

Does your load test
have you covered?

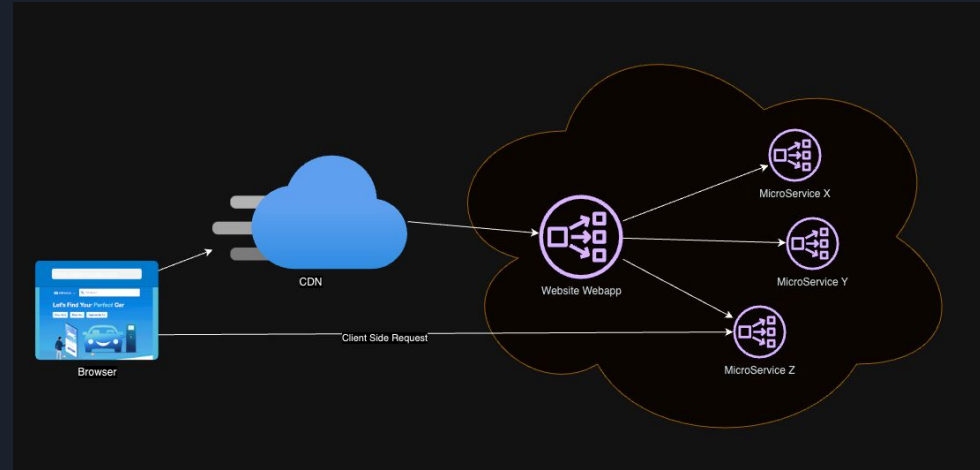
Chanchal Gupta, Simon Wong

SRE @ Edmunds



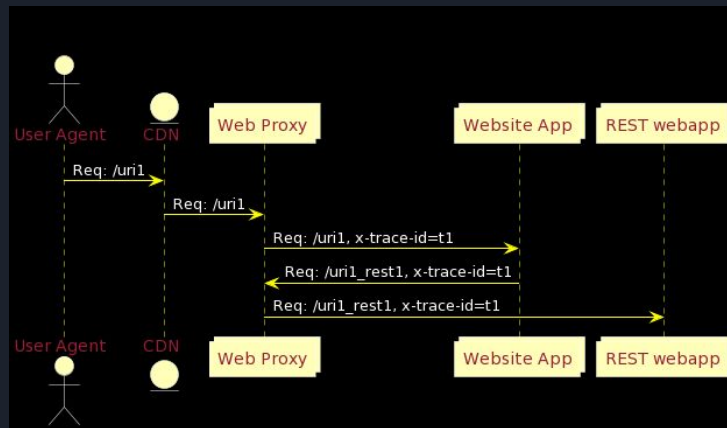
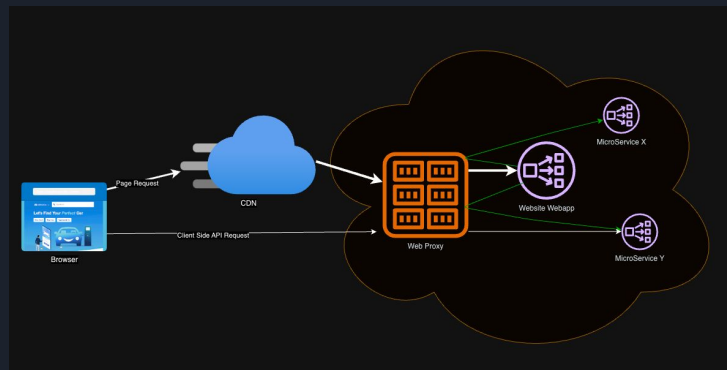
High Level Architecture at Edmunds

- Microservices
- Environments



Building Observability

- Basic Observability
 - Access Logs
 - Correlation
 - Analysis



Why Load Test?

- Identify problems before production
- Reduce failure costs



Challenges

- Gaining visibility
- Optimize quality of load test traffic for page types and microservices



What makes a good load test?

- High quality of load test traffic
 - Breadth
 - Depth
- Optimized
 - Proportional to Production
 - Low variability



How we gained visibility

- What visibility did we have?
- Processes we built to gain visibility

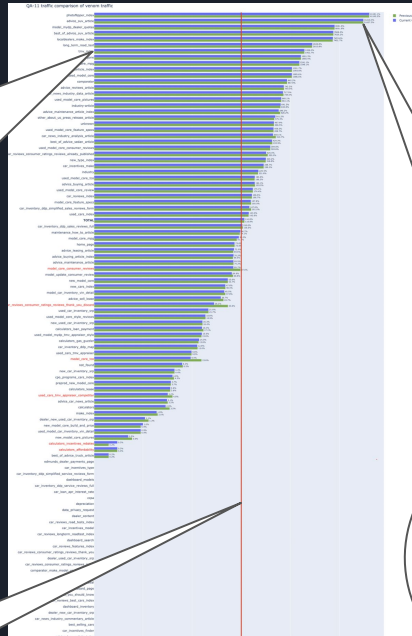


Visibility Gained

Edmunds pages types

- brand_landing
- home_page
- advice_buying_article_index
- advice_leasing_article
- advice_maintenance_article
- model_update_consumer_review
- new_cars_index
- model_car_inventory_vin_detail

100% load of production traffic



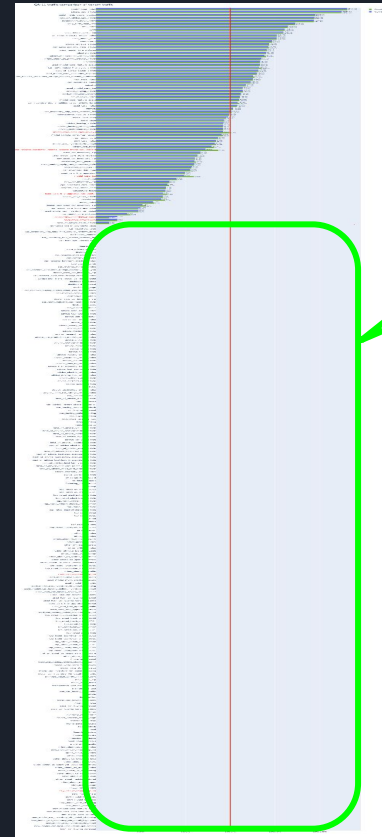
Current QA-11
Previous QA-11

Scale is not linear (Log)



Visibility Gained: Breadth Problem

- Many page types had no coverage at all.
- Unable to test features on these pages types.
- We now have direct line of sight into improvement.
- Pages with no load on QA were still functional tested

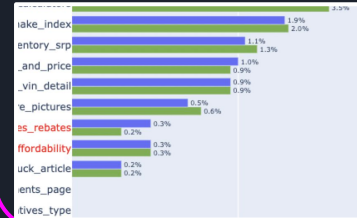


73% of our page types did not have any coverage.

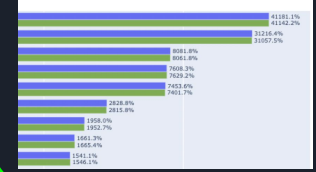
Visibility Gained: Depth Problem

- Continuous load on QA was not balanced
- Need to first bring everything closer to production level
- Fine tune later

- A lot of page types did not get enough load

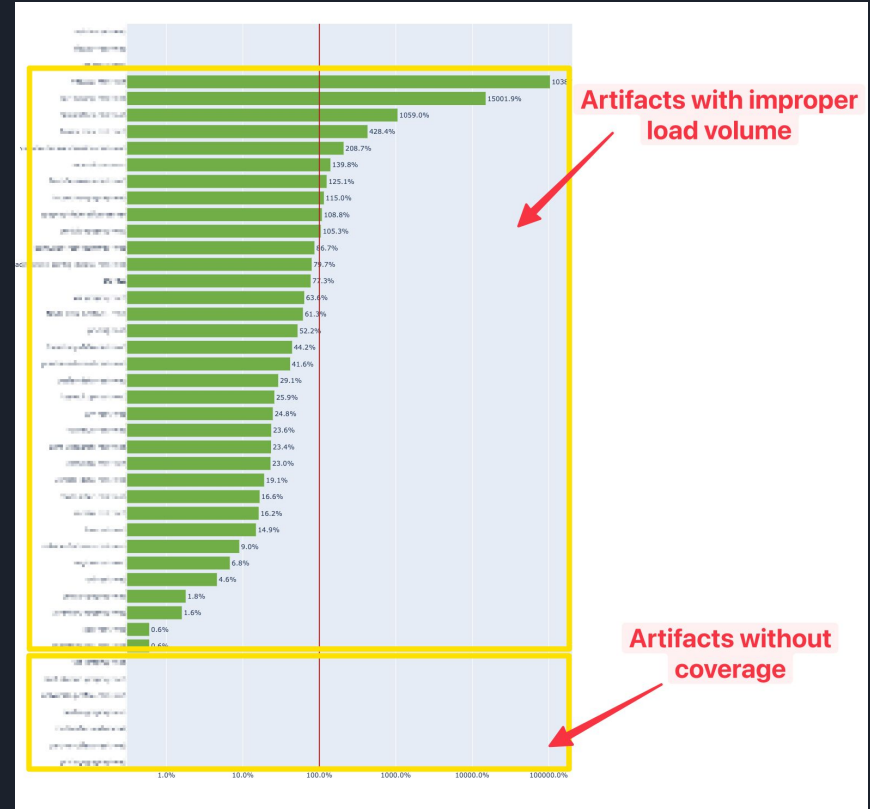


- Many page types had excessive load that's wasteful



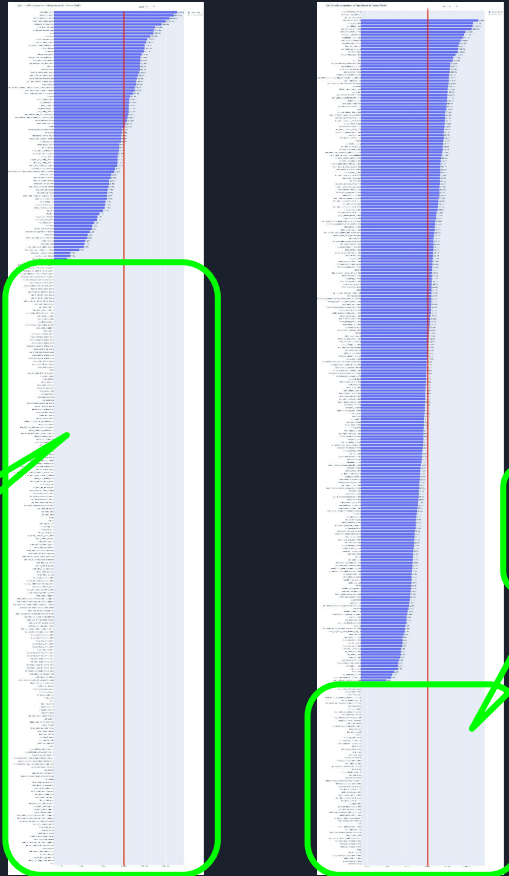
Visibility Gained: Microservices Load Quality

- Upstream Micro Services also had breadth and depth issues on QA's continuous load



Optimizing Load Traffic Breadth

- Analyzed production traffic to identify where our coverage gaps were
- Examined the traffic to upstream services triggered by our web app to generate the proper URLs

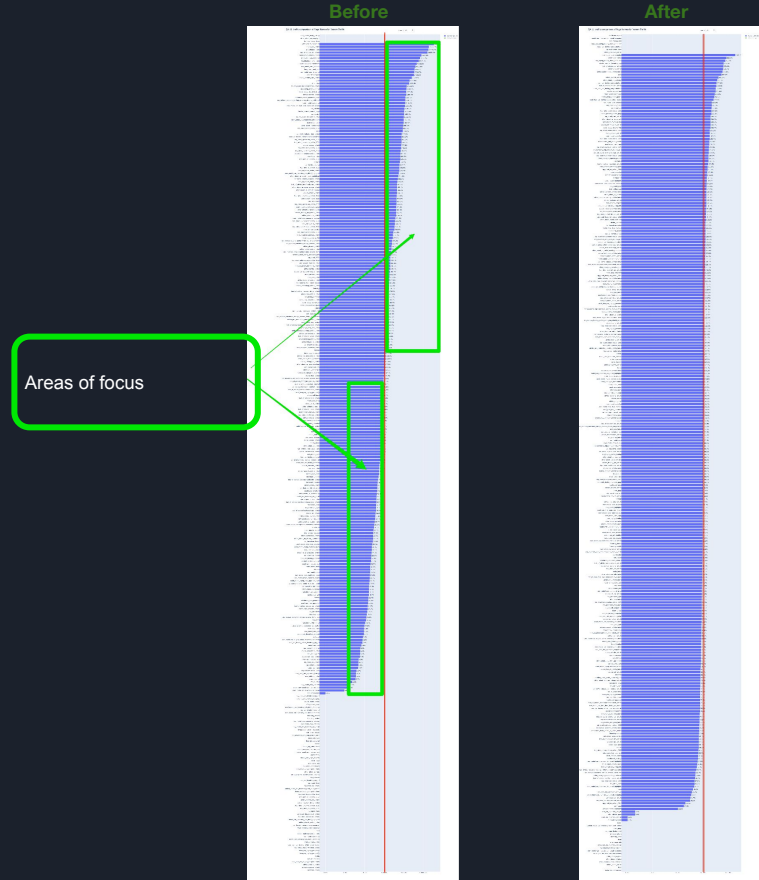


Area of focus for this experiment

Page types without QA coverage went from 73% to 17%

Optimizing Load Traffic Depth

- Analyzed production and upstream micro services traffic to create a model that generated the optimal # of requests each URL needed
- Brought most of our page types much closer to production level load



Prioritizing on Top Key Pages

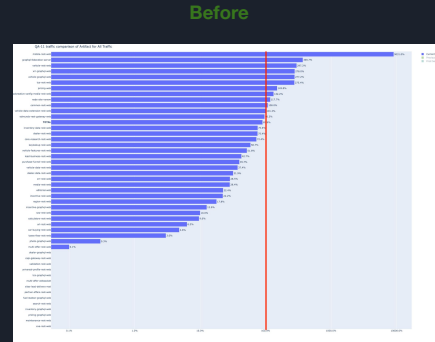
- # of top key page types with high quality QA traffic
 - Previous: 0% page types
 - After: 81% page types

Edmunds Top Key Pages			
Page Name	Previous QA-11 Coverage	Current QA-11 Coverage	Difference in Coverage
comparator_make_model_vs_make_model	8.11%	70.95%	62.84%
new_subtype_index	3.83%	78.04%	74.21%
new_model_car_inventory_vin_detail	0.00%	84.90%	84.90%
preprod_new_model_core	2.48%	87.89%	85.41%
used_model_car_inventory_vin_detail	0.91%	88.54%	87.63%
new_model_core_build_and_price	16.74%	91.57%	74.83%
new_model_core_feature_specs	0.00%	98.15%	98.15%
new_model_highlights	6.85%	98.32%	91.47%
new_model_core_pictures	1.66%	98.35%	96.69%
home_page	0.32%	99.65%	99.33%
car_incentives_model	18.97%	100.14%	81.17%
used_model_core_review	167.38%	100.44%	-66.94%
new_model_core	66.78%	102.00%	35.22%
car_reviews_index	4.80%	102.21%	97.41%
used_car_inventory_srp	1.86%	102.27%	100.41%
new_cars_index	66.48%	102.46%	35.98%
new_used_car_inventory_srp	1.86%	103.58%	101.72%
used_cars_tm_v_appraiser	11.58%	103.79%	92.21%
new_model_msrp	21.40%	105.56%	84.16%
advice_car_news_article	5.13%	107.47%	102.34%
advice_leasing_article	70.71%	110.11%	39.40%
new_model_core_consumer_reviews	0.00%	110.44%	110.44%
used_cars_index	213.78%	112.95%	-100.83%
advice_buying_article	211.30%	112.95%	-98.35%
used_model_mydp_tm_v_appraiser_style	17.34%	113.45%	96.11%
used_model_core_feature_specs	470.18%	115.84%	-354.34%
new_type_index	0.89%	116.35%	115.46%
new_car_inventory_srp	4.86%	127.53%	122.67%
used_model_core_consumer_reviews	411.31%	141.14%	-270.17%
comparator	1133.36%	143.57%	-989.79%
best_of_advice_suv_article	16111.73%	651.97%	-15459.76%

Between 80% - 120% of PROD Coverage
 <80% or >120% in PROD Coverage

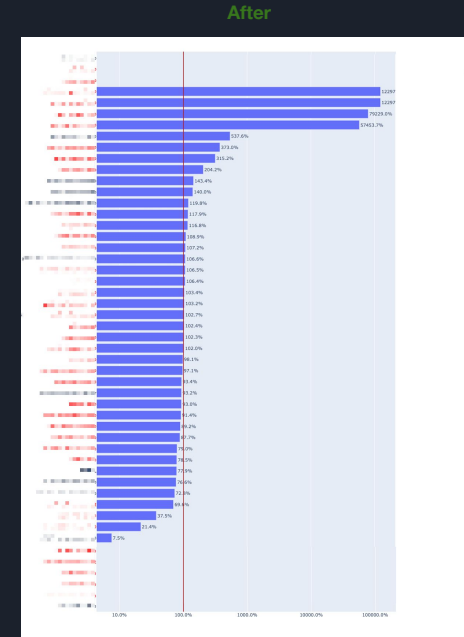
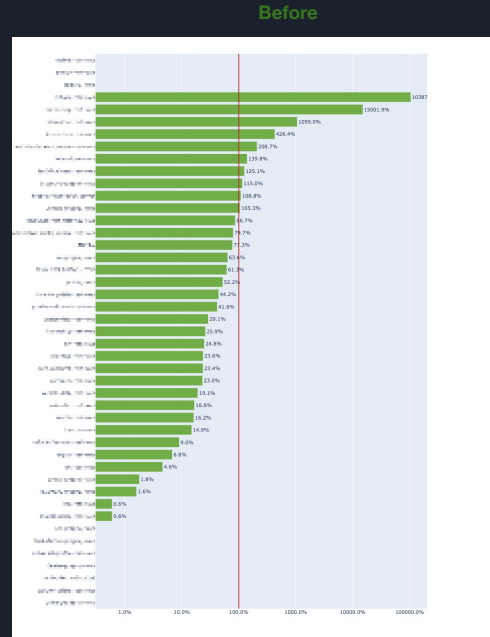
Optimizing Load Traffic Upstream Services

- Upstream services did not improve after rebalancing Web App.
- Decouple the traffic going to our Web App and its upstream services.



Optimizing Load Traffic Upstream Services

- Augmented continuous load for upstream services to provide test confidence
- Improved breadth and depth for upstream services





Optimize Load For Efficiency

- What is the minimum amount of continuous load to maintain the same level of confidence?
- Perform the analysis with historical data.

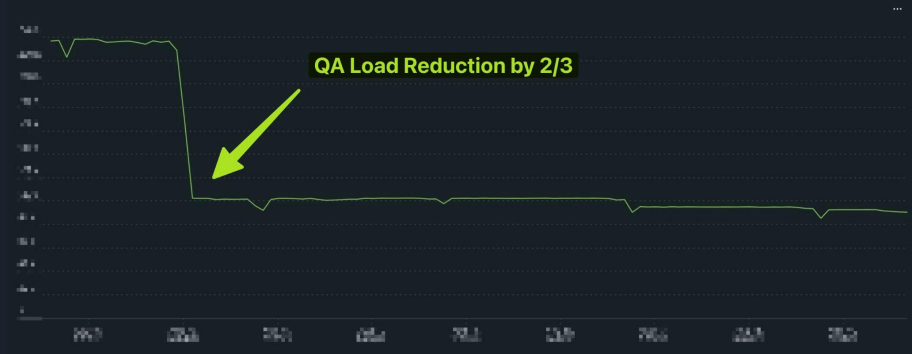
Optimize Continuous Load For Efficiency

- Previous QA traffic distribution was very different from PROD
- Current QA traffic after configuration update to improve quality of traffic is now much closer to PROD distributions



Optimize Continuous Load For Efficiency

- Result of lowering continuous load by 2/3.
- Reduced the # of H/W nodes for efficiency and cost saving.





Next Steps: Drift Prevention and Automation

- Alert on gaps in breadth or depth coverage of our load test.
- Keep configurations up to date.



Questions

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