Reducing the app size in Flutter is super important—especially if you're targeting users on limited data plans or older devices. Here are the best practices and techniques you can use to slim down your Flutter app:

**🔧 1. Use flutter build with release mode**

When building for production, always use:

bash

CopyEdit

flutter build apk --release

flutter build appbundle --release

Debug builds are huge and not optimized at all.

**🧳 2. Use App Bundles (AAB) instead of APKs**

App Bundles are **Google Play's recommended format**, and they help reduce the size for users because only the code and resources for a user’s device are downloaded.

bash

CopyEdit

flutter build appbundle --release

**✂️ 3. Split the APK per ABI (if using APKs)**

This way, each user only downloads the binary for their device’s architecture.

bash

CopyEdit

flutter build apk --release --split-per-abi

This creates smaller APKs for:

* armeabi-v7a
* arm64-v8a
* x86\_64

Upload all of them to the Play Store; it will handle device targeting.

**🎯 4. Shrink native code and remove unused resources**

* Use **ProGuard** for Android to shrink, obfuscate, and optimize native Java/Kotlin code.
* Edit your android/app/build.gradle:

gradle

CopyEdit

android {

buildTypes {

release {

shrinkResources true

minifyEnabled true

proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'), 'proguard-rules.pro'

}

}

}

**📦 5. Reduce dependencies**

Only include packages you really need. Some packages bring in a lot of native code or assets.

You can check the size of your package dependencies with:

bash

CopyEdit

flutter pub deps -- --style=compact

**🖼️ 6. Compress image assets**

Use tools like:

* [TinyPNG](https://tinypng.com/)
* WebP format (smaller size and decent quality)

Replace PNGs or JPGs with .webp if possible.

**🗃️ 7. Use flutter analyze and flutter pub unused**

To find unused code or packages:

bash

CopyEdit

flutter pub get

dart pub global activate dart\_code\_metrics

dart pub global run dart\_code\_metrics:metrics analyze lib

Also:

bash

CopyEdit

flutter pub outdated

flutter pub unused

**🧪 8. Use flutter build apk --analyze-size**

This will generate a .json and .html report that tells you what’s taking up the most space.

bash

CopyEdit

flutter build apk --release --analyze-size

You can view the report in a browser. Super helpful for targeting bloat.