



DIGITAL MARKETING
Ad Exchange using AWS

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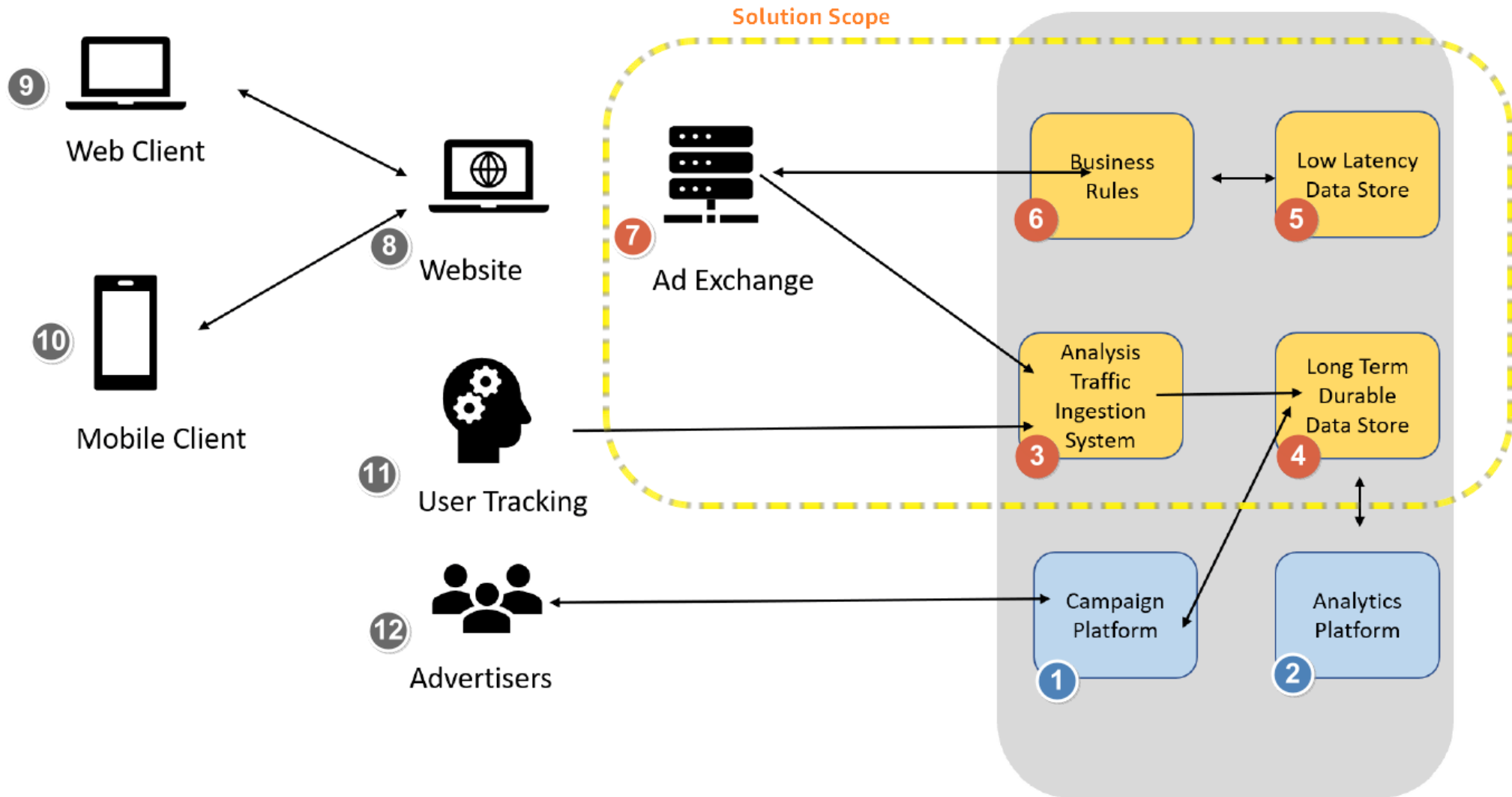
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Problem

- Build an **Ad-Exchange** and **Ad-Server** setup using AWS infrastructure
- The solution consisting of:
 - A highly available Ad-Exchange that matches the requests for ads to available ad inventory based on business rules
 - A highly available Ad-Server that serves the ads by returning a pointer to the Ad selected for display
 - A low-latency data repository for user profile data, business rules, ad inventory, and ad assets
 - A content distribution network for low latency delivery of ad images to the end user's client device
 - Lambda @ Edge for personalization of Ad content
 - WAF based fraud filtering

High-Level Solution



Solution Components

1. Campaign Platform: This is an external tool (like Adobe Campaign) and not in scope of the current solution
2. Analytics Platform: This is an external tool (like Adobe Analytics) and not in scope of the current solution
3. Analysis Traffic Ingestion System : This is an entry point for data into our solution. The data ingested includes
 - the Analytics Data Set that includes the browsing history, user actions on ecom site like adding item to cart etc. (This may be from a tool like Adobe Analytics. This will not be real-time data -- Adobe typically captures browsing history within 8-10 minutes) and
 - the CRM data set that includes the user profile and segmentation data
4. Long Term Durable Data Storage: This stores the analytics and CRM data -- can be implemented in DynamoDB
5. Low-latency Data Store: This is a combination of DynamoDB for information / meta-data attributes about the various ads and the actual static advertisement images files stores in S3
6. Business Rules: business logic implemented on the ad-exchange / ad-server (EC2 or Lambda in #7 below) that matches the "demand" (a request from a page load on ecom site in #8 below that has ad-space) with "supply" (a URL pointing to the ad image, selected from inventory of all ads available in #5 above)
7. Ad-Exchange: Ec2 or Lambda that runs the business rules #6
8. Ecom Website: Not in scope of the current solution. This includes the campaign and analytics tags that track user behaviour as well as click-throughs on ads displayed
9. Web Client: Desktop browser displaying the ecomm website
10. Mobile Client: Mobile browser displaying the ecomm website
11. User Tracking: This is done by tags on ecomm site that has inbuilt analytics tags that are tracked by Adobe Campaign / Analytics
12. Advertisers: Advertisers use their respective campaign management platforms to manage the ad content. This is not is scope of the current solution.

Solution Components

Not Shown in the diagram:

- Content Delivery Network to deliver advertising content to the end-user devices with low latency
- Origin / source of the content will be the static store -- S3 referred to in point #5 above
- Optionally use Lambda@Edge to personalize the advertising content
- Optionally use WAF to filter fraudulent requests

Not-in scope:

- Facility for Advertisers to login, upload and manage advertising assets

AWS Architecture

