What to expect in Android 15

By Mishaal Rahman

ANDROID 15 IS HERE!
(The First Developer Preview, that is)

The First Developer Preview of Android 15

16 February 2024

Posted by Dave Burke , VP of Engineering We're releasing the first Developer Preview of Android 15 today so you, our developers,...

Android 15   Announcements

Timeline

Developer Previews   Beta Releases   Platform Stability

Feb   Mar   Apr   May   Jun   Jul   —   Final Release

Key information

- *Code-name*:   Vanilla Ice Cream ("vic")
- *Build ID*:   AP3A
- *Release date*:   Early September (?)
- *Vendor API level*:   ~~35~~ 202404
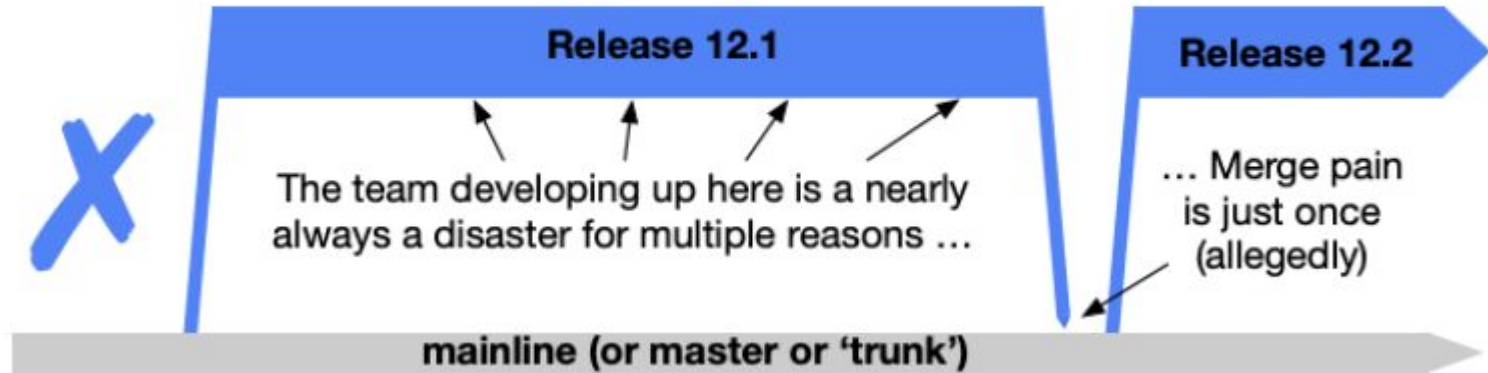- *System SDK version*:   35
- *SDK Extension version*: 10

Who am I?

- Tech journalist covering Android for 8.5 years

- Wrote for *XDA, Esper, Android Authority, Android Central, Android Police*

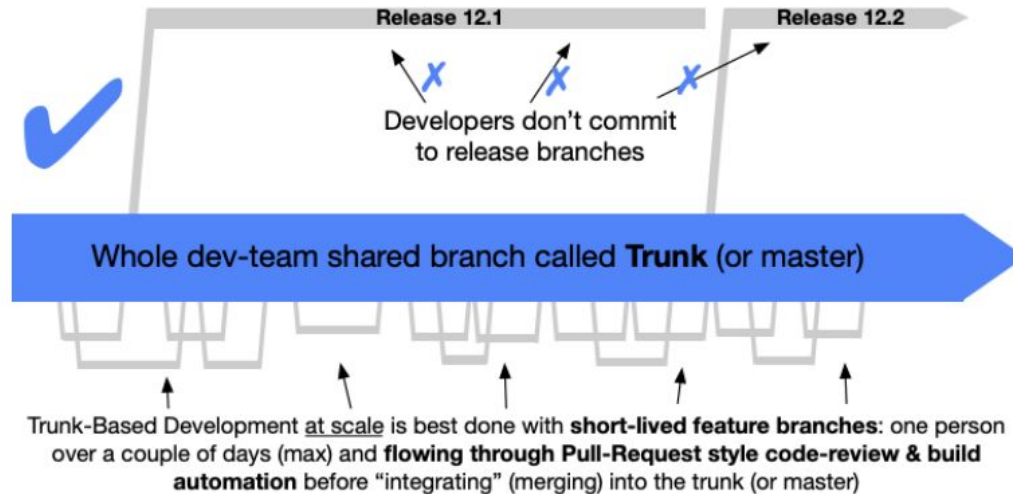- Posts a lot about Android on social media

Trunk stable

Shared branches off mainline/main/trunk are bad at any release cadence:

Release 12.1

Release 12.2

The team developing up here is a nearly always a disaster for multiple reasons …

… Merge pain is just once (allegedly)

mainline (or master or 'trunk')

BEFORE

Trunk stable

Scaled Trunk-Based Development:

Release 12.1 Release 12.2

Developers don't commit to release branches

Whole dev-team shared branch called **Trunk** (or master)

Trunk-Based Development at scale is best done with **short-lived feature branches**: one person over a couple of days (max) and **flowing through Pull-Request style code-review & build automation** before "integrating" (merging) into the trunk (or master)

AFTER

aconfig: Android's new feature flag system


```java
@FlaggedApi("com.android.nearby.flags.powered_off_finding")
@RequiresPermission(android.Manifest.permission.BLUETOOTH_PRIVILEGED)
public void setPoweredOffFindingEphemeralIds(@NonNull List<byte[]> eids) {
```



```xml
<!-- @SystemApi
     @hide
     @FlaggedApi("android.content.pm.quarantined_enabled")
     Allows an application to quarantine other apps, which will prevent
     them from running without explicit user action.
-->
<permission android:name="android.permission.QUARANTINE_APPS"
    android:protectionLevel="signature|verifier"
    android:featureFlag="android.content.pm.quarantined_enabled" />
```

aconfig in action: Notification Cooldown
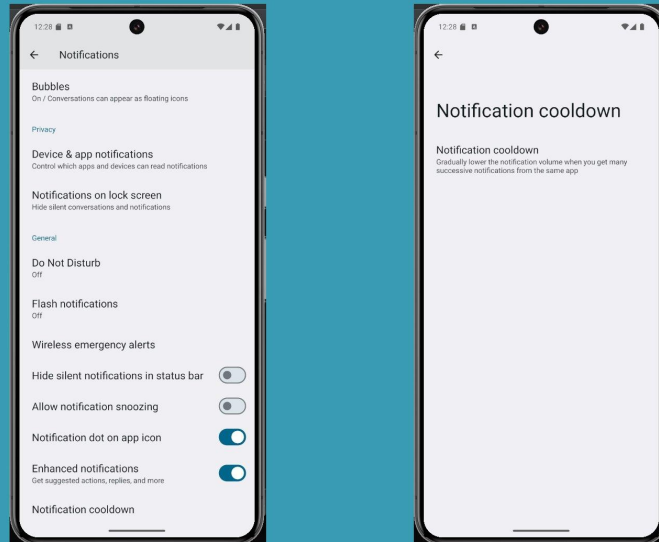
aconfig in action: Notification Cooldown

```
blob: 093bf076c1b07212cc650c94e42beaa69854850f [file] [log] [blame]

 1    # Copyright (C) 2023 The Android Open Source Project
 2    #
 3    # Licensed under the Apache License, Version 2.0 (the "License");
 4    # you may not use this file except in compliance with the License.
 5    # You may obtain a copy of the License at
 6    #
 7    #      http://www.apache.org/licenses/LICENSE-2.0
 8    #
 9    # Unless required by applicable law or agreed to in writing, software
10    # distributed under the License is distributed on an "AS IS" BASIS,
11    # WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
12    # See the License for the specific language governing permissions and
13    # limitations under the License.
14
15    #
16    # Build system flag configuration for `lunch <product>-ap1a-<variant>` builds
17    #                                                         ^^^^
18    # See go/build-system-flags
19    #
20
21    load("//build/make/core/release_config.scl", "value")
22
23    # Flags are sorted alphabetical by flag name to reduce merge conflicts
24    values = [
25        # keep-sorted start numeric=yes
26        value("RELEASE_ACONFIG_FLAG_DEFAULT_PERMISSION", "READ_ONLY"),
```

aconfig in action: Notification Cooldown

```
blob: da017453ed8b93d8f6a2cf982553f73e4623eb2e [file] [log] [blame]
```

```
1   package: "com.android.server.notification"
2
3   flag {
4     name: "expire_bitmaps"
5     namespace: "systemui"
6     description: "This flag controls removing expired notification bitmaps"
7     bug: "290381858"
8   }
9
10  flag {
11    name: "polite_notifications"
12    namespace: "systemui"
13    description: "This flag controls the polite notification feature"
14    bug: "270456865"
15  }
16
```

```java
// TODO: b/291897570 - remove controller when the feature flag is removed!
/**
 * Controller for polite notifications settings page.
 */
public class PoliteNotificationsPreferenceController extends BasePreferenceController {

    public PoliteNotificationsPreferenceController(Context context, String preferenceKey) {
        super(context, preferenceKey);
    }


    @Override
    public int getAvailabilityStatus() {
        return Flags.politeNotifications() ? AVAILABLE : CONDITIONALLY_UNAVAILABLE;
    }

}
```

aconfig in action: Notification Cooldown

android / platform / build / release / refs/heads/main / . / aconfig / trunk_food / com.android.server.notification /
polite_notifications_flag_values.textproto

blob: 2b12ccb86edd88ca4210f8a8020e1228dbbfaadf [file] [log] [blame]

```
1  flag_value {
2      package: "com.android.server.notification"
3      name: "polite_notifications"
4      state: ENABLED
5      permission: READ_WRITE
6  }
```

24Q1: Android's first trunk stable release

android / platform / build / release / **34875ee7055c8b9e4f5b8efe2f2d3b525266b866**

```
   commit  34875ee7055c8b9e4f5b8efe2f2d3b525266b866        [log] [tgz]
   author  Ian Kasprzak <iankaz@google.com>                Fri Feb 16 16:35:36 2024 +0000
committer  Ian Kasprzak <iankaz@google.com>                Fri Feb 16 18:20:03 2024 +0000
     tree  1ab7a95e7a49e66cf8e800822a7c8dcec746d2e5
   parent  6a5b2607156cdacfa2d9b7b384618ae4d917cb3e  [diff]
```

```
DO NOT MERGE ANYWHERE Update next, trunk_staging, trunk_food aconfig configurations.

Flags for release to AOSP main for 24Q1 release, based on
AP1A.231215.001 (snapped from ab/11220357).

Ignore-AOSP-First: Flags not yet in AOSP
Change-Id: Iea877442dbb7535630d6ffbc1bac272b195eb5fc
```
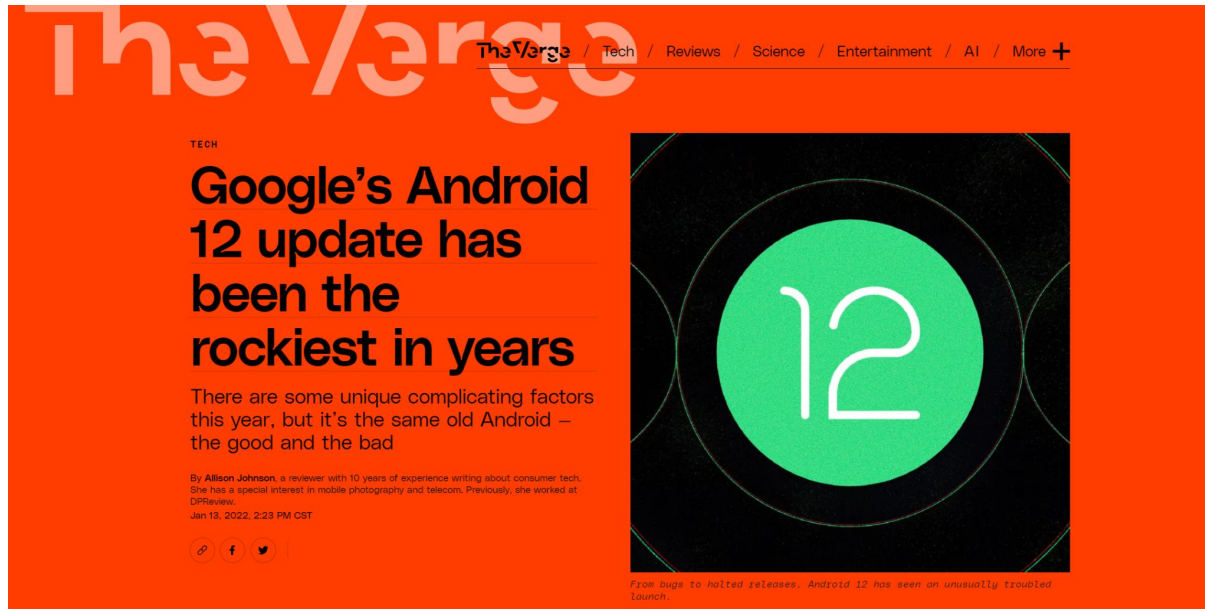
Android's new release cycle?

- 24Q1 = Android 14 QPR2
- 24Q2 = Android 14 QPR3 = system/vendor interface released
- 24Q3 = Android 15   = system/app interface released

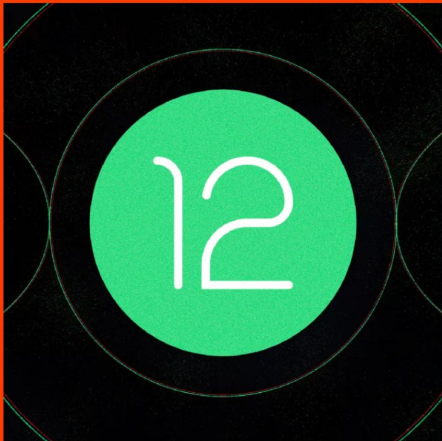# Why trunk stable?

The Verge

TECH

Google's Android 12 update has been the rockiest in years

There are some unique complicating factors this year, but it's the same old Android — the good and the bad

By **Allison Johnson**, a reviewer with 10 years of experience writing about consumer tech. She has a special interest in mobile photography and telecom. Previously, she worked at DPReview.

Jan 13, 2022, 2:23 PM CST

From bugs to halted releases, Android 12 has seen an unusually troubled launch.

What's new in Project Mainline?

- No new modules that are updated through Google Play System Updates, but...
  - New APEX modules for NFC, WebViewBootstrap, CrashRecovery
  - Lots of updates to Connectivity (ie. Tethering)
  - New PDF viewing feature in MediaProvider

NFC: Coming soon to an APEX module near you

android / platform / packages / apps / Nfc / refs/heads/main / . / **apex**

```
tree: 3d8648ad5c8a690f7afbd6408e68425b65306b86 [path history] [tgz]
```

📄 Android.bp
📄 com.android.nfcservices.avbpubkey
📄 com.android.nfcservices.pem
📄 com.android.nfcservices.pk8
📄 com.android.nfcservices.x509.pem
📄 manifest.json

Source: https://android.googlesource.com/platform/packages/apps/Nfc/+/refs/heads/main/apex/

WebViewBootstrap: More crash resilience

- Repo currently empty, but…
  - Google plans to move classes under these directories to WebViewBootstrap:
    - frameworks/base/core/java/android/webkit
    - frameworks/base/services/core/java/com/android/server/webkit
    - frameworks/base/native/webview
  - Updates will be pushed in emergency situations.
  - Optional in V, potentially mandatory in W.

android / platform / packages / modules / **WebViewBootstrap**

Bug: 318715319

Clone this repo:

```
git clone https://android.googlesource.com/platform/packages/modules/WebViewBootstrap
```

Branches

main

| 2860dfe | Initial empty repository by Frank Piva · 9 weeks ago main |

More »

Read more: https://www.androidpolice.com/android-15-webview-bootstrap-module/

CrashRecovery: More bootloop resilience

Bug: 281838476

Clone this repo:

```
git clone https://android.googlesource.com/platform/packages/modules/CrashRecovery
```

Branches

main
android14-qpr2-s1-release
master
sdk-release
simpleperf-release

Tags

android-14.0.0_r29
platform-tools-34.0.5

01cca29	Revert^2 "Create skeleton Apex" by Harshit Mahajan · 3 months ago	main master
cb32b81	[automerger skipped] Revert^2 "Create skeleton Apex" am: a4464326f8 -s ours by Harshit Mahajan · 9 weeks ago	
a446432	Revert^2 "Create skeleton Apex" by Harshit Mahajan · 3 months ago	
414027e	[automerger skipped] Revert "Create skeleton Apex" am: f7ff54804e am: b1f06e389d am: f859f5dd17 -s ours by Harshit Mahajan · 4 months ago	
cd0f79f	[automerger skipped] Revert "Set the min SDK for crashrecovery to 34." am: 9100480607 am: 1cf98910ed am: 0b09be4e0c -s ours by Harshit Mahajan · 4 months ago	
7841f73	[automerger skipped] Revert "Create skeleton Apex" am: f7ff54804e am: 0c8a298d5b am: c881087793 -s ours by Harshit Mahajan · 4 months ago	

Merged ★ 2953747 ⌄ Added high impact rollback in RollbackPackageHealthObserver ⧉

Change Info   SHOW ALL ⌄   REPLY

Submitted	Feb 20
Owner	Shrinidhi Hegde
Reviewers	Song Chun... 🄰 Harshit 🄰
	Alexei Nico... 🄰
	Dan Rodney +1
	Varun Shah +1 Lint 🤖 ✏
	AND 3 MORE
CC	Adam Met... Sanal Buva...
	Treehugger... ✏
Repo | Branch	platform/frameworks/base | main

Added high impact rollback in RollbackPackageHealthObserver

Added high impact rollback as a last resort after low impact rollbacks
are tried. Also removed reference to automatic rollback deny list, since
we will be using impact level instead of the deny list going forward.

Bug: 291137901
Test: Unit tests
Change-Id: I4d75dd513b3f43c179baf93ece832f9007173ff4

Comments 💬 15 resolved
Checks ⓘ Test Coverage

Connectivity: Powered Off Finding API

Read more: https://www.androidpolice.com/android-15-powered-off-finding-pixel-8/

Connectivity: RemoteAuth

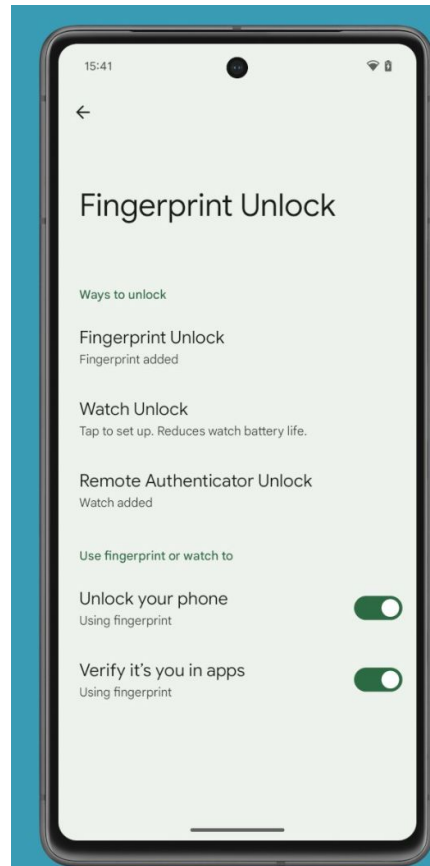```
tree: b85adbd8f97e6b2e854aa807647bf37317f60cb3 [path history] [tgz]
```

📁 framework/
📁 service/
📁 tests/
📄 OWNERS
📄 README.md
📄 TEST_MAPPING

remoteauth/README.md

## RemoteAuth Mainline Module

This directory contains code for the RemoteAuth module.

# Connectivity: Thread network stack

```
tree: a7cff306c02dd3ea7babb04693af2ded0a9bc5ae [path history] [tgz]
```

📁 apex/
📁 demoapp/
📁 framework/
📁 scripts/
📁 service/
📁 tests/
📄 OWNERS
📄 README.md
📄 TEST_MAPPING

thread/README.md

Thread

Bring the Thread networking protocol to Android.
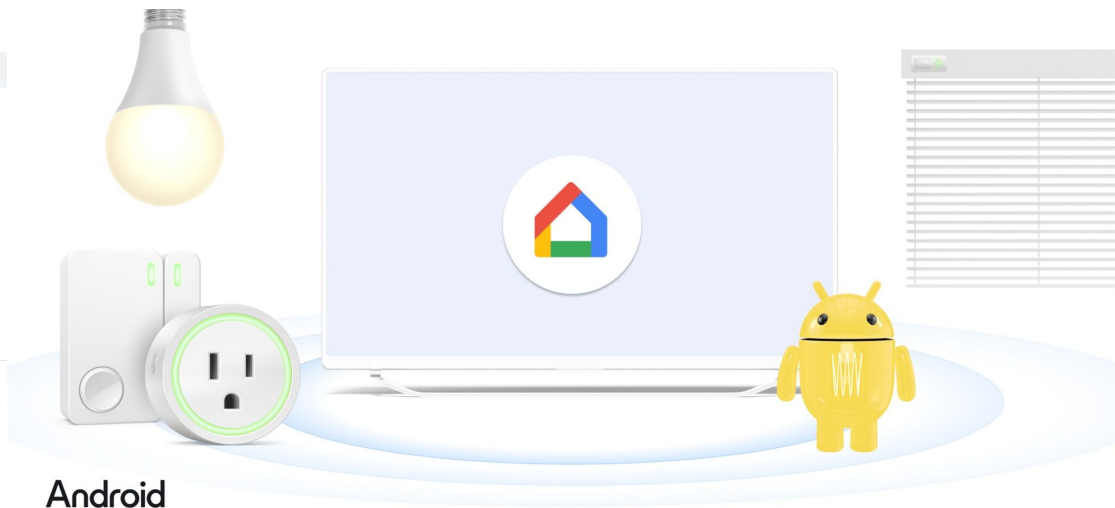
Android

PDF viewer in MediaProvider

```
tree: b56fa4ea82a6d541b078a14e2aead1e441407850 [path history] [tgz]
```

📁 apk/
📁 framework/
📁 framework-v/
📄 OWNERS

```
androidx {
    name = "androidx.pdf:pdf-viewer"
    type = LibraryType.PUBLISHED_LIBRARY
    inceptionYear = "2023"
    description = "add pdf viewing to their apps."
}
```

Private Space

- New profile type:
  android.os.usertype.profile.PRIVATE

- Sandboxed secondary profile designed to house apps the user wants to hide

- Code is in AOSP, gated by aconfig flags

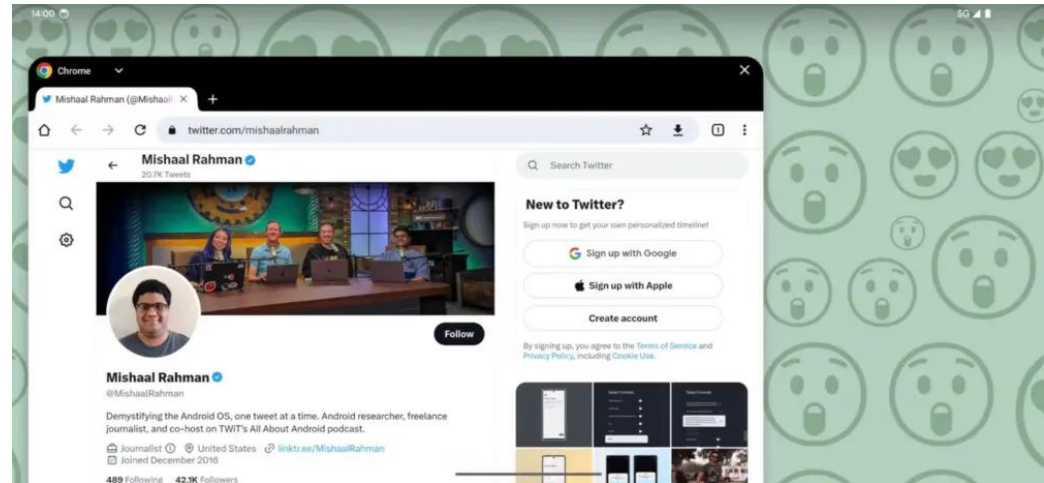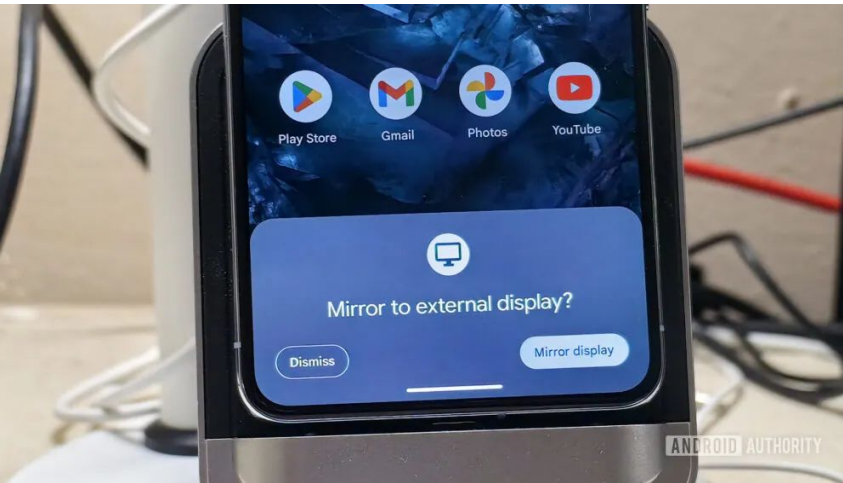Read more: https://www.androidpolice.com/android-private-space-first-look/

Auracast

- Auracast = Bluetooth LE Audio broadcasting
- Already possible since Android 13 on compatible hardware
- New UI for starting and joining audio streams in Android 15

Read more: https://www.androidauthority.com/android-15-audio-sharing-3409519/
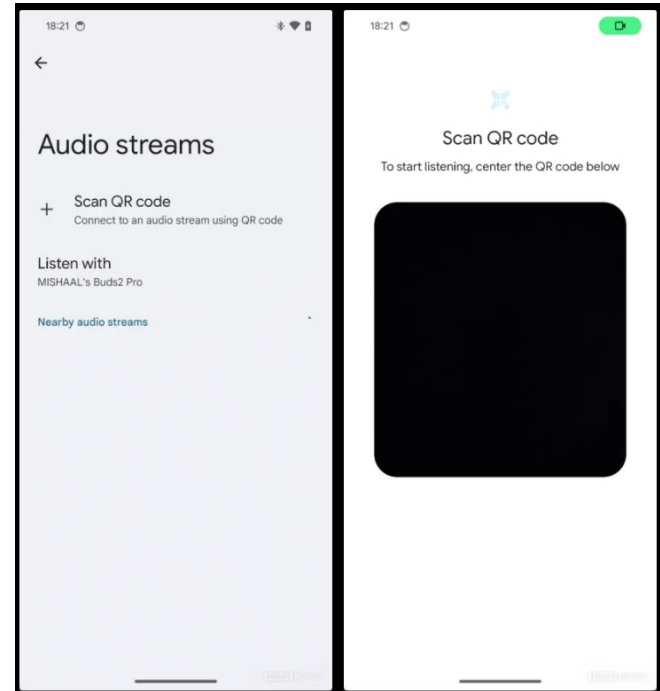
Large screen changes: Desktop mode

Read more:
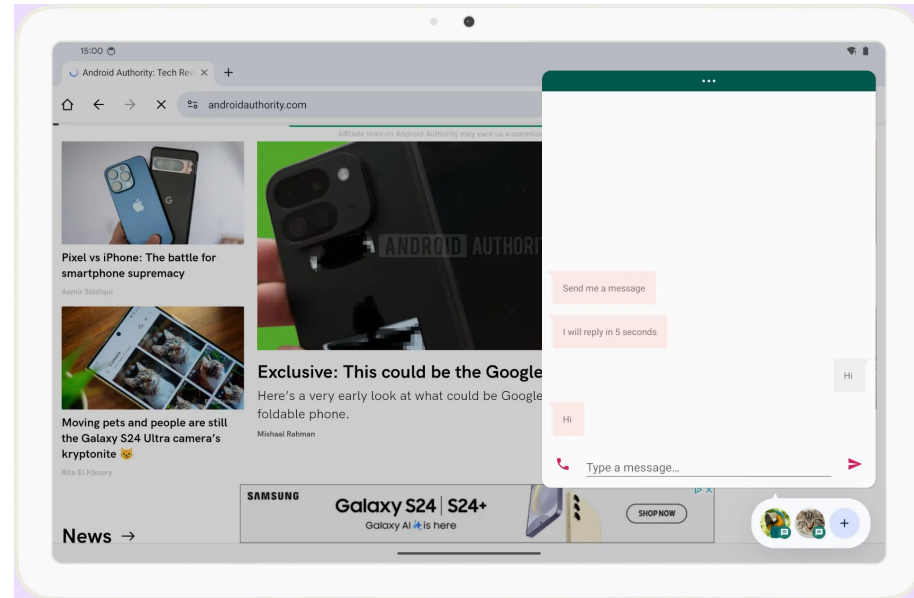https://www.androidauthority.com/google-pixel-8-display-output-3424412/

Large screen changes: Chat bubble bar

- Bubbles API introduced in Android 11

- UI was optimized for phones, not tablets

- Bubble bar makes bubbles easier to use on tablets

Read more: https://www.androidauthority.com/android-chat-bubble-bar-3412010/

Large screen changes: Glanceable hub

- Android added lock screen widgets in Android 4.2

- Lock screen widgets were removed in Android 5.0

- New "glanceable hub" in Android 15 for tablets accessed by swiping inward on the lock screen

Read more: https://www.androidauthority.com/android-15-lock-screen-widgets-3402342/
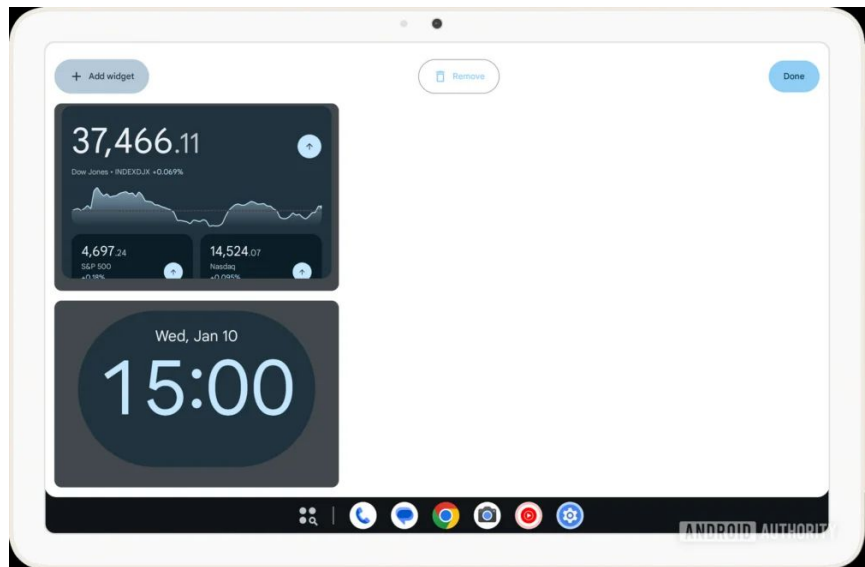
Large screen changes: App Pairs

- AOSP 12 revamped split-screen mode

- OS could remember app pairings that users made

- Now, OS can let users save paired apps to the home screen

Read more: https://www.androidpolice.com/android-app-pair-demo/

Large screen changes: Taskbar pinning

- Taskbar added in Android 12L was "persistent"

- Taskbar revamped in Android 13 QPR2 to be "transient"

- Taskbar pinning feature lets users change between them

Read more: https://www.androidpolice.com/android-14-taskbar-pinning/
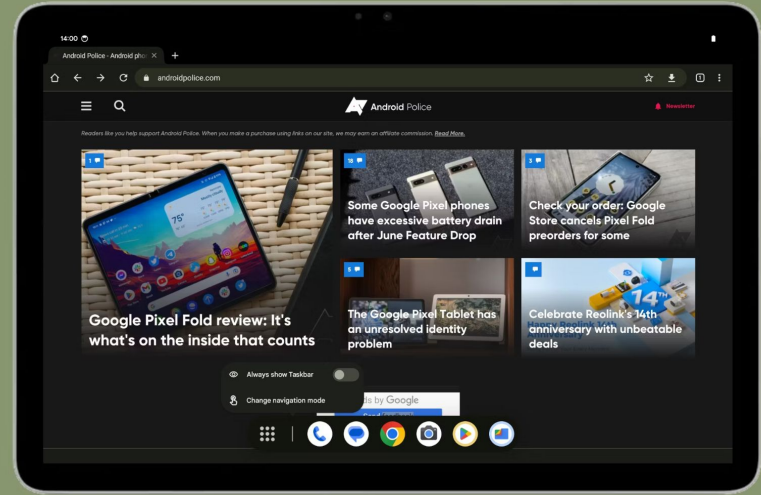
Large screen features: Lock screen note-taking

- "Notes" Role added in Android 14

- Default notes app can use new Capture Content for Notes API to clip screenshots

- "Notes" Role currently disabled in U

Read more: https://www.androidauthority.com/google-keep-notes-on-lock-screen-3418322/

Miscellaneous: Built-in app archiving

- PackageManager is adding app archiving support

- Archiving an app means installing an "archived APK" over it

- Archived APKs are tiny but have same signature as base APK

- Archived APKs are generated by bundletool for apps distributed as AABs


Read more: https://www.androidauthority.com/android-15-app-archiving-demo-3425621/

Miscellaneous: Sensitive notifications

```xml
<!-- @hide @SystemApi
    @FlaggedApi("com.android.server.notification.flags.redact_otp_notifications_from_untrusted_listeners")
    Allows apps with a NotificationListenerService to receive notifications with sensitive
    information
    <p>Apps with a NotificationListenerService without this permission will not be able
    to view certain types of sensitive information contained in notifications
    <p>Protection level: signature|role
-->
<permission android:name="android.permission.RECEIVE_SENSITIVE_NOTIFICATIONS"
    android:protectionLevel="signature|role" />
```

Read more: https://www.androidauthority.com/android-15-sensitive-notifications-3416414/
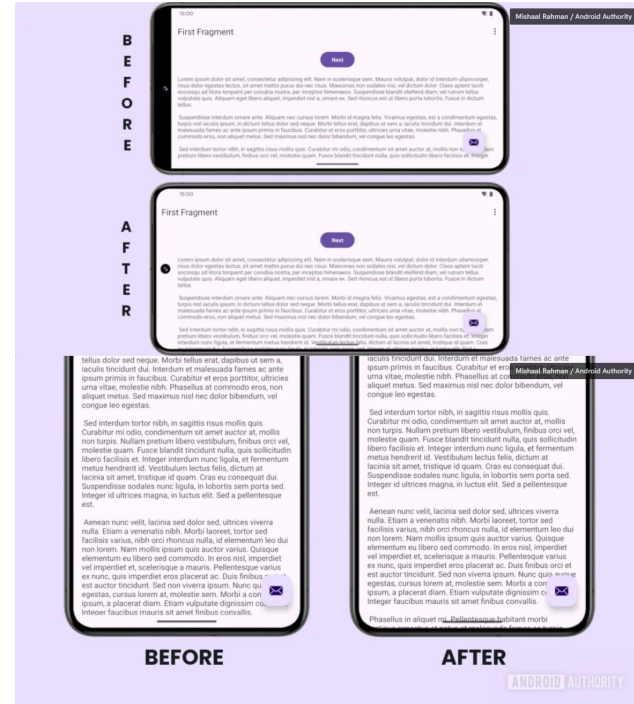
Miscellaneous: Easy preset

- Standard Android text and UI settings may be difficult to use for some users

- New "easy pre-set" mode enhances readability
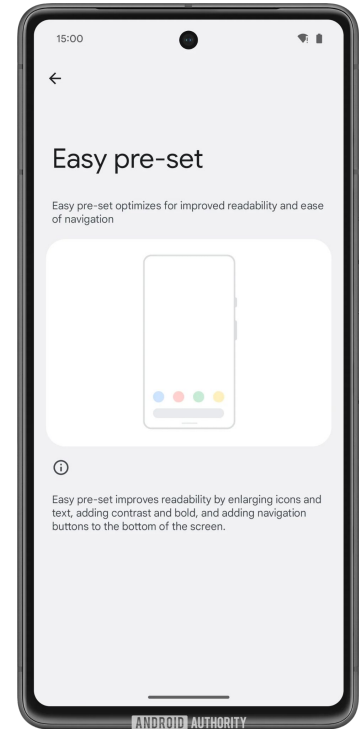
Miscellaneous: Edge-to-edge mode

- Apps can draw under system bars using edge-to-edge APIs

- New EDGE_TO_EDGE_BY_DEFAULT compat change suggests apps targeting SDK 35 will be forced to go edge-to-edge in Android 15

Miscellaneous: Swipe up to continue

- Foldable devices only transition apps from inner to cover screen if they're full screen

- New "swipe up to continue" setting lets the user decide when to transition apps after folding
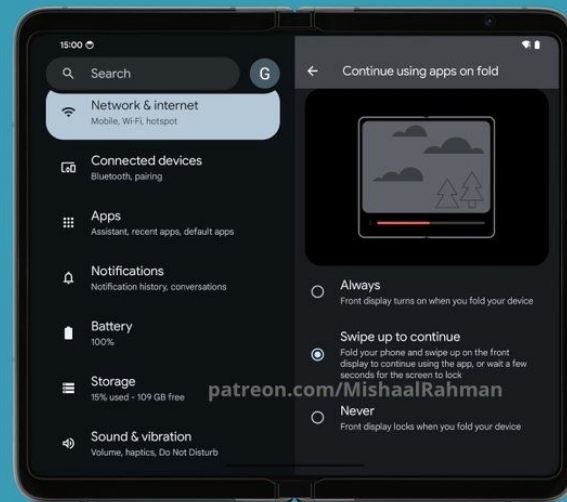
Read more: https://www.androidpolice.com/pixel-fold-swipe-up-to-continue-feature/

Miscellaneous: More battery stats

- Android 14 QPR1 introduced battery information settings that show manufacture date and cycle count (removed in QPR2)

- Manufacture date, cycle count, date of first use, charging policy, charging status, and state of health are supported by health HAL v2

- Health HAL v3 adds support for reporting part status and serial number of battery

Read more: https://www.androidauthority.com/android-battery-capacity-estimate-3396532/
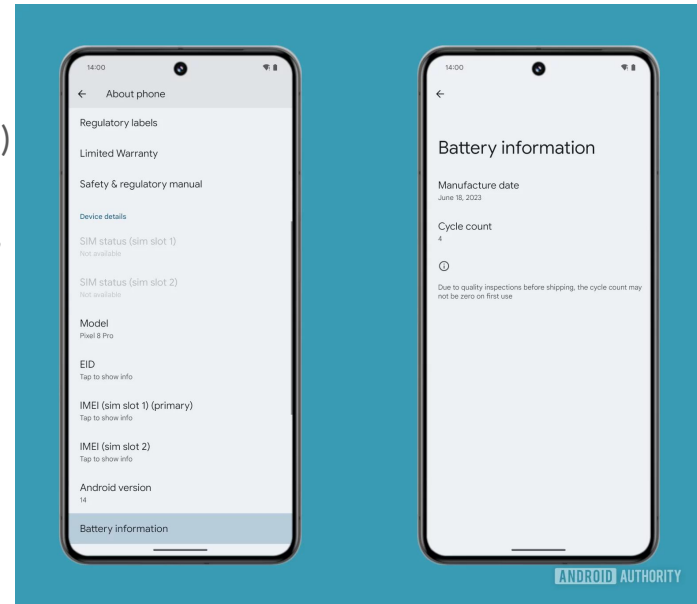
Miscellaneous: Landscape UI optimizations
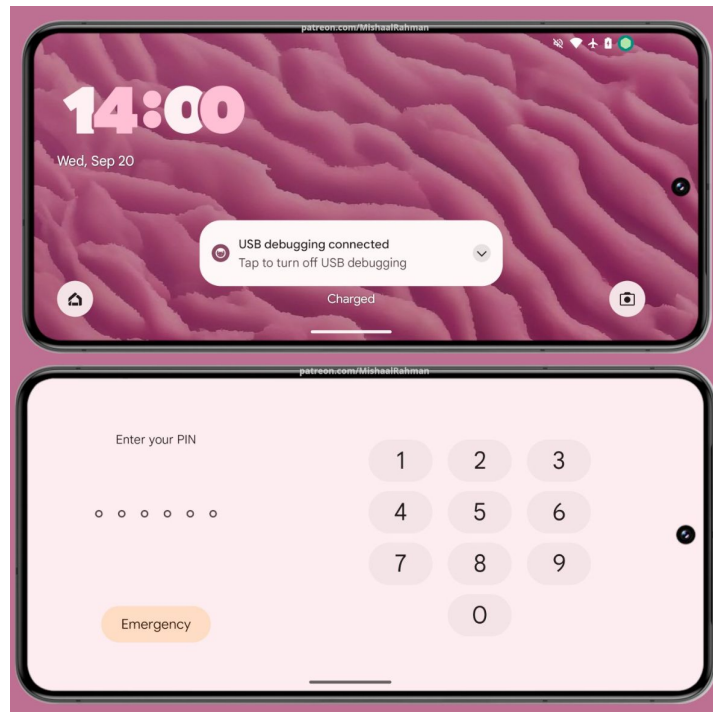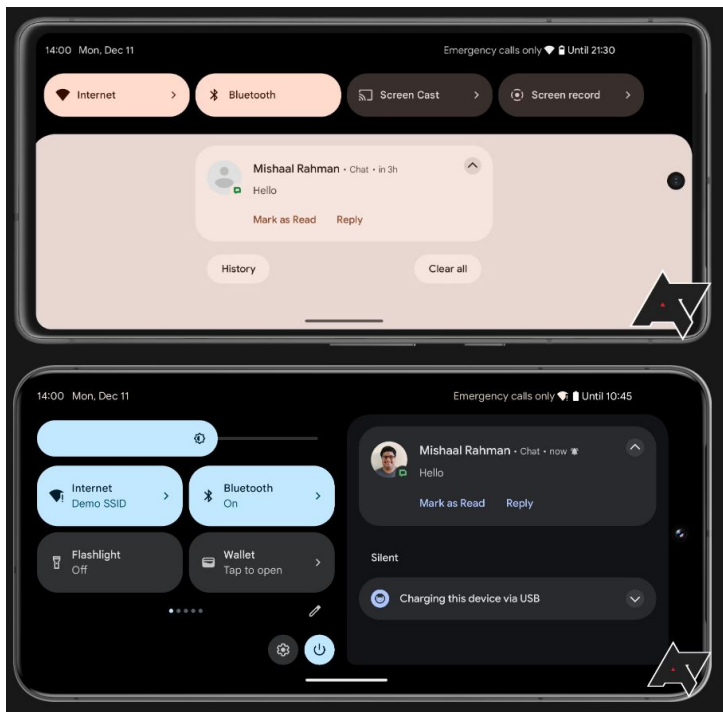
What else to expect?

1. AIDL requirement: New chipsets launching with Android 15 support won't be allowed to define HAL interfaces in HIDL anymore.

2. DEX v41: The last version, DEX v40, was released with Android 10.

3. Security state API: Provides an easy way to query the SPL of the OS, vendor components, Linux kernel version, and WebView version

4. Vulkan UI rendering: Android 15 will require that UI rendering be done using the Vulkan Graphics API instead of OpenGL

Read more: 1) https://twitter.com/MishaalRahman/status/1694739617323405806
2) https://twitter.com/MishaalRahman/status/1702352780806021121
3) https://twitter.com/MishaalRahman/status/1757826982002221449
4) https://twitter.com/MishaalRahman/status/1752063453227798926

What else to expect?

5. Android Glasses WindowManager extension

6. New VirtualDeviceManager (VDM) APIs

7. UVC webcam updates

8. Vulkan Profiles for Android (VPA)

What else to expect?

10. In-process software audio codecs

11. GPU support for Android Virtualization Framework (AVF)

12. Updatable VM feature for AVF

13. Boot with 16K page-compatible kernel
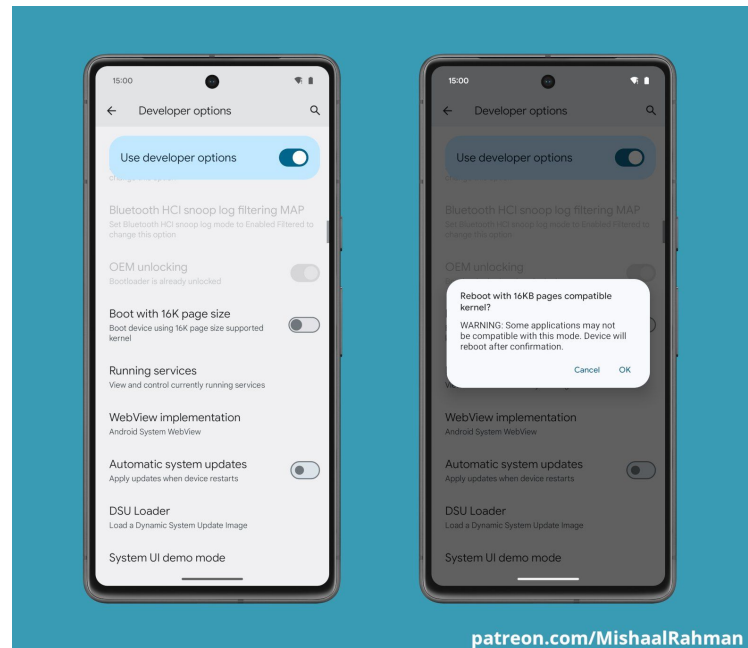
patreon.com/MishaalRahman

Last but not least...

- Intentionally skipped over the changes and new APIs Google announced w/ DP1 (there's not much)

- You can read about them here:
  https://android-developers.googleblog.com/2024/02/first-developer-preview-android15.html

Questions?

patreon.com/MishaalRahman

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- +1-979-473-9212
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