Flash Sales and Scalable eCommerce
Selecting an eCommerce Platform to Handle High-Traffic Online Sales
EXECUTIVE SUMMARY

The subject of this case study is a popular retailer of fashionable handbags and accessories. While their primary selling model relies on their extensive sales team, they hold frequent flash sales online to clear out the previous season’s inventory and make room for new products.

In the past, the company’s flash sales have seen such tremendous response that their selected eCommerce platform was unable to handle the traffic. The servers crashed at the peak load of 96,000 concurrent users, resulting in a poor customer experience and lost sales. As a result, the retailer turned to Amazon Webstore, using Amazon’s substantial server resources, as a scalable eCommerce solution.

The challenges of scaling for such a sale are three-fold: the servers must have enormous capacity to accommodate the customer influx, they must scale quickly to meet the sudden traffic spike, and the platform must allow robust management of product listings and inventories. To meet these challenges, Amazon Webstore forecasted the potential server needs, performed significant load testing, and prepared the site pages for the weight of the sale.

Ultimately, Amazon Webstore easily handled the demands of two separate flash sales. While the prior platform was only able to support $2.5M in sales, the sales on Amazon Webstore during Black Friday and after the Christmas season brought in $4.5M and $7.6M of revenue, respectively. The increased scalability over other eCommerce platforms thus resulted in increased top-line performance for the company, as well as delighted customers.
INTRODUCTION

The company highlighted in this case study is a popular maker and retailer of fashionable handbags, accessories, and other gifts, whose name is withheld. While it started with just one woman sewing purses in her basement, the company has grown into an impressive nationwide business, featured on The Today Show and other news media.

Each new season brings new product lines, so at the end of each sales season the company conducts a flash sale of older inventory at deep discounts to make room for the new season’s products. These online flash sales take place strictly online and last for only a few days.

The company’s previous attempts at flash sales online were hampered by the capacity limitations of a previous eCommerce platform, and resulted in a sales performance below potential. In preparation for flash sales during Black Friday and after Christmas in 2011, the company selected Amazon Webstore as the new platform for its flash sales site because of its ability to scale to meet the heavy demand and technical challenges they anticipated.

TECHNICAL CHALLENGES OF ONLINE FLASH SALES

Online flash sales—and similarly, short-term holiday sales—create several unique challenges for technical infrastructure. In running their quarterly flash sales, the company primarily faced three issues related to scalability:

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This was our first sale where we didn't have to stop the sale early, or come up with a ‘plan B’.

- Director of IT Applications

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The need for massive capacity

Flash sales are designed to move inventory quickly, resulting in an unusually large number of transactions being performed in a short period of time. Failure to provide
adequate capacity results in website crashes or reduction in performance, both of which will deter customers and reduce the efficacy of the flash sale.

In the company’s prior attempts at flash sales, the brief sales were plagued with poor server performance and crashes caused by the unusually high traffic levels. The site came down completely after bending under approximately 96,000 concurrent users.

The need to scale quickly
Traditional eCommerce merchants generally have predictable patterns of gradual growth, allowing systems to programatically add servers to meet anticipated demand. Flash sale sites, on the other hand, can experience unusually high levels of traffic during sales alternating with periods of no traffic at all. It is generally impractically expensive to hold this level of server hardware in-house if it goes unused for periods of time, necessitating a scalable grid- or cloud-based solution.

The company had previously chosen to use a third-party platform to meet their scaling needs and eliminate the need to support the additional hardware with their IT team. However, they were unsure on how much scaling was necessary, as they had previously been unable to meet their demand.

The need for a flexible platform
By design, the products offered in a flash sale will be different every time. The platform for such a sale must allow the seller to quickly and easily manage their listings, so that IT resources aren’t investing in creating and maintaining product pages. In addition, the platform must include robust inventory management capabilities, as items sell out quickly in such a sale.

As the company planned to hold these sales 4-6 times per year, easily maintaining their eCommerce system was essential.
USING AMAZON WEBSTORE RESOURCES TO MEET FLASH SALE DEMAND

The company selected Amazon Webstore as the eCommerce platform to power its quarterly flash sales. Amazon Webstore utilizes Amazon’s substantial server resources to meet scalability demands and deliver a positive shopping experience to customers, regardless of demand on the site. It also provides a flexible interface for managing product listings and inventories.

As the company’s sales promised to deliver an impressive volume of traffic and transactions, several steps were taken to prepare for the short-yet-intense sale.

Forecasting Server Demand

The company estimated that the platform would need to support 100,000 concurrent users at its peak load. This estimate provided the basis for calculation of conversion rates and, ultimately, transactions per second.

Typical conversion rates on eCommerce sites are between 1%-2%, as many visitors are browsing without buying. The company estimated that their conversion rate would be much higher, as visitors would typically be coming from links in email campaigns promoting the sale. Initial traffic from emails going out to tens of thousands of customers (in batches for the first sale, simultaneously for the second) would contribute to a worst-case scenario peak transaction load well above what normal traffic would provide.

Ultimately, Amazon Webstore was prepared to accommodate twenty times the normal number of transactions per second.

Load Testing

Amazon Webstore put its server capacity through rigorous load testing to ensure that it would be able to meet the anticipated demand. Users were added in a step-wise fashion, starting with 1,000 and scaling to 100,000 users assuming a variety of scenarios designed to imitate eCommerce buyer behavior (users browsing, utilizing search functionality, etc.).
Other Preparations

In addition to server capacity considerations, these other preparations were made to ensure that the sales would go smoothly:

- Static versions of the home, info, and browse pages were created to reduce the number of server calls made on pages that would not change during the course of the sale.

- Measures were taken to ensure that other sellers on the Amazon Webstore platform—including major brands like Samsonite, Black & Decker, and Rite Aid—would not see decreased performance on their sites because of the company’s server load.

RESULTS OF FLASH SALES USING AMAZON WEBSTORE

In the company’s last flash sale, approximately six months before and using a different platform, they were able to generate $2.5M in sales within a three-day period.

Using Amazon Webstore, they were able to easily clear that benchmark, without any issues of server performance or site failure.

Black Friday Sale

The Black Friday sale was the company’s first sale on Amazon Webstore. It opened on November 25, 2011, and to the general public the following day. Highlights of the sale included:

- $4.5M of revenue over the course of the three-day sale
- At its peak, 400 orders being processed every 5 minutes
- Traffic peaked over expectations at over 110,000 concurrent users

After Christmas Sale

Immediately following the Christmas sales season, the second sale opened to everyone on December 27, 2011. This time customers received an announcement email simultaneously, instead of in batches,
resulting in potential for a larger initial traffic rush. Highlights of the sale included:

• $7.6M of revenue over the course of the five-day sale

• At its peak, traffic to the sale peaked at over 150,000 concurrent users

• Revenue run rate peaked at $3M of sales a day

• No intervention was required from on-call technical support at any time

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We couldn’t be more pleased with the site and your team’s support throughout the sale…and it was all done over your busiest weekend. Please send our thanks to your entire team.

- Director of IT Applications

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<table>
<thead>
<tr>
<th>COMPARISON TO PREVIOUS PLATFORM</th>
<th>Revenue</th>
<th>Peak Traffic</th>
<th>Server Issues</th>
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CONCLUSION

The company’s flash sales on Amazon Webstore were a rousing success. The platform’s scalability kept the site up and running smoothly through the course of both sales, accommodating increased peak traffic and sales more than three times greater than was accomplished on the prior eCommerce platform.

While the other platform crashed after 96,000 concurrent users, Amazon Webstore allowed traffic to scale up to its natural peaks—over 110,000 concurrent users in the Black Friday sale, and up over 150,000 concurrent users in December (due to email notifications being sent all at once instead of in batches). These levels of traffic were unusually large and by definition short-lived, but the Webstore platform was able to support the high number of transactions per second with capacity to spare.

Ultimately, Amazon Webstore is able to scale more quickly and to greater capacity than other eCommerce platforms, making it the platform of choice for companies holding flash sales or other temporary high-volume sales.
Amazon Webstore is a complete commerce platform that enables companies to leverage Amazon technology and expertise in building and managing their direct-to-consumer business.

Commerce sites built on the Amazon Webstore platform utilize Amazon’s powerful cloud infrastructure and payment processing technology to deliver a scalable, secure online shopping experience to customers. Amazon Webstore also integrates seamlessly with selling on the Amazon Marketplace and using Fulfillment by Amazon, Amazon Prime, and other Amazon Services.

To get started with Amazon Webstore, visit the website at webstore.amazon.com or contact the Amazon Webstore team directly.