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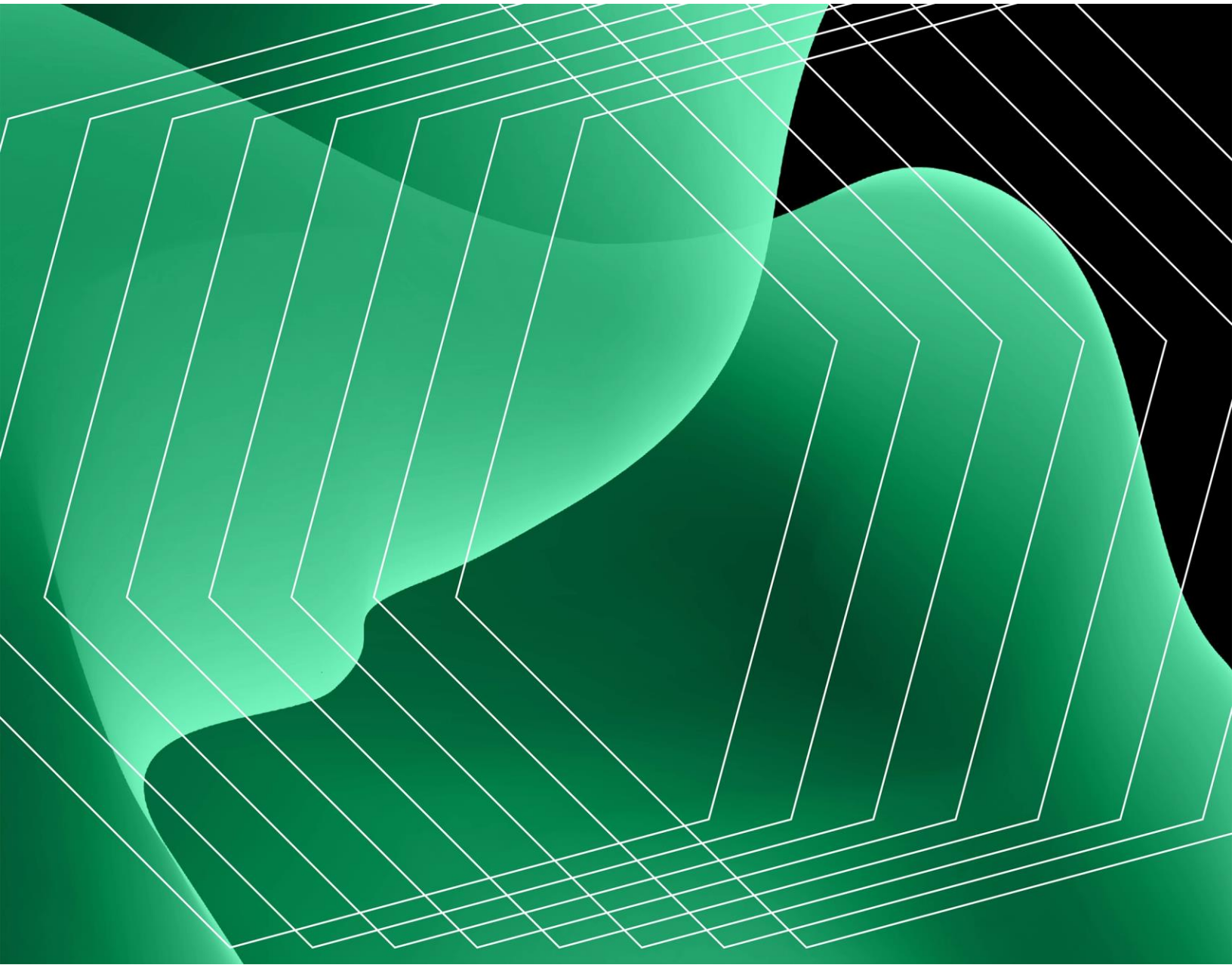
The Total Economic Impact™ Of Microsoft Windows 11 Enterprise

Cost Savings And Business Benefits Enabled By Windows 11 Enterprise

A Forrester Total Economic Impact™ Study
Commissioned By Microsoft, March 2024



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ABOUT FORRESTER CONSULTING

Forrester provides independent and objective research-based consulting to help leaders deliver key outcomes. Fueled by our customer-obsessed research, Forrester's seasoned consultants partner with leaders to execute their specific priorities using a unique engagement model that ensures lasting impact. For more information, visit forrester.com/consulting.

Executive Summary

As the workplace evolves, employees continue to expect flexible work options from their employers. In turn, organizations continue to search for ways to deliver secure, optimized experiences — starting with the operating systems that govern the organizations' many connected devices. Organizations upgrade to Windows 11 to provide a seamless and secure experience for end users and technology administrators alike.

Compared with Windows 10, Windows 11 includes updates such as:

- A new user interface with changes to the taskbar, start menu, and the introduction of widgets to provide users easier access to information and applications.
- A personalized feed powered by AI and the web to surface relevant news and topics of interest.
- Integration with Microsoft 365 and Windows 365, all manageable through Microsoft Endpoint Manager or Microsoft Intune.

Microsoft also advertises Windows 11 as the most secure Windows release yet.[1]

Microsoft commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying Windows 11 Enterprise.[2] The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Windows 11 Enterprise on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed eight representatives at six organizations with experience upgrading to and using a Windows 11 Enterprise license. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single composite organization that is an industry-agnostic, global organization with 15,000 total employees and 30,000 devices targeted for the Windows 11 upgrade.

Return on investment (ROI)
107%

Net present value (NPV)
$2.7M

Interviewees said that prior to using Windows 11, their organizations had widely deployed Windows 10 enterprise licenses for connected devices. Challenges with previous upgrades had led to devices running on different system versions and some reticence about undergoing another upgrade process. However, interviewees shared that their organizations wanted to provide their employees with the latest Microsoft operating system (OS) to improve user experiences and to enable flexible work conditions in a secure environment.

For their upgrade to Windows 11, interviewees' organizations upgraded targeted devices to Windows 11 Enterprise. Key results from the upgrade include better experiences that result in increased productivity for end users; IT efficiencies across help desk, patching, and device management responsibilities; consolidated technology architecture to reduce infrastructure costs; and an improved security posture.

KEY FINDINGS

Quantified benefits. Three-year, risk-adjusted present value (PV) quantified benefits for the composite organization include:

- **Improvement of 15% to productive time due to system performance enhancements and a 5% improvement due to user experience (UX) updates annually for end users.** Major updates included in the Windows 11 OS target both system improvements as well as UX improvements. System improvements include faster boot times and fewer reboot requirements that lessen the impact on productivity for most device operators. UX improvements include a more intuitive interface and better search and integration capabilities that enable efficiencies for a smaller volume of knowledge workers who spend more time working within the operating system. Total time savings over the three years is worth more than $4.6 million to the composite organization.

- **Reduction of 10% to 15% in help desk tickets and reduction of 60% to 80% in time spent on patching activities for IT resources.** Generally, both system and UX improvements, as well as the facilitated upgrade deployment process with Windows 11, work together to reduce the overall volume of IT help desk tickets related to devices and the operating system. Windows Autopatch functionality automatically schedules, communicates, and performs patching activities for connected devices, lessening the need for manual intervention by patching specialists. For ongoing device management, Microsoft Intune is more widely and easily deployed on Windows 11 devices than Windows 10 to improve ongoing updates further and upgrade support processes for IT administrators. Total time savings across IT tasks over three years is worth more than $241,000 to the composite organization.
- **Reduction of 20% in annual spend on printer maintenance and additional infrastructure cost savings from eliminating printer and Configuration Manager servers.** Universal Print streamlines printer maintenance and management to reduce annual costs and enable the organization to retire print servers. Additionally, the wider deployment of Intune on Windows 11 allows the composite organization to move away from prior on-premises device management tools, such as Configuration Manager, to save on related server costs. Total infrastructure cost savings over three years are worth more than $141,000 to the composite organization.

Time saved per end user per year due to system improvements

3.7 hours

- **Improvement of 3% in risk profile to reduce the likelihood of a mega data breach.** The organization improves overall security posture and control by standardizing versioning across devices to Windows 11. Additionally, Windows 11 performs better in penetration testing compared to the prior operating system version to further mitigate the impact of a security breach. The risk improvement with Windows 11 over three years is nearly $347,000 to the composite organization.

Time saved per end user per year due to UX improvements

15.6 hours

Unquantified benefits. Benefits that provide value for the composite organization but are not quantified for this study include:

- **Easier upgrade and deployment of Windows 11.** Windows 11 updates are rolled out to end users through self-service functionality, lessening the need for IT administrator involvement. End users find the deployment process both intuitive and efficient.
- **Better ongoing user experiences.** The UX improvements included in the Windows 11 OS ensure end users continue their daily tasks post-deployment with a minimal learning curve and fewer system interruptions. In a world of hybrid work, these improvements can lead to additional cost savings and a better overall employee experience.

Costs. Three-year, risk-adjusted PV costs for the composite organization include:

- **Initial planning and implementation costs of $1.4 million.** Initial costs are related to the six-month pilot period. Costs include those related to upgrading hardware for participating devices outside of the normal refresh cycle. Additionally, end users spend time upgrading their devices ahead of schedule to participate in the program. Finally, two FTEs are dedicated to planning and

implementation activities. Costs required within the initial period total $1.4 million for the composite organization.

- **Ongoing implementation and management costs of $1.1 million.** Additional devices are upgraded to Windows 11 over the course of the three-year investment period, with a total of 90% of targeted devices upgraded by the end of Year 3; however, the demands on implementation and planning resources are lower than they were during the pilot period. Similarly, fewer devices require hardware updates out of the normal refresh cycle over the investment period. One additional FTE dedicates 25% of their time to the ongoing management of the Microsoft Windows relationship at the organization. Ongoing costs total $1.1 million for the composite organization.

The representative interviews and financial analysis found that a composite organization experiences benefits of $5.3 million over three years versus costs of $2.6 million, adding up to a net present value (NPV) of $2.7 million and an ROI of 107%.

Return on investment (ROI):

107%

Benefits PV:

$5.3M

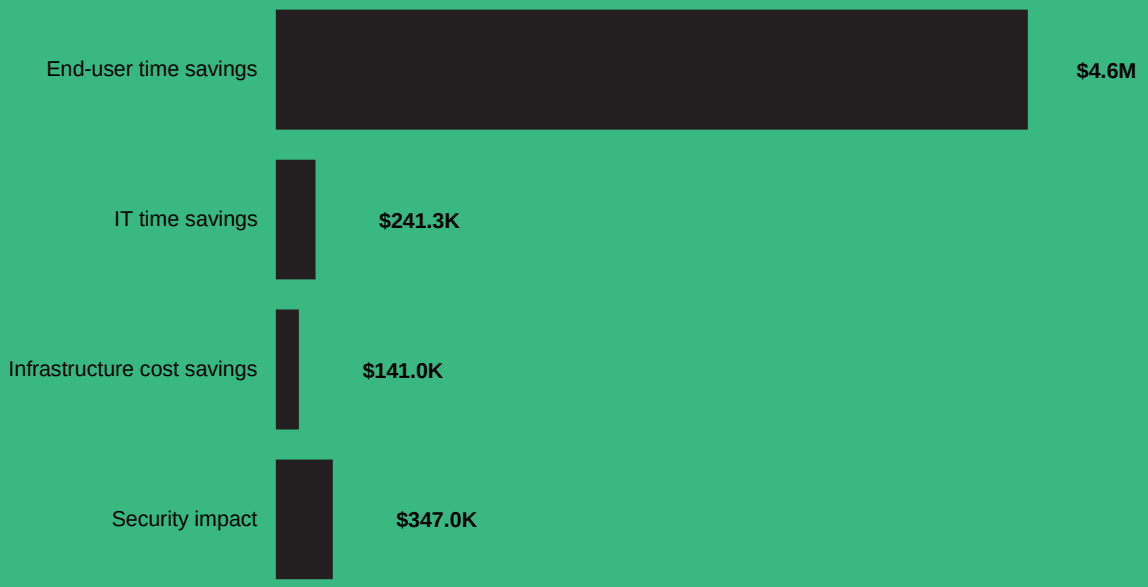
Net present value (NPV):

$2.7M

Payback:

17 months

Benefits (Three-Year)



TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment Windows 11 Enterprise.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that Windows 11 Enterprise can have on an organization.

This TEI uses information from Forrester's Cost Of A Cybersecurity Breach Survey.[3]

DISCLOSURES
Readers should be aware of the following:

This study is commissioned by Microsoft and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.

Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the study to determine the appropriateness of an investment in Windows 11 Enterprise.

Microsoft reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.

Microsoft provided the customer names for the interviews but did not participate in the interviews.

Due Diligence
Interviewed Microsoft stakeholders and Forrester analysts to gather data relative to Windows 11 Enterprise.

Interviews
Interviewed eight representatives at six organizations using Windows 11 Enterprise to obtain data about costs, benefits, and risks.

Composite Organization
Designed a composite organization based on characteristics of the interviewees' organizations.

Financial Model Framework
Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewees.

Case Study
Employed four fundamental elements of TEI in modeling the investment impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

The Microsoft Windows 11 Enterprise Customer Journey

Drivers leading to the Windows 11 Enterprise investment

Interviews					
Role	**Industry**	**Region**	**Targeted Devices; % On W11**	**Windows 11 License**	**Key Feature(s)**
• Deputy CIO • Systems administrator	Government	• US HQ • Regional operations	• 2,000 • 40% on Windows 11	E3 license	N/A
Solutions architect	Engineering services	• Sweden HQ • Global operations	• 30,000 • 14% on Windows 11	E3 license	Universal Print
• Global head of end-user services • Project manager	Consumer goods	• UK HQ • Global operations	• 30,000 • 100% on Windows 11	E5 license	N/A
Head of workplace design	Manufacturing	• Germany HQ • Regional operations	• 20,000 • 100% on Windows 11	E5 license	• Autopatch • Organizational Messaging
IT manager	Mining	• Australia HQ • Global operations	• 8,500 • 12% on Windows 11	E3 license	Autopatch
Senior engineering manager of modern workplace	Supply chain	• Denmark HQ • Global operations	• 30,000 • 17% on Windows 11	E3 license	Universal Print

KEY CHALLENGES

Before migrating to Windows 11, interviewees' organizations deployed Windows 10 enterprise licenses on connected devices.

Not only were interviewees anticipating Windows 10 end of support, but they were also facing common challenges, including:

- **Slow adoption rates of prior Windows updates.** Resoundingly, interviewees indicated that updating to prior versions of Windows 10 had been a challenge that left end users wary, devices behind update schedules, and IT administrations without version control standardization across devices.

- **Difficulty meeting user expectations for hybrid, remote, and flexible work in the current security landscape.** Interviewees agreed that further securing devices at the root or the operating system level would enable their organizations to provide more flexible work environments for end users. However, slow adoption of the prior OS and the resulting lack of standardization made it difficult to meet the organizational security and compliance protocols necessary, hindering the ability to provide additional flexibility to end users.

> "Essentially, our employees are working from anywhere, not just from an office. That means it is even more crucial that the devices employees are using are as secure as possible."
>
> GLOBAL HEAD OF END-USER SERVICES, CONSUMER GOODS

> "It is important that our end users can be flexible and travel, but that is also exposing a risk. That is one of the reasons we want to separate production and Office 365 users and why both Windows 11 and Intune are better options for us."
>
> SOLUTIONS ARCHITECT, ENGINEERING SERVICES

INVESTMENT OBJECTIVES

The interviewees' organizations wanted to update devices to Windows 11 to take advantage of UX and operating system improvements, including:

- Better searchability.
- Better integrations with larger M365 and W365 ecosystem.
- More robust security features.
- Efficient patching via Autopatch.
- Effective notification broadcast to employee base via Organizational Messaging.
- Streamlined printer maintenance and management via Universal Print.
- Embedded AI capabilities via Copilot (future).

> "The modern Windows 11 infrastructures has enabled us to build workstations from home and leverage the whole disconnected nature of not having to be in the office anymore."
>
> **IT MANAGER, MINING**

> “As a manufacturing company that is looking to become more digital, Windows 11 is critical to that. For example, the next version of Windows 11 will include generative AI capabilities built into the OS to help open and canvas files. That will be a game changer for us.”
>
> IT MANAGER, MINING

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an ROI analysis that illustrates the areas financially affected. The composite organization is representative of the eight interviewees, and it is used to present the aggregate financial analysis in the next section. The composite organization has the following characteristics:

Description of composite. The global, billion-dollar, industry-agnostic organization has 15,000 total employees, including a mix of knowledge workers and frontline workers, across a hybrid workplace model. Each employee operates an average of two connected devices for a total of 30,000 devices targeted for the Windows 11 upgrade. There are other devices outside the scope of the upgrade due to their lack of connectivity or hardware maturity.

Deployment characteristics. The composite organization upgrades the targeted devices from Windows 10 enterprise licenses to Windows 11 Enterprise licenses. The 30,000 devices are upgraded on a rolling basis over the three-year investment period at the following cadence: 40% in Year 1, 80% in Year 2, and 90% in Year 3. Additionally, the organization conducts a six-month pilot program initially that includes 15% of the total targeted devices that are upgraded to Windows 11 at the request of the end user. During the pilot, end users self-select into the upgrade process and, therefore, the organization must update the hardware for 20% of those devices outside of their normal

four-year refresh cycle. On an ongoing basis, a much smaller percentage of devices require the same hardware update outside of the normal cycle: 5% in Year 1, 2.5% in Year 2, and 1.25% in Year 3.

Key Assumptions

$1 billion revenue

15,000 employees

30,000 devices

Six-month pilot for 15% of devices

90% of devices upgraded to W11 by Y3

Analysis Of Benefits

Quantified benefit data as applied to the composite

Total Benefits						
Ref.	**Benefit**	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Atr	End-user time savings	$1,078,920	$2,157,840	$2,427,570	$5,664,330	$4,588,044
Btr	IT time savings	$83,334	$98,067	$112,509	$293,909	$241,334
Ctr	Infrastructure cost savings	$33,440	$59,375	$81,890	$174,705	$140,995
Dtr	Security impact	$81,600	$163,200	$183,600	$428,400	$346,999
	Total benefits (risk-adjusted)	$3,078,000	$3,655,125	$4,275,000	$11,008,125	$9,030,816

END-USER TIME SAVINGS

Evidence and data. Interviewees noted that many of the updates included in the Windows 11 OS focused on delivering enhanced end-user experiences by improving both the user interface and underlying operating system performance.

On the UX side, interviewees noted the following:

- An interviewee at a government organization cited a better virtual experience for remote workers with Windows 11.
- The global head of end-user services at a consumer goods organization indicated that the more intuitive interface offered by Windows 11 made it easier for end users to locate and pin tools, files, and folders. The IT manager at a mining organization agreed that the enhanced search capabilities were a big value driver of the update to Windows 11, stating: “One of the other productivity benefits is the searching capabilities of Windows 11 compared to Windows 10. The fact that it can incorporate some of the enterprise search functionality that we’re now leveraging can search within your OneDrive, can search within SharePoint. It shows you all the Microsoft 365 stuff but also includes things like

‘today at a glance’ and your common contacts or even your organizational chart. … It’s really cool that it’s so user-intuitive.”

- The head of workplace design at a manufacturing organization highlighted that Windows 11 was better integrated with the rest of the Microsoft 365 ecosystem compared to Windows 10. They estimated that office workers saved up to 30 minutes daily due to better integrations and facilitated file access.

Interviewees noted that system performance improvements included the following:

- The deputy CIO at a government organization estimated that end users experienced faster device boot times by 5 to 10 seconds on average compared to Windows 10, with most end users rebooting their devices once a week on average.
- The global head of end-user services at a consumer goods organization indicated that end users experienced fewer required reboots and faster reboot times during initial OS deployment as well as for required ongoing updates. They detailed, “With Windows 11, the downtime is on average less than an hour for the initial deployment.”
- The head of workplace design at a manufacturing organization also mentioned the value of fewer required reboots to end users with Windows 11. They estimated that the volume of required device reboots, which typically took end users 20 minutes to perform, was cut in half (50%).
- A senior engineering manager of modern workplace at a supply chain organization also cited the easier Windows 11 deployment as a contributing factor to improved end-user experiences. They stated, “End users are happy with the upgrade [to Windows 11] because it just works; there have been no complaints.”
- A solutions architect in the engineering services industry estimated an overall 5% to 10% productivity improvement for end users going from Windows 10 to 11, explaining: “[Windows 11] is a more worked through operating system overall. It also has a much better look and feel to the start menu, and it’s easier to find things. Generally, everything is a little bit better.”

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- The number of end users impacted scales each year of the investment in accordance with the device update cadence.
- System improvements impact 60% of all end users with updated devices. The impact to productive time is working time previously interrupted by device boot delays and reboot requests in the Windows 10 environment. The impacted end users spent an average of 1.2% of their time, or just under 30 minutes per employee per week, performing such activities before.
- With the update to Windows 11, the 60% of end users impacted by system improvements get 15% of that previous downtime back.
- UX or design improvements impact a smaller group of mostly knowledge workers, or 30% of end users with updated devices. Knowledge workers spend, on average, 15% of their time, or about 6 hours per employee per week, working within the Windows environment performing required tasks.
- With the update to Windows 11, the 30% of end users impacted by UX improvements see a 5% efficiency improvement while performing these tasks from the intuitive interface, better searchability, and integrations with the larger Microsoft 365 ecosystem.
- Forrester assumes that not all recovered time will be used for productive or value-added activities, so a 50% productivity recapture rate is applied.

Risks. End-user time savings may vary depending on the following:

- The size of the organization, including employee and device count, as well as the scope of devices targeted for the Windows 11 update and the cadence of the Windows 11 deployment.
- Cultural and organizational change management barriers.
- The industry and workforce characteristics of the organization, which may dictate the volume of impacted employees per each improvement category for both UX and system improvements, as well as how much their productivity was previously impacted by challenges in the Windows 10 environment.

Results. To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $4.6 million.

	Y1	Y2	Y3
Total volume of users impacted by system updates	3,600	7,200	8,100
Average hours spent booting/ rebooting devices with Windows 10 per user per year (rounded)	25	25	25
Productivity improvement due to system updates in Windows 11	15%	15%	15%
Total volume of users impacted by UX improvements	1,800	3,600	4,050
Average hours spent performing tasks in Windows 10 per user per year (rounded)	312	312	312
Productivity improvement due to UX updates in Windows 11	5%	5%	5%

End-User Time Savings					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
A1	Total employees	Composite	15,000	15,000	15,000
A2	Percentage of users who fully adopted Windows 11	Composite	40%	80%	90%
A3	Average percentage of users whose productivity is directly impacted by Windows 11 system updates	Composite	60%	60%	60%
A4	Average percentage of productive time impacted by Windows 11 system updates	Composite	1.2%	1.2%	1.2%
A5	Average percentage improvement to productive time with Windows 11 system updates	Interviews	15%	15%	15%
A6	Average fully burdened annual salary of end users	TEI standard	$135,000	$135,000	$135,000
A7	Subtotal: Total impact to users due to Windows 11 system updates	(A1*A2*A3)*A4*A5*A6	$874,800	$1,749,600	$1,968,300
A8	Average percentage of users whose productivity is directly impacted by Windows 11 UX updates	Composite	30%	30%	30%
A9	Average percentage of time spent performing tasks in Windows 10	Composite	15%	15%	15%
A10	Percentage improvement to productive time with Windows 11 UX updates	Interviews	5%	5%	5%
A11	Average fully burdened annual salary of end users	TEI standard	$135,000	$135,000	$135,000
A12	Subtotal: Total impact to users due to Windows 11 UX updates	(A1*A2*A8)*A9*A10*A11	$1,822,500	$3,645,000	$4,100,625
A13	Productivity recapture	TEI standard	50%	50%	50%
At	End-user time savings	(A7+A12)*A13	$1,348,650	$2,697,300	$3,034,463
	Risk adjustment	↓20%			
Atr	End-user time savings (risk-adjusted)		$1,078,920	$2,157,840	$2,427,570
	Three-year total: $5,664,330			**Three-year present value: $4,588,044**	

IT TIME SAVINGS

Evidence and data. End-user improvements to both UX and system performance contributed to fewer IT help desk tickets with Windows 11. Additionally, interviewees noted that the easier deployment of the Windows 11 update meant less IT intervention and contributed to fewer help desk tickets during the implementation period specifically.

As a result, more devices were more easily updated to the Windows 11 OS, enabling the interviewees' organizations to take advantage of new functionality, such as Windows Autopatch, that facilitated patching activities that previously required dedicated IT resource time to complete. Finally, Windows 11 played nicer with existing Microsoft functionality, such as Autopilot for managing update processes and Intune for ongoing device management in the cloud. As such, interviewees noted that their organizations were more likely to have Windows 11 devices take advantage of these capabilities to further promote IT efficiencies.

Interviewees noted the following about the help desk ticket reduction their organizations experienced:

- The deputy CIO at a government organization estimated that Windows 11 reduced overall help desk ticket volumes by just over 13% due to fewer device lockouts and less impediment to productivity for end users.
- A solutions architect in the engineering services industry saw 10% fewer OS-related incidents with Windows 11 compared to their prior Windows 10 environment due to improved system stability, which reduced related help desk ticket volumes from about 50 per week to 45 per week.
- The head of workplace design at a manufacturing company also estimated a 20% reduction in OS-related help desk tickets due to the Windows 11 update due to greater ease of use for end users.
- An IT manager at a mining organization saw a 60% to 70% reduction in help desk tickets specific to the Windows 11 implementation phase.

Interviewees noted the following about Autopatch:

- An IT manager at a mining organization implemented Windows Autopatch to help identify and then automatically schedule, communicate, and conduct patches on connected devices. As such, the interviewee's organization redirected 60% of an FTE's time away from manual patching responsibilities. This was especially critical functionality given complexities related to having many field devices dispersed across a large geography "that previously made patching logistics a nightmare given that field devices were rarely connected to the internet. Patching activities had been very reactive [before Windows 11]." Meanwhile, with Autopatch, the interviewee at the mining organization stated: "[The patching

specialist] doesn't need to do too much. We've got them looking at other activities because Autopatch takes away the need for someone to manually go through and work out which patch it is they need to download this month and deploy. Autopatch has been a godsend for us."

- The systems administrator at a government organization anticipated future savings of about 30 minutes per device per week with Windows 11 versus Windows 10 as they no longer "have to go looking for issues or manually patch the environment for certain features."

Interviewees noted the following about easier device management with Intune/Deployment with Autopilot:

- The systems administrator at a government organization saw fewer failures during application testing and installation with the upgrade to Windows 11 compared to previous upgrades, which contributed to the easier deployment of the upgrade across more devices. With more devices standardized to Windows 11, they rolled out Intune for more devices as well and saw additional ongoing management efficiencies. They stated, "With triple the number of devices in Intune now, we are spending the same amount of time on ongoing management of those devices [compared to fewer devices previously], and we have a 95% success rate with upgrading to Windows 11."
- The global head of end-user services at a consumer goods organization also mentioned easier application installation as a contributing factor to IT efficiencies during the Windows 11 upgrade process: "Ninety-nine percent of applications work with Windows 11 with very little failures. In the end, we were able to get through application testing in the allotted time so that it did not hold up upgrade timelines."
- The same interviewee at a consumer goods organization estimated their organization avoided outsourced contractor spend associated with the easier deployment of Windows 11 as they were able to manage with internal resources. Contractor support over the six-month implementation period could have cost their organization upwards of $900,000.
- A senior engineering manager of modern workplace at a supply chain organization explained that they currently outsource a lot of their ongoing device

management to a third-party vendor. They expect to be able to bring this in-house and reduce the contract with the vendor once all the devices are upgraded to Windows 11.

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- For the composite, 20% of employees log an average of one help desk ticket related to their OS or devices annually.
- Windows 11 provides an easier update deployment process, better UX, fewer required reboots, and better onboarding experience for new employees, which contribute to a 10% to 15% reduction in related help desk tickets.
- Average cost per ticket is related to the hourly annual salary for help desk administrators and the average time to process and resolve a ticket.
- Before Windows 11, the composite organization dedicated one FTE to patching activities. With Windows 11, the organization utilizes Autopatch functionality to redirect 60% to 80% of the FTE's time spent on related activities.

Risks. IT time savings may vary depending on the following:

- The scope of the Windows 11 deployment in terms of device volume and functionality enabled.
- The prior state in terms of resources or vendors responsible for impacted IT tasks before the Windows 11 upgrade.
- Salary implications for impacted resource groups.

Results. To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $241,000.

12%

Average annual help desk ticket reduction

IT Time Savings					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
B1	Volume of help desk tickets related to OS/desktops/laptops annually	Composite	3,000	3,000	3,000
B2	Adoption rate of Windows 11	A2	40%	80%	90%
B3	Reduction in help desk ticket requests related to Windows 11	Interviews	10%	12%	15%
B4	Average cost per ticket	Composite	$6	$6	$6
B5	Subtotal: Total help desk ticket savings	B1*B2*B3*B4	$720	$1,728	$2,430
B6	Patching specialists required before Windows 11 (FTE)	Composite	1	1	1
B7	Percentage of patching specialist time redirected due to Autopatch functionality	Interviews	60%	70%	80%
B8	Average fully burdened annual salary for patching specialists	TEI standard	$145,000	$145,000	$145,000
B9	Subtotal: Total savings associated with Autopatch	B6*B7*B8	$87,000	$101,500	$116,000
Bt	IT time savings	B5+B9	$87,720	$103,228	$118,430
	Risk adjustment	↓5%			
Btr	IT time savings (risk-adjusted)		$83,334	$98,067	$112,509
	Three-year total: $293,909			**Three-year present value: $241,334**	

INFRASTRUCTURE COST SAVINGS

Evidence and data. Interviewees updated to Windows 11 and activated features like Universal Print to realize printer maintenance and storage cost savings. Additionally, more Windows 11 devices were transitioned to cloud management with Intune from prior on-premises Configuration Manager tools. Therefore, the interviewees recouped additional infrastructure cost savings from decommissioning Configuration Manager servers. Interviewees also stated that some point solutions previously procured from third-party vendors were no longer required due to enhanced functionality with Windows 11 as well as better UX and searchability that made available tools more easily accessible to end users.

- A solutions architect at an engineering services organization deployed Universal Print to their print devices as part of the Windows 11 implementation. As a result,

their organization saw a reduction in spend on annual printer maintenance. They stated, “[With Universal Print,] we have spent 20% less on printer maintenance in terms of cost per printer compared to our previous solution.” The same interviewee also retired print infrastructure, including three total print servers, to recover the associated annual licensing and server maintenance costs.

- A senior engineering manager of modern workplace at a supply chain organization anticipated similar cost savings on third-party printer maintenance spend once they deploy Universal Print to more of their printing devices.
- A solutions architect at an engineering services organization transitioned more Windows 11 devices to Intune for ongoing device management from Configuration Manager and ultimately retired 30% of Configuration Manager servers with a goal of reaching 50% of servers.
- The deputy CIO and systems administrator at a government organization hope to retire Configuration Manager servers in the future once Windows 11 is more broadly deployed and they can use Intune on more devices. The savings would include those for both power consumption and annual licensing costs.
- An IT manager at a mining organization indicated that due to better integrations with the larger Microsoft 365 universe and enhanced UX for end users, their organization consolidated third-party vendor tools for certain point solutions. For example: “With Windows 11, we’ve been able to leverage PDF tooling for even something as simple as reading a PDF natively without having to require a third-party vendor license. This not only saves on vendor costs, but it makes our life from an IT point of view so much simpler as we have one less app we have to deploy.”

20%

Reduction in spend on printer maintenance with Universal Print

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- The organization deploys Universal Print to 10% of printers in Year 1, 15% of printers in Year 2, and 20% of printers in Year 3.
- Average spend on printer maintenance before Windows 11 assumes under 1 hour of internal IT time spent per printer per quarter.
- With Universal Print, the organization spends 20% less on annual printer maintenance compared to the before state.
- Additionally, as more printers are transitioned to Universal Print, the organization retires print servers, totaling three retired servers by Year 3 to recover the associated annual costs.
- The organization shifts to Intune for device management for more of their devices previously managed with Configuration Manager. With Intune, the organization retires seven total Configuration Manager servers by Year 3 to recover the associated annual costs.

Risks. Infrastructure cost savings may vary depending on the following:

- The scope and cadence of deployment of Universal Print as well as the method and costs associated with printer maintenance before Windows 11.
- The volume of devices previously using Configuration Manager for ongoing management before Windows 11 and the percentage of those devices that are transitioned to Intune for management.

Results. To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $141,000.

Infrastructure Cost Savings					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
C1	Total printer volume	Composite	4,600	4,600	4,600
C2	Percentage of printers using Universal Print	Interviews	10%	15%	20%
C3	Average spend on ongoing printer maintenance per printer before Windows 11	Composite	$250	$250	$250
C4	Reduction in spend on ongoing printer maintenance with Universal Print	Interviews	20%	20%	20%
C5	Print servers retired related to Universal Print	Interviews	1	2	3
C6	Average cost of print server	Composite	$5,000	$5,000	$5,000
C7	Total print savings attributed to Universal Print	(C1*C2*C3*C4)+ (C5*C6)	$28,000	$44,500	$61,000
C8	Configuration Manager servers retired related to Windows 11	Interviews	2	5	7
C9	Average cost of Configuration Manager server	Composite	$3,600	$3,600	$3,600
Ct	Infrastructure cost savings	C7+(C8*C9)	$35,200	$62,500	$86,200
	Risk adjustment	↓5%			
Ctr	Infrastructure cost savings (risk-adjusted)		$33,440	$59,375	$81,890
	Three-year total: $174,705			**Three-year present value: $140,995**	

SECURITY IMPACT

Evidence and data. Some of the security enhancements introduced on Windows 11 allowed better protection at the OS and hardware level. Interviewees generally felt that the Windows 11 environment was more secure. Additionally, it was easier to deploy Windows 11 to more devices. Standardizing more devices to a single OS version also enhanced the security profile by improving transparency across device management and ensuring the latest security features were implemented uniformly across the device suite.

- A solutions architect at an engineering services organization stated that Windows 11 performed better in penetration testing. They stated: “We made a penetration test where a security company tried to break into the platform and see what they could get, such as trying to steal credentials or get a hold of data. [The security

company] found that they were able to get into a lot less with [Windows 11]. Granted, it is a combination of Windows 11-enabled security features, but also that we have a larger focus on cybersecurity overall as an organization."

- A project manager at a consumer goods organization found that Windows 11 was more architecturally secure, stating: "[Windows 11 requires] the adoption of stricter hardware requirements, so things like TPM 2.0 and the latest processors that include some virtualization of the memory space. These requirements protect the operating system from being compromised by any kind of applications on the user side that might contain malware." The interviewee went on to describe the potential impact of a breach: "If one of the machines is compromised and the OS itself is compromised, it potentially leads to attacks like ransomware attacks that could cripple the entire organization. In worst case, if we're not careful about security, it could mean that we're not able to operate in our business or sell our products, so every minute of downtime, especially in the factory, as well as in the distribution marketing space, means dollars gone. And on top of that, if there are any attacks, then it potentially also means reputation loss as well."
- An IT manager at a mining organization said that their organization was able to set aggressive targets for upgrade compliance due to the easier deployment of Windows 11: "We're in the midst of writing our key performance indicators (KPIs) for the upcoming year, and I'm going to bump [upgrade compliance standards] up to 97% this year because I feel that the 96% has been quite achievable over the last year in upgrading to Windows 11."
- The same interviewee at a mining organization cited more built-in security features with the coupling of Windows and Intune (which was more widely deployed on Windows 11 devices) as a contributor to security impact with Windows 11. They stated: "The Windows 11 baseline that is offered within Intune simplifies our approach to managing and securing our workstations. It gives us a great starting point to lock down our workstations against our security profile and control what we want, when we want, in accordance with our security posture."

Modeling and assumptions. Based on the interviews, Forrester assumes the following about the composite organization:

- The composite organization experienced an average of 1.7 material breaches per year based on internal Forrester research.[4]
- According to a Cybersecurity and Infrastructure Security Agency (CISA) report, eight of the 12 largest breaches in recent reports resulted in financial losses of less than or equal to 0.5% of a company's annual revenue.[5]
- Using Windows 11 improves the risk profile of the OS environment by an average of 3% per year, which considers attribution to Windows 11.

Risks. The security impact of Windows 11 may vary depending on the following:

- The industry and geographical location of the organization as well as annual revenue.
- The risk profile prior to Windows 11.
- The number of devices that will receive the Windows 11 upgrade, the speed of the upgrade distribution, and the functions of Windows 11 that will be enabled.

Results. To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $347,000.

3%

Average annual risk improvement

Security Impact					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
D1	Number of security breaches resulting in exposure of data loss experienced annually	Forrester research	1.7	1.7	1.7
D2	Average cost of a mega data breach as a percentage of annual revenue	CISA report	0.5%	0.5%	0.5%
D3	Average annual revenue	Composite	$1,000,000,000	$1,000,000,000	$1,000,000,000
D4	Average cost of a data breach	D1*D2*D3	$8,500,000	$8,500,000	$8,500,000
D5	Improvement in risk profile after using Windows 11	Interviews	3%	3%	3%
D6	Adoption rate of Windows 11	A2	40%	80%	90%
Dt	Security impact	D4*D5*D6	$102,000	$204,000	$229,500
	Risk adjustment	↓20%			
Dtr	Security impact (risk-adjusted)		$81,600	$163,200	$183,600
	Three-year total: $428,400			**Three-year present value: $346,999**	

UNQUANTIFIED BENEFITS

Interviewees mentioned the following additional benefits that their organizations experienced but were not able to quantify:

- **Easier upgrade deployment to Windows 11.** Interviewees cited complicated and prolonged deployment processes for prior Windows upgrades as a common challenge before migrating to Windows 11. Luckily, the experience of upgrading to Windows 11 was easier and faster for end users and IT administrators alike. An IT manager at a mining organization detailed the comparison: “Five years ago, upgrading to different versions of Windows 10 could eat up six months of your life. It was painful. With Windows 11, we see a much more mature upgrade process built into the architecture.” The improvements to the deployment and implementation process encouraged IT administrators to expedite upgrades to Windows 11 and end users to adopt the new OS sooner. The head of workplace design for a manufacturing organization noted that minimal training was required for end users or IT staff, and the adoption process was relatively easy.

- **Better ongoing user experience.** With more devices standardized to the latest OS, the head of workplace design at the manufacturing organization indicated that their organization was better able to "stay on the bleeding edge of technology and end-user compute so that we can leverage the next big thing without legacy OS holding us back."

FLEXIBILITY

The value of flexibility is unique to each customer. There are multiple scenarios in which a customer might implement Windows 11 Enterprise and later realize additional uses and business opportunities, including adopting more cutting-edge technology, such as:

- **AI.** Forrester research states that 85% of leaders who anticipate using generative AI (genAI) in the next 12 months believe it will have a high impact on how employees do their day-to-day work over the next two years and that many will deploy company-sanctioned tools.[6] Interviewees corroborated this sentiment and were excited to take advantage of AI capabilities via Copilot built directly into their OS architecture. Additionally, interviewees felt that being on the latest OS generally prepared them to take advantage of additional value associated with AI, such as more employee experience improvements, impact on talent retention, and the ability to serve end customers more efficiently.[7]
- **Leveraging more existing Windows functionality.** Some interviewees were previously obstructed from using preexisting Windows OS functionality due to limitations in their prior environments. With the wider adoption of Windows 11, most interviewees were looking forward to turning on more functionality, such as Windows 365 Boot to Cloud and Organizational Messages.

  The deputy CIO at a government organization said about Boot to Cloud functionality: "When we made the transition to 11, it seemed like Windows 11 was built for the cloud. Microsoft is very much investing in the integration between cloud and the local PC, where everything is syncing between them. We're looking at 'Boot to Cloud' to connect directly into our cloud PCs."

  A senior engineering manager of modern workplace at a supply chain organization anticipated turning on Organizational Messages to replace a third-

party tool currently in place for end-user notifications and improve the likelihood of end users reading the notification/taking necessary action.

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

> "Just looking at the things that are coming now with Copilot, I think [productivity improvements] will change even more. There's a lot of things happening — just last week, Windows 11 released new features, and we want to be able to enable those new functions at an early stage for users. This is an important aspect of why we want to be in an operating system that is continuously updated and getting new functionalities."
>
> SOLUTIONS ARCHITECT, ENGINEERING SERVICES

Analysis Of Costs

Quantified cost data as applied to the composite

Total Costs							
Ref.	**Cost**	**Initial**	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Etr	Initial planning and implementation	$1,442,468	$0	$0	$0	$1,442,468	$1,442,468
Ftr	Ongoing implementation and management	$0	$645,078	$532,738	$139,545	$1,317,361	$1,131,556
	Total costs (risk-adjusted)	$1,442,468	$645,078	$532,738	$139,545	$2,759,829	$2,574,024

INITIAL PLANNING AND IMPLEMENTATION

Evidence and data. Interviewees shared that initial planning and implementation mostly involved the cost and time spent to set up the first group of users that migrated to Windows 11 during the pilot phase. Interviewees already owned Windows 11 licenses as part of their existing agreements with Microsoft; thus, there was no additional money paid to Microsoft to upgrade from Windows 10 to Windows 11.

The main cost was the expenditure of upgrading a number of devices, including laptops and desktops, to meet the technology requirements of Windows 11, specifically to TPM 2.0-based hardware required for security. While most interviewees' organizations had a set hardware refresh schedule of three to four years, the timeline of starting Windows 11 did not always align with this schedule and prompted upgrade efforts outside the usual refresh cycle. Associated costs included the hardware costs themselves as well as both the IT and end-user time spent on the expedited upgrade process. Additionally, the IT organization dedicated staff to planning the pilot, determining the number of users involved and assessing the current IT environment to see what adjustments needed to be made.

- A solutions architect at an engineering services organization indicated that they had just over 4,000 devices involved in their pilot program for Windows 11 and that 20% required hardware replacements outside of the normal refresh cycle.
- The project manager at a consumer goods organization spent six months on the initial deployment of Windows 11.
- A head of workplace design at a manufacturing organization upgraded 10,000 devices within the first six months of deployment.
- The head of workplace design at a manufacturing organization estimated 30 to 45 minutes of downtime per device for end users to upgrade to Windows 11. An IT manager at a mining organization told end users to anticipate 30 minutes of downtime during the Windows 11 update. An interviewee at a government organization estimated 10 to 15 minutes of end user time to perform the upgrade.
- An interviewee at a government organization indicated that the initial implementation effort for IT resources included setting up Intune on more devices, which required 1 to 2 hours per device.

Modeling and assumptions. For the composite organization, Forrester assumes the following:

- For the composite, 15% of total devices are involved in the pilot with 20% of them requiring a new device to be purchased to meet the technology requirement of Windows 11.
- The average cost of new hardware is $1,200.
- Each piece of hardware requires 2 hours to be upgraded, including the internal testing before integration with the larger IT environment.
- The average fully burdened IT admin hourly salary is $35.
- Planning and implementation include analyzing the IT environment to determine hardware that needs to be upgraded and deciding which users are included as part of the pilot. This requires the involvement of two full-time employees (FTEs).
- Planning and implementation take six months.

- The average fully burdened salary of employees involved in planning and implementation efforts is $145,000, incorporating roles like managers, directors, and software developers.
- End users spend 30 minutes on average upgrading their devices outside of the refresh cycle.
- The average fully burdened end-user hourly salary is $65.

Risks. Initial planning and implementation costs may vary depending on the following:

- The number of end users involved in the pilot.
- The volume of hardware that must be upgraded to meet the Windows 11 eligibility requirements.
- The skills and capability of the IT team to plan the migration and implementation of Windows 11.
- The geography where the implementation occurs, which impacts the assumed salaries.

Results. To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $1.4 million.

15%

Devices involved in Windows 11 pilot

Initial Planning And Implementation						
Ref.	**Metric**	**Source**	**Initial**	**Year 1**	**Year 2**	**Year 3**
E1	New desktops, laptops, or Windows tablets purchased	Composite	900			
E2	Average cost per new device	Composite	$1,200			
E3	Hardware upgrade time per device (hours)	Interviews	2			
E4	Average fully burdened hourly rate for IT admins	Composite	$35			
E5	Subtotal: Total cost related to upgrading hardware	E1*E2+E3*E4	$1,080,070			
E6	Planning and implementation FTE	Composite	2			
E7	Planning and implementation time (years)	Composite	0.5			
E8	Average fully burdened annual rate for planning and implementation FTEs	TEI standard	$145,000			
E9	Subtotal: Total cost related to planning and implementation	E6*E7*E8	$145,000			
E10	End-user time spent per upgraded device (hours)	Interviews	0.5			
E11	Average fully burdened hourly rate for end users	TEI standard	$65			
E12	Subtotal: Total cost of end user time spent on device upgrades	E1*E10*E11	$29,250			
Et	Initial planning and implementation	E5+E9+E12	$1,254,320	$0	$0	$0
	Risk adjustment	↑15%				
Etr	Initial planning and implementation (risk-adjusted)		$1,442,468	$0	$0	$0
	Three-year total: $1,254,320			**Three-year present value: $1,442,468**		

ONGOING IMPLEMENTATION AND MANAGEMENT

Evidence and data. Interviewees shared that they gradually migrated the remaining Windows 10 users to Windows 11 over the investment period. During the ongoing implementation, more desktops and laptops were upgraded to meet the Windows 11 technology requirements. While some devices were replaced in the usual refresh cycle, a percentage were upgraded on an expedited schedule, thus incurring the associated hardware and labor costs. Additionally, while most planning and implementation occurred during the initial phase to prepare for the pilot, some planning and implementation was required annually throughout the investment period until the

company reached full Windows 11 adoption; this included dedicating resources to manage the Microsoft Windows relationship.

- An IT manager at a mining organization dedicated two FTEs to the ongoing deployment of Windows 11 on new devices. A senior engineering manager of modern workplace at a supply chain organization also noted that they dedicated two engineers to the ongoing upgrade process. Meanwhile, a solutions architect at an engineering services organization formed a centralized group of five IT FTEs to manage both the device upgrades as well as ongoing management of upgraded devices and the relationship with Microsoft Windows.
- Interviewees' organizations approached ongoing upgrades to Windows 11 in different ways. An IT manager at a mining organization batched devices for upgrades in groups of 500 devices per week. By comparison, a senior engineering manager of modern workplace at a supply chain organization opted not to force device upgrades and allow end users to self-manage the upgrade process.

Modeling and assumptions. For the composite organization, Forrester assumes the following:

- For the composite, 5% of devices require an upgrade outside the normal refresh cycle in Year 1, 2.5% in Year 2, and 1.25% by Year 3.
- The average cost of new hardware is $1,200.
- Each piece of hardware requires 2 hours to be upgraded, including the internal testing before integration with the larger IT environment.
- The average fully burdened IT admin hourly salary is $35.
- The same planning and implementation effort is conducted. However, since most of the work is done in the initial phase, the effort required in the remaining years is 50% of the prior FTEs and time.
- The average fully burdened salary of employees involved is $145,000, incorporating roles like managers, directors, and software developers.
- Employees involved dedicate 25% of their time and effort.

- End users spend 30 minutes on average to upgrade their devices outside of the refresh cycle.
- The average fully burdened end user hourly salary is $65.
- One FTE dedicates 25% of their time to ongoing device management related to the Microsoft Windows relationship, and the average fully burdened annual salary of the dedicated resource is $145,000.

Risks. Ongoing implementation and management costs may vary depending on the following:

- The migration schedule and adoption rate of Windows 11 that the organization accomplishes each year.
- The amount of hardware the organization upgrades each year to meet the technology requirements of Windows 11, and the percentage of hardware upgrades that occur outside the standard refresh cycle.
- The skills and capability of the IT team to plan the migration and implementation of Windows 11.
- The geography where the implementation occurs, which impacts the assumed salaries.

Results. To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $1.1 million.

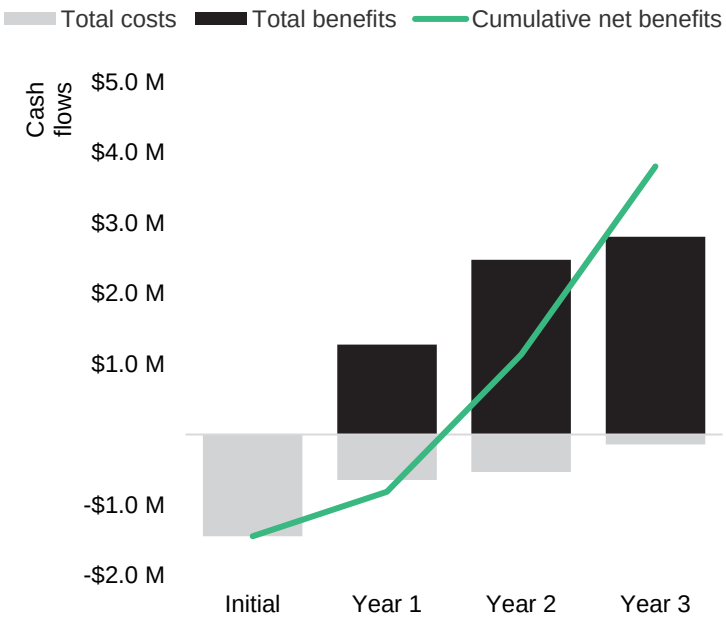
> “Going through a rather large migration from Windows 10 to Windows 11 typically is unsettling for our users, but the feedback we’re getting at the moment is quite positive. It's been seamless.”
>
> **IT MANAGER, MINING**

Ongoing Implementation And Management						
Ref.	**Metric**	**Source**	**Initial**	**Year 1**	**Year 2**	**Year 3**
F1	Planning and implementation FTE	E6*50%		1	1	1
F2	Planning and implementation time (years)	E7*50%		0.25	0.25	0.25
F3	Average fully burdened annual rate for planning and implementation FTEs	TEI standard		$145,000	$145,000	$145,000
F4	Subtotal: Total ongoing planning and implementation resource costs	F1*F2*F3		$36,250	$36,250	$36,250
F5	New desktops, laptops, or Windows tablets purchased	Composite		375	300	38
F6	Average cost per device	Composite		$1,200	$1,200	$1,200
F7	Hardware upgrade time (hours)	Interviews		2	2	2
F8	Average fully burdened hourly rate for IT admin	TEI standard		$35	$35	$35
F9	Subtotal: Total spend on ongoing planning and implementation	(F5*F6)+(F5*F7*F8)		$476,250	$381,000	$47,625
F10	End user time spent per upgraded device (hours)	Interviews		0.5	0.5	0.5
F11	Average annual hourly rate for end users	Composite		$65	$65	$65
F12	Subtotal: Total cost of end user time spent on device upgrades	F5*F10*F11		$12,188	$9,750	$1,219
F13	Ongoing management FTE	Composite		1	1	1
F14	Percentage of time dedicated to ongoing management	Composite		25%	25%	25%
F15	Average fully burdened annual rate for ongoing device management FTE	TEI standard		$145,000	$145,000	$145,000
Ft	Ongoing implementation and management	F4+F9+F12+ (F13*F14*F15)		$560,938	$463,250	$121,344
	Risk adjustment	↑15%				
Ftr	Ongoing implementation and management (risk-adjusted)		$0	$645,078	$532,738	$139,545
	Three-year total: $1,317,361			**Three-year present value: $1,131,556**		

Financial Summary

Consolidated Three-Year, Risk-Adjusted Metrics

Cash Flow Chart (Risk-Adjusted)



The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Analysis (Risk-Adjusted)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	($1,442,468)	($645,078)	($532,738)	($139,545)	($2,759,829)	($2,574,024)
Total benefits	$0	$1,277,294	$2,478,482	$2,805,569	$6,561,344	$5,317,372
Net benefits	($1,442,468)	$632,216	$1,945,744	$2,666,023	$3,801,515	$2,743,348
ROI						107%
Payback						17 months

APPENDIX A: TOTAL ECONOMIC IMPACT

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

Total Economic Impact Approach

Benefits represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.

Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.

Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

PRESENT VALUE (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.

NET PRESENT VALUE (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made unless other projects have higher NPVs.

RETURN ON INVESTMENT (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.

DISCOUNT RATE

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.

PAYBACK PERIOD

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

The initial investment column contains costs incurred at “time 0” or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.

APPENDIX B: ENDNOTES

[1] Source: “Forrester’s Guide To Windows 11,” Forrester Research, Inc., October 24, 2022.

[2] Total Economic Impact is a methodology developed by Forrester Research that enhances a company’s technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

[3] Forrester Consulting conducted an online survey of 351 cybersecurity leaders at global enterprises in the US, the UK, Canada, Germany, and Australia. Survey participants included managers, directors, VPs, and C-level executives who are responsible for cybersecurity decision-making, operations, and reporting. Questions provided to the participants sought to evaluate leaders' cybersecurity strategies and any breaches that have occurred within their organizations. Respondents opted into the survey via a third-party research panel, which fielded the survey on behalf of Forrester in November 2020.

[4] Source: Forrester Consulting Cost Of A Cybersecurity Breach Survey, Q1 2021.

[5] Source: “New Technology: The Projected Total Economic Impact™ Of Windows 11,” a commissioned study conducted by Forrester Consulting on behalf of Microsoft, July 2022.

[6] Source: “Build Your Business Case For Microsoft 365 Copilot,” Forrester Research, Inc., October 24, 2023.

[7] Ibid.

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