

# Creative Cloud on Apple Silicon: Key Speed Measures

## Adobe Illustrator

### About this Benchmark Project

This report presents the findings of a market-specific benchmarking project conducted by Pfeiffer Consulting for Adobe. The main aim of the research was **to measure the performance of Creative Cloud flagship apps on the newly introduced Apple M1 MacBook Pro**, compared to the performance of these apps running on an otherwise identical, similarly priced Intel MacBook Pro.

Benchmarks were executed using *Pfeiffer Consulting's Methodology for Productivity Benchmarking*, which has been fine-tuned over more than a decade, and measures the time experienced operators take to execute specific tasks. Please refer to the Methodology section on the last page of this document for more information.

### About the Apple M1 Platform

In November 2020, Apple started **transitioning the main processor architecture** used in its desktop and laptop computers from the previously used Intel architecture to Apple Silicon to enable **better performance and lower power-consumption** through the use of a more efficient processor architecture.

This benchmark project analyzes in detail how the first generation of Apple Silicon hardware, the **M1 MacBook Pro**, **performs in the context of creative workflows**. Benchmarks covered seven essential Creative Cloud applications: **Photoshop, Illustrator, InDesign, XD, Premiere Pro, Lightroom and Lightroom Classic**. Operations benchmarked covered **a wide range of time-consuming tasks** specific to each individual workflow.

### Creative Cloud Apps Performance on Apple M1 MacBook Pro

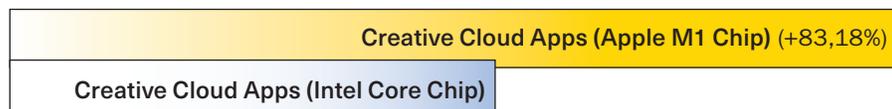


Chart based on the average of all benchmarks of seven essential Creative Cloud apps. A total of **774 individual benchmark measures** were taken. **Longer is better.**

### Executive Summary

- ▶ This document presents key results from a benchmark project **comparing performance of Creative Cloud apps** on the recently released Apple M1 hardware platform.
- ▶ On average, based on 16 workflow benchmarks conducted for this research, Illustrator was **over 65% faster** using the Apple M1 system.
- ▶ Individual, segment-specific benchmarks were conducted with **seven essential Creative Cloud apps**.
- ▶ Benchmarks showed that, based on all benchmarks conducted, Creative Cloud is **on average over 80% faster using the Apple M1 system** when compared to an identically configured Intel system.
- ▶ **Adobe Sensei-powered features** that have been optimized for the Apple M1 machine learning architecture can result in **up to 4x - 6x performance gains**.

# How fast is it really?

## Creative Cloud Application Speed on Apple's M1 platform

### The Hardware Conundrum

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**Reliable, fast hardware is absolutely essential for creative professionals to get their work done.** It's not surprising, therefore, that Apple's announcement in 2019 that the company would start transitioning away from the tried and tested Intel architecture used in Macs for almost fifteen years was met with intense interest from professionals around the world.

**How smooth could such an important transition be?** How long would it be before essential applications such as Photoshop and Illustrator would run natively on the new platform? And, crucially, **how well would these native apps perform**, given the innovative approach Apple was taking?

### The Question of Performance

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Just seven months after the introduction of the first generation Apple Silicon Macs, **all key Creative Cloud apps are now available** in 'universal binary' versions, meaning that the same program can run on both Intel and Apple Silicon platforms.

But what about performance? **How well do these apps take advantage of hardware features unique to Apple's processor design**, in particular aspects such as unified memory? How does the presence of the **Neural Engine in Apple's chips impact Adobe Sensei-driven features** in Photoshop, Premiere Pro and other apps?

To answer these questions we conducted **comprehensive real-world benchmarks** with seven essential Creative Cloud apps, covering aspects as diverse as application launch, opening and processing complex data-sets, and more. For each individual app—Photoshop, Illustrator, InDesign, XD, Premiere Pro, Lightroom and Lightroom Classic—the **most time-consuming features were measured**.

The results were surprising: There was not a single benchmark where the M1 hardware was slower than the Intel version. There is one caveat, however: to ensure a coherent comparison, **we used identical hardware configurations for both Intel and M1** (See sidebar.) For features that rely heavily on GPU acceleration, however, an Intel Mac with a discreet, powerful GPU can still outperform the current generation of M1 Macs in some areas. There is little doubt, however that Apple will address this in the future as new generations of M1 Macs close any remaining gaps with new Apple Silicon-based Macs.

### Benchmark Configurations

▶ **Apple M1:**

13 inch **M1 MacBook Pro**  
16GB RAM, 2TB of SSD

▶ **Intel:**

13 inch **Intel Core i5 MacBook Pro**  
16GB RAM, 2TB of SSD

Both systems were connected to an **Apple Pro Display XDR** for benchmarks (See last page for complete Methodology.)

# How Creative Cloud Applications Perform on M1

	<b>Intel</b>	<b>Apple M1</b>	<i>M1 Productivity gains over Intel</i>
<b>Photoshop – Average of all benchmarks</b>	<b>22,57</b>	<b>11,97</b>	<b>+89%</b>
<b>Top Results Photoshop</b>			
Content Aware Fill 1	37,88	12,62	+200%
Select Subject 1	4,91	1,92	+156%
<b>Illustrator – Average of all benchmarks</b>	<b>25,96</b>	<b>15,73</b>	<b>+65%</b>
<b>Top Results Illustrator</b>			
Scrolling performance (complex vector drawing)	28,15	5,74	+390%
Open file with 31 complex artboards	20,76	9,50	+119%
<b>InDesign – Average of all benchmarks</b>	<b>22,21</b>	<b>13,94</b>	<b>+59%</b>
<b>Top Results InDesign</b>			
Open graphics-heavy file – CPU	6,50	2,28	+185%
Scrolling 100 page book project – GPU	25,23	14,14	+78%
<b>XD – Average of all benchmarks</b>	<b>10,06</b>	<b>5,60</b>	<b>+80%</b>
<b>Top Results XD</b>			
Open complex app prototype	43,11	16,07	+168%
Insert graphic from CC Libraries (copy)	4,48	2,18	+105%
<b>Premiere Pro – Average of all benchmarks</b>	<b>291,31</b>	<b>164,05</b>	<b>+78%</b>
<b>Top Results Premiere Pro</b>			
Scene Edit Detection – 4K	25,51	3,70	+430%
Import XAVC S 4K 100p	19,02	6,63	+187%
<b>Lightroom – Average of all benchmarks</b>	<b>77,00</b>	<b>45,54</b>	<b>+69%</b>
<b>Top Results Lightroom</b>			
Super Resolution	29,87	5,75	+420%
Full-Screen Image Review (Twenty 61MP Images)	71,50	31,74	+125%
<b>Lightroom Classic – Average of all benchmarks</b>	<b>139,60</b>	<b>64,54</b>	<b>+116%</b>
<b>Top Results Lightroom Classic</b>			
Apply Settings (1000 images)	65,23	14,59	+347%
Super Resolution	36,39	9,60	+279%
<b>Average of all benchmarks (774 individual benchmarks measures)</b>	<b>84,10</b>	<b>45,91</b>	<b>+83%</b>

# Illustrator Speed on Apple M1

## What We Benchmarked

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While Illustrator is most widely known as a vector drawing and design tool, it has over the years become **an extremely powerful and multi-facetted design environment** that can handle a variety of data types and design processes.

Our benchmarks took this diversity into account: We used several different kinds of real-world assets, and conducted benchmarks that reflected typical bottlenecks when working with them. Specifically, we benchmarked performance with **purely vector-based illustrations**, files with **dozens of complex artboards**, as well as **design projects including multiple embedded high-resolution pixel images**.

## Analysis of Benchmark Results

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On average, based on 16 different workflow benchmarks, **Illustrator on M1 was 65% faster** than on Intel; all benchmarks showed performance increases over the older platform.

That being said, it is clear that there is **a notable difference in performance increase depending on the functions benchmarked and the complexity of the benchmark assets**: While the *Export for Screens...* feature shows only comparatively modest performance gains (+22% in case of PNG as output option), other seemingly simple features can show spectacular performance gains. A good example is **scrolling of a complex vector drawing**, which was **almost four times faster on the M1 system**. (See following page for details.) Even **opening complex files was over twice as fast** on the new hardware.

In any case, **the performance increase due to the M1 platform was consistent across the board**—despite the fact that the benchmark systems were used with a 6K display.

## Major Points

- ▶ On average, based on 16 workflow benchmarks conducted for this research, Illustrator was **over 65% faster** using the Apple M1 system.
- ▶ **Performance gains tend to increase** with the complexity of benchmark assets.
- ▶ Opening complex files was **over two times faster** on the Apple M1 system than on Intel.
- ▶ Scrolling a complex vector illustration showed a **4x performance increase** using the new hardware platform.

## Illustrator: Average of all Benchmarks

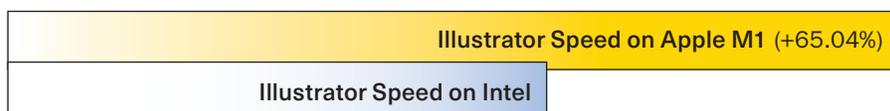


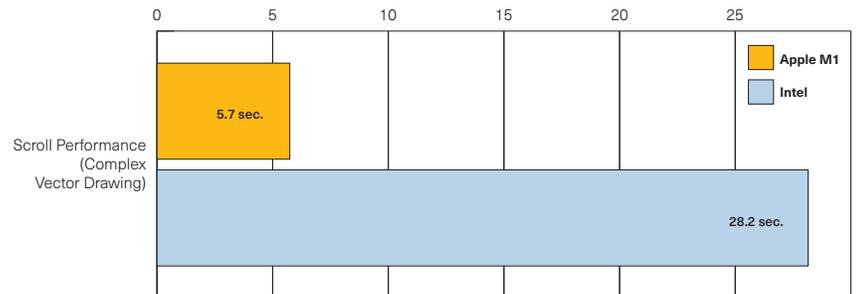
Chart based on the average of 16 workflow benchmarks conducted with Illustrator. A total of **96 individual benchmark measures** were taken. **Longer is better.**

# Illustrator on Apple M1: Key Benchmark Results

**Scrolling Performance (Complex Vector Drawing):** To benchmark scrolling performance, we displayed a very complex vector illustration at 300% zoom, then clicked and held the scroll arrow in the scroll-bar until the picture had completely scrolled through.

Illustrator on M1 took on average **less than six seconds** to complete the test — compared to **almost 30 seconds** on the Intel system.

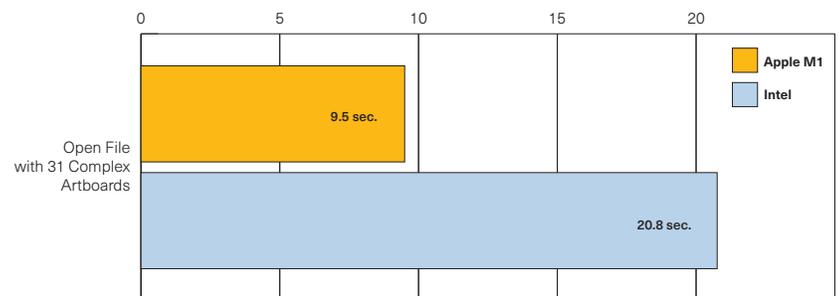
**Illustrator Apple M1 Benchmarks: Scrolling Performance (Complex Vector Drawing)**  
Time-scale in seconds. All data are the average of 3 individual benchmarks  
**Shorter is better.**



**Open File with 31 Complex Artboards:** Opening complex files can take some time. For this benchmark we used a complex design project with 31 densely packed artboards. The timer was stopped when all artboards were displayed.

Opening the file was **over two times faster** with Illustrator running on the M1 system.

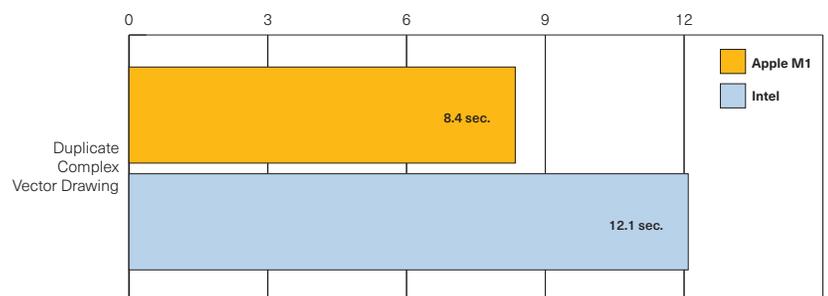
**Illustrator Apple M1 Benchmarks: Open File with 31 Complex Artboards**  
Time-scale in seconds. All data are the average of 3 individual benchmarks  
**Shorter is better.**



**Duplicate Complex Vector Drawing:** Benchmarking duplication of a complex vector drawing was tested by option-dragging the selected Illustration to a new location, and measuring the time necessary for the duplicate to display at the new location.

The operation **took on average just over 8 seconds** on the M1 system, compared to over 12 seconds on Intel.

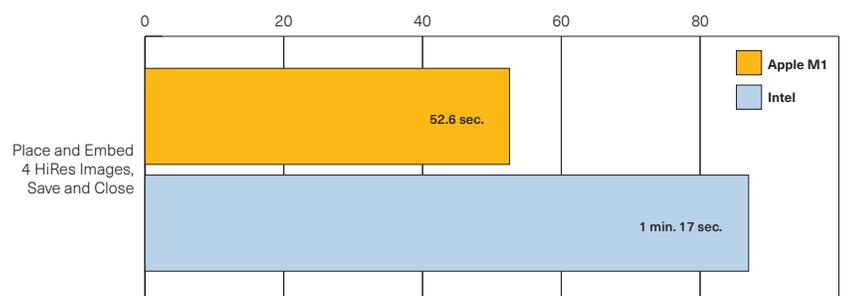
**Illustrator Apple M1 Benchmarks: Duplicate Complex Vector Drawing**  
Time-scale in seconds. All data are the average of 3 individual benchmarks  
**Shorter is better.**



**Place and Embed 4 HiRes Images:** To measure the time it really takes to complete the embedding process, we not only loaded and placed the images, we also saved and closed the document. The timer was stopped when the document window disappeared.

Illustrator on M1 **was almost 70% faster** at this task.

**Illustrator Apple M1 Benchmarks: Place and Embed 4 HiRes Images, Save and Close**  
Time-scale in seconds. All data are the average of 3 individual benchmarks  
**Shorter is better.**



## Methodology

**This benchmark project was commissioned by Adobe and independently executed by Pfeiffer Consulting.**

All the productivity measures presented in this document are based on real-world workflow examples, designed and executed by professionals with many years of experience with these applications and workflows.

### How we measure productivity

The basic approach is simple: in order to assess productivity gains that a program or solution may (or may not) bring, we start by analyzing the minimum number of steps necessary to achieve a given result in each of the applications or workflows that have to be compared.

Once this list of actions has been clearly established, we start to execute the operation or workflow in each solution, with the help of seasoned professionals who have long-standing experience in the field and with the solutions that are tested.

Every set of steps is **executed three times**, the average of the three measures is used as final result.

### Benchmark Configurations

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**Apple Pro Display XDR** for all benchmarks

### Hardware Preparation for Performance Benchmarks

Before performance benchmarks, systems are completely re-initialized. Only apps necessary for the benchmarks are installed.

Only the internal SSD was used for storage and access of benchmark assets.

### About Pfeiffer Consulting

Pfeiffer Consulting is an independent technology research and benchmarking operation focused on the needs of publishing, digital content production, and new media professionals.

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## Pfeiffer Report

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