



MC2MC

Optimizing Healthcare efficiency with Android
enterprise & Intune

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● Focus:

- Enterprise Mobility – Intune
- Android Enterprise

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Horses

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UZ Leuven & Android

Android devices in healthcare today

Overview

- Android devices in UZ Leuven today
- App management
- OEMconfig
- Troubleshooting
- Fota
- Future



SAMEN
GRENZEN
VERLEGGEN



11000 employees



3 Campuses



776 000
consultations



60 000 surgeries



130 000
day admissions



15000 devices



Android:

- Today: 500
- End of 2025: 750
- 2030: 3000 +/-



Android Enterprise today

Zebra dedicated
devices (Kiosk)



Patient bedside
alarm



Digitalisation
Patient Transport



Tablets & smartphones
Specific use cases



Digitalisation ambulances

Kiosk

Device Restrictions

Why Kiosk (Device Restrictions)

- Shared devices
- Specific purpose
- Privacy
 - Locked user
 - Locked settings
 - Camera & Gallery disabled

Kiosk (Device Restrictions)



Configuration settings [Edit](#)

^ General

Default permission policy (work profile-level)	Auto grant
Developer settings	Allow
System update	Maintenance window
Start time	9:00 PM
End time	6:30 AM
Factory reset	Block
Skip first use hints	Enable
System error warnings	Allow
System notifications and information	Show system notifications and information in device's status bar

Kiosk (Device Restrictions)

^ Device experience

Device experience type

Kiosk mode

Home screen

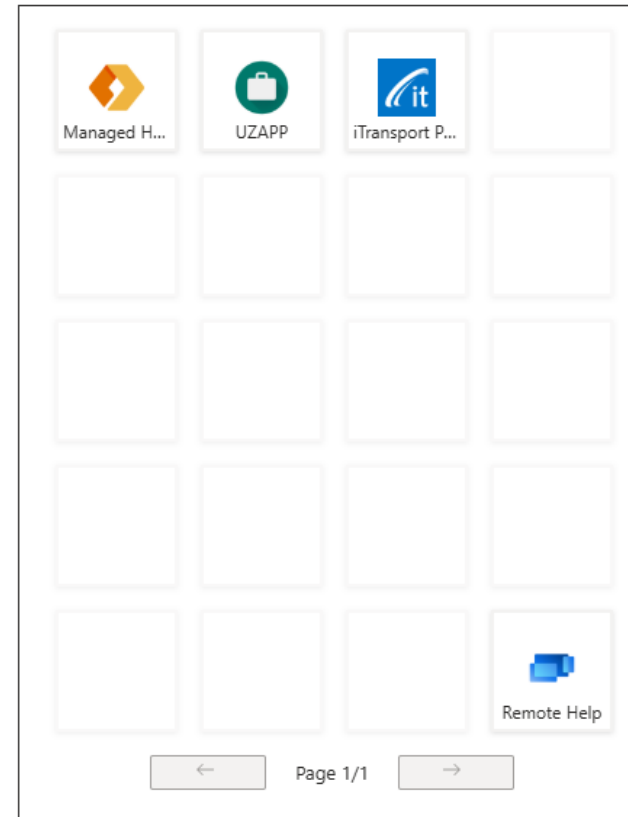


Kiosk mode (dedicated and fully managed)

Multi-app

Lock home screen

Home Screen



Kiosk (Device Restrictions)



Wi-Fi configuration	Enable
Bluetooth configuration	Enable
Flashlight access	Enable
Media volume control	Enable
Quick access to device information	Enable

^ Power Settings

Screen on while device plugged in	AC, USB, Wireless
-----------------------------------	-------------------

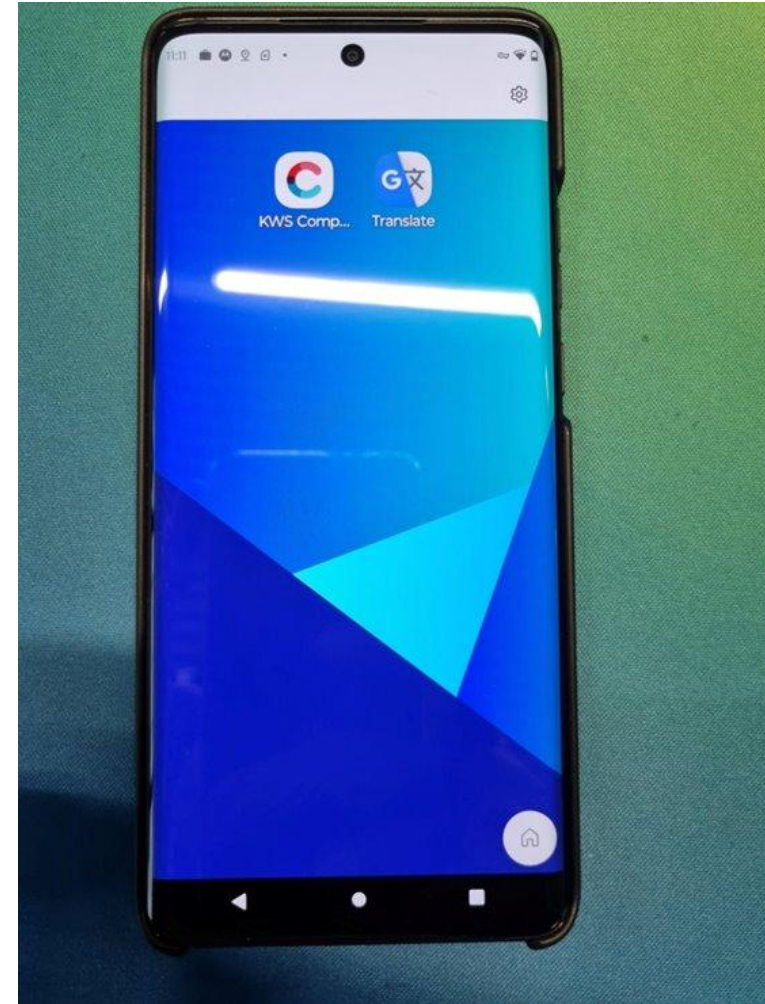
^ Users and Accounts

Add new users	Block
User can configure credentials (work profile-level)	Block
User removal	Block
Personal Google accounts	Block
Account changes	Block

^ Applications

App auto-updates (work profile-level)	Always
---------------------------------------	--------

Dedicated (kiosk) devices



App Management



App Deployment

Public Google Play Store iframe

[Home](#) > [Apps | Android](#) > [Android | Android apps](#) >

Managed Google Play ...

 Sync

 Google Play 



4,5+ ★

Keuze van de redactie

Nieuw



Meta Business Suite
Meta Platforms, Inc.

★★★★★



LinkedIn: Vacature
LinkedIn

★★★★★



YouTube Studio
Google LLC

★★★★★



Indeed Vacatures Z
Indeed Jobs

★★★★★



Slack
SLACK TECHNOLOGI

★★★★★



QuickBooks Small
Intuit Inc

★★★★★



PhonePe Business
PhonePe

★★★★★



Udemy Business
Udemy

★★★★★



Anargya Assessme
Hara Anargya

★★★★★



inDrive: Stel je tarie
© SUOL INNOVATIONS

★★★★★



Uber Driver - voor c
Uber Technologies, Inc.

★★★★★



ADP Mobile Solutio
ADP, INC.

★★★★★



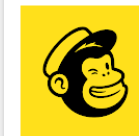
PayPal Business
PayPal Mobile

★★★★★



SAMEDAY App
Delivery Solutions (Sam

★★★★★



Mailchimp Email M
Mailchimp

★★★★★



Shopify - Je eigen
Shopify Inc.

★★★★★



DoorDash - Dasher
DoorDash

★★★★★



Square Register
Block, Inc.

★★★★★

Google Play

App Deployment

Private Google Play Store iframe

- Upload APK
- Tenant tot Tenant push via Google Play Console



[Home](#) > [Apps | Android](#) > [Android | Android apps](#) >

Managed Google Play ...

[Sync](#)

 Google Play



Je e-mailadres is

[Updaten](#)

Privé-apps



pediuz
Nog niet beschi...



uzapp test
Nog niet beschi...



Mindray M...



Nirvana_da...



Safox Beta



UZAPP

App Deployment



Vendor Challenges

- Unique Application ID
- Max 100mb
- Not built for enterprise environment
 - Security standard
 - App ID

Application ID / VersionCode & -Name



Google Play

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <manifest
3   xmlns:android="http://schemas.android.com/apk/res/android"
4   android:versionCode="82"
5   android:versionName="1.3.14.beta"
6   android:compileSdkVersion="34"
7   android:compileSdkVersionCodename="14"
8   package="be.alexanderkrie.iek.e.beta"
9   platformBuildVersionCode="34"
10  platformBuildVersionName="14">
11
12  <uses-sdk
13    android:minSdkVersion="21"
14    android:targetSdkVersion="30" />
15
16  <uses-feature
17    android:name="android.hardware.nfc"
18    android:required="false" />
19
20  <uses-permission
21    android:name="android.permission.NFC" />
22
23  <uses-permission
```

App Configuration Policies

- Protect Data
- App Restrictions

App Config via Intune

+Add

Permission ↑↓	Permission state ↑↓	Permission name ↑↓	Permission group ↑↓
Camera	Auto grant ▼	CAMERA	CAMERA ...

Configuration Settings

Configuration settings format ⓘ Use configuration designer ▼

Use the JSON editor to configure the disabled configuration keys.

+Add

Configuration key	Value type	Configuration value	Description
Incognito mode availabil...	choice	0	Specifies whether the user ma... ...
Allow access to a list of ...	string	["UZLeuven.be","https://...	Setting the policy provides acc... ...
Block access to a list of ...	string	["*"]	Setting the URLBlocklist policy... ...
Configure the home pag...	string	https://www.uzleuven.be...	Setting the policy sets the def... ...

Connected apps

Enable users to connect this app across the work and personal profiles ⓘ

Enabled

Not configured

App Config via Intune

Edit app configuration policy ...

1 Settings 2 Review + save

Permissions

Permissions granted here will override the "Default app permissions" policy for the selected apps.

[Learn more about Android runtime permissions](#)

+Add

Permission ↑↓	Permission state ↑↓	Permission name ↑↓	Permission group ↑↓
Post notifications	Auto grant ▼	POST_NOTIFICATIONS	NOTIFICATIONS

Configuration Settings

Configuration settings format ⓘ

Use the JSON editor to configure the disabled configuration keys.

+Add

Configuration key	Value type	Configuration value	Description
Mobility Server Port	integer	9 [REDACTED]	
Mobility Server Hostname	string	pr [REDACTED]	
Primary Server Hostname	string	pr [REDACTED]	
Primary Server Port	integer	52 [REDACTED]	

Connected apps

Enable users to connect this app across the work and personal profiles ⓘ

Enabled

Not configured

This setting only works for corporate-

Review + save

Cancel

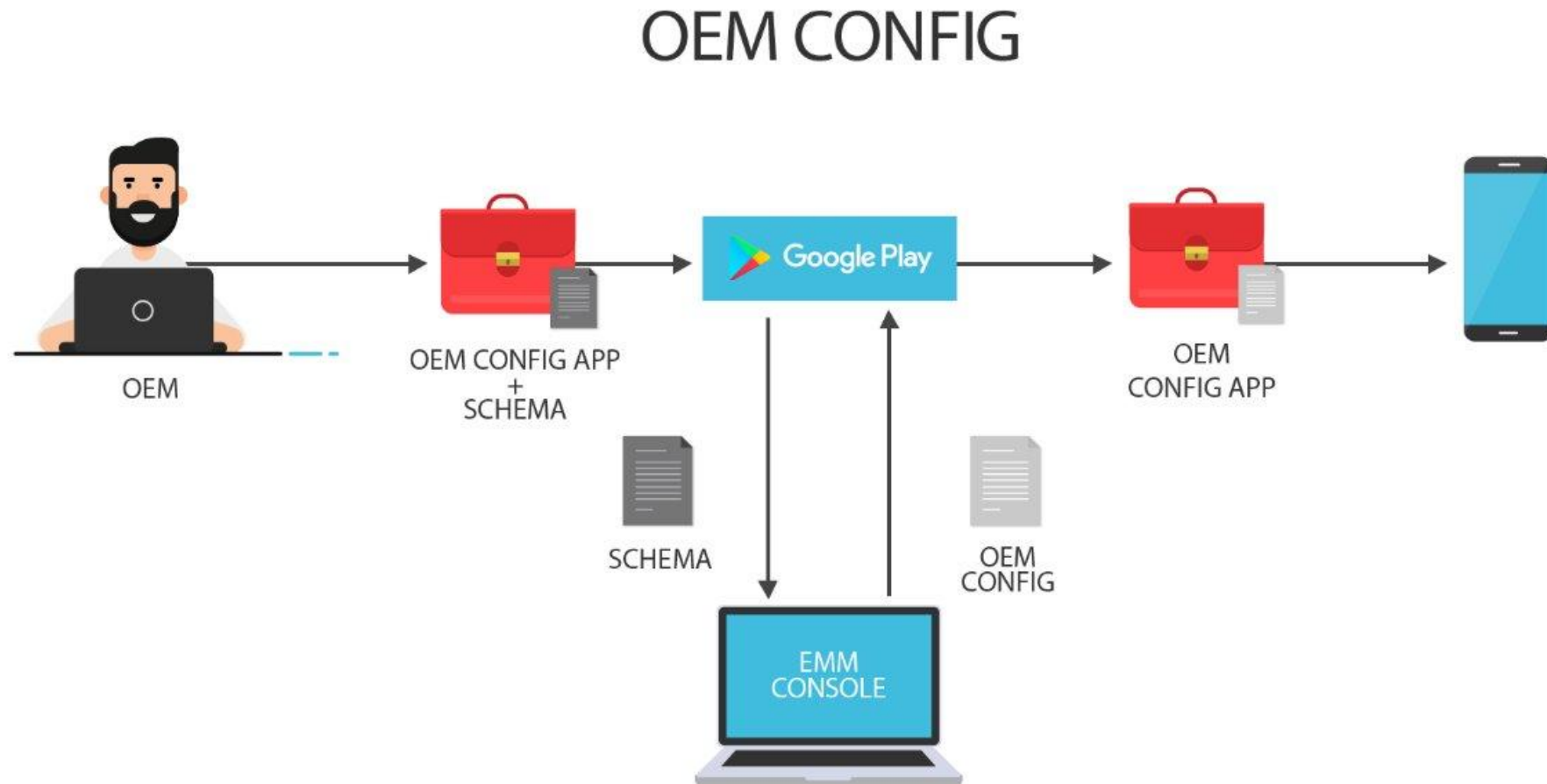
OEMConfig

OEMConfig Overview



- Vendor/ manufacturer advanced settings
- Beste practices
- Specific : Runtime permissions & key configuration

OEMConfig



OEMConfig

Home > Devices | Android > Android

Android | Configuration

Search

Android devices

Monitor

Device onboarding

Enrollment

Manage devices

Configuration

Policies

+ Create Refresh Export Columns

Search



Platform: Android device administrator, Android (AOSP), An...



Policy name ↑

Platform ▾

Policy type

Create a profile



Platform

Android Enterprise



Profile type

Select profile type



OEMConfig

Fully Managed, Dedicated, and Corporate-Owned Work Profile

Derived credential

Device restrictions

OEMConfig

■ Specific use cases and their configuration

Edit Profile

OEMConfig

Configure settings with

Configuration designer

Settings

Locate

- ✓ Zebra OEMConfig Powered by MX
 - ✓ Package Configuration
 - ✓ Package
 - ✓ Feature Variances
 - Feature Variance
 - ✓ System Configuration
 - Clock Configuration
 - ✓ UI Configuration
 - Display Configuration
 - Size and Rotation Configuration

Size and Rotation Configuration

Open to configure Allowed Orientations, Locked Orientation Positions, Rotation Mode, Auto-Landscape External Display, Display Size, Font Size, and Lock Override Button.

Allowed Orientations

Do Not Change

Clear

Locked Orientation Positions

Portrait (No rotation)

Clear

Rotation Mode

Manual

Auto-Landscape External Display

Do not change

Display Size

Do not change

Font Size

Do not change

Lock Override Button

Do not change

Settings

Locate

Zebra OEMConfig Powered

Power Configuration

Select whether the Display Power State will be forced to remain On whenever the device is connected to external power. Not supported on Device(s): TC20 and TC25. Supported from: MX 7.2

Behaviors

Behavior

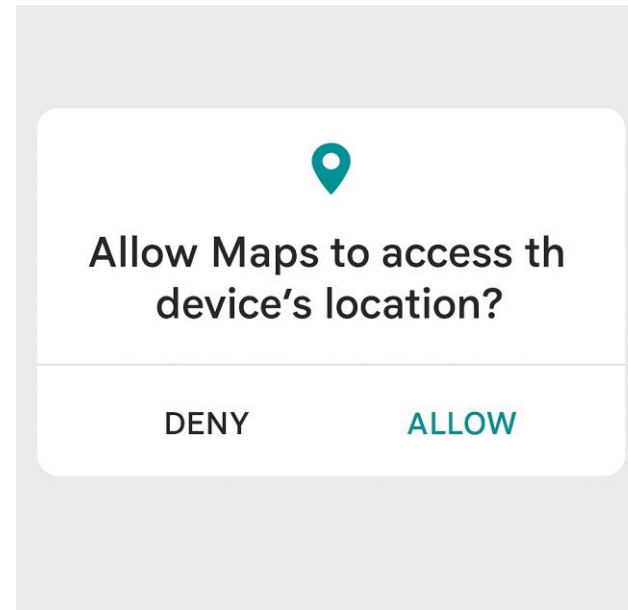
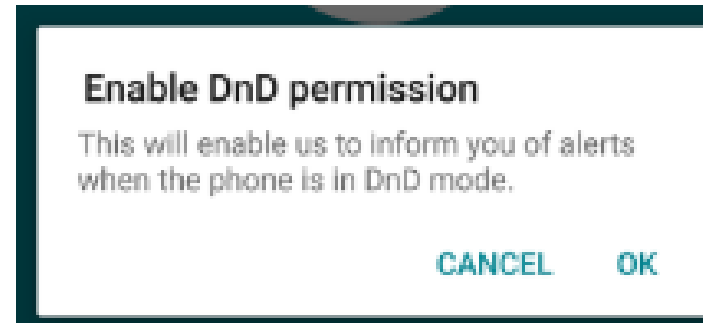
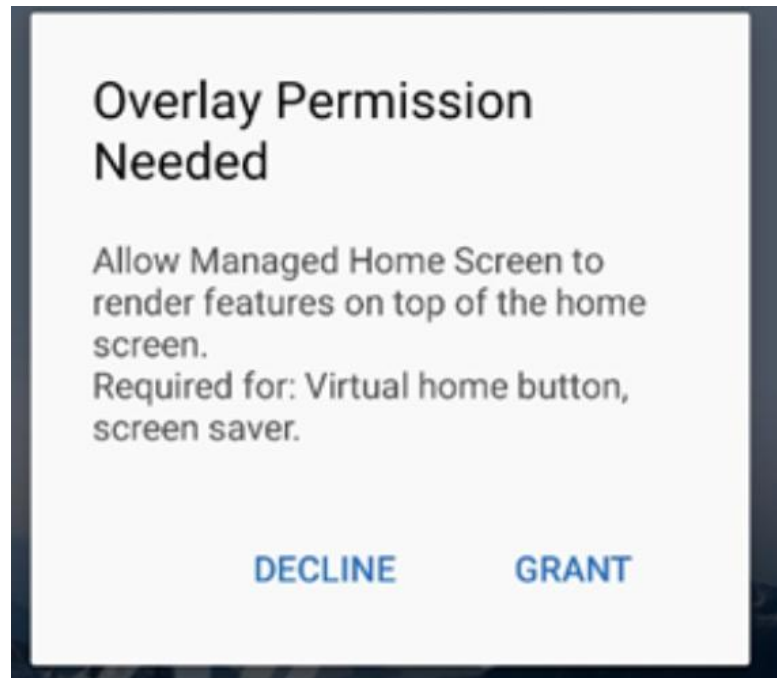
Stay Awake

Timeout

Do not change

2 minutes

OemConfig – Runtime Permissions



OemConfig – Runtime Permissions

Summary of best practices for automating permissions in Intune: use OEMconfig where you can

Action	Where to configure	example
Auto grant standard permissions	Device restriction profile – auto grant app permission (not for dedicated or fully managed)	CAMERA
Auto grant app specific permissions	App configuration policy (Android 9 +, and if app supports it)	MICROPHONE, ACCES_FINE_LOCATION
Auto grant special permissions	OEMConfig	PACKAGE_USAGE_STATS (track app usage, parental control for example)
Auto Approve SYSTEM_ALERT_WINDOW Special permission (!)	OEMConfig	SYSTEM_ALERT_WINDOW (overlay permission)
ALL (dangerous) permissions (most inclusive)	OEMConfig	Location permissions, storage permissions, camera, microphone...

1

OEMConfig – Runtime Permissions

- Manage Runtime Permissions via OEMConfig
 - Prerequisites
- Zebra Developer Page:
 - <https://developer.zebra.com/blog/auto-grant-android-dangerous-permissions-zebra-devices>

OEMConfig – Runtime Permissions

fig_PhilipsCare_test | Properties ...

scope tags [Edit](#)
«

Default

Configuration settings [Edit](#)

Package Configuration



Package

Package Name

com.philips.CareTouch.B00

Package

MIID4TCCAsmgAwIBAgIEdSrPcTANBgkqhkiG9w0BAQsFADCBODELMAk

Signing

Certificate

Permissions

Permission

Name

System Alert Window

State

Grant

Package 1

OEMConfig – Runtime Permissions

fig_PhilipsCare_test | Properties ...

scope tags edit

<<

Default

Configuration settings Edit

Package Configuration

Package

Package Name

com.philips.CareTouch.B00

Package

MIID4TCCAsmgAwIBAgIEdSrPcTANBgqhkiG9w0BAQsFADCBo

Signing

Certificate

Permissions

Permission

Name

System Alert Window

State

Grant

Package 1

s/details?id=com.philips.CareTouch.B00&hl=en

Philips Care Assist

Koninklijke Philips N.V.

10K+
Downloads

3
PEGI 3

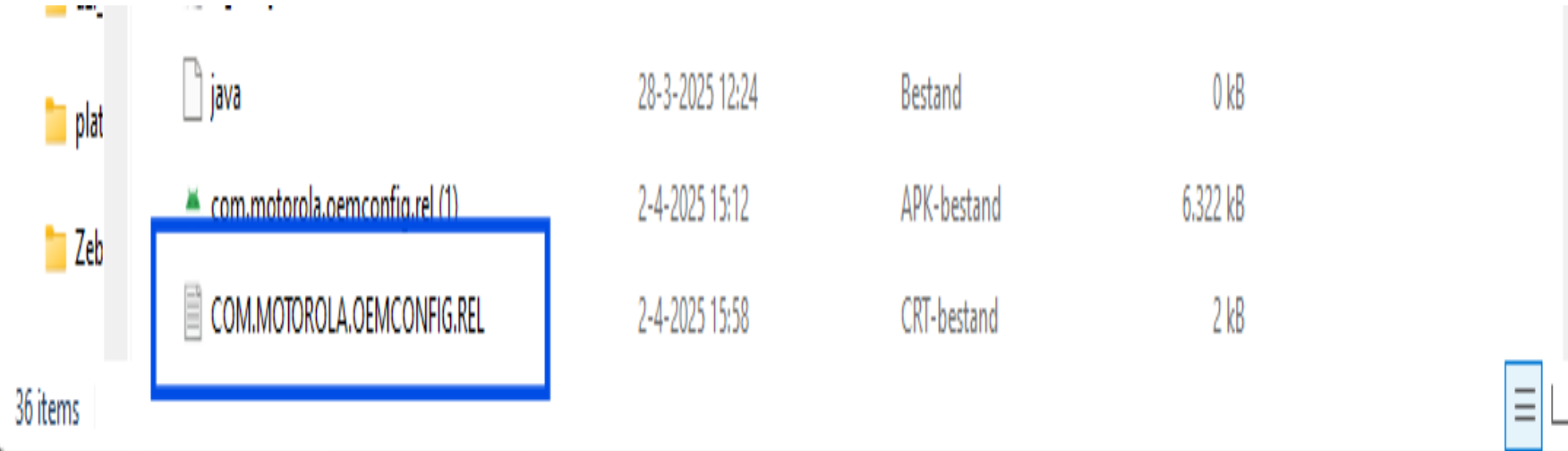
Install

Share

Add to wishlist



Sigtool



java	28-3-2025 12:24	Bestand	0 kB
com.motorola.oemconfig.rel (1)	2-4-2025 15:12	APK-bestand	6.322 kB
COM.MOTOROLA.OEMCONFIG.REL	2-4-2025 15:58	CRT-bestand	2 kB

```
c:\uz\Temp\platform-tools_r35.0.0-windows\platform-tools>
```

```
c:\uz\Temp\platform-tools_r35.0.0-windows\platform-tools>java -jar SigTools.jar GetCert -INFORM APK -OUTFORM BASE64 -IN "com.motorola.oemconfig.rel".apk -OUTFILE "com.motorola.oemconfig.rel".crt
```

```
c:\uz\Temp\platform-tools_r35.0.0-windows\platform-tools>
```

OEMConfig – Runtime Permissions

fig_PhilipsCare_test | Properties ...

scope tags [Edit](#)
«

Default

Configuration settings [Edit](#)

Package Configuration



Package

Package Name

com.philips.CareTouch.B00

Package

MIID4TCCAsmgAwIBAgIEdSrPcTANBgkqhkiG9w0BAQsFADCBODELMAk

Signing

Certificate

Permissions

Permission

Name

System Alert Window

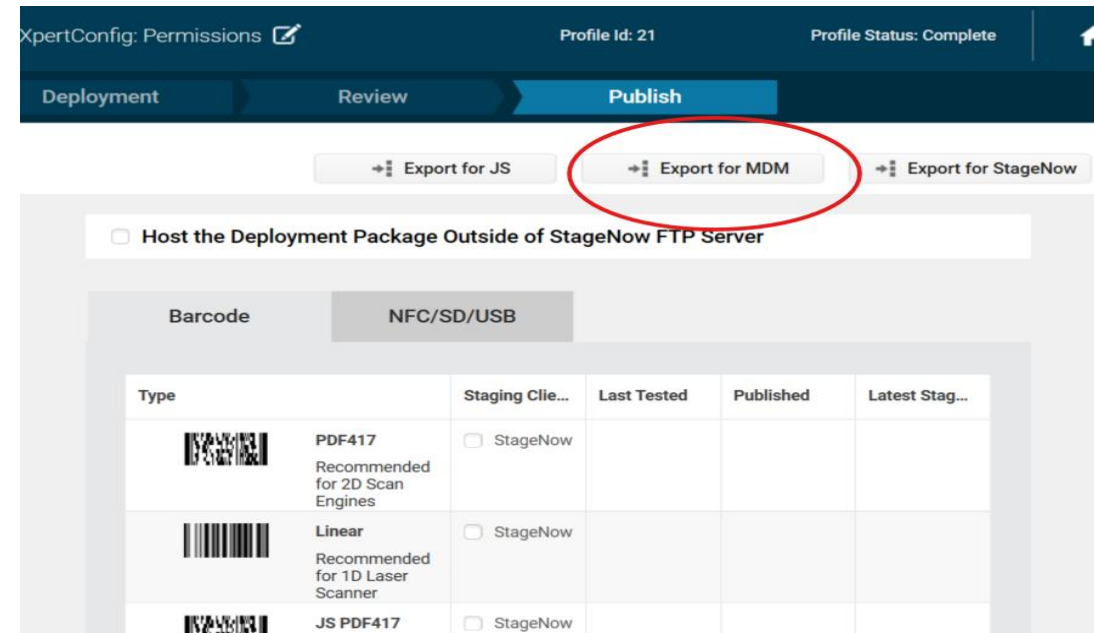
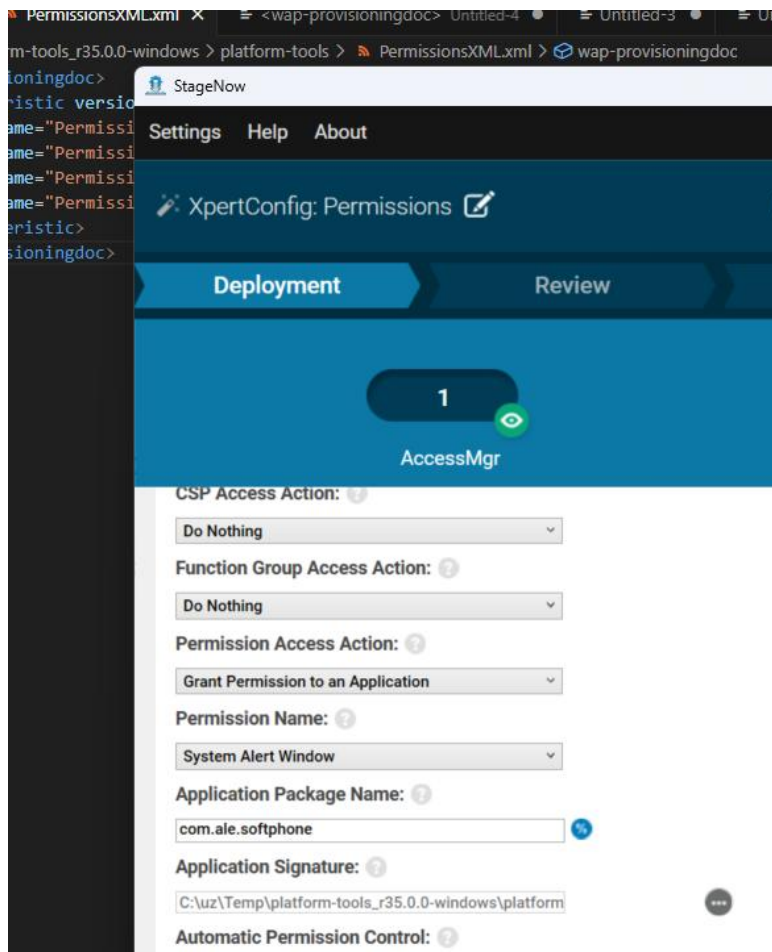
State

Grant

Package 1

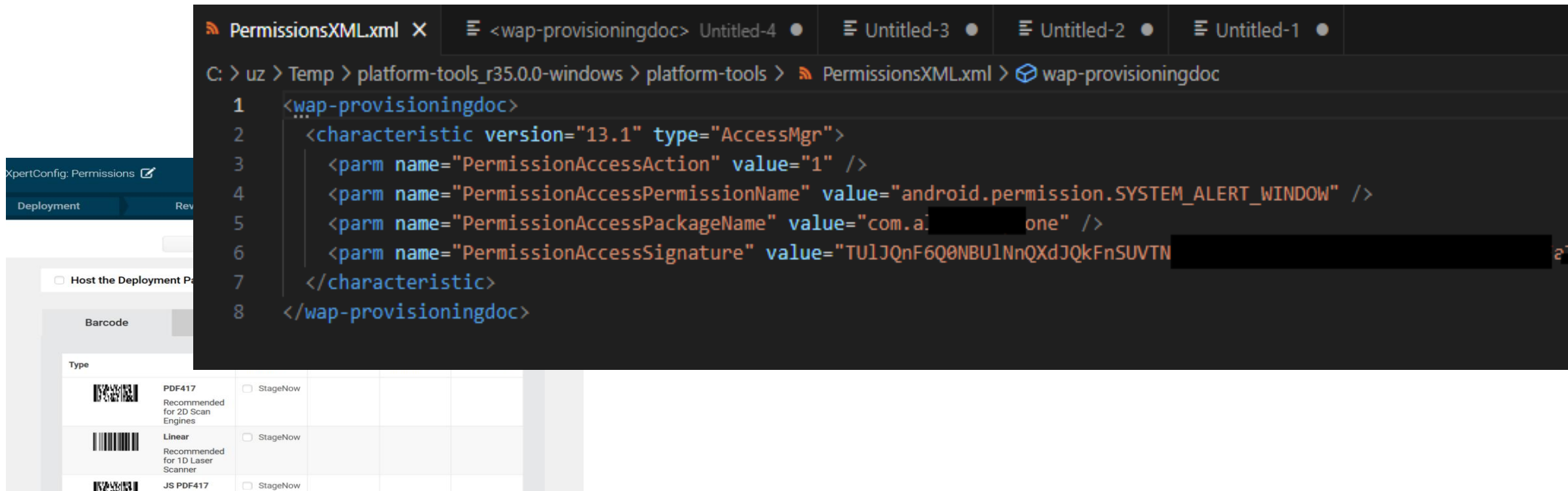
OEMConfig – Runtime Permissions

- XML passthrough command



OEMConfig – Runtime Permissions

- XML passthrough command



The screenshot displays the XpertConfig: Permissions interface on the left and a code editor on the right. The interface includes a 'Deployment' tab, a 'Barcode' section, and a table with columns for 'Type', 'Barcode', 'Recommended for 2D Scan Engines', 'Recommended for 1D Laser Scanner', and 'StageNow'.

The code editor shows the XML passthrough command for runtime permissions:

```
<wap-provisioningdoc>
  <characteristic version="13.1" type="AccessMgr">
    <parm name="PermissionAccessAction" value="1" />
    <parm name="PermissionAccessPermissionName" value="android.permission.SYSTEM_ALERT_WINDOW" />
    <parm name="PermissionAccessPackageName" value="com.a[redacted]one" />
    <parm name="PermissionAccessSignature" value="TUlJQnF6Q0NBUlNnQXdJQkFnSUVTN[redacted]" />
  </characteristic>
</wap-provisioningdoc>
```

OEMConfig – Runtime Permissions

■ XML passthrough command

Package 2

Package Name com.mindray.pmls.alarmguard

Package Signing Certificate MIIFiDCCA3CgAwIBAgIUdAEkDv7BX3grqdlZbKaVxx8mlqAwDQYJKoZIhvcNAQELBQAwDELMAKGA1UEBhMCVVMxEzARBgNVBAgTCkNhbgGImb3JuaWEeFjAUBgNVBACTDU1vdW50YWluIFZpZXCxZDASBgNVBAoTC0dvb2dsZSBJbmI

Permissions

Permission

Name All Dangerous Permissions

State Grant

System Configuration

Pass-Through Command <wap-provisioningdoc> <characteristic version="13.1" type="AccessMgr"> <parm name="PermissionAccessAction" value="1" /> <parm name="PermissionAccessPermissionName" value="android.permission.SYSTEM_ALERT_WINDOW" value="TUIJQnF6Q0NBUIInQXdlQkFnSUVTNzNwWWpBTkUna3Foa2lHOXcwQkFRVUZBREFaTVJjd0ZRWURWUWVFMRxc1QmJHTmhkR1ZzTFV4MVkyVnVkreFncweE1EQTBNRGd4TkRNMElUQmFHQTh5TURZd01ETXlOakUwTXpReE1" /> </characteristic> </wap-provisioningdoc>

UI Configuration



General UI Configuration

UI Element Configuration

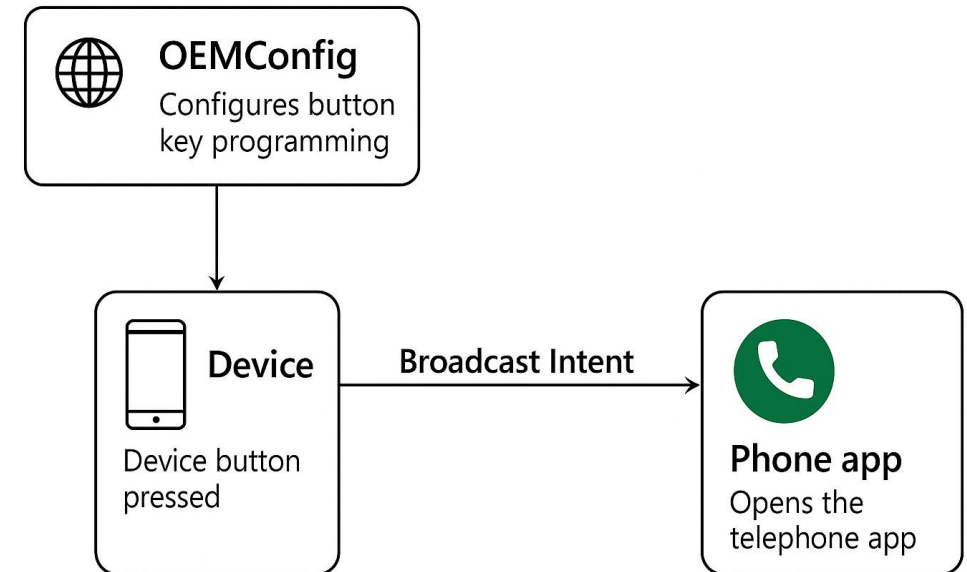
Do Not Disturb Turn Off

OEMConfig – Key programming

Keyboard Mapping

Key ID	Rear Button
Behaviors	
Behavior	
Table Name	Base
Behavior Type	Send Intent
Send Intent	On Both Key Up and Down
Intent Method	Broadcast
Intent Action	 tion.EMERGENCY_BUTTON_LONG
Package Configuration	
Package	
Package Name	 e
Feature Variances	
Feature Variance	
Variance Type	Exempt from Battery Optimization

Broadcast Intent



Troubleshooting



ADB Shell & RX Logger

- ADB Shell
- Developer options enabled
- RX logger application
- XML passthrough workarounds

```
1 <wap-provisioningdoc>
2   <characteristic version="8.3" type="Intent">
3     <parm name="Action" value="Broadcast" />
4     <parm name="ActionName" value="com.symbol.rxlogger.intent.action.ENABLE" />
5   </characteristic>
6   <characteristic version="13.1" type="Wi-Fi">
7     <characteristic type="System">
8       <parm name="WifiSleepPolicy" value="AlwaysOn" />
9     </characteristic>
10    <parm name="UseRegulatory" value="0" />
11    <parm name="UseDiagnosticOptions" value="0" />
12    <parm name="UseAdvancedOptions" value="1" />
13    <characteristic type="AdvancedOptions">
14      <parm name="RoamRssithreshold" value="-55" />
15    </characteristic>
16    <parm name="UseHotspotOptions" value="0" />
17  </characteristic>
18  <characteristic version="11.5" type="WirelessMgr">
19    <parm name="AirplaneShutOff" value="2" />
20  </characteristic>
21 </wap-provisioningdoc>
```


Troubleshooting Zebra OEMConfig

OEMConfig

Version: 13.1.0.1

LAST UPDATE BROADCAST RECEIVED DATE AND TIME
2023-12-01 12:01:55.088

LAST BUNDLE PROCESSED DATE AND TIME
2023-12-01 12:01:55.373

LAST KEYED APPSTATES
KEY: pkgConfig
MESSAGE: Successfully processed the
requestAction:Successfully removed app from
battery optimization.AppFeature:Successfully
applied app background data settings
forcom.zebra.mdna.enterprisebrowser
SEVERITY: SEVERITY_INFO

zebra_oemconfig_mwvlar

Profile settings

↓ Export

🔍 Search by Setting name and State

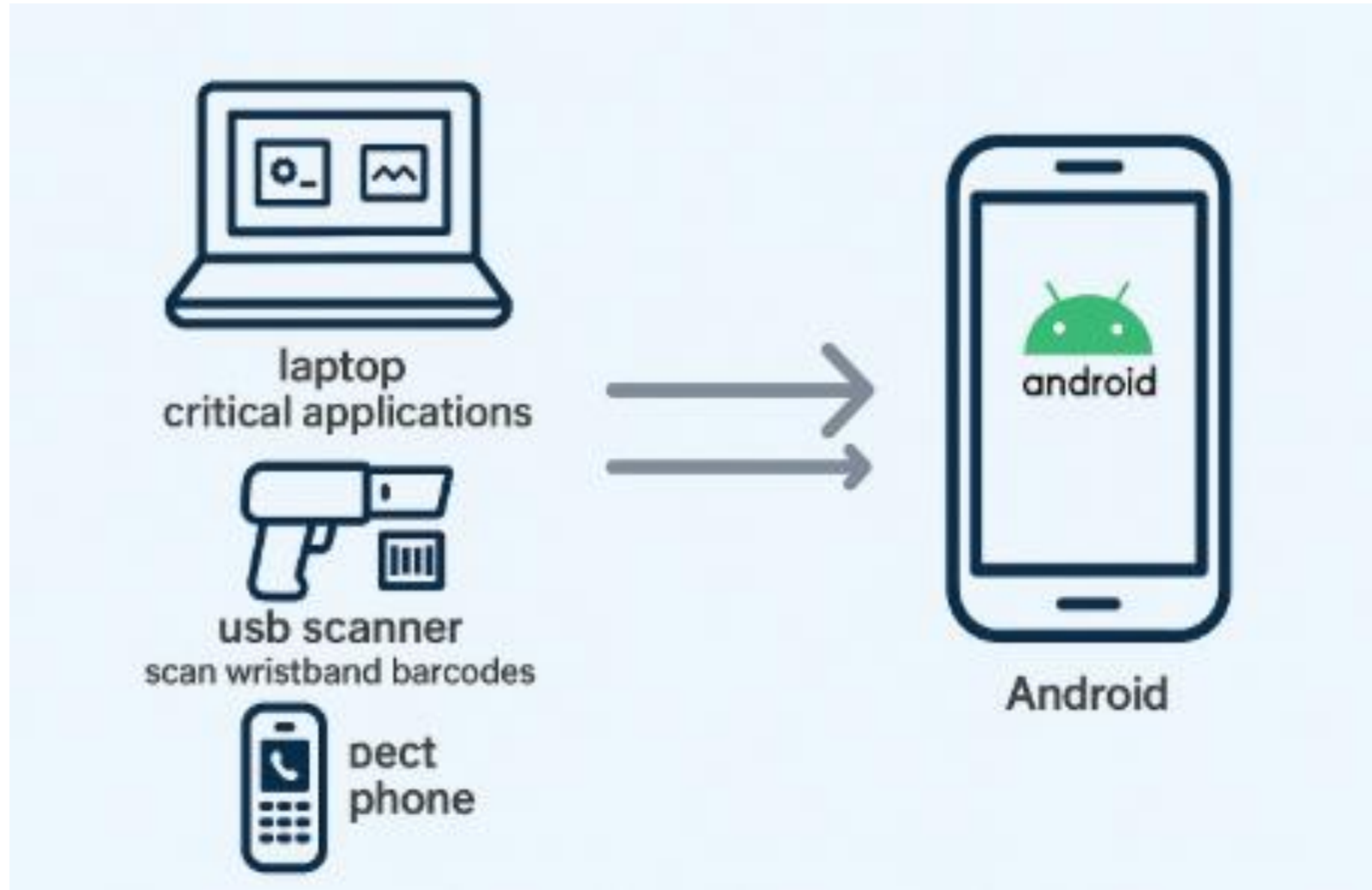
Setting	↕	State	↕	State details
com.zebra.oemconfig.release		✓ Succeeded		
displayConfigRotationMode		✓ Succeeded		
displayLockedOrientation		✓ Succeeded		
pkgConfig		✓ Succeeded		
sysClockAutoNtpServer		✗ Failed		Error: Invalid or unsupported JavaScript input.
sysClockAutoNtpSyncInterval		✗ Failed		Error: Invalid or unsupported JavaScript input.
sysClockTimeFormat		✓ Succeeded		
sysClockTimeMode		✓ Succeeded		

FOTA

FOTA

- Firmware Over The Air
- Licenses
- Ways to perform updates

Future of Android in Healthcare



Questions?



We would love to hear your feedback!

Session feedback
available in home feed
of the app after the
session



Thank You!

