



Apple Worldwide Developers Conference 2022

June 6 through June 10, 2022

Major Apple Announcements

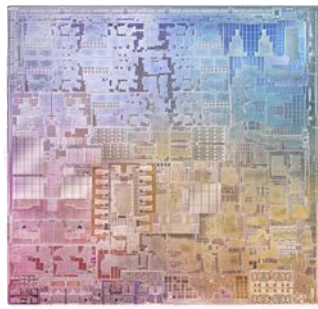
Presented by George Wilde

 **WWDC22**

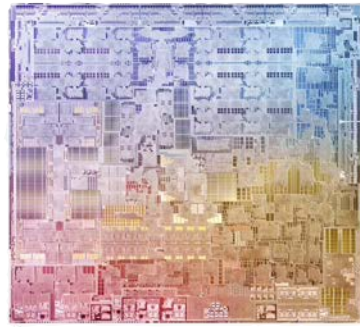
Major WWDC Announcements

- New M2 chip and two new MacBook Computers announced
 - Unusual to have new hardware announcements at WWDC, which is an event for software developers
- New versions of Apple system software announced, with beta versions released to developers and final versions to be released in the fall
- New system software coming to all Apple devices including Mac, iPhone, iPad, Apple TV, and Apple Watch
 - macOS 13 Ventura
 - iOS 16, iPadOS 16, tvOS 16, and watchOS 9
- Many updated features in Apple supplied Apps

New M2 Chip for Mac



Apple M1



Apple M2



- M2 is built using enhanced, second-generation 5-nanometer technology, and consists of 20 billion transistors — 25 percent more than M1
- M2 has 18 percent faster CPU, 35 percent more powerful GPU, and 40 percent faster Neural Engine compared to M1
- M2 has 50 percent more memory bandwidth compared to M1, and up to 24GB of fast unified memory
- M2 has overall better performance than M1, but not as good performance as M1 Pro, M1 Max, and M1 Ultra

M2 MacBook Air & M2 13-inch MacBook Pro



MacBook Air M2 vs. MacBook Pro M2 at a Glance

	MacBook Air M2	13-inch MacBook Pro M2
Processor	Apple M2	Apple M2
Memory	8GB / 16GB / 24GB	8GB / 16GB / 24GB
Storage	256GB / 512GB / 1TB / 2TB SSD	256GB / 512GB / 1TB / 2TB SSD
Display	13.6 inch, 2560 x 1664 Liquid Retina display	13.3-inch, 2560 x 1600 Retina display
Camera	1080p FaceTime HD camera	720p FaceTime HD camera
Speakers	Four-speaker sound system with Spatial Audio support	Stereo speakers with Spatial Audio support
Keyboard	Magic Keyboard with physical function keys	Magic Keyboard with Touch Bar
Ports	Thunderbolt USB 4 (2), MagSafe charging port	Thunderbolt USB 4 (2)
Internal fan	No	Yes
Price	\$1,199	\$1,299

New System Software

- New system software coming to all Apple devices including Mac, iPhone, iPad, Apple TV, and Apple Watch
 - macOS 13 Ventura
 - iOS 16, iPadOS 16, tvOS 16, and watchOS 9s
- I will be discussing some of the unique new features only applicable to specific Apple devices
- I will then discuss some of the new application features included in multiple Apple applications that run on iPhones, iPads, and Macs

Apple watchOS 9

Four New Watch Faces



Lunar



Playtime



Metropolitan



Astronomy

Rotating the Digital Crown will produce significant changes to the display of several of watch faces

New watchOS 9 Features

- New sleep tracking features to detect when users are in REM, Core, or Deep Sleep
- New Medications app to manage and track medications, vitamins, and supplements
- Updated Workout app to better monitor intensity of workouts
- ECG app now can display AFib (atrial fibrillation) history
- New Apple Watch Mirroring capability lets users control their Apple Watch remotely with a paired iPhone



Sleep Tracking



Medications



Workout



ECG



iPhone Mirroring

watchOS 9 Compatibility

- Apple Watch Series 4
- Apple Watch Series 5
- Apple Watch SE
- Apple Watch Series 6
- Apple Watch Series 7
- But not all new features are available on all of these devices

CarPlay in iOS 16

- Existing CarPlay apps improved
- Two new categories of CarPlay apps announced (Fueling and Driving apps) - but we will need to await for third party developers to implement new apps in these categories
- Next Generation CarPlay can exist on all of you car's dashboard screens - but must wait until 2024 or later after car manufacturers (including Ford, Acura, Honda, Volvo, Land Rover, Nissan) adopt it



Next Generation of CarPlay

Apple tvOS 16 and HomePod Software 16

- Support for Nintendo Switch Controllers
- Support for new technologies - HDR10+ and Matter
- New Remote Control app
- General compatibility with new and improved iOS 16 and iPadOS 16 features
- Compatible with:
 - Apple TV fourth generation
 - Apple TV HD
 - Apple TV 4K
 - Apple TV 4K second generation

Device Specific New Features

- Some devices (iPhones, iPads, and Macs) have new features that are unique only to them
 - I will be discussing these in the next few charts
- Other new features are implemented on two or more devices, and I will be discussing those later in the presentation

iOS 16 iPhone Features

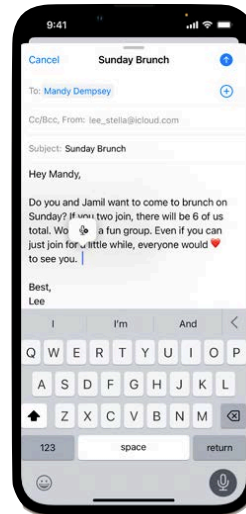
New Personalized Custom Lock Screens



- ★ Showcase favorite photos, customize font styles, and display a set of widgets
- ★ Widgets let you quickly see weather, calendar events, notifications, etc.
- ★ Easily switch between multiple Lock Screens

iOS 16 iPhone Features

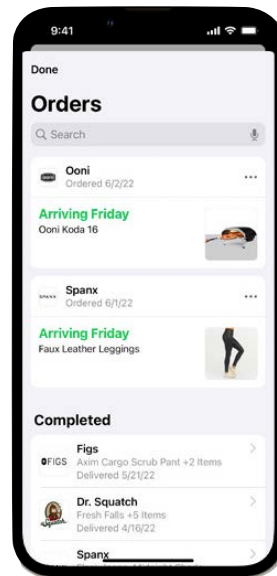
Smart Dictation



- ★ Use Dictation with voice and the keyboard together
- ★ Move seamlessly between voice and touch to enter text
- ★ Type with the keyboard, tap in the text field, move the cursor, and insert QuickType suggestions, all without needing to stop Dictation
- ★ Haptic keyboard improves feel of typing on iPhone

iOS 16 iPhone Features

Apple Pay and Wallet



- ★ Apple Pay Later - split costs into multiple payments
- ★ Track your orders
- ★ Securely share keys
- ★ Verify your identity in apps without the need to use CAPTCHAs

iPhone iOS 16 Compatibility

iPhone 13

iPhone 11 Pro

iPhone 13 mini

iPhone 11 Pro Max

iPhone 13 Pro

iPhone XS

iPhone 13 Pro Max

iPhone XS Max

iPhone 12

iPhone XR

iPhone 12 mini

iPhone X

iPhone 12 Pro

iPhone 8

iPhone 12 Pro Max

iPhone 8 Plus

iPhone 11

iPhone SE (2nd generation or later)

iPadOS 16 Features

Stage Manager and External Display Support



- ★ Stage Manager is an entirely new capability for the iPad and Mac
- ★ Resize and move multiple windows on iPad
- ★ Switch between apps seamlessly with just a tap
- ★ Use iPad as a display that extends or mirrors your Mac desktop

Stage Manager for iPad

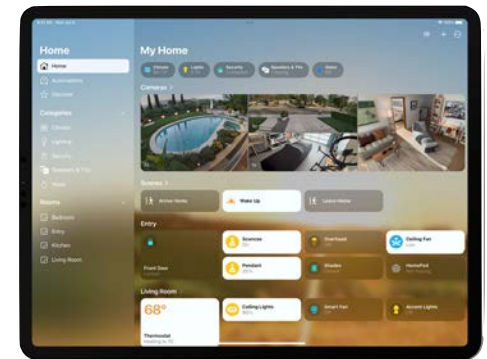


Other iPadOS 16 Features

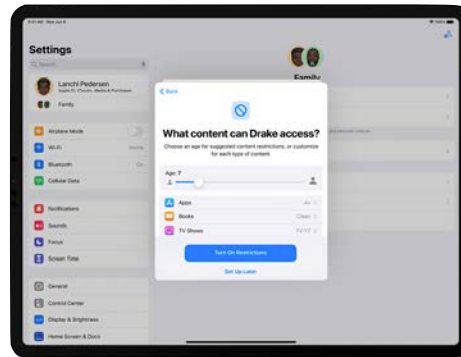
- Weather app on iPad
- All-new Home app
- Family Sharing
- Live Text in videos



Weather app



Home app



Family Sharing



Live Text in Videos

iPadOS 16 Compatibility

iPad Pro (all models)

iPad Air (3rd generation and later)

iPad (5th generation and later)

iPad mini (5th generation and later)

**Note that some features (like Stage Manager) only available with M1 iPads
(M1 11-inch iPad Pro, M1 12.9 inch iPad Pro, and M1 iPad Air)**

Brief History of Mac Operating Systems

- Classic Mac OS from System 1 in 1984 to Mac OS 9 in 1999

22 Years of macOS

- | | |
|---|--|
| • 10.0 Cheetah in March 14, 2001 | • 10.9 Mavericks in October 22, 2013 |
| • 10.1 Puma in September 15, 2001 | • 10.10 Yosemite in October 16, 2014 |
| • 10.2 Jaguar in August 14, 2002 | • 10.11 El Capitan in September 30, 2015 |
| • 10.3 Panther in October 24, 2003 | • 10.12 Sierra in September 20, 2016 |
| • 10.4 Tiger in April 29, 2005 - PowerPC to Intel & Rosetta | • 10.13 High Sierra in September 25, 2017 |
| • 10.5 Leopard in October 26, 2007 (iPhone introduced) | • 10.14 Mojave in September 24, 2018 |
| • 10.6 Snow Leopard in August 28, 2009 - End PowerPC | • 10.15 Catalina in October 7, 2019 |
| • 10.7 Lion in July 20, 2011 | • 11.0 Big Sur in November 12, 2020 - Intel to Apple Silicon |
| • 10.8 Mountain Lion in July 25, 2012 | • 12.0 Monterey in October 25, 2021 |

macOS Ventura Features

Enhanced Image Search in Spotlight



- ★ Find images in Photos, Messages, Notes, the Finder, and the web using Spotlight
- ★ Use Live Text to search for an image based upon text inside the image

macOS Ventura Features

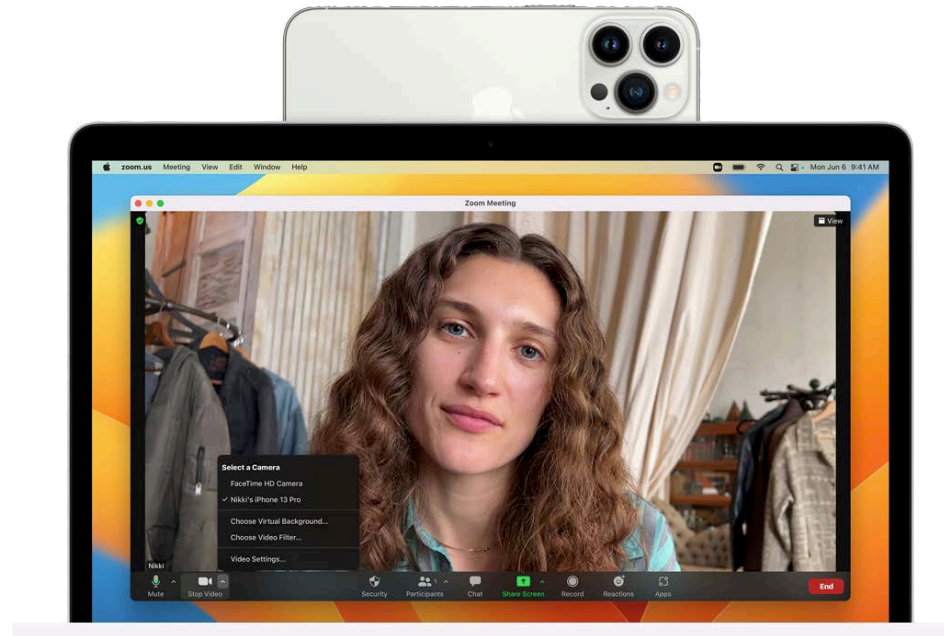
FaceTime Handoff



★ Move a FaceTime Call from one device to another with a click

macOS Ventura Features

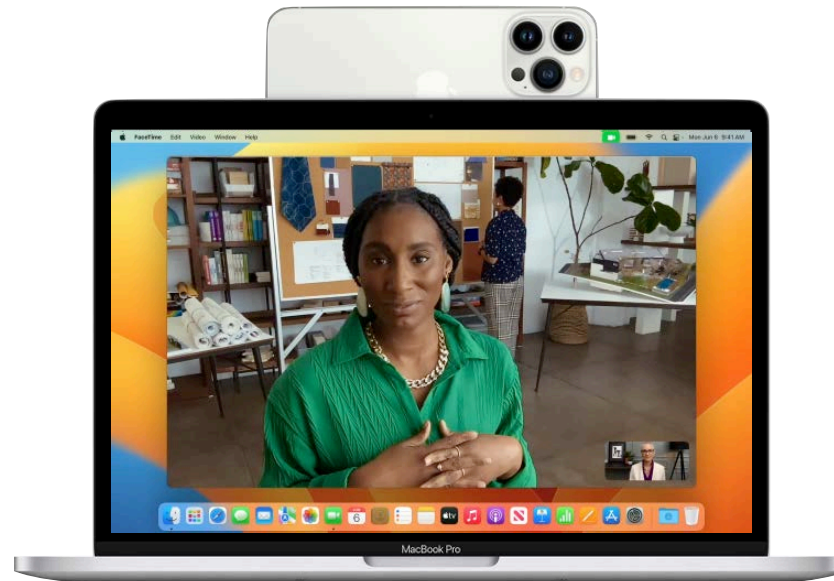
Continuity Camera



- ★ Use your iPhone as a webcam
- ★ Bring your iPhone close to your Mac and your iPhone is wirelessly connected
- ★ Various 3rd party iPhone mounts available later this year

macOS Ventura Features

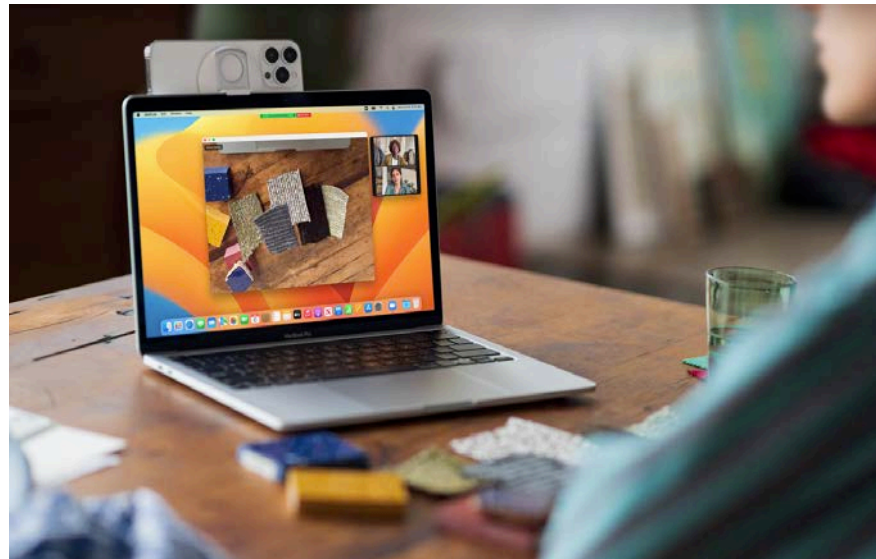
Center Stage



★ Use Ultra Wide camera on iPhone to stay centered in the camera frame during video calls

macOS Ventura Features

Desk View



- ★ Desk View mimics an overhead camera
- ★ Shows you desk and face at the same time

macOS Ventura Features

Stage Manager



- ★ Organizes your apps and windows in a single view
- ★ Switch between apps and windows with a simple click

macOS 13 Ventura Compatibility

iMac (2017 and later)

iMac Pro (2017)

MacBook Air (2018 and later)

MacBook Pro (2017 and later)

Mac Pro (2019 and later)

Mac Studio (2022)

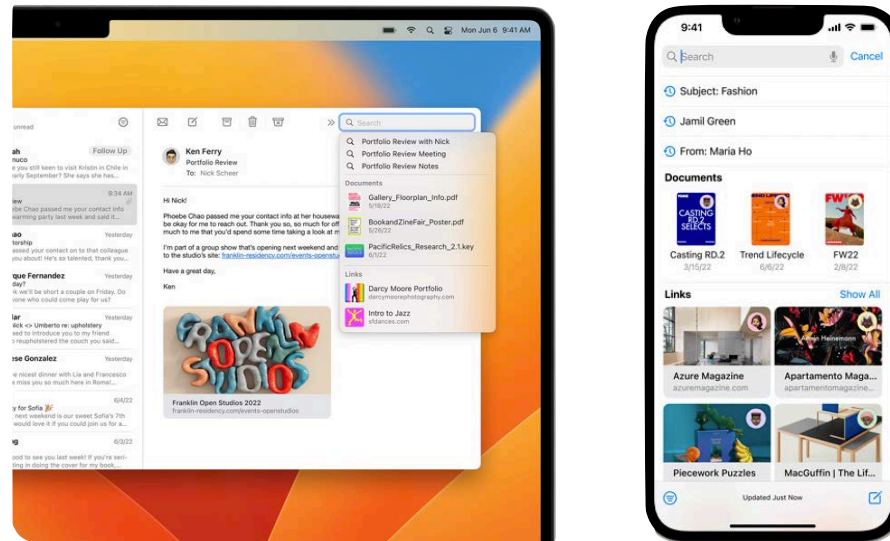
Mac mini (2018 and later)

MacBook (2017 and later)

Ventura Feature Support

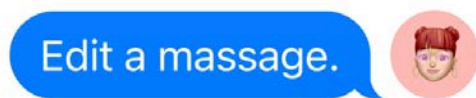
- Intel Macs support most Ventura features (unlike Monterey)
- Only M1 and M2 Macs support the following new features
 - Live Captions which automatically transcribes audio dialog
 - Reference Mode with Sidecar on 12.9-inch iPad Pro for accurate representation of colors
 - Emoji Support in Dictation Mode to automatically insert emoji with just your voice.

New Apple Mail Features



- ★ **Smart search** gives better and richer search results
- ★ **Undo send** deletes email messages before they reach the recipient
 - Available for only 10 seconds after sending
- ★ **Schedule send** schedules email messages to be sent at a later time
- ★ **Follow-up** facilitates quickly sending follow up email messages
- ★ **Remind me** resurfaces emails at a selected future date and time
- ★ **Rich links** can be added to email messages for more content

New Apple Messages Features



- ★ **Edit message** allows you to edit a message for up to 15 minutes after sending it
- ★ **Undo send** unsends any message for up to 15 minutes after sending it
- ★ **Recover deleted messages** recovers deleted messages for up to 30 days
- ★ **SharePlay via Messages** allows sharing of activities while chatting in Messages
- ★ **Live Captions** captions spoken content in real time
- ★ **Collaboration updates** provide richer collaboration capabilities

New Safari Features



- ★ **Shared Tab Groups** shares tabs and bookmarks with others and they can add tabs to
- ★ **Passkeys** is an easier and safer sign-in method that eliminates the need for passwords
 - Passkeys use iCloud Keychain public key credentials
 - Your Apple device generates a unique public-private key pair for every account
- ★ **Website settings sync** will sync settings for specific websites across all of your devices
- ★ **Web page image translation** uses **Live Text** to translate text in images

New Apple Photos Features



- ★ **iCloud Shared Photo Library** - share photos and videos seamlessly with up to five other people
 - Everyone has equal permissions for adding, editing, and deleting photos in the shared library
 - Favorites, captions, and keywords sync too, so if one person organizes the collection, everyone benefits
- ★ **Extract subject from photo** allows you to isolate, copy, share, drag and drop objects in a photo or paused video

**iOS 16, iPadOS 16, tvOS 16, watchOS 9, and
macOS 13 Ventura all Coming this Fall**

Reference Charts

What is “Apple Silicon”?

- Apple silicon is a series of system on a chip (SoC) and system in a package (SiP) processors designed by Apple Inc., mainly using the ARM architecture. Apple bought P.A. Semi in 2008 to do in-house design of custom Apple chips.
- It is the basis of new Mac computers as well as iPhone, iPad, Apple TV, and Apple Watch, and of products such as AirPods, HomePod, and iPod touch
- Custom designed Apple processors are tuned to the specific devices for optimized speed and power
- Apple Silicon Macs can run many iOS and iPadOS Apps without change and can run many Mac Intel-only apps using the Rosetta 2 emulator
- Several series of chips have been designed by Apple in recent years
 - A Series includes the A15 Bionic used in the iPhone 13 which has nearly 15 billion transistors
 - S Series includes the S7 used in the Apple Watch Series 7
 - T series includes the T2 used as a secure enclave for many Macs
 - W series includes the W3 used for Bluetooth and Wi-Fi connectivity
 - H series includes the H1 used in AirPods and AirPods Max
 - U series includes the U1 used for ultra-wideband radio in many devices including the AirTag
 - M series includes the M1 and M2 used in current Apple Silicon Macs and the new iPad Pro and has 20 billion transistors

Some Definitions

- Apple often refers to Apple Silicon as SoC (system on a chip) and SiP (system in a package).
- Apple Silicon is an integrated circuit (also known as a "chip") that integrates all or most components of a computer. These components almost always include a central processing unit (CPU), memory, and input/output ports – all on a single substrate or microchip, the size of a coin. The latest chips also include a graphics processing unit (GPU) and a Neural Engine.
- Apple has custom-designed many such ARM-based chips which have then been manufactured in Asian factories.
- The basic architecture of Apple Silicon is the Advanced RISC Machine, or ARM architecture used by many manufacturers, especially for portable devices requiring lower power consumption and improved heat dissipation.
- RISC, or Reduced Instruction Set Computing, is a computer instruction set that allows a computer's microprocessor to have fewer cycles per instruction than more complex CPUs such as those made by Intel.