



Mobile Experience Benchmark

Crittercism

Key Takeaways

Mobile App Complexity



Mobile app performance is challenging with over **100M** permutations of variables to manage.

App Responsiveness



To be competitive, your app should respond to user requests within **1 second**. The reality is most apps don't because they rely on unpredictable services.

App Uptime (Crash)



Your goal should be to have an app that crashes less than **1%**. Most apps crash more.

Introduction

Mobile apps live in a complex environment that makes it difficult to manage performance and ensure superior user experience. The two pillars that comprise mobile app performance are:

1. App uptime
2. App responsiveness

Crittercism is the leading mobile application performance management (mAPM) solution that processes over 30,000 requests per second from over 1B mobile users in real-time. We've gathered rich performance data and are honored to share the **first-ever mobile experience benchmark report** with the world.

This report uses *data from Crittercism customers actively optimizing their app performance*. App performance across un-optimized applications is expected to be worse.



PERFORMANCE



UPTIME



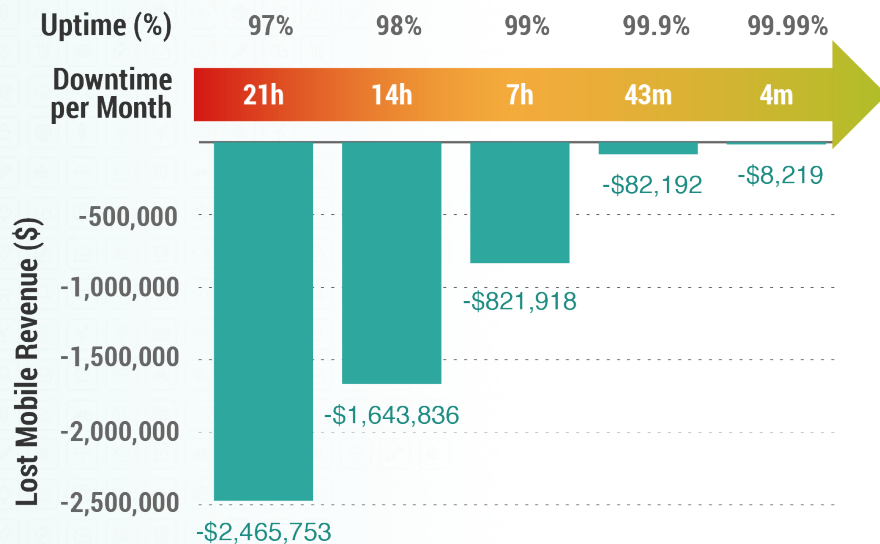
RESPONSIVENESS

Mobile Performance Impacts Your Bottom Line

Let's look at how poor uptime could impact a company with \$1B in annual mobile revenue*:

- At 97% uptime, the company would lose \$2.5M per month
- At 99% uptime, the company would lose \$0.8M per month
- At 99.9% uptime, the company would lose \$82,192 per month

*Examples of companies with significant mobile revenue include Starbucks which Business Insider estimates drives \$1B through mobile and Domino's which sees \$700M in mobile sales according to Mobile Commerce Daily.



Mobile Apps Live in a Complex World



Fragmentation adds Complexity



2582

Device manufacturer
models

X



106

OS versions

X



691

Carriers

=



>100M

Permutations creates
complex ecosystem

Connecting to 6+ Cloud Services Increases Complexity

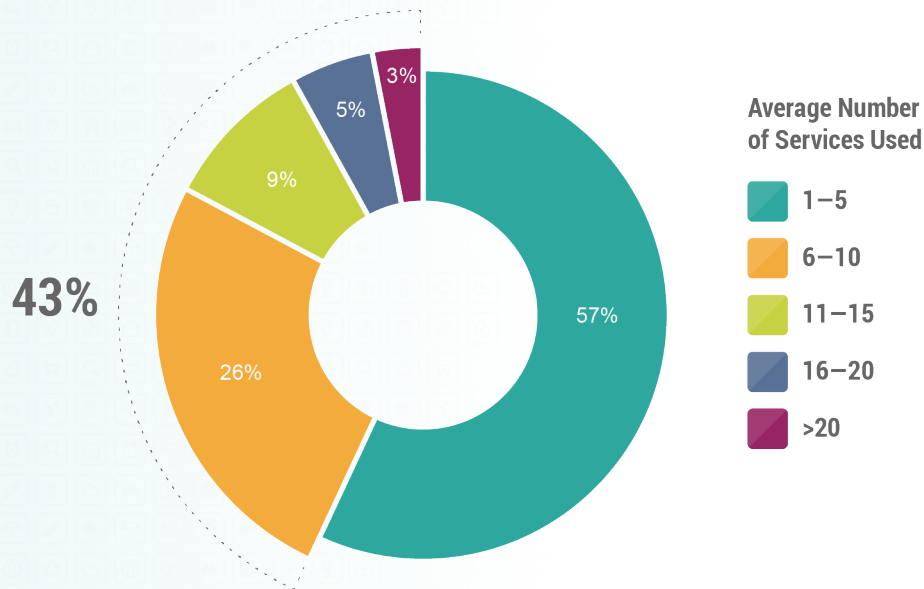
Average Number of Services Used

Findings

- The average app depends on 6 cloud services (5 is the median). Examples include: Facebook for logins, Amazon Web Services for storage, and Flurry for analytics
- 43% of apps depend on over 5 cloud services

Takeaway

- Apps depend on many underlying cloud services, which means they not only need to be free of crashes, but the services they depend on must also work and be available



Responsiveness Performance

The two pillars of mobile app performance are responsiveness and uptime. Responsiveness of cloud services gives you insight into how much faster or slower your app is running than your benchmark or expectations.

Responsiveness helps answer questions such as:

- Which services have the highest error rates?
- Why is my app slow in different geographies?

This section will shed light on mobile app responsiveness and error rates by app, industry, and geography.

Why this matters: Your app depends on many cloud services and responsiveness impacts end-user experience



Service Calls are Unpredictable

Given that apps depend on many services, it is the aggregate performance that ultimately determines end user experience. The two metrics to focus on are **error rate** and **latency**.

Users expect responses in **under 1 second***, yet **9%** of calls experience higher latency. In addition, **18%** of service calls have over **5%** error rate.

*Based on data from Chimera Labs:
<http://chimera.labs.oreilly.com/books/12300000000545/ch10.html>



9%

of cloud services that mobile apps use have over 1 second average latency



18%

of service calls from mobile apps have error rates over 5%

Response Times in Canada Are Fastest

Response Times by Geography

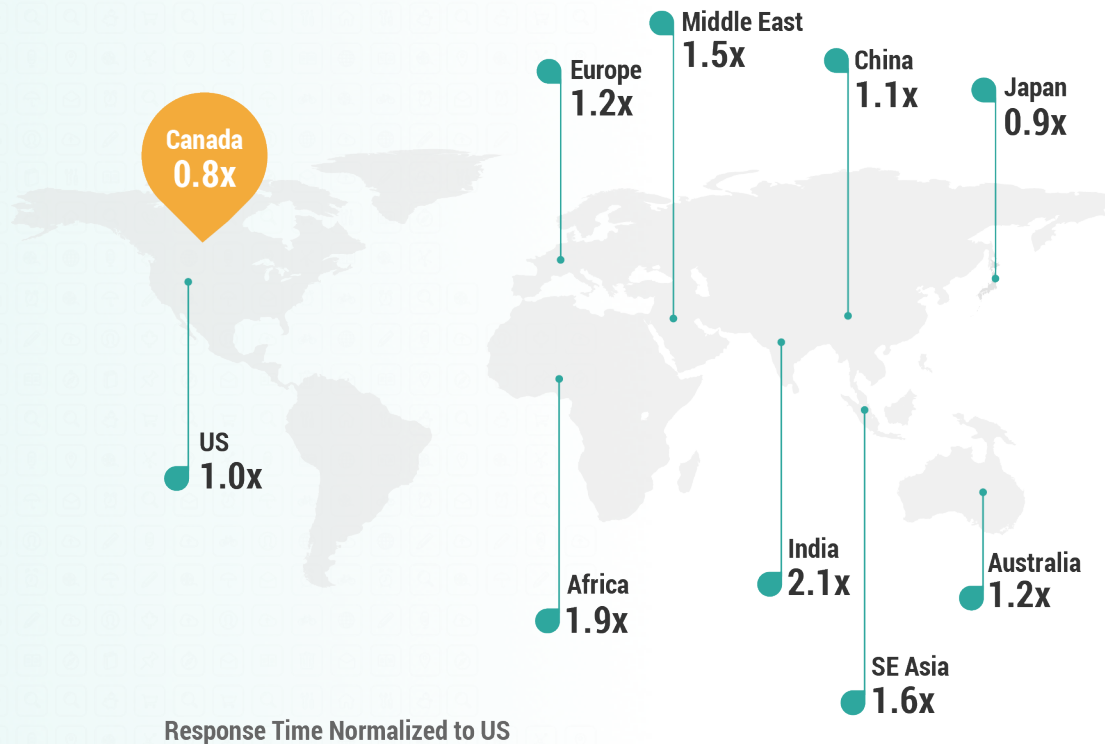
Findings

- Canada has the fastest response time at 0.8X of US
- India has the slowest response time at 2.1X of US

Takeaway

- Be prepared to deal with regional wireless networks and latencies
- App owners should optimize apps and architectures (i.e. Content Delivery Networks and regional data centers) to account for geographic variance in response times

Response times include WiFi



Response Time Normalized to US

Google Analytics is Best Performing Top Service

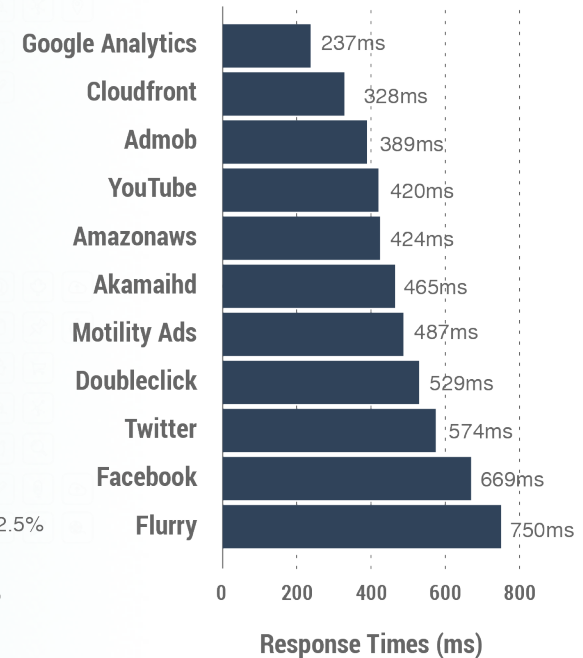
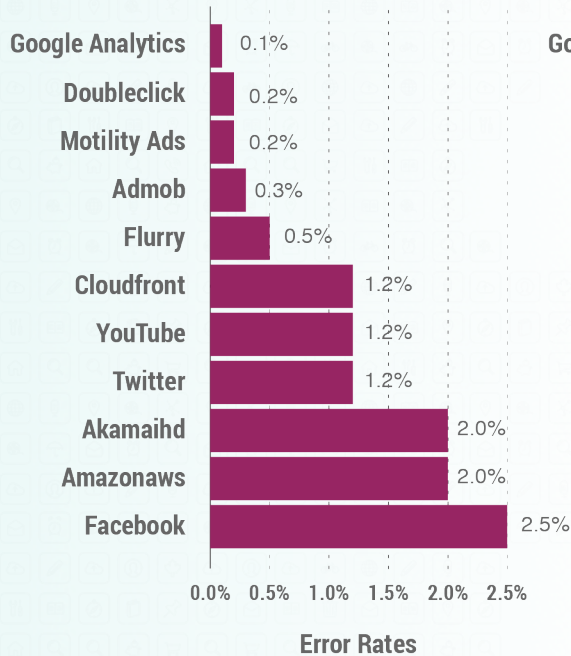
Error Rates & Response Times by top Services

Findings

- Google Analytics has lowest error rate (0.1%); error rate is percent of errors per number of service calls made
- Of top public services, Google Analytics has lowest average latency

Takeaway

- Even top services like Google Analytics and Facebook experience latency and error rates
- Teams must manage every aspect of mobile app performance, including third-party services



Uptime Performance

In addition to responsiveness, the other main culprit of app performance issues is app uptime. Mobile app uptime is defined by Crittercism as the percent of app usage that did not experience a crash.

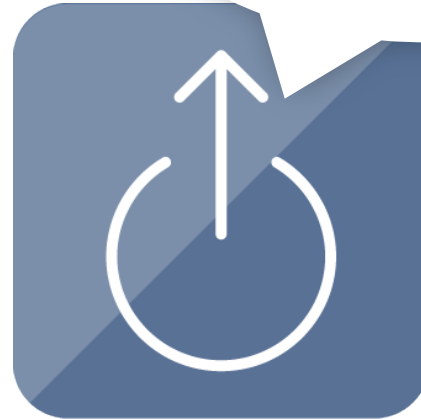
Uptime helps answer questions such as:

- Which devices are causing my app to crash?
- Does my app crash more on a particular OS version?

This section will reveal the acceptable uptime performance of mobile apps. It will also provide data across app categories and industries.

Why this matters:

Uptime performance is a fundamental measure of end-user experience



47% of Apps Have an Uptime That is not Competitive

Percent of apps by crash uptime

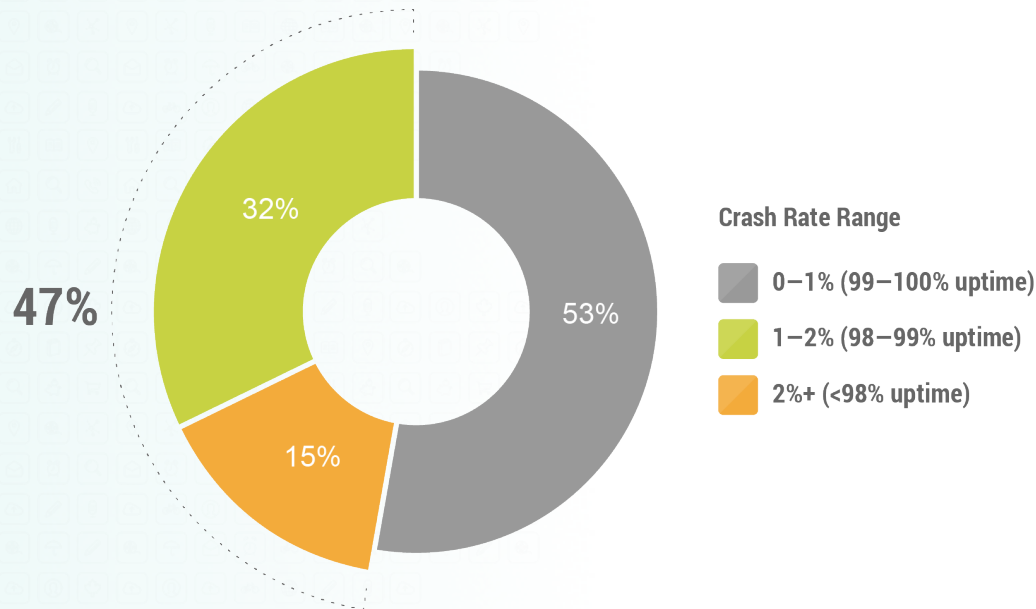
Findings

- 47% of apps crash more than 1% of the time
- 32% have a crash rate over 2%

Takeaway

- In the web world, the norm uptime is 99.9%
- In the mobile world, however, your app should have a crash rate under 1% (uptime of 99%)

1% crash rate is based on customers actively using Crittercism. Apps in the wild can experience anywhere from 3-10% crash rate.



Android: Gingerbread Apps Least Stable

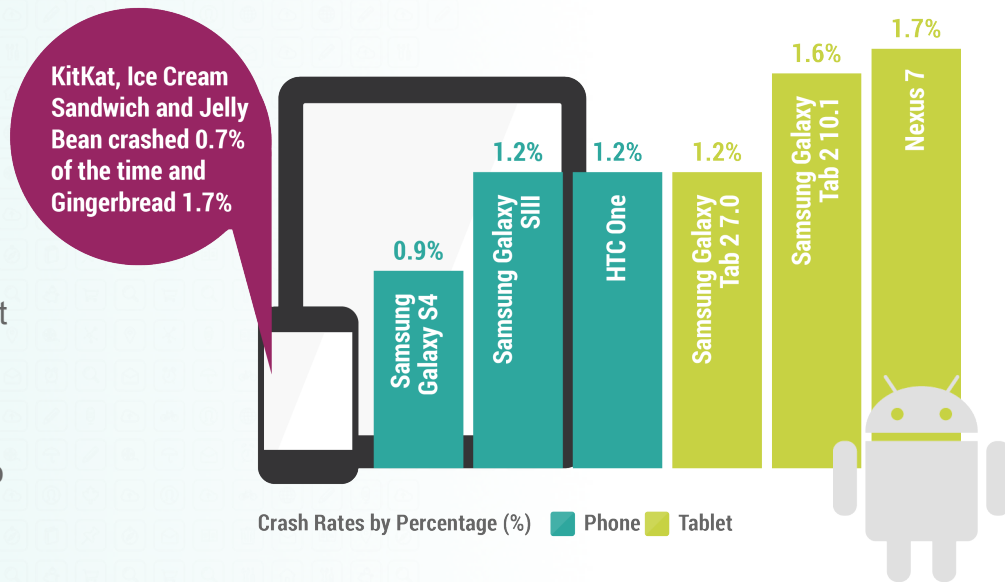
Android OS and device breakdown

Findings

- Gingerbread has the highest crash rate
- Samsung owns the top spots for both Android phones and tablets stability
- Android tablets have worse crash rates than Android phones

Takeaway

- While KitKat is the newest release, teams must continue to optimize for older versions. In particular, Gingerbread is the least stable but widely used (based on Google Play data)
- As tablet adoption grows, expect developers to focus on optimizing performance for tablets, thereby bringing crash rates to be on par with smartphones



Apple: iOS 7.1 Apps Most Stable

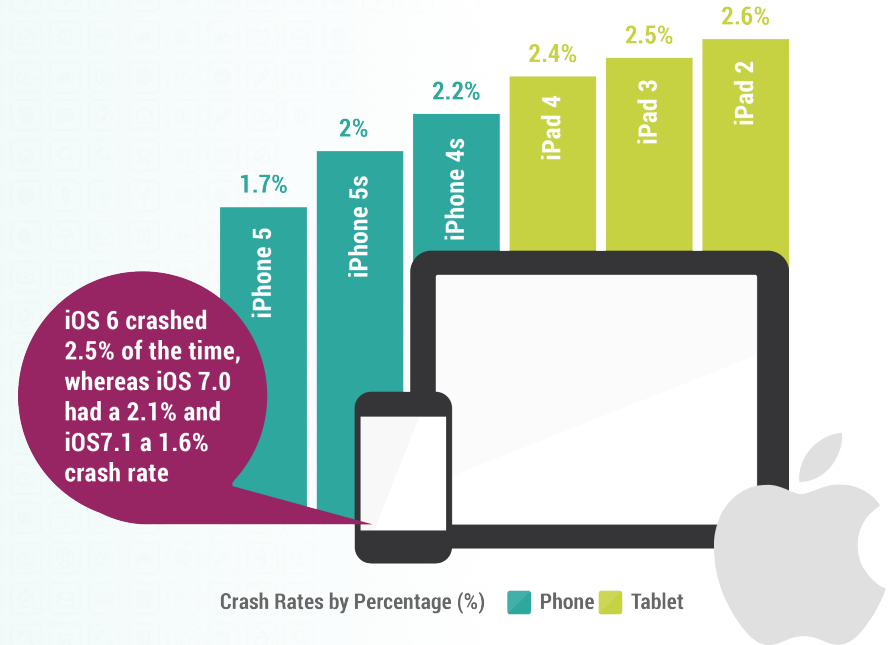
Apple OS and device breakdown

Findings

- iOS 7.1 has lowest crash rate
- iPhone 5 crashes least
- Apps on iPhones are more stable than iPads
- Older iPads crash more

Takeaway

- While most users are on iOS 7, iOS 6 has a higher crash rate and cannot be ignored
- Expect iPad users to experience stability issues more than those using iPhones



Gaming Apps Least Stable

Crash Rate by App Category

Findings

- Gaming apps have the highest crash rate (4.4%)
- Ecommerce apps have the lowest crash rate (0.4%)

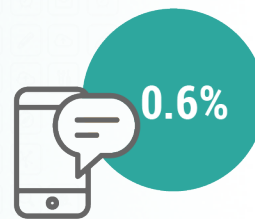
Takeaway

- Graphics intensive apps such as Gaming, Media, Photo, & Video apps crash most
- Apps that enable transactions crash less, but the cost of downtime is significant. Pay close attention to the performance of these apps

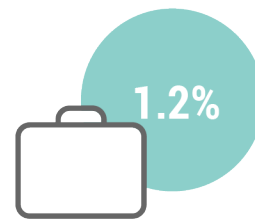
Crash Rates (%)



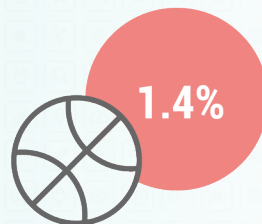
Ecommerce



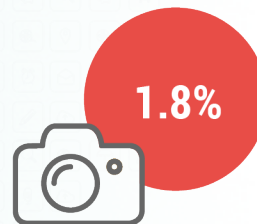
Social & Communication



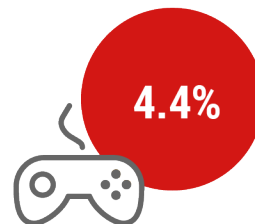
Business



News, Sports,
& Entertainment



Media, Photo,
& Video



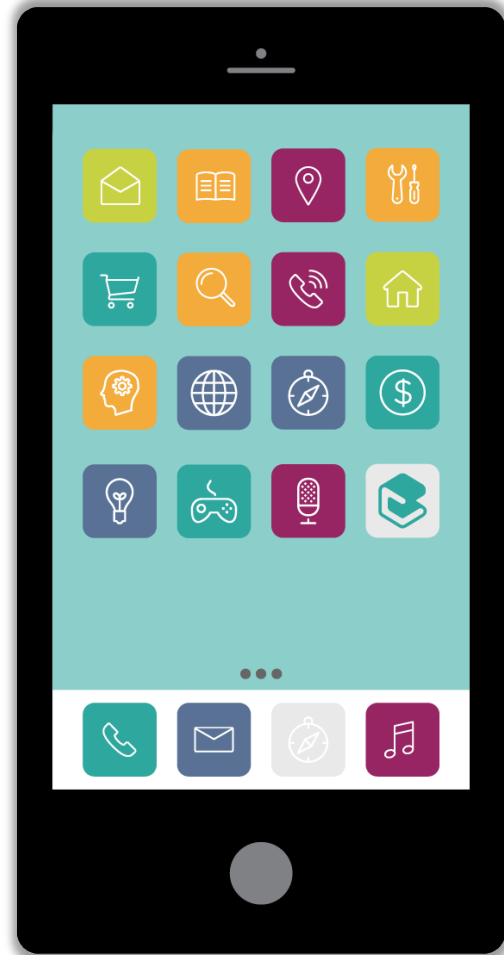
Gaming

Improving mobile app performance is critical

2014 will continue to be a huge year for mobile. Businesses will sharpen their focus from web to mobile, and leverage apps to increase revenue and productivity. In addition, users will demand better performance from mobile apps.

Companies that have consistently delivered top user experience use a mobile APM solution to optimize their apps.

To learn more about Crittercism's mobile app performance management solution, visit WWW.CRITTERCISM.COM



Real Business ROI

Crittercism has worked with thousands of customers across multiple industries to improve their mobile apps and experience. Below is a glimpse into the achievements of customers.

	ISSUE	BEFORE	AFTER	IMPACT
HEARST	Monetize through mobile channel while creating best user experience	3% downtime across all platforms	< 0.5% downtime across all platforms	83% improvement in uptime 2 stars → 4+ stars
DocuSign	Poor visibility into app issues affecting users	2 weeks to resolve issues causing downtime	Resolve most issues in 2 days	14X more efficient at resolving critical crashes 2X faster app releases
URBAN OUTFITTERS	App performance issues affecting user experience	6% downtime	<1% downtime	7x performance improvement 6x revenue improvement

Glossary & Methodology

- **MAU:** Monthly Active Users are the unique end-users on a mobile app during a given month
- **DAU:** Daily Active Users are the unique end-users on a mobile app on a given day
- **Responsiveness:** Time it takes for each service call to respond
- **Mobile app uptime:** Availability of the mobile app; percentage of app loads that do not result in a crash *
- **Crash rate:** Percentage of app loads that result in a crash *
- **Error rate:** Percentage of HTTP or network errors an app experiences while making cloud service API calls
- **Service:** One or more endpoints providing a function that can be accessed by clients over the web.
Example: s3.amazonaws.com
- **Endpoint:** Specific API on a cloud service. Examples include account creation, check-out, or in-app purchase

Methodology

We've gathered data from nearly 1B users and analyzed 3B+ events/day over a month.

*Mobile app uptime/crash metrics in this report are most accurate when used within the context of the platforms they reside on as there are differences in how platforms report app loads.