esri | THE SCIENCE OF WHERE™

Mobile Device Management and ArcGIS Field Apps

Heather McCracken, Philip Wilson, and Derek Law

2020 ESRI DEVELOPER SUMMIT | Palm Springs, CA

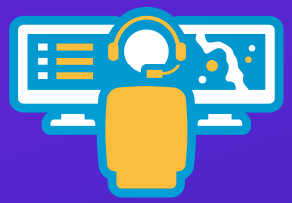
Agenda

- Field Operations and the ArcGIS Field Apps
- Mobile Device Management (MDM) technology
- Esri’s approach to MDM
- ArcGIS Field Apps support for MDM

Field Operations | Location-enable all phases of field work

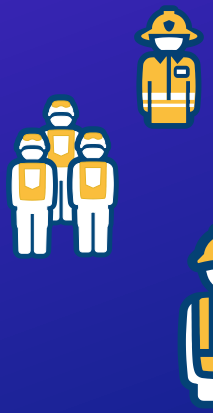
Plan
Use location to assign and coordinate field activities

Navigate
Route to your work using your roads, your GIS data – even while offline



Coordinate
Act on real-time conditions in the field to update worker tasks

Understand
See what's happening around you with maps



Monitor
Know where workers are and see the progress of work in real-time

Capture
Perform data collection and send it back to the office from anywhere

ArcGIS Field Apps

- Complete suite of apps to support field operations workflows

Workforce for ArcGIS

Navigator for ArcGIS

Explorer for ArcGIS

Collector for ArcGIS

Survey123 for ArcGIS

ArcGIS QuickCapture

Tracker for ArcGIS

Mobile Security Challenges

- Users are outside corporate firewall/intranet
  - To VPN or not to VPN?
- Authentication/authorization challenges
- Disconnected editing
  - Local copies of data stored on device
- Types of mobile devices
  - Corporate issue vs BYOD
- Management of mobile devices
    - Mobile Device Management
    - Mobile Application Management
    - Security Gateways
    - E.g., MobileIron, MaaS360, AirWatch, etc.

Mobile Security Implementation Guidance

- Perform Authentication/Authorization
- Encrypt data in-transit (HTTPs) via TLS
- Encrypt data-at-rest (on device)
- Segmentation
  - Use ArcGIS Online, Cloud, or DMZ systems to disseminate public data
- Use an Enterprise Mobility Management (EMM) solution
  - Enforce encryption
  - App distribution
  - Remote wipe
  - Control 3rd party apps & jailbreak detection
  - Distribute Certificates

What is Mobile Device Management (MDM) Technology?

- 3rd party software that IT administrators use to control, secure, and enforce policies on smartphones, tablets, and other devices
- Optimize the functionality and security of mobile devices within the enterprise, while simultaneously protecting the corporate network
- Typically used by large organizations with extensive mobile device(s) user base

What is Mobile Device Management (MDM) Technology?

Benefits: Why do Organizations use MDM Technology?

- Easily manage devices in your organization
- Makes app deployments more efficient, saves time
- Keeps apps and data secure
- Helps with bring your own device (BYOD) management and policies
- Active monitoring for malware and other threats
- “*Better security and more control of devices*”

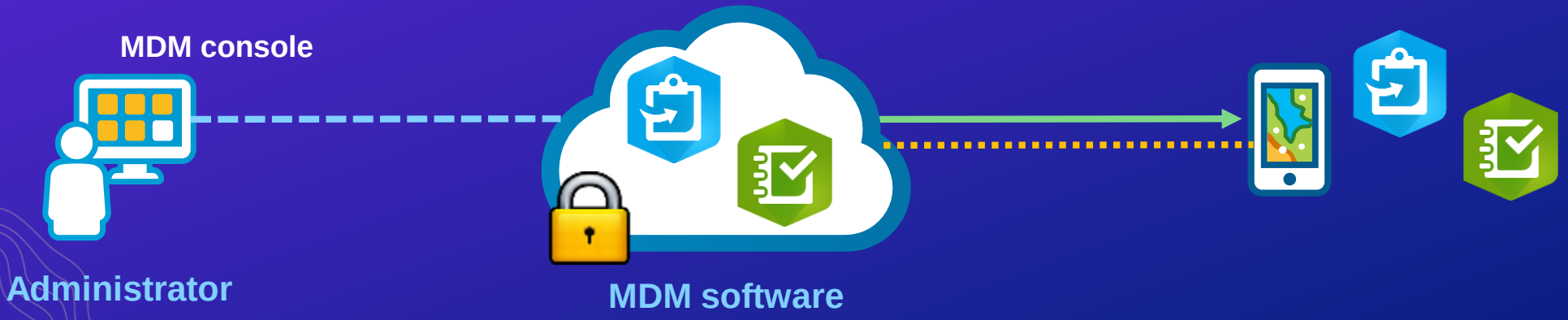
- Typically part of an organization’s larger Enterprise Mobility Management (EMM) strategy

MDM Software helps Organizations to

- Configure devices
  - Set up email, WiFi, VPN, certificates and Trust and other settings wirelessly
- Restrict devices
  - Restrict specific device features like camera, browser, app store, etc.
- Remotely manage devices
  - Locate the device geographically, and lock or wipe them remotely
- Manage mobile applications
  - Install/uninstall device apps, push in-house apps to the devices, blacklist/whitelist apps; set up app catalogs, control app versions and update(s)
- Ensure security
  - Define policy requirements and identify devices that do not comply; generate reports to document compliance status, initiate actions to restore compliance

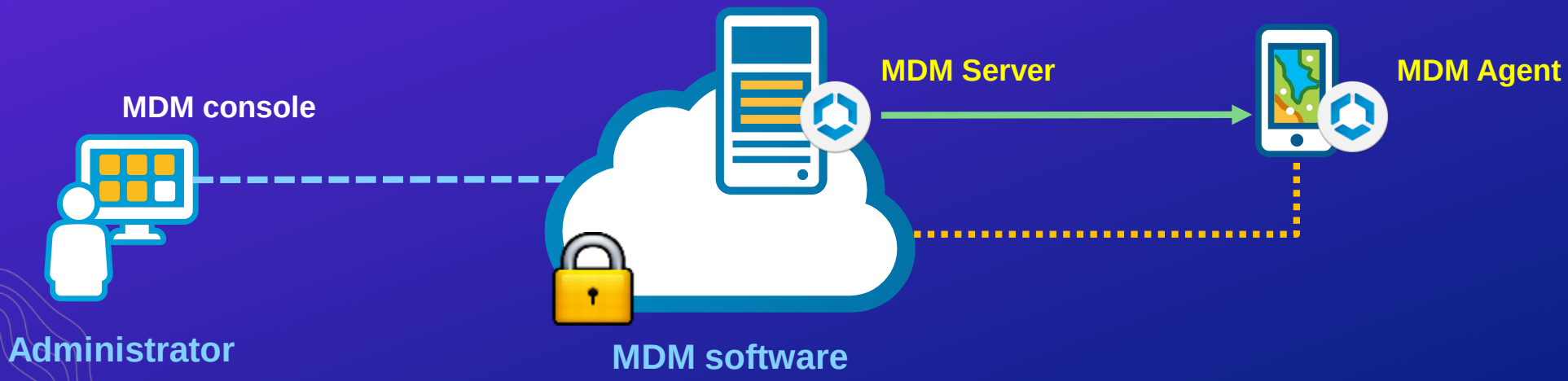
MDM Managed Device High Level Workflow

1. Device is enrolled (corporate or BYOD), it becomes a managed device
2. Managed devices are assigned to group(s) aligned with business/security groups
3. MDM Admin defines:
   - Policies, configurations & restrictions in the MDM console
   - Applications available are deployed via application catalog in the MDM console
4. MDM Administrator assigns these policies/restrictions/apps to devices via the groups



How does MDM Software Work?

- 2 key elements:
  - An MDM Server and an MDM Agent that resides on a mobile device
- MDM admin defines policies/restrictions/apps in the MDM server's management console
- Server pushes the change(s) to the Agent
- Agent applies the change(s) to the mobile device via its device built-in APIs



The Esri Approach

- Many MDM's provide their own APIs to develop against
  - Examples:
    - AirWatch REST APIs, Intune API, and MobileIron's AppConnect SDK & wrapper
- Our approach is MDM agnostic
  - Follow *AppConfig Community* standards
- The ArcGIS Field Apps do not support MDM vendor APIs

AppConfig Community - Context

www.appconfig.org

- Community focused on providing tools and best practices to configure and secure mobile apps; help define standards
- Collaboration with MDM vendors

AppConfig Community

- Defined a set of standard functionality/parameters that all MDM software should support as a best practice
- Helps guide App developers to create “secure” apps
- For both iOS and Android platforms

- Community members: combination of EMM providers and independent software vendors (ISVs)
- “Joining the community provides additional benefits…”

How AppConfig Community Works

App Configuration

Auto-configure URL/port settings, group codes, email addresses and license keys to eliminate the need to educate end users about first time setup.

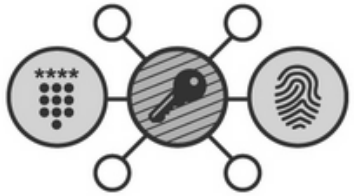
Security Policies & Access Control

Restrict apps to run only on approved devices and enforce security policies such as required encryption and data loss prevention at the app level.

App Tunnel

Selectively enable approved apps to use an app tunnel to connect to backend and corporate networks.

Single Sign-On



Enable single sign-on across enterprise apps, leveraging existing identity management solutions.

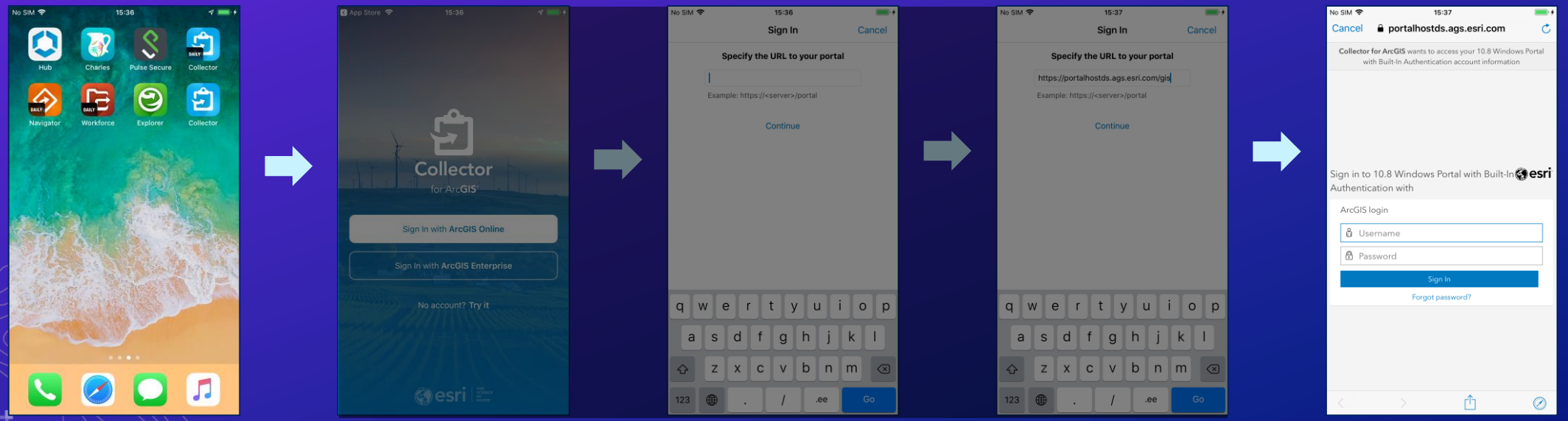
ArcGIS Field Apps Support for MDM

	portalURL	App Specific Settings
Collector	✓	
Survey123	coming soon (UC)	
Workforce	✓	
Navigator	✓	`enableLocalAuthentication` (iOS)
Explorer	✓	
QuickCapture	✓	
Tracker	✓	`updateLKLFrequency` `uploadTracksFrequency`

Collector for ArcGIS - App Configuration Settings

- Supports **`portalURL`** → portal URL address preset when the app opens
  - Saves time, easier workflow for the field user

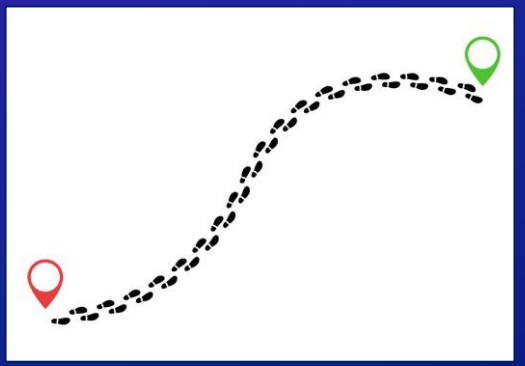
Key	Data type	Platform (version)	Description
`portalURL`	String	iOS (19.1.0+), Android (19.1.0+)	Your organization's portal URL. If user is not already signed in, the sign in screen will automatically be presented on app launch



Tracker for ArcGIS - App Configuration Settings

- Supports **`portalURL`**
- 2 additional Tracker specific app configuration parameters
  - Related to frequency of tracks and upload back to portal
- Documented in Tracker Help

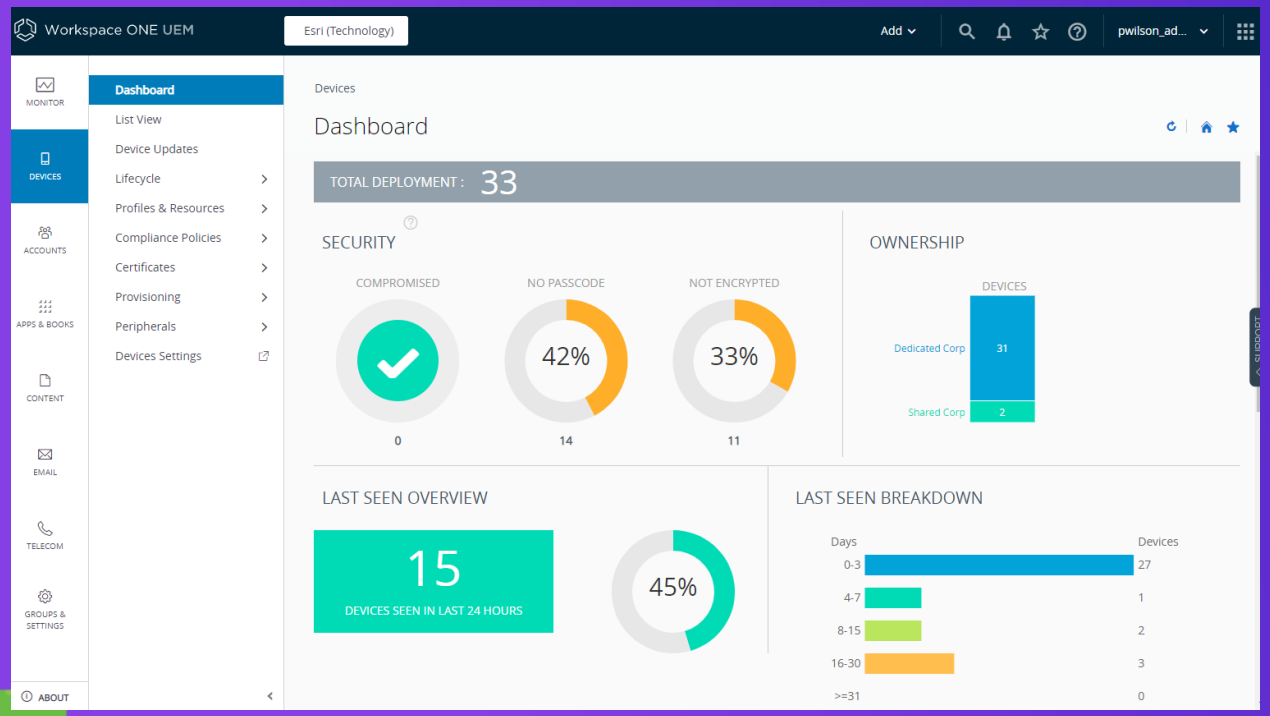
Key	Data type	Platform (version)	Description
`portalURL`	String	iOS (19.1.0+), Android (19.1.0+)	Your organization's portal URL. If user is not already signed in, the sign in screen will automatically be presented on app launch
`uploadTracksFrequency`	Integer	iOS (19.1.0+), Android (19.4.0+)	Override the default upload frequency of 10 minutes or 1 minute if the device is charging. The value must be >= 30. The units are in seconds.
`updateLKLFrequency`	Integer	iOS (19.4.0+), Android (19.4.0+)	Override the default in-app setting of 60 seconds. In-app setting is hidden when frequency is overrode. The value must be >=5. The units are in seconds.



Navigator for ArcGIS - App Configuration Settings

- Supports **`portalURL`**
- **`"enableLocalAuthentication"`** (iOS only)
  - Ties into biometric and passcode authentication method set up on the mobile device when the app is launched or brought forward from the background
  - Customer request
- Documented in Navigator Help
- Blog

Key	Data type	Platform (version)	Description
`portalURL`	String	iOS (19.1.0+), Android (19.1.0+)	Your organization's portal URL. If user is not already signed in, the sign in screen will automatically be presented on app launch
`enableLocalAuthentication`	Bool, String	iOS (19.1.0+)	Whenever app is brought to the foreground, the app will prompt for authentication. If authentication fails, the user is signed out



Using MDM with the ArcGIS Field Apps

Philip Wilson

Summary

- Field Operations and the ArcGIS Field Apps
- Mobile Device Management (MDM) technology
- Esri’s approach to MDM
- ArcGIS Field Apps support for MDM

- Resource: ArcGIS Secure Mobile Implementation Patterns whitepaper

esri
THE
SCIENCE
OF
WHERE