AKAMAI WHITE PAPER

Akamai's 2015 Online Holiday Shopping Trends and Traffic Report for Europe and North America

Akamai
FASTER FORWARD

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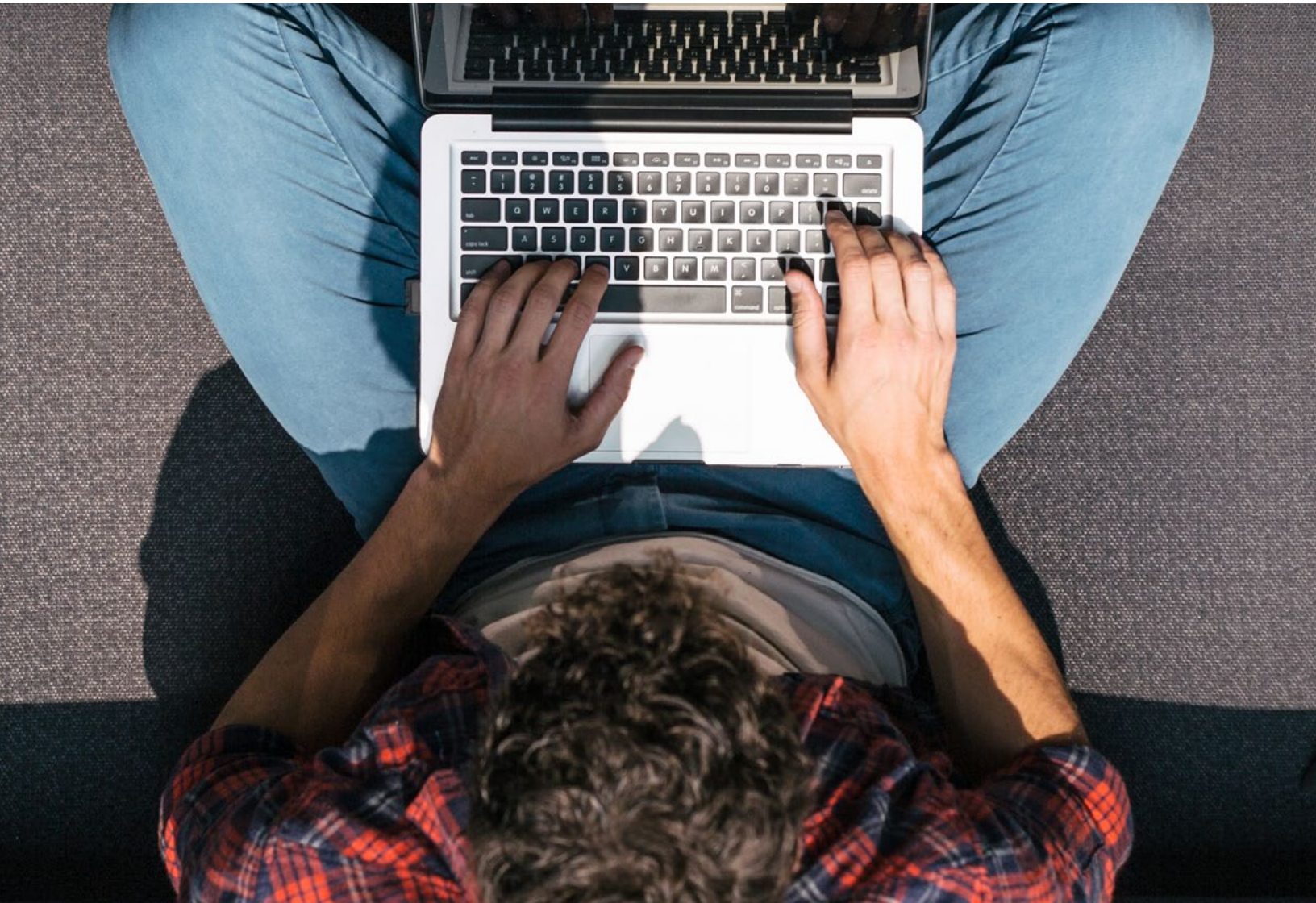
Executive Summary

Reports are mixed on the success of the 2015 holiday season. U.S. retail sales grew by 7.9% during the Black Friday to Christmas Eve Shopping season, according to MasterCard SpendingPulse™[1]. This is the biggest jump since the 6.3% rise in 2011[2]. However, the National Retail Federation saw only 3% growth in 2015 compared to 2014 for the season, on expectations of 3.7% growth[3]. Europe as a whole saw flat sales compared with last year, according to e-commerce News[4]. On a bright note, the U.K.[5] saw significant growth -- Boxing Day sales hit nearly £1.75 billion, contributing to an expected (and record breaking) £40 billion total for December[6].

E-commerce shopping activity – especially on mobile devices – played a key role in driving the 2015 holiday season's results on both sides of the pond and was one of the highlights of the season.

This report provides an overview of e-commerce shopping activity across the Akamai network throughout North America and Europe during the 2015 holiday shopping season, spanning November through the end of December. This report focuses in particular on the Thanksgiving holiday sales events—Black Friday and Cyber Monday.

We gathered data for this report by geography using Akamai's Retail Net Usage Index (NUI) and Real User Monitoring (RUM). NUI monitors Akamai's retail customers' real-time website traffic in page views per minute (V/PM). RUM reports data about actual web traffic based on device type and operating system. Akamai's retail customers represent the top 20 global e-commerce sites, and our findings include major retailers in North America and Europe.



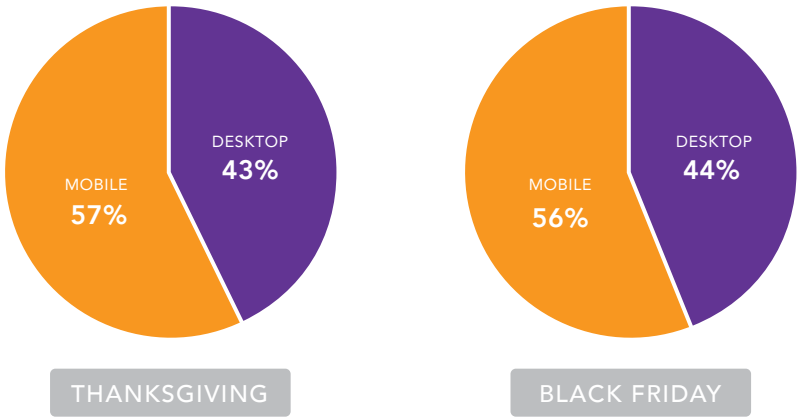
Key Takeaways

Noteworthy highlights include the following 2015 holiday shopping trends:

- **The role of mobile has increased substantially —** The big news in North America is the newfound dominance of mobile commerce; for the first time, the majority (54%) of traffic to retail e-commerce sites came from mobile devices. Mobile also played an important role in Europe, although traffic from desktop devices (51%) narrowly edged out mobile traffic over the Thanksgiving holiday period.
- **Cyber Monday shone as the most popular shopping day in North America—**While the entire Thanksgiving weekend—Thursday through Cyber Monday—showed significant increases in online traffic compared with baseline traffic (the daily average of the first seven days in November), Cyber Monday experienced the largest increase of 119%. Traffic peaked on Cyber Monday with a weekend high of 23.5 million page views per minute at 9 p.m. EST.
- **Black Friday gains significance in Europe—**This year's data shows that Black Friday and Cyber Monday have become global sales events, with European traffic increasing by 39% over baseline on Black Friday and by 11% on Cyber Monday. This data indicates that in coming years, European retailers will need to prepare for these sales events in ways they haven't previously.
- **Shopping started later in North America and was less focused on specific days—**Shopping in North America started later in November this year than it did last year. Traffic in 2015 began with a surge on November 21 and remained higher than baseline until December 30. In contrast, 2014 saw increases in traffic over the baseline that began on November 1. In Europe, the surge in traffic began for both 2014 and 2015 around November 21.
- **Shopping peaked during late morning and late evening hours —**Across all major shopping days in North America and Europe, traffic peaked in late morning and late evening. In North America, peaks occurred at approximately 11 a.m. and 9 p.m. In Europe, peaks fell at around 9 a.m. and 8 p.m.
- **Retail was the most attacked industry—**In Q4 2015, nearly 60% of all cyberattacks in North America and more than 50% in Europe targeted retail industries.
- **Web Application Firewall (WAF) attacks were up in North America but down in Europe—** Between Thanksgiving and Cyber Monday, WAF attacks in North America exceeded our baseline (a daily average of 11 weeks of attack data) by 24%, while Europe saw 72% fewer WAF attacks. The most common WAF attacks were Log File Injection, SQL injection, and Cross-Site Scripting. The number of attacks did not correlate to overall traffic.
- **DDOS attack size and frequency increased—**Over the holiday period, Akamai saw the average DDoS attack size in Gbps grow 2X the baseline and median attack size grow 3X the baseline (a daily average based on two years worth of attack data). The number of attacks also increased by 129% over that period.

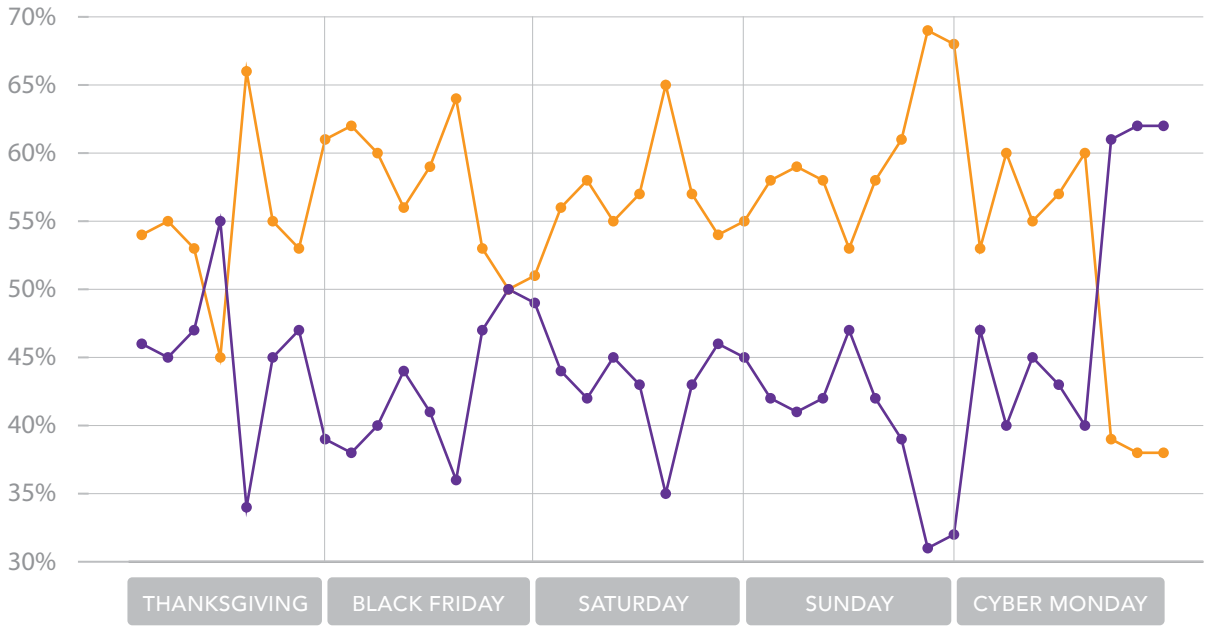
M-Commerce Achieves Dominance in North America

The major scoop for the 2015 holiday season in North America was the newfound dominance of mobile commerce. For the first time, mobile devices (phones and tablets) accounted for the majority (54%) of traffic to retail e-commerce sites. This is in contrast to 37% in 2014 and 35% in 2013. This data corroborates IBM data that showed an increase in mobile sales of 30% over last year. IBM found that mobile accounted for 60% of all online traffic and 40% of all online sales[7], as shoppers used their smartphones throughout their shopping experience — even in physical stores for price comparison, product reviews, and coupons.



MOBILE VS. DESKTOP
NORTH AMERICA

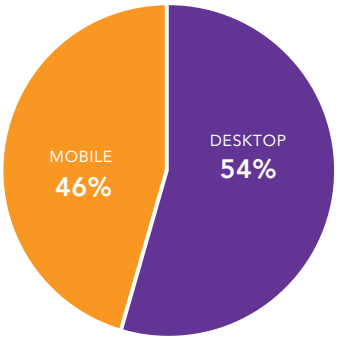
Over the 120-hour period that comprised the 5-day Thanksgiving holiday shopping weekend, mobile comprised at least half of all traffic nearly 90% of the time. Desktop only contributed the majority of traffic for 14 hours. This move to m-commerce makes sense, given that people have little time or desire to sit down at a desktop machine and shop during holiday family time. It also reflects improvements in the mobile experience. Simpler, more fluid interactions and a more trusted channel are enticing more shoppers to use their mobile devices in lieu of a desktop machine. On several occasions throughout the weekend, mobile contributed to as much as 69% of all traffic to retail sites. When we compare this Thanksgiving to 2014, the increase is astounding – 57% of traffic came through mobile devices on Thanksgiving Day in 2015 versus 44% in 2014, an increase of 13 basis points.



THANKSGIVING WEEKEND: RETAIL TRAFFIC
MOBILE VS. DESKTOP | NORTH AMERICA

DESKTOP MOBILE

The only exception to this mobile dominance was Cyber Monday. On that day, the majority of online shopping (54%) was done on desktops, as people took time off from work (don't tell!) to take advantage of the big discounts available. But even on Cyber Monday, the trend is toward increasing m-commerce. In 2015, mobile accounted for 46% of e-commerce traffic on Cyber Monday compared with only 30% of e-commerce traffic in 2014. We fully expect Cyber Monday to see a majority of traffic through mobile in 2016.

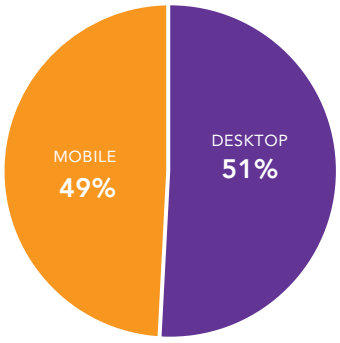


CYBER MONDAY

MOBILE VS. DESKTOP
NORTH AMERICA

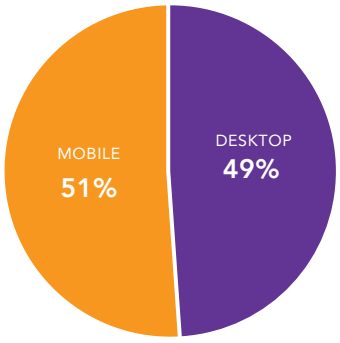
Mobile in Europe: A More Even Distribution of Traffic

In Europe, mobile also played a major role in online sales, contributing significant traffic throughout the weekend. However, unlike the mobile dominance Akamai observed in North America, Europe's e-commerce traffic was more equally distributed — use of desktop devices narrowly edged out mobile (51% to 49%) over the entire weekend period. This pattern was apparent on individual days as well. The one exception was Cyber Monday which, as in North America, was heavily desktop oriented. This trend in Europe isn't surprising, as many more shoppers, like their North American counterparts, take advantage of the holiday promotions on their work devices.



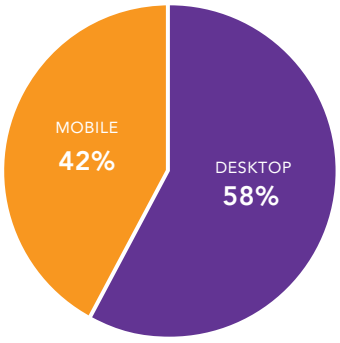
BLACK FRIDAY

MOBILE VS. DESKTOP
EUROPE



SATURDAY

MOBILE VS. DESKTOP
EUROPE

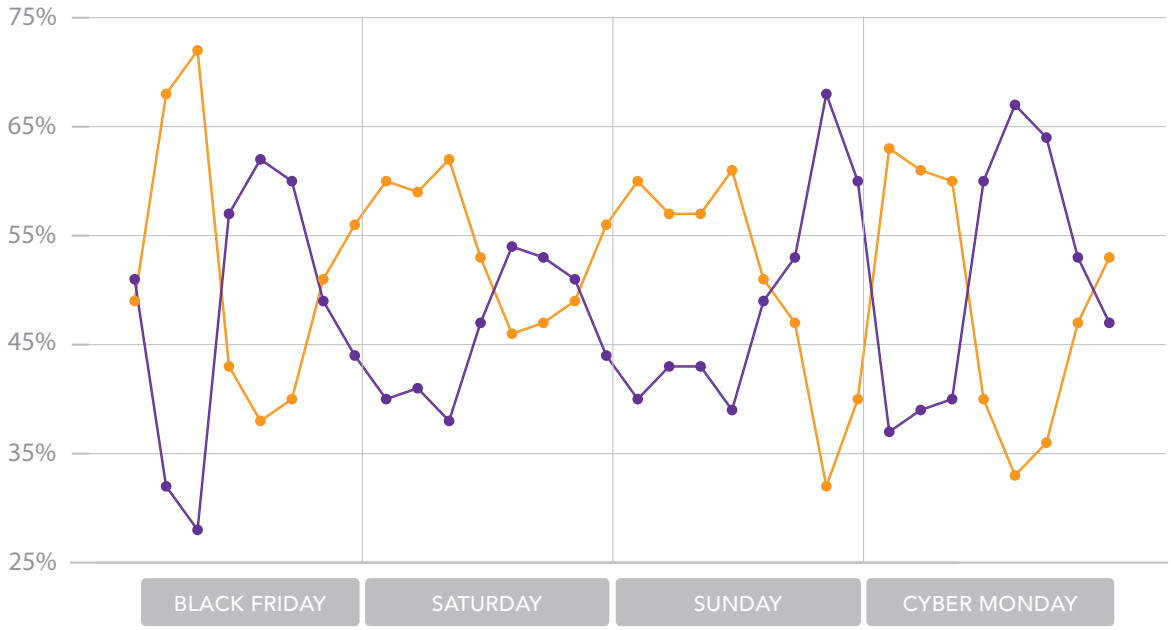


CYBER MONDAY

MOBILE VS. DESKTOP
EUROPE

An interesting note is that while Cyber Monday gets the headlines, the Saturday before contributed 20% more traffic than Cyber Monday and had a majority of that traffic on mobile devices. Perhaps Mobile Saturday will be a focal point next year, instead of Cyber Monday.

We also see a pattern emerge over the four days where mobile traffic tended to surge from late night through mid-morning, after which most traffic moved to desktop.



BLACK FRIDAY WEEKEND: RETAIL TRAFFIC
MOBILE VS. DESKTOP | EUROPE

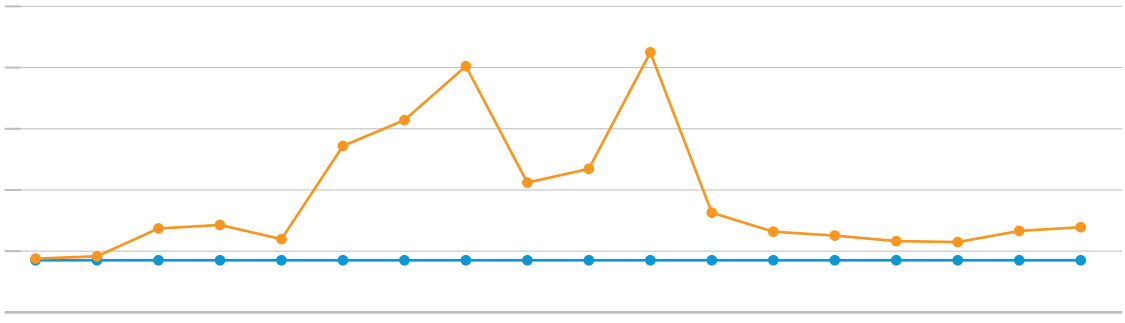
DESKTOP MOBILE

Thanksgiving Weekend

The Shopping Season Kicks up Nicely for the Thanksgiving Holiday in North America

In North America, mobile traffic contributed to a surge in e-commerce traffic overall throughout the Thanksgiving holiday season. Typically, online sales comprise between 8-10% of total retail sales[8].In comparison, the National Retail Federation[9] saw that nearly half of shoppers chose to shop online on Thanksgiving and Black Friday. This statistic illustrates the growing importance of e-commerce as retailers seek to cater to the way consumers want to shop.

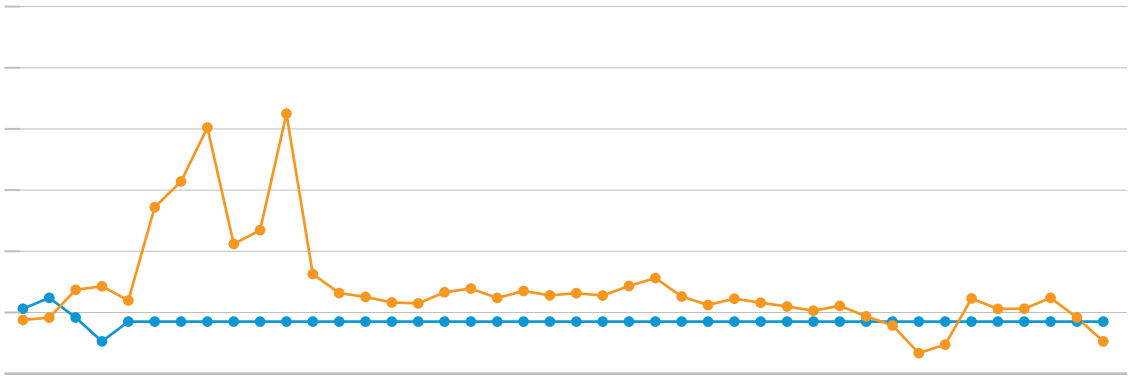
Akamai data fully supports the importance of the digital channel to retail. The entire weekend, Thursday through Cyber Monday, showed significant increases in online traffic compared with the baseline traffic– 80%, 109%, 45%, 52%, and 119% daily spikes respectively. Traffic peaked on Cyber Monday with a weekend high of 23.5 million page views per minute at 9 p.m. EST. This makes sense, since people across North America were home and settled in to take advantage of the sales. Black Friday peaked at 21.3 million page views per minute at 10 a.m. EST as most consumers were likely researching or shopping before heading out to take advantage of brick-and-mortar sales.



THANKSGIVING WEEKEND: RETAIL TRAFFIC DAILY AVERAGE
NORTH AMERICA

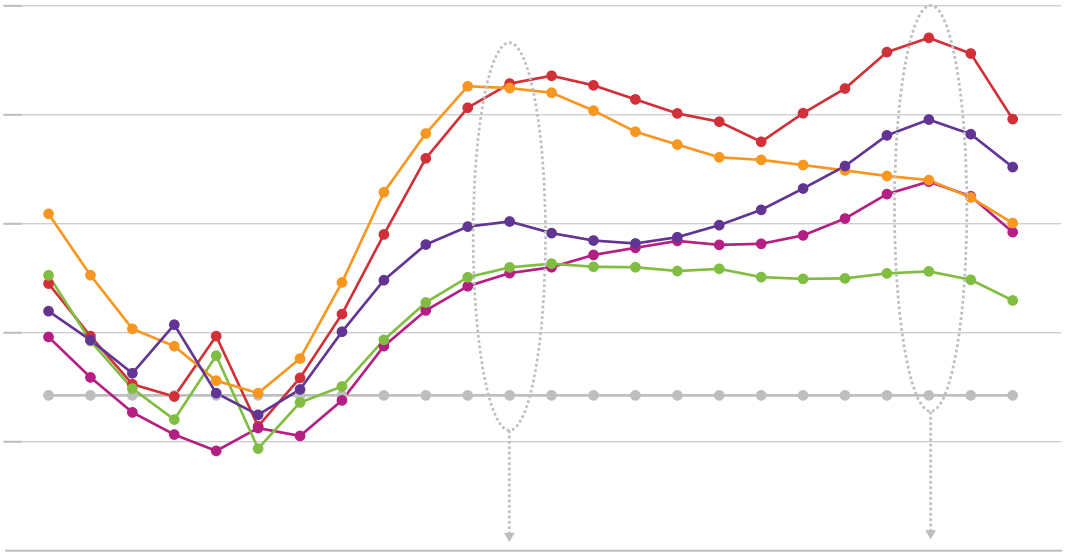
NA BASELINE

One trend that ran counter to 2014 (based on Akamai's data) was that shopping started later in November in North America than it did last year. Traffic in 2015 began to surge on November 21, whereas in 2014 the increase over the baseline started on November 1. In addition, we observed that the shopping season is getting longer. Traffic didn't fully subside back to its baseline level in 2015 until December 30th. We did not track when traffic began to subside in 2014. This is consistent with industry reports5 that shoppers were less dependent on single-day sales. We believe this is due to: 1) an improving economy where shoppers are less focused on getting a deal and 2) more deals being available online at any given time, reducing the need to accomplish most/all shopping on a big single-day sale (whether offline or online).



THANKSGIVING - CHRISTMAS WEEKEND: RETAIL TRAFFIC
NORTH AMERICA

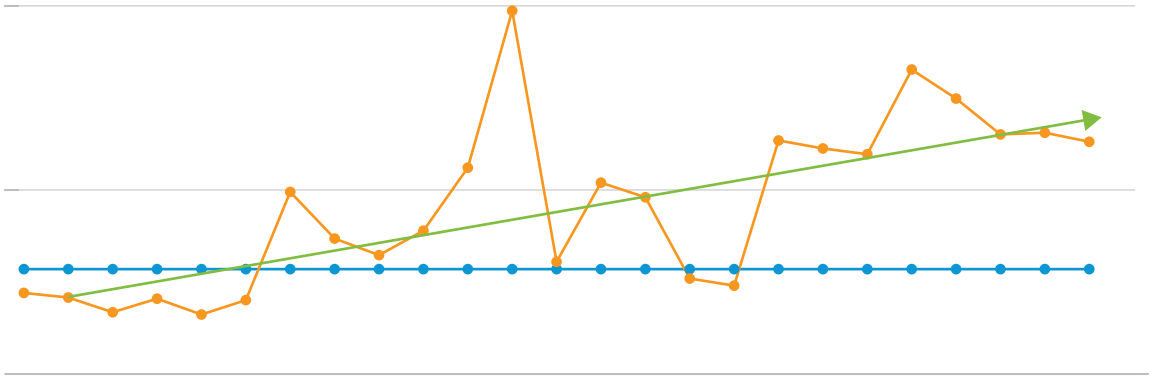
If we take a deeper look at how traffic each day broke down from an hourly perspective, we see some interesting trends. Across the three major shopping days, the relevant hourly peaks all fall within narrow windows - late-morning and late evening. Four out of the five days saw a clear peak in the morning, indicating a combination of online research and shopping before heading out to shop (Black Friday) or later in the evening when holiday activities or work (Cyber Monday) have settled down.



HOURLY TRAFFIC
NORTH AMERICA

Europe Embraces Black Friday

The big story in Europe during this period was the increasing adoption of Black Friday as a sales day. European data from our Net Usage Index saw a 39% increase over baseline traffic on Black Friday and 11% on Cyber Monday. This data indicates that Black Friday and Cyber Monday are becoming global events.

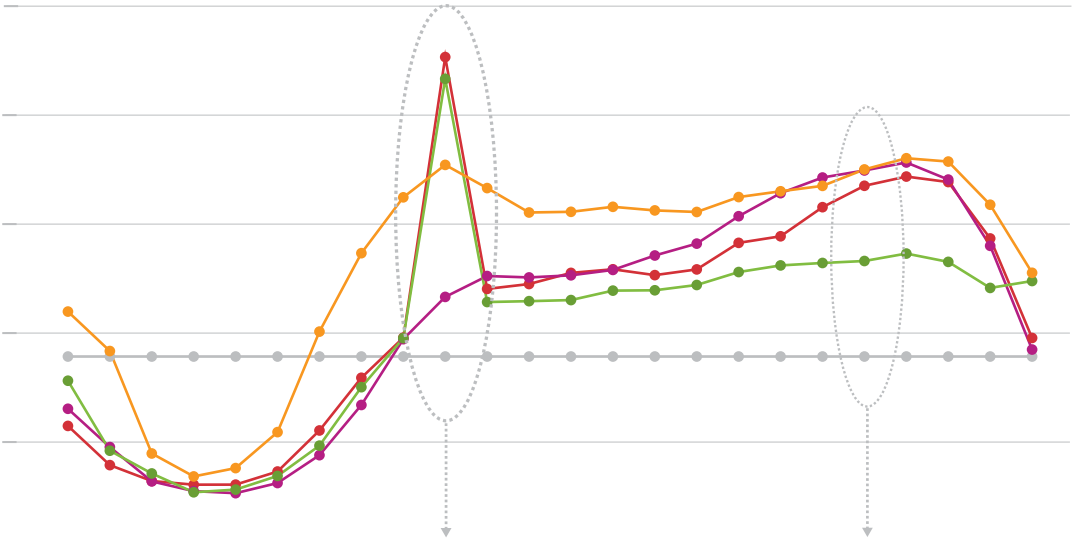


NOVEMBER HOLIDAY WEEKEND: RETAIL TRAFFIC
EUROPE

EUROPE BASELINE

Overall traffic activity in Europe peaked on Cyber Monday with 4.5 million page views per minute at 9 a.m. GMT. Interestingly, the next highest daily peak was not on Black Friday, but on that Saturday, reaching 4.3 million page views at 9 a.m. GMT. Perhaps the most important role the weekend played, however, was kicking off the shopping season, ushering in steady, higher traffic numbers through the beginning of December, as shown in the graph above. Holidays such as Sinterklaas (Saturday December 6 and Sunday December 7th) contributed to the steady traffic growth through early December.

The prime takeaway is that European retailers will need to start planning and preparing for these sales events in ways they haven't in the past. They should use this holiday weekend as a jump start for the shopping season - building on the initial traffic spikes and growth to ensure a consistent level of online activity and strong sales.



HOURLY TRAFFIC TREND
EUROPE

BLACK FRIDAY SATURDAY SUNDAY
CYBER MONDAY BASELINE

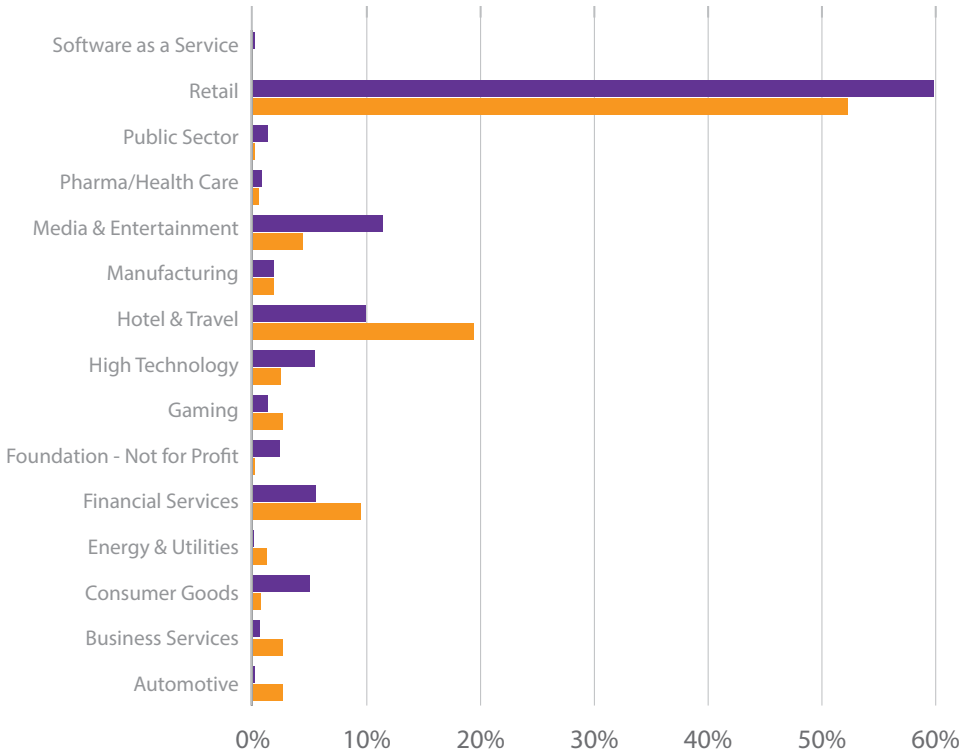
As we looked at traffic on the individual days during the holiday sales period, we saw similar patterns emerge in Europe as we saw in North America. Across the major selling days, peaks occurred consistently in the morning at 9 a.m. CET and later in the day at 8:30 p.m. CET. This makes sense, as consumers shopped before or at the start of the work day and then revisited online shopping as their day wound down.

Key Takeaways

- Mobile comprised more than half of North American traffic and nearly half of traffic in Europe.
- Black Friday and Cyber Monday gained significance in Europe, kicking off the holiday shopping season.
- The holiday shopping period started later in North America in 2015.
- Daily shopping peaks were consistent for North America and Europe—mid-morning and late evening.

Cybersecurity Trends in North America and Europe

Securing digital commerce sites has become increasingly important for retailers. Retail was by far the most attacked industry in Q4 2015 - nearly 60% of all web application attacks in North America and more than 50% in Europe targeted retail, based on Akamai's platform data. The number and sophistication of these attacks is growing. The Akamai Q3 2015 State of the Internet report found that total Distributed Denial-of-Service (DDoS) attacks increased by 179.66% over Q3 2014, application-layer DDoS attacks increased by 25.74%, and infrastructure layer attacks increased 198.1% over the same time period. DDoS attacks flood a site with excess traffic to cause the site to shut down.



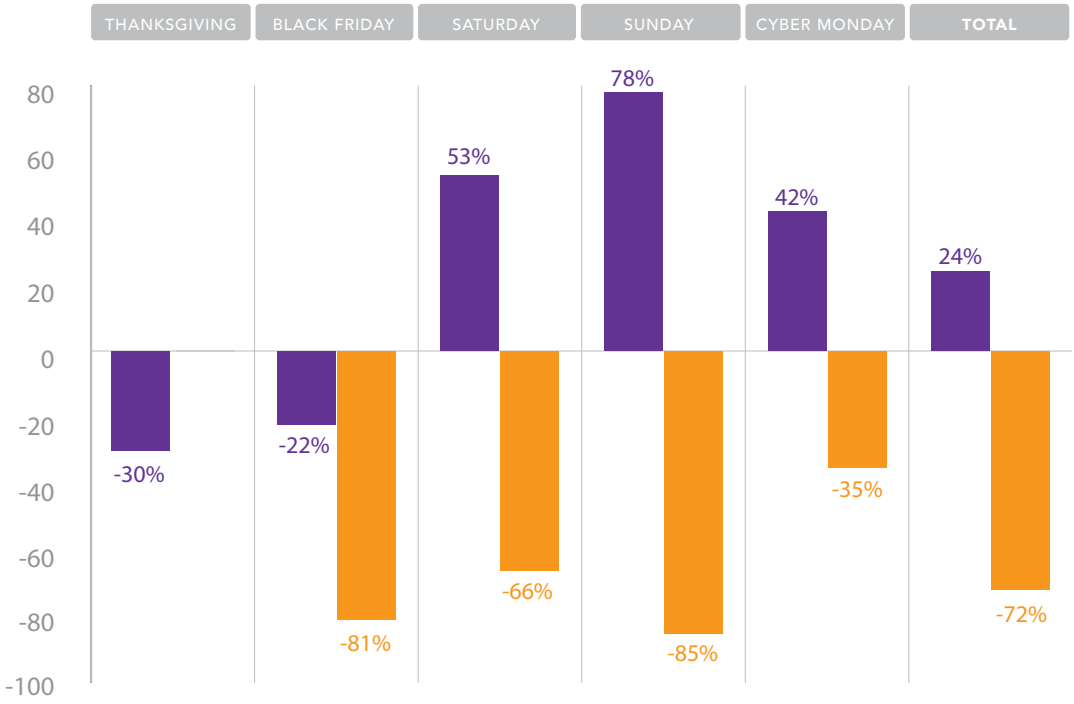
WEB APPLICATION ATTACKS: Q4 2015
NORTH AMERICA & EUROPE

The consequences of cyberattacks are serious. Downtime due to malicious web application or DDoS attacks can cause revenue loss while the site is inaccessible, fines if customer data is exposed, and lower productivity as resources that are intended to drive revenue and business strategy are refocused to mitigate attacks. Such attacks also have a negative impact on the retailer's brand. Consumers will hesitate to return to a site that was down and known to have been breached — many won't ever return. A recent survey by Interactions Marketing reported that 12% of a retailer's local customers said they stopped shopping at a retailer after a breach; 36% said they will shop at that retailer less frequently[10].

As a result, we tracked security traffic during the holiday period, observing activity for both web application attacks attempting to breach our Web Application Firewall and DDoS attacks.

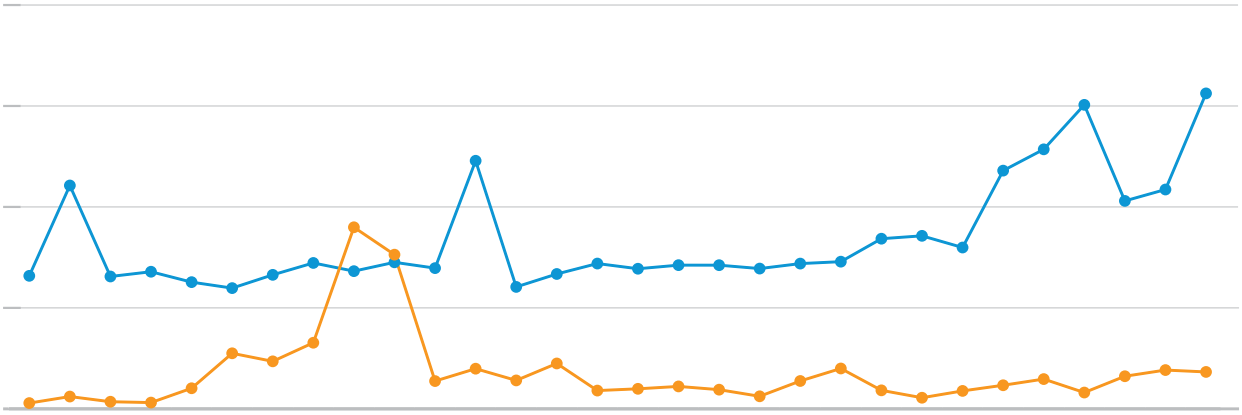
Web Application Attacks Increased Compared with Baseline

Leveraging the data used to produce our State of the Internet Security report, we found that across the five holiday shopping days, WAF attacks in North America exceeded our baseline by 24%. However, Europe saw a significant drop in the number of WAF attacks – 72% fewer. The North America data (we didn't track Europe data last year) contrasts with what we saw last year, when Black Friday attacks were 2.5X higher than the baseline. The most common attack vectors were Log File Injection, Structured Query Language (SQL) Injection, and Cross-Site Scripting.



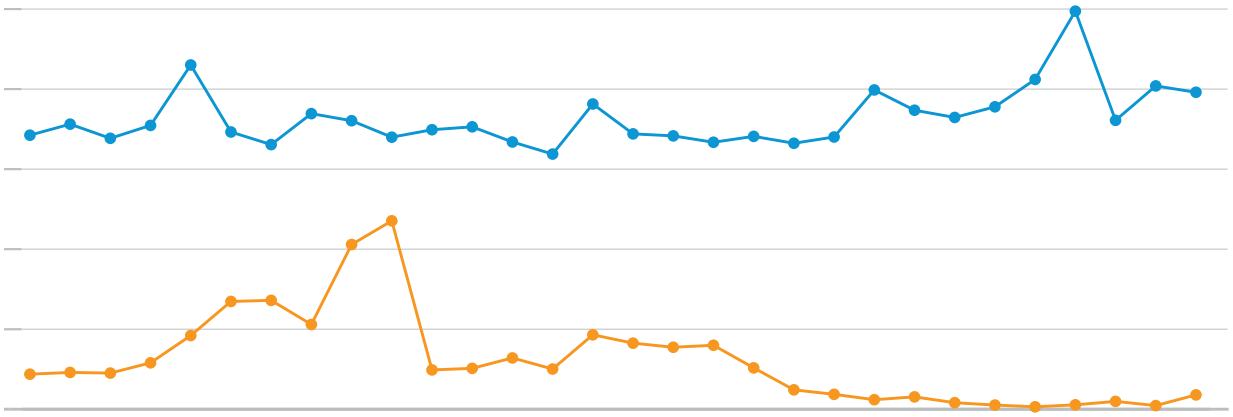
WAF ATTACK CHANGE FROM BASELINE
NORTH AMERICA & EUROPE

If we compare overall traffic and WAF attacks, we see that attacks don't increase or decrease in-line with traffic but follow separate, independent paths.



WAF ATTACKS VS TOTAL TRAFFIC
NOVEMBER | NORTH AMERICA

TOTAL ATTACKS TOTAL TRAFFIC



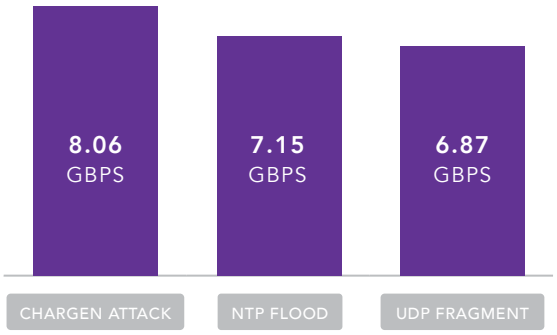
WAF ATTACKS VS TOTAL TRAFFIC
NOVEMBER | EUROPE

TOTAL ATTACKS TOTAL TRAFFIC

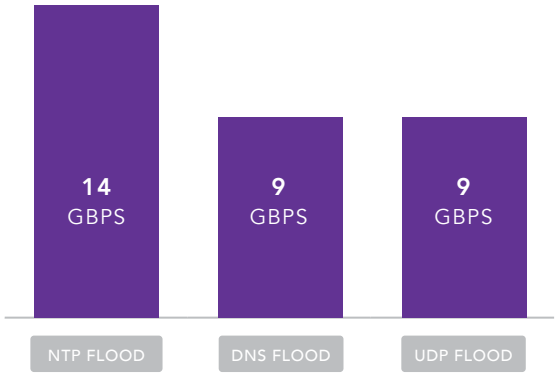
DDoS Attack Size and Frequency Increased During the Holiday Period

DDoS attacks are among the most consistent threats for retailers. As expected, attackers took advantage of the naturally inflated traffic for holiday shopping to knock out sites.

Over the holiday period, Akamai saw the average attack size (in Gbps) grow 2X the baseline attack size, and the median attack size grew nearly 3X the baseline. We also saw an uptick in the number of attacks to more than two attacks per day over a period of five weeks, compared with just under one attack per day during the baseline period – an increase of 129%.



TOP 3 DDOS ATTACKS BY AVERAGE SIZE (GBPS)



TOP 3 MOST FREQUENT DDOS ATTACK TYPES

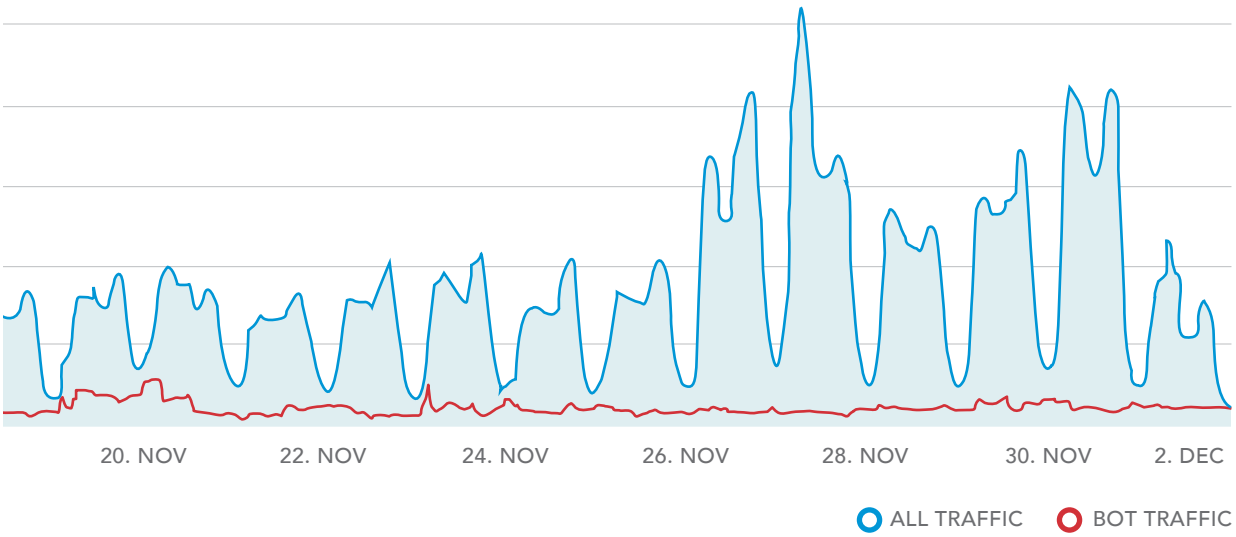
NTP Flood and UDP Flood attack types were among the most common and largest attacks Akamai saw over the holiday period.

Bot Traffic Trends

Retailers are increasingly aware of Bots' impact, both good and bad. Akamai leveraged its global view of the Internet to see what changes occurred for Bot traffic during the recent holiday shopping days for North American retailers.

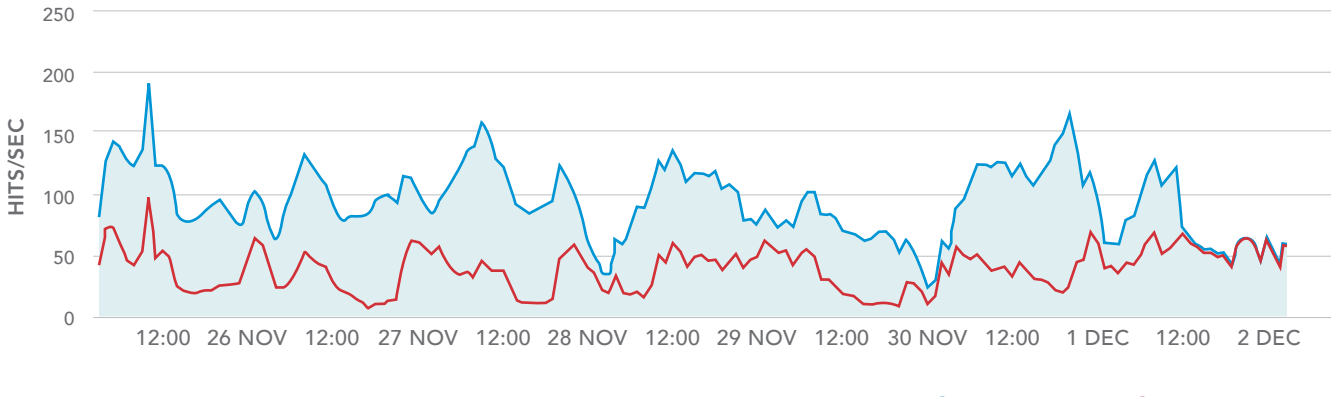
Despite the increased talk of Bots, we saw flat Bot activity over the five critical shopping days from November 26, 2015 through November 30, 2015, even though traffic spiked considerably, as you can see in the graph from a retail client below.

We can explain this by the fact that Bot traffic isn't inherently tied to human traffic. Bots do what they do on an automated schedule.



However, as pricing becomes more dynamic and content rotated more frequently, we believe that Bot traffic will likely follow broader traffic patterns in the future. Bad Bots that scrape sites for price or content will need to scrape more sites more quickly to ensure that a company can match its competitor's rapidly changing offers and prices. Good Bots, such as search engines, ad tech, and SEO crawlers, will also want to keep up with rapidly changing content and prices to ensure they are highlighting search results with updated content and capturing their ad-based traffic accurately.

This graph from one of our retail clients demonstrates the expected trend.



Key Takeaways

- Retail is by far the most targeted vertical for WAF attacks, however…
- …WAF attacks in North America and Europe did not correlate with overall traffic.
- DDoS attacks ramped up for heavy shopping periods – both in number and average size.
- Bot traffic today does not correlate to overall traffic—but we're likely to see this correlation increase as pricing and content become more dynamic.

Conclusions and Recommendations

Those that do not study history are doomed to repeat it. To optimize their websites, brace for new trends, and prepare for growing and increasingly diverse web activity during the 2016 holiday season, retailers must first understand the past. Here are some key takeaways and best practices from 2015 that will contribute to an even more successful 2016 holiday season:

- **Know your customers:** In this age of the customer, retailers that can't serve their customers with more personal, relevant, and timely products and offers delivered seamlessly, quickly, and reliably, risk losing not only the sale, but the long-term value of the customer. Knowing when a customer visits their site, on what device/OS and browser, from which country, and over what type of connection (WiFi or cellular) can help retailers build content and experiences to better serve customers. Akamai clients using Real User Monitoring and the Luna Portal can leverage data to better understand their customers and deliver experiences that are fast, reliable, and secure for any device, anywhere.
- **Optimize for mobile:** The numbers are staggering! Fifty four percent of analyzed retailer traffic on Akamai's network over the Thanksgiving Holiday shopping weekend came from mobile devices. This rate of mobile use is unprecedented for the weekend and represents significant growth over what Akamai saw in 2014. Further, we found a sizable uptick in cellular traffic. While cellular still only accounts for 8-13% of online traffic, cellular traffic increased 300% on Black Friday and 231% on Cyber Monday in 2015.

To make the most of this trend, retailers can no longer treat mobile devices as second-class citizens. Retailers must optimize sites for mobile browsers and provide a seamless experience, optimizing delivery over all device types on both WiFi AND cellular networks.

- **Support in-store mobile use.** Customers commonly use mobile devices to support purchases in store. For example, customers in the retail environment often use mobile devices to access coupons, do research, and check for product availability. Retailers should support in-store mobile use with a stronger in-store network.

  Currently, most retailers backhaul Internet traffic over the WAN, through the data center, and out to the Internet. This contributes to congested, high-latency, low-bandwidth networks, which result in slow HTTP applications, video, and software updates. Slow apps, whether inside or outside the store, mean unhappy customers and unproductive employees. Accelerating HTTP applications, video, and software updates while offloading the enterprise network to ensure fast, high-quality experiences to all end users will prevent this and allow retailers to make the most of m-commerce.

- **Prepare for unexpected traffic spikes.** Black Friday and Cyber Monday will continue to matter: but shopping will likely spread out more over time. As more commerce occurs digitally, consumers will expect deals to be available more consistently and at the same level as traditionally bigger, single-day shopping events. Retailers should plan for a longer shopping period with more persistent, compelling deals to cater to the way consumers want to shop.

  More random traffic spikes are likely to occur as sales and promotions outside of the traditional shopping days lead to unexpected interest. Retailers can gain a better understanding of their website capacity and vulnerability by simulating realistic holiday traffic with third-party load testing providers. These tests will reveal the website's breaking points based on the volume of traffic, which retailers can then use to avoid glitches in real-user scenarios. Alternatively, retailers that don't want to test with third-party load testing providers can conduct synthetic load tests at night with real users on the site.

- **Plan for failure.** Failure can happen for any number of reasons. Retailers need to carefully evaluate what might go wrong and define steps to recover the site. Retailers can accomplish this by simulating failure of parts of the infrastructure to see how the rest of the system handles them. Taking this step will ensure that retailers are prepared to address any problem and open back up for business quickly.

- **Assume your site is a target.** Retailers are prime targets for cyberattacks. In Q4 2015, more than 60% of all attacks in North America and 50% in Europe targeted retailers. The negative impact of a slow or down site, particularly during key shopping periods, is substantial. Missed revenue and fines for exposed customer data pale in comparison to the impact on the brand and loss of trust and loyalty. Partnering with a company that can provide protection against the most common threats to retail – DDoS attacks, Web Application attacks, and Bot traffic -- is paramount.

- **Leverage e-commerce partners to create a plan.** Work with your partners to develop a plan for your anticipated holiday traffic — and the potential threats it presents. The Akamai Professional Services team can work with you to establish an operational run book to define key components, contacts, and dates for holiday promotions and activities. By completing these deliverables, clients and partners are able to communicate better, enjoy faster response times, and increase efficiency in solving business-critical needs.

  In addition to planning for the technical unknowns, teams and partners should share key contact information and escalation paths of who should be notified in the event of failure. This allows you and your partners to align resources and be on alert during these times or even schedule planned touch points to ensure things are running smoothly.

SOURCES

1. http://newsroom.mastercard.com/news-briefs/a-happy-holiday-season-for-retailers-u-s-retail-sales-rose-7-9-this-year/
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