

Andrew MacKenzie

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Andrew has been a Teacher, Apple Systems Engineer, Instructional Design Manager, and an Apple-focused IT Consultant.

Explainer of things.

Kind word enthusiast.



Andrew MacKenzie
Capstan Networks
Apple IT Services & Consulting

A photograph of a silver laptop, a silver tablet, and a silver smartphone resting on a dark wooden surface. The laptop screen shows a macOS desktop with a mountain landscape wallpaper and a menu bar at the top. The tablet and smartphone screens show iOS lock screens with a space-themed wallpaper. The text 'Deploying Devices: State of the Union and How to Select an MDM' is overlaid in white on the laptop screen.

Deploying Devices: State of the Union and How to Select an MDM

2:30pm Session



Apple Programs



Profile Manager & Configurator



WWDC 2016



MDM Tools



Apple Deployment Programs



Apple Deployment Programs

Device Enrollment Program



“DEP simplifies initial setup by **automating mobile device management (MDM) enrollment and supervision** of devices during setup, and enabling you to configure the devices without touching them.”

- Mandatory and lockable MDM enrollment
- Wireless Supervision
- Zero-touch configuration for IT
- Streamlined Setup Assistant
- Can use same Apple ID as VPP



Deployment Programs

Enroll your organization in the:



Device Enrollment Program



Volume Purchase Program

Don't have an account? [Enroll Now](#)

Sign In

andrew@capstannetworks.com

.....

[Forgot your Apple ID or Password?](#)

Sign In

Apple Inc. deploy.apple.com/qforms/web/admins/index/avs

Kevin Martin

Deployment Programs

Admins

Locations

Device Enrollment Program

Volume Purchase Program

Terms and Conditions

Search for Admin

Admin Account

Date Created

3/13/14

Add Admin Account

First Name

Andrew

Last Name

MacKenzie

Work E-mail

andrew@capstannetworks.com

Allow access to:

☒ Device Enrollment Program

☒ Volume Purchase Program

Allow Admin to:

☒ Create and Edit Admins

Cancel

Add

Start using Apple School Manager. Upgrade now

Deployment Programs

Admins

Locations

Device Enrollment Program

Manage Servers


Manage Devices

View Assignment History

Volume Purchase Program

Apple ID for Students

Terms and Conditions

 Start using Apple School Manager. [Upgrade now >](#)

Search for Serial Number

Kevin Martin

Manage Devices

1. Choose Devices By:

☒ Serial Number

☐ Order Number

☐ Upload CSV File

f6qq7040fk11

2. Choose Action:

Assign to Server

Assign to Server

Unassign Devices

Disown Devices

D90 JSS

- Deployment Programs
- Admins
- Locations
- Device Enrollment Program
- Volume Purchase Program
- Terms and Conditions



Upgrade to Apple School Manager



Apple School Manager is the central place for educators to create Apple IDs, build courses, and access everything you need to deploy iPad in your school. [Learn more >](#)
Upgrade your Apple Deployment Program to start using Apple School Manager.

Upgrade Now



Start using Apple School Manager. [Upgrade now >](#)

[Get Started](#)

[Get Started](#)

Device Enrollment Program



Things to remember

- Apple adds your last three years of purchases.
- You assign devices to MDM servers.
- Disown a device to remove from DEP
- Disowning is permanent.

Volume Purchase Program



“The Volume Purchase Program (VPP) makes it simple to **find, buy, and distribute apps and books** in bulk for your organization. ”

- Volume Purchases
- Custom B2B Apps
- Managed Distribution
- Pay with PO or Credit Card

Volume Purchase Program



For Business and Education

- Provide contact info
- DUNS Number for Business
- Business Address
- You can use the same Apple ID as DEP



Mac

iPad

iPhone

Watch

TV

Music

Support



Volume Purchase Program

Business Store Sign In

The Volume Purchase Program allows businesses to purchase apps and books in volume for distribution to their users. [Learn more](#) or sign in using an Apple ID associated with the Volume Purchase Program.

Apple ID

Password



Mac

iPad

iPhone

Watch

TV

Music

Support



Volume Purchase Program

Captan Networks, LLC
D-U-N-S# 941173481

\$0.00

vppadmin@capstannetworks.c...

Search

Q Name, ISBN, or Link

Media Type

All



Search

To get started, search for an app or book.



Streamline Your Distribution

Get apps and books into the hands of your users quickly and easily with an MDM solution. Retain ownership of apps only by assigning, revoking, and redistributing them to your users on iOS 7 or later or on OS X 10.9 or later via a Mobile Device Management (MDM) solution.

[Learn More](#) ▶

Captan Networks, LLC
D-U-N-S# 941173481

\$0.00

vppadmin@capstannetworks.c... ▾

🔍 pages

All

Search

Name	Developer	Category	Released/Updated	Price
 Pages 	Apple	Productivity	05/10/16	\$9.99
 Facebook Pages Manager 	Facebook, Inc.	Business	08/04/16	Free
 Chrome - web browser by Google 	Google, Inc.	Utilities	07/27/16	Free
 YP - Yellow Pages local search 	YELLOWPAGES.COM LLC	Travel	07/29/16	Free
 Yellow Pages 	Avantar LLC	Navigation	04/25/16	Free
 White & Yellow Pages 	Avantar LLC	Reference	04/25/16	Free
 TurboScan Pro: document & receipt sc... 	Piksoft Inc.	Business	11/22/15	\$4.99
 Adobe Spark Page - Create Stunning ... 	Adobe	Productivity	07/15/16	Free
 How to Draw - step by step Drawing ... 	Ramil Valiullin	Education	12/05/14	Free
 Colorfy: Coloring Book for Adults - Free 	Fun Games For Free	Entertainment	08/02/16	Free

⊕ indicates an app designed for both iPhone and iPad.

Volume Purchase Program

Captan Networks, LLC
D-U-N-S# 941173481 \$0.00

vppadmin@capstannetworks.c...

VPP Home > Account Summary

Account Summary

Managed Distribution

Easily assign apps or books to users on iOS 7 or later or on OS X 10.9 or later using a Mobile Device Management (MDM) solution, such as the latest version of Apple Profile Manager. If you have an MDM solution, you can download a token which can be used to link your MDM solution with your VPP account. Once linked, you can invite users, assign apps and books, and revoke and reassign apps directly through your MDM solution. This token will expire after one year or after a password reset.

[Download Token](#)

Latest Purchase

Feb 03, 2013 The Night Sky™ [Quantity: 10](#)

[View Purchase History](#)

Account Information

Mr. Andrew MacKenzie (vppadmin@capstannetworks.com)
Captan Networks, LLC

Payment Information:

VPP Credit Balance:

Credit Card: PayPal Mr. Andrew MacKenzie

Tax Status: Not Exempt

[Redeem VPP Credit](#)

[Previously Redeemed Credits](#)

[Edit Payment Information](#)

Server

- mothership
- Alerts
- Certificates
- Logs
- Stats

Accounts

- Users
- Groups

Services

- Caching
- Calendar
- Contacts
- File Sharing
- Mail
- Messages
- Profile Manager**
- Time Machine
- VPN
- Websites
- Wiki
- Xcode

Advanced

- DHCP
- DNS
- FTP
- NetInstall
- Open Directory**
- Software Update
- Xsan



VPP Managed Distribution

Configure Profile Manager to distribute apps and books from the Volume Purchase Program.

ON

Drag the token file here.

Choose...

Download your VPP service token from the Volume Purchase Program



Cancel

Continue

☐ Automated MDM Enrollment

Configure...

Apps & Books: ☒ Managed Distribution

Configure...

Default Configuration Profile: Settings for Everyone

Configure...

☐ Sign configuration profiles

Configure...

My Devices: [Open in Safari](#)

Profile Manager: [Open in Safari](#)

Purchasing Apps



Redeem Codes

- Like a big pile of Starbucks cards.
- Keep a spreadsheet or something.
- Good luck.

Managed Distribution

- VPP keeps track of your apps and available licenses.

Upgrade to Managed Distribution!

- Apple will convert all your unredeemed codes.

Managed Distribution



User Based

- Assigned to a user, can be used on all devices assigned to that user

Device Based

- New in iOS 9.3
- Assigned to a device, often a shared device.
- No more device-specific Apple ID's.
- And there was much rejoicing.

Apple School Manager



“The new Apple School Manager is a simple, web-based portal that has everything admins need to deploy iPad and Mac in schools.”

- Create Managed Apple ID's
- Manage enrollment settings for MDM
- Buy and distribute apps and books

Combines DEP and VPP, and adds Managed Apple ID's.



MacBook Air

Township Schools

PEOPLE

Individuals

Classes

Roles

DEVICES

MDM Servers

Device Assignments

Assignment History

CONTENT

Buy Apps and Books

iTunes U

Connected

school.apple.com

Robyn Glennon

Search People

Search All Columns

716 total

Status		ID Number	First Name	Last Name	Managed Apple ID	Grade Level	Role	Date Created	More
CA	New	78684556	Cynthia	Able	acynthia2@appleid.bu	1	Student	Today	
DA	New	23455656	Diane	Abbott	dabbott2@appleid.bu	1	Student	Today	
EA	New	56954843	Evelyn	Amador	aevelyn4@appleid.bul	1	Student	Yesterday	
RA	New	34686514	Rose	Anderson	randerson1@appleid.t	1	Student	Yesterday	
JA	New	45958756	Jane	Appleseed	jappleseed1@appleid.	1	Student	Yesterday	

JA

Jane Appleseed

New

Settings

ID Number

1847664

Role / Location

Student at Township Schools

Edit

Grade Level

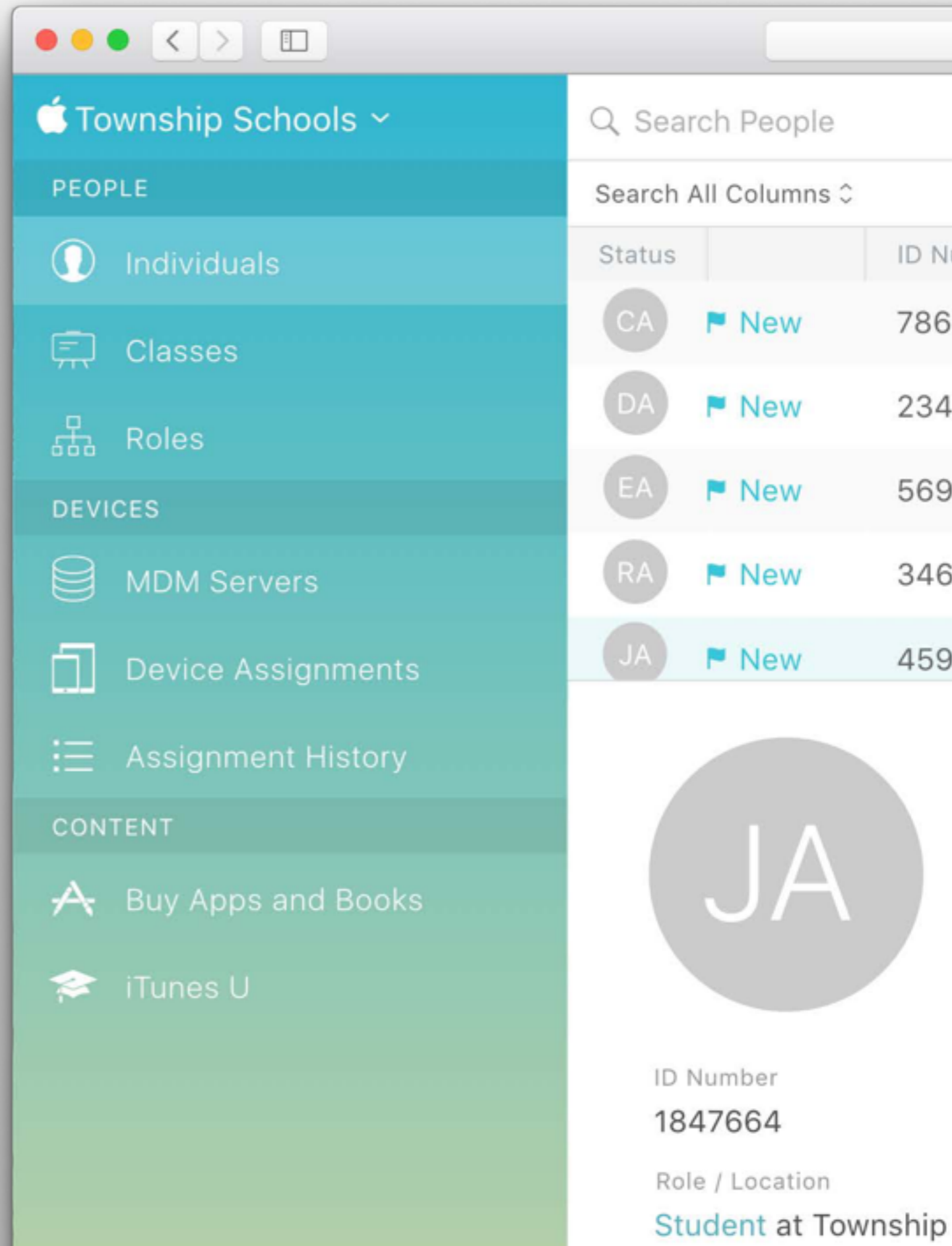
1

Email Address

jappleseed2@townshipschools.org

Upload CSV | Add New Person

People, Devices, and Content



The screenshot shows the Apple School Manager interface. The left sidebar is divided into three main sections: PEOPLE, DEVICES, and CONTENT. The PEOPLE section is currently selected and expanded, showing options for Individuals, Classes, and Roles. The DEVICES section includes MDM Servers, Device Assignments, and Assignment History. The CONTENT section includes Buy Apps and Books and iTunes U. On the right side, there is a search bar labeled 'Search People' and a table listing people. The table has columns for Status, a flag, and ID Number. The first three rows show 'New' status with IDs 786, 234, and 569. The fourth row, which is highlighted, shows 'New' status with ID 459 and a circular profile picture containing the letters 'JA'.

Apple Township Schools ▾

PEOPLE

- Individuals
- Classes
- Roles

DEVICES

- MDM Servers
- Device Assignments
- Assignment History

CONTENT

- Buy Apps and Books
- iTunes U

Search People

Search All Columns ↕

Status		ID Number
CA	New	786
DA	New	234
EA	New	569
RA	New	346
JA	New	459

JA

ID Number
1847664

Role / Location
Student at Township

Managed Apple IDs



“Managed Apple IDs are **a new kind of Apple ID** that gives students access to **iCloud, iTunes U, and Shared iPad**, while maintaining the control schools need.”

- Created in Apple School Manager
- From CSV, SIS, or LDAP
- Handles duplicate user records
- School control over passwords, roles.

Managed Apple IDs



No Commerce

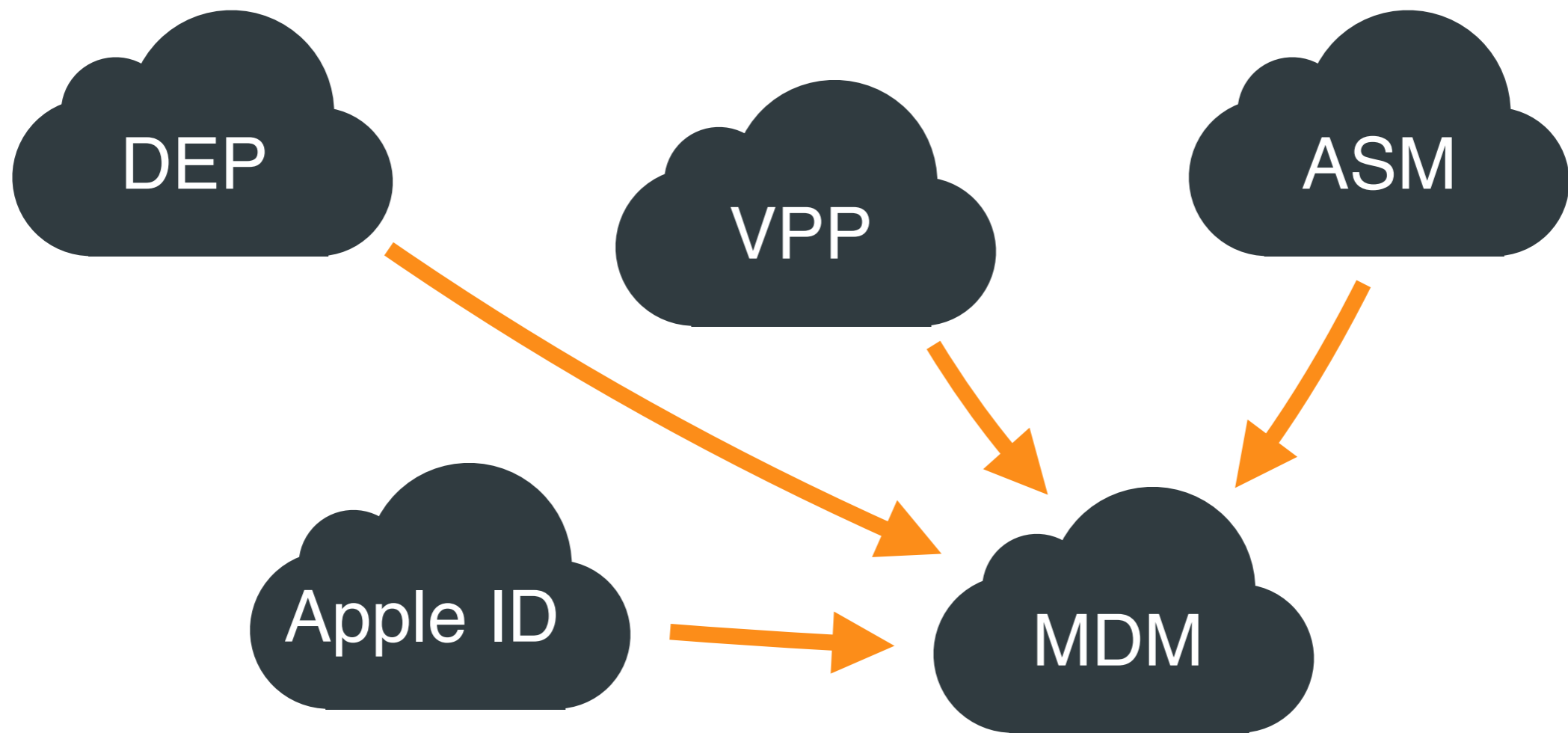
- App Store, iBooks Store, or iTunes Store
- Apple Pay disabled

Disabled for Privacy

- Find My Friends, Find My iPhone, iCloud Mail, HomeKit, iCloud Keychain.

Off by Default

- FaceTime and iMessage



Mobile Device Management

Mobile Device Management



Combines the hardware, apps, settings, and users to provide a completely configured and ready-to-go device for users in your organization.

- Each iOS release has provided additional functionality and control.
- Works with business-owned or BYOD devices
- Mandatory enrollment vs Carrot-and-Stick

All together now!

DEP
VPP
MDM



```

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WWDC 2016

WWDC 2016 Session 303

What's New in Apple Device Management

Executive Summary

Always a good idea to watch WWDC sessions on MDM and App development for management features.

Good to know where the puck is going to be.

WWDC 2016 Session 303: What's New in Apple Device Management

New in iOS 9.3

- Logout user, get user list, or delete user
- MDM Lost Mode (including device location)
- MDM Activation Lock (non-Apple ID devices)
- Notifications, Home Screen Layout, Lock Screen Message
- Show & Hide apps

Assessment Mode

- Disables Auto-correction, Define, keyboard shortcuts, predictive keyboard, spell check

WWDC 2016 Session 303: What's New in Apple Device Management

New in iOS 10

- Default app for VOIP calls
- Lock Screen Message
- New IKEv2 VPN settings
- Bypass Captive WiFi
- Marking for Cisco WiFi QoS
- Restrictions to not allow toggle bluetooth

WWDC 2016 Session 303: What's New in Apple Device Management

Deprecated Soon

- App installation
- App removal
- Facetime
- Safari
- iTunes
- Explicit content
- iCloud documents and data
- Multiplayer gaming
- Add gamecenter friends

“You’ve been warned”

WWDC 2016 Session 304: Best Practices for Building Apps Used in Business and Education

Support Shared iPad

- Shared iPad devices allow schools to allocate more funds for software.
- Test with two iPads

Move your App data to the cloud

- Even if not using iCloud, can still take advantage of Shared iPad features

Use On-Demand Resources

- App resources that are downloaded as needed
- Can be cached by Caching Server



Profile Manager and Apple Configurator

Profile Manager 2



Apple-supplied MDM Server

- Works with DEP / VPP / ASM
- Set policy and restrictions
- Assign Apps

Available in Mac App Store for \$30

Profile Manager

Search Users

Andrew MacKenzie

LIBRARY

- Apps
- Books
- Devices
- Device Groups
- Users**
- Groups
- Classes

ACTIVITY

- Active Tasks
- Completed Tasks



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About

Settings

Apps

Books

Devices

Activi

▼ General

Account name andrew

Managed Apple ID

Managed Apple ID Passcode Type

▼ Restrictions

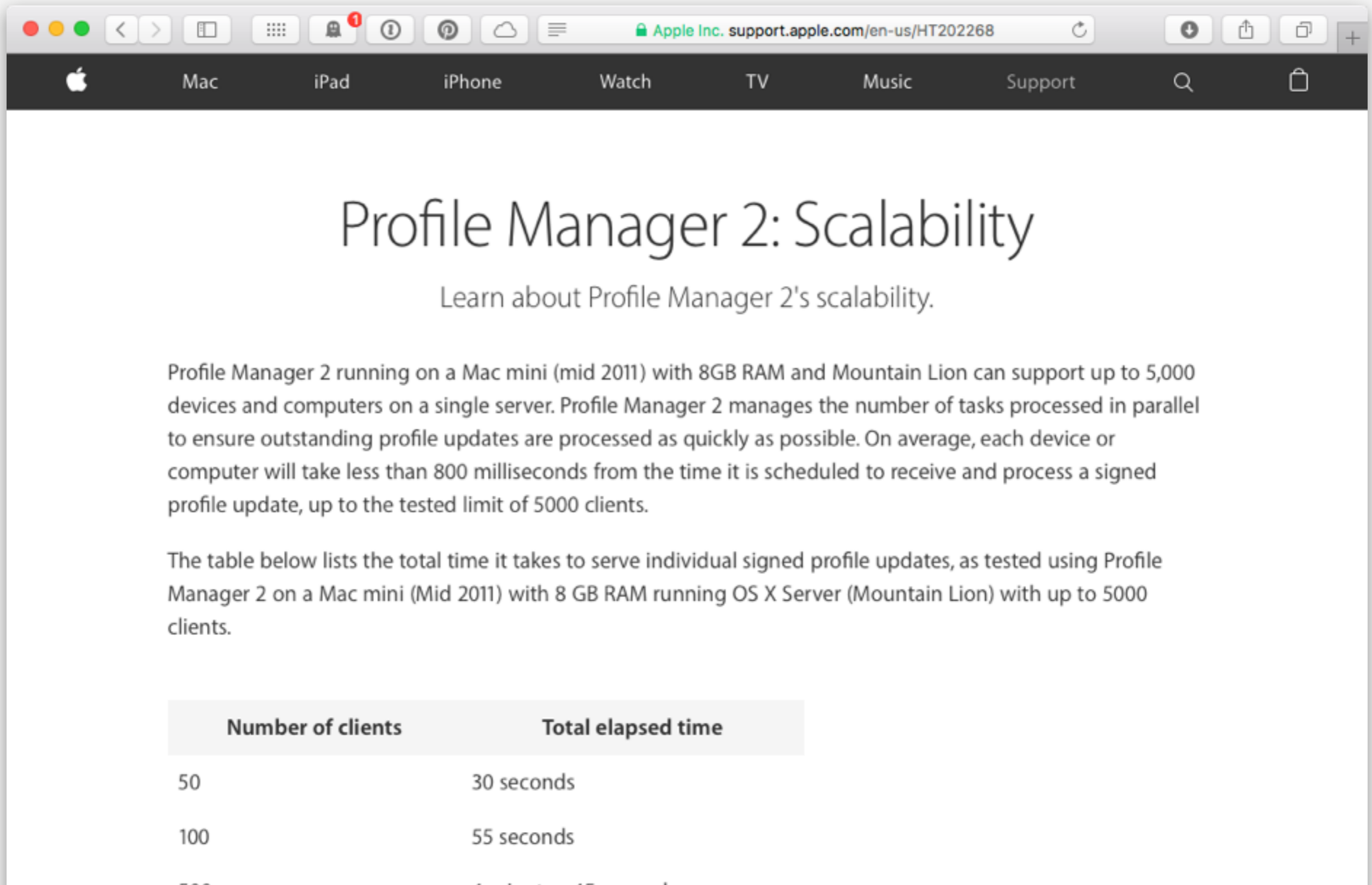
- ☒ Allow access to My Devices Portal (<https://mothership.local/mydevices>)
 - ☒ Allow configuration profile downloads
 - ☒ Allow device enrollment and unenrollment
 - ☒ Allow device lock
 - ☒ Allow device passcode to be cleared
 - ☒ Allow device wipe
- ☒ Allow enrollment during Setup Assistant for devices configured using Device Enrollment Program
- ☐ Allow enrollment during Setup Assistant for devices configured using Apple Configurator
- ☐ Restrict enrollment to placeholder devices
 - ☐ Restrict enrollment to assigned devices

[Learn about restrictions](#)

Revert

Save

Profile Manager 2



The screenshot shows a web browser window with the Apple logo in the top left corner. The navigation bar includes links for Mac, iPad, iPhone, Watch, TV, Music, and Support. The address bar shows the URL [Apple Inc. support.apple.com/en-us/HT202268](https://support.apple.com/en-us/HT202268). The main content area has the title "Profile Manager 2: Scalability" and a subtitle "Learn about Profile Manager 2's scalability." Below this, a paragraph explains that Profile Manager 2 can support up to 5,000 devices and computers on a single server, with updates processed quickly. A table below lists the total time to serve individual signed profile updates for 50, 100, and 500 clients.

Profile Manager 2: Scalability

Learn about Profile Manager 2's scalability.

Profile Manager 2 running on a Mac mini (mid 2011) with 8GB RAM and Mountain Lion can support up to 5,000 devices and computers on a single server. Profile Manager 2 manages the number of tasks processed in parallel to ensure outstanding profile updates are processed as quickly as possible. On average, each device or computer will take less than 800 milliseconds from the time it is scheduled to receive and process a signed profile update, up to the tested limit of 5000 clients.

The table below lists the total time it takes to serve individual signed profile updates, as tested using Profile Manager 2 on a Mac mini (Mid 2011) with 8 GB RAM running OS X Server (Mountain Lion) with up to 5000 clients.

Number of clients	Total elapsed time
50	30 seconds
100	55 seconds
500	4 minutes 45 seconds

The table below lists the total time it takes to serve individual signed profile updates to 5000 clients. The test was performed on a Mac mini (Mid 2011) with 8 GB RAM running OS X Server (Mountain Lion) with 1000 clients.

Number of clients	Total elapsed time
50	30 seconds
100	55 seconds
500	4 minutes, 45 seconds
1000	10 minutes
2500	25 minutes
5000	65 minutes

Note: These numbers do not represent a guarantee of performance. Your experience may vary based on factors such as computer model, microprocessor speed, network conditions, hardware configuration, and the number of clients.

Profile Manager 2



- Proof of Concept
- Few enough devices that if everything goes wrong you'll be ok.

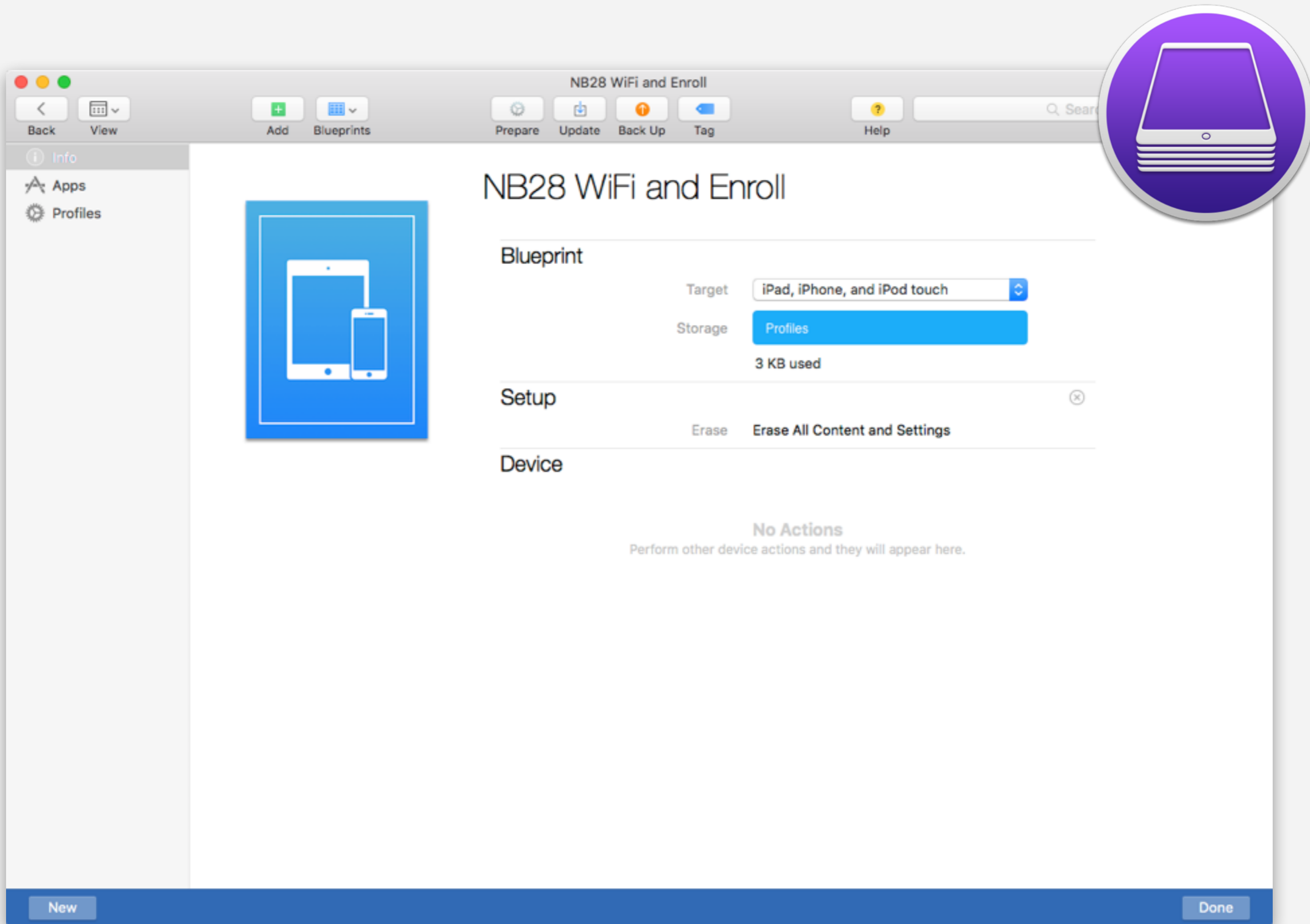
But it's **FREE!**

Apple Configurator 2

- New Interface
- Works with VPP / DEP / MDM
- Blueprints for re-using configurations
- Managed distribution*



* One or two carts. That's it.



Apple Configurator 2

Great for

- Customers with 1-2 carts and don't want to go MDM.
- Configuring shared iPad devices with zero-touch configuration.





Third Party MDM Tools

Third Party MDM Tools

“These MDM solutions are building support for iOS 9.3 education features.”

vmware airwatch

 Meraki

filewave


 **HEAT** LANrev

 ZULUdesk

JAMF
software

Microsoft Intune

 MOSYLE
manager

 **tabpilot**
MDM FOR SCHOOLS

vmware airwatch



Multi-tenant console

- Provides a unified interface for multiple organizational units.

Supported Platforms

- iOS
- Android
- Blackberry
- OS X
- Windows
- Chromebook

Per-device pricing starts at \$4.33/month

Cisco Meraki



Highlights

- Single web-based console
- Enforced enrollment with Meraki WiFi AP's

Supported Platforms

- iOS
- Android
- Blackberry
- OS X
- Windows
- Windows Phone

Free for up to 100 devices,

Filewave



Highlights

- Single native app for managing all devices.
- Available on-premise and cloud-hosted

Supported Platforms

- iOS
- Android
- OS X
- Windows
- Linux

MobileIron



Highlights

- Excellent security profiles
- Integrated content management
- Scalable for large deployments or BYOD

Supported Platforms

- iOS
- Android
- OS X
- Windows

Tiered licensing, “fairly inexpensive” per device

MaaS360



Highlights

- Fast initial deployment
- MDM is available part of Suite of tools
- Easy to use Interface

Supported Platforms

- iOS
- Android
- Blackberry
- OS X
- Windows

Inexpensive per device

Casper Suite



Highlights

- Great customer support with JumpStarts
- Many ex-Apple folks onboard.
- Significant education discounts
- Day 1 feature support

Supported Platforms

- iOS
- OS X

Bushel



Highlights

- Simple interface and feature set
- Great for non-IT folks to manage themselves
- Up to 50 devices *maybe*

Supported Platforms

- iOS
- OS X

Free for up to three devices, \$2/device/month

Absolute Manage



Highlights























- Excellent inventory and reporting system
- MDM is add-on to main platform.

Supported Platforms

- iOS
- Windows Phone
- Android

Pricing depends on package

enterpriseios.com MDM Comparisons

GENERAL INFO		PRODUCT NAME	INFO LAST UPDATED	SUPPORTS IOS 7	SUPPORTS IOS 8	WEB SITE
	APPTEC360 Enterprise Mobility Management	AppTec - Free Enterprise Mobile Manager (EMM)	1 year ago	✓	✓	
	4app	4app	1 year ago			
	SEVEN PRINCIPLES Enabling Your Business	7P MDM	16 weeks ago	✓	✓	
	AirWatch	AirWatch	51 weeks ago	✓	✓	
	Amtel MDM	Amtel MDM	1 year ago	✓	✓	
	AppBlade	AppBlade	2 years ago	✓		
	Profile Manager	Apple Profile Manager	1 year ago	✓	✓	
	AppTrack	AppTrack	1 year ago	✓		
	auralis	auralis	47 weeks ago	✓	✓	
	BlackBerry Enterprise Service 10	BlackBerry Enterprise Service 10	2 years ago	✓		
	BoxTone	BoxTone	2 years ago	✓		

Home Users MDM

Content Filtering and Reporting

- How much time is my kid on SnapChat?



Rules and timeouts

- Only allow categories for limited time per day.
- One-button Timeouts



So how to decide?

Research

Know your people

Platform Support

iOS MDM Feature Support

Pricing

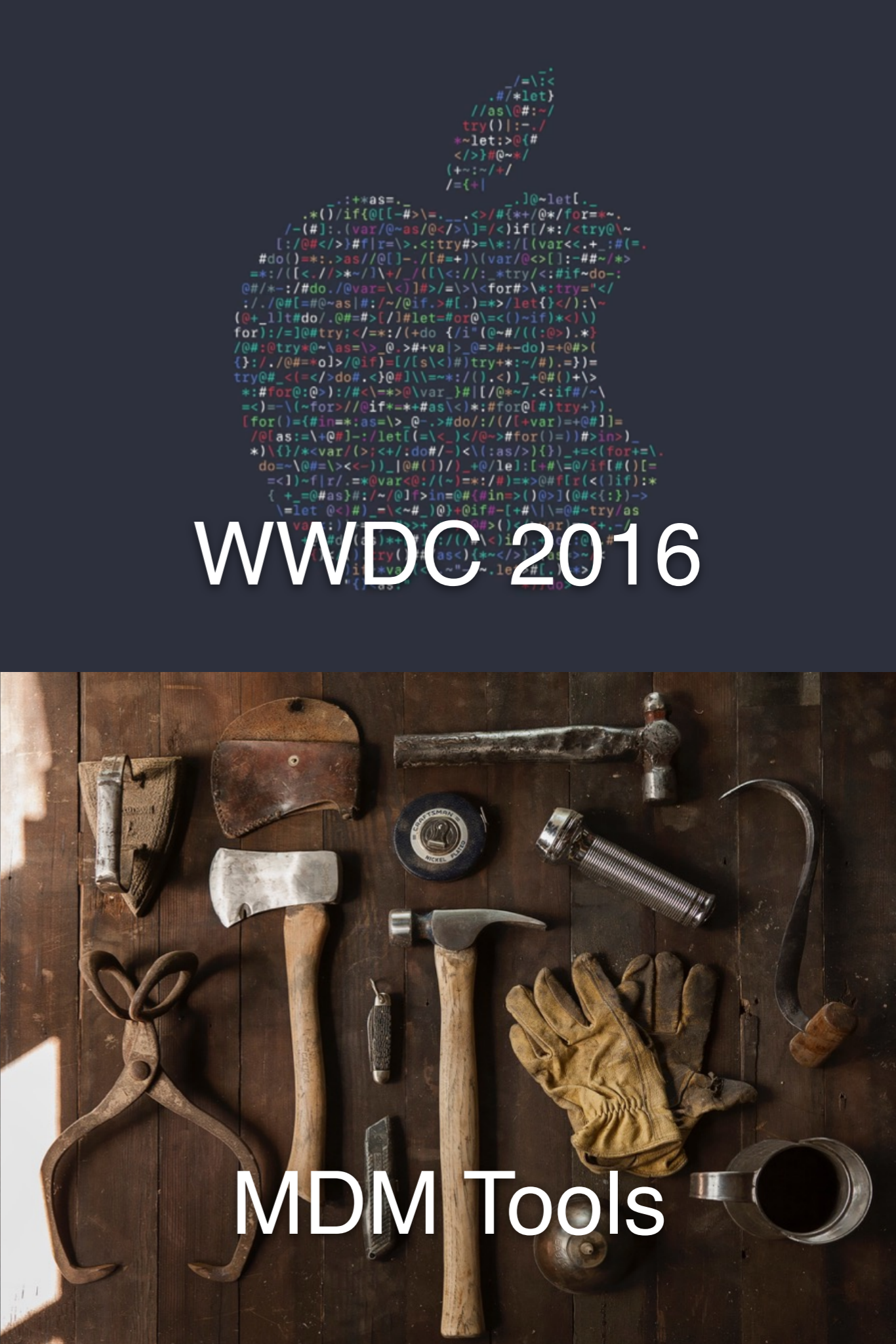




Apple Programs



Profile Manager & Configurator



WWDC 2016

MDM Tools

Thanks. :)