Mobile Device Management

101

Unlock the power of iPad in education

The State of iOS in K-12 Education

Education Technology Why iPad for Education Leverage iPad to Transform Learning Apple School Manager Shared iPad

Mobile Device Management Overview

MDM Definition and Helpful Terms

Why MDM is Necessary

Deployment

Deployment Methods Best Practice: Zero-Touch Deployments with MDM and Apple School Manager

Inventory

Collect Data with MDM

Configuration Profiles

Available Profile Payloads for MDM Restrictions Best Practice: iPad Display Configuration

Management Commands

Available Commands for MDM Best Practice: Manage Activation Lock with MDM

App Deployment

Deploy Apps with MDM Best Practice: Managed Apple IDs

Security and Privacy

Native Apple Security Features Best Practice: Using Apple School Manager for Loss Prevention

iPad in the Classroom

iPad in K-12

iPad and Classroom Management * iPad, Educational Apps and iBooks App Spotlight: Personalize Learning with eSpark Secure Assessments with iPad Apple TV in K-12



Jamf Pro

Start a Trial

Appendix Checklists Profile Payload and Management Commands List

The State of iOS in K-12 education

Education Technology

Why iPad for Education

Schools are not choosing just any mobile technology. They are adopting iPad, because it is preferred by students and teachers is easier to manage and offers extensive security features. When schools give iPad devices to students, they pave the way for enhanced creativity, more productivity, better engagement and spontaneous collaboration.

How Many Schools Choose iOS?

A recent survey of IT professionals revealed a majority of K-12 schools saw an increase in iPad adoption in 2016. Additionally, compared to other operating systems, IT professionals believe iOS (and macOS) is easier to manage.

 $\textbf{Source:} \ \texttt{https://www.jamf.com/resources/2016-survey-managing-apple-devices-in-k-12-education/}$

90%

of IT staff said they use iPad to enhance education

Leverage iPad to Transform Learning

According to a theory proposed by American psychologist Abraham Maslow, all humans have the same fundamental needs. Basic needs (food, clothing, and shelter) must be met before an individual is motivated to advance to a higher level of needs, such as love and self-esteem. In other words, constant betterment can only be achieved when certain needs are mastered.

Maslow's hierarchy of needs serve as an analogy for what is possible in education with iOS. Device deployment and communication are the basic needs of any school. However, iOS is so much more. It is the gateway to educational transformation. As schools look to modernize teaching and personalize learning, iOS apps are a mechanism to turn classrooms into interactive environments and provide individualized learning paths.



To transform what is possible in education, the most innovative schools are not only investing in iPads. They are also pairing innovative teaching methods, such as blended learning or flipped classrooms, with education apps to achieve individualized learning. The result is higher student engagement, addressing the needs of all students, and delivering on the goal of academic success.

Productivity

Communication is simply a stepping stone for what is possible with iPad. Paired with a classroom management app, teachers are better equipped to create productive learning experiences and maximize the value of precious classroom time.

Communication

Once devices are in the hands of teachers and students, IT needs to enable basic communications for them. This includes access to email, Wi-Fi and VPN settings all without adding unnecessary bloat. On top of the basic communication functions, apps offer an additional layer of connectivity. For example, learning Edmodo enables communication beyond classroom walls.

Deployment

Schools need to tackle the challenge of deployment, device configurations and inventory. This is the lowest layer of the pyramid and the foundation for any school looking at significant quantities of iOS devices.

Apple School Manager

Everything You Need In One Location

Along with iOS 9.3 came Apple School Manager - a tool that allowed IT administrators to more easily manage people, devices and content in a central, web-based portal. Apple School Manager simplifies education deployments by consolidating Apple's enterprise deployment programs, the Device Enrollment Program (DEP) and the Volume Purchase Program (VPP).

With iOS 10.3, it became even easier to manage educational devices with Apple School Manager. When schools pair the tool with education-supported mobile device management (MDM) solutions, they are able to:

Automate device enrollment and setup Distribute apps and content Create Managed Apple IDs Utilize Shared iPad

Shared iPad

With the introduction of iOS 9.3, schools can extend the personalized learning experience iPad offers to all students through the capabilities of Shared iPad. While allowing multiple users to engage with an iPad throughout the day, Shared iPad provides a unique experience to each user by giving students access to their own apps and content. The only thing students share is the iPad itself. This allows students to pick up where they left off the day before and creates a streamlined learning experience.

The benefits of Shared iPad are expansive and cater to all ages. Younger students, who may not be as familiar with iPad devices as their older classmates, can access their own personalized apps and content by simply tapping their photo on the device's home screen. This capability is possible when schools integrate Shared iPad, Apple School Manager and a student photo server within their MDM.

Hardware Requirements

To give the optimal Shared iPad experience, Apple recommends using modern hardware with enough storage for multiple users. Shared iPad is supported on iPad Pro (9.7-inch and 12.9inch), iPad 5th generation or later, iPad Air 2 or later, and iPad mini 4 or later with 32GB of storage or higher.

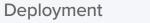
Mobile Device Management **Overview**

Why MDM is Necessary

Mobile device management (MDM) is Apple's framework for managing iOS. To effectively manage iOS devices and unleash their full potential, organizations require an equally powerful MDM solution. From deploying new devices and gathering inventory, to configuring settings, managing apps, or wiping data, MDM provides a complete toolset to address large-scale deployments and ensure device security.







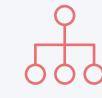
Inventory



Configuration Profiles

Management Commands

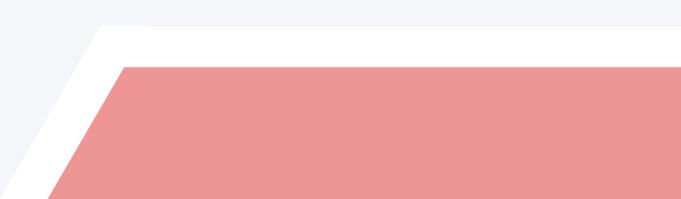
ଽୖୢ



App Deployment



Security and Privacy



Deployment

Before you can use an MDM solution to manage your iOS devices, you first have to enroll them. For iPad, an MDM tool allows you to easily enroll devices into management, consistently distribute apps and content, and set up security and access profiles. There are several methods to enroll an Apple mobile device, including enrollment via Apple Configurator, a user-based enrollment via a webpage, or automated zero-touch deployment with Apple's Device Enrollment Program (DEP).

Deployment Methods

	Description	User Experience	Supervision	Best For
Automated deployment with MDM	Automatic enrollment over the air (also referred to as zero-touch deployment)	User receives shrink- wrapped box, and the device is automatically configured when turned on	Yes—wirelessly	Everyone
Apple Configurator	Enrollment through a Mac app that connects to devices via USB	N/A—IT manages this process and hands devices to users	Yes—wired	iPad carts
User Initiated via URL	Over-the-air manual enrollment	User visits a specific URL to automatically configure their device	No	BYOD

Supervision



Supervision is a special mode of iOS that enables deeper management by an MDM solution. A growing number of configurations are only available if a device is supervised. It is recommended that school-owned devices are put into supervision mode.

Examples of Supervision-only Commands:

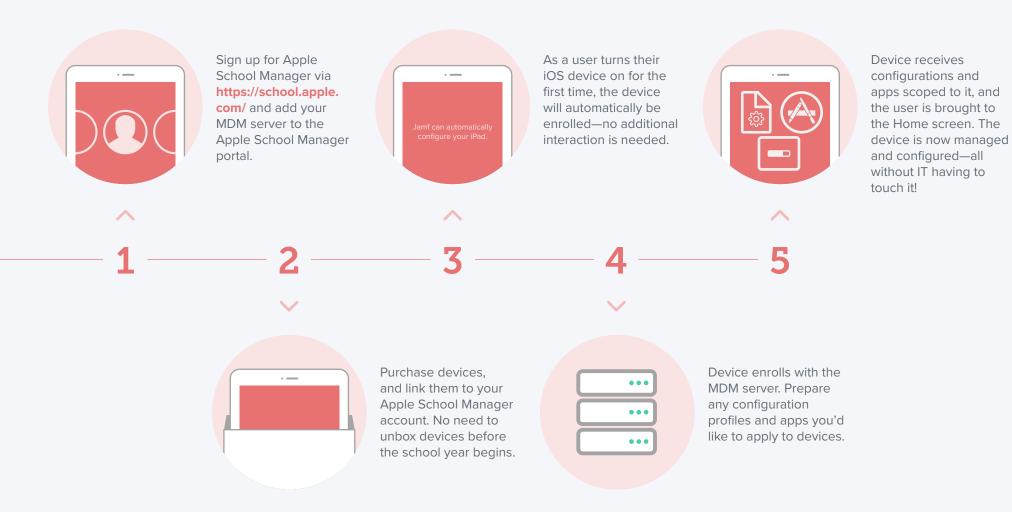
- Disable Camera
- Disable App Store
- Disable Safari
- Disable modifyi
- Disable adding email
- Plus many more...

Mobile Device Management Overview

Deployment

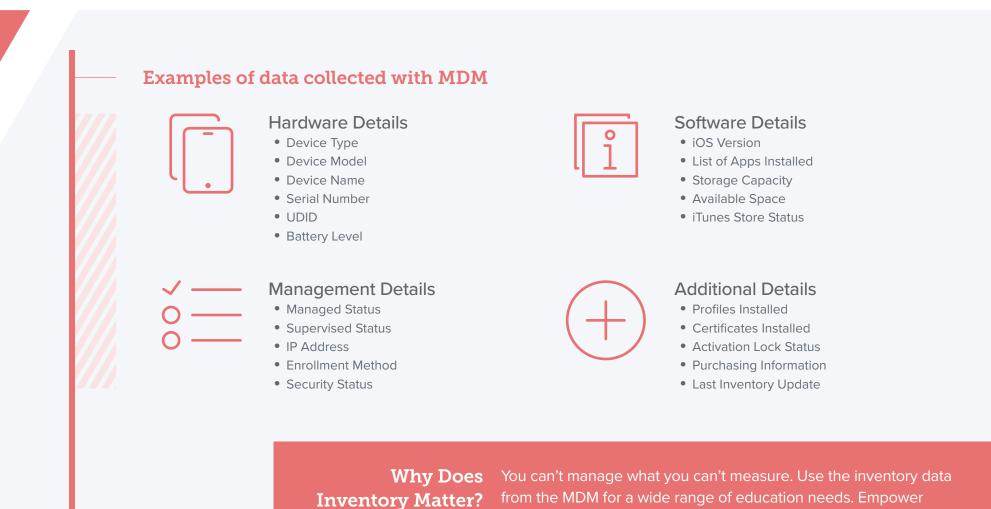
ĥ

Best practice: Zero-Touch Deployments with MDM and Apple School Manager



Inventory

MDM solutions are capable of querying an iOS device to collect a large amount of inventory data. This ensures you always have updated device information, which allows you to make informed management decisions or trigger automated actions. Collect inventory information, such as serial numbers, iOS version, apps installed and more, from devices at various intervals.

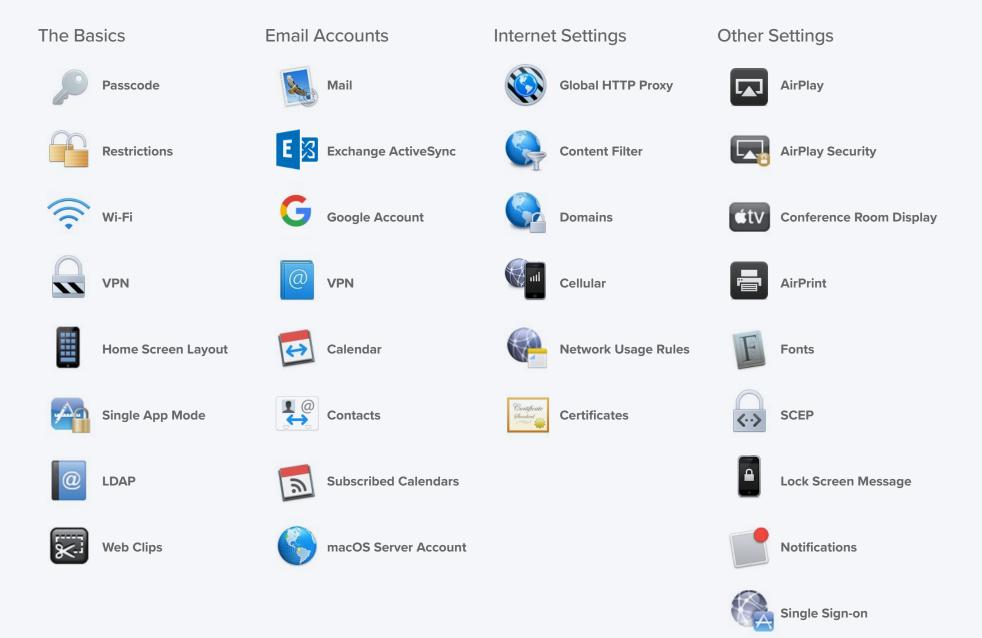


from the MDM for a wide range of education needs. Empower yourself to answer common questions like: Are all my devices secure? How many apps do we have deployed? What version of iOS do we have deployed?

Configuration Profiles

Configuration profiles give you the ability to tell your devices how they are supposed to behave. While you once had to manually configure devices, MDM technology now allows you to automate the process of configuring passcode settings, Wi-Fi passwords, VPN configurations and more. With configuration profiles, you can also restrict items in iOS.

Available Profiles for MDM



Access Point Name

Restictions

Using configuration profile restrictions, IT can select individual items to restrict in iOS devices, such as the Camera or Safari web browser. This functionality is especially helpful when schools need to limit student access to certain apps and websites. Restrictions also allow schools to create age-appropriate iOS experiences for their students. For example:

In an elementary setting (K-4): To keep kids from installing apps beyond those that are predetermined to be age appropriate and necessary for learning, IT can

Disable the App Store Disable side-loaded apps and certificates Disable Camera Disable Siri Disable iCloud, FaceTime and iMessage

When restrictions are applied, elementary students will have access to a predetermined set of apps. Additional functionality on the device will be limited. By allowing students to access only what they need for their academic success, the school proactively mitigates class distractions and encourages engaged learning.

Whether it is schoolwide or for a specific grade, schools apply restrictions for a variety of reasons. They often include creating a more focused classroom and establishing a safer technological experience for students.



Best Practice: iPad Display Configuration

In education, one size does not fit all. Providing consistency throughout a classroom's iPads does not mean giving up personalization for each student. When you personalize iPads, you are able to provide users with an easier setup and allow them to get started on learning without having to find apps.

Three ways to tailor the iPad display for students

Show/hide apps

Show only the apps you need. Hide the ones you don't. This makes the learning experience as relevant as possible for the student.

2 Wallpaper

1

3

Set the Home screen wallpaper to your school's mascot or classroom name.

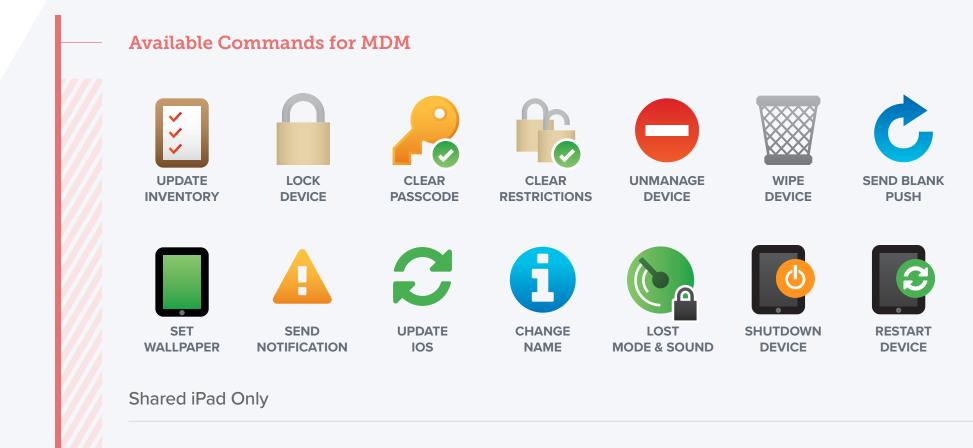
Home screen layout

Define the placement of apps and folders, along with web clips. Put mission critical apps on the first page and less important apps on other pages.



Management Commands

Management commands (also known as MDM commands), are specifications you can apply to individual devices to ensure security of student data. Leverage this capability within MDM to take action on lost or stolen devices by locking a device or wiping it completely. Additional commands allow you to send push notifications, update iOS to the latest version, and change the device name to make it easier for IT to manage their devices.





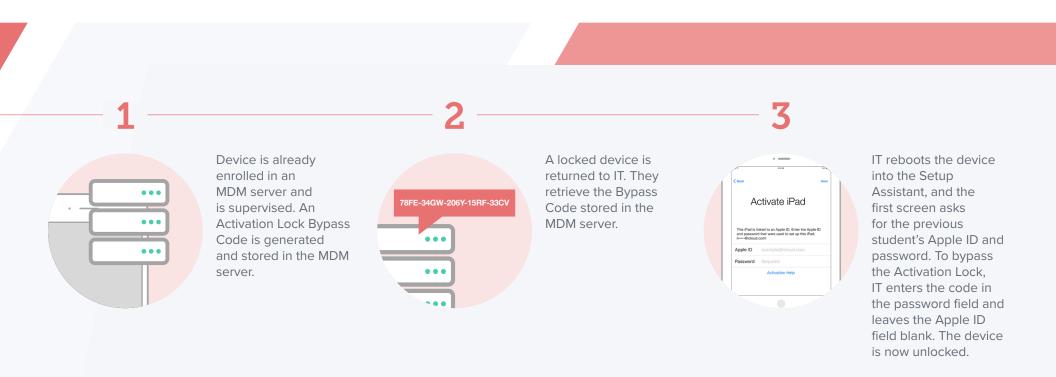
USER



DELETE USER

Best Practice: Manage Activation Lock with MDM

Activation lock is designed to prevent the theft of iPhone and iPad devices. They both require an Apple ID and password, which means only those with that information can activate the devices. This feature is great for theft prevention, but it can also cause problems for IT admins if they are not managing their students' Apple IDs. This, however, is easier to manage when pairing Activation Lock with an MDM. If a device is enrolled in an MDM, and it is supervised, an Activation Lock Bypass Code will allow the IT admin to unlock the device.



App Deployment

An iOS device serves as a great out-of-the-box communication tool on its own, but the rich library of personal and education apps in the iOS App Store can enhance a student's productivity and overall learning experience. Apps can transform an iPad into a video production studio, science laboratory, planetarium and much more. With an app strategy and MDM to manage your app deployments, you will ensure students and teachers have the apps they need—configured and secure for your school.

App Management Strategies



What is a Managed App?

Introduced in iOS 5, managed apps differ from a standard app, because they are flagged as owned by an organization. Specifically, managed apps are distributed via an MDM solution and can be configured and reassigned by MDM.

Managed Open In

Managed Open In takes the concept of managed apps a step further by controlling the flow of data from one app to another. With MDM, organizations can restrict what apps are presented in the iOS share sheet for opening documents. This allows for truly native data management without the need for a container.



App Configurations

Sometimes deploying an app isn't enough. You'd like to precustomize some of the settings. This is the premise for app configurations. App developers can customize what settings can be pre-configured by an MDM server for their app. For example, you could deploy the Box app with a pre-populated server URL. After entering a username and password, the app is operational.



Best Practice: Managed Apple IDs

What is an Apple ID?

An Apple ID is a personal account for users to access Apple services, such as the App Store, iTunes, iCloud, iMessage, FaceTime and more. An Apple ID is identified by an email address and password, and may be linked to contact, payment and security details.

Why Are Apple IDs Important for Schools?

An Apple ID allows students to take full advantage of iOS and the App ecosystem. For example, students can download educational apps, e-books and iTunes U content using their Apple ID.



Shared iPad: Managed Apple ID Required

With Shared iPad, a student can leverage their Managed Apple ID to log into a specific iPad to access their assigned apps and content, as well as their individual school work.

Best Practice: Managed Apple IDs

Schools can create Managed Apple IDs in bulk for all teachers, students and staff across an entire district. Unlike a personal Apple ID, a Managed Apple ID is controlled by the school and can be customized with specific user roles and service restrictions. For example, Managed Apple IDs cannot be used with Apple Pay or to purchase apps through the App Store. When a student graduates or leaves the district, their school administrator can transfer their Apple ID account, which gives them the ability to take all their school-related work with them.

Security and Privacy

Security and privacy are major concerns for schools. iOS has a number of security features built into the mobile operating system to keep both student and teacher data safe. Additionally, with Apple's commitment to student privacy, parents and students can take comfort knowing Apple does not allow geotracking of devices. Coupling these features with MDM, you can ensure your devices, apps and network are secure, and users feel secure, and users feel protected.

Native Apple Security Features



Lost Mode

With Lost Mode, schools have the ability to locate and recover lost or stolen Apple devices without compromising student privacy through ongoing location tracking. When Lost Mode is activated, the iOS device receives a customized lock screen message, is disabled from use and sends its location to IT.



Encryption

iOS has a built-in 256-encryption and is automatically enabled if a passcode is in use. This means the data on your devices remains secure without having to add additional software bloat to the operating system. Since Apple makes both the hardware and software, the encryption is so fast it is unnoticeable to the user.

Best practice: Using an MDM Solution for Loss Prevention

When a school manages their iOS devices, they can take advantage of various security features that help reduce the amount of devices that are lost or stolen. The following steps will help ensure a school can locate their devices when they go missing.



Ensure devices are supervised, and disable the removal of the MDM profile using your MDM solution.

Set a lock screen message, and apply physical asset tags that clearly show the device is owned by the school. This will help deter theft.

Utilize Lost Mode if a device is missing. This disables the device, displays a custom message and reports the GPS coordinates.

Another recommendation in recovering lost or stolen devices is to talk to the local pawn shops or technology resellers with members of law enforcement. Educate them on how to spot a managed device, and tell them what to do if they see a device that belongs to a school.

Additionally, by requiring a passcode on the device, access to the Home screen is prevented, data privacy stays intact and the device is encrypted.

iPad in the

Classroom

iPad in K-12

iPad and Classroom Management

iPad transforms the way teachers teach and the way students learn. With the right classroom management strategy and a robust tool to support it, teachers feel more confident enhancing the classroom experience with technology.

With Apple Classroom, configured by MDM, teachers have a tool to manage four common classroom challenges

Transitions

Streamline transitions to maximize class time. Easily switch students from one app to the next as the lesson continues. Regain attention on the teacher by momentarily locking the screen. And, reset forgotten passwords immediately without calling IT.

Focused Engagement

To help students stay on task, teachers can easily focus a student's iPad on a specific app or webpage. This can be helpful during both work time or when it's time for an assessment or quiz.



Collaboration

Encourage interactivity and collaboration through the Classroom app. When it's time to share work with the class, a teacher can easily project a student's iPad to the big screen using Apple TV making the transition seamless for the student when it's time to present.

Classroom Awareness

Check in with each student and see where they are at in the lesson or how they are tackling an assignment. Teachers can view what each student is working on and see what they see on their iPad. Nothing replaces 1-to-1 interaction, but with the Classroom app, teachers are able to turn their attention to who needs it the most.

iPad, Educational Apps and iBooks

With more than 170,000 education apps in the App Store that are designed specifically for the iPad, Apple has the strongest education app ecosystem for students of any grade level, age or learning style. In addition to a wide variety of education apps, students can also enjoy a new learning experience through interactive iBooks.

One of the biggest advantages of utilizing education apps and iBooks on the iPad is the ability to be interactive and provide engaged learning for students - a stark difference to only viewing a lesson on a webbased device. With iBooks, students can interactively highlight text, leave comments and even collaborate with other students.

With so many apps available, it is essential that every district has a way to evaluate what apps will provide the most benefits to their students. Jamf recommends leveraging an app rubric, such as "Substitution, Augmentation, Modification and Redefinition" (SAMR) and/or the 4C's model (Communication, Collaboration, Critical Thinking and Creativity) as part of the app evaluation process. This will ensure the apps students are using will truly engage them in curriculum and help them continue to progress in their studies.



Schoology

A learning management system (LMS) that helps teachers prepare and engage with students through engaging content, interactive lessons and dynamic assessments.



eSpark

Delivers a personalized learning experience for each student based on curated educational app content provided by eSpark.



eBackpack

Creates a paperless classroom by assigning, collecting, review, annotating and returning student work through eBackpack.



Edmodo

Provide teachers a safe and easy way to communicate, engage, and collaborate with students for free any time, anywhere.



Nearpod

Easily manage student iPad content and seamlessly combine interactive presentations, collaboration and real-time assessments tools into one integrated solution.



Socrative

Students can now easily share their lesson understanding by answering formative assessment questions in a variety of formats.

Education apps for parents too!

Many of the education apps found in the App Store provide a parent's version available for download. That way parents can stay more involved with what their students are learning, while also seeing how they're progressing.

App Spotlight: Personalize Learning with eSpark



Delivering the right apps and content to meet the specific needs of each individual student can be a daunting task. But it is possible when leveraging an educational app curation and personalization tool like eSpark.

With eSpark, the app evaluation, rubric and distribution is already done. Pre-approved apps, that are based on each student's needs, are instantly available on their devices.

With MDM and VPP, districts can automate app license distribution with zero administration effort. So when apps are no longer applicable to a particular student, automatic removal can preserve device space and app budget. Similarly, when new apps are needed, automatic installation allows students to continue learning without delay.

It has never been easier to use personalized apps to meet students where they are at with their learning needs. This technology gives schools the ability to engage with every student by providing the materials they need as soon as they need them. This accessibility, combined with the quality learning experience, creates an optimal learning environment for students of all ages and abilities.



$\hat{\mathbf{h}}$

Secure Assessments with iPad

Whether administering formative or summative assessments, have peace of mind that iPad provides a secure platform. By combining MDM restrictions and a classroom management app, you can focus each student on a specific webpage or app until the assessment is complete.

With MDM, IT can configure restrictions on an iPad during the assessment.

- Common restrictions include the ability to disable:
- Predictive Keyboard Keyboard Shortcuts Auto-Correction Spell Check Definition Lookup

••••• ÷	Settings	9:41 AM 100% Common 100% Commo
	Settings	Restrictions
►	Airplane Mode	Predictive keyboard not allowed
?	Wi-Fi JAMF Software Guests	Auto-Correction not allowed
*	Bluetooth Off	Keyboard shortcuts not allowed
		Spell check not allowed
	Notifications	Definition lookup not allowed
	Control Center	
C	Do Not Disturb	
Ø	General	
AA	Display & Brightness	
*	Wallpaper	
N	Sounds	
A	Passcode	
	Battery	
	Privacy	
	iCloud	
\bigcirc	iTunes & App Store	
	Mail, Contacts, Calendars	

Apple TV in K-12

Apple TV is proving its value to schools in a variety of ways. Within the classroom, students can use AirPlay to display their Mac, iPad or other device screen on an HDTV or projector. With the ability to instantly share content, teachers can seamlessly highlight student work, encourage collaboration and keep the class engaged. With access to the latest technology, students gain real world presentation experience with iPad and Apple TV.

Now that MDM can manage tvOS 10.2 and higher, schools are able to unlock the full potential of the large screen in a manageable and scalable way. Schools see the benefits of Apple TV beyond the classroom and are already using them to:

Serve as kiosks in media centers

Provide districtwide emergency notifications Display messages on welcome screens Deliver upcoming event notifications Post the cafeteria menu And much more!

Learn More

e Read about how schools can leverage Apple TV devices to make the classroom a more collaborative and engaging learning environment.



Apple TV Management: Moving Education Forward

jamf | PRO **MDM for iOS**

Jamf Pro is the leading mobile device management tool for iOS. Designed to automate common tasks around Apple deployment, inventory and security, it makes mobile device management easy. A transformative learning experience is within reach.



















Deployment

Inventory Configuration Profiles

Management Commands

App Deployment

Security and Privacy

Self Service

Apple School Manager

Classroom Management



Start Managing iOS with a Free Trial

Configuration Profile Payloads and Management Commands List

Managed + Supervised

- Allow FaceTime

- Allow AirDrop

- Allow iMessage

- Allow Apple Music

- Allow Apple Radio

- Allow iBookstore - Allow apps from App Store

- Allow removing apps

- Enable Siri profanity filter - Allow user-generated content in Siri

- Allow automatic app downloads

- Allow iCloud documents & data

- Allow managed apps to store data in iCloud

- Allow Erase All Content and Settings

- Allow installing configuration profiles

- Allow modifying cellular data app settings

- Allow modifying Find My Friends settings

- Allow pairing with non-Configurator hosts

Restrictions Payload - Apps

- Allow adding Game Center friends

- Allow modifying Touch ID fingerprint

- Allow modifying account settings

- Allow modifying device name

- Allow modifying passcode

- Allow modifying restrictions

- Allow modifying Wallpaper

- Allow predictive keyboard

- Allow keyboard shortcuts

- Allow Auto-Correction

- Allow Check Spelling

- Allow definition lookup

- Allow News

- Allow Podcasts

- Allow Game Center - Allow multiplayer gaming

- Restrict App Usage

Other Payloads

- Single App Mode

- Notifications Payload - Lock Screen Message Payload

- Home Screen Layout

- Bypass Activation Lock

- Set Wallpaper

- Lost Mode

- Global HTTP Proxy Payload

- OS X Server Account Payload

Management Commands

- Update iOS (DEP Enrollment Required)

- Delete User (Shared iPad only) - Logout User (Shared iPad only)

Content Filter Payload

- Allow pairing with Apple Watch

Make MDM Profile Mandatory (DEP only)

Restrictions Payload - Functionality

- Allow screen observation by Classroom

Managed Only

Passcode Payload

- Allow simple value Require alphanumeric value
- Minimum passcode length (0-16)
- Minimum number of complex characters (0-4)
- Maximum passcode age (0-730 days)
- Maximum Auto-Lock time
- Passcode history (0-50 passcodes)
- Maximum grace period for device lock Maximum number of failed attempts

Restrictions Payload - Functionality

- Allow use of camera
- Allow screenshots - Allow voice dialing
- Allow Siri
- Allow Siri while device locked
- Allow installing apps using Apple Configurator and iTunes
- Allow In-App Purchase

- Allow notes and highlights sync for enterprise books
- Allow iCloud Photo Sharing
- Allow My Photo Stream
- Allow automatic sync while roaming
- Force encrypted backups
- Force limited ad tracking
- Allow users to accept untrusted TLS certificates
- Allow documents from managed sources in unmanaged destinations
- destinations
- Allow Handoff
- Allow internet results in Spotlight

- Allow Wallet notifications in Lock screen
- Show Control Center in Lock screen
- Show Notification Center in Lock screen

- Allow Safari
- Enable AutoFill
- Force fraud warning - Enable JavaScript
- Block pop-ups
- Accept cookies

Restrictions Payload - Media Content

- Select ratings region
- Set content rating for Movies, TV Shows, and Apps
- Allow playback of explicit media - Allow explicit sexual content in iBooks Store

Other Payloads

- Wi-Fi Payload
- Domains Payload
- VPN Payload
- AirPlay Payload
- AirPrint Payload
- Mail Payload - Google Account Payload
- LDAP Payload
- Calendar Pavload
- Contacts Payload
- Subscribed Calendars Pavload
- Web Clips Payload

Management Commands

- Remote Lock
- Remote Wipe - Rename Device
- Clear Passcode
- Clear Restrictions
- Un-Manage Device
- Update Inventory - Send Blank Push

- Require iTunes password for all purchases
- Allow iCloud backup
- Allow iCloud keychain
- Allow backup of enterprise books
- Allow iCloud Photo Library

- Allow automatic updates to certificate trust settings
- Allow trusting new enterprise app authors
- Allow documents from unmanaged sources in managed
- Treat AirDrop as unmanaged destination
- Allow sending diagnostic and usage data to Apple
- Allow Touch ID to unlock device
- Force Apple Watch wrist detection
- Require passcode on first AirPlay pairing

- Show Today view in Lock screen

Restrictions Payload - Apps

- Allow iTunes Store