Android™ App Performance Report

by AVG Technologies

Q2 - Q3 2014

The Online Security Company™
Protecting **182 million** active users.

Whatever your device, we've got you covered.

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Whatever your device, we've got you covered.

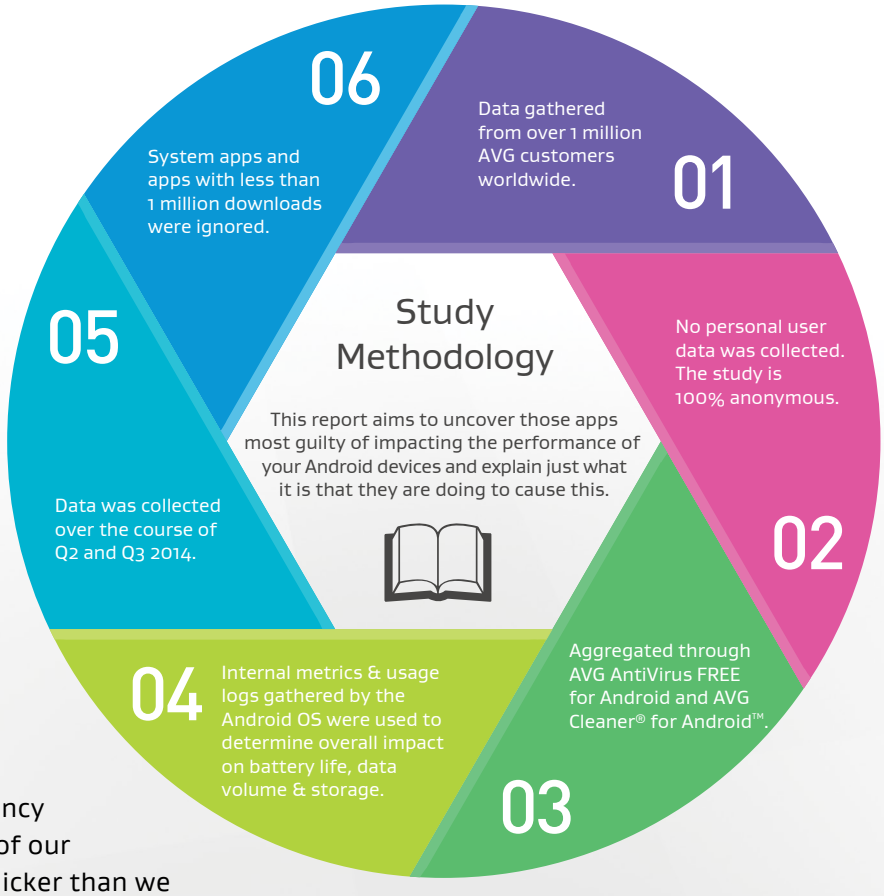
A Executive summary
The secret life of Android apps

The secret life of Android AVG study identifies top battery, data and storage consuming apps on Android smartphones and tablets.

The huge choice of cool, interesting and engaging apps available today for Android handsets is what makes a phone more than just a phone.

These apps bring social networks, entertainment, educational information, and productivity tools to our fingertips, at home, in the office or on the move.

Brilliant though they are, certain apps have a tendency to eat up the battery life of our phones and tablets far quicker than we might expect.



A Executive summary
The secret life of Android apps cont...

They can also be greedy with our data plans and use up all our storage without us realizing – by constantly checking for content and feed updates, pushing through notifications, streaming audio in the background, delivering high quality graphics, or simply downloading data.

If you are tired of soaring data bills, sluggish devices, and that universally hated red battery symbol, then read on.

A Executive summary
Top findings

1 Staying on top of the news can be bad for your device's health

Keeping up with what's going on in the world can to be particularly hard on your device because by their very nature, they deliver real-time updates on breaking news stories. In Q3 2014, the New York Times'® **Breaking News** app topped our list of the apps that take up the most storage. It joins other media outlet apps including that of the Daily Mail, and the BBC®, whose **BBC Sport** and **Media Player** apps showed up throughout Q2 and Q3 in the top ten battery drainers and network traffic hogs lists.

2 Handset makers risk draining their own devices

In a bid to differentiate their devices and offer a better user experience, an increasing number of smartphone and tablet makers now pre-install their own apps on the devices you get out of the box. This does make things easy, but sometimes pre-installed apps can be more trouble than they are worth by negatively impacting how your device runs.

In both Q2 and Q3 2014, for example, three Samsung apps made the top ten list of auto-starting battery draining apps (excluding games). **Samsung WatchON**, a mobile remote control app, also topped the non-auto-starting battery list thanks to the high quality visual content it delivers.

A Executive summary
Top findings cont...

3 It's game over for your battery life

Our real-time usage data showed that of the total time spent on Android smartphones or tablets, 62 percent was on some kind of game – potentially very bad news for batteries everywhere as games are amongst the highest users of battery life.
Within the games category, game producer **King**, which produced the Saga series, owned four of the top ten battery-chewing games.

A Executive summary
Top findings cont...

4 Google fatigues its own OS

After games, everyday tools were the most popular apps users downloaded and four of the top ten most resource hungry tools tracked in the last six months belong to Google. Three of these made the top five – **Google Now/Search, Google Text-to-Speech** and **Google Translate**, while Google's **Chrome Browser** for mobile also scored highly in the list of top storage eaters.

A Executive summary
App scoreboard

The following tables show the top three apps which have the most impact on device performance overall, or on device storage capacity, battery life or network data plan. These tables do not include games apps.

Overall performance impact

Facebook	1
Path	2
9GAG - Funny Pics and Videos	3

Highest Battery Drain (non auto-start apps)

Samsung WatchON (Video)	1
Apple Daily App	2
Netflix	3

Highest Data Traffic

Netflix	1
Daily Mail Online	2
Facebook	3

Highest Battery Drain (auto-start apps)

AllShareCast Dongles S/W Update	1
ChatON Voice and Video Chat	2
Beaming Service for Beep'nGo	3

Highest Storage Consumption

NYTimes - Breaking News	1
Tango Messenger Video & Calls	2
Spotify Music	3

A Executive summary
App scoreboard cont...

The tables below look at the top three games apps which have the most impact on device performance overall, or on device storage capacity, battery life or network data plan.

Overall performance impact

Puzzle & Dragons	1
Hay Day	2
8 Ball Pool	3

Highest Battery Drain

Puzzle & Dragons	1
Hay Day	2
Candy Crush Saga	3

Highest Storage Consumption

The Sims	1
Puzzle & Dragons	2
Family Guy - The Quest for Stuff	3

Highest Data Traffic

Hay Day	1
LINE - Let's Get Rich	2
FarmVille 2 Country Escape	3

A Executive summary
Methodology

The AVG team analysed performance data from over 1 million devices worldwide

The measured vectors - battery, storage and data plan - were normalized by calculating the percentile based on the medians values of the apps, measured from when the app was installed, whether used or not.

Based on our experience with consumer preferences, AVG weighted each of the three vectors slightly differently when calculating the overall performance score for an app. The calculation was therefore:

Storage*3 + Battery*2 + Traffic

Data collected in the US, UK and Australia was statistically significant enough to be able to produce specific tables and insights for those markets. These can be viewed in the appendix.

Measurement was carried out as follows:

Battery drain
We ranked the apps' battery consumption average based on real usage data.
We ignored applications that have less than 1 million downloads according to Google Play.
We also did not include core system apps but left in pre-installed but optional apps.

Storage consumption
We ranked the apps' storage consumption average based on real usage data. We ignored applications that have less than 1 million downloads according to Google Play™.
We also did not include core system apps but left in pre-installed but optional apps.

Data plan
We ranked the apps' network traffic consumption average based on real usage data. We ignored applications that have less than 1 million downloads according to Google Play. We also did not include core system apps but left in pre-installed but optional apps. We only took into account cellular transmitted data, ignoring the cost-free Wi-Fi traffic.

B Key findings
Introduction

With every new version of a mobile operating system, additional features are introduced that are specifically optimized for the latest devices.

While this can dramatically improve the experience for those who own the latest smartphone or tablet, the same is not true for older devices, whose users may see the battery life and speed suffer.

It's also the case that the more apps you install, the slower your phone or tablet will get. This is not just about the space those apps take up being on your device, but also the fact that a lot of apps, such as **Spotify**, **Skype** or **WhatsApp™**, tend to be active even when not used and run quietly in the background.

In this section, we will take a closer look at the full list of apps which ranked in the top ten for impact on battery life, device storage and data plan – as well as those with the overall highest ranking for performance when combining all three of these measurements. The key findings are separated into two parts:

- All apps excluding games
- Games only (which we felt were significant enough to merit a separate category of their own)

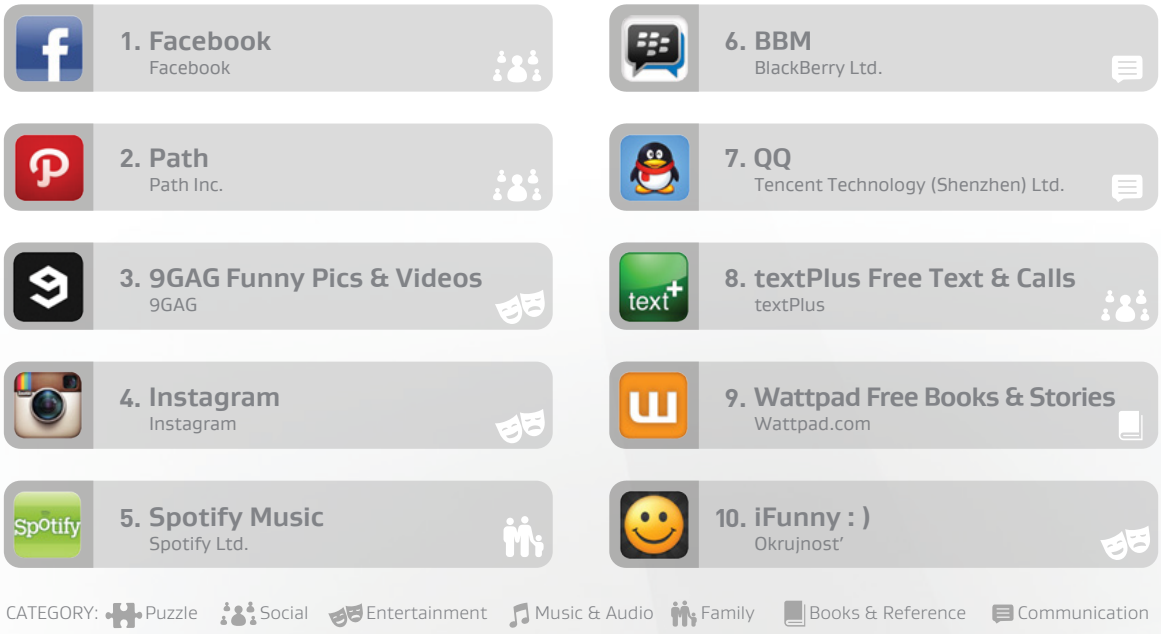
On page 21, we will look at possible ways to improve the battery drain, performance draw and data usage through various steps both inside the Android OS as well as in specific apps.

B Key findings

World's greediest mobile apps

In this section, we discovered which apps had the most overall impact on mobile devices.

Top 10 performance draining apps



Analysis

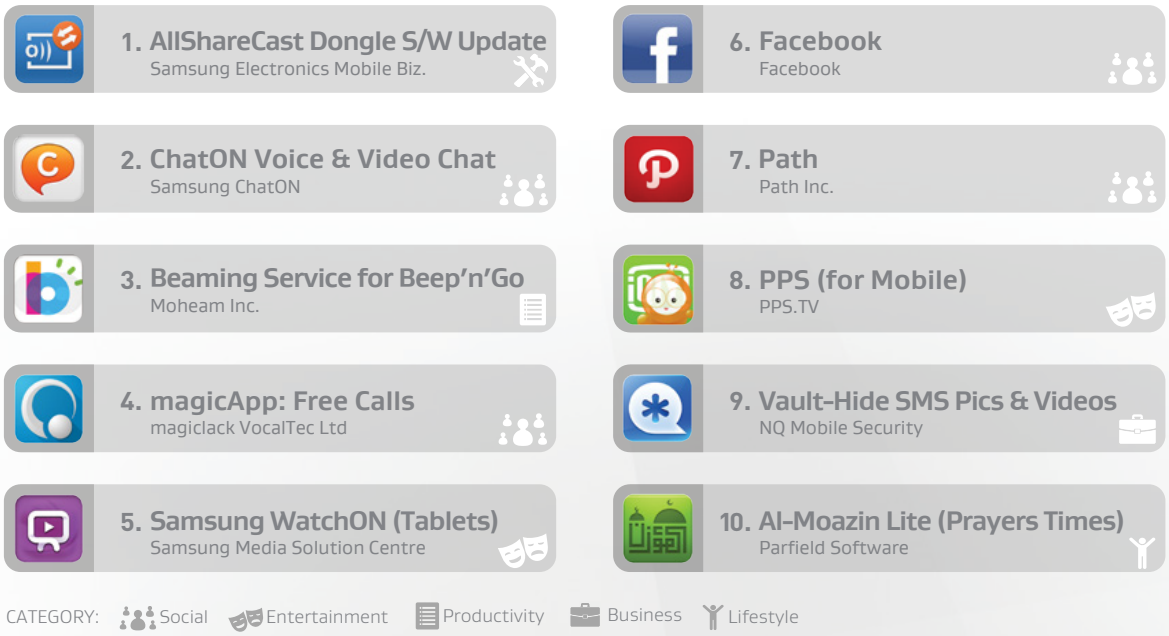
One of four ranking apps that fall in the social category, **Facebook** has the overall heaviest impact on battery life, data consumption and storage. Also joining the social apps as the most resource hungry, were the communication apps **QQ** and **BBM**, and multimedia apps like **9GAG**, **Spotify** and **iFunny**.

B Key findings

Top ten battery drainers

In this category, we split out those apps which run automatically when you turn on your smartphone or tablet and keep on running in the background all the time. This could, for example, include messaging apps, social apps or antivirus apps.

Top 10 battery drainers – Run at start up



Analysis

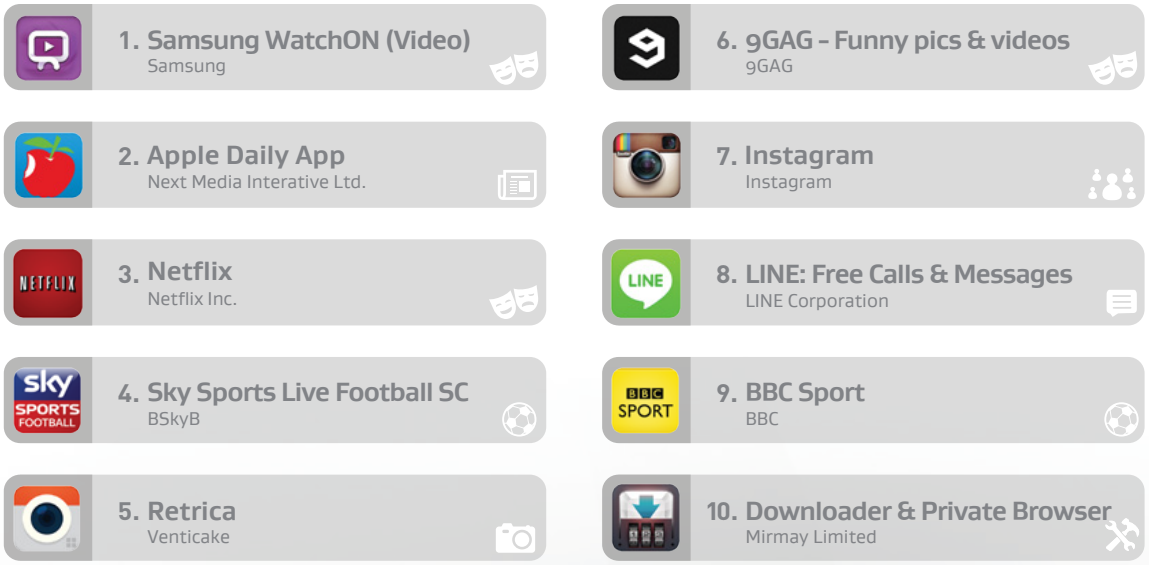
Many start-up apps, such as **AllShareCast** and **ChatON**, drain a device's battery quite extensively even when not being run by the user. Facebook is also a prime culprit due to the constant background notification checks if performs – these should be manually switched off if not needed.

While the list of the top draining auto-start apps has changed little over the past quarter both in terms of entrants and the power each uses, it is interesting to note that all of the apps in the non-auto-start category increased their drain on device batteries in Q3. The category also saw new entrants from the **Apple Daily** app & **BBC Sport**.

B Key findings

Top ten battery drainers cont...

Top 10 battery drainers – Non auto-start



Analysis

This category is perhaps one of the more competitive in our report. Most non-auto-start apps are very reliant on data usage, for example, constant Wi-Fi, mobile traffic, which, in and of itself, is one of the main draws on battery life.

Using such apps actively also requires intense processing power, especially with content-heavy ones like **9GAG**, **Sky Sports** and the **Apple Daily App**, which is why running them over longer periods should be avoided if battery life is a concern.

Amongst the top ten, we were surprised to see the Chinese newsreader **Apple Daily App** beating out the resource-heavy video streaming app **Netflix** for battery drain.

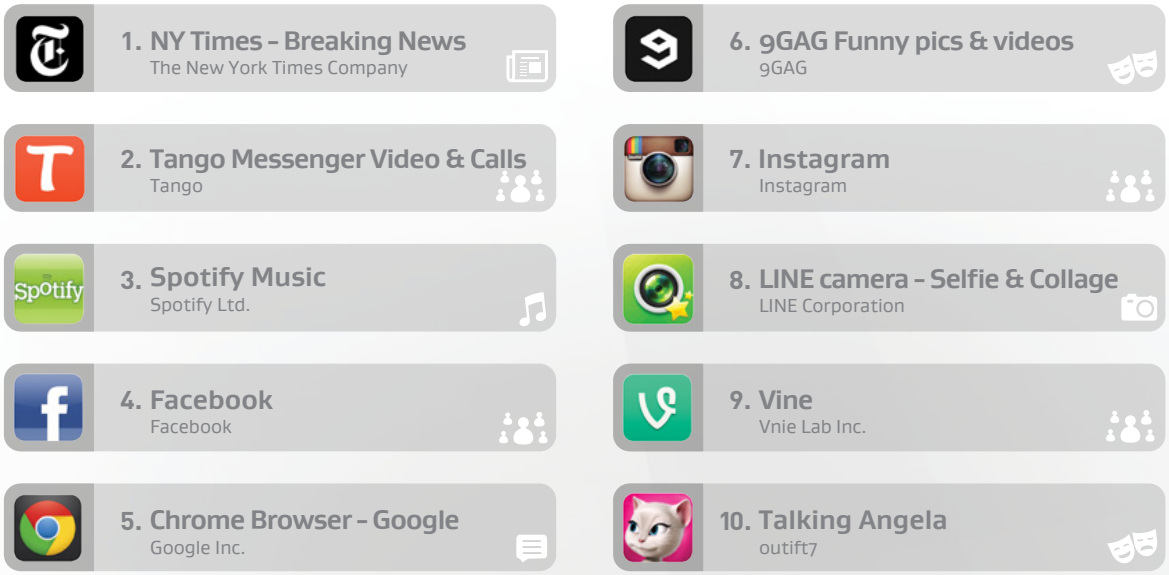
B Key findings

Top ten storage hogs

Your favorite everyday apps could be using up more of the precious limited storage on your device than you might realize.

This is because the longer some apps are installed the more storage they consume – either because the app is collecting temporary data (that it may "forget" to delete) or because the developer adds more and more features over time. In this section of our study, we examine which of the top-ranking apps in the Google Play store consume the most storage space over time.

Top 10 storage eaters



Analysis

The reasons behind the top three listings are varied. In the number one spot, the **NYTimes** app caches articles, including photos and videos, leading to a higher storage usage than even **Spotify**.

Meanwhile, messaging apps such as **Tango** or **LINE camera** store attachments, such as any videos or photos that are sent or received. **Spotify** reserves the number three spot thanks to its option to store songs locally for offline listening.

B Key findings

Top ten network traffic hogs

Many of the apps you love the most can impact heavily on your data plan, which is why if you are watching your monthly bills, you might want to use these apps with care.

Top 10 network traffic hogs

1. **Netflix**
   Netflix Inc.
2. **Daily Mail Online**
   Daily Mail Online
3. **Facebook**
   Facebook
4. **Tumblr**
   Tumblr Inc.
5. **Instagram**
   Instagram
6. **9Gag** Funny pics & videos
   9GAG
7. **iFunny :)**
   Okrujnost'
8. **TV Guide UK**
   TV Guide
9. **NYTimes** Breaking News
   The New York Times Company
10. **CNN** Breaking US & World News
    CNN

CATEGORY: Social Entertainment Newspaper & Magazines

Analysis

All of this quarter's top ten were also listed in Q2 and all have increased their draw on the network within that period, most likely due to more usage.

As video streaming (**Netflix**) is the most traffic-heavy activity on mobile phones or tablets, our team was surprised to see that news apps make up the number two, nine and ten spots.

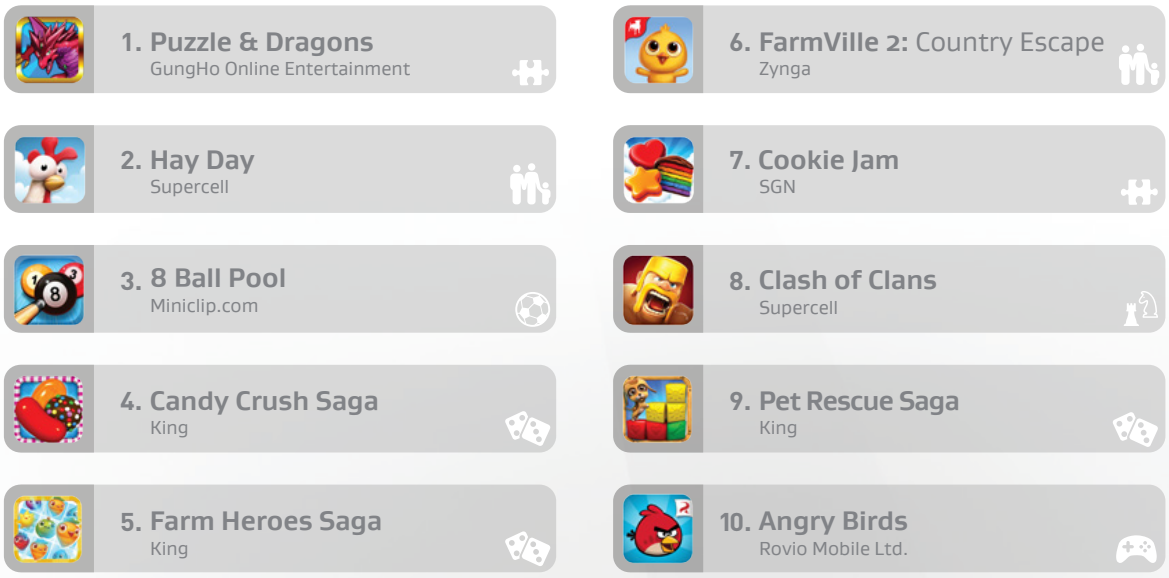
In analyzing the results, there appeared to be a correlation between the apps which were high in both the battery and data plan consumption measurements; conversely, the storage hogs seemed only to impact that single performance vector.

B Key findings

Mobile gaming – what gamers should know

In this section, we look at the world's greediest games apps. Games apps are the most used category of app and in general draw heavily on device resources.

Top 10 performance draining games apps



Analysis

Puzzle & Dragons retains the top slot for all-round performance impact in the last six months, followed closely by **Hay Day**. Breaking this down, we can see that both top the scoreboard of biggest battery drainers, with **Puzzle & Dragons** also in second place in the storage hog category and **Hay Day** additionally topping the data plan consumption chart.

B Key findings

Mobile gaming – what gamers should know cont...

Top 10 battery drainers

1. **Puzzle & Dragons**
GungHo Online Entertainment

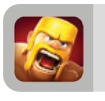
2. **Hay Day**
Supercell

3. **Candy Crush Saga**
King

4. **Minecraft** - Pocket Edition
Mojang

5. **Cookie Jam**
SGN

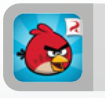
6. **Pet Rescue Saga**
King



7. **Clash of Clans**
Supercell

8. **Bubble Witch 2 Saga**
King

9. **Farm Heroes Saga**
King



10. **Angry Birds**
Rovio Mobile Ltd.

Top 10 storage eaters

1. **The Sims**
EA Mobile

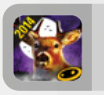
2. **Puzzle & Dragons**
Gung Ho Online Entertainment

3. **Family Guy** The Quest for Stuff
Tiny Co

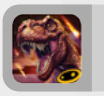
4. **The Simpsons:** Tapped Out
EA Mobile

5. **Despicable Me**
Gameloft

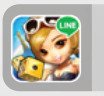
6. **Plants vs. Zombies**
EA Mobile



7. **DEER HUNTER 2014**
Glu



8. **DINO HUNTER:** DEADLY SHORES
Glu



9. **LINE** Let's Get Rich
Line Corporation

10. **UNO & Friends**
Gameloft

CATEGORY: Puzzle Casual Adventure Action Simulation Card Family Strategy Arcade

B Key findings

Mobile gaming – what gamers should know cont...

Top 10 network traffic hogs

1. **Hay Day**
Supercell

2. **LINE** Let's Get Rich
LINE Corporation

3. **FarmVille 2:** Country Escape
Zynga

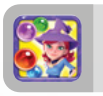
4. **Solitaire**
MobilityWare

5. **Farm Heroes Saga**
King.com

6. **Candy Crush Saga**
King.com

7. **Clash of Clans**
Supercell

8. **Words with Friends** Free
Zynga



9. **Bubble Witch 2 Saga**
King.com

10. **Trivia Crack**
Etermax

Other games which draw heavily on both your smartphone or tablet battery and data plan at the same time are:

- Farm Heros
- Candy Crush
- Clash of Clans
- Bubble Witch 2 Saga

LINE Let's Get Rich also appeared in both the data plan and storage charts, the only app to be in the top ten for these combined performance impact measures.

C App usage trends
Introduction

Based on AVG's global statistics, the following list shows the top 20 most used apps on Android devices. Of these, the top five apps which draw most heavily on the resources of your smartphone or tablet are, in order, **Facebook**, **Instagram**, **Spotify**, **8 Ball Pool** and **Farm Heroes Saga**.

C App usage trends

Apps users spend the most time out

Based on AVG's global statistics, the following list shows the top 20 most used apps on Android devices. Of these, the top five apps which draw most heavily on the resources of your smartphone or tablet are, in order, **Facebook**, **Instagram®**, **Spotify**, **8 Ball Pool** and **Farm Heroes Saga**.

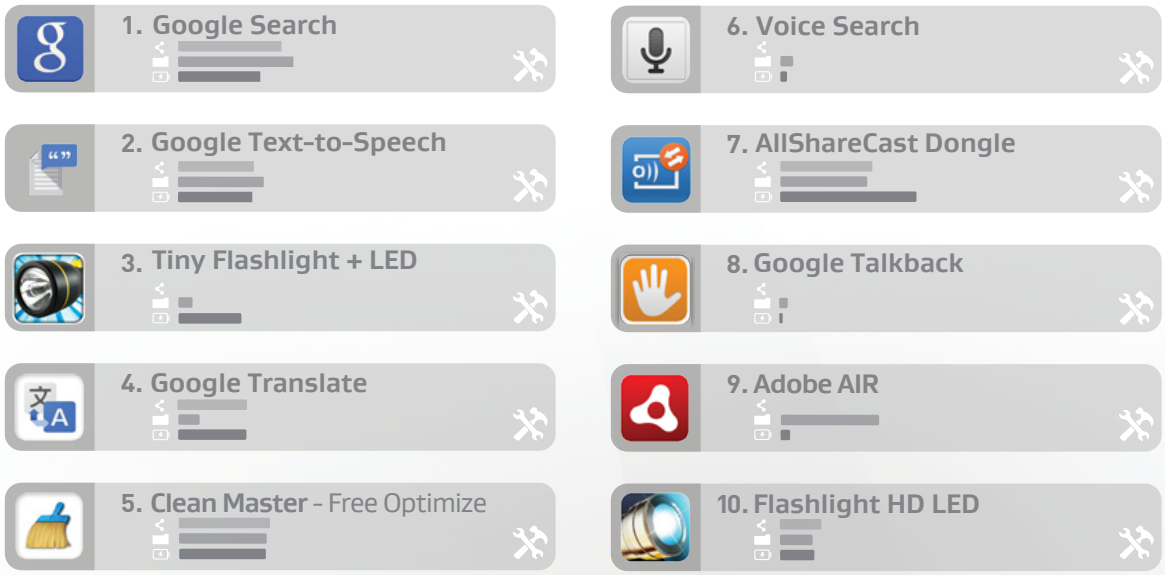
Top 20 apps users spend their most time on

C App usage trends
Installed tools

Looking more closely at the most installed tools apps on Android handsets, unsurprisingly, Google tools featured prominently in the top ten.

AllCastDongle ranked highest for resource consumption, particularly with battery life, followed by **Google Search**, **Clean Master** and **Google Text-to-Speech**.

Top 10 installed tools - resource consumption



C App usage trends

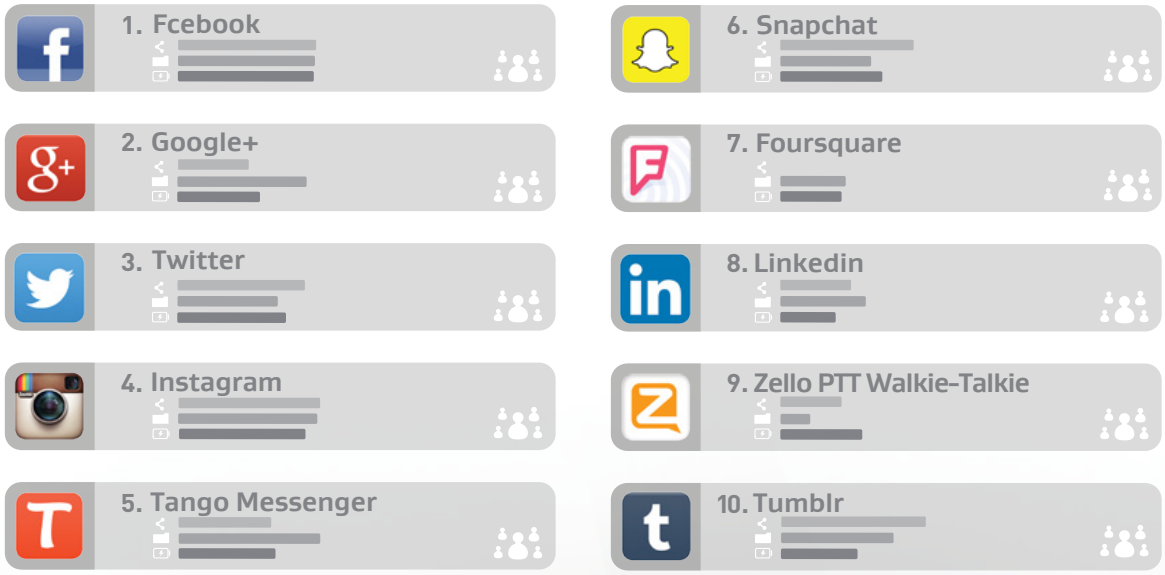
Installed communication apps

The top installed social and communications apps during the last six months were consistent quarter on quarter as their popularity continues. **LINE** topped the communication apps chart with the most resource consumption across data plan, storage and battery. **Facebook** is the most popular downloaded social app and along with **Instagram**, which is fourth most popular, tops the greediest apps chart.

Top 10 installed communication apps – resource consumption

C App usage trends
Installed social apps

Top 10 installed social apps - resource consumption



D Addressing the issues
Insights into Android device and app optimization

Android devices have to walk a fine line trying to restrict the resource consumption of apps but not limit their functionality too much. We all love our apps and we don't want to stop using them.

In this chapter, we'll walk through not only how to limit your app resource use but also how to get the most out of your battery life, device performance, storage and data plan on Android devices in general.

This guide was written for most Android devices running Android 3.x or Android 4.x, including:

- Smartphones (such as the Samsung Galaxy S5)
- Tablets (Samsung Galaxy Note Pro, Nexus 7)

Please note that though many phone and tablet makers use Android, they tend to change the way things look and work.

We'll show you how it works on different systems, but if you can't find an option for your exact device, don't worry as many of the steps are the same for most devices.

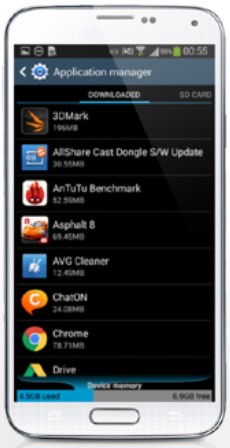
D Addressing the issues

Step 1 Limit notifications to save battery life, performance and mobile data

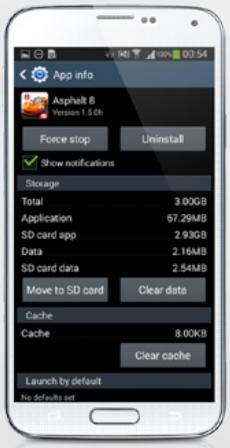
Phone notifications are one of the most useful mobile inventions, giving users information they need to know about new appointments or messages at a glance.

However, not all notifications are necessary and most cause the phone to be constantly active, increasing the drain on the battery and mobile data.

1. To turn off unnecessary notifications, you need to go into the **Apps** or **Application Manager** sections of the settings menu on your device. This will show you a list of all the apps you have running.



2. To turn off notifications for an app, such as **Asphalt 8**, tap on it and uncheck the **Show Notifications** entry.



D Addressing the issues
Further limiting an apps' battery & traffic drain

Limiting notifications is only one side of the coin if you want to reduce the impact an app has on your device.

In each app's settings you will find additional options and features you may want to turn off. We're going to use Facebook as an example to show you how it's done.

Ranking among the most resource-heavy apps, there are a few things any user can do to limit Facebook's use of resources.

1. As with before, the first step is to go to the app's settings page (via the settings page and App Settings):

2. From there you will see a number of features that will tax your device, such as:

Facebook chat
If you do not use the chat feature, you can turn it off or uninstall the standalone Messenger app.

Refresh interval
Every hour, Facebook automatically downloads content in the background which has an impact on battery life and traffic, even if you're not using the app. You can limit this to every four hours or turn it off completely.

Location
Facebook can use the built-in GPS of your device to determine where you are and include that data in posts you make. This too can be turned off to save battery life.

Notifications
This is an alternative way to turn off the app's notifications.

While this is specific to Facebook, many apps on your smartphone or tablet have similar settings. In general, however, you should watch out for any that look to involve background activity, such as "**Refresh Interval**" or "**Background Refresh**" and limit the use of built-in features such as GPS/ Location and Bluetooth.

D Addressing the issues

Step 2 Free up space & limit mobile traffic

Our top storage offenders often start off as small apps or games but collect temporary clutter over time, and swell in size.

When this happens, the impact is not just on your device's storage, which obviously declines, but also on your mobile data. Many apps tend to download data in the background in order to be instantly available once you open them. The NYTimes app for example automatically downloads news stories to your devices every 24 hours – even though you may not read all of them.

Almost every app stores temporary files, cookies and other data in order to work. In our internal tests, we found that simply browsing through a typical Facebook timeline for **roughly 60 seconds produced over 5 MByte of temporary files** – including downloaded pictures, ads, cookies and more. The **NYTimes** app created a cache of 10 MB when we watched a 20 sec video and opened one news post.

This cache can be deleted on either a per-app basis or automatically. In this next tip, we'll show you two ways to limit the growing storage impact of apps.

1. Open up the **Application Manager** or **App** menu from within your Settings menu. Tap on an app, such as NYTimes or Facebook and hit the **Clean Cache** Button (screenshot to the right).

2. Doing this for each app on a regular basis can be quite time consuming which is why AVG built the AVG Cleaner for Android app (screenshot on the right). It scans all apps for these caches regularly and allows for the removal of all of them at the same time – by tapping a button or automatically. The only downside of cleaning a cache may be that information, for example a Facebook image, which has been loaded and cached, may need a few extra moments to load when you open it the next time.

D Addressing the issues

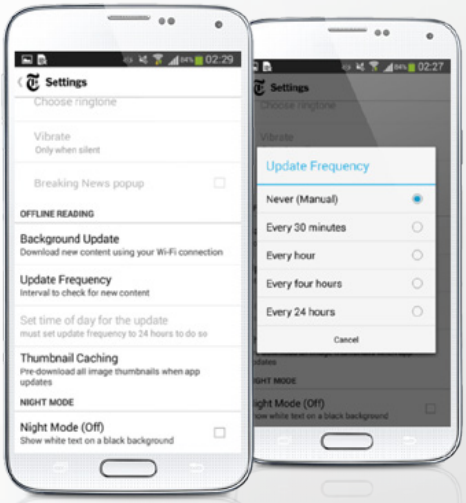
Step 3 Reduce data traffic: Limit the offline storage and background downloads of apps

In some cases, an app will include settings which allow the user to limit the amount of data it downloads over Wi-Fi or mobile data and stores locally.

Below we outline how to do that, again using the NYTimes app as an example:

1. Open up the app in question and tap on the three little dots in the upper right corner. Go to **Settings**. From here, you can turn off "Offline Reading" by tapping on **Update Frequency** and selecting **Never (Manual)**.

2. You can also turn off the **Thumbnail Caching** which downloads images of news stories so that they display faster if you open them.



There will be some people who do not want to limit their apps to work in a certain way and in some cases – like with games or video streaming – there's no technical way to reduce the amount of battery consumption or mobile data usage. Which is fine – this is all about user choice. If you do choose to take action however, these general recommendations should help Android device users reduce the overall resource consumption so they can enjoy using their apps without limitation.

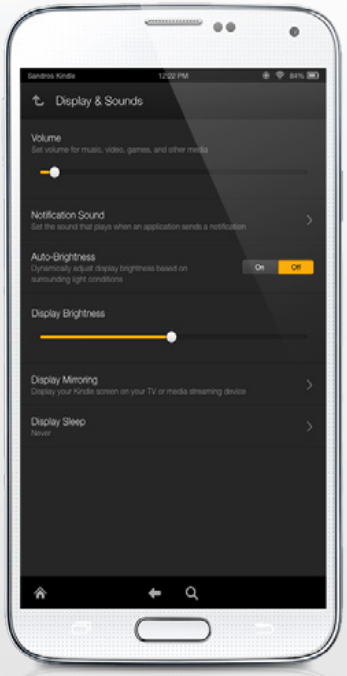
D Addressing the issues

Step 4 Your display – battery drainer No. 1

These days, virtually all Android smartphones or tablets come with super high-resolution displays that are also extremely bright. While that may be great for browsing the web, sharing photos or playing games, these displays literally eat into your battery life.

Did you know for example that on some smaller tablets with high-resolution displays, a display set to full brightness is responsible for 80 percent of the entire power consumption!

If you're not in bright sunlight, we would therefore recommend turning the brightness levels down to **50–70 percent**.



D Addressing the issues

Step 5 Turn off Wi-Fi, Bluetooth and GPS to save battery life

Your Android device is full of features that eat into your battery life. It is important to make sure they're off when they're not being used:

Wi-Fi®

Nowhere near a wireless connection? Then turn off your Wi-Fi. Otherwise the built-in Wi-Fi receiver will constantly try to scan for networks – which can increase battery usage by more than 20 percent.

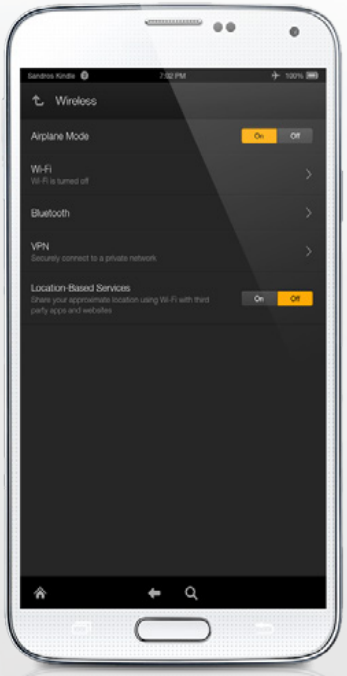
Bluetooth®

Not using a Bluetooth headset or connecting your Android device to your car? Then this setting should also be turned off, otherwise it will continually scan for compatible Bluetooth devices, using up battery as it does so.

GPS

Your mobile GPS is probably one of the biggest power suckers there is. The built-in GPS antennas are really power-hungry, and if your GPS is turned on they continue to draw power even if you're not actively using them – mainly thanks to the alarming number of apps that regularly use the GPS feature such as [Google Maps, Facebook or Twitter]. So if you're at home or just don't need to use any GPS, turn it off.

You'll find the settings for all three features in your swipe down menu or under **Settings**. Go to **Wireless** (or **Wireless and networks**) and switch off the relevant feature when not in use. Note: GPS can sometimes be referred to as **Location-based services**.



D Addressing the issues

Getting rid of performance-sapping apps

Your Android device is much like your PC: the more apps you install on it, the slower it will get and the sooner it'll run out of juice.

It won't happen with one app nor probably with five, but once you've installed a dozen – or hundreds – of apps, you'll notice a significant slowdown. That's because many apps run features even when you're not using them. So how can you be selective about which apps you do and don't want on your phone? There are tools that help you identify the worst offenders for performance and battery life.

D Addressing the issues
Getting rid of performance-sapping apps cont...

Ours is the free AVG Cleaner 2.0 app. Here's how it works as an example:

1. Firstly, install the free app from the Google Play Store or the Amazon Kindle™ store and launch it.

Next, go to the **App Uninstaller** page. This will list all your currently running apps.

2. If you tap on the little blue arrow in the top right, you can then sort the list by:

App Usage Shows the apps you haven't used in a long time on the top. This will help you get rid of apps you may have completely forgotten about and that are consuming precious space.

Storage Usage Running out of disk space? Then it's time to look at the largest apps on your phone. Sort by **Storage Usage** to find the largest apps and then take action accordingly.

Battery Usage This helps you identify the most power-consuming apps on your device. It's likely that they'll also have a severe impact on performance overall. If you don't need some of the top offenders (using 5% or more), get rid of them. If you do need them, then open their settings (if they have any) and find a way to reduce their background activity as we have already shown you.

Data Usage If you're on a monthly data plan, every Megabyte counts. If you sort the apps by **Data Usage**, you'll quickly find the top apps that are sucking up your plan. Again, uninstall any you don't need or turn off their background data usage.

To uninstall an app, tap on it and hit **Uninstall**. You can even tap and select multiple apps so you can get rid of a batch at a time.

We hope these tips will be useful. This report is not designed to be judgmental of apps that do require resources to run. The goal is to identify our favorite ones which are heaviest on Android smartphone and tablet resources, and see what can be done to reduce this impact so we can continue to enjoy them while experiencing less of the side effects.

E Contact Information

For further information, please visit:.

Our blogs, press information and resources on how to get the most out of your connected devices at AVG Now: http://now.avg.com

Our website for details about our performance products: http://www.avg.com/performance

Contact: **Sandro Villinger** at sandro.villinger.contractor@avg.com

F Appendix

App resource consumption analysis

In this section, you can find the app resource consumption analysis for the United States, the United Kingdom and Australia. We used the same methods to calculate the ranks as before but this time only took into account performance data of users from these specific countries.

F Appendix
USA

Top 10 performance draining apps – excluding games

1. **Facebook**
   Facebook
2. **Instagram**
   Instagram
3. **Spotify Music**
   Spotify Ltd.
4. **textPlus** Free Text + Calls
   textPlus
5. **ifunny :)**
   Okrujnost'
6. **Netflix**
   Netflix Inc.
7. **ooVoo** Video Call Text & Voice
   ooVoo LLC
8. **SoundCloud** - Music & Audio
   SoundCloud
9. **GO SMS Pro**
   GO Dev Team
10. **Vine**
    Vine Labs Inc.

CATEGORY: Social

Top 10 performance draining apps – games only

1. **Candy Crush Saga**
   King
2. **Farm Heroes Saga**
   King
3. **Pet Rescue Saga**
   King
4. **Bubble Witch 2 Saga**
   King
5. **Clash of Clans**
   Supercell
6. **Solitaire**
   MobilityWare
7. **Words With Friends**
   Zynga
8. **The Simpsons**
   Electronic Arts Inc
9. **Subway Surfers**
   Kiloo
10. **Temple Run 2**
    Imanji Studio

CATEGORY: Casual Strategy Card Word Arcade Action

F Appendix
USA

Top 10 battery draining apps – run at startup

1. **AllShare Cast Dongle**
   Samsung Electronics Mobile Biz.
2. **Beaming Service** for Samsung
   Mobeam Inc.
3. **Samsung WatchON** (Tablet)
   Samsung Media Solution Center
4. **RetailMeNot Coupons**
   RetailMeNot Inc.
5. **Facebook**
   Facebook
6. **textPlus** Free Text + Calls
   textPlus
7. **Facebook Messenger**
   Facebook
8. **Antivirus & Security** | Lookout
   Lookout Mobile Security
9. **Kik**
   Kik Interactive
10. **GO SMS Pro**
    GO Dev Team

CATEGORY: Social Entertainment Communication Shopping Tools Productivity

Top 10 battery drainers (user execute)

1. **Samsung WatchON** (Video)
   Samsung Media Solution Center
2. **Netflix**
   Netflix Inc.
3. **Instagram**
   Instagram
4. **GO SMS Pro** Emoji Plugin
   Go Dev Team
5. **Glide - Video Texting**
   Glide
6. **Walmart**
   Walmart
7. **Spotify Music**
   Spotify Ltd.
8. **LINE:** Free Calls & Messages
   Line Corporation
9. **Brightest Flashlight** Free
   GoldenShores Technologies LLC
10. **iFunny :)**
    Okrujnost'

CATEGORY: Social Entertainment Communication Personalization Shopping Tools Music & Audio

F Appendix
USA

Top 10 battery drainers – games only

1. **Candy Crush Saga**
   King
2. **Pet Rescue Saga**
   King
3. **Bubble Witch 2 Saga**
   King
4. **Clash of Clans**
   Supercell
5. **Farm Heroes Saga**
   King
6. **Solitaire**
   MobiltyWare
7. **The Simpsons:** Tapped Out
   Electronic Arts inc.
8. **Don't Tap the White Tiles**
   HU WEN ZENG
9. **2048 Number Puzzle Game**
   Estoty Entertainment Lab
10. **Subway Surfer**
    Kiloo

CATEGORY: Casual Strategy Card Arcade Puzzle

Top 10 storage eaters – excluding games

1. **Chrome Browser** - Google
   Google Inc.
2. **Vine**
   Vine Labs Inc.
3. **Spotify Music**
   Spotify Ltd.
4. **Facebook**
   Facebook
5. **Tango Messenger** Video & Calls
   Tango
6. **Instagram**
   Instagram
7. **Soundcloud** - Music & Audio
   SoundCloud
8. **Firefox Browser** for Android
   Mozilla
9. **NFL Mobile**
   NFL Enterprises LLC
10. **Samsung WatchOn** (Tablets)
    Samsung Media Solution Center

CATEGORY: Social Entertainment Communication Music & Audio Sports

F Appendix
USA

Top 10 storage eaters – games only

1. **Despicable Me**
   Gameloft
2. **The Simpsons:** Tapped Out
   Electronic Arts Inc
3. **DEER HUNTER 2014**
   Glu
4. **Subway Surfer**
   kiloo
5. **My Talking Tom**
   Outfit7
6. **Candy Crush Saga**
   King
7. **Temple Run 2**
   Imangi Studios
8. **Farm Heroes Saga**
   king
9. **Pet Rescue Saga**
   King
10. **Solitaire**
    MobilityWare

CATEGORY: Casual Action Arcade

Top 10 network traffic hogs

1. **Netflix**
   Netflix
2. **Tumblr**
   Tumblr inc.
3. **AT&T Smart Wifi**
   AT&T Services inc.
4. **Instagram**
   Instagram
5. **Facebook**
   Facebook
6. **ifunny :)**
   Okrujnost'
7. **Spotify Music**
   Spotify Ltd.
8. **CNN** Breaking US & World News
   CNN
9. **Beaming Services** for Samsung
   Mobeam Inc.
10. **Wi-fi Now** by U.S. Cellular
    devicescape.uscc

CATEGORY: Social Entertainment Productivity Tools Music & Audio Newspaper & Magazines

F Appendix
United Kingdom

Top 10 performance draining apps – excluding games

1. Facebook – Facebook
2. Instagram – Instagram
3. Spotify Music – Spotify Ltd.
4. BBM – BlackBerry Limited.
5. Vine – Vine Labs Inc.
6. Netflix – Netflix Inc.
7. Tango Messenger Video & Calls – Tango
8. SoundCloud – Music & Audio – SoundCloud
9. Daily Mail Online – Daily Mail Online
10. Twitter – Twitter Inc.

CATEGORY: Social, Entertainment, Music & Audio, Communication, Newspaper & Magazines

Top 10 performance draining apps – games only

1. Hay Day – Supercell
2. Candy Crush Saga – King
3. Farm Heroes Saga – King
4. 8 Ball Pool – Miniclip.com
5. Clash of Clans – Supercell
6. Pet Rescue Saga – King
7. Bubble Witch 2 Saga – King
8. Solitaire – MobilityWare
9. Words With Friends – Zynga
10. The Sims – EA Mobile

CATEGORY: Card, Family, Sports, Casual, Strategy, Word, Simulation

F Appendix
United Kingdom

Top 10 battery drainers – run at startup

1. AllShareCast Dongle S/W Update — Samsung
2. Facebook — Facebook
3. Facebook Messenger — Facebook
4. Kik — Kik Interactive
5. Antivirus & Security | Lookout — Lookout Mobile Security
6. Outlook.com — Outlook.com
7. Groupon – Daily Deals Coupons — Groupon Inc.
8. BBM — BlackBerry Limited.
9. WhatsApp Messenger — WhatsApp Inc.
10. Yahoo Mail — Yahoo

CATEGORY: Social, Shopping, Productivity, Communication, Tools

Top 10 battery drainers (user execute)

1. Netflix — Netflix Inc.
2. Sky Sports Live Football SC — BSkyB
3. Instagram — Instagram
4. Lloyds Bank Mobile Banking — Lloyds Banking Group
5. BBC Sport — Media Applications Technologies for the BBC
6. BBC Media Player — Media Applications Technologies for the BBC
7. Spotify Music — Spotify Ltd.
8. Halifax Mobile Banking App — Lloyds Baking Group
9. Twitter — Twitter Inc.
10. Sky Sports for Android — BSkyB

CATEGORY: Entertainment, Sports, Social, Finance, Music & Audio

F Appendix
United Kingdom

Top 10 battery drainers – games only

1. **Hay Day**
   Supercell
2. **Candy Crush Saga**
   King
3. **Pet Rescue Saga**
   King
4. **Bubble Witch 2 Saga**
   King
5. **Clash of Clans**
   Supercell
6. **Farm Heroes Saga**
   King
7. **Solitaire**
   MobilityWare
8. **Don't Tap the White Tile**
   HU WEN ZENG
9. **The Sims**
   EA Mobile
10. **The Simpsons: Tapped Out**
    EA Mobile

CATEGORY: Card, Family, Casual, Strategy, Simulation, Arcade

Top 10 storage eaters – excluding games

1. **Facebook**
   Facebook
2. **Tango Messenger** video & Calls
   Tango
3. **Spotify Music**
   Spotify
4. **Chrome Browser** - Google
   Google Inc.
5. **Instagram**
   Instagram
6. **Vine**
   Vine LAbs Ibc.
7. **Soundcloud** – Music & Audio
   soundCloud
8. **Daily Mail Online**
   Daily Mail Online
9. **TripAdvisor** Hotels Flights
   TripAdvisor
10. **Firefox Browser** for Android
    Mozilla

CATEGORY: Social, Communication, Travel & Local, Newspaper & Magazines, Music & Audio

F Appendix
United Kingdom

Top 10 storage eaters - games only

1. **The Sims** FreePlay — EA Mobile
2. **Despicable Me** — Gameloft
3. **The Simpson:** Tapped Out — EA Mobile
4. **Family Guy** The Quest for Stuff — TinyCo
5. **Hay Day** — Supercell
6. **Subway Surfers** — Kiloo
7. **My Talking Tom** — Outfit7
8. **8 Ball Pool** — Miniclip.com
9. **Candy Crush Saga** — King
10. **Farm Heroes Saga** — King

CATEGORY: Simulation, Arcade, Family, Adventure, Sports, Casual

Top 10 network traffic hogs

1. **Netflix** — Netflix
2. **Facebook** — Facebook
3. **Tumblr** — Tumblr Inc.
4. **Daily Mail Online** — Daily Mail Online
5. **Instagram** — Instagram
6. **TVGuide.co.uk / TV Guide UK** — TV guide
7. **BBC Media Player** — Media Applications Technologies for the BBC
8. **Spotify Music** — Spotify Ltd.
9. **Solitaire** — MobilityWare
10. **BBC News** — Media Applications Technologies for the BBC

CATEGORY: Social, Entertainment, Music & Audio, Card, Newspaper & Magazines

F Appendix
Australia

Top 10 performance draining apps

1. **Facebook**
   Facebook
2. **Instagram**
   instagram
3. **LINE:** Free Calls & Messages
   LINE Corporation
4. **Samsung WatchON** (Video)
   Samsung
5. **Amazon kindle**
   Amazon Mobile LLC
6. **Google Play** Service
   Google inc.
7. **Facebook Messenger**
   Facebook
8. **Tinder**
   Tinder
9. **Dropbox**
   Dropbox Inc.
10. **Pinterest**
    Pinterest Inc.

CATEGORY: Social Entertainment Books & Reference Communication Productivity Tools Lifestyle

Top 10 storage eaters

1. **Facebook**
   Facebook
2. **Instagram**
   Instagram
3. **Chrome Browser** - Google
   Google inc.
4. **Firefox Browser** for Android
   Mozilla
5. **Amazon Kindle**
   Amazon Mobile LLC
6. **LINE:** Free Calls & Messages
   LINE Corporation
7. **Group Play**
   Samsung electonics Co. Ltd. LSC
8. **Google+**
   google Inc.
9. **Samsung Link**
   Samsung Electronics Co. Ltd. MSC
10. **Samsung WatchON**
    Samsung Media solution center

CATEGORY: Social Entertainment Books & Reference Business Productivity Communication

F Appendix
Australia

Top 10 battery (user execute)

1. **Samsung WatchON**
   Samsung Media Solution Center
2. **Gumtree Australia**
   eBat Classifieds Group
3. **Instagram**
   Instagram
4. **Super-Bright LED Flashlight**
   Surpax Technology Inc.
5. **Amazon Kindle**
   Amazon Mobile LLC
6. **LINE:** Free Calls & Messages
   LINE corporation
7. **Weatherzone**
   Weatherzone
8. **Snapchat**
   Snapchat Inc.
9. **Tinder**
   Tinder
10. **Twitter**
    Twitter Inc.

CATEGORY: Social, Entertainment, Books & Reference, Communication, Lifestyle, Weather, Productivity

Top 10 network traffic hogs

1. **Facebook**
   Facebook
2. **Instagram**
   Instagram
3. **Samsung WatchOn**
   Samsung Media Solution Center
4. **Beaming Service** for Samsung
   Mobeam Inc.
5. **Snapchat**
   Snapchat
6. **Candy Crush Saga**
   King
7. **Yahoo Mail**
   Yahoo
8. **Outlook.com**
   outlook.com
9. **Gumtree Australia**
   eBay Classifieds Group
10. **Twitter**
    Twitter Inc.

CATEGORY: Social, Entertainment, Communication, Productivity, Casual, Lifestyle