Mobius
2024 Autumn

Что не так с мобильными сервисами в Android и iOS

Кирилл Розов

Android Broadcast

Кирилл Розов

- 👉 Android эксперт и Блогер
- 👉 Staff Software Engineer
- 👉 12+ лет в Android разработке
- 👉 Живу в Гродно, Беларусь

mb Experts
Android

Android Broadcast

Современные тренды Android разработки в одном месте

androidbroadcast.dev

@android_broadcast

@androidBroadcast

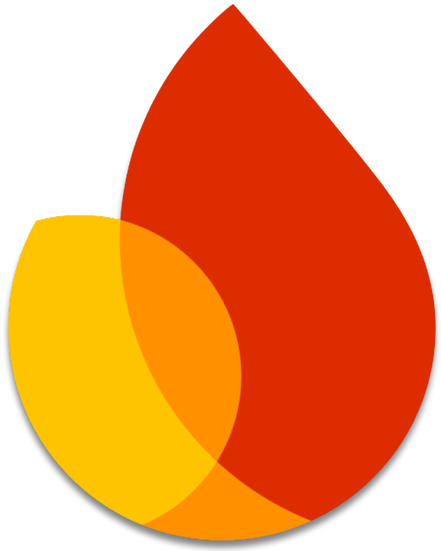
Магазин Google Play

Сервисы Firebase

Сервисы Google Play

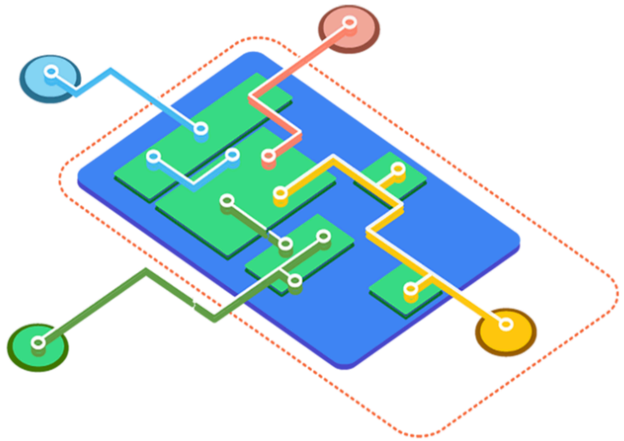
База AOSP

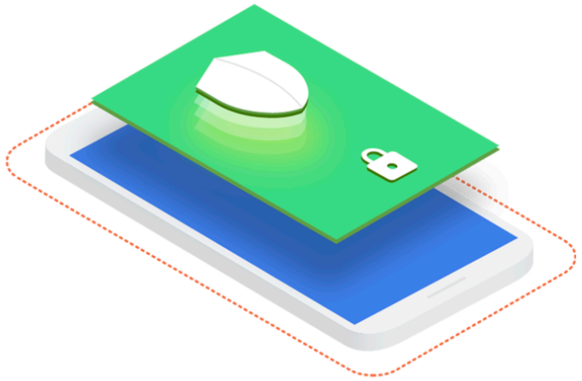
Google

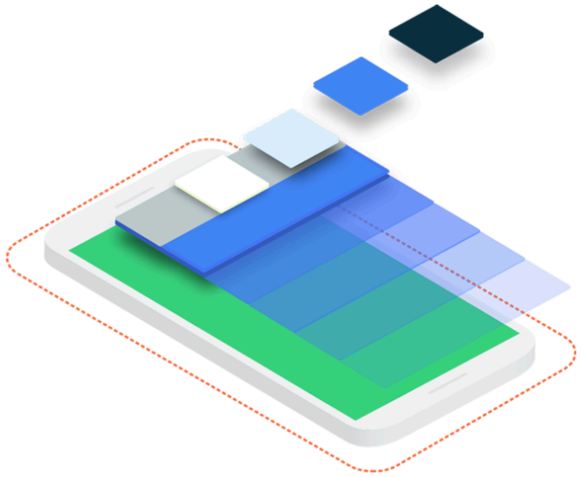


Андроид
Проект с открытым исходным кодом

Android объединяет мир. Используйте операционную систему Android с открытым исходным кодом для питания вашего устройства.







03 September 2024

Android 15 is released to AOSP

Posted by Matthew McCullough – VP of Product Management, Android Developer

What’s new in Android 15, plus more updates

Oct 15, 2024
2 min read

We’re launching new theft protection features, a private space for sensitive apps, multitasking capabilities on foldables and tablets and more.

Seang Chau
VP and GM of Android Platform

Android - это AOSP билд

- 👉 Открытый исходный код
- 👉 Нету стандартных приложений
- 👉 Нет магазина приложений
- 👉 Нет push уведомлений
- 👉 Часть API из Android SDK требуют реализации
- 👉 Нету части сервисов из официальной документации

Get the last known location

Using the Google Play services location APIs, your app can request the last known location of the user's device. In most cases, you are interested in the user's current location, which is usually equivalent to the last known location of the device.

Specifically, use the fused location provider to retrieve the device's last known location. The fused location provider is one of the location APIs in Google Play services. It manages the underlying location technology and provides a simple API so that you can specify requirements at a high level, like high accuracy or low power. It also optimizes the device's use of battery power.

> **Note:** When your app is running in the background, access to location should be critical to the core functionality of the app and is accompanied with proper disclosure to users.

This lesson shows you how to make a single request for the location of a device using the `getLastLocation()` method in the fused location provider.

Set up Google Play services

To access the fused location provider, your app's development project must include Google Play services. Download and install the Google Play services component via the SDK Manager and add the library to your project. For details, see the guide to Setting Up Google Play Services.

Specify app permissions

Geocoder

Added in API level 1

Kotlin | Java

```
class Geocoder
```

kotlin.Any
↳ android.location.Geocoder

A class for handling geocoding and reverse geocoding. Geocoding is the process of transforming a street address or other description of a location into a (latitude, longitude) coordinate. Reverse geocoding is the process of transforming a (latitude, longitude) coordinate into a (partial) address. The amount of detail in a reverse geocoded location description may vary, for example one might contain the full street address of the closest building, while another might contain only a city name and postal code.

Use the isPresent() method to determine whether a Geocoder implementation exists on the current device. If no implementation is present, any attempt to geocode will result in an error.

Geocoder implementations are only required to make a best effort to return results in the chosen locale. Note that geocoder implementations may return results in other locales if they have no information available for the chosen locale.

Warning: Geocoding services may provide no guarantees on availability or accuracy. Results are a best guess, and are not guaranteed to be meaningful or correct. Do not use this API for any safety-critical or regulatory compliance purpose.

Summary

getFromLocation

Added in API level 33

```
fun getFromLocation(
    latitude: Double,
    longitude: Double,
    maxResults: Int,
    listener: Geocoder.GeocodeListener
): Unit
```

Provides an array of Addresses that attempt to describe the area immediately surrounding the given latitude and longitude. The returned addresses should be localized for the locale provided to this class's constructor.

Warning: Geocoding services may provide no guarantees on availability or accuracy. Results are a best guess, and are not guaranteed to be meaningful or correct. Do **NOT** use this API for any safety-critical or regulatory compliance purposes.

Parameters	
`latitude`	Double: the latitude a point for the search Value is between -90D and 90D inclusive
`longitude`	Double: the longitude a point for the search Value is between -180D and 180D inclusive
`maxResults`	Int: max number of addresses to return. Smaller numbers (1 to 5) are recommended Value is 1 or greater
`listener`	Geocoder.GeocodeListener: a listener for receiving results This value cannot be `null`.

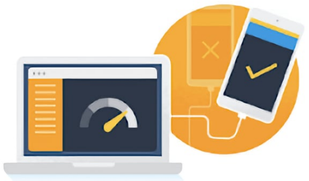
Generic System Image

Чистый образ Android без модификации AOSP кода

Firebase

Build better apps

- Auth
- Hosting
- Cloud Functions
- ML Kit
- Cloud Firestore
- Realtime Database
- Cloud Storage



Improve app quality

- Crashlytics
- Performance Monitoring
- Test Lab

Grow your app

- Analytics
- Remote Config
- Predictions
- A/B Testing
- Cloud Messaging
- Dynamic Links
- In-app Messaging

Google Play Services

- 👉 Firebase Services
- 👉 Fused Location Provider
- 👉 Fused Orientation Provider
- 👉 Google Analytics
- 👉 Google Play Analytics
- 👉 Google Maps API
- 👉 Google ML Kit
- 👉 Tensor Flow Runtime
- 👉 ~~SafetyNet~~
- 👉 Google Play Integrity API

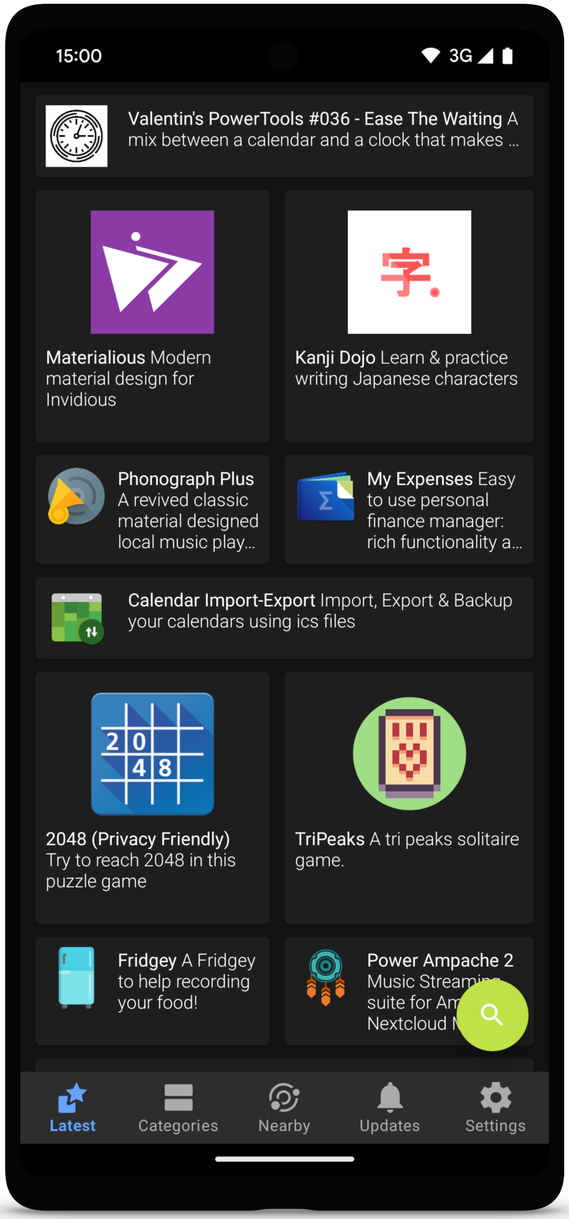
Google Play Services

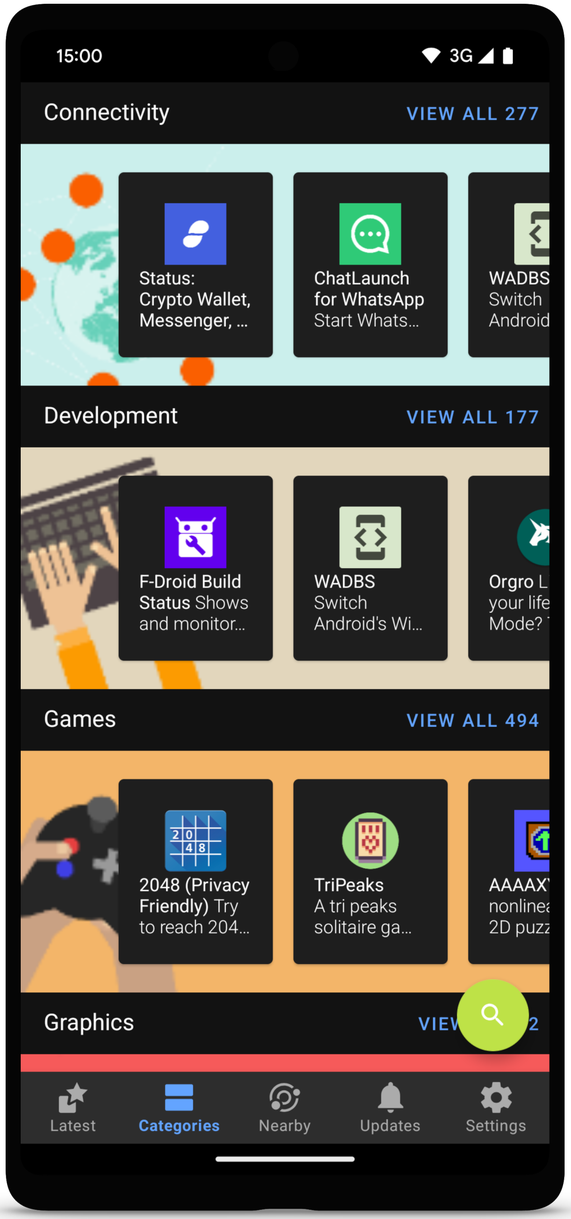
- 👉 Разработка Google
- 👉 Android разрабатывается с оглядкой на интеграцию GMS
- 👉 Закрытый исходный код
- 👉 Приложение с полными системными правами
- 👉 Лицензируется производителям устройств за деньги

81%

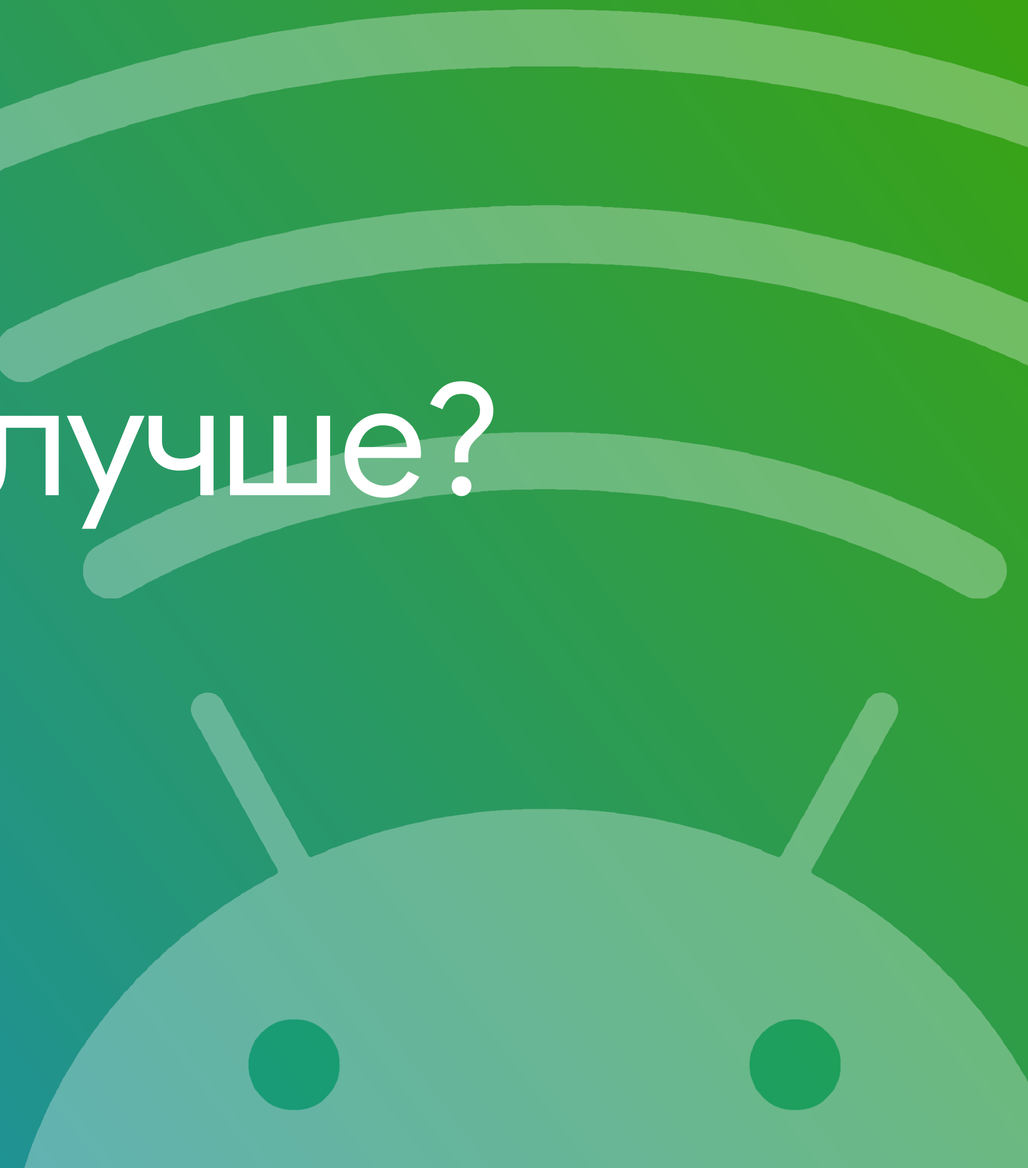
Из топ 1000 приложений в Google Play могут полноценно работать на Android только при наличии GMS

F-Droid


15:00
3G
Valentin's PowerTools #036 - Ease The Waiting A mix between a calendar and a clock that makes ...
Materialious Modern material design for Invidious
Kanji Dojo Learn & practice writing Japanese characters
Phonograph Plus A revived classic material designed local music play...
My Expenses Easy to use personal finance manager: rich functionality a...
Calendar Import-Export Import, Export & Backup your calendars using ics files
2048 (Privacy Friendly) Try to reach 2048 in this puzzle game
TriPeaks A tri peaks solitaire game.
Fridgey A Fridgey to help recording your food!
Power Ampache 2 Music Streami
suite for Am
Nextcloud
Latest
Categories
Nearby
Updates
Settings


15:00
3G
Connectivity
VIEW ALL 277
Status: Crypto Wallet, Messenger, ...
ChatLaunch for WhatsApp Start Whats...
WADBS Switch Android
Development
VIEW ALL 177
F-Droid Build Status Shows and monitor...
WADBS Switch Android's Wi...
Orgro L your life Mode?
Games
VIEW ALL 494
2048 (Privacy Friendly) Try to reach 204...
TriPeaks A tri peaks solitaire ga...
Graphics
Latest
Categories
Nearby
Updates
Settings

Думаете что на iOS лучше?



Ограничения iOS

- 👉 Всё связано с Apple аккаунтом
- 👉 Права на работу всегда только у Apple
- 👉 Удаление аккаунта разработчика == потеря всего
- 👉 Альтернативы базовым приложениями только через законы

Альтернативы

Anton L. Менеджер сообщества • Автор первой записи

10 авг. 2021 г.

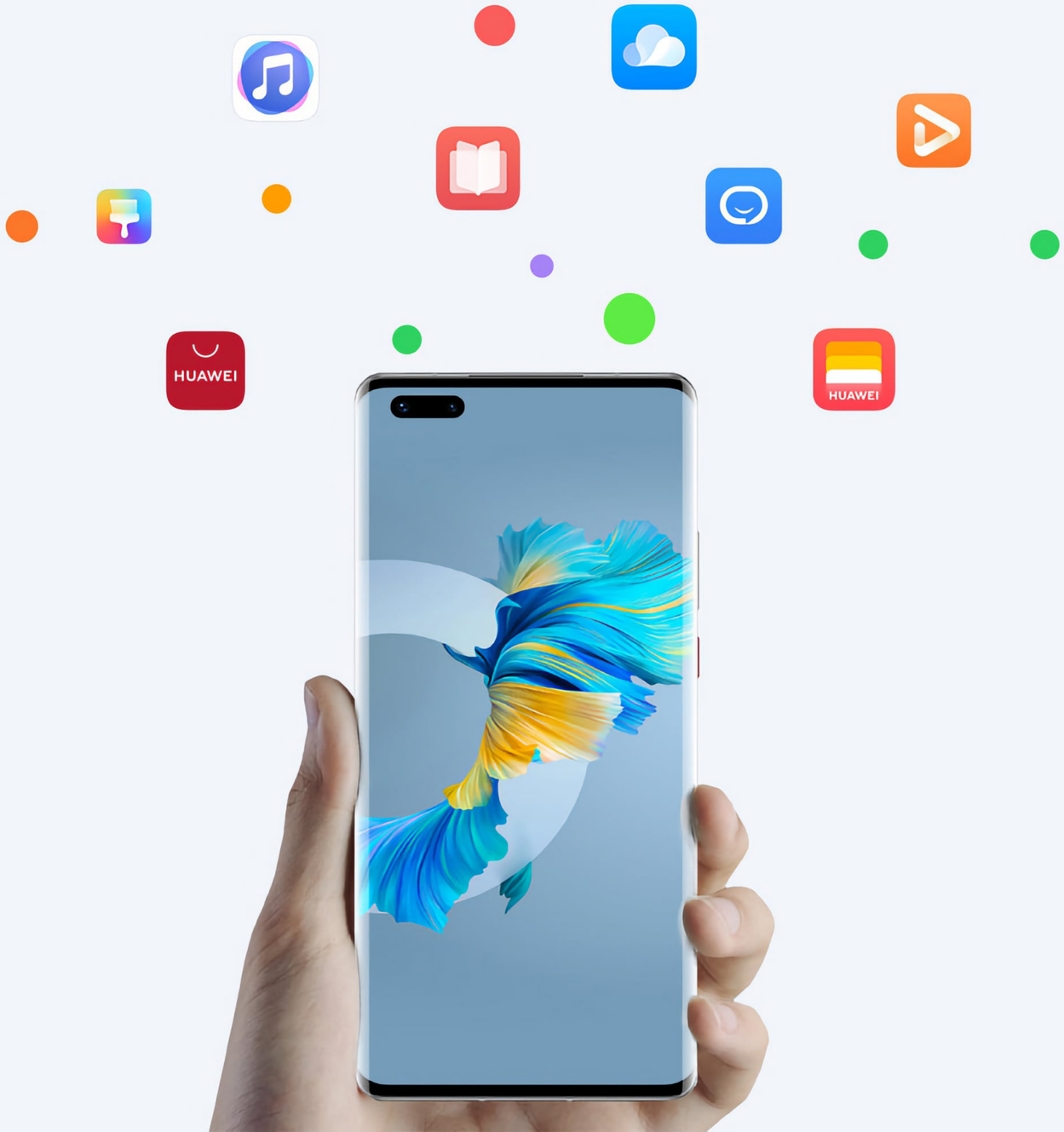
О ситуации с устройствами Huawei и сервисами Google

16 мая 2019 г. правительство США включило Huawei в список организаций, подпадающих под действие особых правил экспортного контроля. Фактически это означает запрет на сотрудничество с Huawei для всех компаний из США, включая Google.
Таким образом, Google запрещено работать с Huawei над новыми моделями устройств или предоставлять приложения, включая Gmail, Карты, YouTube, Google Play и другие, для предзагрузки или скачивания на такие устройства.

Мы стремимся защитить пользователей Google во всем мире, поэтому продолжим сотрудничать с Huawei и предоставлять обновления системы безопасности и другие исправления для приложений и сервисов Google на существующих устройствах Huawei, пока это не противоречит требованиям законодательства. В настоящее время Google имеет право работать с Huawei только по тем моделям устройств, которые появились в продаже до 16 мая 2019 г. включительно.
Мы продолжаем получать вопросы о новых устройствах Huawei (как о моделях, вышедших недавно, так и о тех, которые были выпущены после 16 мая 2019 г., но в некоторых

HMS

Huawei Mobile Services



Security

FIDO

Keyring

Safety Detect

DataSecurity Engine

LocalAuthentication Engine

Smart Device

CaaS Engine

Cast Engine

DeviceVirtualization Engine

OneHop Engine

Share Engine

Wear Engine

System

5G Modem Kit

HEM Kit

MDM Engine

Nearby Service

Network Kit

Wireless Kit

Graphics

3D Modeling Kit

Accelerate Kit

AR Engine

Computer Graphics Kit

GameTurbo Engine

Scene Kit

Media

Audio Editor Kit

Audio Engine

Audio Kit

AV Pipeline Kit

Camera Engine

Image Kit

Panorama Kit

Video Editor Kit

Video Engine

Video Kit

WisePlay DRM

AI

ML Kit

HUAWEI HiAI Foundation

HUAWEI HiAI Engine

App Services

Account Kit

Ads Kit

Analytics Kit

App Linking

Awareness Kit

Drive Kit

Dynamic Tag Manager

Game Service

Health Kit

Identity Kit

In-App Purchases

Location Kit

Map Kit

Navi Kit

Push Kit

Quick App

Scan Kit

Search Kit


HUAWEI
EXPLORE IT ON
AppGallery

microG Project

A free-as-in-freedom re-implementation of Google's proprietary Android user space apps and libraries.

About

The linux-based open-source mobile operating system Android is not only the most popular mobile operating system in the world, it's also on the way to becoming a proprietary operating system. How is that?

While the core operating system is still released as part of the Android Open Source Project, the majority of core apps are not. It gets worse: More and more libraries and APIs are only available on phones that run various Google apps pre-installed, effectively locking third-party apps to the Google ecosystem. For these reasons Android is described as being a "*look but don't touch*" kind of open.

At this point, several popular open-source applications already require some of Google's proprietary libraries to be installed. Increasing demand in the free software community in addition to severe problems in Google's proprietary software discovered by the Android modding community, have led to the development of a free software clone of Google's proprietary core libraries and applications - the microG Project was born.

Although most microG components are far from complete, users are amazed by the results. Free software users

Components

- **Service Core (GmsCore)** is a library app, providing the functionality required to run apps that use Google Play Services or Google Maps Android API (v2).

  More details and installation instructions

- **Services Framework Proxy (GsfProxy)** is a small helper utility to allow apps developed for Google Cloud tc Device Messaging (C2DM) to use the compatible Google Cloud Messaging service included with GmsCore.

  Read GmsCore documentation for details

- **Unified Network Location Provider (UnifiedNlp)** is a library that provides Wi-Fi- and Cell-tower-based geolocation to applications that use Google's network location provider. It is included in GmsCore but can also run independently on most Android systems.

  More details and installation instructions

- **Maps API (mapsv1)** is a system library, providing the same functionality as now deprecated Google Maps API (v1).

  More details and installation instructions

- **Store (Phonesky)** is a frontend application providing access to the Google Play Store to download and update applications. Development is in early stage and there is no usable application yet.

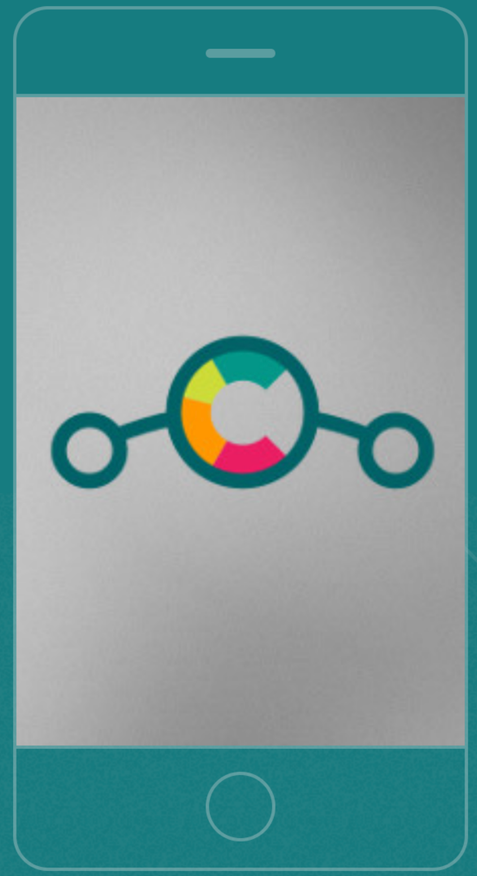
API	Functionality	Crashing	Issues
Account Authentication	⚠️ Partial	⚠️ Maybe	Major regressions in 0.2.7.17455, fixed in 4713797edc (0.2.8.17785)
Analytics	🚫 Not intended	✔ No	
Auto	❌ None	✔ No	It may works if the official Android Auto apk is installed as privileged application
Cast	⚠️ Partial	⚠️ Maybe	Minor issues
Drive	✔ Full	⚠️ Maybe	
Exposure Notifications	✔ Full	✔ No	Exposure Notifications
FIDO2/U2F	✅ Mostly	⚠️ Maybe	#849, currently FIDO/FIDO2 security keys can be connected only via USB or NFC
Firebase Analytics	🚫 Not intended	⚠️ Maybe	
Firebase Cloud Messaging	✔ Full	✔ No	
Firebase Auth	⚠️ Partial	⚠️ Maybe	#1198,#1281 **Supported methods**: Anonymous login, Email/Password login, Phone login, Custom-Token login **Not supported methods**: GoogleSignIn, FirebaseUI
Fitness	❌ None	⚠️ Maybe	
Fonts	❌ None	✔ No	#797, Not implemented
Fused Locations	✔ Full	✔ No	

LineageOS for microG

The full Android experience
without Google Apps

Download | Donate

Installation | FAQ



Проблема сервисов

- 👉 Жёсткая привязка к одному вендору
- 👉 Невозможность/сложность выбора альтернативы
- 👉 Сторонние приложения не могут получить гарантий встроенных сервисов
- 👉 Давление Google на производителей устройств

Импортозамещение


Kvadra gsm
16:37
Пятница, 1 сентября
23° Временами облачно
Разблокировать
10:30
Яндекс
Календарь
Музыка
Настройки
Галерея
Телефон
SMS/MMS
Камера

Технологии и медиа, 30 дек 2022, 04:28

«Коммерсантъ» узнал о планах «Яндекса» и VK по созданию мобильной ОС

«Ъ»: VK, Сбербанк и «Яндекс» намерились создать мобильную ОС на базе Android

Компании намерены развить экосистему новой ОС и заменить предустановленные приложения от Google на собственные. Собеседники газеты сочли, что компании могут создать новую операционную систему за год

«Яндекс», Сбербанк, VK и «Ростелеком» намерены учредить компанию — разработчика новой мобильной операционной

Коммерсантъ

03.05.2024, 01:29

Системный разнобой

Крупные IT-компании будут разрабатывать мобильные ОС независимо

VK, «Сбер» и «Яндекс» не смогли договориться о создании консорциума для разработки общей российской мобильной операционной системы (ОС) на основе Android. Теперь каждая компания сосредоточится на собственной ОС. Эксперты полагают, что даже с учетом собственных экосистем потенциальные ОС от VK, «Сбера» и «Яндекса» не смогут занять значимую долю рынка и составить реальную конкуренцию американской системе.

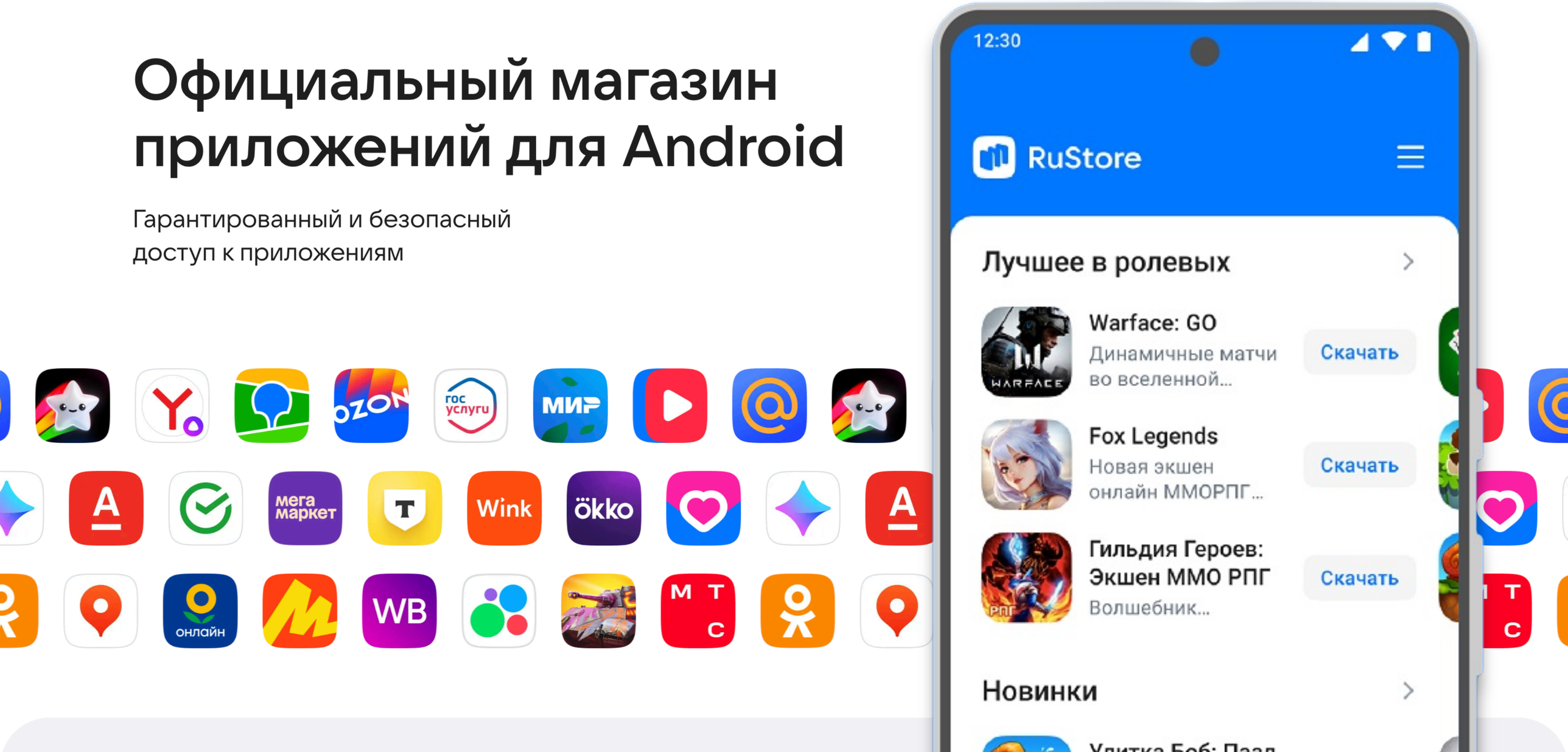
Источник “Ъ” на IT-рынке рассказал, что «Яндекс», «Сбер» и VK отказались от идеи создания совместной мобильной ОС на основе открытого кода AOSP (Android Open Source Project) и сосредоточились на разработке собственных версий.

RuStore

Приложения Игры Разработчикам Помощь

Официальный магазин приложений для Android

Гарантированный и безопасный доступ к приложениям



	Мобильные сервисы
Карты + FLP	
Push	
Магазин приложений	
Единая авторизация	
Поиск	
Голосовой помощник	
Аналитика (события и креши)	
Облако	

Все важные сервисы

- 👉 Авторизация
- 👉 Карты
- 👉 Гибридный провайдер местоположения
- 👉 Аналитика
- 👉 Магазин приложений
- 👉 Push уведомления
- 👉 Голосовой помощник
- 👉 Бесконтактная оплата
- 👉 Облако файлов
- 👉 Календарь
- 👉 Почта
- 👉 Бэкап фото/видео
- 👉 Музыка
- 👉 Видео
- 👉 Работа с документами

onepf

Overview | Repositories 15 | Packages | People

One Platform Foundation

Delivering open-source cross-store distribution tools to Android developers and enabling fair competition between app stores.

2 followers | Worldwide

Popular repositories

OpenIAB — Public archive

Open In-App Billing for Google Play, SlideMe, Amazon Store, Nokia Store, Samsung Apps, Yandex.Store, Appland, Aptoide, AppMall and Fortumo.

Java 474 171

OpenIAB-Unity-Plugin — Public archive

OpenIAB Unity Plugin for Android (Google Play, Samsung Apps, Amazon Appstore, SlideME, Nokia Store, Appland, Aptoide, AppMall, Yandex.Store, Fortumo), Windows Phone and iOS.

C# 147 58

AppDF — Public archive

Application description file for the appstores. Best way to distribute your apps!

Java 128 36

OPFPush — Public archive

Android push notifications client (GCM, ADM, Nokia Push)

Java 81 17

OPFlab — Public archive

Java 61 12

OPFMaps — Public archive

Java 20 9

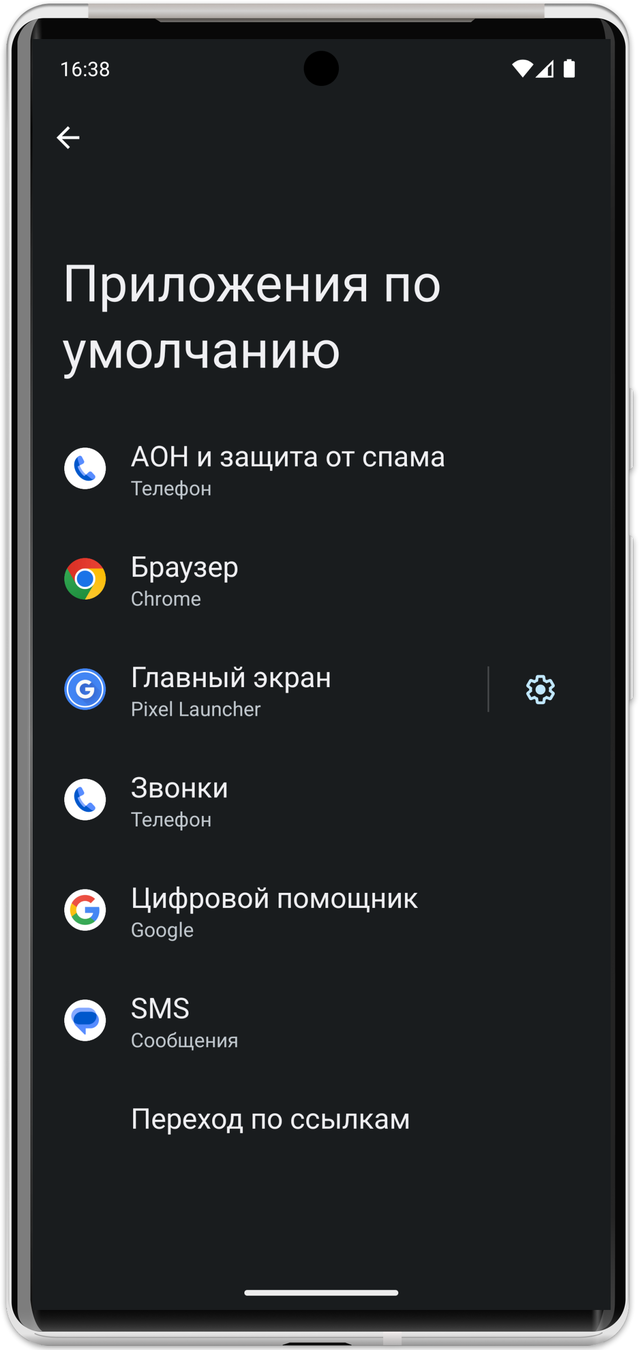
Repositories

Find a repository... | Type | Language | Sort

Открытый подход

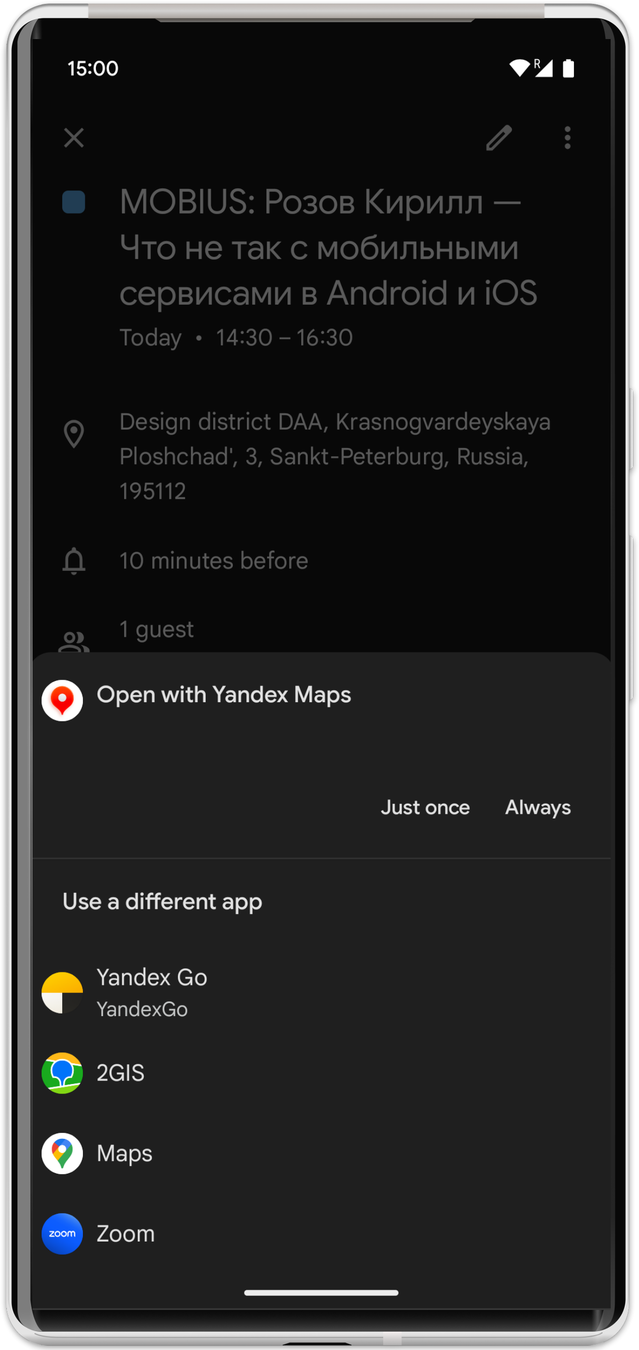
Приложения по умолчанию

- 👉 Браузер
- 👉 Звонилка
- 👉 SMS
- 👉 Лаунчер
- 👉 Голосовой помощник



Приложения по умолчанию

Выбор приложения по умолчанию для запуска Intent или Deep Link



RoleManager

Added in API level 29

This class provides information about and manages roles.

A role is a unique name within the system associated with certain privileges. The list of available roles might change with a system app update, so apps should not make assumption about the availability of roles. Instead, they should always query if the role is available using `isRoleAvailable(java.lang.String)` before trying to do anything with it. Some predefined role names are available as constants in this class, and a list of possibly available roles can be found in the AndroidX Role library.

There can be multiple applications qualifying for a role, but only a subset of them can become role holders. To qualify for a role, an application must meet certain requirements, including defining certain components in its manifest. These requirements can be found in the AndroidX Libraries. Then the application will need user consent to become a role holder, which can be requested using `Activity.startActivityForResult(Intent, int)` with the `Intent` obtained from `createRequestRoleIntent(java.lang.String)`.

Upon becoming a role holder, the application may be granted certain privileges that are role specific. When the application loses its role, these privileges will also be revoked.

Summary

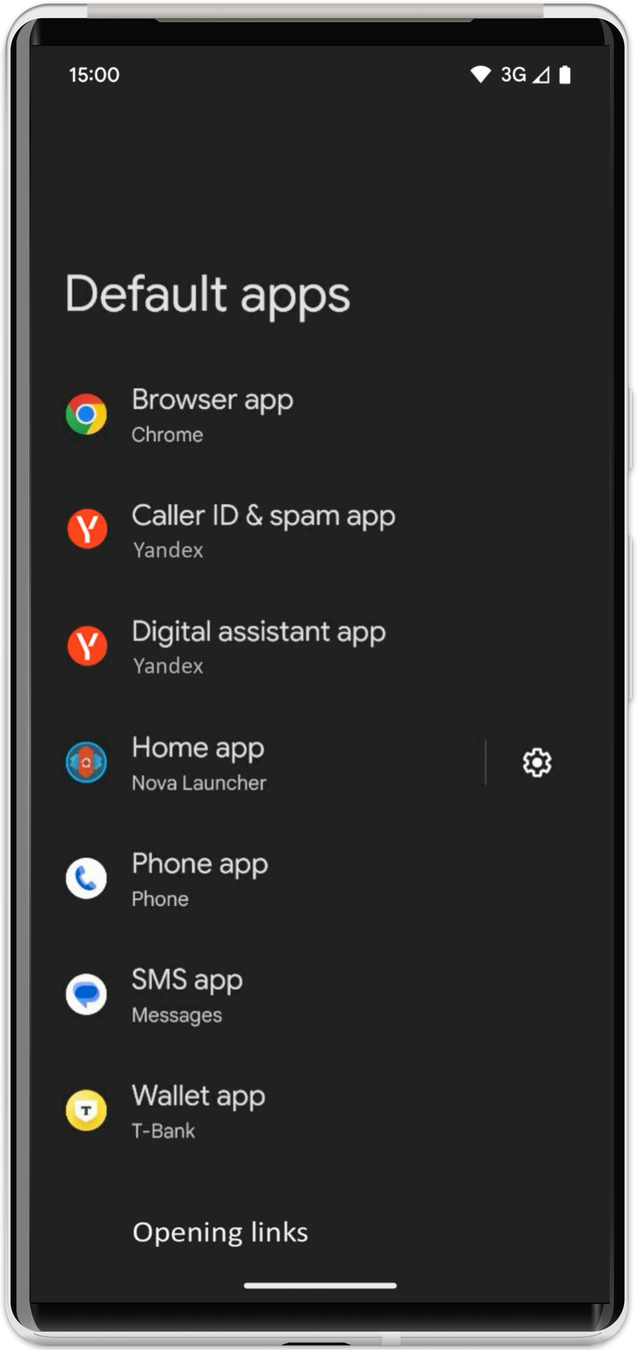
Constants	
`String`	`ROLE_ASSISTANT` The name of the assistant app role.
`String`	`ROLE_BROWSER` The name of the browser role.

Роли в Android

- 👉 ASSISTANT
- 👉 BROWSER
- 👉 CALL_REDIRECTION
- 👉 CALL_SCREENING
- 👉 DIALER
- 👉 EMERGENCY
- 👉 HOME
- 👉 NOTES
- 👉 SMS
- 👉 WALLET
- 👉 **APP STORE**
- 👉 **LOCATION PROVIDER**
- 👉 **PUSH NOTIFICATION**
- 👉 **SAFETY SERVICE**

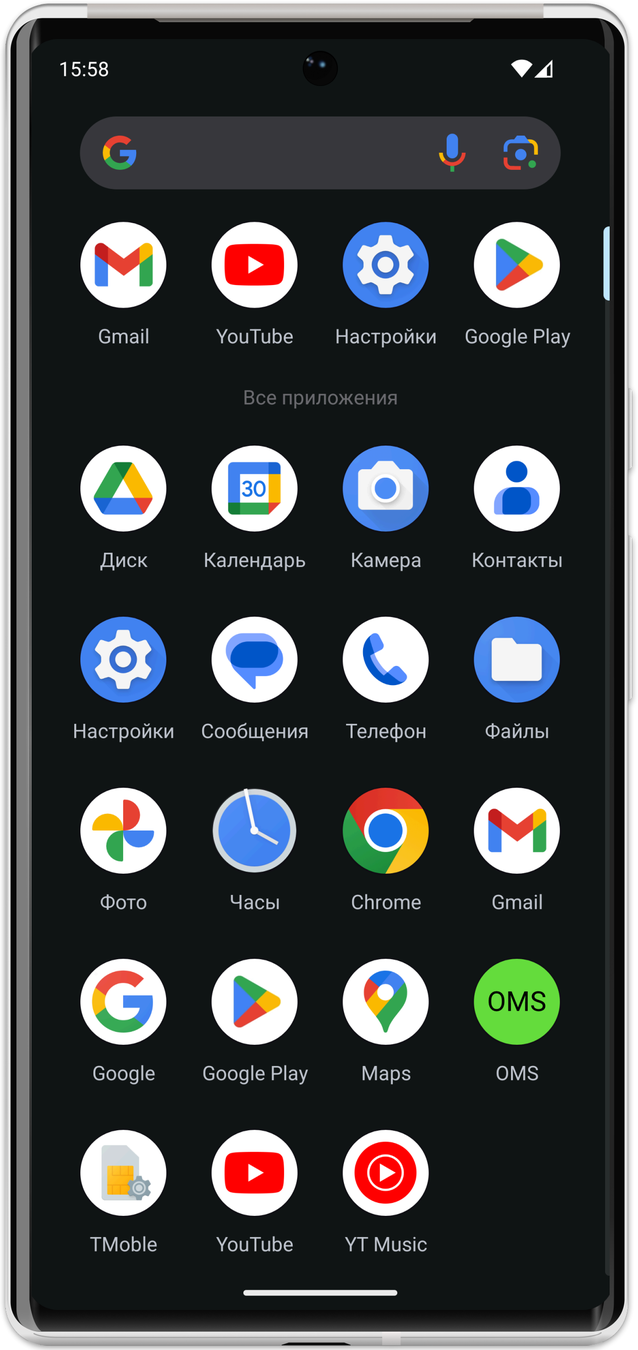
Приложения по умолчанию

- 👉 Браузер
- 👉 Звонилка
- 👉 SMS
- 👉 Лаунчер
- 👉 Голосовой помощник
- 👉 Push сервис
- 👉 Провайдер местоположения
- 👉 Карты



Отдельное приложение

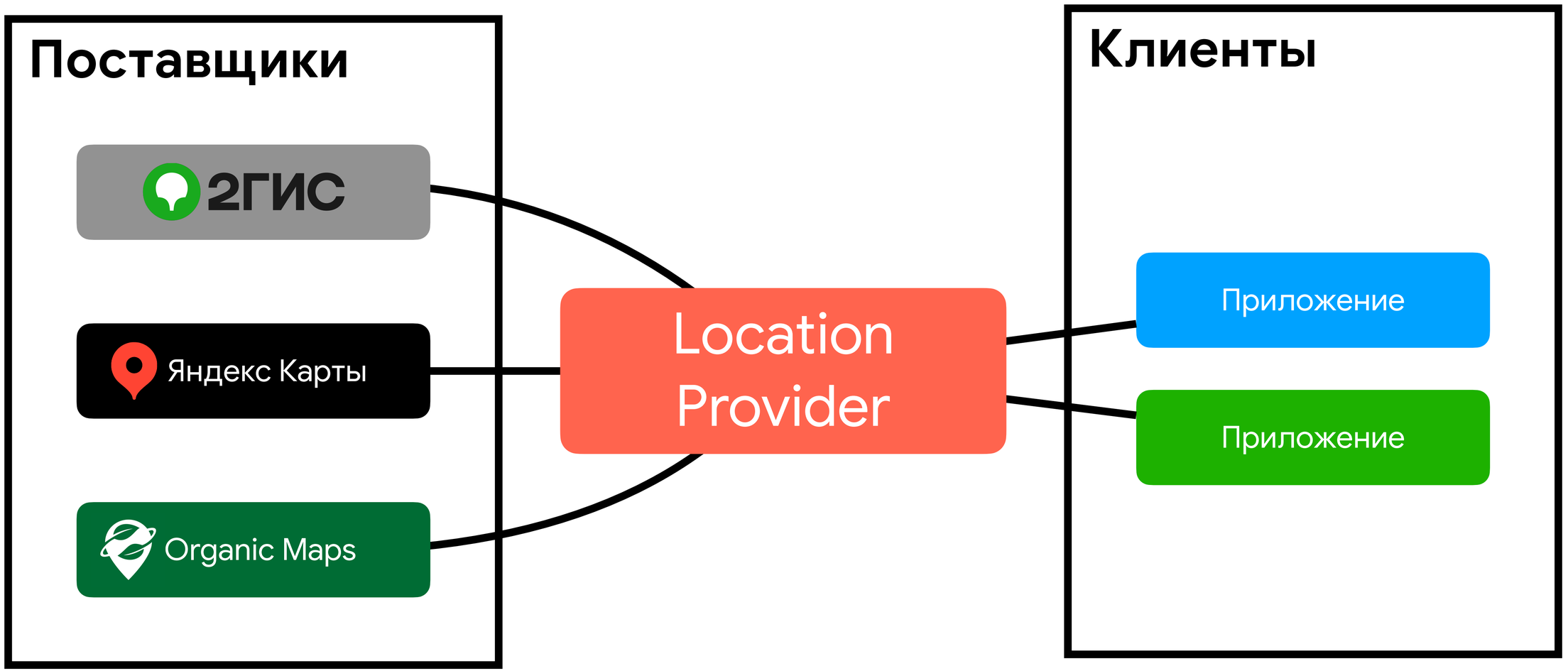
- 👉 Системные права
- 👉 Не нужна модификация прошивки
- 👉 Аналогичные принципы работы

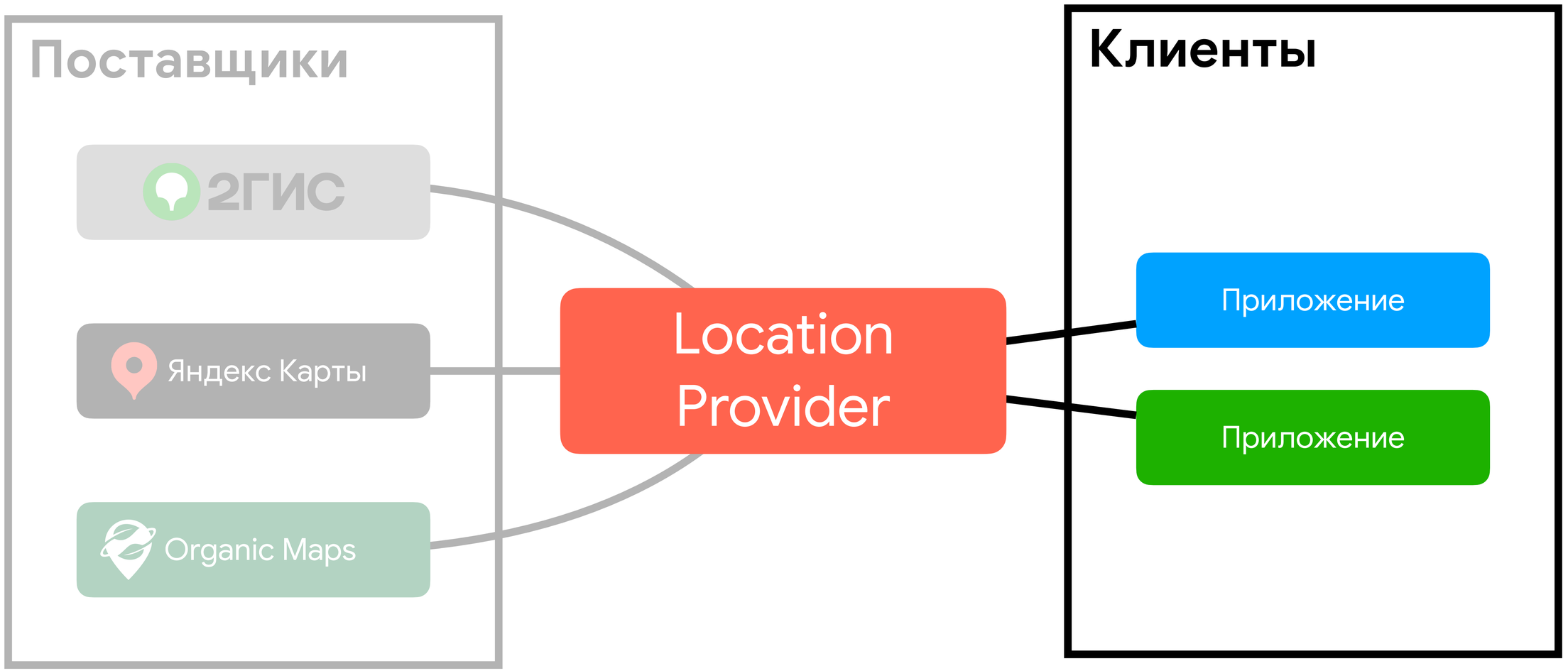


Реализация

Android Components

Activity	UI компонент для показа пользовательского интерфейса
Service	Выполнение задач в фоне
BroadcastReceiver	Получение сообщений от приложений или системы
ContentProvider	Предоставление данных другим приложениям


Поставщики
2ГИС
Яндекс Карты
Organic Maps
Location Provider
Клиенты
Приложение
Приложение


Поставщики
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Location Provider
Клиенты
Приложение
Приложение

Переиспользование

Одна из концепций, которая закладывалась в архитектуру работы между приложениями в Android ОС. Приложения могут использовать компоненты других приложений для реализации функционала

Реализация в Android

Android IPC

- 👉 Bound Service
- 👉 AIDL
- 👉 Intent
- 👉 Parcelable

Use binder IPC

This page describes changes to the binder driver in Android 8, provides details on using binder IPC, and lists required SELinux policy.

Changes to binder driver

Starting in Android 8, the Android framework and HALs now communicate with each other using binder. As this communication dramatically increases binder traffic, Android 8 includes several improvements designed to keep binder IPC fast. SoC vendors and OEMs should merge directly from the relevant branches of android-4.4, android-4.9, and higher of the kernel/common project.

Multiple binder domains (contexts)

Common-4.4 and higher, including upstream

To cleanly split the binder traffic between framework (device-independent) and vendor (device-specific) code, Android 8 introduced the concept of a *binder context*. Each binder context has its own device node and its own context (service) manager. You can access the context manager only through the device node to which it belongs and, when passing a binder node through a certain context, it is accessible from that same context only by another process, thus completely isolating the domains from each other. For details on using, see vndbinder and vndservicemanager.

Scatter-gather

Common-4.4 and higher, including upstream

In previous releases of Android, every piece of data in a binder call was copied three times:

- Once to serialize it into a `Parcel` in the calling process
- Once in the kernel driver to copy the `Parcel` to the target process

Android Interface Definition Language

специальный синтаксис описания интерфейсов взаимодействия между процессами в Android. На основе AIDL генерируются Java код с реализацией взаимодействия

AIDL для получения обновлений

Slide Subtitle

```
interface ILocationService {
    void registerCallback(ILocationCallback callback);

    void unregisterCallback(ILocationCallback callback);
}

interface ILocationCallback {
    void onLocationUpdated(double latitude, double longitude);
}
```

* Похож на Java, но отличается

Реализация Service провайдера

Упрощенная реализация с основными деталями

```
class LocationService : Service() {

    private val callbackList = RemoteCallbackList<ILocationCallback>()
    override fun onBind(intent: Intent) = binder

    private val binder = object : ILocationService.Stub() {
        override fun registerCallback(callback: ILocationCallback) {
            if (checkCallingPermission(Permissions.LOCATION) == PERMISSION_GRANTED) {
                callbackList.register(callback)
            }
        }

        override fun unregisterCallback(callback: ILocationCallback) {
           callbackList.unregister(callback)
        }
    }
}
```

Обертка для работы с Service

```
class FusedLocationManage(private val context: Context) {
    private var locationService: ILocationService? = null
    private val serviceConnection = …

    private var locationCallback: ILocationCallback? by observable(null) { _, oldValue, newValue →
        if (oldValue ≠ null && newValue == null) unboundService()
        } else if (oldValue == null) boundService()
    }

    private fun boundService() {
        context.bindService(newLocationServiceIntent(), serviceConnection, Context.BIND_AUTO_CREATE)
    }

    private fun unboundService() {
        val locationService = locationService ?: return
        locationService.unregisterCallback(locationCallback)
        context.unbindService(serviceConnection)
    }

    fun connect(callback: ILocationCallback) { this.locationCallback = callback }

    fun disconnect() { this.locationCallback = null }
}
```

Использование FusedLocationProvider

```
class MainActivity : AppCompatActivity(R.layout.activity_main) {

    private val locationServiceManager: FusedLocationManager
            by lazy(LazyThreadSafetyMode.NONE) { FusedLocationManager.init(this) }

    private val locationCallback = object : ILocationCallback.Stub() { … }

    override fun onStart() {
        super.onStart()
        locationServiceManager.connect(locationCallback)
    }

    override fun onStop() {
        super.onStop()
        locationServiceManager.disconnect()
    }
}
```

Использование FusedLocationProvider

```
class MainActivity : AppCompatActivity(R.layout.activity_main) {

    private val locationServiceManager: FusedLocationManager
            by lazy(LazyThreadSafetyMode.NONE) { FusedLocationManager.init(this) }

    private val locationCallback = object : ILocationCallback.Stub() { … }

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        locationServiceManager.connect(lifecycle, locationCallback)
    }
}
```


Kvadra gsm
16:37
Пятница, 1 сентября
23° Временами облачно
Разблокировать
10:30
Яндекс
Календарь
Музыка
Настройки
Галерея
Телефон
SMS/MMS
Камера


ВОПРОСЫ