



Case Study

Site Performance Audit



The Problem

We frequently get the call when problems become unmanageable. The Sheplers.com website was struggling with performance problems, SEO optimization issues, slow page load times, and a low checkout conversion rate. Red Van was called in by the CEO to audit the site and propose solutions ASAP! Red Van to the Rescue.

Why read this?

Below, we will describe our audit process and the results of our remediation efforts. By reading this case study, clients can use these lessons learned to recover from similar situations, or better yet, avoid them from the start.

Our Approach: Research and Collaboration

We are a company of teams that are focused on individual clients' projects. When the need arises, we have the capability to mobilize into a unit of subject matter experts to "put out the fire".

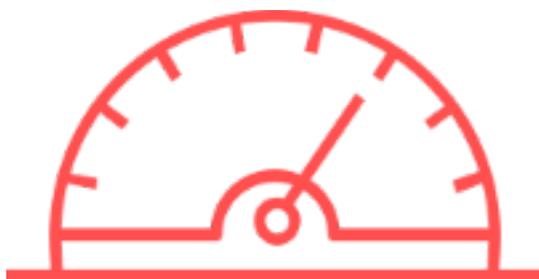
For the Shepler's project, we gathered together several members of our company to tackle specific areas of the audit based on their experience with other projects. After just a few conference calls, the team was able to identify target areas of investigation. We spent two weeks reviewing the code, analytics, logs, and processes for adherence to best practices and here is what we found...

The Report

Task	Impact	Effort
Above the fold optimization; lazy loading a variety of images	☰	★
Optimize Critical Rendering Path	☰	★
Utilize external CDN for static assets	☰	★
Utilize external CDN for storefront pages	☰	★
Utilize the hash portion of the URL instead of query string parameters	☰	★
Troubleshoot cache utilization of the highest load pipelines and adjust to decrease average pipeline response time	☰	★
Remediate the most commonly occurring errors and add proper error handling around code	☰	★
Enable asset expiration and GZip compression using Cloudfront CDN	☰	★

We put together 79 pages of findings, weighted by impact and effort, covering:

- Above-the-Fold Optimization
- Optimization of Critical Rendering Path for Faster Page Loads
- Utilization of an External CDN for storefront pages and static assets
- Pipeline Cache Utilization and Response Time
- Remediation of the most commonly occurring errors and addition of proper error handling
- Update Cartridges, Libraries, and Frameworks
- SEO Optimization
- SFCC Quota Violations



The Solution

We met with the Sheplers Team on-site in Wichita and spent the day reviewing the results, prioritizing all the findings based on a weighted score, and putting a work plan together. We assembled a team of front-end and back-end developers, quality assurance, and project management to work in five, two-week sprints to remediate the highest priority issues, bringing the site to peak optimization for the holiday season. We set up a daily meeting with the internal team to stay on target, and met with management weekly to report on progress.

The Results

Optimized Critical Rendering Path

- JavaScript was moved to later in the page loading process.
- CSS was cleaned up.
- Page load times have decreased by 20-40% on the highest traffic pages.

Utilized External CDN for Storefront Pages and Static Assets

Akamai FPO (full page optimization) was implemented to decrease load on servers and speed up content delivery. This required us to ajaxify all of the customer specific content on the cached pages.

Pipeline Cache Utilization and Response Time

- There were a number of pipelines that were throwing a large amount of errors; in some cases > 135K per day.
- Most pipelines had a cache miss percentage near 100%.

Overall Pipeline Performance by Stats											
Rank	Pipeline	Top Req by Proc. Time	Top Req by Call Ct (by K)	Top Pipe Error Ct (by K)	Top Pipe Ave Pro. Time	Top Pipe Includes	Top Req > .5s	Top Req > 1s	Cache Percentage		
									Miss	Hit	Store
1	Search-Show	60.86%	3600	103	539	46.3	47.0%	7.5%	98.3%	0.1%	1.6%
2	Product-Show	22.17%	2440	753	268	14.3	14.0%		100.0%	0.0%	0.0%
3	Page-Show	5.00%	340	0.87	428	46.9	23.5%	3.0%	100.0%	0.0%	0.0%
4	Search-InitializeThumbDataLayer	1.55%	62	0.005	717	0.0	33.5%	24.5%	100.0%	0.0%	0.0%
5	Cart-SubmitForm	0.90%	57	0.85	455	5.6	19.0%	10.5%	100.0%	0.0%	0.0%
6	COOnePage-SubmitForm	0.77%	34	0.021	669	5.7	12.0%	7.0%	100.0%	0.0%	0.0%
7	Cart-Show	0.54%	183	101	85	9.6	1.0%	0.5%	100.0%	0.0%	0.0%
8	COOnePage-Start	0.32%	32	8.2	285	22.4	6.0%	2.0%	100.0%	0.0%	0.0%
9	COBilling-Billing	0.98%	28	0.75	1,011	0.0	39.0%	38.0%	100.0%	0.0%	0.0%
10	RedirectURL-Start	1.13%	960	962	34	0.0	0.0%	0.0%	0.1%	11.6%	88.3%

- There were several high traffic pipelines that had higher than desired average processing times.

Remediation of the most commonly occurring errors and addition of proper error handling

- Javascript errors were removed.
- Pipeline errors continue to be reduced -- saving load on servers and making new errors easier to find and correct.

Updated Cartridges, Libraries, and Frameworks

During the years following an initial implementation, integrations, cartridges, and libraries tend to grow stale. We recommended updating these to take advantage of security and performance gains. Moving import and export jobs to the new jobs framework helped with performance, scalability, as well as error management and reporting.

SEO Optimization

- H1 and H2 tags have correct content including dynamic content (product categories)
- Alt tags for images
- Structured Data
- Meta Descriptions
- Enabled product reviews to be indexed by search engines
- Error Pages

SFCC Quota Violations

We noticed a few quota violations that were occurring regularly and also happened to be on some of the worst performing pipelines.

Script : Near Quota Limit			
Quota	Enforced	Max	Limit
 api.dw.util.collectionSize	Yes	< 1,000	20,000
 api.jsArraySize	Yes	< 1,000	20,000
 api.jsArraySize2	No	< 1,000	20,000
 api.jsEval	No	--	0
 api.jsJSONStringLength	No	648,755	1,000,000

The Win

Red Van Workshop was able to bring the site performance up significantly in time for the 2017 holiday season. Many of the improvements have been replicated to other sites in the parent company Boot Barn's portfolio.

Red Van Workshop has built a reputation among large enterprise retailers that only grows with each new client. Our people, with minimal time and resources, can assess a client's site issues and quickly execute a solution that "puts out the fire". This ability, in turn, provides our clients with an ongoing sense of stability and peace of mind. That, as they say, is priceless.

