

TOTAL COST OF OWNERSHIP: SAVE WITH 2-IN-1 DEVICES

Compared to separate laptop and tablet devices

Executive Summary

In today's linked, productivity-centric world, employees need 24/7 connectivity and remote access to business applications and proprietary, industry-specific software. Some organizations have chosen solutions that provide their mobile workforces with two computers—a laptop to run business and productivity software and a tablet for mobile, customer-facing interactions and to run specific proprietary software.

With the ongoing expansion of cloud computing and software-as-a-service (SaaS) subscription-based licensing, this two-device strategy might initially seem cost effective, since businesses have the option to save by purchasing one license per user rather than one license per device. However, based on our research, we have come to a different conclusion.

Considering the results of a total cost of ownership (TCO) analysis, we found substantial cost savings over a three-year timeline for organizations that provide a single 2-in-1 device—such as Microsoft Surface® Pro or Microsoft® Surface Go® for Business devices—to their workforce rather than two separate devices. Such 2-in-1 devices transform between functioning as a laptop and functioning as a tablet, all in a single, integrated device. They first garnered mainstream attention in 2011.¹

Organizations could expect to save up to \$3,624 per user when they opt for a 2-in-1 device scenario compared to maintaining a tablet and laptop for their employees over three years. The most notable savings are accrued in hardware costs and in IT support, management, and deployment costs. In fact, while the 2-in-1 scenario offers 40 percent savings over the two-device scenario overall, the IT line items offer the highest relative savings—from a low of 62 percent savings in management and security costs to a high of 70 percent savings in deployment costs.

In addition to the quantitative benefits, we also noted multiple qualitative benefits that increase productivity and user satisfaction when employees must manage and maintain one device instead of two devices as a part of their work environment. While not easily quantifiable, these benefits can substantially enhance employee retention and recruitment, as well as increase workplace efficiency and productivity.



Figure 1. Savings drivers

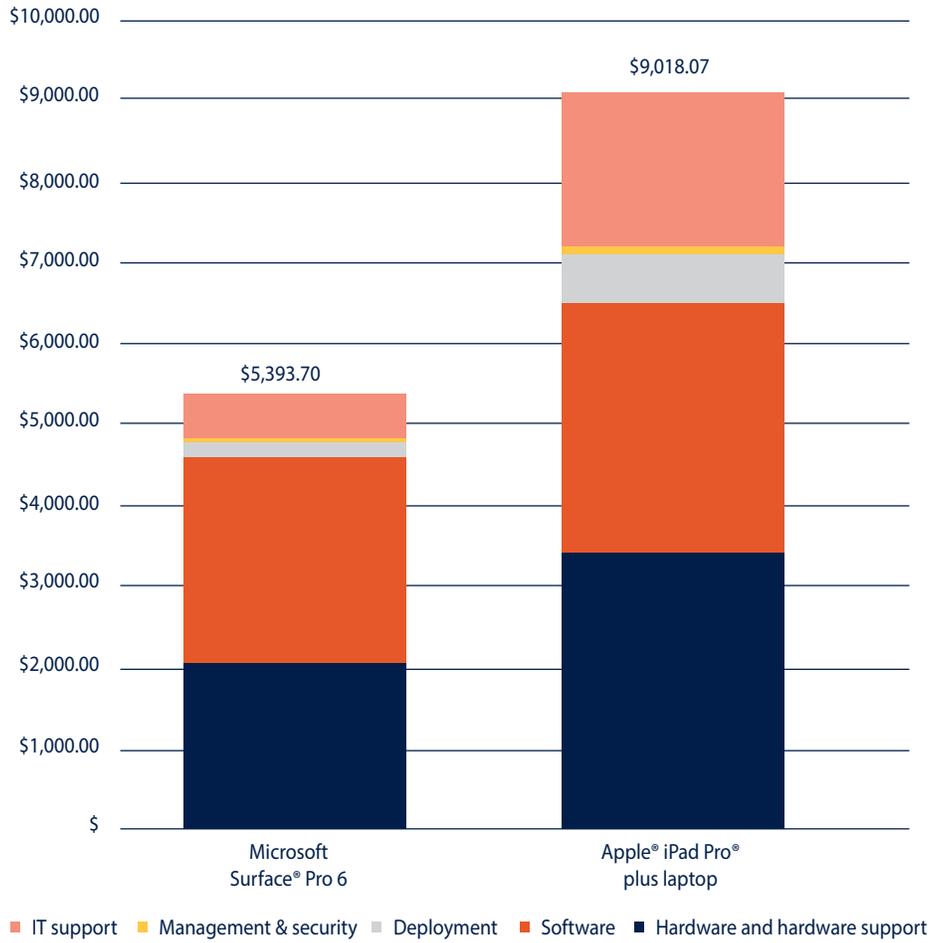


Figure 2. Three-year costs for one 2-in-1 Microsoft Surface® Pro device vs. two devices (Apple® iPad Pro® + laptop)

Table 1. Detailed three-year costs

Three-year cost	Microsoft Surface® Pro 6	Apple® iPad Pro® plus laptop
Hardware and hardware support	\$2,099.00	\$3,479.00
Software	\$2,520.00	\$3,060.00
Deployment	\$188.76	\$635.94
Management and security	\$23.44	\$61.88
IT support	\$562.50	\$1,781.25
Total	\$5,393.70	\$9,018.07
Savings for 2-in-1 scenario	\$3,624.37	
% Savings for 2-in-1 scenario	40%	

Hardware and Hardware Support

When enterprises opt to provide a 2-in-1 device instead of two devices for their employees, they can expect to achieve savings in hardware and hardware support (warranty) costs.

While it is possible to find laptops for less than \$1,000, it typically costs more to purchase enterprise-level laptops that have the Intel® Core™ i5 and Intel Core i7 processors' security features and processing speeds that are required in today's business environment.

For this report, we considered the average cost of the top 10 business laptops, excluding the highest and lowest models, that were featured in PC Magazine's review article, "The Best Business Laptops for 2019."² That figure equals \$1,455. A 2-in-1 device can cost incrementally more than a laptop, but not as much as an average enterprise-quality tablet, which, if needed, would require additional costs to purchase both the hardware and an appropriate warranty.

We selected a mid-range Apple® iPad Pro® as our reference tablet, due to its competitive standing in the marketplace as an enterprise-level tablet device that is powerful and fast enough to run business applications, although reviews note that it still lacks some key multitasking functionality and is constrained by keyboard and app limitations.³

Because we conducted a three-year TCO analysis, we also considered the two-year refresh cycle of a typical tablet. This more limited lifespan is evidenced by the fact that Apple offers two-year AppleCare+ warranty protection for its tablet devices and three-year protection for its Mac® portable and desktop models.^{4,5} We validated this figure based on interviews with IT managers, who plan their hardware purchasing cycles assuming a two-year lifespan for tablet devices.

Both professional- and consumer-quality tablets are designed for a two-year refresh cycle, in part because their functionality is limited by their form factor and they are not designed specifically for enterprise use. Given the pace of innovation, faster, lighter, and more powerful tablet models are released more frequently than traditional laptops and desktop computers. Therefore, we added the replacement hardware cost and one-year warranty for the final year of our timeline.

Although it can add up to a substantial total investment, we did not calculate the cost of peripherals for this analysis, since most peripherals are purchased separately (for example, keyboard covers or stylus pens) for 2-in-1 devices, laptops, and tablets. Therefore, there is no real incremental savings in this category, though it is clearly cheaper to buy peripherals for one device than for two devices.

It is worth noting, however, that it is also much less time intensive for IT departments to track and manage one set of peripherals rather than two sets. This is especially true for companies with large mobile workforces, whose members frequently travel and must pack and transport their computer equipment to conduct business on the road. From the end-user perspective, it is also less cumbersome to manage one set of peripherals rather than two sets.

Software

Software licensing structures are changing, with more organizations opting for per-user, subscription-model licenses. This gives users flexibility in where and when they work. Still, many enterprises prefer to use a perpetual licensing model, which means they are obliged to purchase separate licenses for every device in the enterprise. In this case, maintaining two devices requires purchasing two licenses.

When businesses choose a 2-in-1 device, they can save if they need to maintain software that requires perpetual licensing, eliminating the cost of software purchases for a second device. Even without it being their preference, some companies are tied to processes and policies that dictate how they need to handle their licensing decisions.

Additionally, businesses can operate more efficiently and with less complexity when IT managers do not need to set up and manage different operating systems or business software on different devices.

With 2-in-1 devices, software updates are streamlined, yielding less downtime for users and more reliable security and compliance for companies, which can manage updates from a single, centralized system.

From a user's perspective, file management is streamlined when a user can operate one instead of two devices. This results in less downtime, fewer IT support issues, higher work productivity, and a better user experience.

Deployment

Modern workplaces can deploy their devices at scale by using either Windows® or macOS® tools. However, deploying one device per user is inherently less complex and time consuming for IT support staff than deploying two devices per user.

In addition to the initial investment of IT support time required to set up a second device, even more IT time and expertise is required to ensure that the devices are synced or paired so that actions performed in the two environments don't result in loss of work or user frustration. As one IT manager stated, "Setting up two devices translates to about 250 percent of the work. It's not linear in this case, because we need to set up an environment that has more endpoints, which creates much more administrative complexity."

This complexity is multiplied if the two devices run on different operating systems. Such a scenario is common when users must run proprietary or presentation software in one environment but maintain their productivity applications in a different environment.

Based on our interviews, we determined that it requires five hours to deploy one device. However, in the case of deploying two devices for a single employee, instead of requiring 10 hours, it requires 12 hours. Two additional hours are needed to sync or pair the two devices, above and beyond deploying them to the worker.

With the introduction of cloud-based deployment tools such as Windows Autopilot, initial setup and configuration can occur automatically and seamlessly across devices.⁶ Given the ease and efficiency of using these new tools, there is a growing gap between the initial deployment experience

using cloud-based tools and the experience using the manual, time-consuming process required to configure non-Windows 10 Enterprise operating systems. The positive impact of the time savings and reduced frustration is felt by both IT professionals and end users.

Management and Security

Modern enterprise devices that run the Windows 10 Pro operating system on 8th generation Intel Core processors offer IT professionals remote management tools and built-in best-in-class security features. The improved data protection built into these systems includes biometric authentication, automatic encryption, and antitheft capabilities. Additionally, these devices support Microsoft Intune® device-wipe functionality to remotely wipe lost, stolen, or repurposed devices.

With 2-in-1 devices, IT professionals can use the same procedures and network policies they use for other Windows laptops. This includes tracking and managing devices, in addition to installing updates and security features. Incorporating this efficiency lets IT professionals streamline to a single management tool, such as Microsoft Intune, for the administration of policies and settings and for application deployment. IT staff can therefore eliminate the more complex, less reliable, manual procedures that are needed to secure tablets, which are more easily lost and less easily integrated into a centralized management system to begin with.

Incorporating 2-in-1 devices also eliminates the inherent security vulnerabilities of tablets, which do not include trusted platform modules (TPM) to encrypt hardware, and which rely on consumer-based authentication rather than the two-factor authentication that is standard to secure and manage enterprise devices.

As one IT manager noted, “Operating an additional tablet device adds a layer of complexity where you need to worry about communicating regularly or taking your devices to storage. It’s a complicated headache. With 2-in-1 devices, you are still within a normal Windows environment, and you avoid the hassles of multiple management tools.”

IT Support

Streamlining from two devices to a 2-in-1 device provides significant time savings for IT management and support functions in any enterprise. The savings are even more pronounced if staff need to manage updates across operating systems, apps, drivers, and firmware. Additionally, maintaining a complex IT ecosystem requires IT managers and support staff to substantially increase their technical literacy to help users operate and sync their devices, a frequent challenge for employees who use a laptop and tablet to create a complete work environment.

For 2-in-1 devices that offer the latest Windows 10 operating system and Microsoft 365® Enterprise, effective remote management capabilities reduce the number of, and costs associated with, help-desk calls, as well as save both IT support time and reduce user downtime for repairs, password resets, software updates, and other IT support issues.⁷

Given the complexity of managing two devices per user, it is not surprising that our analysis yielded a 40 percent savings over three years of our TCO calculations. This figure is variable and can depend on the technical literacy of both users and the IT team in any enterprise setting.

Conclusion

We analyzed the cost to purchase, deploy, secure, and support two devices—a laptop and a tablet per employee—versus a 2-in-1 device that can transform from laptop to tablet functionality.

Our analysis showed substantial cost savings for companies that provide one instead of two devices for their workforce. These economies are driven by savings in software, deployment, management, security, IT support, hardware, and hardware support.

The most significant difference was in the IT support and management functions, where maintaining, supporting, and syncing two devices per user is exponentially more complex and time consuming than maintaining one device that can operate within the enterprise's normal administrative and security framework.

Employees and organizations also are more productive when they use 2-in-1 devices instead of two devices, since this eliminates the hassle of moving and syncing files between devices and learning multiple operating systems and different functionality. Additionally, using a 2-in-1 device instead of two devices can increase worker satisfaction and user experience, which in turn can enhance employee retention and recruitment.

Assumptions

1. HARDWARE AND HARDWARE SUPPORT

REFERENCE LAPTOP

To determine the cost of a typical laptop to use for our calculations, we took the average cost of the top 10 business laptops, excluding the highest and lowest models, that were featured in PC Magazine's review article, "The Best Business Laptops for 2019."² That figure equals \$1,455.

REFERENCE TABLET

We selected a mid-range Apple iPad Pro as our reference tablet, due to its competitive standing in the marketplace as an enterprise-level tablet device that is powerful and fast enough to run business applications, although reviews note that it still lacks some key multitasking functionality and is constrained by keyboard and app limitations. Specs: 11" liquid Retina[®] display, 512 gigabyte hard drive, Apple[®] A12X Bionic chip with 64-bit architecture, Face ID[®], 10 hours battery life, USB-C[®] connector, iOS[®] 12. Price: \$1,149.⁸

REFERENCE 2-IN-1 DEVICE

We selected the Microsoft Surface Pro 6 as our reference 2-in-1 device, since it is most often compared to the Apple iPad Pro in technical literature. Both were characterized as "the best available options" in a device "that combines the portability of a tablet with the power, flexibility, and full-size keyboard of a laptop" in a recent article in Wirecutter, a *New York Times* company.⁹ Specs: 12.3" PixelSense™ Display, 512 gigabyte hard drive, 7th generation Intel Core i7 processor, Windows Hello[®], 13.5 hours battery life, full-size USB 3.0 connector, Windows 10 Pro. Price: \$1,949.¹⁰

WARRANTIES

Based on interviews with IT professionals, we selected a \$150/three-year warranty price for the laptop and the Microsoft Surface Pro 6. AppleCare+ provides a comparable two-year warranty for \$129 for the iPad Pro, so we added the cost of a pro-rated year of AppleCare+ to cover year three of our time horizon.

2. SOFTWARE

Software licensing has increased in complexity with the addition of multiple licensing models, including monthly subscription services and per-user licensing deals. We interviewed IT professionals to determine the software needs and optimal licensing scenarios for a hypothetical 1,000-employee company with five office locations and five percent of its workforce in sales. We calculated the cost of equipping each device with an E3 license for Microsoft[®] Office, Windows 10 Pro, Adobe[®] Acrobat[®], plus one copy of a generic, industry-specific third-party software, priced at \$1,200 per user.

The software costs were equivalent for the one- versus two-device scenarios except for the Adobe Acrobat line item. In this case, we assumed that our hypothetical enterprise would purchase a perpetual desktop license but opt for a \$15/month mobile device license for their mobile sales force.

Although we assume that five percent of employees would need Adobe Acrobat, we used this common software package as a reasonable stand-in for additional software packages that other business units typically need, for example, customer relationship management, accounting, project management, design, and inventory management software.

3. DEPLOYMENT

IT STAFF COSTS

To determine the cost of IT support staff time, we calculated an hourly rate based on a \$50,000 annual salary, rounded up from the 2019 national average of \$48,185.¹¹ We included the cost of a 33 percent benefits package in our hourly rate calculations.

INITIAL DEPLOYMENT

Based on interviews with IT managers, we determined that it requires five hours to deploy a single device for one employee and 12 hours to deploy two separate devices for the same employee. This calculation is broken down as follows:

Task	Time (hours)	Number of staff	Total hours
Research	0.25	1	0.25
Approvals/order processing	0.25	2	0.50
Receiving/unboxing/ asset entry	0.25	1	0.25
Device imaging	1.00	1	1.00
Post-install patching	0.50	1	0.50
Customization for specific role (specialized apps, etc.)	0.75	1	0.75
Physical setup	0.25	1	0.25
First logon/setup	0.50	2	1.00
Day 1 questions	0.25	2	0.50
TOTAL			5.00

We also took into the consideration the need to deploy a replacement tablet after year two of our time horizon, given the two-year refresh cycle of tablet devices.

APPLICATION PROVISIONING

We assumed that 18 percent of the workforce would make one special application (app) provisioning request per year that would require additional deployment time. We assumed that each request would require 30 minutes of IT support time in a one-device scenario and 2.5 hours in a two-device scenario, which lacks the advantage of the remote management capabilities offered by Windows 10 Pro.

LOGISTICS

We included a logistics line item to account for IT staff time spent performing general administrative tasks for each device, including device re-provisioning, configuration, shipping, and asset management tasks. Based on interviews, we assumed that each device would require a lifetime total of 30 minutes of IT staff time devoted to logistics.

4. MANAGEMENT AND SECURITY

Based on interviews with IT managers, we assumed a 15-minute per-year investment in IT staff time—typically allocated as a 30-minute task undertaken biannually—for managing and securing the hardware assets of a single device. That figured increased to a 40-minute per-year investment to secure two devices for a single employee. Additional time must be allocated, because it is much more time consuming to secure and manage mobile devices that cannot be integrated into a centralized system.

This line item includes neither data security, since that is a network issue, nor IT support. Instead, this category reflects the cost of logistical management of hardware assets.

It is worth noting that one of our IT professionals emphasized that the task of securing non-integrated mobile devices is so complicated that some organizations do not even try, considering it a waste of time and resources to maintain inaccurate databases of enterprise-owned hardware assets.

5. IT SUPPORT

BREAK FIXES

Based on interviews with IT managers, we allocated 30 minutes of IT staff time per user per month to support employees who are having trouble with a single device, for example, needing logon credentials, requiring help managing files or finding assets, or having difficulty connecting to the Internet.

For employees with two devices, our IT manager recommended allocating 40 minutes of IT staff time per user per month to account for the increased complexity introduced by devices that are most often not integrated but must synchronize and provide a complete work environment for each employee. The time to manage these IT support issues is multiplied when workers are using different operating systems or file systems.

CONFIGURATION CHANGES

Also based on interviews with IT managers, we assumed a 30-minute per-event allocation of IT staff time to manage configuration changes for employees. Such changes occur only when an end user needs to maintain two devices. We assumed that each employee would undergo a configuration change every six months.

- ¹ Engadget. "Best of CES 2011." January 2011. www.engadget.com/2011/01/11/best-of-ces-2011/.
- ² PC Magazine. "The Best Business Laptops for 2019." December 2018. www.pcmag.com/roundup/249672/the-best-business-laptops.
- ³ Wired. "Review: iPad Pro (2018)." November 2018. www.wired.com/review/review-ipad-pro-2018/.
- ⁴ Apple. iPad® support web page. www.apple.com/support/products/ipad.html.
- ⁵ Apple. Mac® support web page. www.apple.com/support/products/mac.html.
- ⁶ Microsoft. "Overview of Windows Autopilot." March 2019. <https://docs.microsoft.com/en-us/windows/deployment/windows-autopilot/windows-autopilot>.
- ⁷ Forrester Total Economic Impact™ Study: Maximizing your ROI from Microsoft 365 Enterprise with Microsoft Surface. May 2018.
- ⁸ Apple. "Buy iPad Pro." www.apple.com/shop/buy-ipad/ipad-pro.
- ⁹ Wirecutter. "iPad Pro vs. Surface Pro 6: The Best Pro Tablets." March 2019. <https://thewirecutter.com/reviews/can-pro-tablets-replace-your-laptop/>.
- ¹⁰ Microsoft. Microsoft Surface® Pro 6 web page. www.microsoft.com/en-us/p/surface-pro-6/8zcn665slq5?activetab=pivot:techspecstab.
- ¹¹ Glassdoor. "Desktop Support Technician Salaries." April 2019. www.glassdoor.com/Salaries/desktop-support-technician-salary-SRCH_KO0,26.htm.



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