BUSINESS CHALLENGES

- The following root issues caused OMEGA Engineering’s website lag times:
  - The complexity of the customer’s data model – it had several base products with hundreds of variants.
  - The number of variant categories / the criteria – The system had to narrow down options by searching more than 25 variants (ex. size, temperature).
  - Their OOTB Hybris was iterating each product variant and variant categories on multiple cases.
  - The customer wanted ‘variant categories’ (ex: size, temperature) to be listed in the category pages and search results.
  - In product detail pages, the customer wanted to provide options for the user to navigate/view all the same product’s variant products.
- One option was to increase performance by increasing the number of Hybris servers/Hardware, but it had the below caveats:
  - The customer had a cost constraint for the additional server, which required an additional license fee.
  - Application server caches play a major role in performance. Caches are maintained at the individual application-server level. Adding servers would have led to additional cache warm-up time on each server. Eventually, each server would have taken a long time to get into efficient/cached-warmed-up status.
  - Load on Cache invalidation process would have become high as the invalidation would have happened across each server for all the DB updates (n * n)

USE CASE

A USA-based Instrumentation Company wanted to enhance the performance of the website.

CHALLENGES

The client’s data model was complex with several base products having multiple variant products.

SOLUTION

Royal Cyber implemented full-page caching from Akamai that resulted in page responses as fast as ~0.1 seconds.

Akamai Increased load speeds from 60+ seconds to 0.1 seconds
OMEGA Engineering was already using Akamai Content Delivery Network (CDN) for static file caching with css, js, and more. We took advantage of the CDN’s ability to offer full-page caching with various options/configurations.

When another user requests the same page, the page will be served from Akamai in just ~0.1 seconds.

However, implementing full-page caching was not as straightforward as it sounds.

With full-page caching, when one user visits the page, Akamai gets the content from Origin/Hybris, serves content to the user and caches it in CDN.

There were some problems that had to be tackled properly as given below:

- Dynamic Content in the Pages such as user details
  - If logged in, cart count and stock details keep changing throughout the day.
  - We made those items as Ajax calls (a technique that helps in loading webpages faster in the browser) as per the screenshot on the following page.
Another problem was that the page, which is already in cache, might be updated in the back-end. Typical example is price change.

- Akamai provides API to clear the cache programmatically. API should be provided with list of URLs for which cache should be cleared. In Hybris, there is a column ‘modifiedts’ in each table, which is updated with current time whenever a record is modified.

- A Hybris cronjob (a scheduled task that runs automatically at the specified time and date) was created to pull the modified records and products since the last run of the job, frame the URLs for the products, and call the Akamai API to clear cache for the specified URLs. The job was set to run every 15 minutes.

Optimal cache expiry/Prefreshing

- Akamai provides an option called ‘Prefreshing’, and it can be explained better with an example. Let’s say a page (URL pattern) is set with expiry of ‘one week’. If we configure the Prefreshing as ‘one day’, then ‘one day’ after a page is cached, when a user hits the same page/URL, the content will be served from cache, and at the same time, Akamai will get fresh content from Origin/Hybris. Akamai will set a new expiry (One week from current time) for the new content. This will enable cached pages not expiring easily.

RESULTS

- 70% of Product pages and articles served from CDN within 100-200 milliseconds
- Reduced Load On Server
- Improved user experience
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In ME & KSA specifically, Royal Cyber has been serving major enterprise accounts for the last 8 years, as an IT System Integrator and trusted technology partner, to overcome their complex Enterprise Modernization challenges and achieve their Digital Transformation journey.

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