

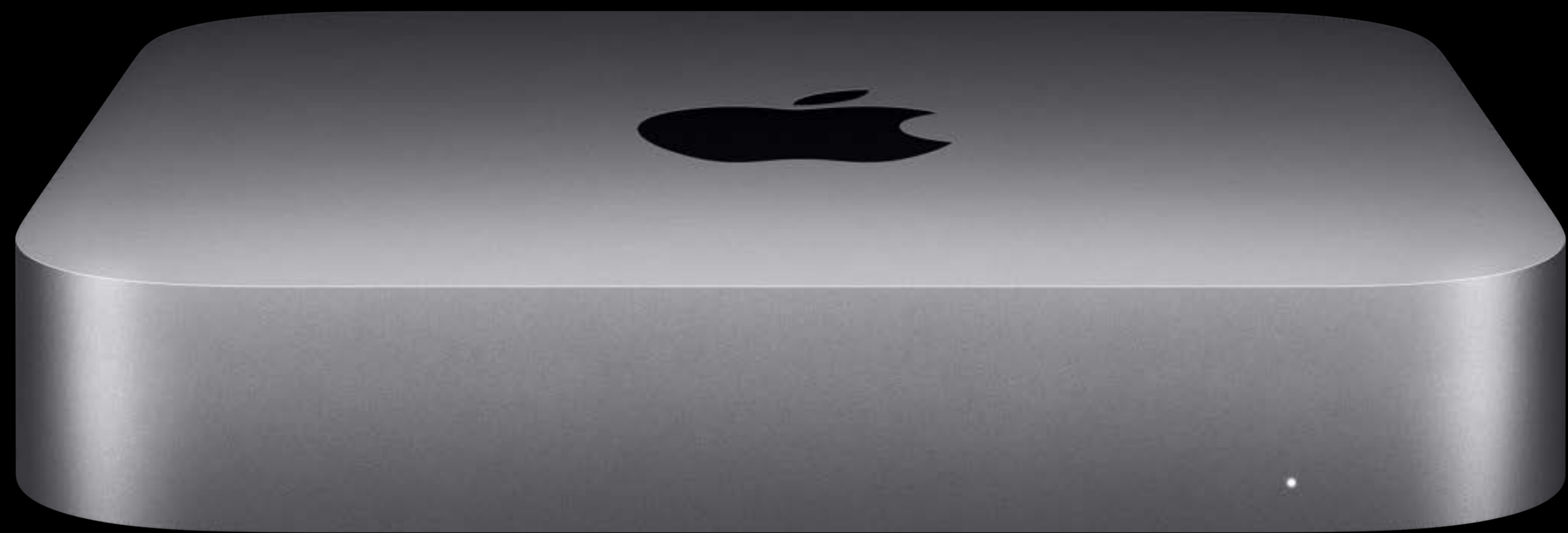


# Mac mini

Presenter Name

Title

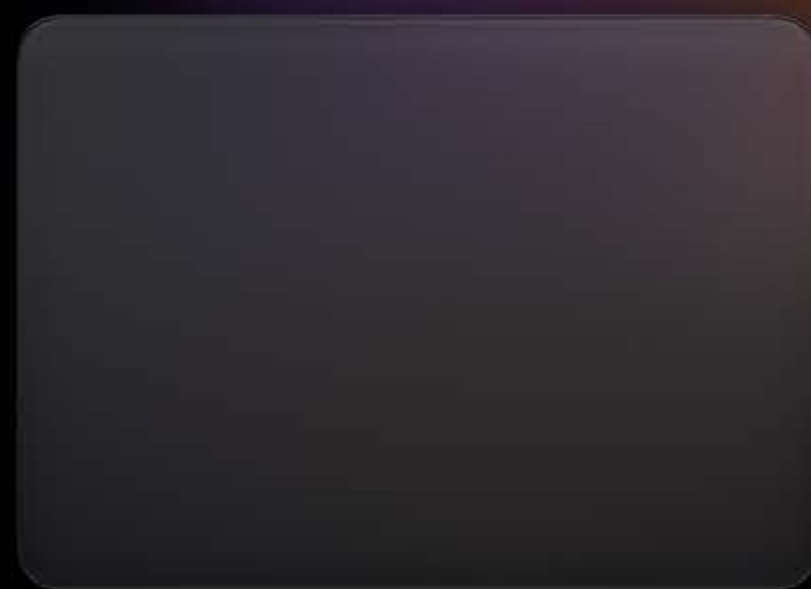
Date















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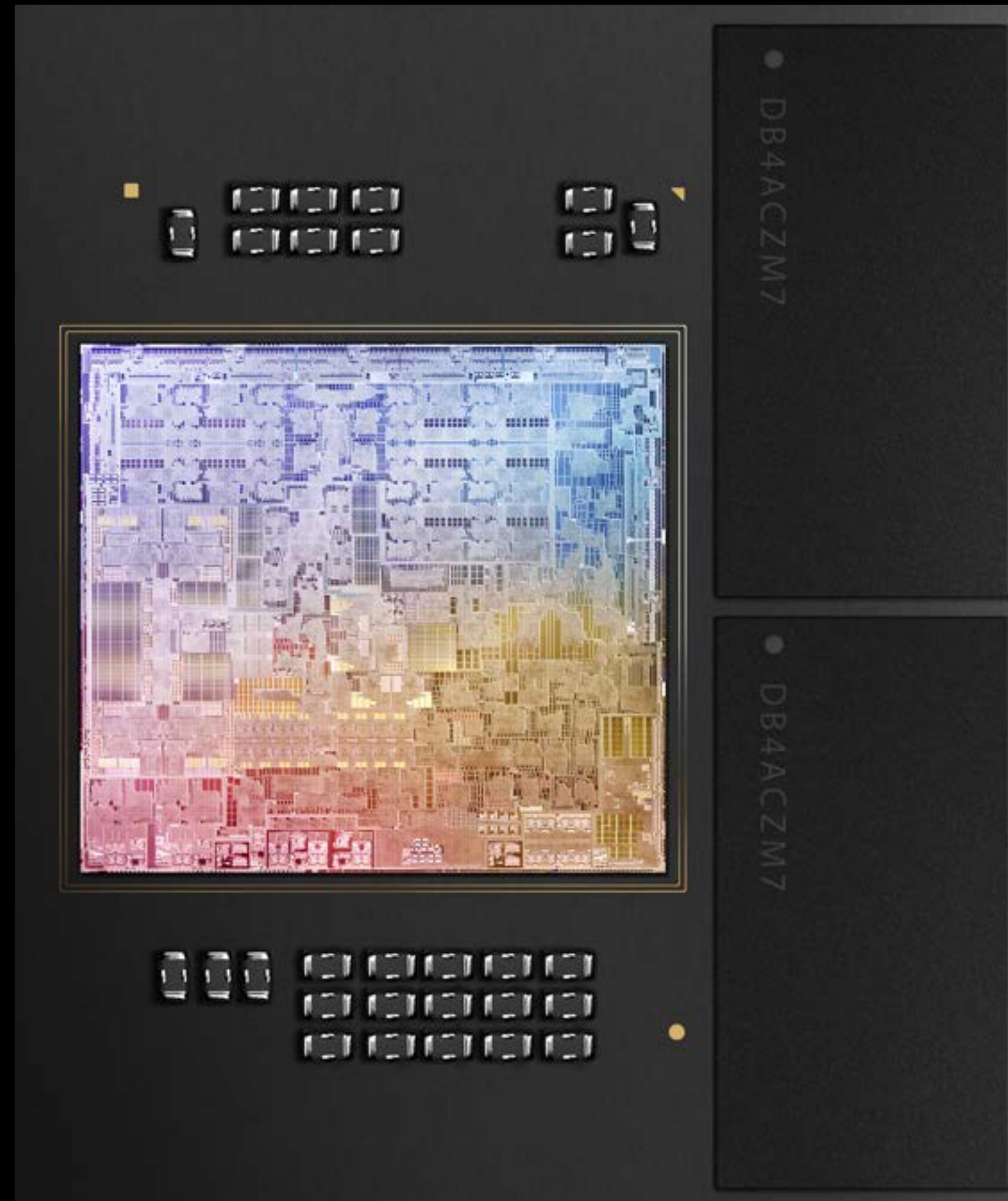
Second-generation  
5 nanometer process technology

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20 billion transistors

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Integrates multiple  
discrete chips



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Unified memory architecture

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Advanced chip  
packaging process

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Up to 24GB of high-  
performance memory

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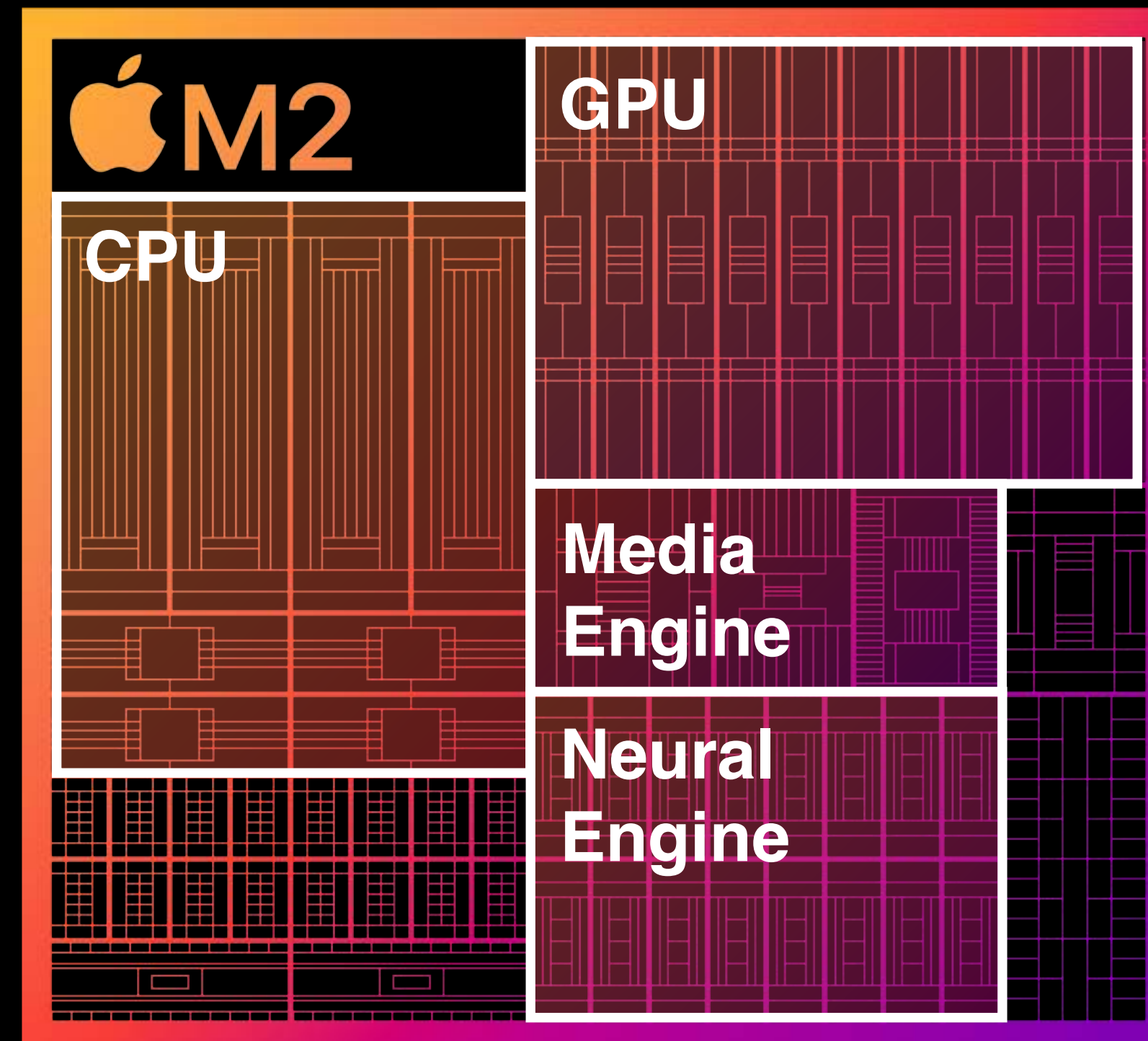
## 8-core CPU

4 high-performance cores  
4 high-efficiency cores

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## 16-core Neural Engine

15.8 trillion operations/second



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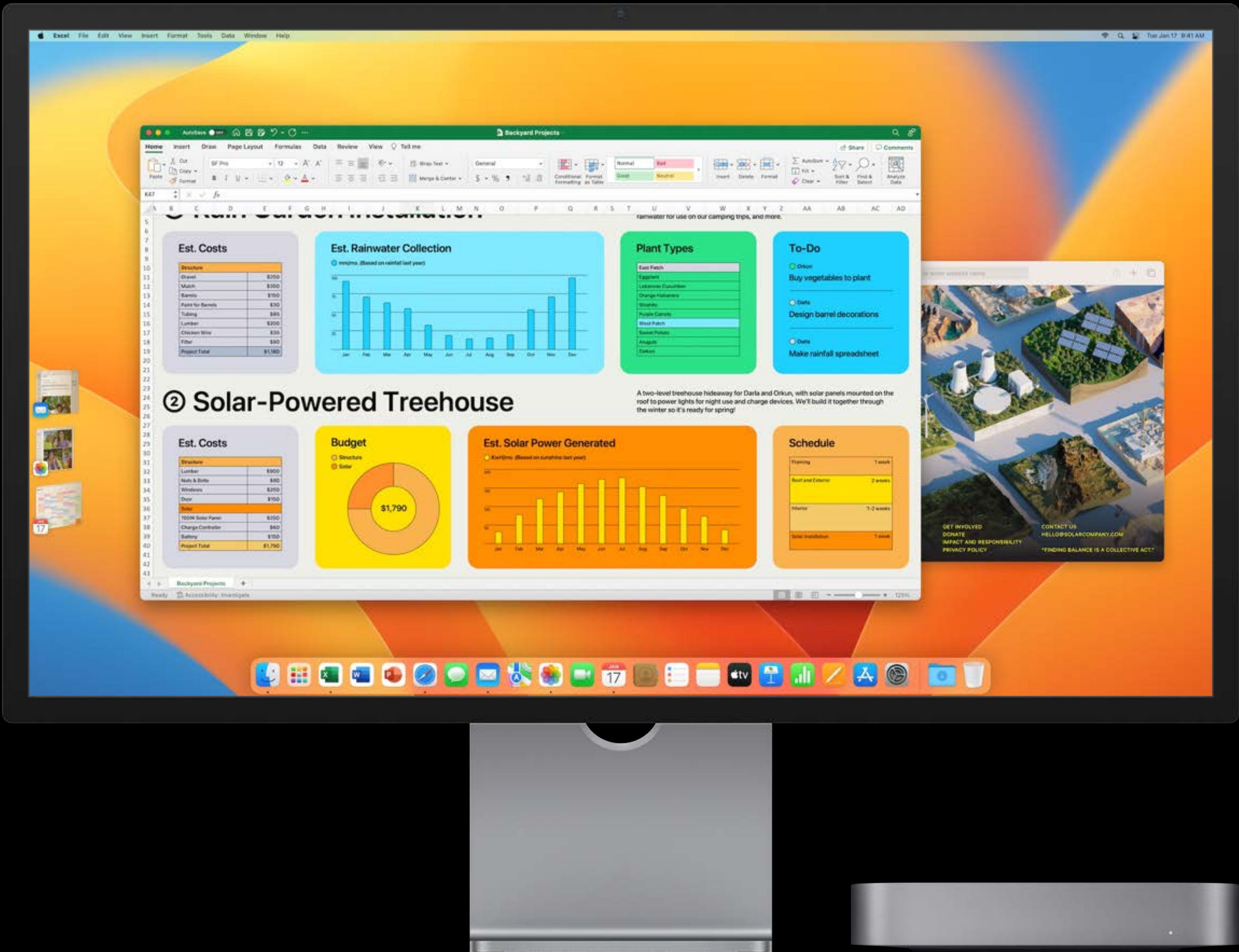
## 10-core GPU

Larger L2 cache  
3.6 teraflops  
111 gigatexels/second  
55 gigapixels/second

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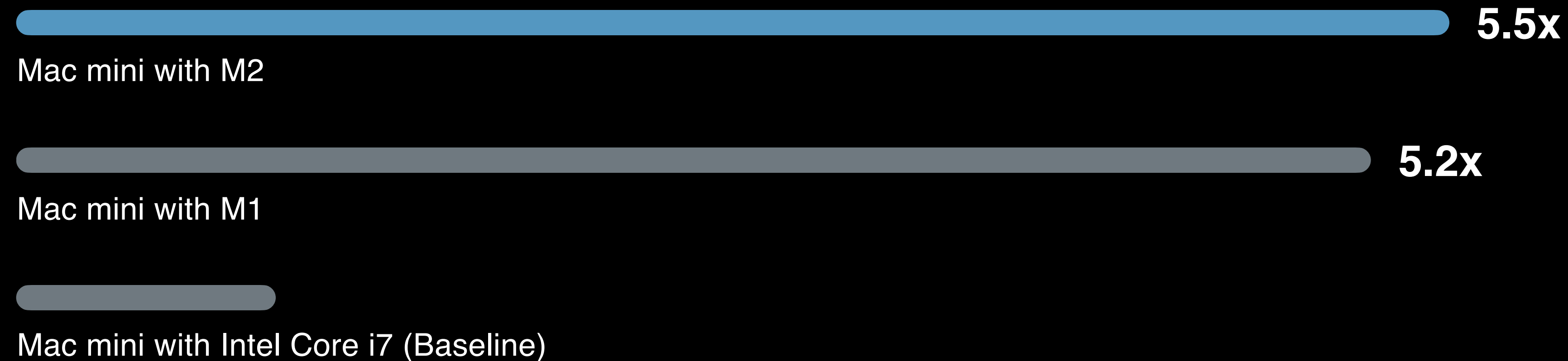
## Media engine

8K H.264 and HEVC  
encode and decode



# Web Browsing

## Faster rendering performance of animated content in Safari



Testing conducted by Apple in November and December 2022 using preproduction Mac mini systems with Apple M2, 8-core CPU, 10-core GPU, 24GB of RAM, and 2TB SSD, and production Mac mini systems with Apple M1, 8-core CPU, 8-core GPU, 16GB of RAM, as well as production 3.2GHz 6-core Intel Core i7-based Mac mini systems with Intel Iris UHD Graphics 630, 64GB of RAM, and 2TB SSD. Tested with prerelease Safari 16.2 and MotionMark 1.2. Performance tests are conducted using specific computer systems and reflect the approximate performance of Mac mini and iMac.

# Productivity

## Faster spreadsheet processing in Excel



Testing conducted by Apple in November and December 2022 using preproduction Mac mini systems with Apple M2, 8-core CPU, 10-core GPU, 24GB of RAM, and 2TB SSD, and production Mac mini systems with Apple M1, 8-core CPU, 8-core GPU, 16GB of RAM, as well as production 3.2GHz 6-core Intel Core i7-based Mac mini systems with Intel Iris UHD Graphics 630, 64GB of RAM, and 2TB SSD. Tested with a selection of tasks using Microsoft Excel v16.67. Performance tests are conducted using specific computer systems and reflect the approximate performance of Mac mini and iMac.



# Photo Editing

## Faster ML image upscaling performance in Pixelmator Pro

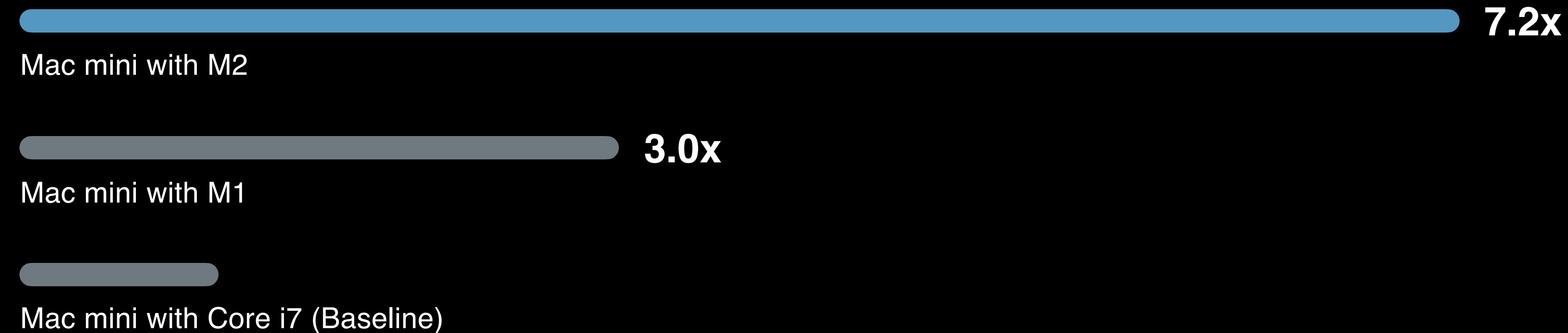


Testing conducted by Apple in November and December 2022 using preproduction Mac mini systems with Apple M2 Pro, 12-core CPU, 19-core GPU, 32GB of RAM, and 8TB SSD, preproduction Mac mini systems with Apple M2, 8-core CPU, 10-core GPU, 24GB of RAM, and 2TB SSD, production Mac mini systems with Apple M1, 8-core CPU, 8-core GPU, 16GB of RAM, and 2TB SSD, and production 3.8GHz 8-core Intel Core i7-based iMac systems with AMD Radeon Pro 5500 XT with 8GB of GDDR6, 8GB of RAM, and 512GB SSD, as well as production 3.2GHz 6-core Intel Core i7-based Mac mini systems with Intel Iris UHD Graphics 630, 64GB of RAM, and 2TB SSD. Tested with Pixelmator Pro 3.1.1 using a 216KB image. Performance tests are conducted using specific computer systems and reflect the approximate performance of Mac mini and iMac.



# Video Transcode

## Faster ProRes transcode performance in Final Cut Pro



Testing conducted by Apple in November and December 2022 using preproduction Mac mini systems with Apple M2 Pro, 12-core CPU, 19-core GPU, 32GB of RAM, and 8TB SSD, preproduction Mac mini systems with Apple M2, 8-core CPU, 10-core GPU, 24GB of RAM, and 2TB SSD, production Mac mini systems with Apple M1, 8-core CPU, 8-core GPU, 16GB of RAM, and 2TB SSD, and production 3.8GHz 8-core Intel Core i7-based iMac systems with AMD Radeon Pro 5500 XT with 8GB of GDDR6, 8GB of RAM, and 512GB SSD, as well as production 3.2GHz 6-core Intel Core i7-based Mac mini systems with Intel Iris UHD Graphics 630, 64GB of RAM, and 2TB SSD. Final Cut Pro 10.6.5 tested using a 55-second clip with 4K Apple ProRes RAW media, at 4096x2160 resolution and 59.94 frames per second, transcoded to Apple ProRes 422. Performance tests are conducted using specific computer systems and reflect the approximate performance of Mac mini and iMac.

# 5x

faster than the best-selling Windows desktop

Testing was conducted by Apple in November and December 2022 using preproduction Mac mini systems with Apple M2, 8-core CPU, 10-core GPU, 8GB of RAM, and 256GB SSD, as well as production Intel Core i5-based PC systems with Intel UHD Graphics 730 and the latest version of Windows 11 available at the time of testing. The best-selling system is based on publicly available sales data over the prior twelve months. Performance tests are conducted using specific computer systems and reflect the approximate performance of Mac mini.







5 nanometer  
process  
technology

40 billion  
transistors

Integrates  
multiple  
discrete chips



Unified memory  
architecture

Advanced chip  
packaging process

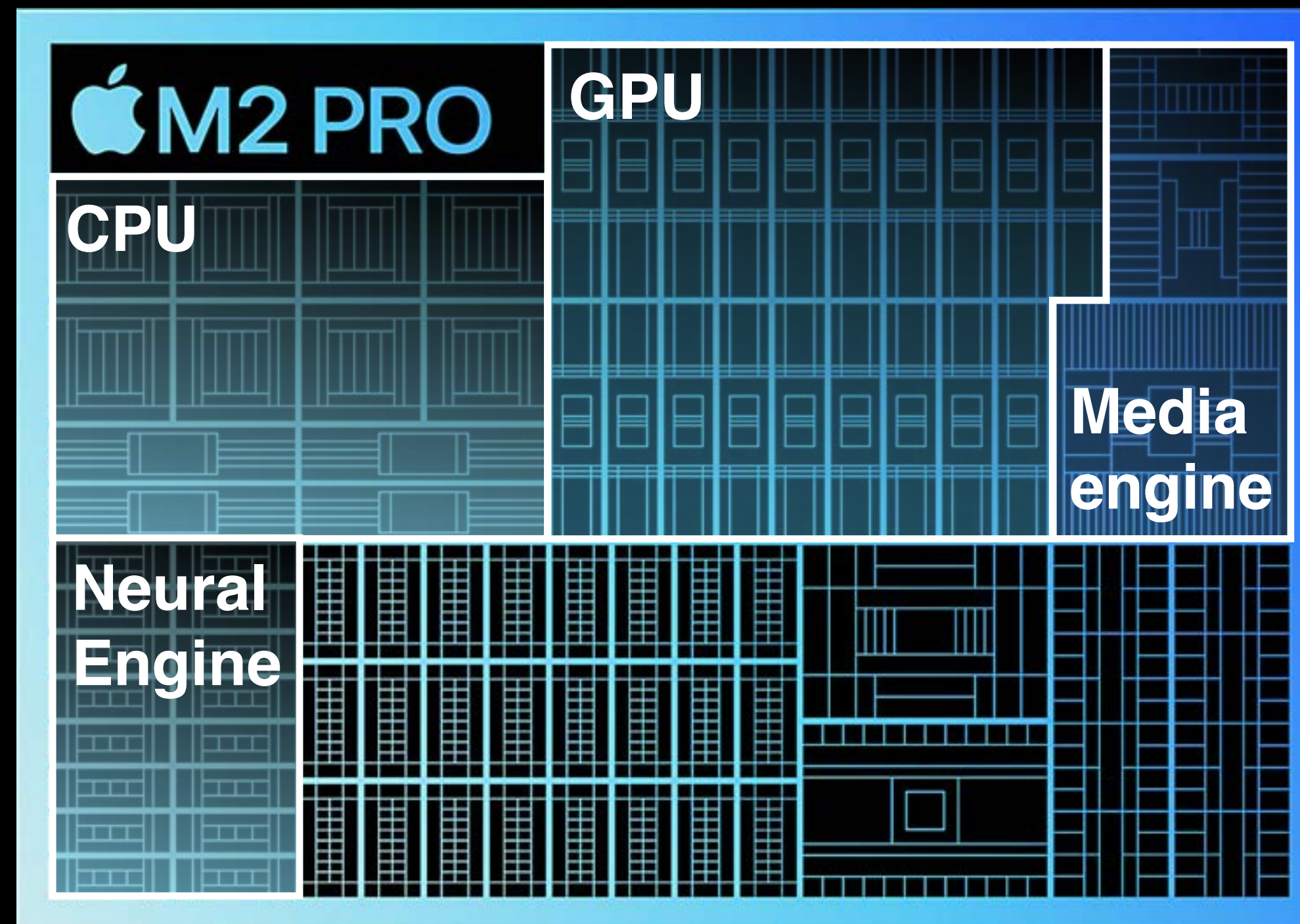
Up to 32GB of high-  
performance  
memory

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Up to 12-core CPU  
8 high-performance cores  
4 high-efficiency cores

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16-core Neural Engine  
15.8 trillion  
operations/second



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Up to 19-core GPU  
6.8 teraflops  
212 gigatexels/second  
106 gigapixels/second

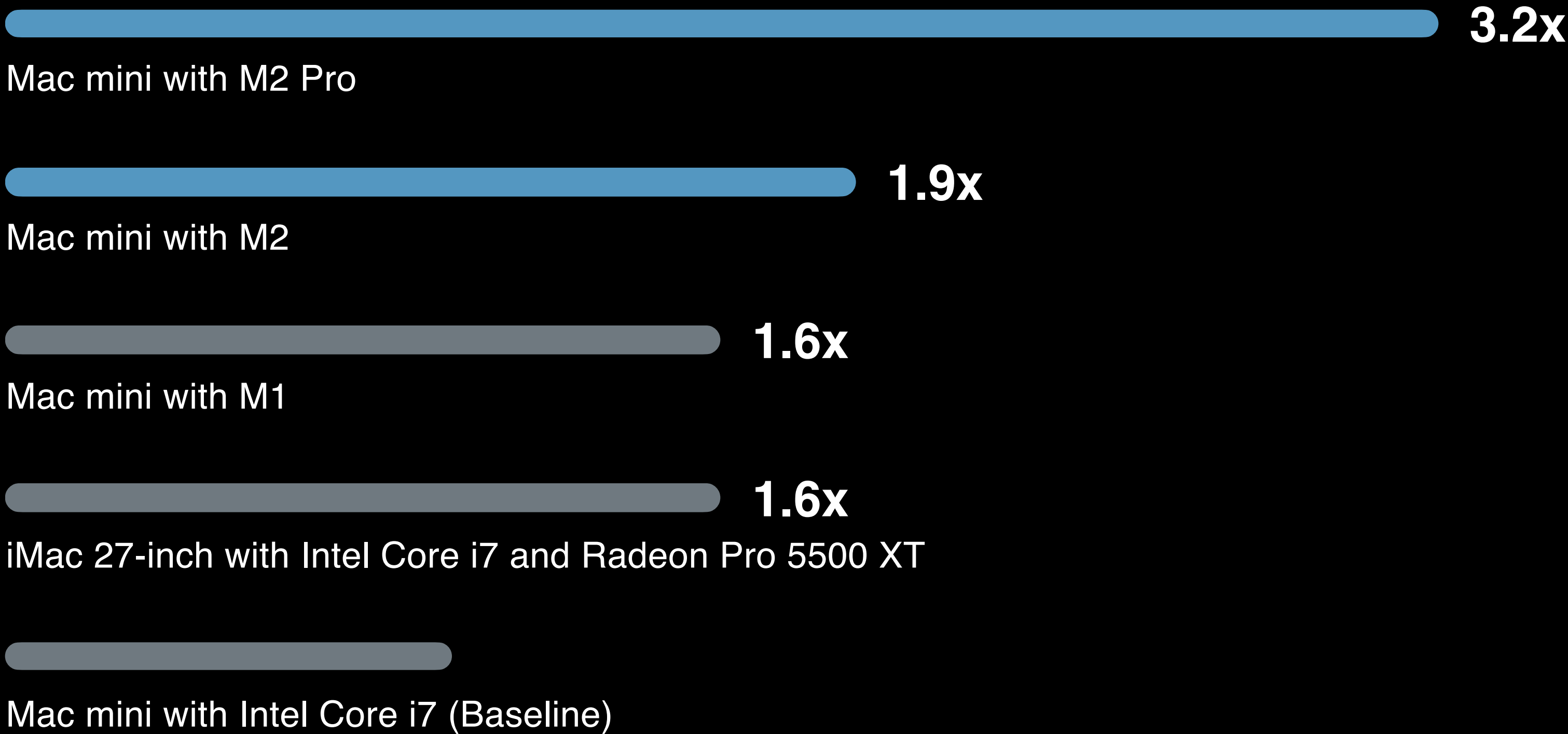
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Media engine  
Hardware-accelerated  
H.264, HEVC, ProRes,  
and ProRes RAW



# Code Compiling

## Faster project build performance in Xcode



Testing conducted by Apple in November and December 2022 using preproduction Mac mini systems with Apple M2 Pro, 12-core CPU, 19-core GPU, 32GB of RAM, and 8TB SSD, preproduction Mac mini systems with Apple M2, 8-core CPU, 10-core GPU, 24GB of RAM, and 2TB SSD, production Mac mini systems with Apple M1, 8-core CPU, 8-core GPU, 16GB of RAM, and 2TB SSD, and production 3.8GHz 8-core Intel Core i7-based iMac systems with AMD Radeon Pro 5500 XT with 8GB of GDDR6, 8GB of RAM, and 512GB SSD, as well as production 3.2GHz 6-core Intel Core i7-based Mac mini systems with Intel Iris UHD Graphics 630, 64GB of RAM, and 2TB SSD. Open source project built with prerelease Xcode 13.0 with Apple Clang 14.0.0, Ninja 1.10.0.git, and CMake 3.25.0-rc2. Performance tests are conducted using specific computer systems and reflect the approximate performance of Mac mini and iMac.



# Photo Editing

## Faster filter and function performance in Photoshop



Mac mini with M2 Pro



Mac mini with M2



Mac mini with M1



iMac 27-inch with Intel Core i7 and Radeon Pro 5500 XT



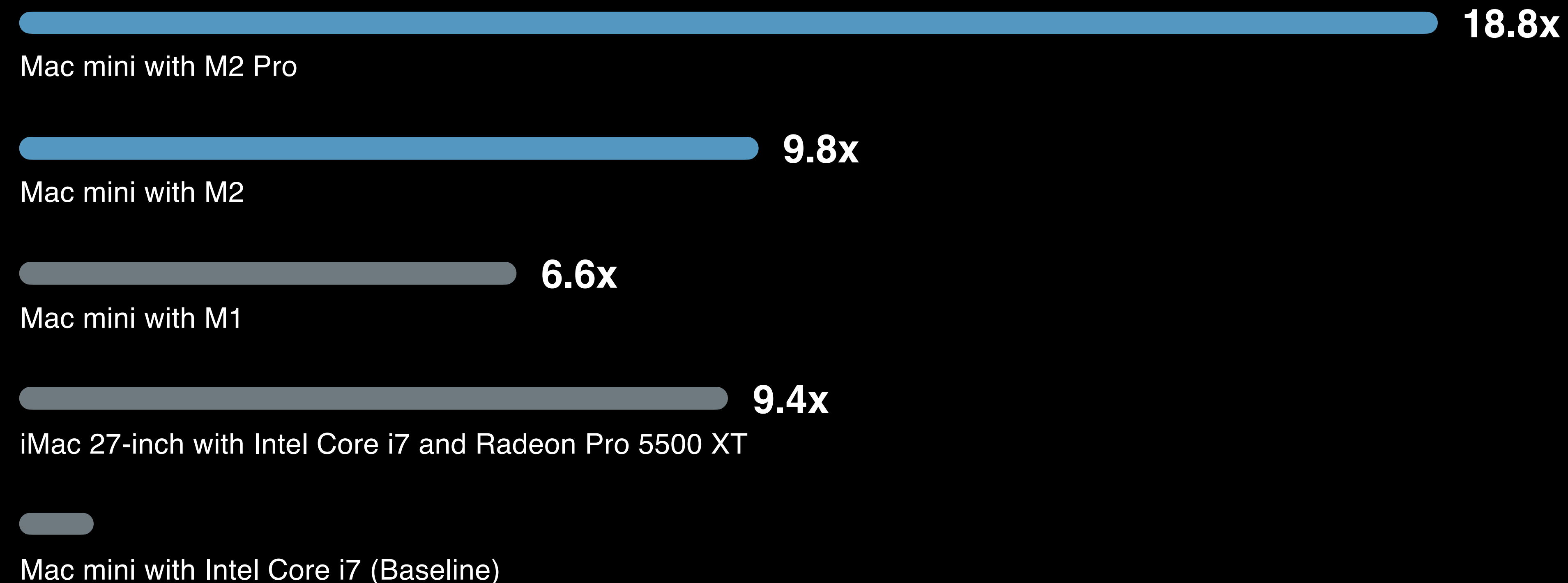
Mac mini with Intel Core i7 (Baseline)

Testing conducted by Apple in November and December 2022 using preproduction Mac mini systems with Apple M2 Pro, 12-core CPU, 19-core GPU, 32GB of RAM, and 8TB SSD, preproduction Mac mini systems with Apple M2, 8-core CPU, 10-core GPU, 24GB of RAM, and 2TB SSD, production Mac mini systems with Apple M1, 8-core CPU, 8-core GPU, 16GB of RAM, and 2TB SSD, and production 3.8GHz 8-core Intel Core i7-based iMac systems with AMD Radeon Pro 5500 XT with 8GB of GDDR6, 8GB of RAM, and 512GB SSD, as well as production 3.2GHz 6-core Intel Core i7-based Mac mini systems with Intel Iris UHD Graphics 630, 64GB of RAM, and 2TB SSD. Tested with Adobe Photoshop 24.0.0 using the following filters and functions: mesh from layer, difference clouds, lighting effects, tree, and spherical panorama. Performance tests are conducted using specific computer systems and reflect the approximate performance of Mac mini and iMac.



# Video Editing

## Faster complex timeline render performance in Final Cut Pro



Testing conducted by Apple in November and December 2022 using preproduction Mac mini systems with Apple M2 Pro, 12-core CPU, 19-core GPU, 32GB of RAM, and 8TB SSD, preproduction Mac mini systems with Apple M2, 8-core CPU, 10-core GPU, 24GB of RAM, and 2TB SSD, production Mac mini systems with Apple M1, 8-core CPU, 8-core GPU, 16GB of RAM, and 2TB SSD, and production 3.8GHz 8-core Intel Core i7-based iMac systems with AMD Radeon Pro 5500 XT with 8GB of GDDR6, 8GB of RAM, and 512GB SSD, as well as production 3.2GHz 6-core Intel Core i7-based Mac mini systems with Intel Iris UHD Graphics 630, 64GB of RAM, and 2TB SSD. Final Cut Pro 10.6.5 tested using a complex 2-minute clip with 4K Apple ProRes RAW media. Performance tests are conducted using specific computer systems and reflect the approximate performance of Mac mini and iMac.



# Gaming

## Faster gaming performance in Myst



Mac mini with M2 Pro



Mac mini with M2



Mac mini with M1



iMac 27-inch with Core i7 and Radeon Pro 5500 XT



Mac mini with Core i7 (Baseline)

Testing conducted by Apple in November and December 2022 using preproduction Mac mini systems with Apple M2 Pro, 12-core CPU, 19-core GPU, 32GB of RAM, and 8TB SSD, preproduction Mac mini systems with Apple M2, 8-core CPU, 10-core GPU, 24GB of RAM, and 2TB SSD, production Mac mini systems with Apple M1, 8-core CPU, 8-core GPU, 16GB of RAM, and 2TB SSD, and production 3.8GHz 8-core Intel Core i7-based iMac systems with AMD Radeon Pro 5500 XT with 8GB of GDDR6, 8GB of RAM, and 512GB SSD, as well as production 3.2GHz 6-core Intel Core i7-based Mac mini systems with Intel Iris UHD Graphics 630, 64GB of RAM, and 2TB SSD. Tested with Myst 1.8.3 at 1920x1080, with low settings. Performance tests are conducted using specific computer systems and reflect the approximate performance of Mac mini and iMac.

# Connectivity



Gigabit or 10Gb  
Ethernet

Thunderbolt 4

HDMI

Headphone jack

USB-A



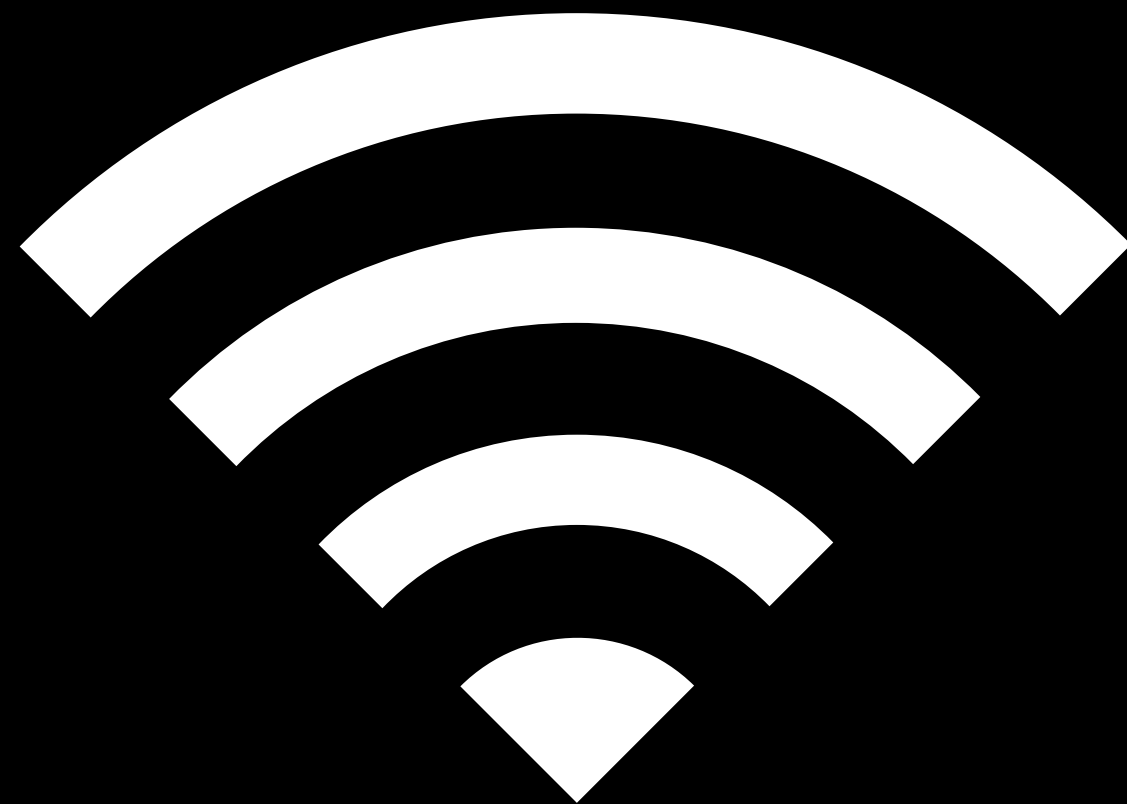
Gigabit or 10Gb  
Ethernet

Thunderbolt 4

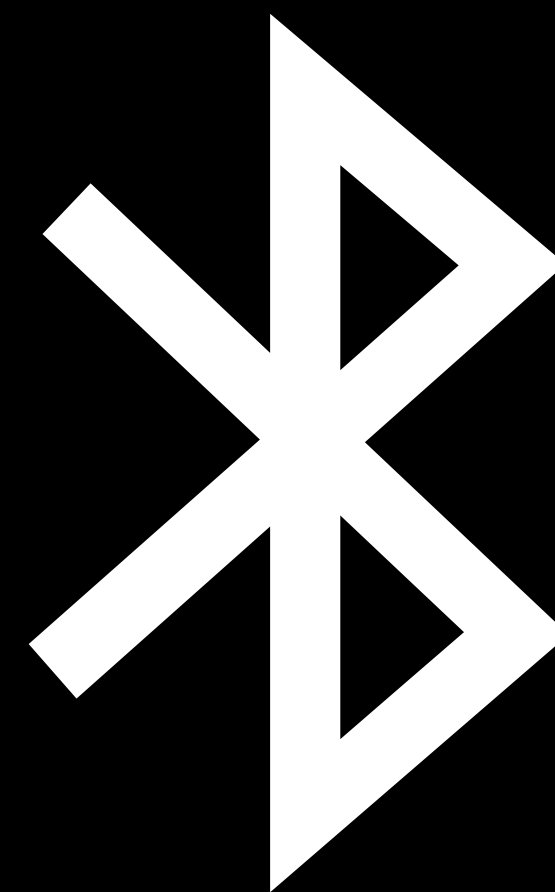
HDMI

Headphone jack

USB-A



Wi-Fi 6E



Bluetooth 5.3











Stage Manager



Continuity Camera



FaceTime



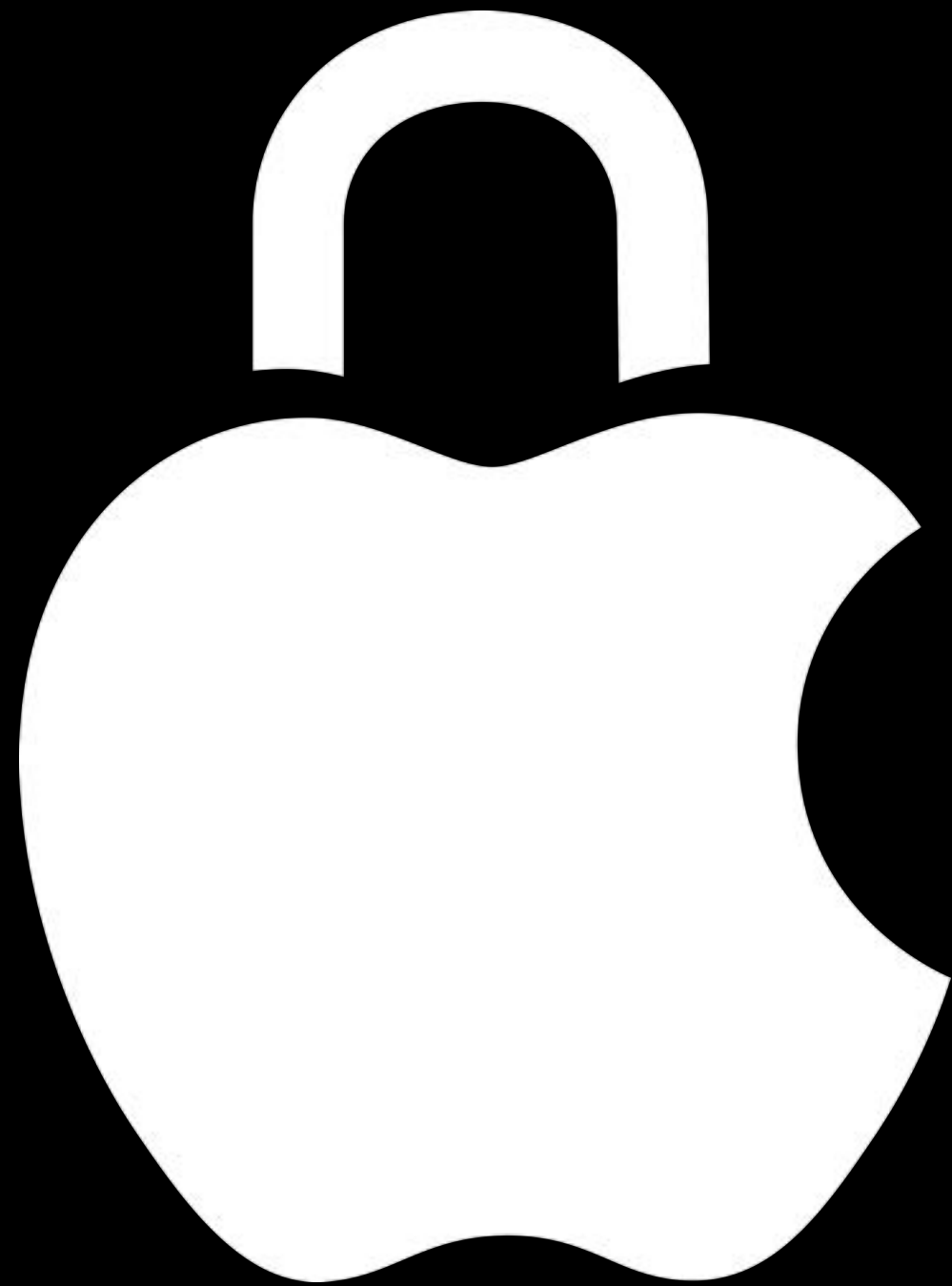
Freeform



Safari



Gaming



Best-in-class security

Secure Enclave

Secure boot

Automatic encryption

# Environment

# Mac mini



Mac mini is designed with the following features to reduce its environmental impact:

100% recycled rare earth elements in all magnets



90% or more fiber-based packaging



100% recycled aluminum in the enclosure



100% of virgin wood fiber in packaging comes from recycled and responsible sources



100% recycled tin in the solder of the main logic board



BFR, PVC, Mercury, Beryllium-free



35% or more recycled plastic in multiple components



Meets ENERGY STAR requirements



Data accurate as of product launch. ENERGY STAR and the ENERGY STAR mark are registered trademarks owned by the U.S. Environmental Protection Agency. Apple defines its restrictions on harmful substances, including definitions for what Apple considers to be “free of,” in the Apple Regulated Substances Specification. Every Apple product is free of PVC and phthalates with the exception of AC power cords in India, Thailand (for two-prong AC power cords), and South Korea, where we continue to seek government approval for our PVC and phthalates replacement.

# Configurations and Options

# Mac mini with M2



\$599

Apple Retail Price

M2  
with 8-core CPU and 10-core GPU

8GB unified memory

256GB SSD

Two Thunderbolt 4 and two USB-A ports

Built-in speaker and 3.5 mm headphone jack

HDMI

Gigabit Ethernet

Wi-Fi 6E and Bluetooth 5.3



\$799

Apple Retail Price

M2  
with 8-core CPU and 10-core GPU

8GB unified memory

512GB SSD

Two Thunderbolt 4 and two USB-A ports

Built-in speaker and 3.5 mm headphone jack

HDMI

Gigabit Ethernet

Wi-Fi 6E and Bluetooth 5.3

# Mac mini with M2 Pro



\$1299

Apple Retail Price

M2 Pro  
with 10-core CPU and 16-core GPU

16GB unified memory

512GB SSD

Four Thunderbolt 4 and two USB-A ports

Built-in speaker and 3.5 mm headphone jack

HDMI

Gigabit Ethernet

Wi-Fi 6E and Bluetooth 5.3

# Configure-to-Order Options

|                      | Chip                                            | Memory                                           | Storage                                  | Ethernet      |
|----------------------|-------------------------------------------------|--------------------------------------------------|------------------------------------------|---------------|
| Mac mini with M2     | N/A                                             | 16GB of unified memory<br>24GB of unified memory | 1TB SSD<br>2TB SSD                       | 10Gb Ethernet |
| Mac mini with M2 Pro | Apple M2 Pro chip<br>12-core CPU<br>19-core GPU | 32GB unified memory                              | 1TB SSD<br>2TB SSD<br>4TB SSD<br>8TB SSD | 10Gb Ethernet |

\*1 GB = 1 billion bytes and 1TB = 1 trillion bytes; actual formatted capacity less.

# Accessories



## Displays and Accessories

Magic Keyboard with Touch ID and Numeric Keypad — Black Keys

Magic Trackpad — Black Multi-Touch Surface

Magic Mouse — Black Multi-Touch Surface

Apple Studio Display

Apple Pro Display XDR

## USB-C Adapters and Cables

1.8 m Thunderbolt 4 (USB-C) Cable

3 m Thunderbolt 4 (USB-C) Cable

USB-C to USB Adapter

USB-C VGA Multiport Adapter

Thunderbolt 3 (USB-C) to Thunderbolt 2 Adapter

# Apple Studio Display

27-inch 5K Retina display

12MP Ultra Wide camera with Center Stage

Six-speaker sound system with Spatial Audio

Studio-quality mics

Thunderbolt port with 96W power delivery

Three USB-C ports



**\$1599**

Apple Retail Price



# AppleCare+ for Mac

Additional hardware coverage for Mac

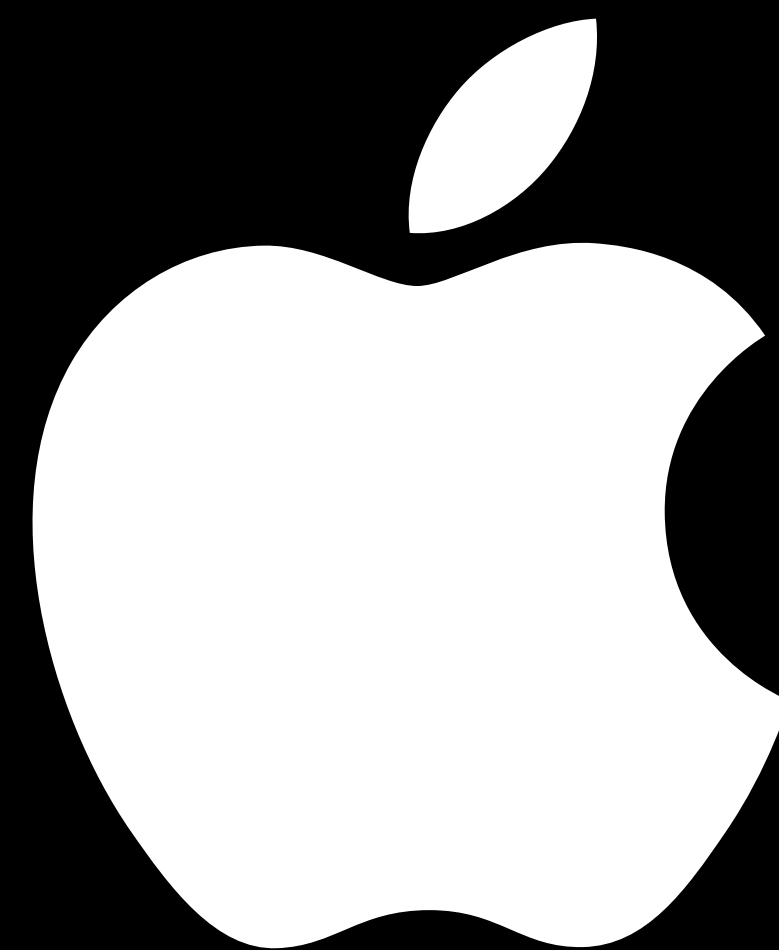
Unlimited incidents of accidental damage protection, each subject to a service fee

Includes battery coverage

Onsite for desktops, mail-in for notebooks, and carry-in for all

24/7 priority access to Apple Support for help with macOS, iCloud, and Apple apps





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# AppleCare Protection Plan for Mac

Three years of technical support  
and hardware service

Covers Mac, macOS, iCloud, and Apple  
apps

Onsite for desktops and carry-in for all

Priority access to Apple Support

