-user computing were preventing and responding to attacks on the endpoint, protecting data on end-user devices, and day-to-day end-point management (see Figure 3). Not surprisingly then, respondents noted endpoint security and endpoint management are the most time-consuming aspects of their current jobs. Respondents said they spent on average 19% of their time managing endpoint security, 15% on endpoint management, and 14% on endpoint deployment.

FIGURE 3

### Top Challenges With End-User Computing



Base: 652 global IT infrastructure and end-user computing decision-makers  
Note: Showing top three responses  
Source: A commissioned study conducted by Forrester Consulting on behalf of Google, February 2024

## Web Is At The Forefront

Ninety percent of respondents in our survey indicated that the future of end-user computing is web-based. Why such high confidence? Because the web is a key forcing function for endpoint modernization. In other words, when the majority of applications that employees use are web-based, it makes all other elements of endpoint management easier to achieve, from simplifying management and improving security to unlocking the power of AI. IT leaders are so bullish on web because:

- **Software as a service (SaaS) is reshaping global business operations.** Today, IT respondents said their organizations host 50% of their applications on the web. They plan to increase that percentage by 38% over the next three years to hosting 69% of their applications on the web. Embracing web is an inevitable shift that's driven through a mass shift towards SaaS, which offers simpler licensing, easier management, and a better user experience compared to traditional client applications.
- **Web apps offer a superior user experience.** Respondents believed that web-based applications are more likely to meet their needs around user experience, (see Figure 4). Compared to client-based applications, respondents indicated that web-based apps provide a better user experience by improving real-time collaboration with coworkers, opening up access across multiple device form factors, and enabling greater choice of browsers. Respondents also saw web apps are more customizable than client apps because of the wealth of extensions, policies, and other configurations available within browsers.
- **Client apps are more difficult to manage.** In contrast to web apps, respondents indicated that client applications are more difficult to deploy, update, and manage on an ongoing basis. Eighty percent of respondents associate ease of deployment with web apps, whereas

**78%**

of respondents indicated that companies that don't embrace the web will be left behind.



only 16% said the same about client applications. In that same vein, 55% of respondents believed web applications provide seamless updates and ongoing management, whereas just 40% said the same about client applications.

The limited configurability of client applications is another source of frustration. Because every operating system needs its own version of a client app to run, it also means IT must manage multiple versions of client apps, significantly increasing complexity.

**FIGURE 4**

<b>Characteristics Most Associated With Web-Based Or Client Applications</b>	Web-based application	Client application
Ease of deployment	<b>80%</b>	<b>16%</b>
Ability to collaborate in real time with coworkers	<b>72%</b>	<b>23%</b>
App access through various operating systems on desktop, laptop, or mobile	<b>66%</b>	<b>29%</b>
Ability to unlock new innovation opportunities	<b>62%</b>	<b>34%</b>
App access through multiple browsers	<b>60%</b>	<b>34%</b>
Ability to use AI	<b>58%</b>	<b>37%</b>
Seamlessness of updates and ongoing management	<b>55%</b>	<b>40%</b>

Base: 652 global IT infrastructure and end-user computing decision-makers  
 Note: Showing top seven responses  
 Source: A commissioned study conducted by Forrester Consulting on behalf of Google, February 2024

- Web fuels innovation.** Over 60% of respondents associated innovation with web, while just 34% of respondents said the same about client applications. In particular, web applications are strongly associated with the ability to use AI, as browser-based generative AI systems primarily run within a web-context today. Astonishingly, 78% of respondents indicated that companies that don't embrace the web will be left behind.

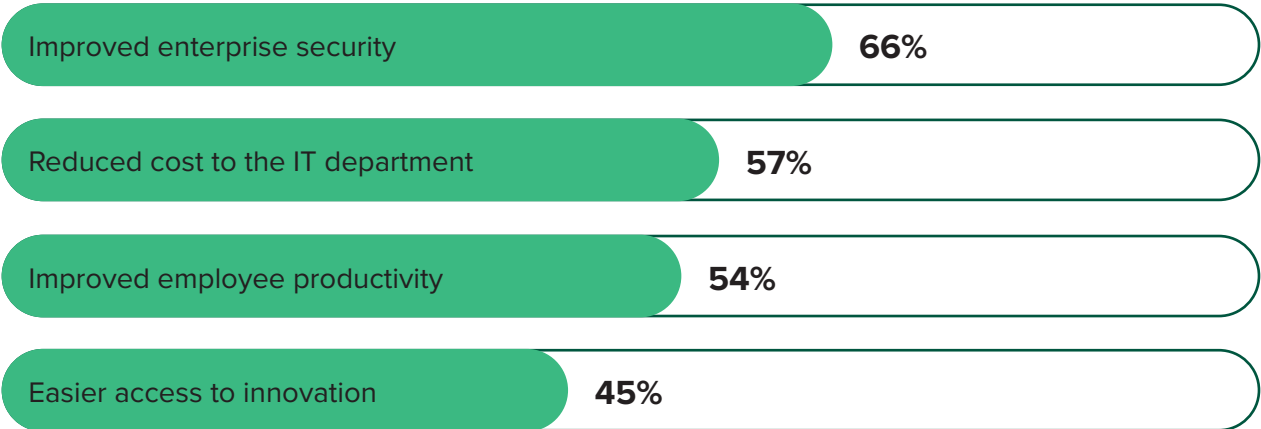
# Embrace The Future Of The Endpoint To Drive Future Outcomes

Achieving a modern endpoint is not just an IT goal. The benefit of a modern endpoint spans the entire organization. We found that a modern endpoint will (see Figure 5):

- **Improve enterprise security.** Sixty-six percent of respondents agreed that modern endpoints improve security. Focusing on acquiring a modern endpoint will address respondents' top challenge of endpoint security, as well as increase security across the organization.
- **Reduce total cost of ownership (TCO).** Twenty-eight percent of respondents targeted a TCO reduction and expected a modern endpoint to cut IT cost by an average of 19%. By focusing on a modern endpoint, respondents can access budget for other areas of transformation.
- **Produce productivity gains.** Over half (54%) of IT respondents saw modern endpoints as a way to boost employee productivity. The core capabilities of a modern endpoint, AI, web-based applications, and cloud management all work towards more efficient employee experiences.

**FIGURE 5**

## Business Outcomes Of Achieving A Modern Endpoint



Base: 652 global IT infrastructure and end-user computing decision-makers  
Note: Showing top four responses  
Source: A commissioned study conducted by Forrester Consulting on behalf of Google, February 2024

## Key Recommendations

The vision of the modern endpoint is now in full view, but how IT leaders get to this end state will require careful planning. While the road to transforming end-user computing is clear, IT leaders must think through multiple challenges to ensure they can successfully reap the benefits of a modern endpoint strategy.

Forrester's in-depth survey of 652 global IT decision-makers yielded several important recommendations:

**Inventory existing applications.** Respondents indicated that nearly 50% of their organizations' current application stacks reside on the web, which means the remaining 50% are still client-based. IT leaders should inventory these remaining apps and conduct an in-depth analysis of their active users, usage frequency, business necessity, underlying dependencies, and modernization techniques. In some cases, IT teams can modernize apps to run natively in HTML5; other times, they can virtualize the application. In cases where the app is too legacy to modernize, replacing it with an off-the-shelf SaaS application might make most sense. Ensure that your IT organization has a plan dealing with legacy applications before modernizing your firm's endpoint strategy.

**Anticipate employee resistance to web.** Though 82% of respondents indicated that the majority of employees will exclusively use web-apps five years from now, expect resistance from some employees that are used to the client experience. Twenty-five percent of respondents indicated that employees prefer the client app experience, and 22% said that they lose access to some features when they move to the web. Have a strong understanding of how the move to web applications will change the employee experience and develop a strong communication and adoption plan. Effective change management will require IT to illustrate the benefits of IT, propose alternative solutions to perceived loss of functionality, and keep an open and empathetic dialogue with end users.

**Use virtual app delivery to fill in the gaps.** While virtual desktop infrastructure (VDI) is the historical method of dealing with legacy app roadblocks, respondents indicated significant challenges with this approach. They highlighted the need for specialized skill sets, user experience latency, and difficulty in security and management as some of the top challenges of end-user computing virtualization. Newer approaches that only virtualize the application are now becoming more common, significantly simplifying and improving

delivery of legacy applications to the endpoint. Respondents indicated that this new approach would be helpful in achieving their priorities. Most (83%) indicated that direct integration of a virtual application in the OS would be helpful, while 74% said the same for a seamless use experience between native and virtual apps (no visible distinction).

**Understand that simpler does not mean inferior.** The new world of endpoint management is by definition leaner and more effective; endpoints update themselves, apps run within web browsers without OS dependencies, and users see no distinction between SaaS and virtual apps. Oftentimes, IT equates lightweight with less powerful, but that's not the case here. The transition to a modern endpoint is a paradigm shift that means IT must think differently than it once did. Just because you've historically managed platforms using complex management and security technologies doesn't mean that you should.

**Place the endpoint AI strategy at the center.** Fifty-three percent of respondents indicated that moving to web enabled them to gain faster access to generative AI. Like the internet, mobile, and cloud before it, genAI represents the most transformative technological change of our age. IT leaders must not fall behind the genAI curve and should take every step necessary to quickly onboard employees with this disruptive technology. Embracing web-based technologies on the endpoint is one of the fastest ways to give employees access to these new capabilities and should form the backbone of your strategy for endpoint transformation.

**Use the endpoint as a catalyst for IT modernization.** Endpoint modernization will require changes to tools, processes, and existing infrastructure, but it can also drive modernization across the IT stack. IT leaders should see the modern endpoint as an opportunity to address other areas of technical debt, such as identity and access management, virtualization, encryption, mobile device management, and endpoint detection and response. For example, embracing a modern web-based endpoint environment may make it easier to sunset on-premises virtual desktop products. In other cases, modernizing identity authentication capabilities alongside endpoint management can improve the user experience for both employees and administrators.

## Appendix A: Methodology

In this study, Forrester conducted an online survey of 652 global IT infrastructure and end-user computing decision-makers at organizations to evaluate the evolution of the modern endpoint and its impact on IT organizations. Survey participants included decision-makers in healthcare, retail, financial services and manufacturing and materials. Questions provided to the participants asked how modern endpoints are being used today and what they are looking for in the future. Respondents were offered a small incentive as a thank-you for time spent on the survey. The study began and was completed in February 2024.

## Appendix B: Demographics

COUNTRY	
United States	20%
Canada	14%
Australia	13%
Japan	10%
United Kingdom	9%
New Zealand	9%
France	6%
Germany	6%
Sweden	5%
Italy	4%
The Netherlands	4%

TITLE	
C-level executive	12%
Vice president	19%
Director	27%
Manager	41%

INDUSTRY	
Healthcare	23%
Retail	25%
Financial services	26%
Manufacturing and materials	26%

COMPANY SIZE	
50 to 99 employees	4%
100 to 499 employees	20%
500 to 999 employees	17%
1,000 to 4,999 employees	30%
5,000 to 19,999 employees	23%
20,000 or more employees	6%

IT INFRASTRUCTURE INFLUENCE	
I am the final decision-maker for IT infrastructure at my organization.	44%
I am part of a team making decisions for IT infrastructure at my organization.	32%
I influence decisions related to IT infrastructure at my organization.	25%

END-USER COMPUTING INFLUENCE	
I am the final decision-maker for end-user computing at my organization.	29%
I am part of a team making decisions for end-user computing at my organization.	42%
I influence decisions related to end-user computing at my organization.	29%



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