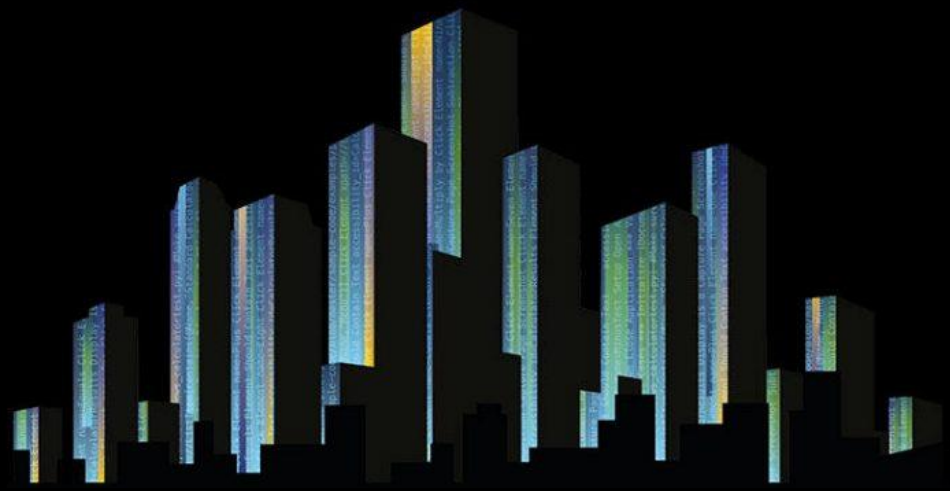
Zebra Developers

Build Your Edge

EMM (MDM) and Application Management



Zebra DevCon 2021
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Darryn Campbell
SW Architect, Zebra Technologies
@darryncampbell

November 3rd – 5th, 2021

EMM (MDM) and Application Management

Agenda

- Overview of EMM landscape
  - Terminology & overall setup
  - EMM options
- Developer considerations when your app is controlled by an EMM
  - Configuration
  - OEMConfig
  - How to share a file with a specific app with Scoped Storage Manager

EMM (MDM) and Application Management

Overview of EMM landscape

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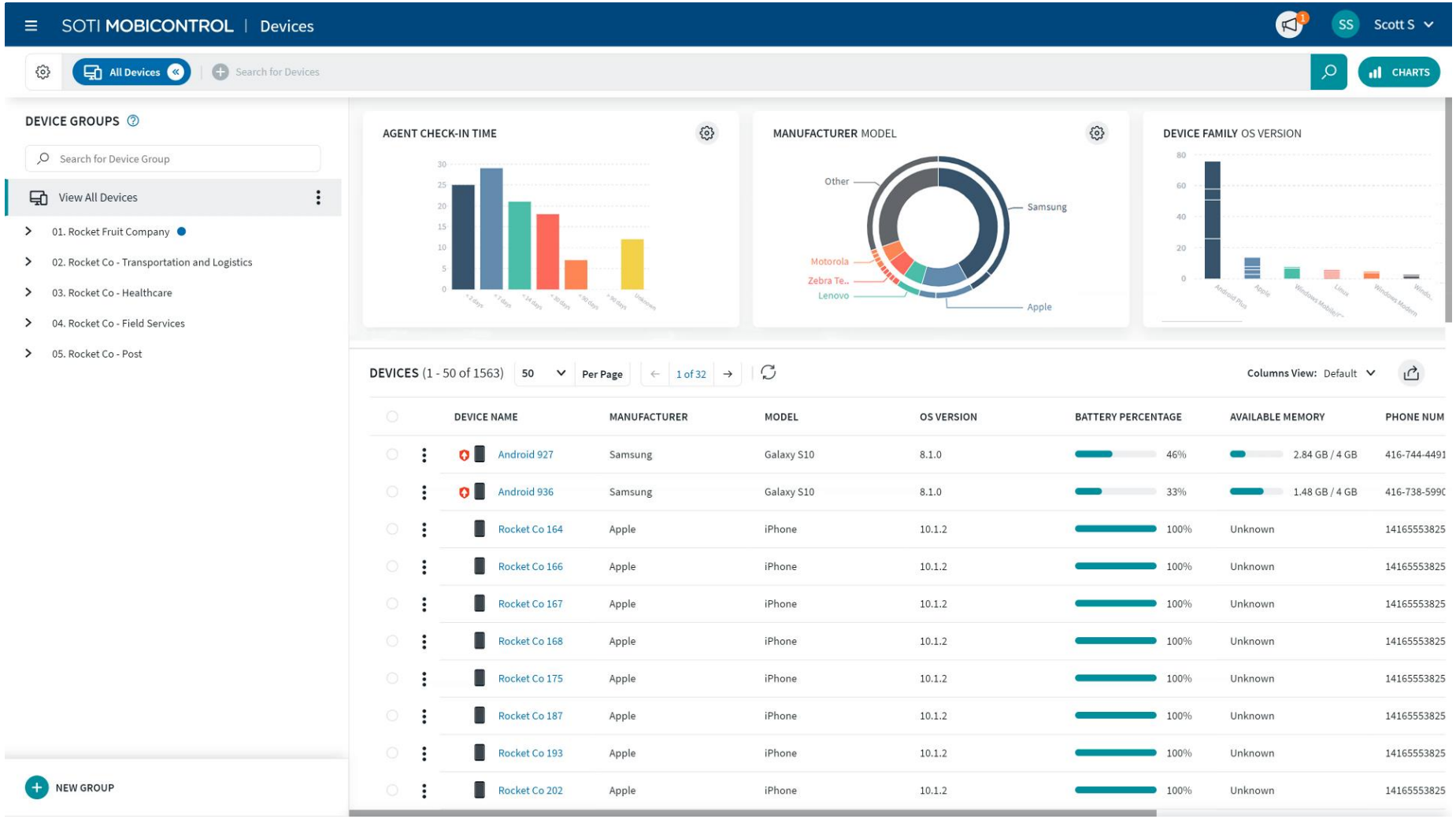
Terminology & Overall setup



EMM (MDM) and Application Management

Terminology & Overall setup

- EMM: Enterprise Mobility Management | MDM: Mobile Device management
- MAM: Mobile Application Management
- UEM: Unified Endpoint management: EMM + MAM
- Work Profile: Designed for using personal devices in enterprise. Formally BYOD or BYOP.
- Fully Managed device: Category of devices which are company-owned and company-managed. Typically smartphone form factor. More restrictive than the Work profile from a user point of view. Formally COPE.
- Dedicated devices: Category which defines Zebra devices. Google define this as devices which fulfil a single use case but that can be misleading – more accurately they are multi-purpose devices which can excel at enabling employees to perform a single task. Formally COSU.
- See also Google's defined feature list and solution sets: https://developers.google.com/android/work/requirements

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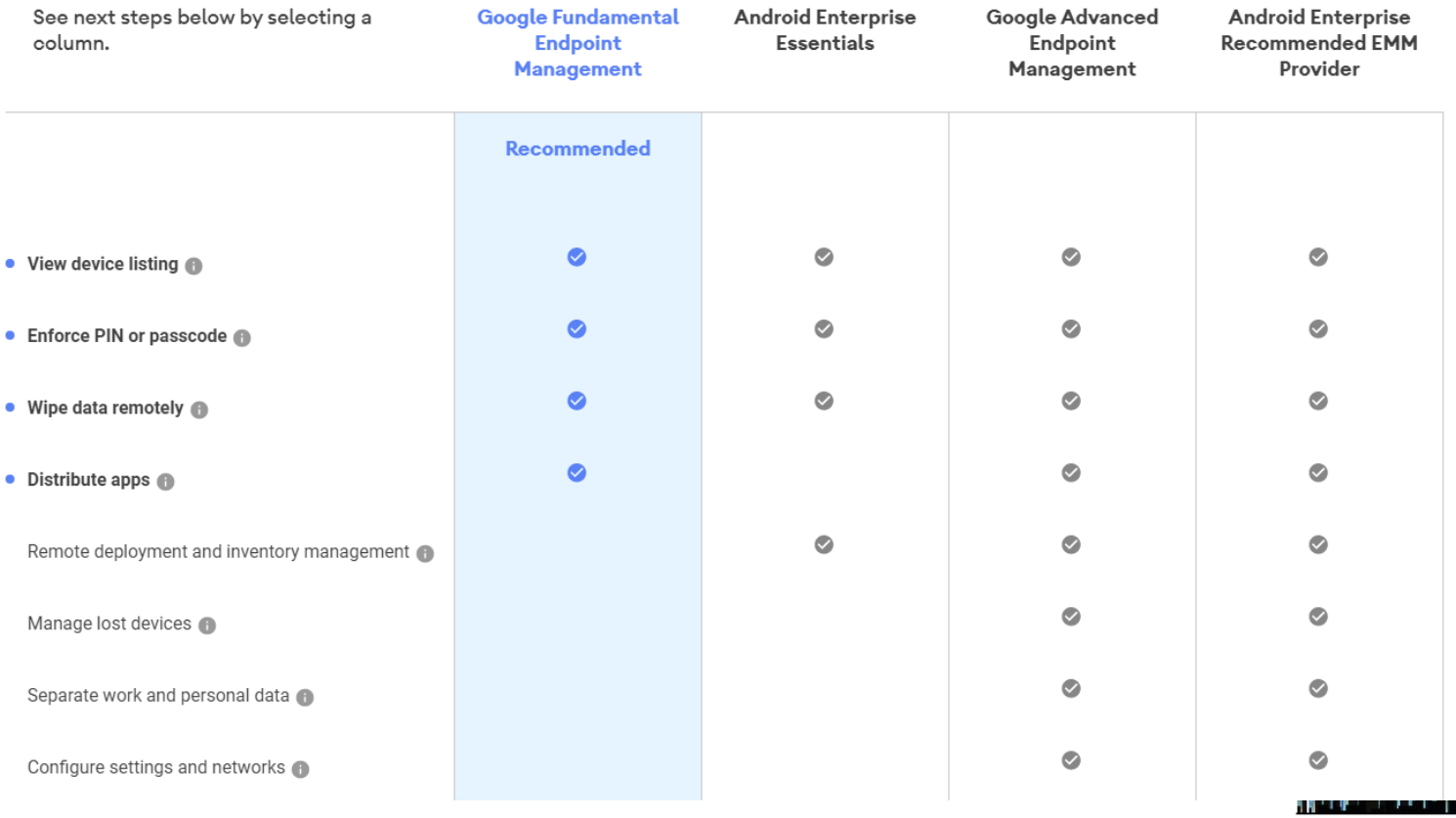
EMM Options - Demo

- Android Enterprise Recommended → Find Solutions
  - https://www.android.com/intl/en_uk/enterprise/solutions-finder/
- Designed for both dedicated devices and BYOD devices
- Buckets 1, 2 and 3 are Google products (this website is continually updating)
- Majority of Zebra customers will adopt an EMM from the fourth bucket, "AER EMM Provider"



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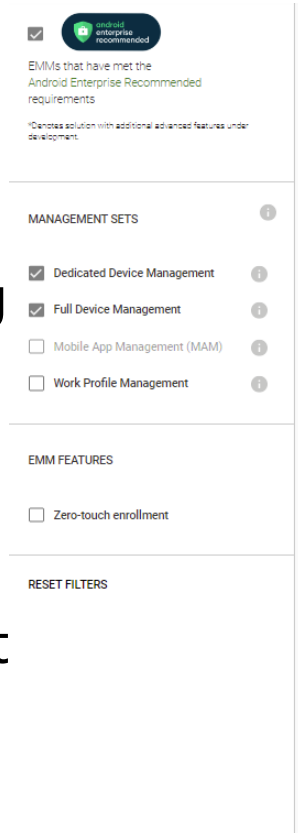
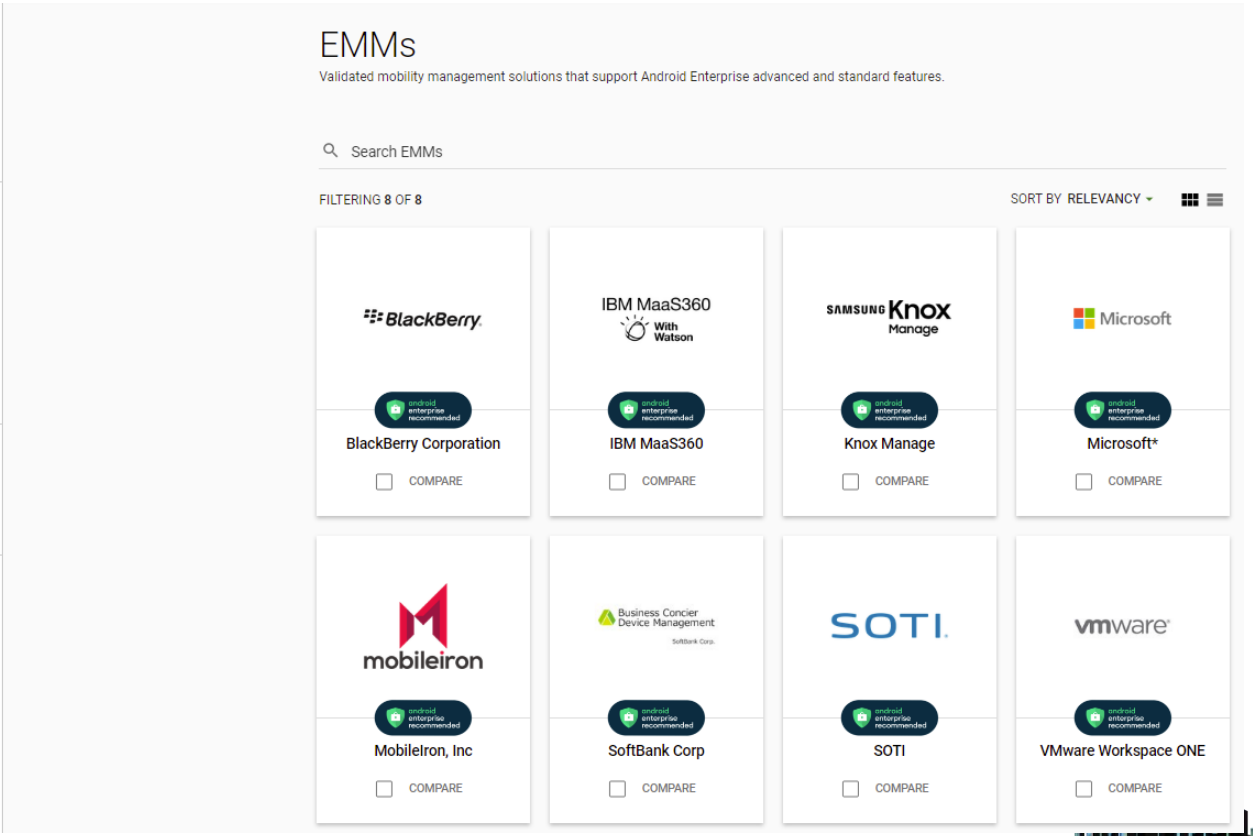
EMM Options - Demo

- Android Enterprise Recommended EMM Provider → Browse Providers
  - https://androidenterprisepartners.withgoogle.com/emm/
- Also shows EMMs not part of AER (a Google certification program)
- Some filters exist but recommend additional research before selecting an EMM, e.g. AOSP support is not a filterable option.
- How the EMM agent is deployed and the *potential* capabilities of that agent will be largely consistent across EMMs.





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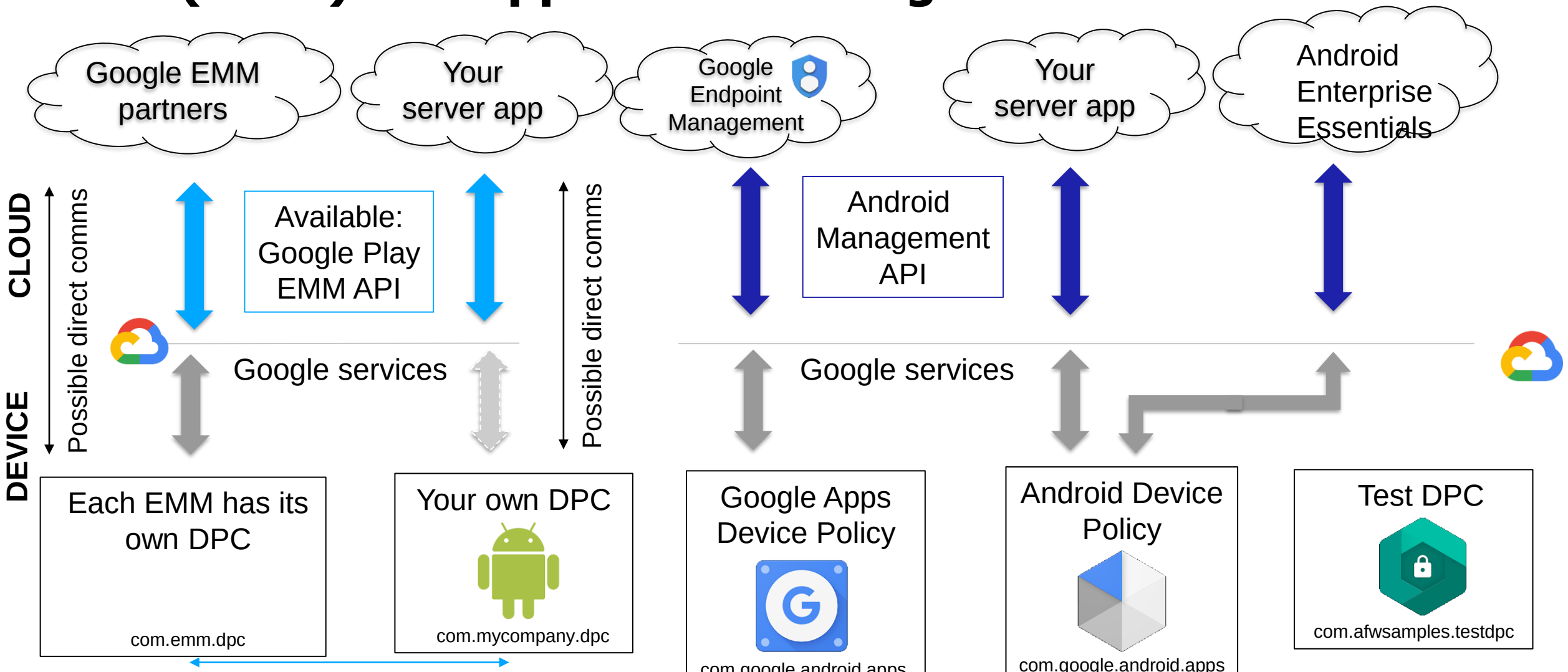

Requires membership of Google EMM community. Not open to new members.

EMM (MDM) and Application Management

Developer considerations when your app is controlled by an EMM

EMM (MDM) and Application Management

Configuration

- Consider **how** you configure your app today:
  - How do you expose application configuration?
  - Would you still want the app to be configured under an EMM?
- Consider **what** you configure in your app today:
  - Would the configuration be different under EMM?
  - Are there any features of your app you might want to disable when running under EMM?
  - Does my app collect data that an Enterprise device administrator might consider proprietary?

EMM (MDM) and Application Management

Managed Configurations

1. Define your application configurations (application restrictions) in XML
2. Supported types: Bool, String, Integer, Choice, Bundle
3. Check state of managed configs:
   - OnResume()
   - Listen for broadcast
4. Configure the application as appropriate

```
<resources>
    <!-- Bool restriction -->
    <string name="title_can_say_hello">Can say hello</string>
    <string name="desc_can_say_hello">Whether app can say Hello</string>
    <bool name="default_can_say_hello">false</bool>
</resources>
```

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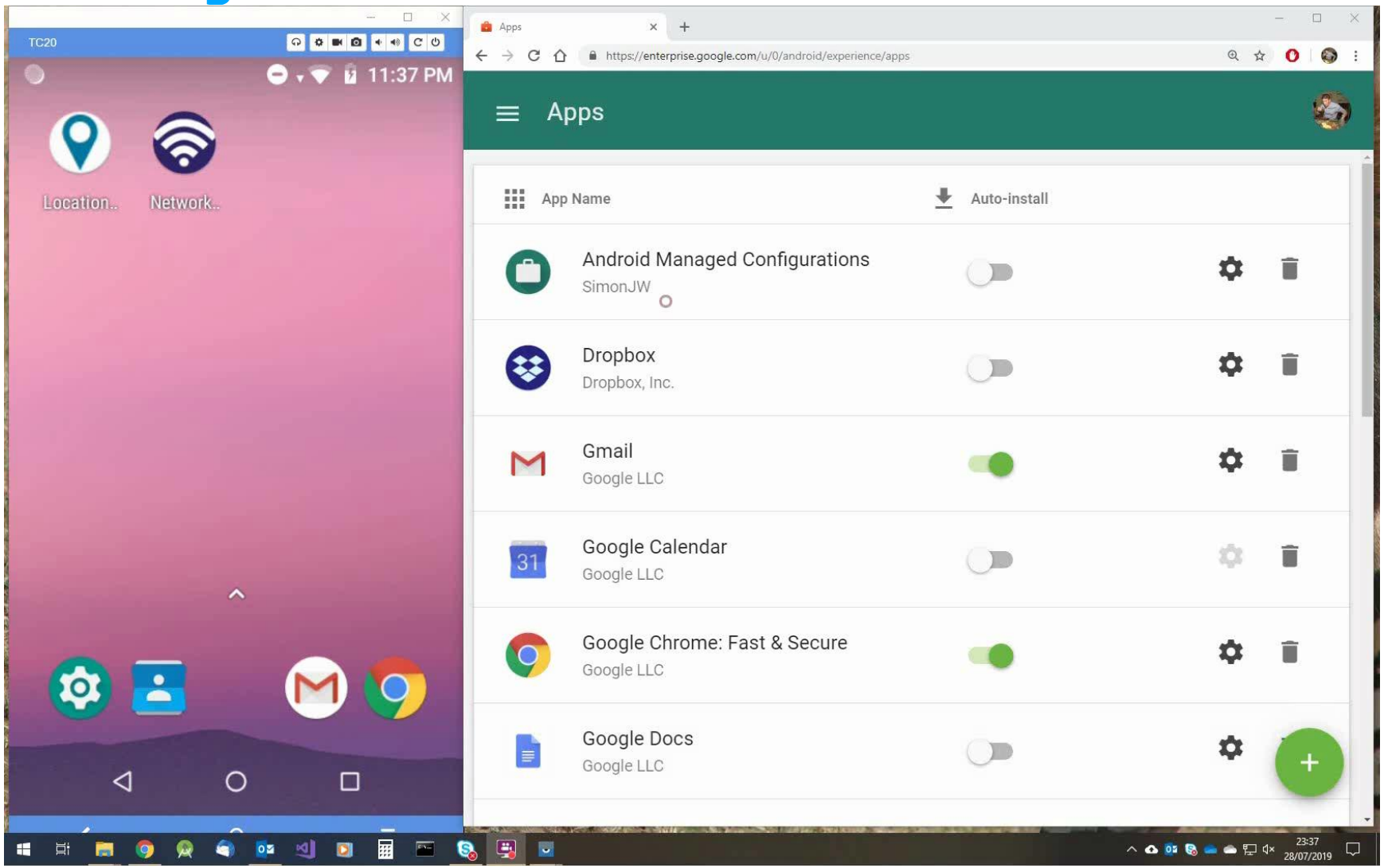
Managed Configurations



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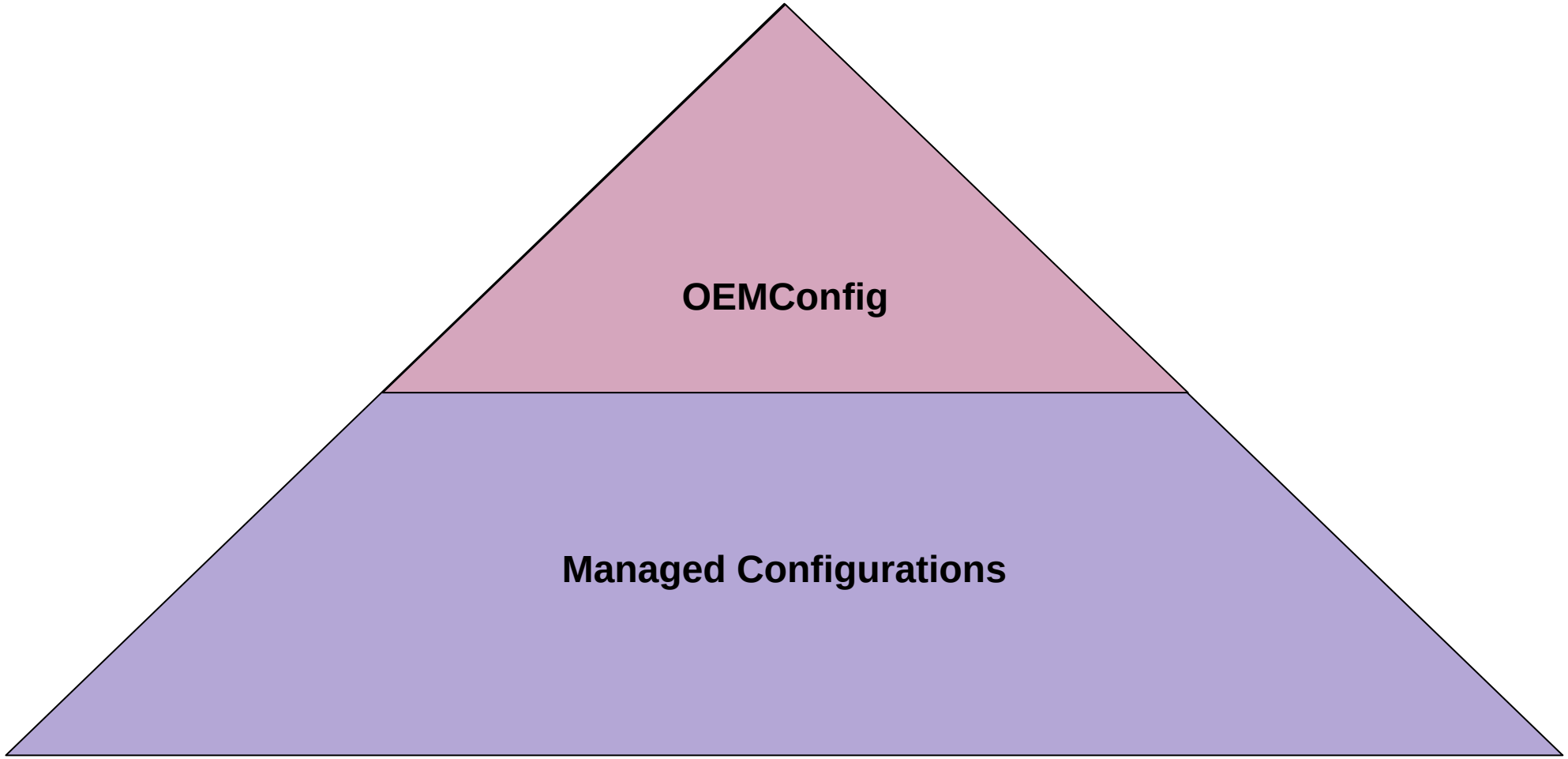
OEMConfig – Similarity between Managed config and OEMConfig



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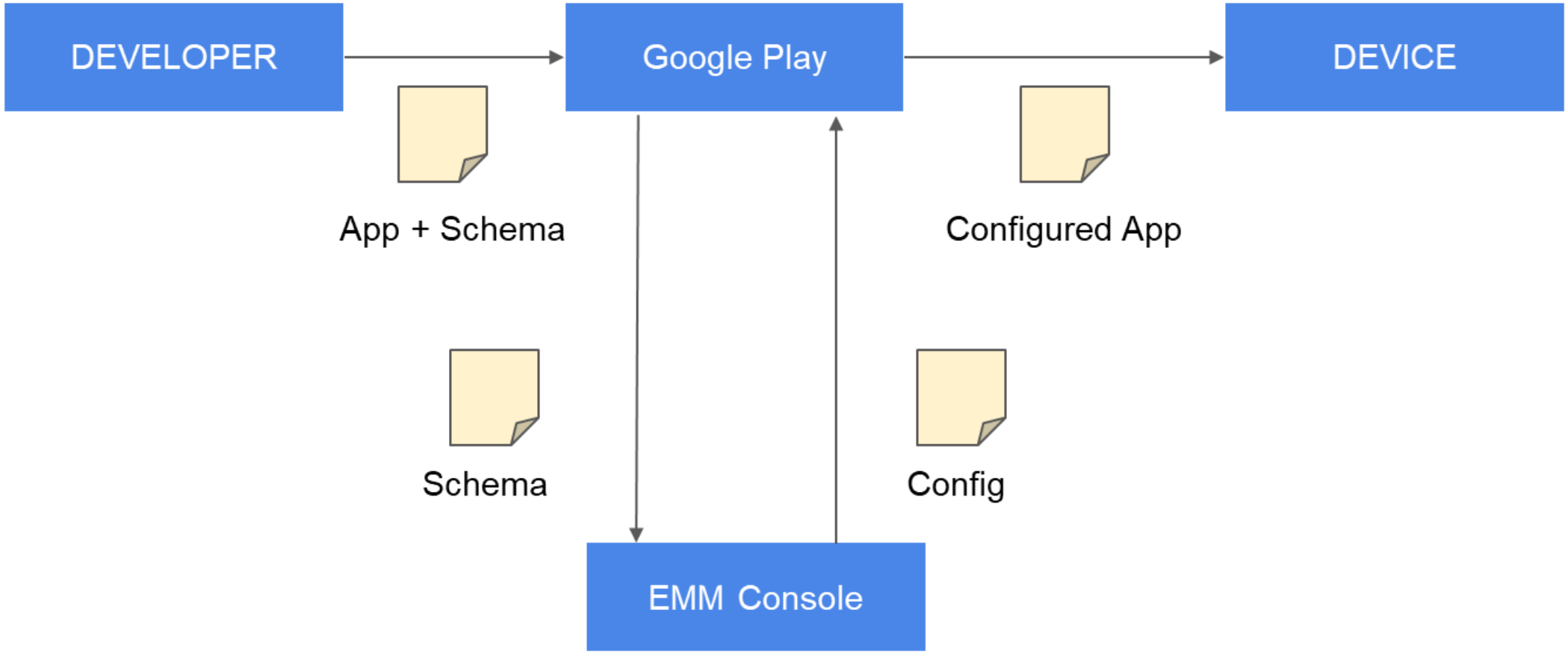

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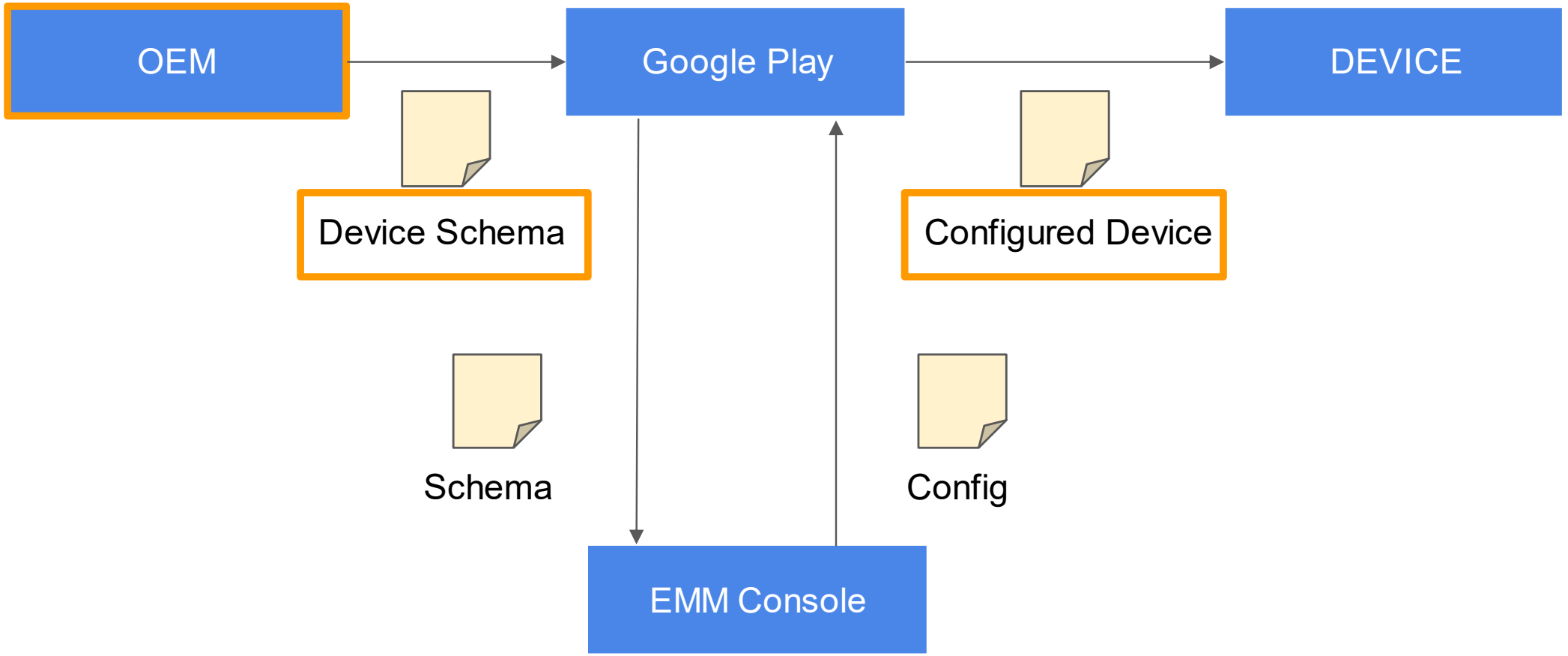

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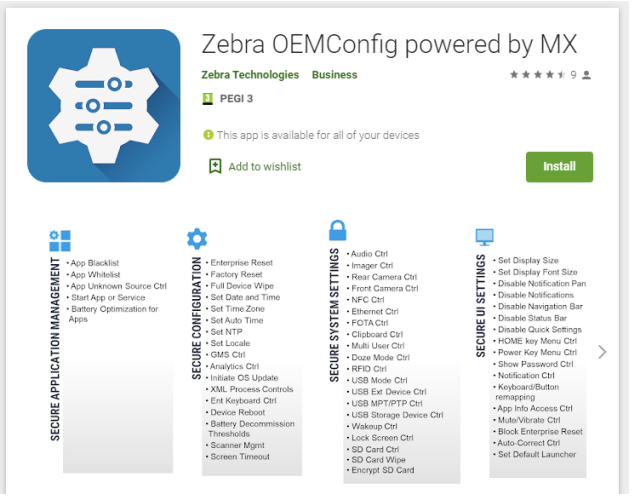
OEMConfig

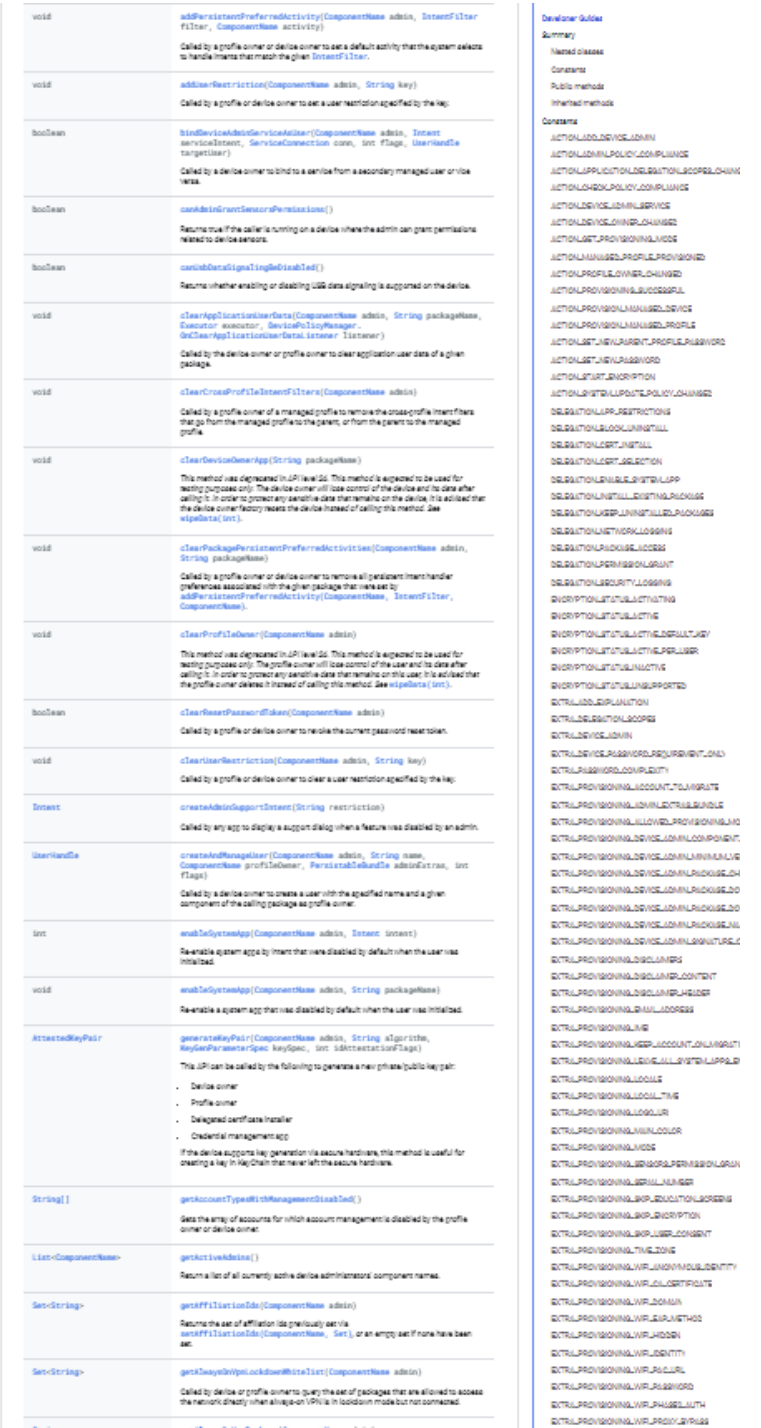


- Zebra's OEMConfig application is available on the Play Store:
  - https://play.google.com/store/apps/details?id=com.zebra.oemconfig.common
- Aim is to expose the full capabilities of Mobility eXtensions in an **industry standard** way
  - Can take full advantage of Zebra's Android enhancements for enterprise without specifically targeting Zebra devices or code changes.
- More information available on techdocs: https://techdocs.zebra.com/oemconfig/about/
- Compare with the documentation for MX in general: https://techdocs.zebra.com/mx/. There will be close parity.
- Options will also be visible from your EMM console. EMMs will have documentation on how to access OEMConfig from their platform, e.g. Intune, SOTI, WizzyEMM

EMM (MDM) and Application Management

Other development considerations

- The behaviour of the device may be locked down in unexpected ways
  - See Device Policy Manager for a full capabilities exposed to EMMs →
  - Examples:
    - Disable account sign-in
    - Disable camera
    - Disable backup
    - Disable location
    - & many more
- GMS services might not be available
- Settings screens might be restricted
- Notifications might be invisible



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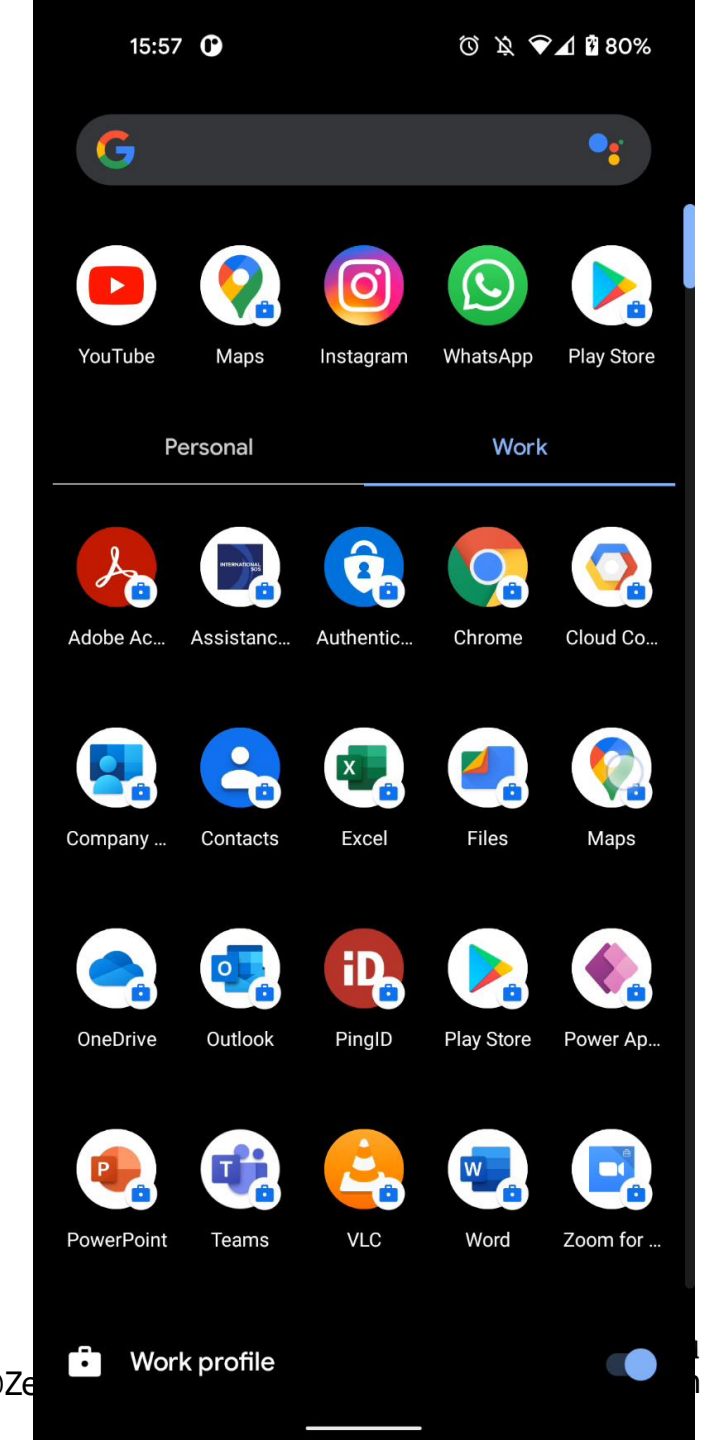

EMM (MDM) and Application Management

How to share a file with a specific app using SSM

- Before Scoped Storage: EMMs would download files required by applications, e.g. configuration files, and place them in a world-writeable location. The application would then read the file.
- With Scoped Storage: It is no longer possible for an EMM to place a file into a world-writeable location (touch-free) since these locations have been removed.
- Problem: How to meet the use case of an EMM sharing files with applications?
- The solution: Share files from the EMM client app to the customer app using Android File Provider

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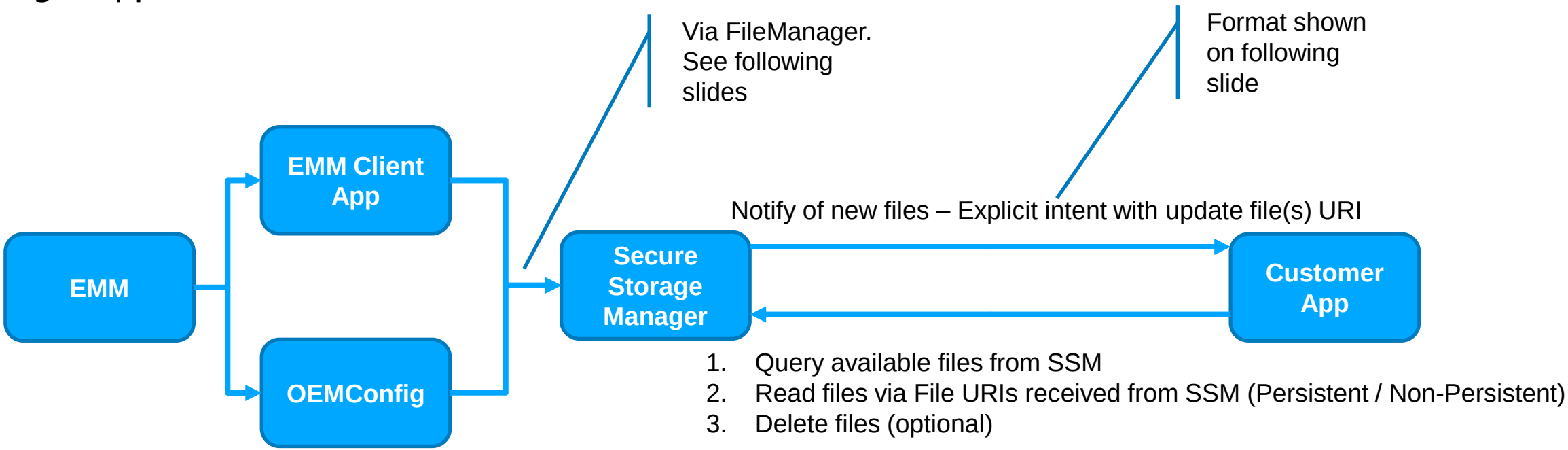
How to share a file with a specific app using SSM

The EMM app will make use of Zebra's Secure Storage Manager to exchange data securely to the target application



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How to share a file with a specific app using SSM

Format of explicit intent sent from Secure Storage manager to customer app

Extra Key	Description	Example
filename	Filename or relative file path	Config.json or /config/Config.json
URI	content://com.zebra.securestoragemanager/config/Config.json	
isdir	Whether the file uri points to a directory or file.	True or false
crc	Check sum of the file. This can be checked by applications to see whether they already process this file or not.	

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How to share a file with a specific app using SSM

How to specify the file to share from your EMM

Existing File Manager CSP has been enhanced. Can be defined via:

- OEMConfig (for EMM) or StageNow

New Action: *Deploy file for an application*

Properties to define: *Target application package*, *Target application signature*.

For more information on defining signatures I suggest https://github.com/darryncampbell/MX-SignatureAuthentication-Demo

Additional options: Whether the file should persist across enterprise reset

Define file as: On a remote server, on the device (subject to scoped storage restrictions), embedded

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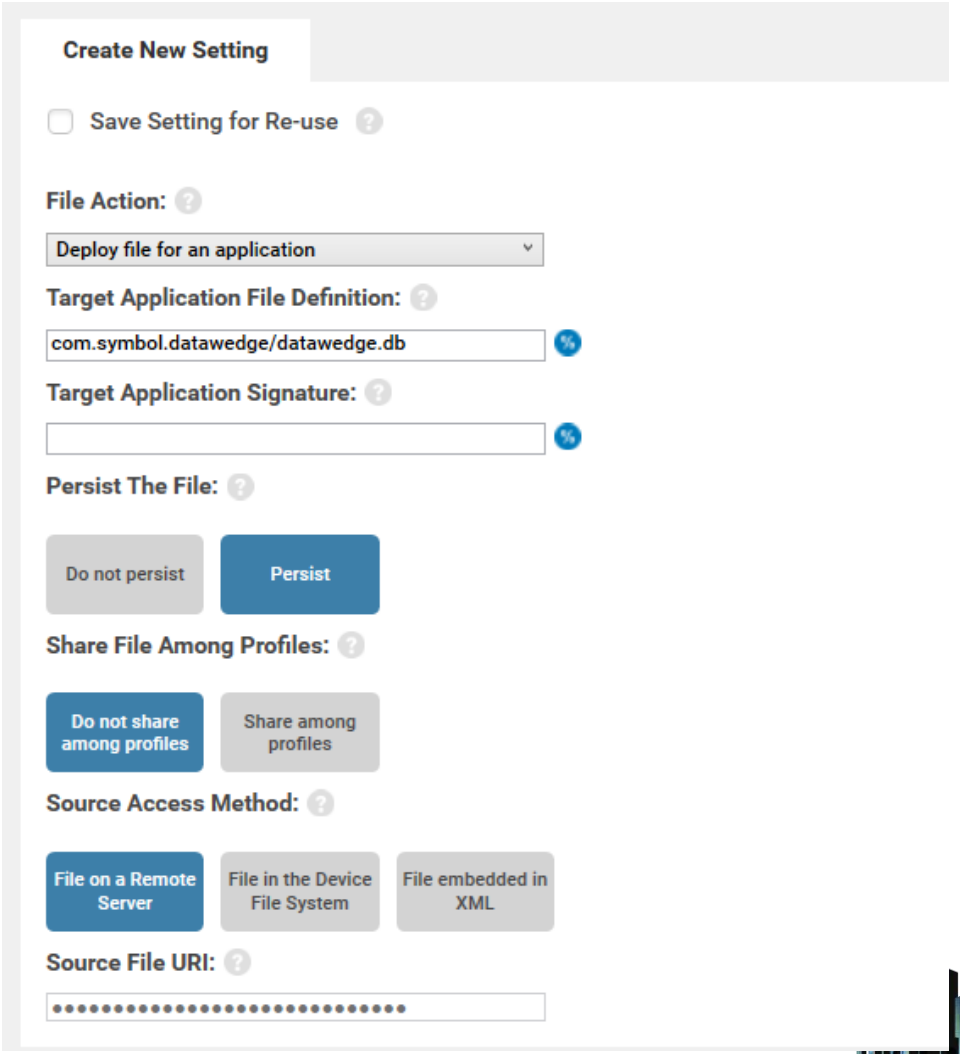
How to share a file with a specific app using SSM

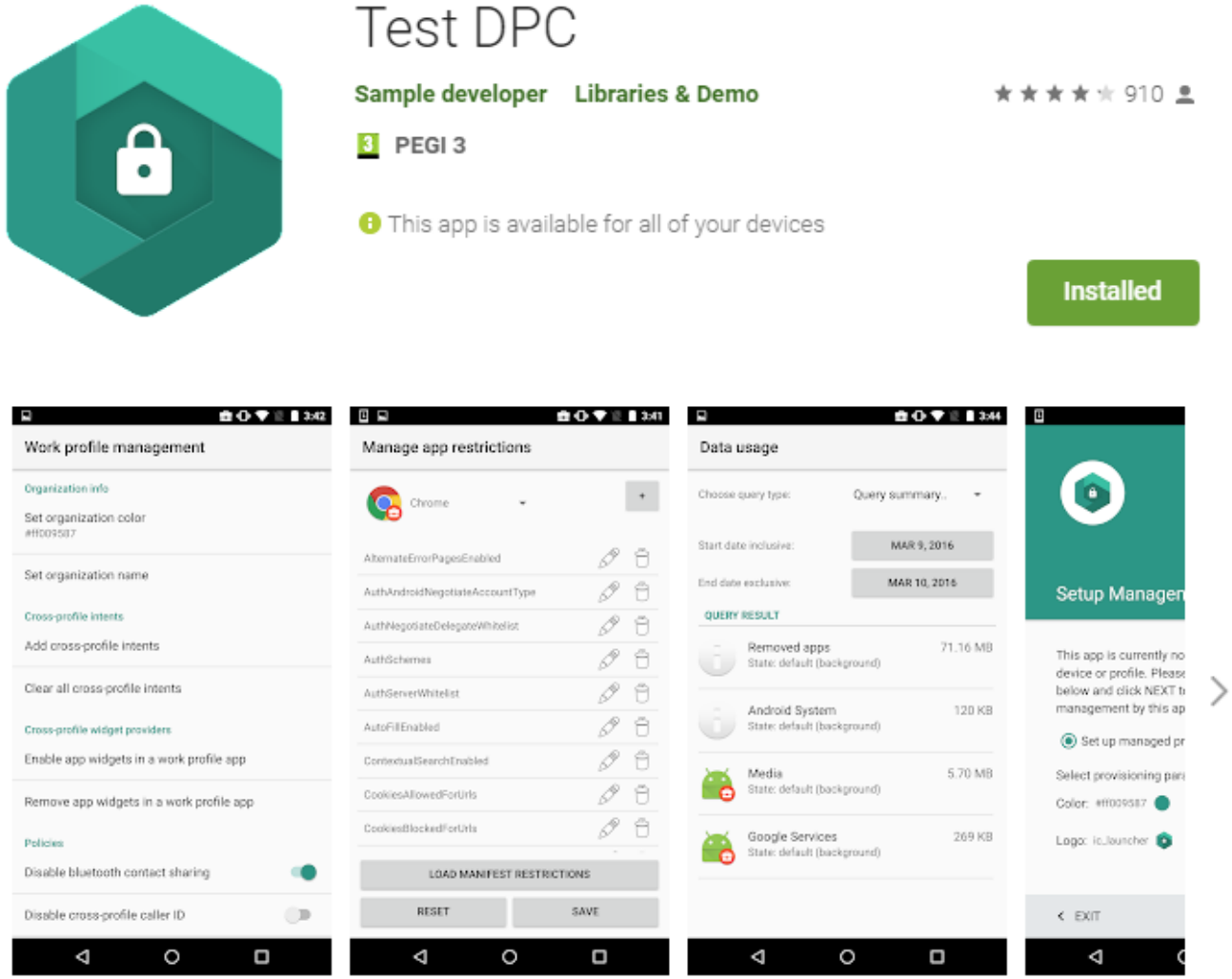
How to specify the file to share from StageNow



EMM (MDM) and Application Management

Testing your app: Test DPC

- Test DPC is available in the Play Store and on github
- Set to Device Owner as follows: `adb shell dpm set-device-owner "com.afwsamples.testdpc/.DeviceAdminReceiver"`
- Be mindful of the difference between work profile and device owner
- Test DPC exposes (pretty much) the full capabilities that are available to an EMM, but runs entirely on-device.



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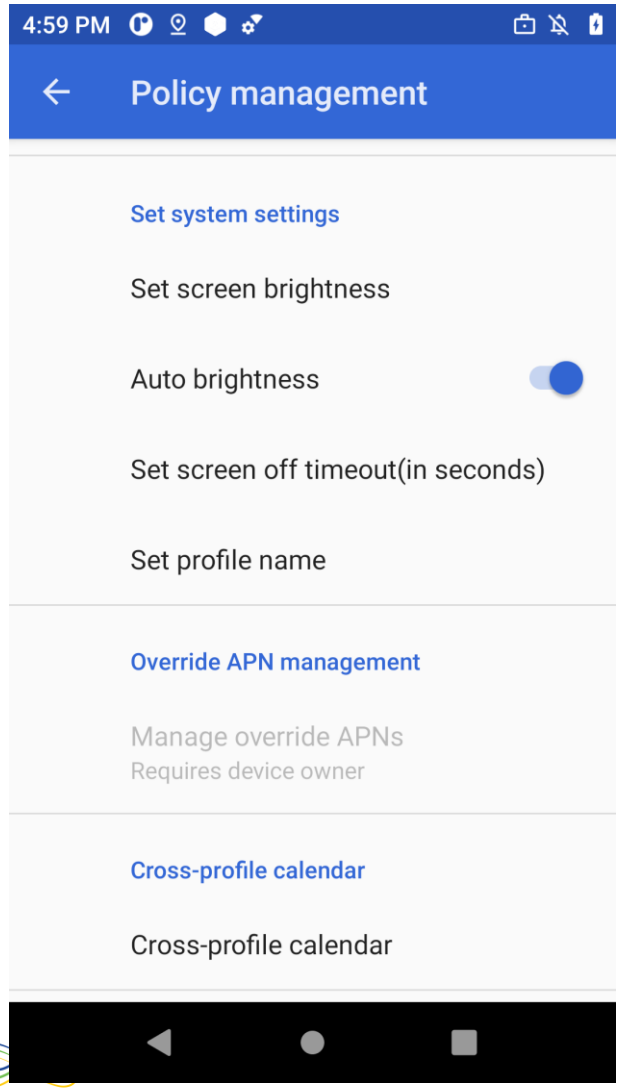
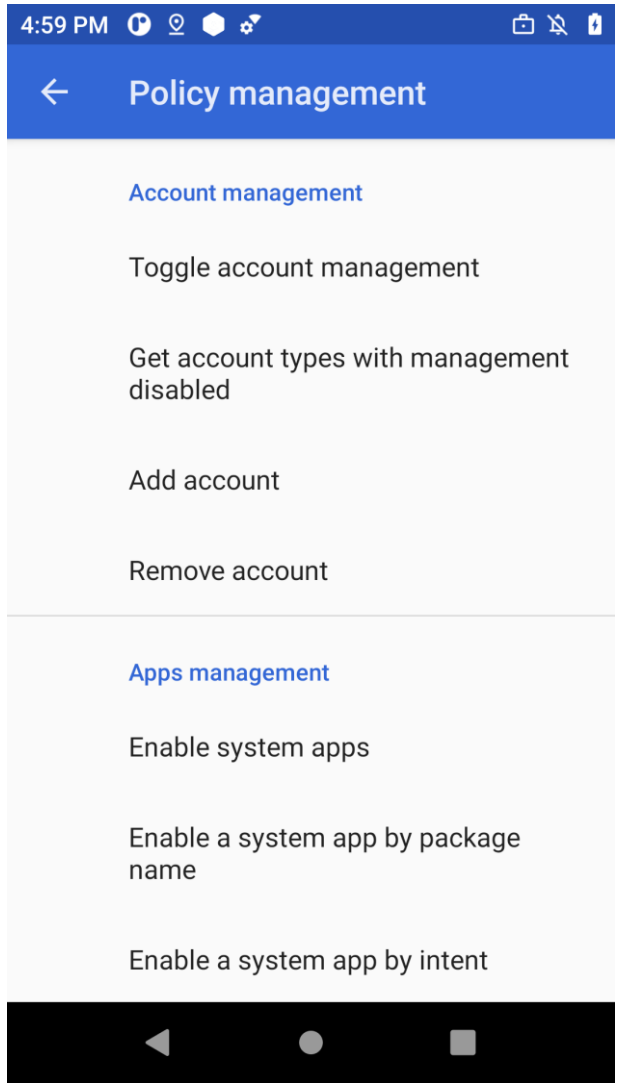
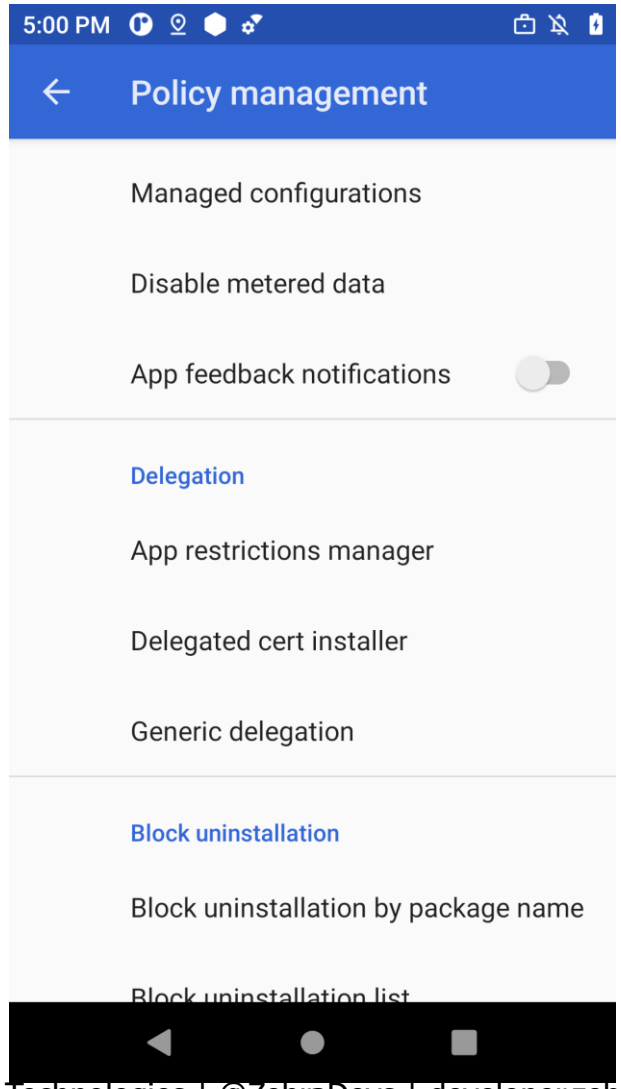
Testing your app: Test DPC







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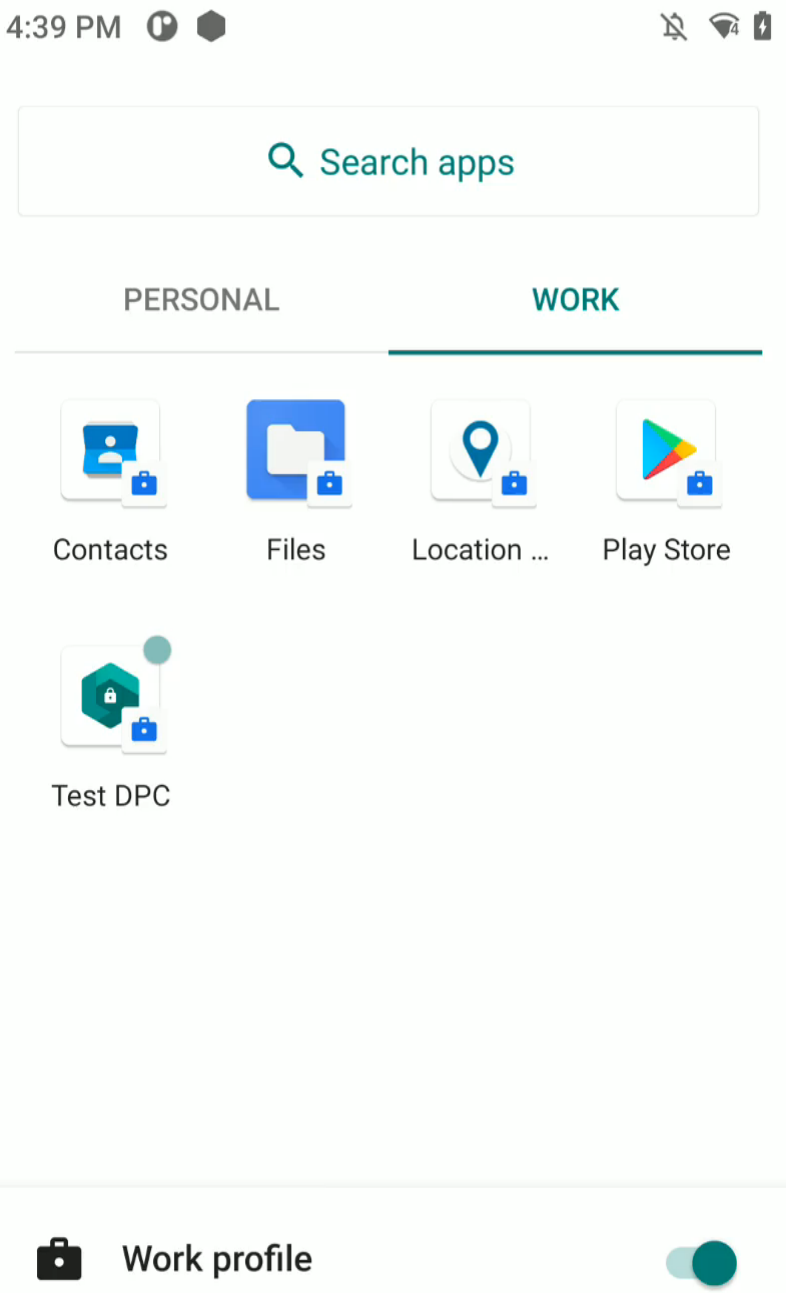
Testing your app: Test DPC

Example:

- **Video shows an application managed by the Work Profile but the principle is the same for a fully managed device.**
- Application installed into Work Profile which accesses location
- Will request location permission when launched
- In work profile, expect location permission to be pre-granted
- Use Test DPC to specify the pre-approved runtime permissions



EMM (MDM) and Application Management

Resources

- Android Enterprise Recommended: https://www.android.com/intl/en_uk/enterprise/

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Questions?

https://developer.zebra.com

Zebra Developers Community – LinkedIn Group

@ZebraDevs

https://github.com/ZebraDevs

Thank You

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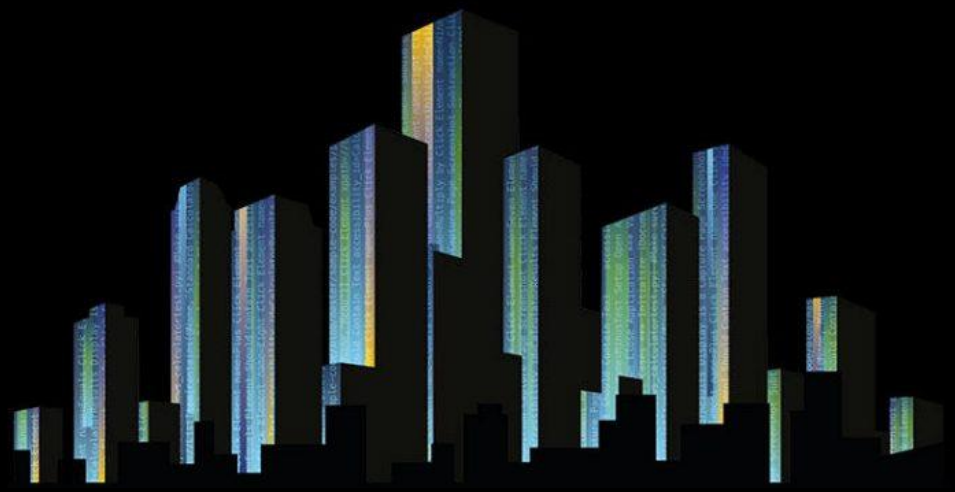

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