

Web Performance – A CDN Specialist Perspective

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About Me

- Sankalp Basavaraj
- Architect by day, stock trader round the clock
- Specialization :
Enterprise & Cloud Security
Web Performance
Web Analytics
Networking & Telecom (4G LTE, 5G)



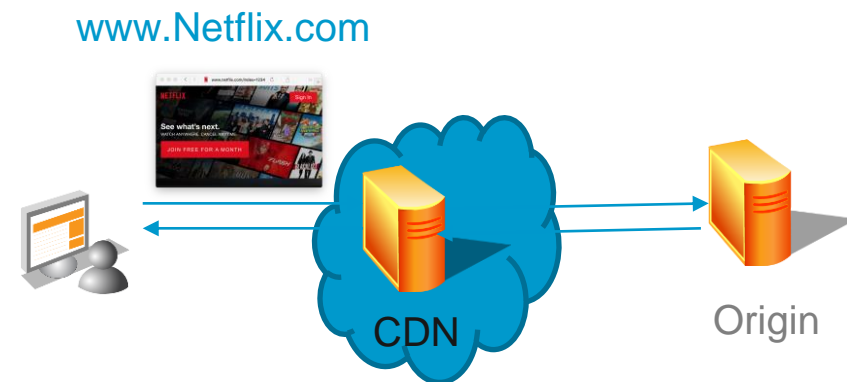
AGENDA

- Introduction to CDN
- L7 Web performance
- Critical aspects of web performance
- Averages and percentiles
- Metrics , Customer use case
- Time To First Byte - TTFB

What do Content Delivery Networks (CDN) do ?

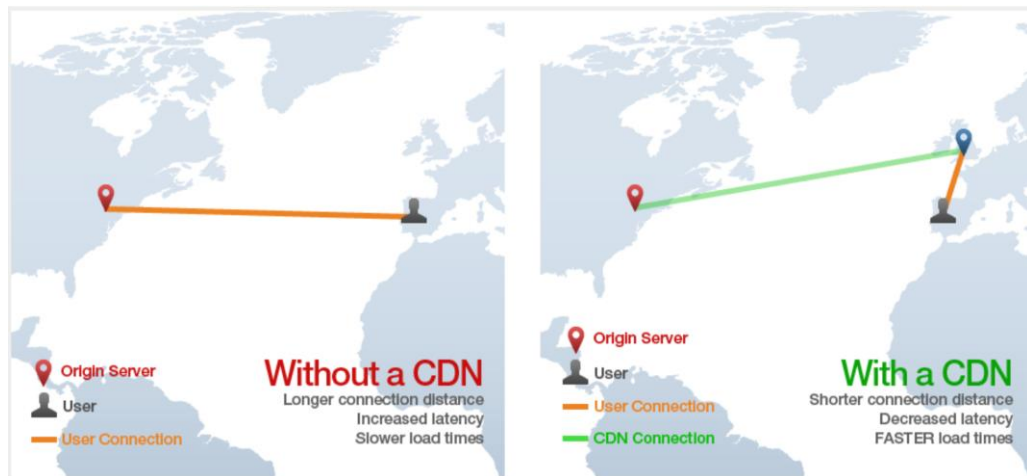
CDN offers:

- Availability
- Performance
- Security



How does a CDN improve performance ?

- Caching
- Route Optimization
- Optimization on DNS, TCP & SSL handshakes
- HTTP Protocol Optimizations



Great, Does a website speed really matter ?!!!!!!

Why does speed matter ?

- Websites keep getting heavier and more complex by the day. In the last ten years alone, the median size of a desktop site has grown three times whereas the mobile pages have grown by a factor of 7!
- Akamai Technologies, Inc., [research study](#) in 2017, which established the importance of performance in online retail sector:
 - 100-millisecond delay in website load time can hurt conversion rates by 7%
 - 2 second delay in web page load time increased bounce rates by 103%
 - 53% of mobile site visitors will leave a page that takes longer than three seconds to load

In Web Performance world, milliseconds is mega dollars!!



660 KB
February 2012



2159 KB
February 2022



295 KB
February 2012



1984 KB
February 2022

What do you do when someone claims their website is slow ?

Client claims bad performance! What next?

"If given the chance to talk about themselves, patients are often very good judges of what's wrong with them."

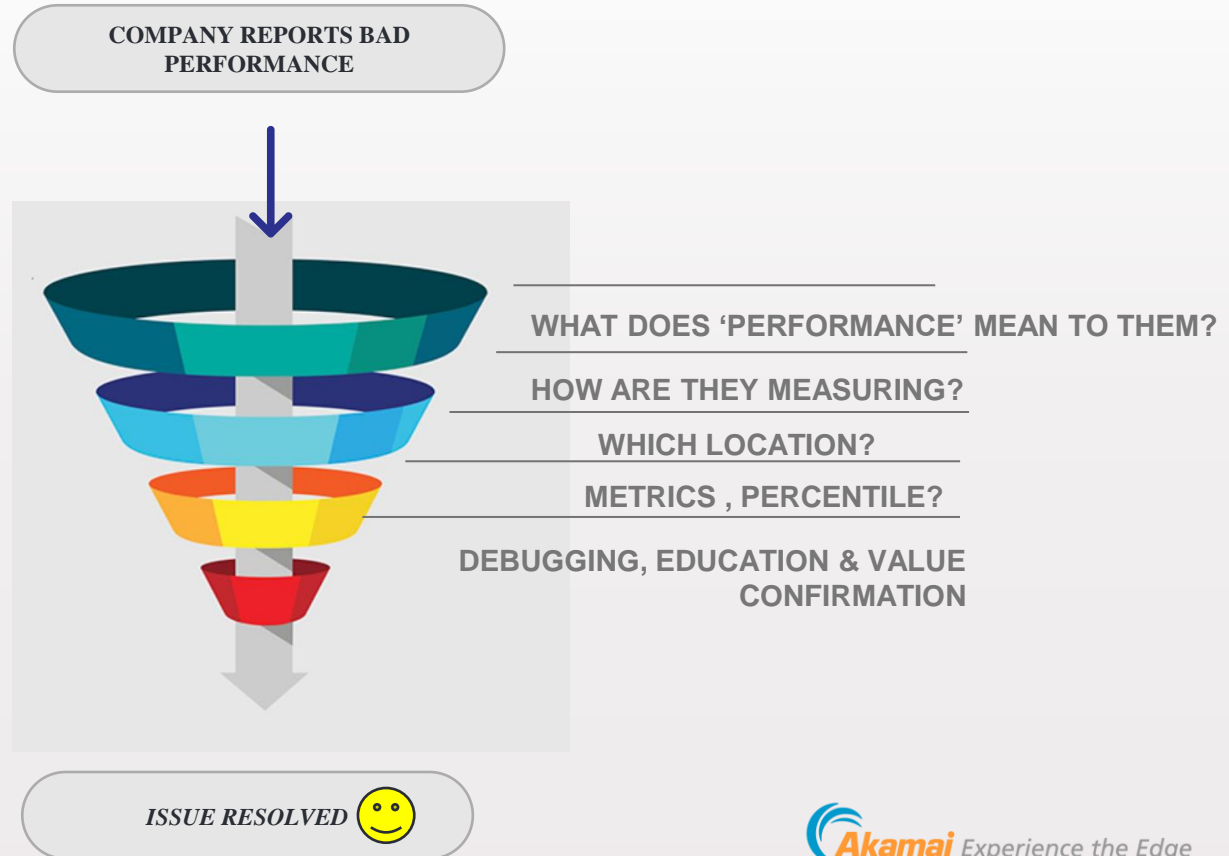
- Dr John Martin



Dr David Hartman

Performance – My approach

“Web Performance is an art, it has to be seen with context” – Sankalp



Common ways people measure performance

Stop Clock & L3 Pings



Yes, it is true!

Free testing tools



PageSpeed



Synthetic tools



dynatrace

3rd Party vendors

RUM solutions



Google Analytics



mPulse™

Akamai Experience the Edge



CrUX report – The underdog of web performance

- The Chrome User Experience Report provides user experience metrics for how real-world Chrome users experience popular destinations on the web
- Aggregated from users who have opted-in to syncing their browsing history
- If your site is popular, you will most likely find the performance data readily available in CrUX



Percentiles

- Averages are ineffective because they are too simple and may mis-represent true performance
- Percentiles gives us a much better visualization on where the problem is
- It is a good practice to 'fix' the 50th percentile and later move on to the higher ones (which are influenced by outliers)

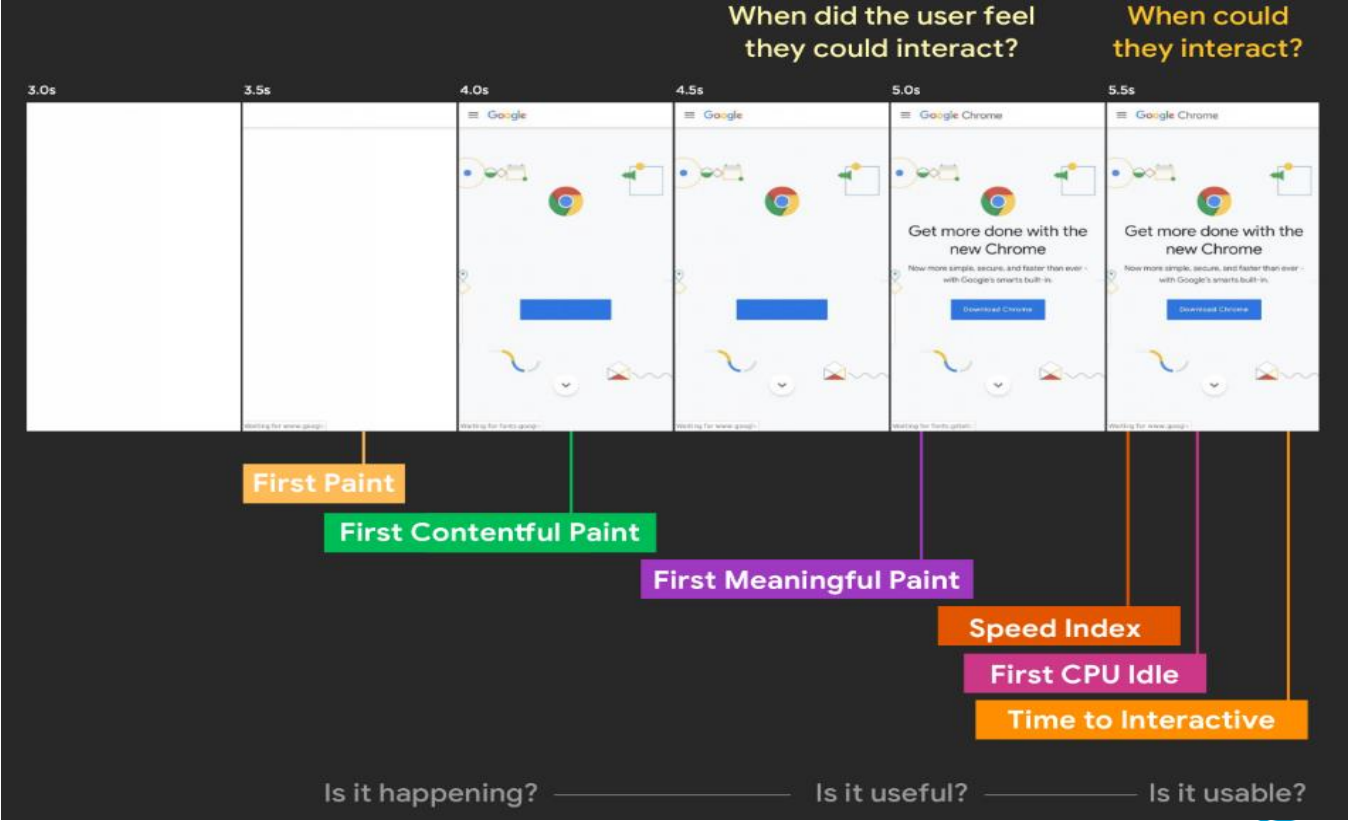
Load times (in seconds)	AVERAGE (in seconds)	50th percentile (in seconds)
3	6.92	3.775
3.25		
3.1		
3.15		
4		
4.25		
4.15		
3.75		
3.6		
3.8		
25		
22		

Let's talk METRICS !

- No 'one-size-fits-all'.
- Traditional Page load times are cliche
- Performance v/s Perceived performance metrics
- Business metrics are tied to perceived performance
- Analyse the site to know which metric is best suited



Metrics that matter



Core Web Vitals

(Loading)

LCP

Largest Contentful Paint



(Interactivity)

FID

First Input Delay



(Visual Stability)

CLS

Cumulative Layout Shift



Core Web Vitals



Core Web Vitals

The image shows a screenshot of the Big Basket website's meat section. At the top, a dark navigation bar contains the text "You are seeing our catalogue in Bangalore, 560004" and a "Change Location" button, both highlighted with a red box. Below this is the Big Basket logo, a search bar with the placeholder "Search for Products...", and a "My Basket 0 Items" icon. A secondary navigation bar includes "SHOP BY CATEGORY", "OFFERS", and "BB SPECIALTY".

The main content area features a large advertisement for meat products on a wooden background. The headline reads "The best cuts for an awesome meal!". On the left, "Chicken Curry cut without skin" is priced at ₹244 (crossed out ₹290) for 1 kg. On the right, "Catla Fish Large Curry Cut" is priced at ₹352 (crossed out ₹640) for 1 kg. A red arrow points from the text "Changing carousel palette" to the bottom left of the advertisement.

Below the advertisement is a horizontal menu with categories: "Fresho Meat", "Summer Vegetables", "Snacking Store", "Lindberg Chocolates", "BB Home", "Home & Kitchen", and "Deodorise Refresh". A red box highlights a row of buttons: "EGGS, MEAT AND FISH", "b star", "PRECAUTIONARY MEASURES", "FREQUENTLY ASKED QUESTIONS", "COMBO STORE", and "DEALS OF THE WEEK". A red arrow points from the text "Shifting buttons" to this row.

At the bottom, there are banners for "Min" and "Har Din Sasta". A "1 kg" label is visible on a product in the bottom right.

Changing carousel palette

Shifting buttons

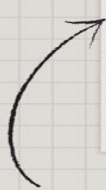
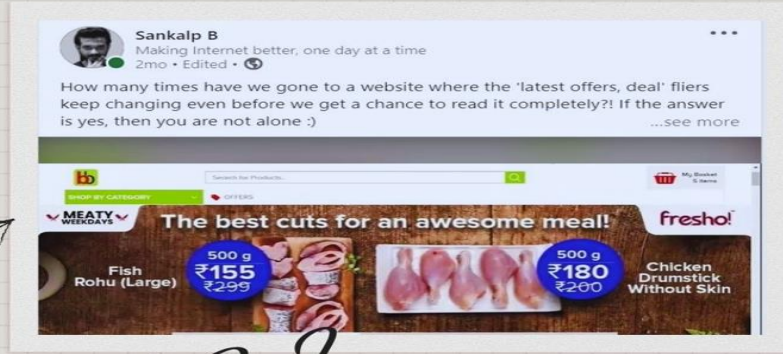
TTFB – The proverbial holy grail !

- TTFB – Time To First Byte of an HTML
- The correlation between TTFB and SEO ranking is strong, but erroneous
- Google has repeatedly re-affirmed that TTFB isn't the only metric to look at
- Redirects always add to the TTFB component



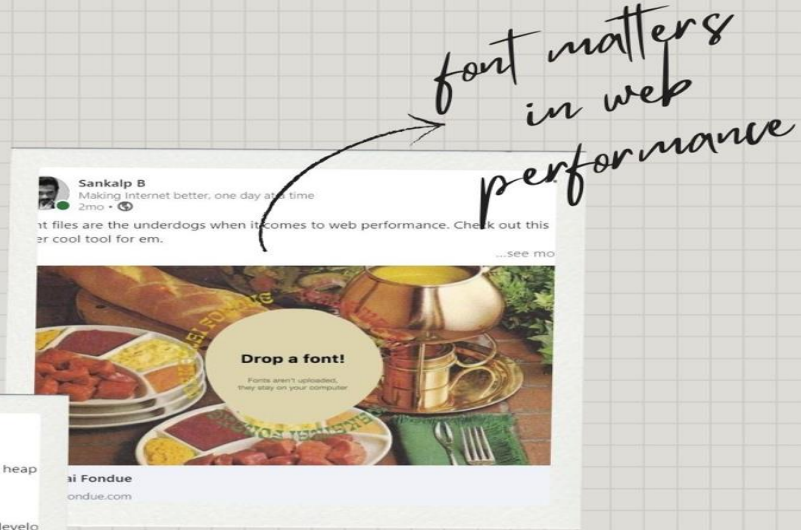
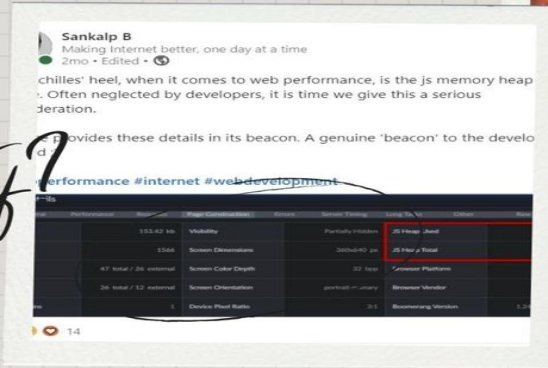
For interesting discussions around Internet

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CLS?

JS heaps in web perf



font matters in web performance