



Android™ App Performance Report

by **AVG Technologies**
Q4 - 2014



The online security company™
Protecting **197 million** active users.



Whatever your device, we've got you covered.

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A Executive Summary

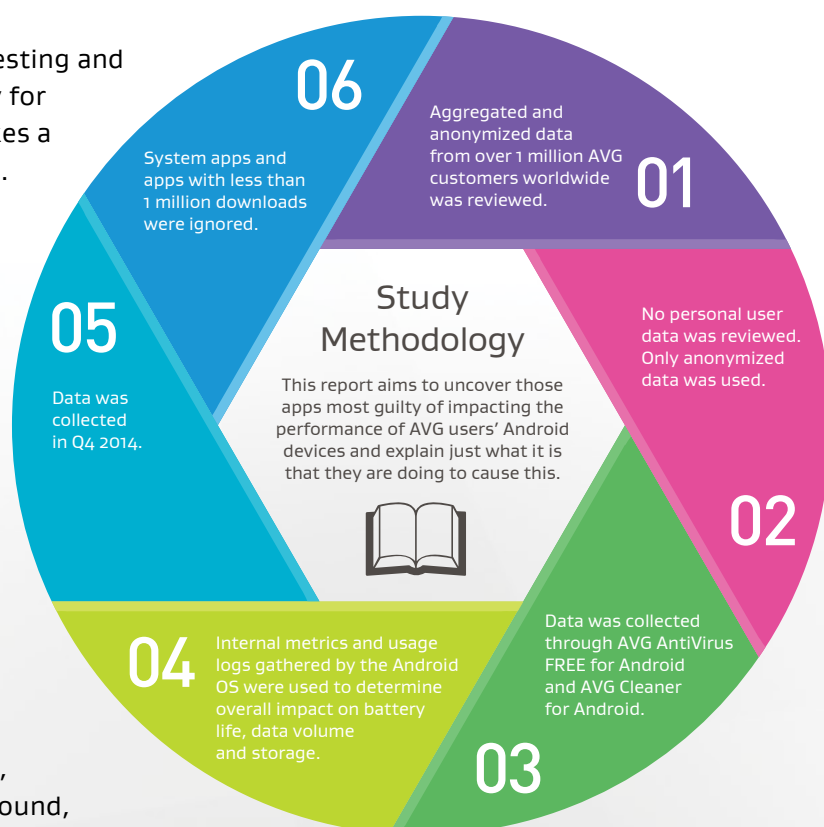
Introduction

This AVG study identifies the top battery, data and storage consuming apps on Android™ smartphones and tablets and includes the latest results from Q4 2014.

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, mobile data and storage of our phones and tablets without us realizing – by constantly checking for content and feed updates, pushing through notifications, streaming audio in the background, delivering high-res 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

Introduction cont...

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 by measuring the size of not just the app itself but also the additional data (e.g. downloads, temp files or cache data) stored over time.

Data Plan

We ranked the apps' network traffic consumption average based on real usage data. We only took into account cellular transmitted data, ignoring the cost-free Wi-Fi traffic.

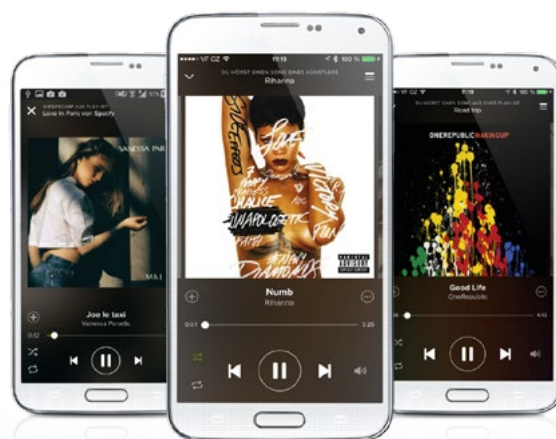


A Executive Summary

Top Findings in Q4 2014

1 Spotify is now the No 2 resource-consuming app overall.

Out of our entire user base, **638,716 users** had the music streaming service Spotify installed: what they perhaps didn't know is that **Spotify** is now the second most resource-consuming app in the store (up from rank 5 in Q3). However, our analysis also shows that the number of installs among AVG customers has also gone down from more than 900,000 installs tracked in June 2014.



2 We went online for our Thanksgiving, Christmas and New Year's Shopping.

Given the massive shopping opportunities during the holiday season, it may be unsurprising that the official **Amazon for Android app** was popular among AVG customers. But users probably didn't realize it's impact on battery life, data usage and local storage of their Android device as it secured the **number 5 spot in our top 10 of most resource-consuming apps**.



3 The changing gaming landscape: FarmVille and Puzzle & Dragons show massive decline

In our previous report, uber-popular FarmVille and Puzzle & Dragons topped the charts for the most resource-hungry games for Android. However, they were nowhere to be found in our Q4 roundup. A closer look shows **Puzzle & Dragons** and FarmVille suffered from a **50%** and **43% decline** respectively in installed user base among AVG customers in Q4 when compared to the beginning of the year (Q1/Q2).

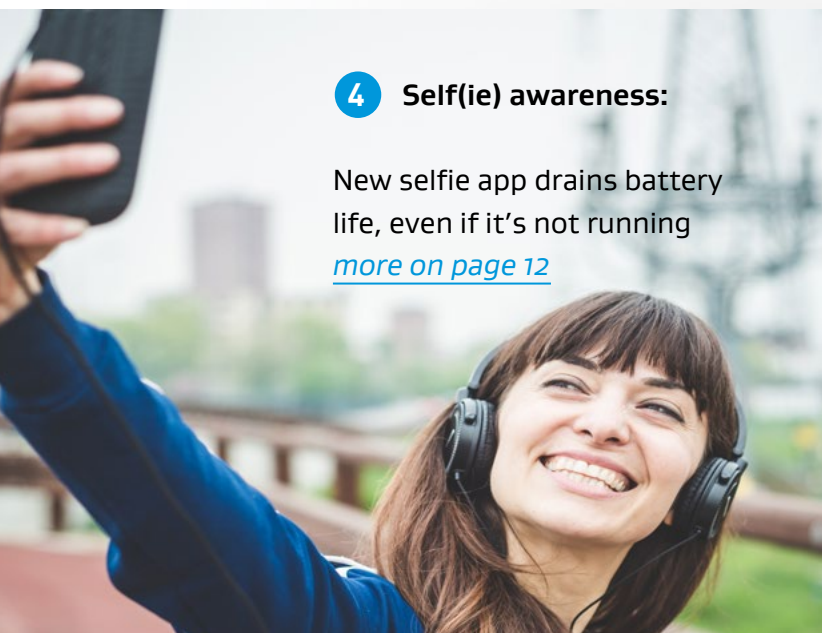
New games such as **Boom Beach** and **Deer Hunter 2014**, however, appeared out of nowhere and secured the top spots in both usage and resource usage (not surprisingly, they're games after all!).



Massive decline for Farmville and a rise of Deer Hunter 2014.

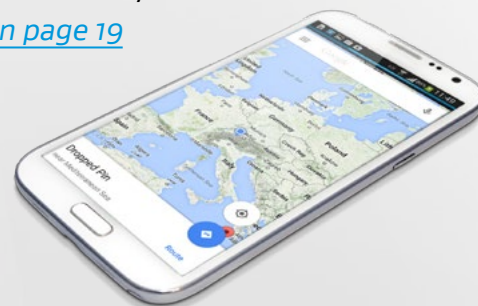
4 Self(ie) awareness:

New selfie app drains battery life, even if it's not running
[more on page 12](#)



5 Maps & Navigation:

We spent more time navigating using Waze & Google Maps during the holiday season
[more on page 19](#)



6 Samsung's New Updates: When Security Destroys Battery Life

After the rollout of Android 4.4.2 (October), we noticed a new entry in our top battery drainers that runs immediately when the device starts up. **Samsung's Security Policy Update service**, officially named [Samsung KNOX™](#), automatically checks for security updates and downloads these automatically. A number of users have publicly complained about not just the amount of notifications shown but also a **30-40% drop in battery life**.

As mentioned in this [ZDNet article](#), this feature cannot be turned off as mentioned by the Samsung Technical Support: *"To ensure that your device always has the latest security to protect you and your data, Samsung will occasionally send security updates to the device as needed. I'm sorry to inform you that there is no option to disable these updates"*.

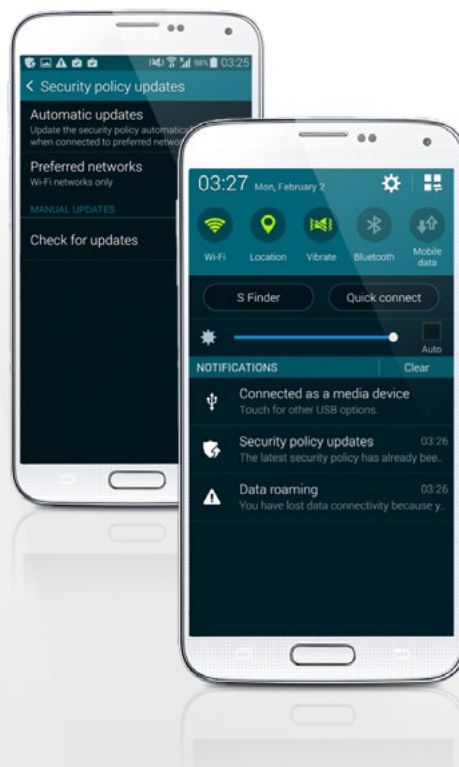
While we can't stress enough that security on mobile device is critical, handset makers need to ensure their product does not reduce battery life or impact overall performance drastically.

7 Isn't it ironic?

Some phone performance tools actually drain your phone
[more on page 21](#)

8 Android users are chattier than ever [more page 19](#)

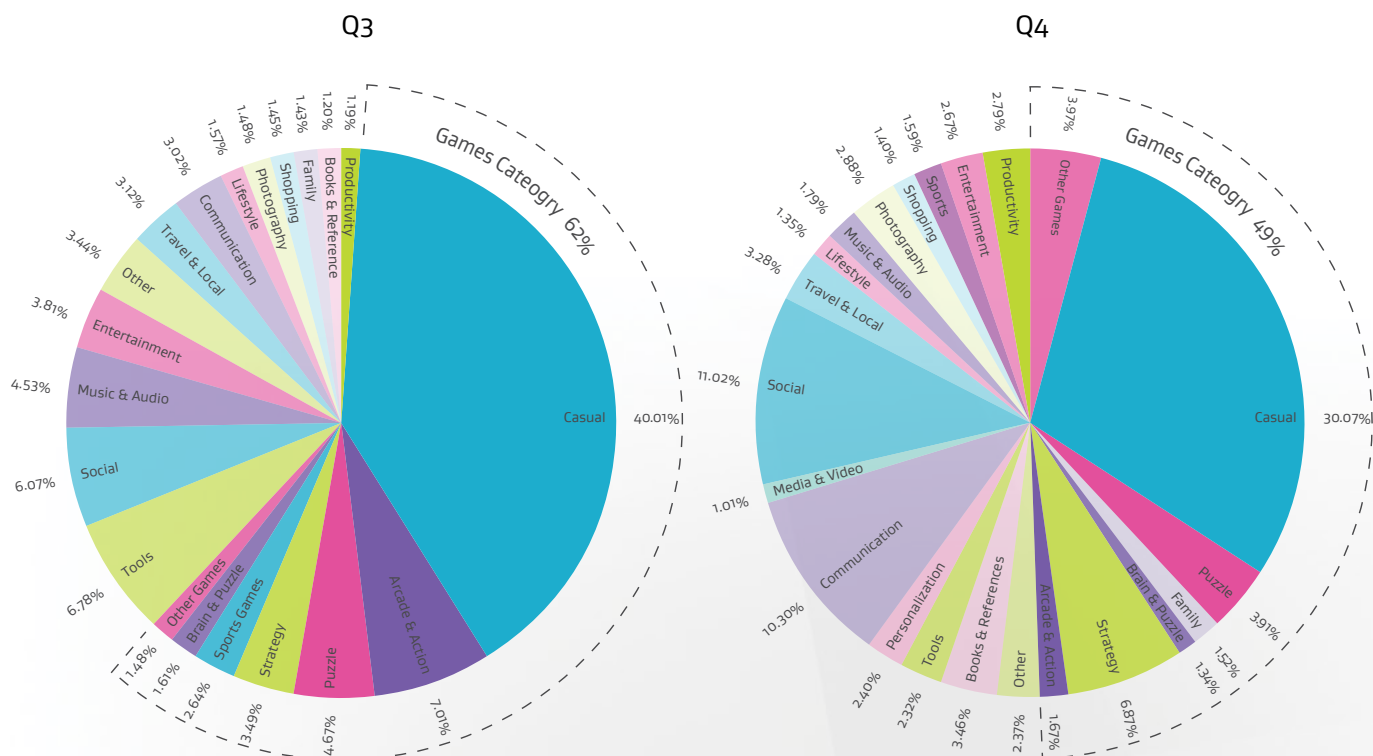
And some chat apps can quickly fill up your storage, too
[more on page 14](#)



9 Less Gaming. More Talking.

Another seasonal effect: compared to Q2 and Q3 of 2014, AVG users have spent much more time on social networks and communicating through messenger apps instead of gaming.

While we **still spend most 49% of our time gaming** on our Android devices compared to 62% in the previous quarter, **social and communication apps rose to 11% and 10.3%** of our total usage (compared to 6% and 3% respectively before).








A Executive Summary

App Scoreboard

The following tables show the top five apps which, according to AVG's study, 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:








OVERALL PERFORMANCE IMPACT

	Facebook	1
	Spotify Music	2
	Instagram	3
	Path	4
	Amazon Android	5







HIGHEST BATTERY DRAIN (auto-start apps)

	Beaming Service for Beep'nGo	1
	Security Policy Updates (Samsung)	2
	Facebook	3
	Waze Social GPS Maps & Traffic	4
	Vault-Hide SMS Pics & Videos	5








HIGHEST DATA TRAFFIC

	Daily Mail Online	1
	Tumblr	2
	Facebook	3
	Instagram	4
	Spotify Music	5








HIGHEST BATTERY DRAIN (run by the user)

	Samsung WatchON (Video)	1
	OLX Free Classifieds	2
	Telstra	3
	Spotify Music	4
	Amazon Android	5



HIGHEST STORAGE CONSUMPTION

	Tango Messenger Video & Calls	1
	Daily Mail Online	2
	Facebook	3
	Spotify Music	4
	LINE camera - Selfie & Collage	5



A Executive Summary

App Scoreboard cont...

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



OVERALL PERFORMANCE IMPACT

	Hay Day	1
	LINE Let's Get Rich	2
	Boom Beach	3
	Candy Crush Saga	4
	Farm Heroes Saga	5



HIGHEST BATTERY DRAIN

	Candy Crush Soda Saga	1
	Candy Crush Saga	2
	Pet Rescue Saga	3
	Clash of Clans	4
	Farm Heroes Saga	5



HIGHEST STORAGE CONSUMPTION

	Plants Vs. Zombies	1
	Despicable Me	2
	The Simpsons: Tapped Out	3
	DEER HUNTER 2014	4
	LINE - Let's Get Rich	5



HIGHEST DATA TRAFFIC

	New Words With Friends	1
	Solitaire	2
	LINE - Let's Get Rich	3
	Clash of Clans	4
	Candy Crush Saga	5

B Key Findings – Q4 2014

Introduction

New versions of the Android™ operating system introduce additional features that are specifically optimized for the latest devices.

But at what cost?

While new Android versions 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 23, 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 – Q4 2014

Greediest Mobile Apps

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

TOP 10 PERFORMANCE DRAINING APPS

	1. Facebook Facebook			6. Samsung WatchON (Video) Samsung Media Solution Center	
	2. Spotify Music Spotify Ltd.			7. BBM Blackberry Limited.	
	3. Instagram Instagram			8. LINE: Free Calls & Messages LINE Corporation	
	4. Path Path Inc.			9. 8 Ball Pool Miniclip.com	
	5. Amazon Android Amazon Mobile LLC			10. Daily Mail online Daily Mail Online	

CATEGORY:  Social  Music & Audio  Shopping  Sports  Newspaper & Magazines  Communication

Analysis

In Q4 2014, **Facebook** still took the crown for the most resource-heavy app on our users' devices. Yet a few new entries made the list of apps with the most impact on battery life, data consumption and storage.

Most notably, the **Amazon shopping app** jumped from nowhere straight to the **number 5 spot** as users likely spend hours browsing for gifts throughout the Holiday and New Year sales.

Also, despite the fact that Spotify's overall installed user base went down from **638,717** users to **523,613** across our total user base, we saw increased resource usage which is likely due to inactive users uninstalling and active users more actively using the app.

Of note, once the number 3 app in our top resource-hungry list, **9GAG** is no longer appeared in our findings.

B Key Findings – Q4 2014

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 as part of their core functionality. This could, for example, include antivirus apps, messaging apps or social apps.

TOP 10 BATTERY DRAINERS – RUN AT START UP

	1. Beaming Service for Samsung Mobeam Inc.		6. Path Path Inc.
	2. Security Policy Updates Samsung Software Update		7. Candy Camera – Selfie Selfies JP Borthers Inc.
	3. Facebook Facebook		8. magicApp: Free Calls magicJack VocalTec Ltd
	4. Waze Social GPS Maps & Traffic Waze		9. Al-Moazin Lite (Prayer Times) Parfield
	5. Vault-Hide SMS Pics & Videos NQ mobile Security (NYSE: NQ)		10. WhatsApp Messenger Whatsapp Inc.

CATEGORY:  Social  Communication  Productivity  Lifestyle  Business  Photography  Travel & Local

Analysis The top battery drainer this quarter is **Beaming Service for Samsung**, an app which helps you redeem coupons, gift cards, and loyalty cards through your smartphone. While the app is hugely popular, it's also draining resources even when you're not actively using it.

As mentioned on Page 5, Samsung's **Security Policy Update** service is the number two battery drainer across the 1 million users we sampled.





















Last but not least: Taking selfies was obviously "the" cool thing to do in 2014: selfie sticks, selfie apps, selfie phones. Unfortunately, some of these apps can be quite draining on a device's battery.

A new app called **Candy Camera – Selfie Selfies** crept up to number 7 in the top battery hungry apps that run in the background. We suggest to avoid apps like these as they only should drain battery when you're actively running them!

B Key Findings – Q4 2014

Top Ten Battery Drainers cont...

TOP 10 BATTERY DRAINERS – RUN BY THE USER

	1. Samsung WatchON (Video) Samsung Media Solution Center	
	6. Retrica Venticake Inc.	
	2. OLX Free Classifieds OLX Inc.	
	7. Truecaller – Caller ID & Block True Software Scandinavia AB	
	3. Telstra Telstra Corporation Ltd.	
	8. LINE: Free Calls & Messages LINE corporation	
	4. Spotify Music Spotify Ltd.	
	9. Amazon Kindle Amazon Mobile LLC	
	5. Amazon Android Amazon Mobile LLC	
	10. Walmart Walmart	

CATEGORY:  Entertainment  Books & Reference  Comms  Music & Audio  Photography  Lifestyle  Shopping

Analysis This category is perhaps the most competitive in our report. Most apps that are proactively initiated by the user are very reliant on data usage, for example, constant Wi-Fi or 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 which also drains a device's resources.

As we mentioned above: **Netflix**, once in the top 3 of battery draining apps, no longer appears in the top 10 tables. With one of their November updates, Netflix has caused significantly less battery drain than before and is now nowhere to be found in the list of top apps. Well done, Netflix! It means users can stream and enjoy TV shows and movies longer than before.

Popular chatting app **WhatsApp** is now in the top 10 of most battery consuming apps in the store. Why? According to our app engagement analysis (see below), users spent more time in Q4 chatting and sending photos than in the previous quarters. It's likely that the Holiday season (Christmas, New Year's Eve) may have significantly contributed to this finding.

In this quarter, the **Samsung WatchON** remote app took the crown as it sucked the most battery life out of your headset while watching TV, switching channels and browsing. Coming close at a second is **the OLX Free Classifieds**, joined by the **Amazon shopping app** again.











B Key Findings – Q4 2014



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 apps with more than 1 million install in the Google Play store consume the most storage space over time.

TOP 10 STORAGE EATERS

	1. Tango Messenger Video & Calls Tango		6. Instagram Instagram
	2. Daily Mail Online Daily Mail Online		7. Chrome Browser – Google Google Inc.
	3. Facebook Facebook		8. SoundCloud – Music & Audio SoundCloud
	4. Spotify Music Spotify Ltd.		9. 8 Ball Pool Miniclip.com
	5. LINE Camera – Selfie & Collage LINE Corporation		10. Vine Vine Labs Inc.

CATEGORY:  Social  Communication  Music & Audio  Photography  Sports  Newspaper & Magazines

Analysis

With many phones still delivering 16 or 32 GB of storage, users have to watch their available space, especially when using any of the listed 10 apps. While apps like **Tango Messenger**, **Daily Mail** or **Vine** seem unsuspecting at first, they take up more and more storage space over time. This is because when you receive a video or photo via chat, look at an article, browse your

Facebook timeline and stream music, these apps store most of that content on the phone so it can access it faster (next time) or even allow for offline usage when you're not connected.





















The **NY Times** app, which previously held the top slot as the number 1 storage eater, is now completely out of our Top 10.






B Key Findings – Q4 2014

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. Daily Mail Online Daily Mail Online	
	6. Yahoo! JAPAN Yahoo Japan Corp.	
	2. Tumblr Tumblr Inc.	
	7. Apple Daily App Next Mobile Limited	
	3. Facebook Facebook	
	8. Yahoo Weather Yahoo	
	4. Instagram Instagram	
	9. NAVER NAVER Corp.	
	5. Spotify Music Spotify Ltd.	
	10. Netflix Netflix Inc.	

CATEGORY:  Social  Entertainment  Books & Reference  Weather  Newspaper & Magazines

Analysis

These apps could cause your monthly phone bill to skyrocket or use up all your available data volume quickly: Surprise, surprise, **Netflix** is no longer the number 1 traffic consumer but dropped to **No 10** as it consumed actually less than many other top apps such as Daily Mail Online or even Yahoo Weather. That's particularly noteworthy, given that video streaming is probably the single





















most traffic heavy activity on your phone. However, news apps like Daily Mail, CNN or NYTimes can be surprisingly heavy, given how image-laden they are these days. If you don't have a big data plan, you may also want to take it easy when using Tumblr and Yahoo! Mail as they rank highest in the social apps and communication apps category respectively.


B Key Findings – Q4 2014

Mobile Gaming – What Gamers Should Know

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

TOP 10 PERFORMANCE DRAINING GAMES APPS

	1. Hay Day Supercell			6. The Simpsons: Tapped Out Electronic Arts	
	2. LINE Let's Get Rich LINE Corporation			7. Cookie Jam SGN	
	3. Boom Beach Supercell			8. Candy Crush Soda Saga King	
	4. Candy Crush Saga King			9. DEER HUNTER 2014 Glu	
	5. Farm Heroes Saga King			10. Pet Rescue Saga king	

CATEGORY:  Casual  Strategy  Family  Puzzle  Action

Analysis

Puzzle & Dragons is no longer the king of performance-sapping apps on your Google Android (see our Q3 report).





















This questionable honour now goes to Hay Day. Due to their decrease in usage, **Angry Birds** and also **Farmville 2** are also out of our

Top 10, replaced with newcomers like **DEER HUNTER 2014** and **LINE Let's Get Rich**. Again, if you love these games, of course you should keep on playing them; just make sure you've got a portable battery at hand or a power outlet nearby.





















B Key Findings – Q4 2014



Mobile Gaming – What Gamers Should Know cont...

TOP 10 BATTERY DRAINERS

	1. Candy Crush Soda Saga King	
	2. Candy Crush Saga King	
	3. Pet Rescue Saga King	
	4. Clash of Clans Supercell	
	5. Farm Heroes Saga King	
	6. Cookie Jam SGN	
	7. Boom Beach Supercell	
	8. Bubble Witch 2 Saga King	
	9. Solitaire MobilityWare	
	10. Pou Zakeh	

STORAGE, GAMES ONLY











	1. Plants Vs Zombies Electronic Arts	
	2. Despicable me Gameloft	
	3. The Simpsons: Tapped Out Electronic Arts	
	4. DEER HUNTER 2014 Glu	
	5. LINE Let's Get Rich LINE Corporation	
	6. Frozen Free Fall Disney	
	7. My Talking Tom Outfit7	
	8. Boom Beach Supercell	
	9. LINE Pokopang LINE Corporation	
	10. Subway Surfers Kiloo	

CATEGORY:  Casual  Action  Puzzle  Strategy  Arcade

B Key Findings – Q4 2014

Mobile Gaming – What Gamers Should Know cont...

TRAFFIC, GAMES ONLY (3G ONLY)

 1. New Words With Friends Zynga	 6. Farm Heroes Saga King
 2. Solitaire MobilityWare	 7. Pets Rescue Saga King
 3. LINE Let's Get Rich LINE Corporation	 8. Boom Beach Supercell
 4. Clash of Clans Supercell	 9. Candy Crush Soda Saga King
 5. Candy Crush Saga King	 10. Bubble Witch 2 Saga King

Diving deeper into the individual categories (Battery Life, Storage, Traffic), we were surprised to see the rather simple game **New Words With Friends** show up as the top traffic consumer of all Android games we analysed. The same goes for **Solitaire** and

LINE Let's Get Rich, which consumed more traffic than more complex games like Clash of Clans or even Farm Heroes Saga. Make sure you're not playing for longer periods of time when you're on the go and use Wi-Fi where it's available.

C App Usage Trends

Introduction

Based on AVG's global statistics, the following list shows the top 20 most used apps on AVG users' Android devices.



C App Usage Trends

Apps Users Spend the Most Time On

Did we spend more time navigating and looking at maps? With holidays giving us more time to explore the world, both **Waze**

(Social GPS Maps & Traffic) and also **Google Maps** climbed the **Top Usage** chart.

TOP 20 APPS USERS SPEND THEIR MOST TIME ON



CATEGORY:  Social  Comms  Books & Reference  Media & Video  Travel & Local  Casual  Entertainment  Personalization

USAGE:  Network  Storage  Battery

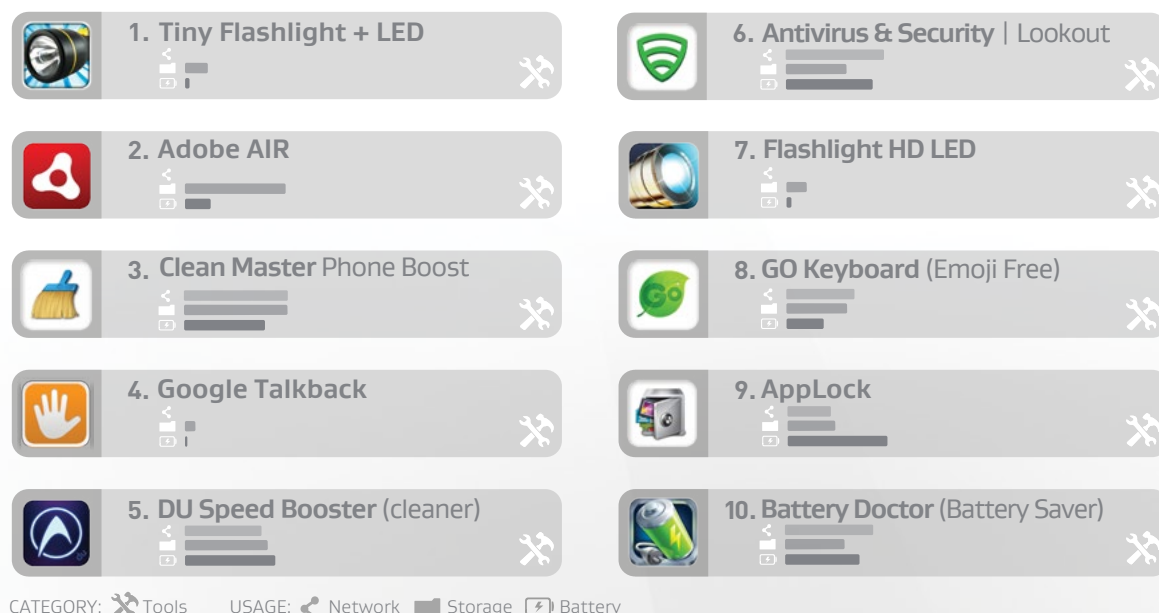
C App Usage Trends

Installed Tools

In our top 10 Android tools, you'll find battery enhancing, cleaning and security apps such as Battery Doctor, Lookout Antivirus & Security, and Clean Master

Phone Boost. However, when looking at the raw data, we found that these tools often drain the battery or your mobile traffic quite significantly. See the table below for more.

TOP INSTALLED TOOLS



C App Usage Trends

Installed Social Apps

A few things have changed in the world of social apps since the previous quarter: first of all, **Google+** is no longer in the list of top used communication apps by AVG users, which indicates a steady decline overall, whereas newcomers Vine, Path

and magicApp make an appearance for the first time among our user base. In our communications app category (see next page), the previous number 1 app, Gmail, has been replaced by **WhatsApp**.

TOP INSTALLED SOCIAL APPS

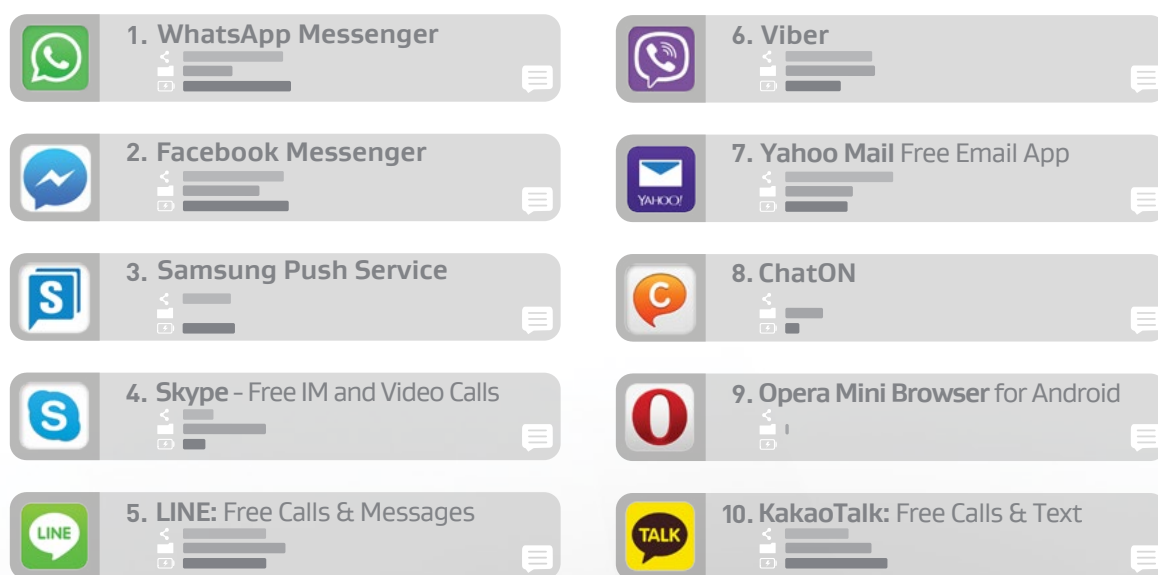


CATEGORY:  Social USAGE:  Network  Storage  Battery

C App Usage Trends

Installed Communication Apps

TOP INSTALLED COMMUNICATION APPS



CATEGORY:  Communication USAGE:  Network  Storage  Battery

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.



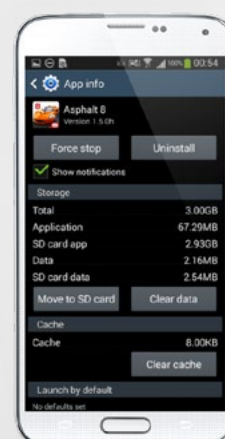
D Addressing the Issues

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 and have the standalone Messenger app serve as your only way of sending and receiving apps.

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. 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

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 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 above). 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

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.

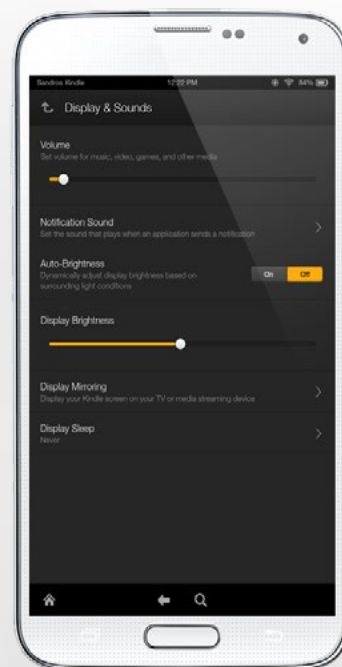
D Addressing the Issues

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 recommend turning the brightness levels down to **50-70 percent**.



D Addressing the Issues

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.

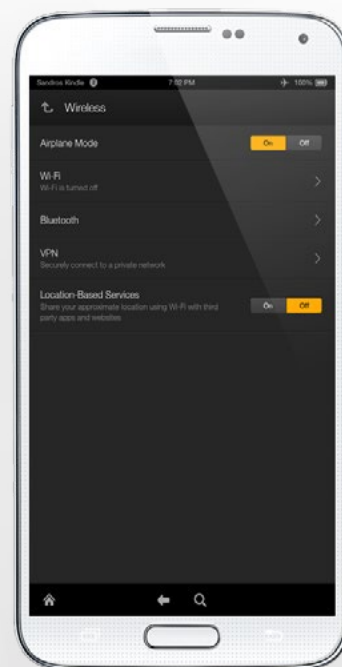
You'll find the settings for all three features in your swipe down menu or under Settings. Go to **Wireless** (or **Wireless and networks**) and switch off the relevant feature when not in use. Note: GPS can sometimes be referred to as "Location-based services".

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.



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 - Performance PR
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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			6. SoundCloud – Music & Audio SoundCloud	
	2. Instagram Instagram Inc.			7. Amazon Kindle Amazon Mobile LLC	
	3. Spotify Music Spotify Limited.			8. Vine Vine Labs inc.	
	4. Samsung WatchON (Video) Samsung Media Solution Center			9. Tango Messenger Video & Calls Tango	
	5. Netflix Netflix Inc.			10. LINE: Free Calls & Messages LINE Corporation	

CATEGORY:  Social  Entertainment  Books & Reference  Communication  Music & Audio  Books & Reference

TOP PERFORMANCE DRAINING APPS – GAMES ONLY

	1. Candy Crush Saga King			5. Clash of Clans Supercell	
	2. Farm Heroes Saga King			6. Subway Surfers Kiloo	
	3. Candy Crush Soda Saga King			7. New Words With Friends Zynga	
	4. Despicable Me Gameloft			8. Don't Tap The White Tile Cheetah Game Studio	

CATEGORY:  Casual  Word  Arcade  Strategy











F Appendix USA







Top 10 battery drainers – run at startup

	1. Beaming Service for Samsung Mobeam Inc.		6. Kik Kik Interactive
	2. Security Policy Updates Samsung OTA Software Update		7. GO SMS Pro GO Dev Team
	3. RetailMeNot Coupons RetailMeNot inc.		8. WhatsApp Messenger WhatsApp Inc.
	4. Facebook Facebook		9. Facebook Messenger Facebook
	5. Lookout Security & Antivirus Lookout Mobile Security		10. Instagram Instagram

CATEGORY:  Social  Communication  Tools  Productivity  Shopping













Top 10 battery drainers (user execute)

	1. Samsung WatchON (Video) Samsung Media Solution Center		6. Walmart Walmart
	2. Super-Bright LED Flashlight Surpax Technology Inc.		7. Netflix Netflix Inc.
	3. Spotify Music Spotify Ltd.		8. Twitter Twitter Inc.
	4. LINE: Free Calls & Messages LINE Corporation		9. SoundCloud - Music & Audio SoundCloud
	5. Amazon Kindle Amazon Mobile LLC		10. Audible for Android Audible Inc.

CATEGORY:  Social  Entertainment  Books & Reference  Communication  Productivity  Shopping





















F Appendix USA

TOP BATTERY DRAINERS – GAMES ONLY

	1. Candy Crush Soda Saga King	
	2. Candy Crush Saga King	
	3. Clash of Clans Supercell	
	4. Farm Heroes Saga King	
	5. Don't Tap The White Tiles Cheetah Game Studio	
	6. Subway Surfers kiloo	

CATEGORY:  Casual  Strategy  Arcade









TOP 10 STORAGE EATERS – EXCLUDING GAMES

	1. Facebook Facebook	
	2. Tango Messenger Video & Calls Tango	
	3. Vine Vine Labs Inc.	
	4. Instagram Instagram	
	5. Spotify Music Spotify Ltd.	
	6. Chrome Browser - Google Google inc.	
	7. SoundCloud - Music & Audio SoundCloud	
	8. Firefox Browser for Android Mozilla	
	9. Amazon kindle Amazon Kindle LLC	
	10. NFL Mobile NFL Enterprises LLC	

CATEGORY:  Social  Books & Reference  Communication  Sports  Music & Audio






F Appendix USA

TOP STORAGE EATERS – GAMES ONLY

	1. Despicable Me Gameloft		5. Candy Crush Soda Saga King
	2. Subway Surfers Kiloo		6. Clash of Clans Supercell
	3. Candy Crush Saga King		7. New Words With Friends Zynga
	4. Farm Heroes Saga king		8. Don't Tap The White Tile Cheetah Game Studio

CATEGORY:  Casual  Strategy  Arcade  Word

















TOP 10 NETWORK TRAFFIC HOGS

	1. Facebook Facebook		6. Beaming Service for Samsung Mobeam inc.
	2. Instagram Instagram		7. The Weather Channel The Weather Channel
	3. Spotify Music Spotify Ltd.		8. Yahoo Mail Free Email App Yahoo
	4. Snapchat Snapchat Inc.		9. Security Policy Update Samsung OTA Software Update
	5. Netflix Netflix Inc.		10. Samsung WatchON (Video) Samsung Media Solution Center

CATEGORY:  Social  Entertainment  Communication  Weather  Music & Audio  Productivity

F Appendix USA

TRAFFIC – GAMES ONLY











	1. New Words With Friends Zynga	
	2. Candy Crush Saga King	
	3. Clash of Clans Supercell	
	4. Farm Heroes Saga King	
	5. Candy Crush Soda Saga King	
	6. Don't Tap The White Tile Cheetah Game Studio	
	7. Despicable Me Gameloft	
	8. Subway Surfers Kiloo	

CATEGORY:  Casual  Word  Strategy  Arcade

F Appendix











United Kingdom

TOP 10 PERFORMANCE DRAINING APPS - EXCLUDING GAMES

	1. Facebook Facebook		6. Twitter Twitter Inc.
	2. Spotify Music Spotify Ltd.		7. Tango Messenger Video & Calls Tango
	3. Instagram Instagram		8. BBM BlackBerry Limited.
	4. Daily Mail Online Daily Mail Online		9. SoundCloud - Music & Audio SoundCloud
	5. Amazon Kindle Amazon Mobile LLC		10. Yahoo Mail Free Email App Yahoo

CATEGORY:  Social  Books & Reference  Communication  Newspaper & Magazines  Books & Reference  Music & Audio

TOP 10 PERFORMANCE DRAINING APPS - GAMES ONLY











	1. Farm Heroes Saga King		6. My Talking Tom Outfit7
	2. Candy Crush Saga King		7. Subway Surfers Kiloo
	3. The Simpsons: Tapped Out Electronic Arts		8. Bubble Witch 2 Saga King
	4. Candy Crush Soda Saga King		9. Clash of Clans Supercell
	5. Despicable Me Gameloft		10. Don't Touch The White Tile Cheetah Game Studio

CATEGORY:  Casual  Strategy  Arcade

F Appendix











United Kingdom


TOP 10 BATTERY DRAINERS - RUN AT STARTUP

	1. Security policy Update Samsung OTA Software Update		6. BBM BlackBerry Ltd.
	2. Facebook Facebook		7. Outlook.com Outlook.com
	3. Kik Kik Interactive		8. AVG Cleaner & Battery booster AVG Mobile
	4. Facebook Messenger Facebook		9. Instagram Instagram
	5. Lookout Security & Antivirus Lookout Mobile Security		10. Tango Messenger Video & Calls Tango

CATEGORY:  Social  Communication  Productivity  Tools

TOP 10 BATTERY DRAINERS (USER EXECUTE)

















	1. Super-Bright LED Flashlight Surpax Technology Inc.		6. Sky Sports for Android BSkyB
	2. Spotify Music Spotify Ltd.		7. Clean Master (Speed Booster) Cheetah Mobile
	3. BBC Media Player Media Applications Technologies for the BBC		8. Snapchat Snapchat inc.
	4. Twitter Twitter Inc.		9. SoundCloud - Music & Audio SoundCloud
	5. Amazon Kindle Amazon Mobile LLC		10. Netflix Netflix Inc.

CATEGORY:  Social  Entertainment  Books & Reference  Music & Audio  Productivity  Sports  Tools

F Appendix





















United Kingdom

TOP BATTERY DRAINERS - GAMES ONLY

	1. Candy Crush Soda Saga King	
	2. Candy Crush Saga King	
	3. Clash of Clans Supercell	
	4. Farm Heroes Saga King	
	5. Bubble Witch 2 Saga King	
	6. Don't Tap The White Tile Cheetah Game Studio	
	7. The Simpsons: Tapped Out Electronic Arts	
	8. Subway Surfers Kiloo	

CATEGORY:  Casual  Strategy  Arcade

TOP 10 STORAGE EATERS - EXCLUDING GAMES





















	1. Facebook Facebook	
	2. Tango Messenger Video & Calls Tango	
	3. Daily Mail Online Daily Mail Online	
	4. Spotify Music Spotify Ltd.	
	5. Instagram Instagram	
	6. Chrome Browser - Google Google Inc.	
	7. SoundCloud - Music & audio SoundCloud	
	8. Amazon Kindle Amazon Mobile LLC	
	9. Firefox Browser for Android Mozilla	
	10. TripAdvisor Hotels Flights TripAdvisor	

CATEGORY:  Social  Books & Reference  Communication  Music & Audio  Newspaper & Magazines  Travel & Local

F Appendix





















United Kingdom

TOP 10 STORAGE EATERS - GAMES ONLY

	1. Despicable Me Gameloft	
	6. Candy Crush Saga King	
	2. The Simpsons: Tapped Out Electronic Arts	
	7. Candy Crush Soda Saga King	
	3. Subway Surfers Kiloo	
	8. Bubble Witch 2 Saga King	
	4. My Talking Tom Outfit7	
	9. Clash of Clans Supercell	
	5. Farm Heroes Saga King	
	10. Don't Tap The White Tile Cheetah Game Studio	

CATEGORY:  Casual  Strategy  Arcade

TOP 10 NETWORK TRAFFIC HOGS - EXCLUDING GAMES











	1. Daily Mail Online Daily Mail Online	
	6. BBC News Media Applications Technologies for the BBC	
	2. BBC Media Player Media Applications Technologies for the BBC	
	7. Yahoo Mail Free Email App Yahoo	
	3. Facebook Facebook	
	8. Snapchat Snapchat Inc.	
	4. Instagram Instagram	
	9. Sky Sports for Android BSkyB	
	5. Spotify Music Spotify Ltd.	
	10. Netflix Netflix Inc.	

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

F Appendix

United Kingdom




















TOP 10 NETWORK TRAFFIC HOGS- GAMES ONLY

 1. Candy Crush Saga King	 6. Don't Tap The White Tile Cheetah Game Studio
 2. Farm Heroes Saga King	 7. The Simpsons: Tapped Out Electronic Arts
 3. Clash of Clans Supercell	 8. Despicable Me Gameloft
 4. Bubble Witch 2 Saga King	 9. Subways Surfers Kiloo
 5. Candy Crush Soda Saga King	 10. My Talking Tom Outfit7

CATEGORY:  Casual  Strategy  Arcade





















F Appendix Australia

TOP 10 PERFORMANCE DRAINING APPS

	1. Facebook Facebook			6. Yahoo Mail Free Email App Yahoo	
	2. Instagram Instagram			7. Snapchat Snapchat Inc.	
	3. Facebook Messenger Facebook			8. Dropbox Dropbox Inc.	
	4. Viber Viber Media			9. Twitter Twitter Inc.	
	5. Clean Master Speed Booster Cheetah Mobile			10. Outlook.com Outlook.com	

CATEGORY:  Social  Communication  Productivity  Tools





















TOP 10 BATTERY DRAINERS - RUNS AT STARTUP

	1. Security Policy Updates Samsung OTA Software Update			6. Instagram Instagram	
	2. Beaming Service for Samsung Mobeam Inc.			7. Outlook.com Outlook.com	
	3. Facebook Facebook			8. Yahoo Mail Free Email App Yahoo	
	4. Facebook Messenger Facebook			9. Pandora internet radio Pandora	
	5. WhatsApp Messenger WhatsApp Inc.			10. Samsung Push Service Samsung Electronics Ltd.	

CATEGORY:  Social  Communication  Productivity  Music & Audio








F Appendix Australia









TOP 10 STORAGE EATERS

	1. Facebook Facebook			6. Skype - Free IM & Video Calls Skype	
	2. Instagram Instagram			7. Dropbox Dropbox Inc.	
	3. Chrome Browser - Google Google Inc.			8. Samsung Link Samsung Electronics Co. Ltd. MSC	
	4. Group Play Samsung Electronics Co. Ltd. MSC			9. TripAdvisor Hotels Flights TripAdvisor	
	5. Viber Viber Media			10. Maps Google Inc.	

CATEGORY:  Social  Communication  Business  Productivity  Travel & Local

TOP 10 BATTERY DRAINERS (USER EXECUTE)

	1. Telstra Telstra Corporation Ltd.			6. Google Play Music Google Inc.	
	2. Weatherzone Weatherzone			7. LinkedIn LinkedIn	
	3. Snapchat Snapchat Inc.			8. Chrome Browser - Google Google Inc.	
	4. Clean Master Speed Booster Cheetah Mobile			9. Google Play Newsstand Google Inc.	
	5. Twitter Twitter Inc.			10. Google Drive Google Inc.	

CATEGORY:  Social  Communication  Weather  Tools  Lifestyle  Productivity  Newspaper & Magazines  Music & Audio

F Appendix

Australia

TOP 10 NETWORK TRAFFIC HOGS

	1. Facebook Facebook			6. Clean Master Speed Booster Cheetah Mobile	
	2. Instagram Instagram			7. Security Policy Updates Samsung OTA Software Update	
	3. Snapchat Snapchat Inc.			8. Outlook.com Outlook.com	
	4. Beaming Service for Samsung Mobeam Inc.			9. Facebook Messenger Facebook	
	5. Yahoo Mail Free Email App Yahoo			10. Twitter Twitter Inc.	

CATEGORY:  Social  Communication  Productivity  Tools