

Creative Cloud on Apple Silicon: Key Speed Measures

Adobe InDesign

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

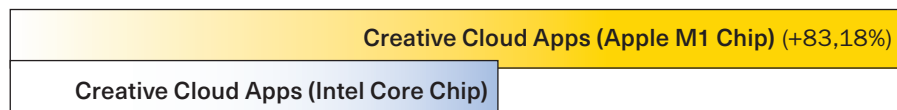


Chart based on the average of all benchmarks of seven essential Creative Cloud apps. A total of **774 individual benchmark measures** were taken. **Longer is better.**

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 15 workflow benchmarks conducted for this research, InDesign was **almost 60% 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

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

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

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

InDesign Speed on Apple M1

What We Benchmarked

Since InDesign is most widely used for design projects that **result in multi-page, often very complex documents** that integrate a variety of images, graphics and illustrations, performance issues usually do not show up in relatively simple projects; once one works with **real-world designs** such as brochures incorporating many high resolution images or book-projects that can run into hundreds of pages of densely composed text, however, performance can slow down. **That's the context we reproduced in our benchmarks.**

Analysis of Benchmark Results

Our 15 individual workflow benchmarks covered **file handling** (opening, saving and packaging InDesign projects), **display performance**, as well as **editing performance**.

On average, **InDesign on M1 was almost 60% faster** than on the older hardware platform. Performance gains for most operations were in the range of 40% to 80%, while others were **two to three times faster** than on the Intel system.

In other words, **InDesign on M1 significantly speeds up many common operations** such as scrolling complex documents (both long-form book projects or design-projects with high resolution graphics.) **File handling was on average over twice as fast** than on the older hardware platform.

Finally, **GPU acceleration on M1 also produced significantly faster performance** than the integrated GPU on the Intel platform, as the 'Modify Composition' benchmark shows. (See next page for details.)

Major Points

- ▶ On average, based on 15 workflow benchmarks conducted for this research, InDesign was **almost 60% faster** using the Apple M1 system.
- ▶ Packaging a graphics-heavy design-project on Apple M1 took just over **half the time necessary using the Intel system.**
- ▶ Scrolling designs with high-resolution images **was over 50% faster** using InDesign on the Apple M1 system.
- ▶ Modifying composition settings for a 250 page Book design showed a **performance increase of +69%.**

InDesign: Average of all Benchmarks

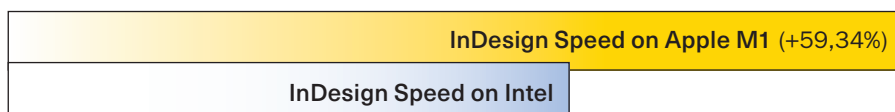


Chart based on the average of 15 workflow benchmarks conducted with InDesign. A total of **90 individual benchmark measures** were taken. **Longer is better.**

InDesign on Apple M1: Key Benchmark Results

Package Graphics-Heavy Design Project:

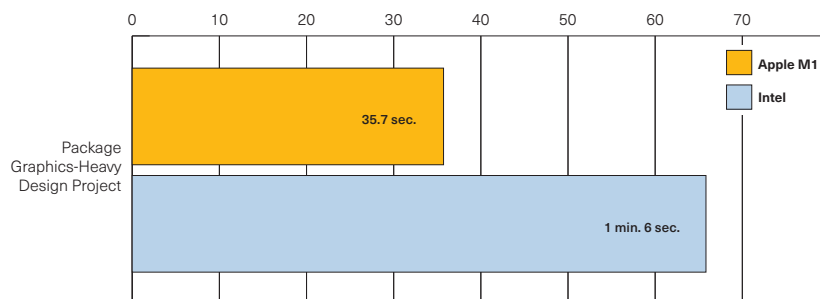
The asset we used for this benchmark was a print-ready catalogue with dozens of high-resolution images (The project folder weighs in at around 6GB of data.) The benchmark consisted in packaging the project, copying linked files as well as generating a PDF file of the project.

InDesign completed the task in **36 seconds** on the M1 system, compared to **over a minute** using the Intel platform.

InDesign Apple M1 Benchmarks: Package Graphics-Heavy Design Project

Time-scale in seconds. All data are the average of 3 individual benchmarks

Shorter is better.



Modify Composition (250 Page Book Project):

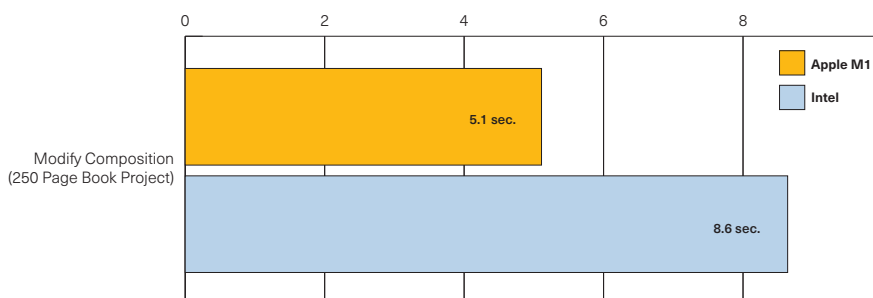
To assess if the M1 system would speed up composition, we worked with the design for a 250 page book, set in 10-point Adobe Caslon Pro using the Paragraph Composer. We benchmarked the time necessary to modify the totality of the body copy from *Align Left* to *Left Justify*.

InDesign on M1 was **almost 70% faster** completing the task.

InDesign Apple M1 Benchmarks: Modify Composition (250 Page Book Project)

Time-scale in seconds. All data are the average of 3 individual benchmarks

Shorter is better.



Scrolling Graphics-Heavy Design Project:

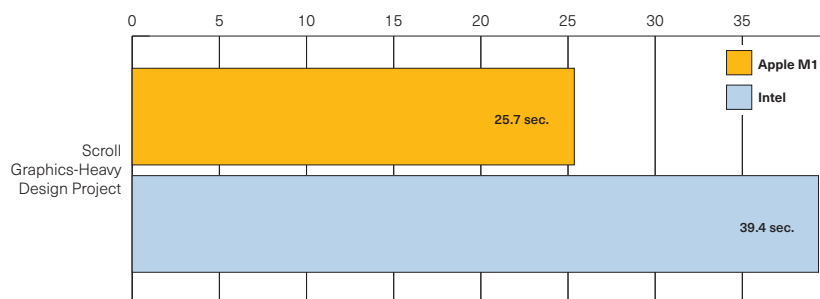
Scrolling an InDesign project is very fast with the *Typical Display* option enabled. Finalizing a design project, however, usually requires high quality display, which displays all images in full resolution. To benchmark this feature, we jumped from spread to spread in a print-ready catalogue, waiting for each spread to fully load before moving to the next.

InDesign on M1 was **over 50% faster** in this benchmark.

InDesign Apple M1 Benchmarks: Scrolling Graphics-Heavy Design Project

Time-scale in seconds. All data are the average of 3 individual benchmarks

Shorter is better.



Scrolling 100 Page Book Project:

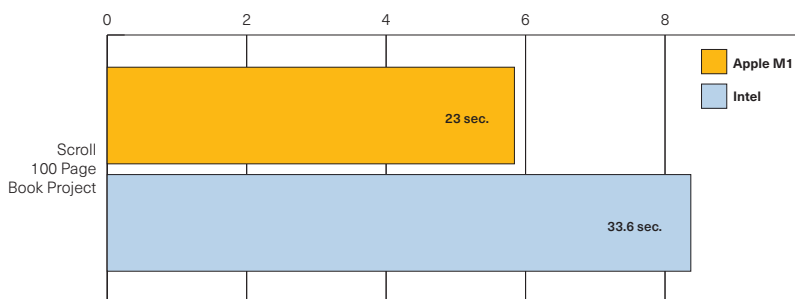
In order to measure the display performance of text-based designs, we loaded a shorter version of the book design mentioned above, set zoom level to 300% to display the text-composition full-screen, then pressed the down-arrow on the scroll bar until we reached the end of the document.

InDesign running on the M1 system was **over ten seconds faster** than on the Intel system.

InDesign Apple M1 Benchmarks: Scrolling 100 Page Book Project

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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Both systems were connected to a
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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