Introduction

This project provides a platform where website owners can track and analyse their website in real time using AWS Services.Analysing website in real-time provides insight into who visits the website, where they come from,how long they stay, what content they view and what all features they use. Website Owners can analyse time series data on counts of visitors, views on various pages, time spent on the website,traffic on the website, actions users take, and many more.These insights can allow owners to improvise quickly to changing conditions and unknown situations.
This project features a dashboard that will help in visualizing a website clickstream activities in real-time.Basically it creates a web activity monitoring system which will include beacon web servers to log requests from a visitor's web browser, Amazon Kinesis Data Firehose to capture website data ,Amazon S3 and Amazon DynamoDB to conviniently store data.

Procedure

When the user accesses a website, client-side JavaScript code on the web server sends a web analytic beacon to the solution's beacon web servers which log the request. An Application Load Balancer manages the incoming traffic.
Then the **beacon web servers** send this data to the Kinesis data delivery stream, which archives the events in an Amazon S3 bucket and sends the data to the Kinesis data analytics application for processing. Once the data is processed, it is sent to the Kinesis data stream. A Lambda function reads data from the stream and sends the data in real-time to a DynamoDB table to be stored for up to one week.

Beacon Code Snippet

```
var http = new XMLHttpRequest();
var url = beacon_url; //from Outputs section of CloudFormation stack
http.open("POST", beacon_url);
http.setRequestHeader("event","click");
http.setRequestHeader("clientid","user123");
http.setRequestHeader("page",
window.location.pathname.split("/").slice(-1));
http.setRequestHeader("referer",document.referrer);
http.setRequestHeader("custom_metric_name","userAgent");
http.setRequestHeader("custom_metric_string_value",navigator.userAge
nt);
http.send();
```

Real-Time Web Analytics with Kinesis Data Analytics uses two Amazon EC2 instances for the beacon web servers.

Application Interface

The solution features a simple dashboard that loads data from Amazon DynamoDB into line charts every 10 seconds and bar charts every minute. The dashboard uses Amazon Cognito for user authentication and is powered by web assets hosted in an Amazon S3 bucket. Amazon CloudFront is used to restrict access to the solution's website bucket contents. The dashboard uses the open-source chart.js JavaScript library to draw charts using HTML5. The index.html file contains the HTML elements that render the charts in the dashboard. The dash.js file in the js folder contains the JavaScript that populates the dashboard with metrics. The Kinesis data application contains the SQL queries that compute metrics.