



68%
less time



to launch Autodesk Revit
with V-Ray Next*

35%
less time



to export an
Adobe Premiere Pro
timeline*

**Process up
to 36% more
images/second**



on machine learning
workflows*

Up to 64%
**higher CPU
performance**



on the SPECworkstation 3
benchmark*

Upgrade to a mobile workstation with Windows 10 Pro for Workstations and an Intel Xeon E processor and save time on compute-intensive activities

A newer workstation performed better in our testing vs. a previous-generation workstation

If you're constantly on the go and use compute-intensive applications in your daily routines, chances are that you already have a powerful mobile workstation. But an older system might be making you wait longer than you need to—a hit to both your time and productivity—without you even realizing it.

At the request of Microsoft, we performed hands-on testing to quantify the improvements users could enjoy by upgrading from a previous-generation system to a current mobile workstation with Windows 10 Pro for Workstations and an Intel® Xeon® E processor. We carried out a series of tasks in Adobe® Premiere® Pro and Autodesk® Revit and also tested AI and overall CPU performance. With Windows 10 Pro for Workstations and an Intel Xeon E processor, the current workstation reduced the time it took to complete common compute-intensive activities.

**Current mobile workstation running Windows 10 Pro for Workstations vs. previous-generation mobile workstation running Windows 10 Pro*

About our testing

We set out to quantify the performance improvements customers can expect when upgrading from previous-generation mobile workstations running Windows 10 Pro to current mobile workstations with Windows 10 Pro for Workstations and Intel Xeon E processors.

We tested two systems from the same vendor:

- A previous-generation mobile workstation running Windows 10 Pro and powered by an Intel Core™ i7 processor
- A current mobile workstation running Windows 10 Pro for Workstations and powered by an Intel Xeon E-2286M processor

We conducted the following tests:

- Creative, high-end video-rendering workflow with Adobe Premiere Pro
- Architectural design/creative 3D visualization workflow with Autodesk Revit with V-Ray Next
- Artificial intelligence/machine learning workload with the AIXPRT benchmark
- General performance with the SPECworkstation 3 benchmark

For complete details on the systems we tested and the tests we performed, see [the science behind the report](#).

We'll present our findings through the lens of three fictional scenarios. Though we've made up the characters, their situations reflect the experiences that real-world workstation users would have.

About Windows 10 Pro for Workstations

According to Microsoft, Windows 10 Pro for Workstations powers users with mission-critical and intensive workloads and provides:

- Faster file sharing
- Automatic corruption repair and persistent memory to protect data during critical failures
- Support for up to 4 CPUs and 6 TB of RAM¹

Learn more at <https://www.microsoft.com/en-us/windowsforbusiness/workstations>.

About Intel Xeon E processors

The current workstation we tested was powered by the Intel Xeon E-2286M processor, part of the Intel Xeon E processor family. According to Intel, systems that use Intel Xeon E processors deliver "essential performance and advanced security technologies for entry server solutions, professional workstations, and secure cloud services."²

Learn more at <https://www.intel.com/content/www/us/en/products/processors/xeon/e-processors.html>.

Scenario 1



We've made up these characters, but their experiences reflect those that real-world users would have.

Small business owners editing videos with Adobe Premiere Pro

Since March, Darren and Antonio have been running their videography business out of their respective homes. Between juggling childcare, doing socially distanced shoots, and trying to find a quiet spot in the house to get work done, they both appreciate having mobile workstations they can grab and go. Darren recently upgraded to a new mobile workstation running Windows 10 Pro for Workstations and powered by an Intel Xeon E processor. Antonio is still using the previous-generation mobile workstation he got a couple of years ago, but on their shoots he sees firsthand how fast Darren's new device is—saving almost four minutes each time Darren exports a timeline in Adobe Premiere Pro. The new mobile workstation also saves up to 44 seconds on common tasks like launching Adobe Premiere Pro and opening a project. Two months into watching Darren's newer system consistently outpace his older one, Antonio decides to upgrade too.

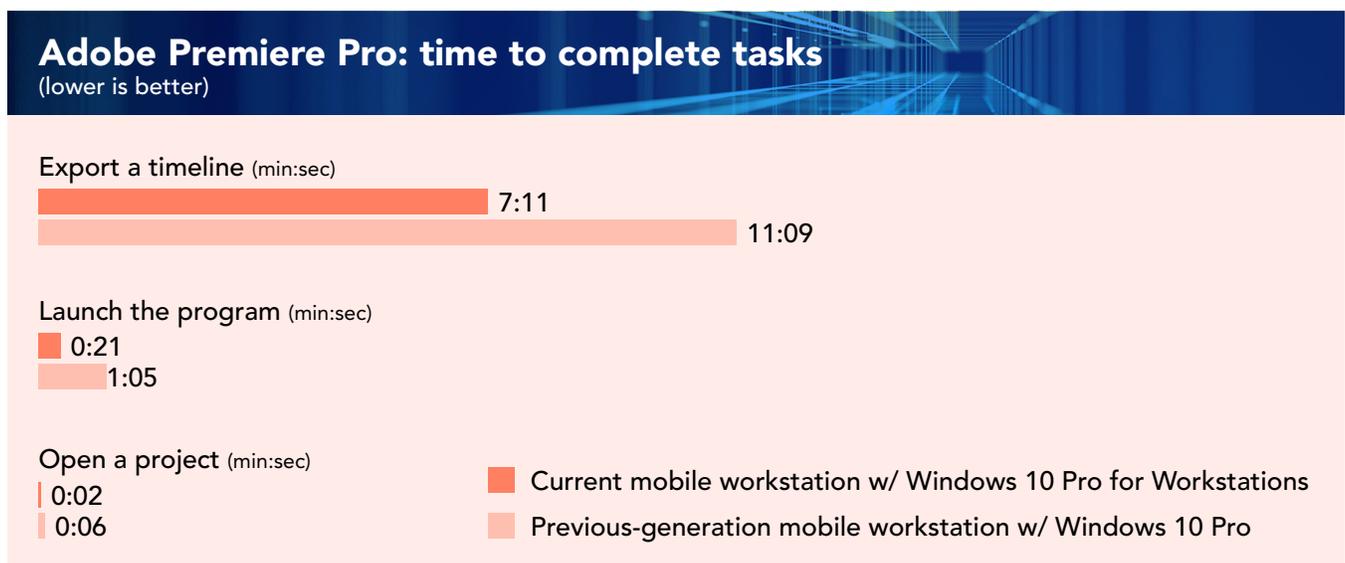
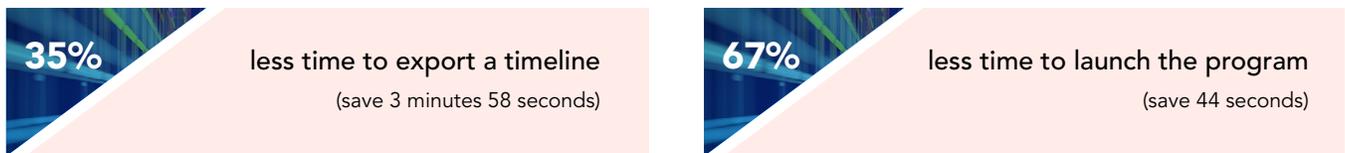
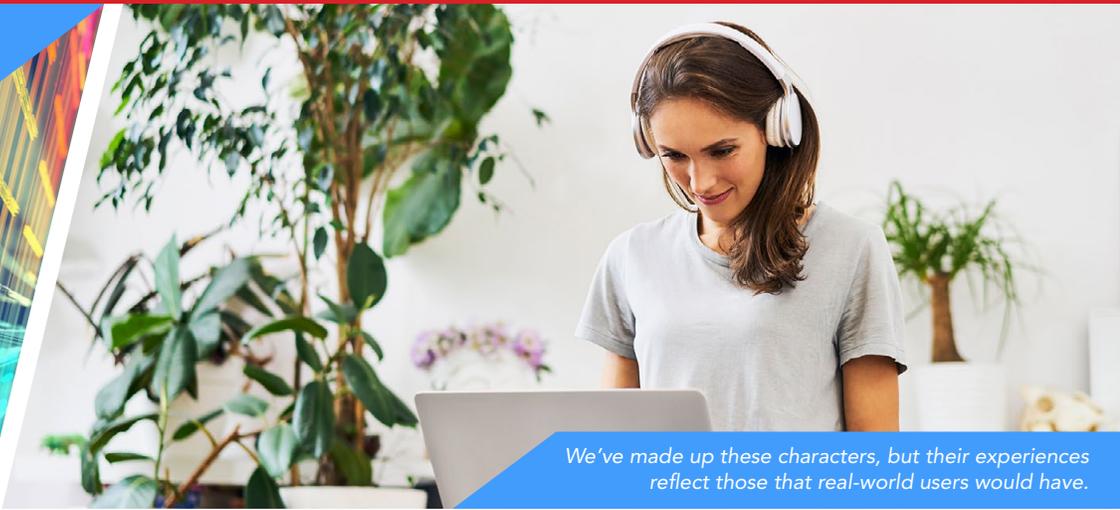


Figure 1: Time to complete tasks with Adobe Premiere Pro (min:sec). Source: Principled Technologies.

Scenario 2



We've made up these characters, but their experiences reflect those that real-world users would have.

Architect working remotely using Autodesk Revit

Karen is lucky—as an architect, she can complete most of her work from home, so she has adjusted to her company's new remote work policies with relative ease. Since she still has to occasionally visit job sites, she needs a workstation that's mobile while still providing enough power to handle her 3-D modeling work. She has a system that's a couple of years old, but she decides to do some research to see how much time she could be saving with a newer device. As our results show, the newer mobile workstation we tested could help Karen save over a minute each time she has to launch the image rendering software Autodesk Revit with V-Ray Next. Armed with the facts about these and other time savings, Karen requests a mobile workstation upgrade.

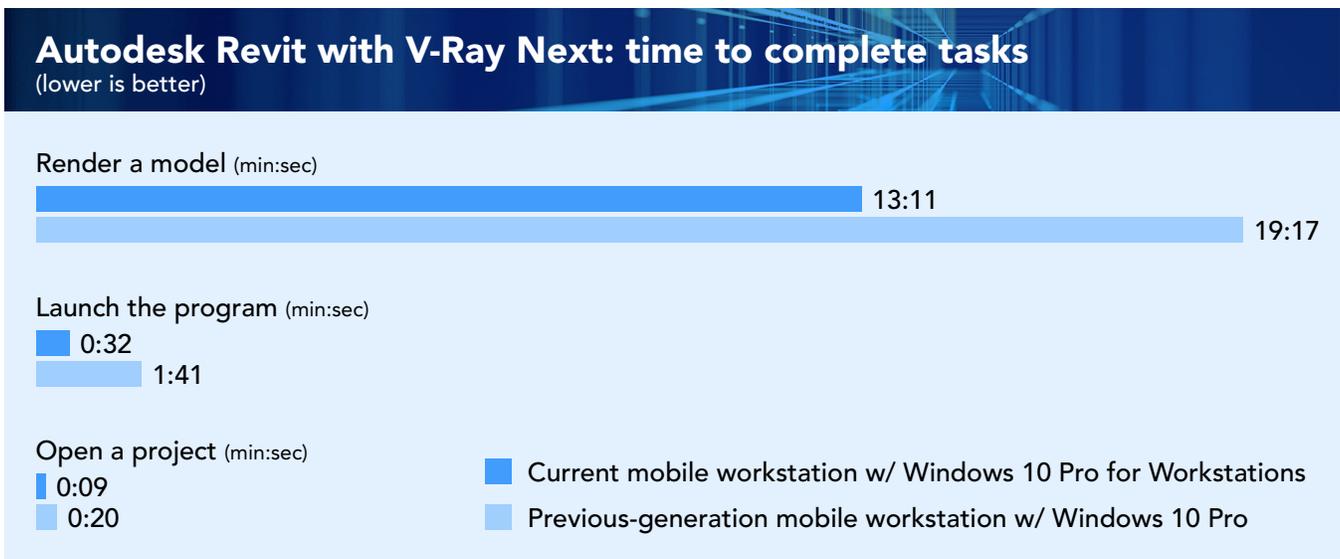
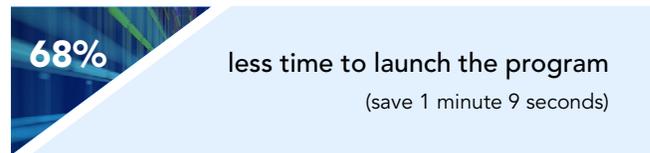


Figure 2: Time to complete tasks using Autodesk Revit with V-Ray Next (min:sec). Source: Principled Technologies.

Scenario 3



We've made up these characters, but their experiences reflect those that real-world users would have.

Colleagues collaborating on machine learning

Brittney and Lisa work together in a pathology lab, applying machine learning to medical image analysis. Although they can complete most of their work remotely, they occasionally need to go into the lab—which means both of them need powerful workstations they can also bring on the move. When Brittney uses her new mobile workstation, equipped with an Intel Xeon E processor and running Windows 10 Pro for Workstations, Lisa sees how the new device processes more images per second with lower latency than her previous-generation mobile workstation. She applies for an upgrade of her device so she can keep up with her colleague.

Process up to **36 percent** more images per second

Reduce latency by up to **26 percent**

AIXPRT images per second (higher is better)

SSD-MobileNet v1
353.2
258.1

ResNet-50
172.4
128.1

- Current mobile workstation w/ Windows 10 Pro for Workstations
- Previous-generation mobile workstation w/ Windows 10 Pro

AIXPRT latency (lower is better)

SSD-MobileNet v1 latency (ms)
3.06
4.14

ResNet-50 latency (ms)
7.67
9.11

- Current mobile workstation w/ Windows 10 Pro for Workstations
- Previous-generation mobile workstation w/ Windows 10 Pro

Figure 3: AIXPRT images per second.
Source: Principled Technologies.

Figure 4: AIXPRT latency (ms).
Source: Principled Technologies.

Testing overall performance

To measure the overall CPU performance of the two systems, we used the SPECworkstation 3 benchmark, which tests a variety of professional applications.³ As we show below, the current workstation running Windows 10 Pro for Workstations and powered by an Intel Xeon E processor outperformed the previous-generation mobile workstation on every CPU metric.



Up to **64 percent** higher
CPU performance score

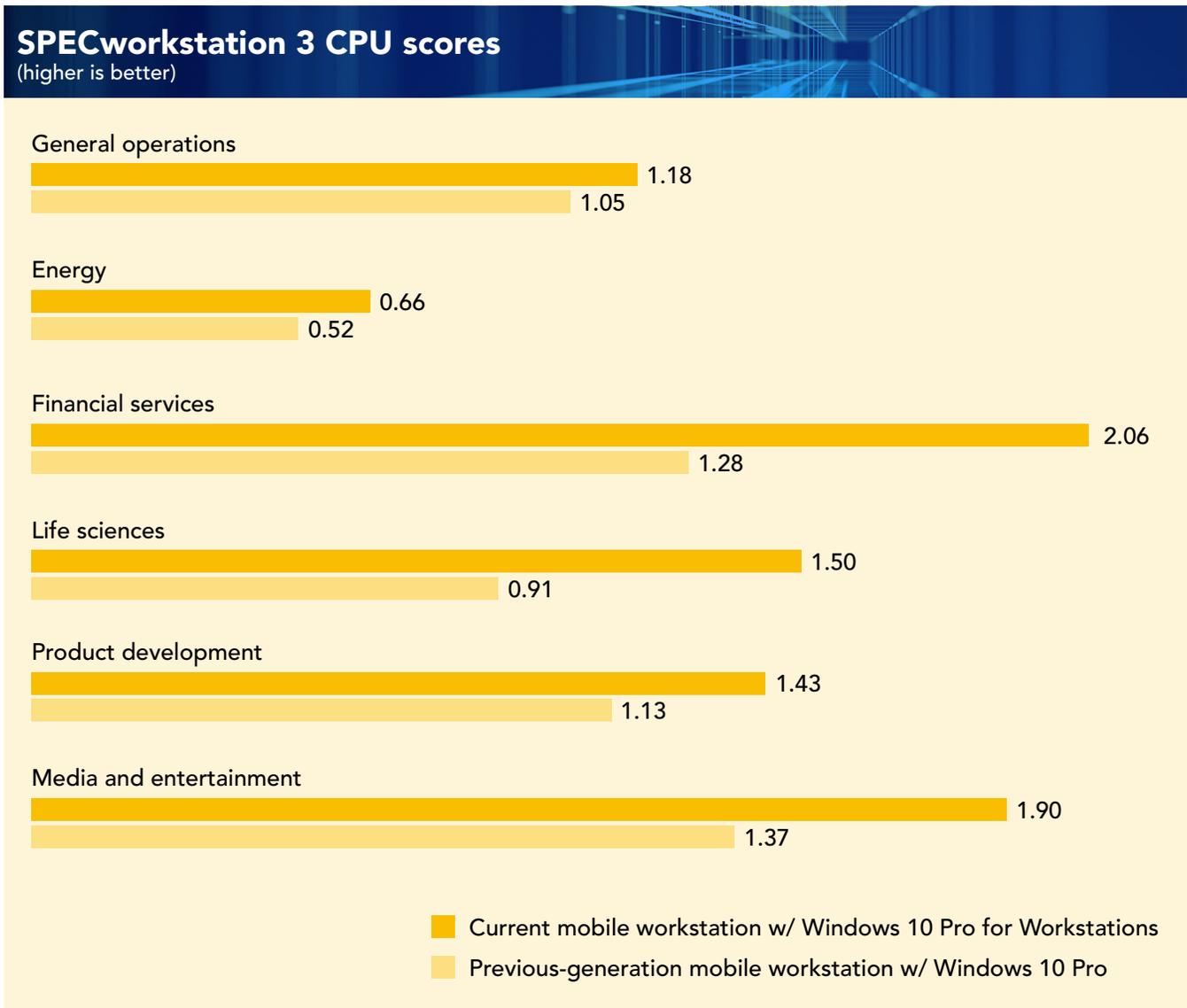


Figure 5: SPECworkstation 3 CPU scores. Source: Principled Technologies.



Conclusion

When we executed tasks in Adobe Premiere Pro and Autodesk Revit and conducted AI and general benchmark testing, the current mobile workstation reduced the time it took to perform these tasks by up to 68 percent and scored better on all our benchmark tests. For those looking to upgrade their previous-generation device, our testing demonstrated that a newer mobile workstation with Windows 10 Pro for Workstations and an Intel Xeon E processor could save users seconds or even minutes on common compute-intensive activities.

- 1 "Windows 10 Pro for Workstations," accessed August 19, 2020, <https://www.microsoft.com/en-us/windowsforbusiness/workstations>.
- 2 "Intel Xeon E Processors," accessed August 19, 2020, <https://www.intel.com/content/www/us/en/products/processors/xeon/e-processors.html>.
- 3 Learn more about SPECworkstation 3 at <https://www.spec.org/gwpg/wpc.static/workstation3-info.html>.

Read the science behind this report at <http://facts.pt/7tcs815> ►



Facts matter.®

Principled Technologies is a registered trademark of Principled Technologies, Inc. All other product names are the trademarks of their respective owners. For additional information, review the science behind this report.

This project was commissioned by Microsoft.