# **The M1 Family**



## **Apple's Groundbreaking M1 Chip**

Last year, the world of technology made a giant leap forward with Apple's M1 chip. And with that groundbreaking chip, Apple dove deeper into the enterprise.

#### **Reviewers impressed with M1**

The first release was heralded from all quarters as an absolute triumph, with reviewers calling the new MacBook Air, powered by the M1 chip, "... like stepping into a new world where we can demand much more from ultraportables,"<sup>1</sup> and "... screamingly fast for developers. I almost feel sorry for Intel!"<sup>2</sup>

#### The specs for the M1 chip

The specs for Apple's first in-house chip were somewhat astonishing:

- An 8-core CPU
- 8 or 16 gigabytes of memory
- A 10W thermal envelope overall
- A total of 16 billion transistors
- A separate 16-core neural engine for machine learning tasks

This gave the chip three times the performance per watt than that of previous chips used in Mac, two times the CPU speed and a battery life of two-to-three times that of machines without the M1. It also offered two times the graphics speed than the latest PC laptop chip offered at the time.

1. "MacBook Air M1 review: Faster than most PCs, no fan required," engadget.com, November 17, 2020 2. Tweet from @twostraws on November Nov 17, 2020

## Setting the stage for the future of the enterprise

Beyond the obviously stunning specs of the M1 chip, the chip also set the stage for a profound transformation not only for Apple, but for the tech industry as a whole.

#### What the M1 chip meant for Apple

This in-house chip made Apple's strategy for the future clear: they were coming for the enterprise, and they meant it.

In owning the entire tech stack and in offering such dizzying speeds in such a portable device, Apple was telling enterprise: we are the face of the future.

## What the M1 chip meant for the entire industry

With so much power and speed in such a mobile device, Apple transformed the power of their always-connected mobile devices into the inheritors of desktop computers, primarily used in corporations. It combined mobility with speed and enormous capability, which could help larger enterprises to allow for more flexibility in employee location and increased productivity for those employees who traveled. While Apple might not have foreseen how quickly the world would demand powerful work-from-anywhere options, it was certainly there to meet the suddenly growing need.

And, as 9-to-5-Mac so eloquently put it: "At this point, it's impossible not to think of Apple Silicon chips as something that changed the computer industry."<sup>4</sup>

Apple has invested in Mac in the enterprise with the M1 chip, and this investment is leading to increased Mac adoption in small, medium and large business. It has turned the Mac from a personal machine to a business workhorse. These new chips should only increase this desire and steep adoption rates.

4. Filipe Esposito, 9-to-5-Mac.com, Nov. 10th 2021: "Comment: 1 year after the M1 chip, Apple has really changed the computer industry once again."

## Meet the family: the M1 Pro and M1 Max chips

#### The most powerful chips Apple has ever built

The M1 Pro and M1 Max chips power the all-new MacBook Pro. They offer up to a 10-core CPU, 32-core GPU and 64GB of unified memory. They also have ProRes acceleration and industry-leading power efficiency.

Together with M1, Apple describes these chips as "<u>a family of chips</u> that lead the industry in performance, custom technologies, and power <u>efficiency</u>."<sup>3</sup>

"We've seen tremendous momentum for Macs with M1, M1 Pro, and M1 Max in the market, highlighting Apple's focus on computing power, efficiency and simplifying the customer transition to Apple Silicon on the Mac," says Dean Hager, CEO, Jamf. "More than ever, since the arrival of M1, it is clear that giving employees the most powerful products, and the ones that they love has a huge impact on team morale, and ultimately, workplace productivity."

### Jamf and the M1 family of chips

"It's been incredible to see the enthusiasm and momentum for the Mac lineup powered by the M1 family of chips among innovative businesses, prestigious learning institutions, and beyond," says Susan Prescott, Apple's vice president of Enterprise and Education Marketing. "It's a testament to their reputation and strength in the market that Jamf is working with tens of thousands of business and education customers, providing solutions that help ensure everyone can do their best work on the Mac."

#### **Turning incredible into astounding**

While reviewers found little to improve on the M1, Apple's developers knew scaling up the M1's transformational architecture by delivering faster CPU performance, doubling the GPU and increasing the M1's already jaw-dropping power efficiency.

## The M1 Pro and M1 Max chips

And they most certainly did: CPU in both new chips delivers up to 70 percent faster CPU performance than the M1, so tasks like compiling projects in Xcode compile at dizzying speed. M1 Pro offers even better performance than the M1 with industry-leading power efficiency, while M1 Max takes these capabilities to new heights.

M1 Pro and M1 Max introduce a system-on-a-chip (SoC) architecture to pro systems for the first time. This has the capacity to propel enterprise worldwide to even higher rates of efficiency, productivity and creativity.

The chips feature fast unified memory, industry-leading performance per watt, and incredible power efficiency. Increased memory bandwidth and capacity as well as enhanced media engines with dedicated ProRes accelerators are specifically for pro video processing.

And believe it or not, the efficient architecture of M1 Pro and M1 Max means they deliver the same level of performance whether MacBook Pro is plugged in or using the battery.

#### The M1 Pro

The GPU in the M1 Pro is up to double that of the M1, and offers up to 200GB/s of memory bandwidth with support for up to 32GB of unified memory.

And with 5-nanometer process technology, M1 Pro has squeezed in more than twice the amount of transistors than the M1. Compared with the latest 8-core PC laptop chip, M1 Pro delivers nearly double the CPU performance at the same power level and achieves the PC chip's peak performance using up to 70 percent less power.

#### The M1 Max

Four times faster than the M1, the M1 Max allows pro users to sail through the most demanding graphics workflows.

What truly makes the M1 Max chip stand out is how it affects creative work. For instance, timeline rendering in Final Cut Pro is up to thirteen times faster than the previous-generation 13-inch MacBook Pro.

The M1 Max doubles the memory interface of the M1 Pro and allows the M1 Max chip to be configured with up to 64GB of fast unified memory.

## The three game-changers from the M1 family

#### Performance, battery life, and the best tools to create.

#### Performance

The main story of the M1 family is really that of performance. Their fast unified memory, industry-leading performance per watt and increased memory bandwidth and capacity power efficiency hasn't just changed the game — it has started a new one.

M1 Pro offers up to 200GB/s of memory bandwidth with support for up to 32GB of unified memory. M1 Max delivers up to 400GB/s of memory bandwidth — 2x that of M1 Pro and nearly 6x that of M1 — and support for up to 64GB of unified memory.

With a dizzying 57 billion transistors — 70 percent more than M1 Pro — M1 Max is the largest chip Apple has ever built.

The M1 Max features up to 400GB/s of memory bandwidth. That's double that of the M1 Pro and nearly six times that of the M1, which had already blown the socks off of the industry.

The GPU delivers performance comparable to a high-end GPU in a compact pro PC laptop, while also consuming up to 40 percent less power.

With less heat generation, fans run quietly and less often, and the new MacBook Pro with the M1 Max has an absolutely astounding battery life.

Real-world tests such as those conducted by MacRumors back up the specs, as you'll see.

#### **Battery life**

According to Dot Esports<sup>6</sup>, MacBook devices powered by the M1 Pro and M1 Max can last for up to 21 hours of Apple TV app movie playback and up to 14 hours of wireless web searching. This isn't surprising, considering the up to 400GB/s of memory bandwidth offered, and the efficiency of these models which are often 40% more efficient than a comparable PC.

Both models work just as quickly whether the computer is plugged in or using battery power. This extends the reach of these machines further than they've ever been able to go before. Mobile workers can work longer without a charge, faster than ever before, and continue their work without interruption, while working from absolutely anywhere.

6. Ben Hestad, "What is the battery life on the MacBook M1 Pro and MacBook Pro M1 Max?" October 19, 2021, dotesports.com.

#### The best tools for creating

Perhaps the biggest stand-out from the new members of the M1 family is how much mobility they will offer to video editors and other creative workers. This has the capacity to truly transform the creative industry by freeing editors from their desktops and allowing them to edit on-the-fly in real time.

Even the most demanding tasks, like high-resolution photo editing, are handled with ease by M1 Pro. The M1 Max chip transforms graphics-intensive workflows providing up to thirteen times faster complex-timeline rendering in Final Cut Pro compared to the previous generation 13-inch MacBook Pro.

They also subjected M1-family-powered machines to real-world pressures with multiple commonly-used video editing programs open and working at once, such as Final Cut Pro, Lightroom, Chrome, Safari and Music. "There were zero performance hiccups across either MacBook Pro model," announced MacRumors. In Final Cut Pro, a video export test saw the M1 Max machine export a 6-minute 4K video in one minute and 49 seconds, a task that took the M1 Pro 2 minutes and 55 seconds. In addition, both machines handled 8K RAW footage, and even the M1 Max MacBook Pro performed nearly flawlessly."

-MacRumors<sup>7</sup>

Zuli Clover, "M1 Pro vs. M1 Max: Real-World Performance Test," November 3, 2021, MacRumors.com

### So what do all of these specs mean for Mac users?

Simply put, workers with better machines and fewer obstacles and breakdowns are free to produce their best work.

#### Investing in M1 devices just makes good business sense

The benefits for organizations to deploy Mac computers powered by the M1 family of chips range from financial savings to improved employee satisfaction and productivity.



company, has deployed 5,200 Mac computers powered by M1 using Jamf in the last year, adding to its 30,000 total Mac fleet. When testing Mac with M1, SAP developers saw remarkable results regarding speed and app performance, resulting in increased cost efficiency. SAP has offered employee choice since 2008 and has seen demand for Mac quickly increase since then. SAP also has deployed over 70,000 iPhones and 17,500 iPads with Jamf.

SAP, an enterprise software

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Electric, a Jamf partner and IT tech company that manages a fleet of over 26,800 Apple devices for its small and medium-sized customers, has seen 158% growth in deployment of Mac devices this year. They note that the speed offered by Mac computers with the M1 family of chips is attractive to the many businesses they serve that are focused on quickly and securely onboarding employees with the powerful devices and applications they need.



Bartlett City Schools, an 8,500 student and 1,100 employee school system just outside of Memphis, Tennessee, deployed nearly 6,000 Mac devices powered by M1 this year. The new M1 Mac devices make up around 45% of the district's total device count, with 7,800 more iPadOS and tvOS devices, all managed by Jamf. Using Jamf to deploy these devices decreased Bartlett's rollout time by two weeks.

According to a recent Forrester Report<sup>8</sup>, Mac saves enterprise organizations \$843 in an average three-year device lifecycle, and lowers the risk of data breaches on an enterprise device by 50% per M1 Mac deployed.



8. "The Total Economic Impact<sup>™</sup> Of Mac In Enterprise: M1 Update Cost Savings And Business Benefits Enabled By Mac," JULY 2021, Forrester.

## **Expanded Apple footprint means expanded need for management**

Apple has invested in Mac in the enterprise with the M1 chip, and this investment is leading many customers to adopt more Mac devices. It has turned the Mac from a personal machine to a business workhorse. These new chips should only increase this desire and adoption.

#### **Jamf: the standard in Apple Enterprise Management**

But these expanded tools and location flexibility the best employees demand require careful management. Offering the latest and greatest devices requires a solution that keeps up with Apple to supply same-day, up-to-date support. And that offers robust, smart, state-of-the-art security.

You'll need a solution that extends beyond simple mobile device management. Your organization needs a complete Apple Enterprise Management solution that can connect, manage, and protect your fleet.

Jamf helps customers deploy more Mac desktops and notebooks in enterprise than any company in the world, including serving the Mac needs of 23 of the top 25 brands in the world as ranked by Forbes.

Jamf offered same-day support for the M1 chip last November, allowing organizations to take advantage of the newest and most secure Apple technology in their school or business as it became available.

In one year, organizations have deployed a million M1-powered Mac computers with Jamf.

74% of Jamf customers have at least one Mac with an M1 chip.

## Jamf empowers organizations by:

#### **Connecting users with:**

- Account provisioning
- Identity management
- Password sync
- Conditional access
- Customized app store

#### Managing devices with:

- Zero-touch deployment
- Device management
- App lifecycle management
- Customized inventory
- Security enforcement

#### **Protecting endpoints with:**

- Antivirus protection
- Compliance monitoring
- Security visibility
- Behavior detections
- Threat hunting

# jamf

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