APPLE OS

Upgrades Guide
For Beginners

Everything you need to prepare for macOS Big Sur, iPadOS 14,
iOS 14 and tvOS 14

Apple OS upgrades are coming. Are you ready?

Exciting new versions of macOS (for Mac), iPadOS (for iPad), iOS (for iPhone) and tvOS (for Apple TV) are heading to a device near you. Your job is simple. Get the latest, most secure version of the OS with new features into the hands of users, all without disrupting workflows or slowing productivity.

As most IT organizations know, this can often be easier said than done, especially when factoring in the speed at which Apple users like to upgrade. Now for the good news. At Jamf, we've been doing this for more than 17 years, and are here to provide step-by-step guidance for successful Apple upgrades — regardless if it is your first, fifth or 17th OS season.

Why an Apple upgrade is different

Contrary to other ecosystems, major new versions of Apple's operating systems, macOS, iOS, tvOS, and iPadOS, are released annually. A combination of the simple upgrade path and $0 cost help drive industry-leading adoption rates for consumers.

This trend is further accelerated by Apple's vertical integration of hardware and software: any new Mac, iPad, iPhone, Apple TV or Apple Watch will always ship with the latest OS version and can't be downgraded. The same cannot be said for Windows and Android, where hardware and software fragmentation can be a major challenge for organizations, IT and users.

When devices are running old software, consistency, security and user experience are all compromised. And this is especially true when organizations attempt to support a variety of devices and OS platforms with a single management solution. Without the complications and cost of licensing, Apple's user-initiated upgrades are easy for end users to carry out autonomously. This is one of the reasons Apple's operating systems have the highest adoption rate of any ecosystem.

End users are so excited to access the new features; yet, you're responsible for maintaining security controls and an accurate systems inventory at all times.

This guide provides you with a thorough understanding of the new operating systems, and ways to carefully prepare for and implement an upgrade. You'll learn how to minimize disruptions and eliminate unplanned downtime, gaining the knowledge to deliver organizational value and walk users through their macOS Big Sur, iPadOS 14, iOS 14 and tvOS 14 upgrades.

The business value of same-day readiness

There are four key reasons organizations should embrace upgrades and empower end users to update their device(s) the day new operating systems are released:

1 Reduce security vulnerabilities

New operating system versions usually include improved security and privacy functionality. It's in your best interest to empower and encourage users to upgrade to the latest operating systems. This will help ensure your organization doesn't fall prey to data breaches and system vulnerabilities, all because devices are out of date.

2 Keep end users happy

New features and improvements mean end users eagerly anticipate new operating system versions. With more users adopting the full Apple ecosystem, they want all their devices upgraded and compatible for the features that allow multiple device types to work together. Same-day upgrades ensure this expectation is met.

3 Keep users productive

The latest operating systems introduce new features that support greater efficiency and productivity. When same-day upgrades are discouraged, users are unable to take advantage of helpful functionality, such as enhanced workflows and user experience with macOS Big Sur, iPadOS 14, and iOS 14.

4 Access new IT management features

Gain access to a wealth of new management features. Not only will you have access to new capabilities for Apple ecosystem management, but you can also customize and configure new end-user features based on the unique needs of your environment.

Join the beta party

The best defense is a good offense. Arm yourself with previews of upcoming releases through AppleSeed for IT to get an early look at how new OS versions and features will impact your organization.

Apple is regularly updating its operating systems, which means participating in the beta program provides months of testing ahead of an operating system release. Apple offers AppleSeed for IT which provides free beta programs for macOS, iPadOS, iOS and tvOS. To join, sign up with your Managed Apple ID you use Apple Business Manager or Apple School Manager.

Why Beta?

1 The beta cycle for these operating systems typically occurs in multiple phases. Participating early and submitting feedback to Apple increases the likelihood that the features and issues that impact you most will be addressed. Filing feedback early shows the impact of your suggestion and allows for fixes and changes to be completed before a new OS is released, rather than future releases

2 Participating in the beta not only gives you early access to test new features and compatibility, but it also offers a deeper understanding of how the end-user experience will be impacted. Knowing which new settings have been added, any features that have moved, or changes to labels can inform necessary updates to your training materials, onboarding kits, etc. This helps your organization best prepare for changes to the end-user experience, so you can execute a more user-centric support model and communication plan accordingly.

3 Lastly, in addition to new OS settings and features, application, infrastructure and management compatibility testing is critical for continuity with current software offerings in your environment. We recommend you run Apple's betas to test their deployed apps for issues. Use your AppleSeed Managed Apple ID in the Feedback Assistant to report any issues.

Join the beta party

Beta tips

Use dedicated hardware for pre-release testing of Mac, iPad, iPhone and Apple TV devices. As always, avoid using personal or production hardware for beta testing.

Not only is it critical to test your organization's business tools with Apple's betas, but you should test your device management solution as well. Whichever solution your organization uses to manage and secure your Mac, iPad, iPhone or Apple TV devices should provide active beta programs year-round and demonstrate the ability to test compatibility with Apple's beta software on all of your devices.

Check out Apple's Lifecycle Management guide or the AppleSeed for IT Guide for more details.

STEP
1

Conduct strategic testing

STEP **2**

For best results, be sure to test your entire tech stack

1 Infrastructure

Includes anything outside your application stack, such as VPN or printer drivers (which should always be tested with new operating systems). Testing infrastructure is less of a concern for organizations moving toward cloud hosting and services.

2 Applications

Includes both web and non-web based applications. If you don't have time to test all apps, prioritize based on an application vendor's statements related to compatibility.

macOS Big Sur includes changes to legacy kernel extensions. Consult your vendor(s) to see if they support Apple's modern System Extensions framework.

3 Management

Includes device deployment and management solutions (MDM, EMM, UEM, etc.). Check that your device management solution offers the ability to test new restrictions, management capabilities and features.

4 Work as a team

Creating a plan with your team allows your organization to methodically test together and share responsibility.

The new Teams feature in the Feedback Assistant is also useful for teams to share and track feedback.

Prioritization is essential, especially in resource-strapped organizations. Take inventory of all applications used across your organization and rank them by critical-business nature (financial software, CRM software, ERP software, etc.). Start with high-level business apps and move to mid-level apps, browsers and low-level apps.

Many organizations choose to prioritize based on automated inventory information from their device management provider, as well as frequency of use (most commonly used to least commonly used).

Consider recruiting end-user liaisons from each department you support (Finance, Marketing, Sales, Technology, HR, etc.) to discuss their daily business processes. Ask them to walk you through their workflows and which tools they use most. Then, document each item in a spreadsheet format for testing.

Due to the architecture of iPadOS, iOS and tvOS apps, light testing might be more appropriate for these platforms. Consider leveraging automated testing tools such as Sellenium, TestPlant or Sikuli, which automate point-and-click tasks to execute a task and test it. For more information on testing frameworks, check out ITIL certification.

For additional OS testing support, Apple has "test plans" that suggest areas of each OS and features to test and validate. This can be found within the AppleSeed portal.

Incorporate a user-centric test process.

STEP 2

When documenting use cases, lay out the key business units, critical level, applications, user tasks and whether you validated compatibility. Example:

Business Unit	Critical	Apps	User Task	Operating System	Validate
Marketing	Mid-Level	Word	*"I want to create a Word document on a machine that was just upgraded, choose the Copperplate font, then print on a printer."*	macOS Big Sur	Yes

Understand the new operating systems

STEP 3

In addition to the testing guidance above, macOS Big Sur, iPadOS 14, iOS 14 and tvOS 14 have differing sets of new features and unique impact on your environment.

Below you will find important information for what you need to know when upgrading to each operating system. For a comprehensive list, please review Apple's online resources, including articles on their support site.

Upgrading to macOS Big Sur

There are several ways to accomplish upgrades on a Mac. The most common upgrade path for macOS is an in-place upgrade. An in-place upgrade involves installing the operating system while keeping user data intact.

One method for conducting an in-place upgrade is to send an MDM command to Macs enrolled in Apple Business Manager or Apple School Manager. Like iOS, this MDM command will trigger your Mac devices to download the new OS from Apple and automatically install it on devices. However, this method will only work for Mac devices enrolled in Apple Business Manager or Apple School Manager.

For Mac devices not enrolled in Apple Business Manager or Apple School Manager, Jamf customers typically accomplish in-place upgrades by packaging the macOS installer for the user. The macOS installer is then either installed automatically by IT or initiated by the end user through Jamf Self Service (an enterprise app catalog). To save network bandwidth and maximize user productivity, the macOS installer can be pre-cached on the systems that are eligible for an upgrade. Additional software updates and configuration changes can be combined with the update to ensure a smooth transition.

Understand the new operating systems

You must also be connected to the internet when you upgrade macOS. This is due to firmware updates Apple installs on the Mac, further strengthening the security of your devices. Only the macOS installer can download and install these firmware updates, which validates Apple as the source of the critical firmware. **In fact, installing macOS Big Sur on a Mac connected by Target Disk Mode is no longer a supported installation method.**

If you need to erase data for rapid return to service, there is an option to install macOS and erase the hard drive at the same time. After you download the macOS Big Sur installer from the Mac App Store and upload via your Apple management solution, deploy with policies using the --eraseinstall flag with the startosinstall command. This will only work on computers that have been converted to Apple File System. For more information, read this article.

Here are some other areas to consider as you prepare to upgrade to macOS Big Sur:

Apple File System (APFS)

APFS, Apple's file system, shipped with macOS High Sierra for only solid-state drives. APFS is now the standard file system for all drives. Revisit any imaging workflows in your environment, as they may no longer be supported. See Jamf's APFS white paper for more information.

Customer Quote

"Being able to deploy a Mac operating system upgrade without having to visit each machine is huge. Jamf Self Service allows us to put the power into our end users' hands, allowing them to kick off a system upgrade on their time."

Steve Wood
Endpoint Services Manager,
Omnicom Group

Understand the new operating systems

STEP 3

Signed system volume

macOS Big Sur introduces a cryptographically signed system volume to protect against malicious tampering, which replaces the separate system volume introduced in macOS 10.15.

For IT admins, this new volume makes for a very large macOS Installer file that native macOS tools or Jamf Composer can't build as a .pkg file, which is the most common method to deliver macOS applications. If you have Jamf or are using Jamf Composer to package the macOS Big Sur Installer to deliver via a policy, choose the option to "Create as DMG" instead of a .pkg file.

macOS Big Sur's signed system volume (SSV) raises protection of key system files beyond the reach of all current malware and should withstand the most determined attacker from altering them after the OS has booted. It also guards against inadvertent corruption and guarantees system integrity.

UAMDM = Supervision

With macOS Big Sur, User-approved MDM enrollment (UAMDM) is automatically considered "supervised". This opens up new feature support for devices that weren't enrolled via Automated Device Enrollment.

These benefits include:

• Ability to run software updates as an MDM command

• Ability to manage Activation Lock on T2 Macs

• Ability to use Bootstrap Token to help assign certain users a SecureToken cryptographic attribute for FileVault authentication

Bootstrap Tokens

New in macOS Big Sur is an expanded availability for accounts to use the Bootstrap Token, allowing any user account that doesn't have a SecureToken to receive this when logging in. Previously, the only eligible accounts were either mobile account users or the managed administrator created during Automated Device Enrollment

macOS managed software updates

Managed software updates allow MDM admins to delay software updates on supervised devices. By delaying the availability of software updates, you can test critical apps and infrastructure before rolling it out to your team.

Understand the new operating systems

Upgrading to iPadOS 14 and iOS 14

When it comes to upgrading iPhone or iPad devices there are two options — upgrade by user or IT. If you are having your users complete their upgrades, they will simply go to Settings on their device(s) and start the installation — no IT interaction required. If your devices are managed by Apple Business Manager or Apple School Manager, IT has the ability to send an MDM command to download and install iPadOS 14 and/or iOS 14 — no user interaction required.

Here are a few aspects to look forward to as you prepare for upgrading to iOS/iPadOS 14::

Nonremovable apps

Previously, admins had to prevent the deletion of all apps. Now admins can mark individual mission-critical apps as nonremovable. "Mission-critical" apps could be a Content Filter, VPN apps that need to be installed to ensure proper network connectivity or Jamf apps like Self Service. For IT admins, there are plenty of possibilities with this new addition.

Time zone settings

iOS 14 introduces a command to set the time zone of managed devices, so they reflect the proper time zone without user interaction. Previously, devices would need Location Services to be enabled during enrollment to automatically set the correct date and time for the location the device is used.

Wi-Fi MAC address randomization

In iOS 14 and iPadOS 14, when a device joins a Wi-Fi network, it will use a random MAC address to increase privacy and security. This is an effort to continue to bring security and privacy to end users automatically which is why Apple is bringing Wi-Fi MAC address randomization to iPhone and iPad as a built-in feature..

Notification management

A new setting to control notification previews with Face ID. This ensures previews are not revealed without user intent with Face ID. Now managed apps can have their Lock screen notification behavior managed by MDM.

STEP 3

Understand the new operating systems

STEP 3

Upgrading to tvOS 14

Apple TV devices enable wireless sharing without the need for adapters, all while delivering a modern conference room experience. Apple TV is also great for digital signage, wayfinding and specific industries, such as hospitality.

Building off the management functionality introduced with tvOS 12 and 13, tvOS 14 gives organizations even more control over the Apple TV experience.

Here are some areas to consider as you prepare for upgrades to tvOS 14:

MDM command upgrades

tvOS devices can be now upgraded by MDM command like iOS, including specifying which available tvOS version you want to update them to.

Automatic upgrades

tvOS will automatically and silently update itself to the latest OS release at its earliest convenience without interrupting users. This is unless updates are deferred by a configuration profile or the Apple TV is running in Single App Mode.

A deep understanding of the new operating systems, careful planning and insight into the potential impact for end users ahead of an upgrade can minimize disruption, help desk calls and unhappy end users. Next, consider the following stakeholders and conversations ahead of your upgrade.

Partner with InfoSec

If your organization has an information security (InfoSec) team, this is a great opportunity to partner with them. Keeping your organization secure and productive is not often a one-team task, so reach out proactively to make sure you consider their needs before OS upgrades.

Some consumer features released by Apple may not be approved for use by your InfoSec team. This is why the MDM specs are updated to disable these features. Get together with your InfoSec team now to discuss which features are appropriate for your organization.
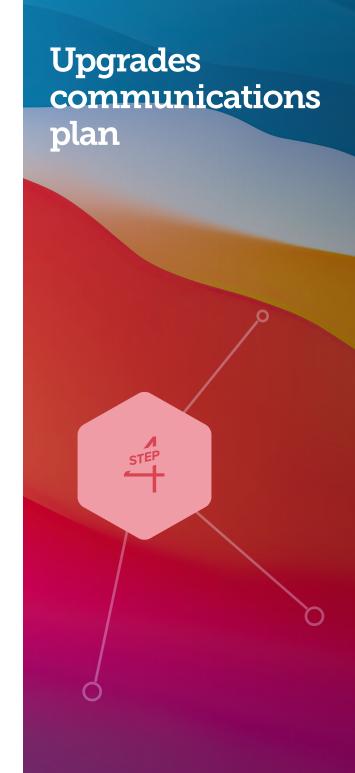
Establish a test plan, and communicate these new features to your InfoSec team. If your organization is going to adopt new settings or restrictions available in a new OS version, consider using Smart Groups to intelligently target those configurations to eligible devices.

Steps to preparing end users

1 Not every end user is aware of the time it takes to upgrade a Mac. Inform users of the average upgrade time, and provide tips on the best time of day to upgrade.

2 Recommend that your end users back up their device(s) before they update. This applies to localized and iCloud backups.

* If you use a centralized backup tool for macOS, consider sending a policy to run a backup before you do an upgrade.

3 Implement a policy to require end users to update within 30 days, or let them know you will update for them. PCIDSS compliance requires 30 days.

When it comes to upgrades, err on the side of over communication. Use email, your company's intranet, or if your device management solution allows, your Jamf Self Service app catalog, to give users plenty of warning and recommendations prior to OS upgrades. They'll thank you for it (or if all goes well, they'll say nothing.)

Upgrades communications plan

STEP
4

Go forth and conquer

Apple's latest operating systems, macOS Big Sur, iPadOS 14, iOS 14 and tvOS 14 bring innovative capabilities to all organizations.

A streamlined approach to Apple upgrades ensures security measures are met, accurate system inventory is maintained and downtime is eliminated. A purpose-built Apple ecosystem management solution equips you with the tools you need to take advantage of the latest Apple OSs without negatively impacting end users or putting abundant strain on IT personnel.

Jamf is committed to helping organizations succeed with Apple. We've offered same-day support for all Apple releases for more than a decade, ensuring organizations can take advantage of new Apple technology as it becomes available.

Let Us Prove It

Or contact your preferred authorized reseller of Apple devices to take Jamf for a test drive.