DeviceAtlas™
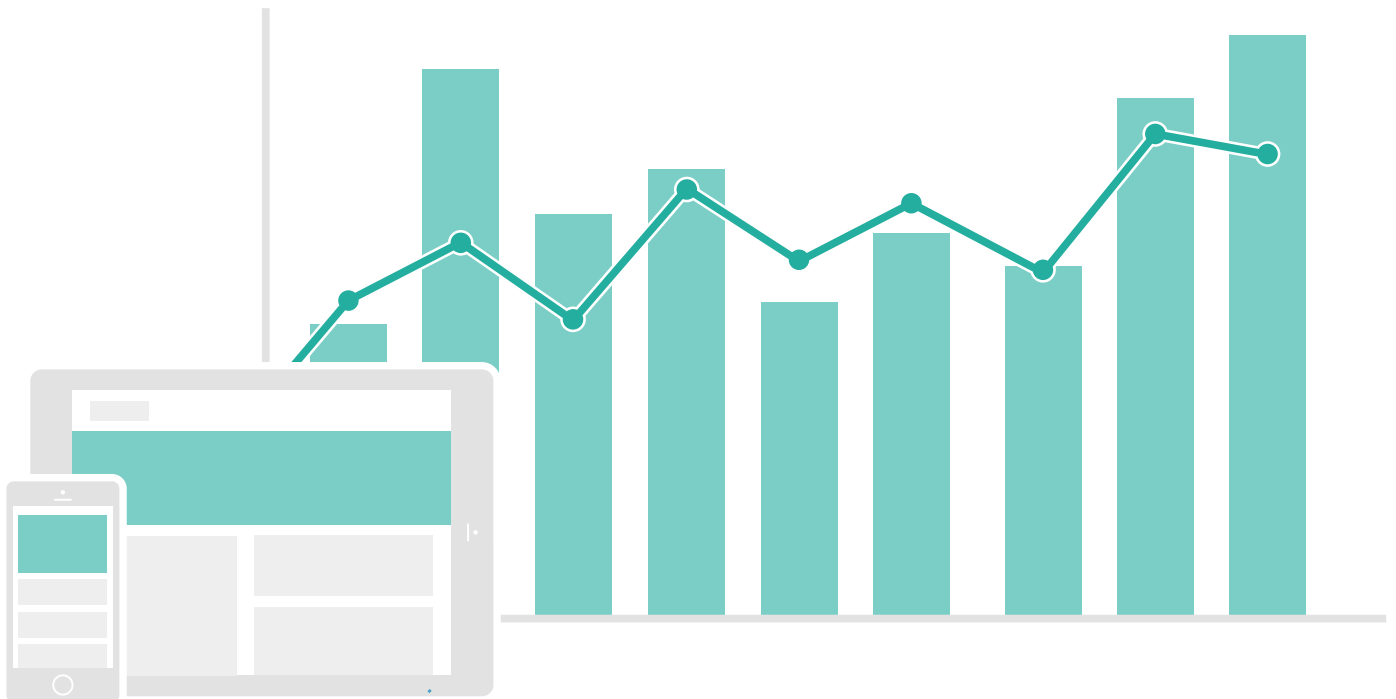
HOW TO UNDERSTAND AND ANALYZE YOUR MOBILE TRAFFIC

WHAT YOU SHOULD KNOW ABOUT MOBILE TRAFFIC TO YOUR WEBSITE

DeviceAtlas™

INTRODUCTION

The explosion of different types of web-enabled devices and the improvements to mobile networks have made for an online landscape in which users can access websites on a myriad of devices, in varying contexts.

A new era of pervasive connectivity allows businesses to address online visitors better by optimizing their experience based on device characteristics. Having a sound knowledge of users' devices also makes for smarter, data-driven decisions on mobile strategy. Therefore, it is of the utmost importance to make sure that your business understands the complexity of its website traffic at device level.

In this paper we'll guide you through the complex, fast-growing world of mobile web traffic analytics. You'll notice that you may be getting traffic from more sources than you think. We'll answer the following questions:

- What is the difference between mobile web and desktop web?
- How do you detect devices accessing websites?
- How detailed can mobile traffic data be?
- How to choose the right device detection strategy?

This paper will help you understand why today's web analytics world is difficult to navigate without having a sound understanding of user devices, and user contexts.

THE END OF 'MOBILE VS. DESKTOP' DIFFERENTIATION

Over the past decade, laptop and desktop computers haven't changed much in terms of their screen sizes or the way they're being used. During the same period however, mobile devices have changed dramatically especially in terms of screen sizes, connectivity and web browsing capabilities.

In the past, mobile web and desktop web were two separate worlds, given the limited browsing capabilities of early mobile devices. Mobile web offered much less content, which was browsed in a fundamentally different way.

This changed circa 2007 when the original iPhone was released, followed by the first Android devices. The new types of Operating Systems and the proliferation of touchscreens reduced the gap between the mobile and the desktop web. Mobile phones had evolved to the point where you could have an excellent web experience on a mobile device.

This established that Web is important on mobile and opened new doors for businesses to harness their mobile traffic in a variety of ways.

Did you know…?

M-commerce is taking up a progressively larger slice of the online retail space. One out of four people now own a smartphone worldwide (a much higher rate in developed countries), and 55% of all time spent on retail sites takes place on a mobile device.

- Over 80% of the US mobile subscriber population now owns a smartphone. (Comscore)
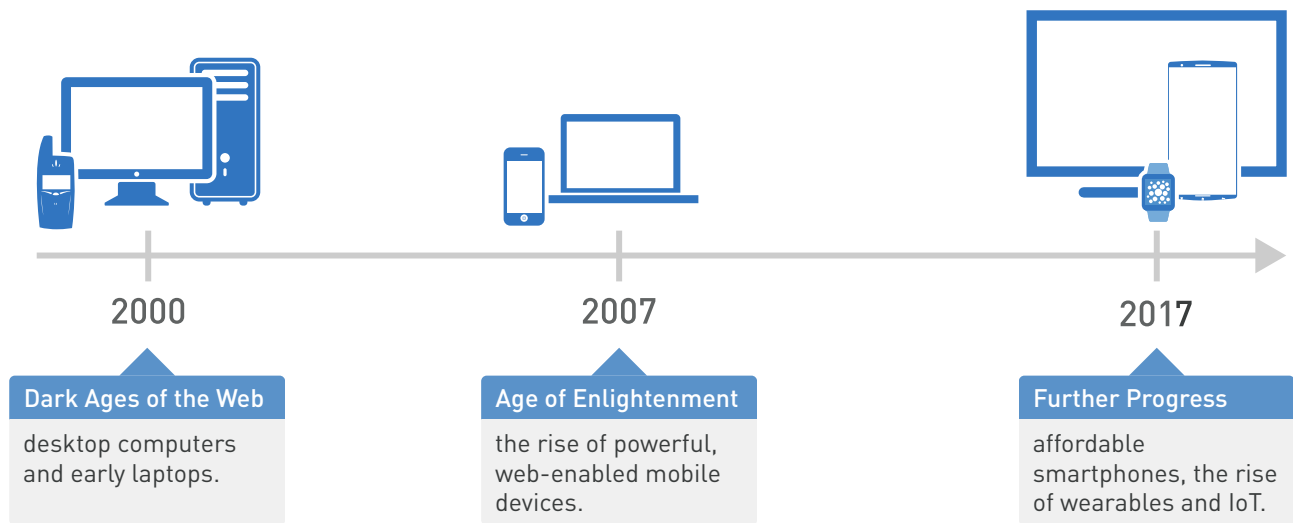
- Mobile advertising spending in the US jumped to $58bn in 2017. Expenditure on mobile accounted for over 70% of total internet ad revenues, and 28.5% of all media ad investment. (eMarketer)

- 80% of tablet use happens at home and 84% of smartphone and tablet owners use these devices while watching TV. (Nielsen)

- In 2017, 2.73 billion people worldwide will use a mobile phone to access the internet, representing 36.9% of the worldwide population and 78.9% of internet users. (eMarketer)

OVERWHELMING DEVICE DIVERSITY

Analyzing your online traffic you need to accept the fact that 'mobile' is not a homogenous group. Today it refers to an extremely diverse rainbow of device types (tablet, smartphone, low-end phone), capabilities (high, mid, low), connectivity levels (2G, 3G, 4G, WiFi), and costs (depending on the country, Mobile Network Operator, data plan).

Businesses must be aware that users can access their websites not only on laptops, tablets, and smartphones. The expansion of Android, and the lowered cost of hardware components, has made bringing connectivity to a device relatively cheap and easy. Today any device can be web-enabled once equipped with appropriate connectivity (WiFi, 3G, 4G, and soon 5G), and this includes the likes of smart TVs, digital cameras, home appliances, projectors, vehicles, and so on.

Web Evolution engendered by device diversity

2000

2007

2017

Dark Ages of the Web

desktop computers and early laptops.

Age of Enlightenment

the rise of powerful, web-enabled mobile devices.

Further Progress

affordable smartphones, the rise of wearables and IoT.

DeviceAtlas data can help you understand the scope of device fragmentation. Its device database contains thousands of disparate devices that offer web browsing capabilities.

Device fragmentation as seen in DeviceAtlas

- **4,200+**

  different device vendors

- **2,500+**

  devices released in 2017

- **34**

  Operating Systems

- **100**

  different iPhone models

- **27**

  models of Samsung Galaxy S8

- **over 55,000**

  unique connected devices

All indicators suggest that fragmentation is on the rise. Ten to fifteen years ago there was mobile or desktop – now there are countless devices bridging the gap, each with its own features and limitations indicated by the above statistics. This is a very complex landscape for Web Analytics packages to navigate mainly due to the fact that device identification is not easy to get right. These solutions can only be as accurate as the device data that powers them.

Did you know…?

With 81.5% market share, Android was the leading smartphone OS in 2014 in terms of shipments, followed by iOS capturing 14.8% of the market. 2.7% of devices featured Windows Phone, 0.4% had BlackBerry OS, while 0.6% used other operating systems. (IDC)

HOW MOBILE DEVICES REQUESTING YOUR WEBSITE ARE DETECTED

Device intelligence is an essential component of web analytics tools supplying them with accurate, segmented data on all devices accessing online content. This allows businesses to make data-driven choices on mobile strategy. How does device detection work?

Device detection solutions typically examine information contained in the HTTP headers, particularly User Agent strings sent by all web-enabled devices. Then they look up the device capabilities in a database. The most problematic aspect of this process is that the information contained in the User Agent (UA) often isn't correct because many devices deliberately pretend to be something else.

Did you know...?

User Agents are defined in the HTTP/1.1 standard which says that a User Agent string consists of multiple 'product tokens'. Each product token includes a product name and its version separated by a "/" sign with some optional information in brackets. The tokens are typically listed by significance, however this is up to the software maker.

Given that User Agent string rules are rather superficial, there is no consistent structure for UAs. This world is still the 'Wild West'. Software developers and device makers can freely conceal the device-specific information, or build nonsensical User Agent strings.

User Agent string examples

- **Safari on iPhone XR:**

  Mozilla/5.0 (iPhone; CPU iPhone OS 12_0 like Mac OS X) AppleWebKit/605.1.15 (KHTML, like Gecko) Version/12.0 Mobile/15E148 Safari/604.1

- **Opera Mobile on an Android smartphone**

*Mozilla/5.0 (Linux; Android 5.0.2; XT1032 Build/LXB22.46-28.1)
AppleWebKit/537.36 (KHTML, like Gecko) Chrome/43.0.2357.78 Mobile
Safari/537.36 OPR/30.0.1856.93524*

Detecting third-party browsers by analyzing just the User Agent string can
be particularly difficult given that a lot of browser-related information is
conveyed in other HTTP headers (not just the User Agent string).

MOBILE WEB TRAFFIC – A DIVE INTO THE DATA

Accurate traffic data can only be derived by the correct correlation of the
information contained in HTTP headers with the underlying device. And thus
sophisticated device detection methods are required to accurately report on
all mobile traffic details.

Here is a brief analysis of traffic to thousands of mobile optimized websites
tracked by DeviceAtlas in 2014. As expected, mobile devices made up the
largest group from devices (61%). But they were not the only "visitors" to
mobile sites. The next two largest groups were non-human and desktop
browser traffic. The table below presents the detailed breakdown of all
categories considered.

Mobile	60.97%
Desktop	9.68%
Application	0.34%
Non-human (bots, crawlers, etc)	28.29%
Garbage	0.62%

Interestingly, the second largest group (28%) consisted of the traffic generated by non-human visits, such as robots, crawlers, checkers, feed fetchers, spam, etc. Many bots pretend to be real devices and they can easily mislead some device detection solutions.

Mozilla/5.0 (iPhone; CPU iPhone OS 6_0 like Mac OS X) AppleWebKit/536.26 (KHTML, like Gecko) Version/6.0 Mobile/10A5376e Safari/8536.25 (compatible; Googlebot-Mobile/2.1; +http://www.google.com/bot.html)

Mozilla/5.0 (compatible; bingbot/2.0; +http://www.bing.com/bingbot.htm)

Other strings that didn't convey any meaningful device information generated roughly 1% of traffic. The most significant group from the remaining ones contains just garbage strings. Hashes, random character strings, deliberately altered UAs or just empty strings made up about 0.6% of the traffic. And here are some interesting examples of these User Agent strings.

/usr/local/websense/af_mobile/user_agent/ipad

silly_that_i_have_to_do_this
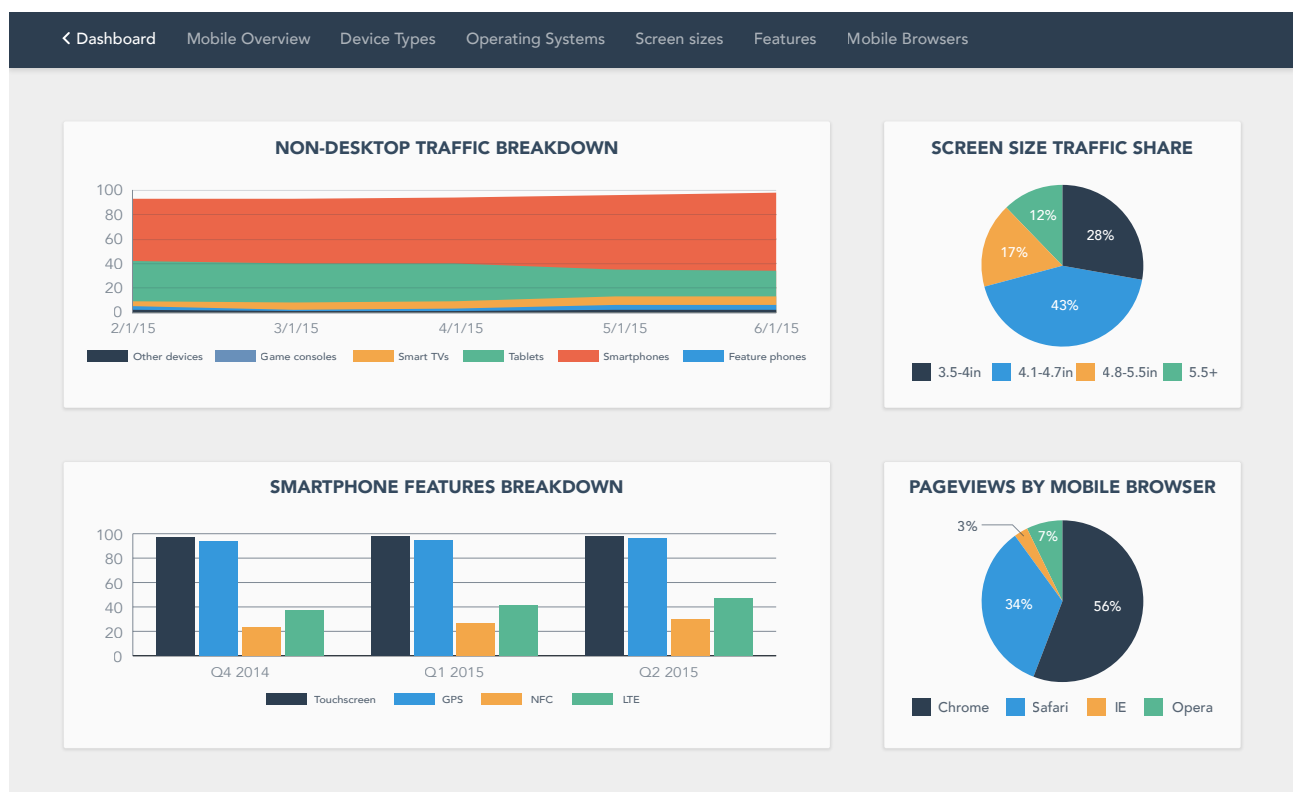
\'"\\'\");l]{%0d%0a<%00>*

Did you know...?

As much as 50% of your traffic to a mobile site may not actually come from mobile or tablet devices but from other sources including desktop and non-human traffic.

AUGMENT YOUR OWN PRODUCT CAPABILITIES WITH DEVICE DATA

Many Web Analytics solutions do not fully report on mobile devices due to a reliance on un sophisticated device detection methods that can't handle the issues described earlier, such as incorrect or incomplete HTTP headers. As a result, you may be getting much more mobile traffic than you realize, and from a wider variety of devices and sources.

Here is an example of an Analytics solution that is powered by rich data on device characteristics.

<table>
<tr><td>‹ Dashboard</td><td>Mobile Overview</td><td>Device Types</td><td>Operating Systems</td><td>Screen sizes</td><td>Features</td><td>Mobile Browsers</td></tr>
</table>

NON-DESKTOP TRAFFIC BREAKDOWN

■ Other devices ■ Game consoles ■ Smart TVs ■ Tablets ■ Smartphones ■ Feature phones

SCREEN SIZE TRAFFIC SHARE

28% / 43% / 17% / 12%

■ 3.5-4in ■ 4.1-4.7in ■ 4.8-5.5in ■ 5.5+

SMARTPHONE FEATURES BREAKDOWN

Q4 2014 / Q1 2015 / Q2 2015

■ Touchscreen ■ GPS ■ NFC ■ LTE

PAGEVIEWS BY MOBILE BROWSER

3% / 7% / 34% / 56%

■ Chrome ■ Safari ■ IE ■ Opera

Web Analytics solutions need constantly updated device data sources that are sophisticated enough to handle deliberate masquerades and other similar situations where a User Agent string is not what is seems. To choose the right device detection solution for Web Analytics purposes, you need to focus on the following aspects:

- **Detection method**

All device detection solutions analyze User Agent strings to detect devices, but they do it in a number of ways. For example to accurately identify third-party browsers, such as Opera Mini, all HTTP headers must be analysed.

- **Detection accuracy and transparency**

Some web traffic cannot be detected due to malformed HTTP headers or missing device information. You need to make sure the detection method is transparent for the undetectable and undetected traffic. It should flag unrecognized devices not approximate a value, so that you can get the full picture of the traffic you're getting.

- **Speed and memory footprint**

Detection speed and memory footprint need to be tested in the real-world environment to make sure they don't create a bottleneck impeding the overall performance of your solution.

- **Device Property coverage**

Analytics can be generated for any device characteristic or property that is tracked by the device database. Make sure your device detection solution allows you to track and target device characteristics you are interested in.

- **Device coverage and frequency of updates**

Web Analytics providers that support the tracking of mobile devices usually allow their customers to view a breakdown of the traffic to the site by different device types. Clearly for this information to be useful the device database utilized by the Analytics company must be kept up to date, since new and notable devices are released every week. Having out of date device information can mean that literally thousands of devices can be missed in any given year. The total number of distinct web-enabled mobile devices is changing constantly. The exact number is not as important as the global coverage of devices.

INTEGRATE DEVICE AWARENESS INTO YOUR SERVICE

DeviceAtlas can power device awareness for any web solution either for your own analytics needs, or as part of your product offering to your own customers.

- High-speed, low memory footprint device identifcation
- Fine-grained device data, with 185+ data points including device type, marketing name, operating system, browser, network, and more
- Locally installed in your environment or hosted in the cloud

Try it for free ➤

OTHER DEVICEATLAS WHITEPAPERS

Visit deviceatlas.com/whitepapers to download the following whitepapers:

Why Device Awareness Is Important For The Operator Environment

Today all Mobile Network Operators need deep understanding of all devices on their network. But building and maintaining your very own TAC-based device database is a challenging and time-consuming effort.

A Content Adaptation Survival Guide

This e-book will help you understand the techniques of content redirection and adaptation. Learn how to address mobile users in a fundamentally different way.

Ad Targeting in a Multi-Screen World

Find out how to unlock the mobile advertising opportunity. This free whitepaper outlines 6 methods to target advertising by using knowledge of the requesting device, how ad platforms are using device intelligence, how the RTB spec is dealing with device data, technology requirements, and more.

Benchmarking your Device Detection Strategy

The proliferation of device types has made for an ever more fragmented device landscape. If you are a business with a strategic digital focus, you should review your device detection strategy.

For more information on the DeviceAtlas, visit deviceatlas.com or contact us at sales@deviceatlas.com.