DDM Performant Advertising

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Advertising Overview - Technologies

- RTB - Real Time Bidding
- GAM - Google Ad Manager
- Prebid - Open source RTB library

Google Ads

Prebid

iab.

Magnite

amazon publisher services

appnexus

Index Exchange

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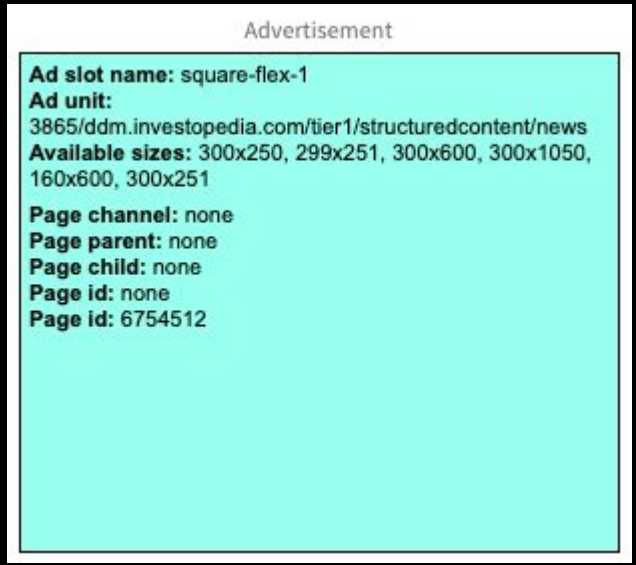
Advertising Overview - Slots

- What is a slot? The basic unit of advertising supply

- Contains information about the unit:
  - Name - unique on the page
  - Path - where on the site it's serving
  - Sizes - what size of creatives are we allowing?
  - Targeting Keys - allows us to serve specific ads



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Advertising Overview

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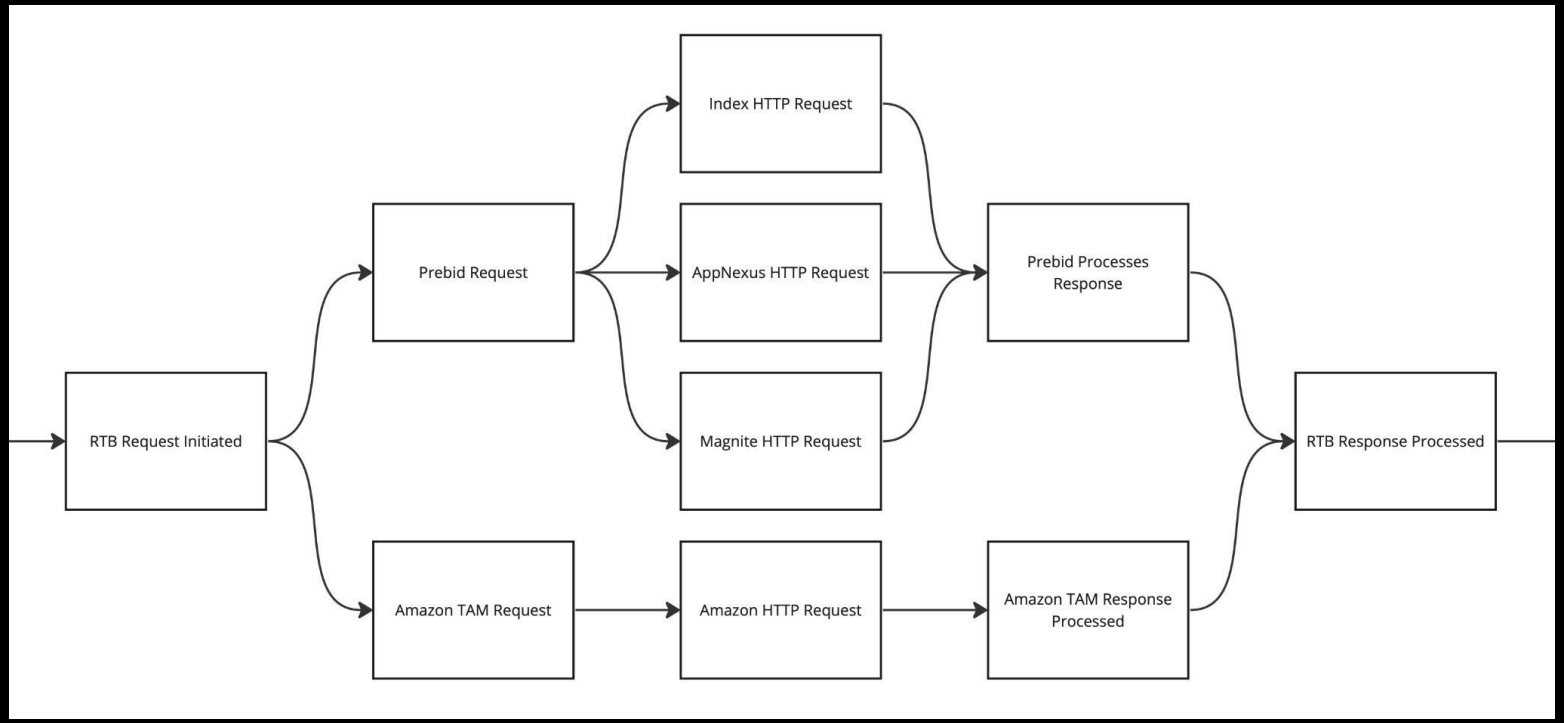

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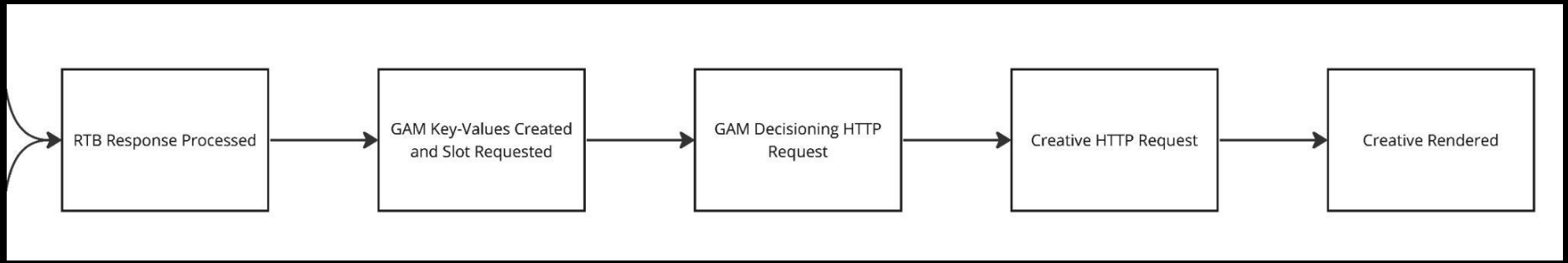

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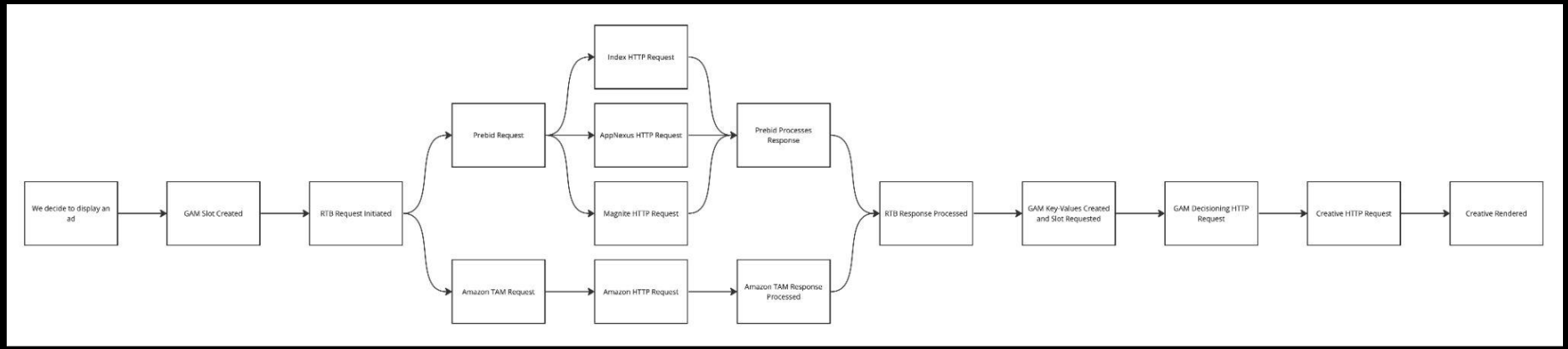

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Our Mantra:

The freshest content

On the fastest sites

With the fewest ads

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Why Optimize Ad Speed?

- Impressions
- Viewability
- User engagement
- SEO
- What about optimizing for revenue?

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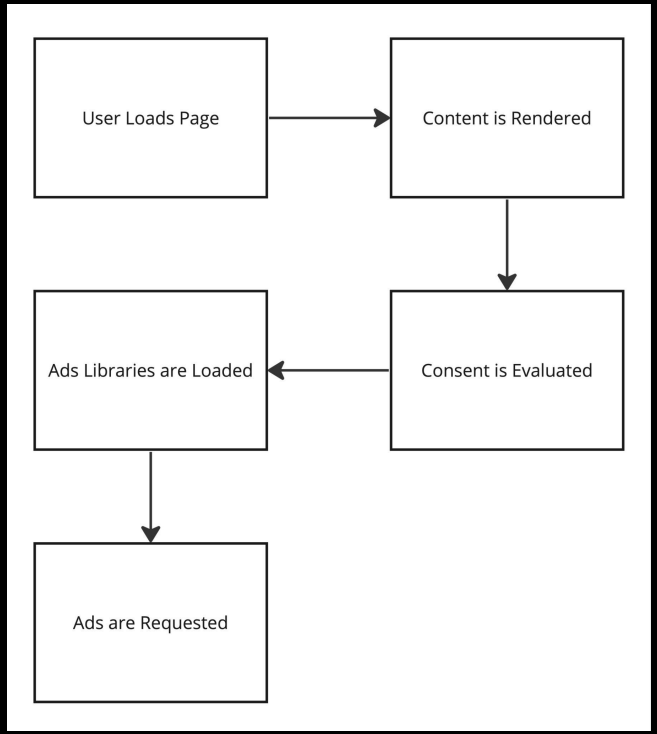
DDM Strategies - Delaying Ads

- Don’t start loading ads or ad libraries until the content is done loading

- Benefits:
  - Less competition for resources (key on mobile where there is less concurrent HTTP requests allowed)
  - Better UX



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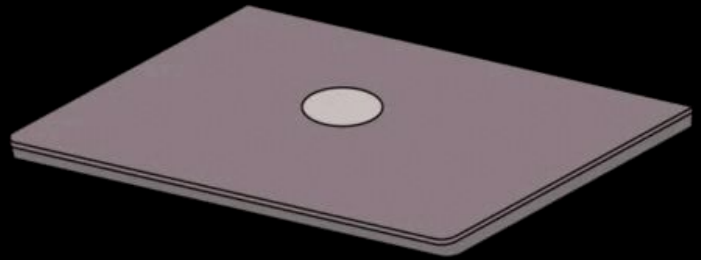
DDM Strategies - Performance Testing

- Performance Testing
  - Done locally before merging pull requests

- A/B Testing
  - Monitoring performance on real user devices



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Monitoring - Internal Metrics

- Real User Data - pagespeed, CLS, lighthouse
- Ad-specific performance metrics
- Automated lighthouse testing
- Revenue metrics - impressions, RPM

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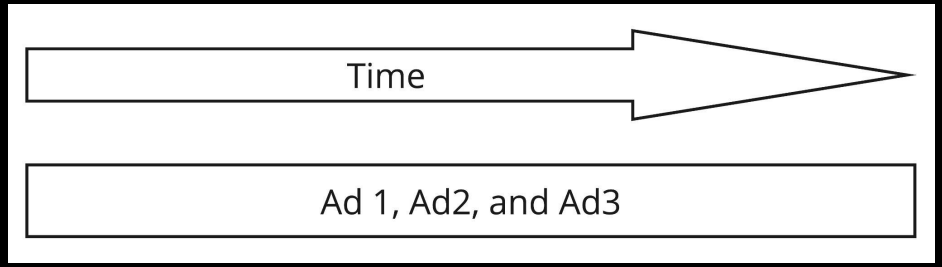
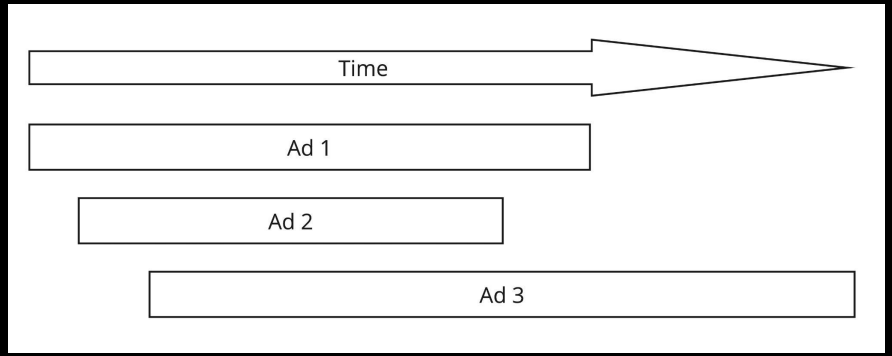
Monitoring - The Things You Find...

- GAM concept - MRA vs SRA
  - Multi-request architecture
  - Single-request architecture

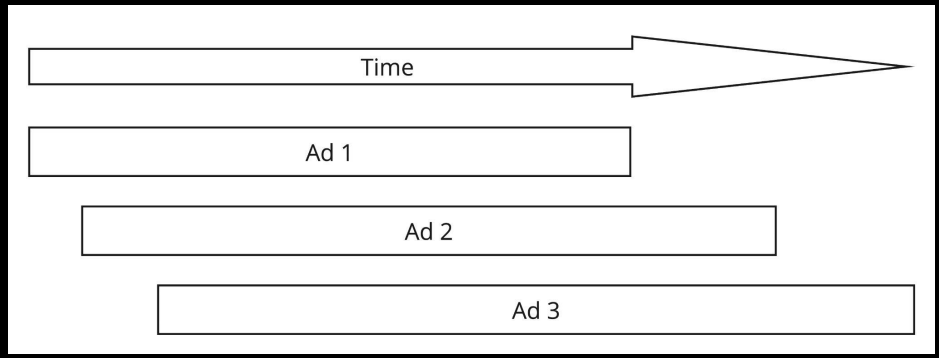
SRA



MRA - Expected



MRA - Actual



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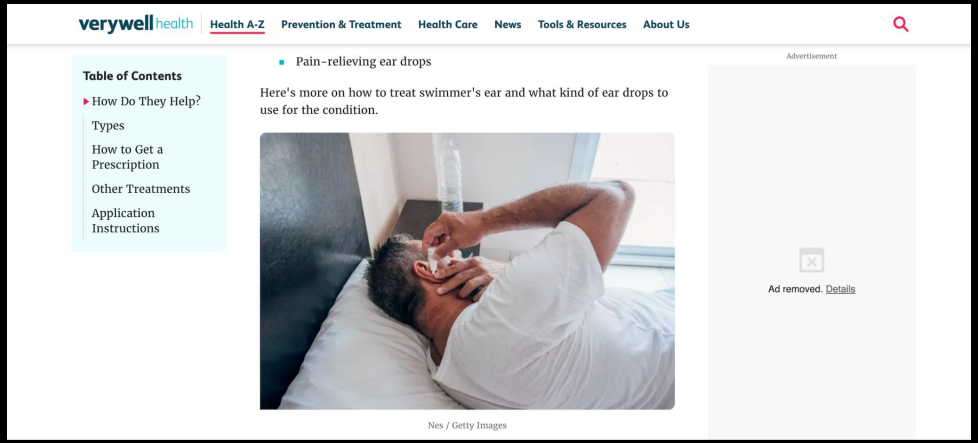
Heavy Ad Intervention

Ad removed. Details

Heavy Ad Intervention



Protecting against resource-heavy ads in Chromium Engine (Chrome + Edge)

- Limits resources a display ad can use before user interaction.
- When an ad reaches its limit, ad frame will navigate to an error page

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Why Do We Care?

- Fastest Sites
- User Experience
- Revenue

Motivating Use Cases

Examples of observed ad behaviors that are intended to be discouraged:

- Mining cryptocurrency
- Large, poorly compressed images
- Large video files before user interaction
- Performing expensive operations in javascript, (eg: decoding video files or CPU timing attacks)

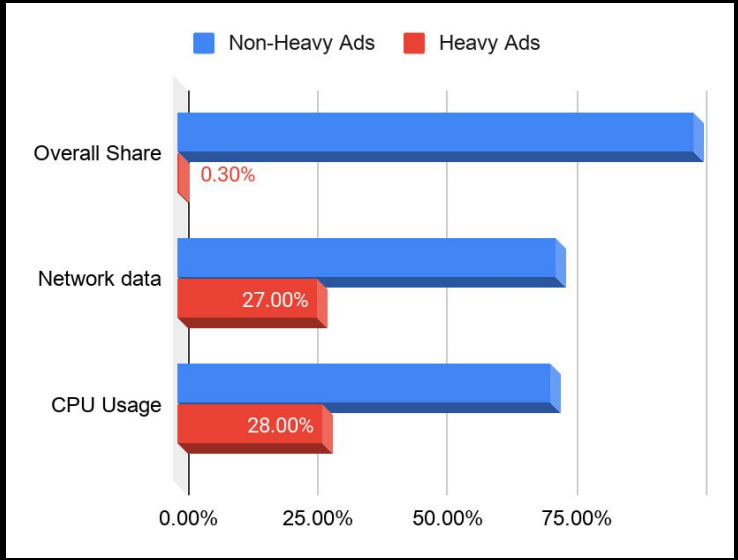
Criteria

No user interaction and uses...

- Main thread for more than 60 seconds in total
- Main thread for more than 15 seconds in any 30 second window
- More than 4 megabytes of network bandwidth

Main thread time limits are based on CPU time to execute the ad's code.

Heavy and non-heavy ads resource. - Google



“While only 0.3% of ads exceed this threshold today, they account for 27% of network data used by ads and 28% of all ad CPU usage.’

- Marshall Vale, Product Manager, Chrome

What happens when an ad is removed?

- Reports are triggered on the root ad iframe along with all of its descendants.
- Intervention is reported via the **Reporting API** (W3C).
- If an ad comes from a third-party source, then it's up to that third-party (eg: Ad provider) to handle the report.

So how would we collect reports without third-party involvement?

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What do we do about it?

Creative Wrappers

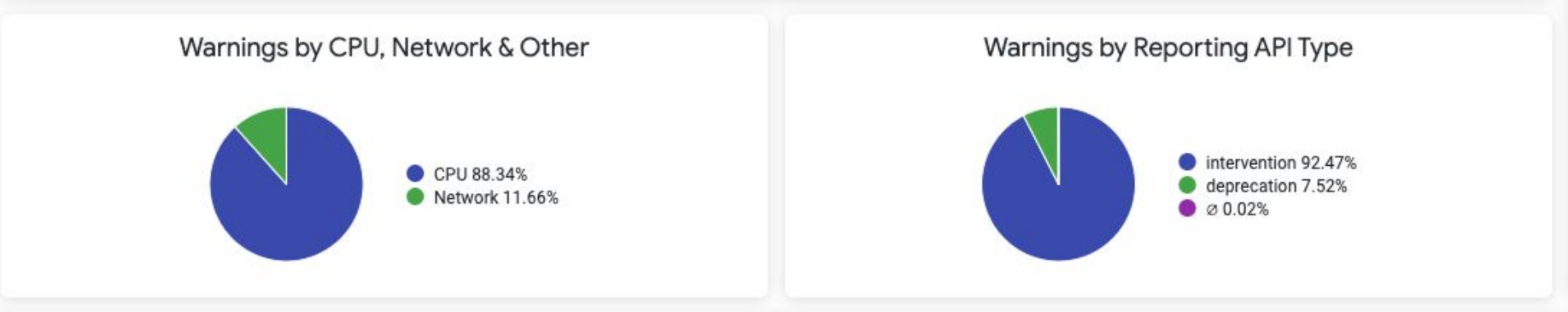
- Code snippets (third-party tracking pixels or other code), Reporting Observer script in this case.
- Wraps every ad creative being delivered.
- Additional ad info (Campaign ID, Creative ID, etc) available.
- No reliance on third party report collection.

What do we do about it?

Report Observer + Listener

1. Observer collects the reports (after ad removal), posts to parent page.
2. Post message listener (via GTM on all pages) receives and identifies report type.
3. Sends reports to Google Analytics.

Stats



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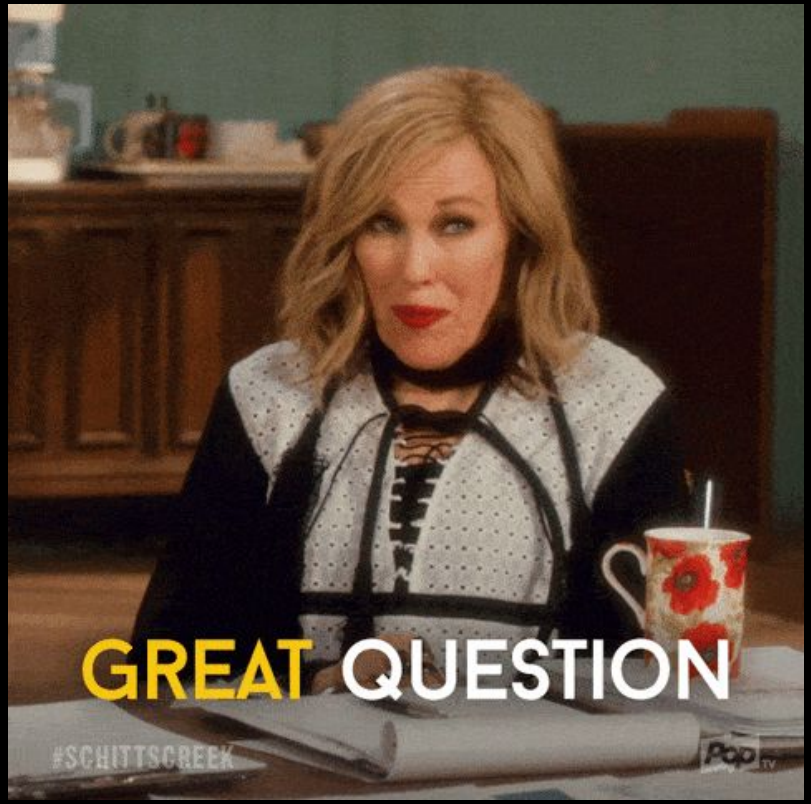
How You Can Use It

- Work with advertiser on changes and improvements.
- Most agencies are aware of Network usage but not CPU.
- Help to ensure a healthy site. Too many is a bad user experience.

Questions?



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