

DECEMBER 13, 2016

# WEB TRAFFIC VISUALIZATION

## EXTRA CREDIT ASSIGNMENT

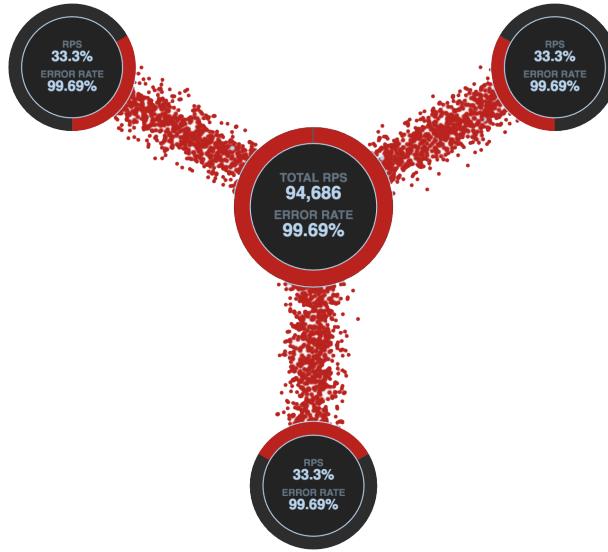
CMPE 272 – ENTERPRISE SOFTWARE PLATFORMS

**NRUPESH PATEL**  
CMPE 272  
GitHub ID: Nrupesh29  
SJSU ID: 011425271

GitHub Repository: <https://github.com/Nrupesh29/Web-Traffic-Visualizer>

Live Demo: <http://webtraffic.nrupeshpatel.com>

# INTRODUCTION



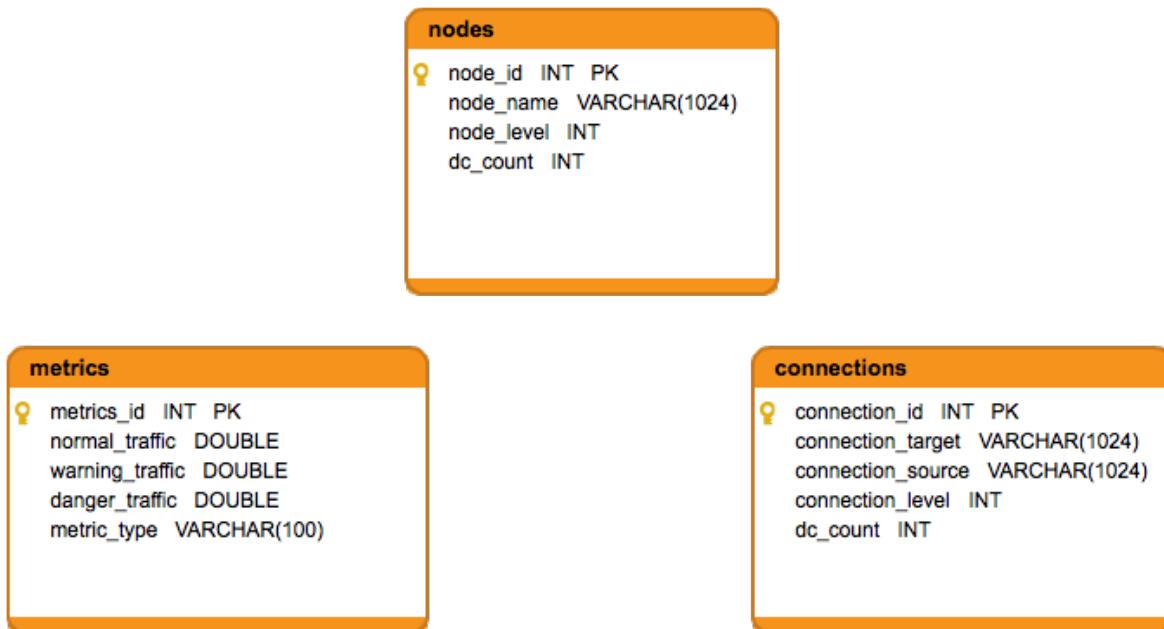
**Web Traffic Visualizer** is created to visualize the web traffic data. Web traffic can be clicks per session, visits per day, views per page, duration of user engagement and much more. Here we divide web traffic into **three** categories:

- Normal Traffic
- Warning Traffic
- Danger Traffic

Here we will be visualizing web traffic for all the three categories and for applications with different number of data centers.

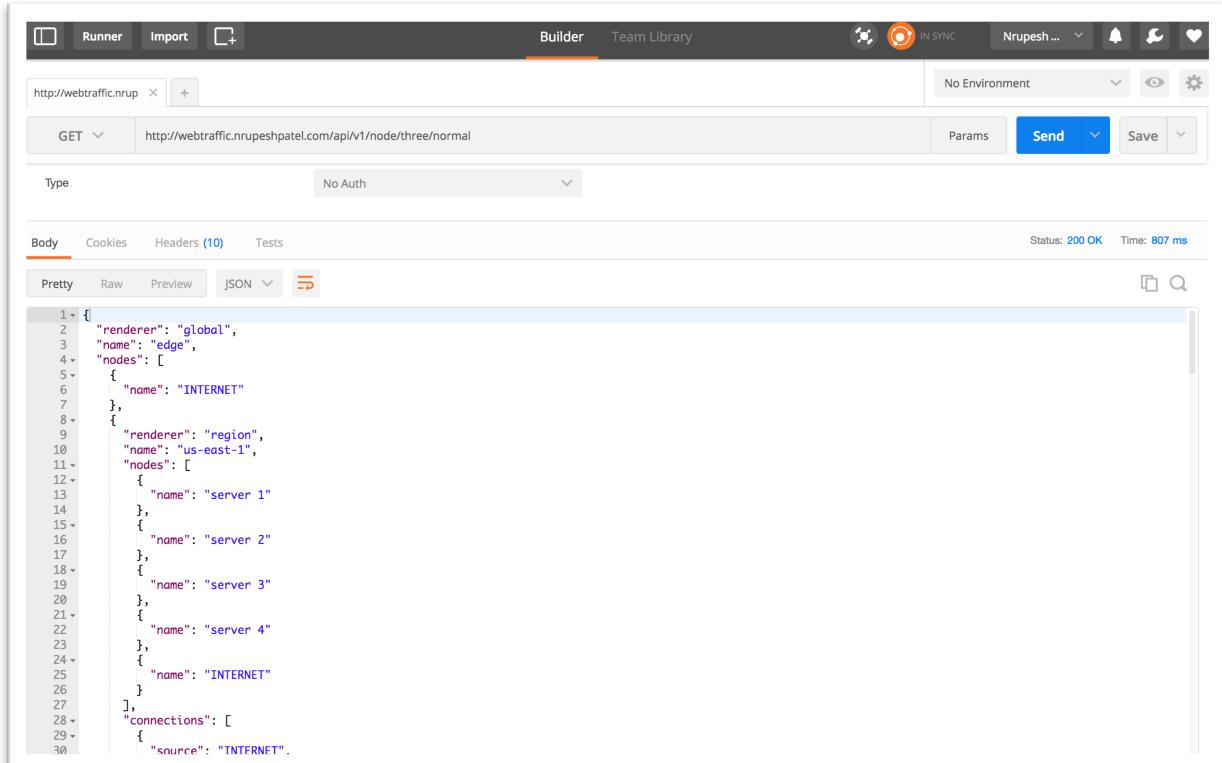
## DATA GENERATION

Data used in this project is not real web traffic and was generated using custom API's. Following diagram shows the database design for web traffic data generation.



- **node\_level** decided whether node belongs to higher level visualization or the sub nodes visualization.
- **dc\_count** determines that the node belongs to application with this much amount of data centers.
- **connection\_target** shows the target node of the connection.
- **connection\_source** shows the source node of the connection.
- **connection\_level** decided whether connection belongs to higher level visualization or the sub system visualization.
- **normal\_traffic** shows the amount of normal traffic during specific type of metric.
- **warning\_traffic** shows the amount of warning traffic during specific type of metric.
- **danger\_traffic** shows the amount of danger traffic during specific type of metric.

Using the above database and Custom API's, the required data for Visualization was generated. Below is some sample data generated using API.

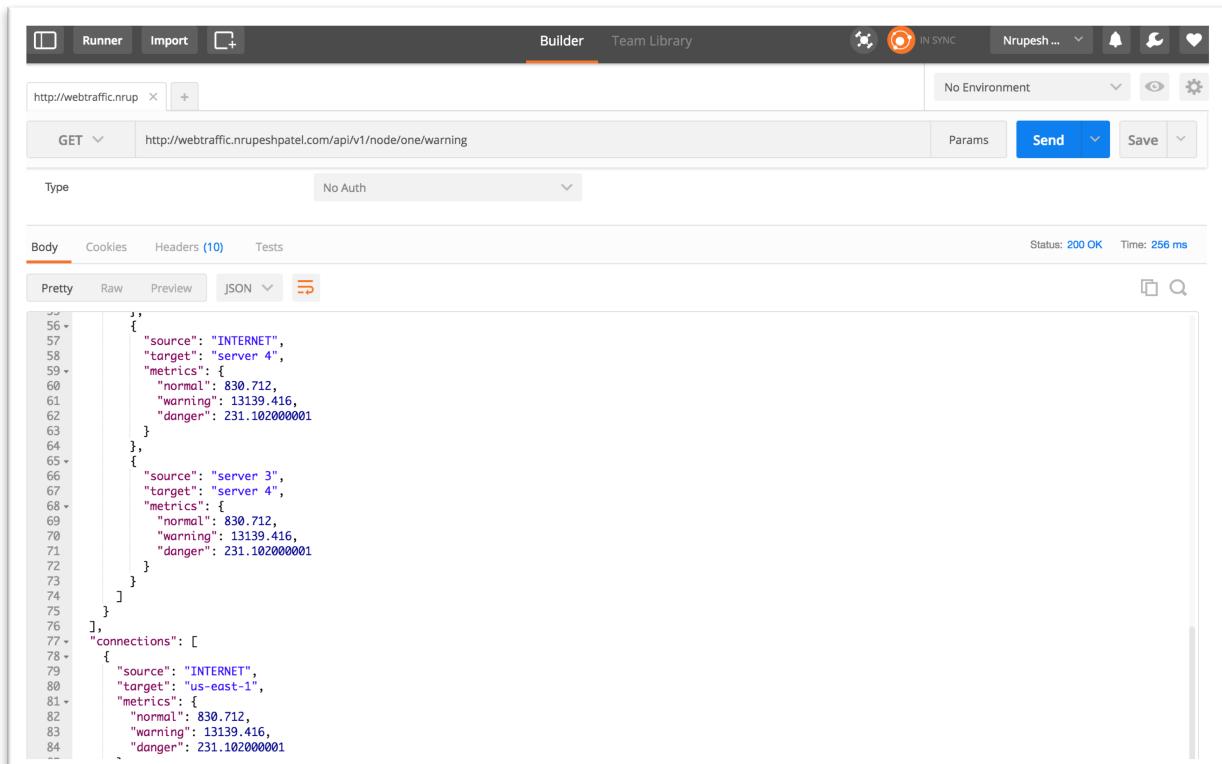


POST <http://webtraffic.nrupeshpatel.com/api/v1/node/three/normal>

Type: No Auth

Body

```
1  {
2    "renderer": "global",
3    "name": "edge",
4    "nodes": [
5      {
6        "name": "INTERNET"
7      },
8      {
9        "renderer": "region",
10       "name": "us-east-1",
11       "nodes": [
12         {
13           "name": "server 1"
14         },
15         {
16           "name": "server 2"
17         },
18         {
19           "name": "server 3"
20         },
21         {
22           "name": "server 4"
23         },
24         {
25           "name": "INTERNET"
26         }
27       ],
28       "connections": [
29         {
30           "source": "INTERNET".
```



POST <http://webtraffic.nrupeshpatel.com/api/v1/node/one/warning>

Type: No Auth

Body

```
56  {
57   "source": "INTERNET",
58   "target": "server 4",
59   "metrics": {
60     "normal": 830.712,
61     "warning": 13139.416,
62     "danger": 231.102000001
63   },
64   {
65     "source": "server 3",
66     "target": "server 4",
67     "metrics": {
68       "normal": 830.712,
69       "warning": 13139.416,
70       "danger": 231.102000001
71     }
72   }
73 ]
74 },
75 "connections": [
76   {
77     "source": "INTERNET",
78     "target": "us-east-1",
79     "metrics": {
80       "normal": 830.712,
81       "warning": 13139.416,
82       "danger": 231.102000001
83     }
84   }
```

## Demo Data API Call's List

BASE URL: <http://webtraffic.nrupeshpatel.com/api/v1>

Request	Endpoint	Description
GET	{base_url}/node/one/normal	Fetch traffic data for single node application with normal traffic
GET	{base_url}/node/one/warning	Fetch traffic data for single node application with warning traffic
GET	{base_url}/node/one/danger	Fetch traffic data for single node application with danger traffic

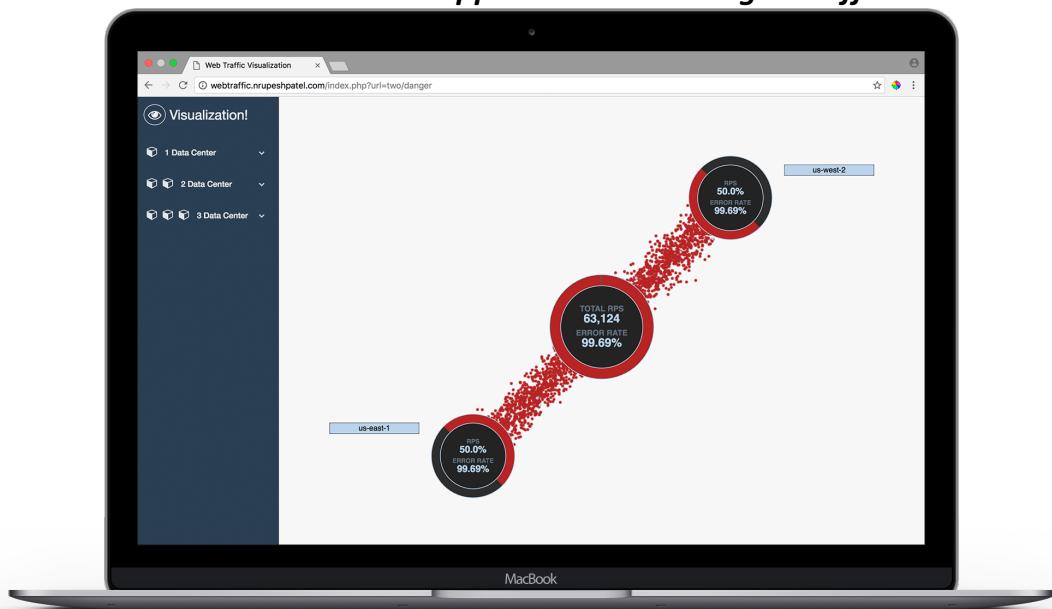
Request	Endpoint	Description
GET	{base_url}/node/two/normal	Fetch traffic data for two node application with normal traffic
GET	{base_url}/node/two/warning	Fetch traffic data for two node application with warning traffic
GET	{base_url}/node/two/danger	Fetch traffic data for two node application with danger traffic

Request	Endpoint	Description
GET	{base_url}/node/three/normal	Fetch traffic data for three node application with normal traffic
GET	{base_url}/node/three/warning	Fetch traffic data for three node application with warning traffic
GET	{base_url}/node/three/danger	Fetch traffic data for three node application with danger traffic

# DATA VISUALIZATION

The data generated using custom API can now be visualized using Netflix Vizceral open source project. I used HTML/ES5 example to start developing the application. I had to clone the Vizceral repository and include it into my project files. Then I used JavaScript to load the generated data into the WebGL Canvas. Here are some screenshots for visualization.

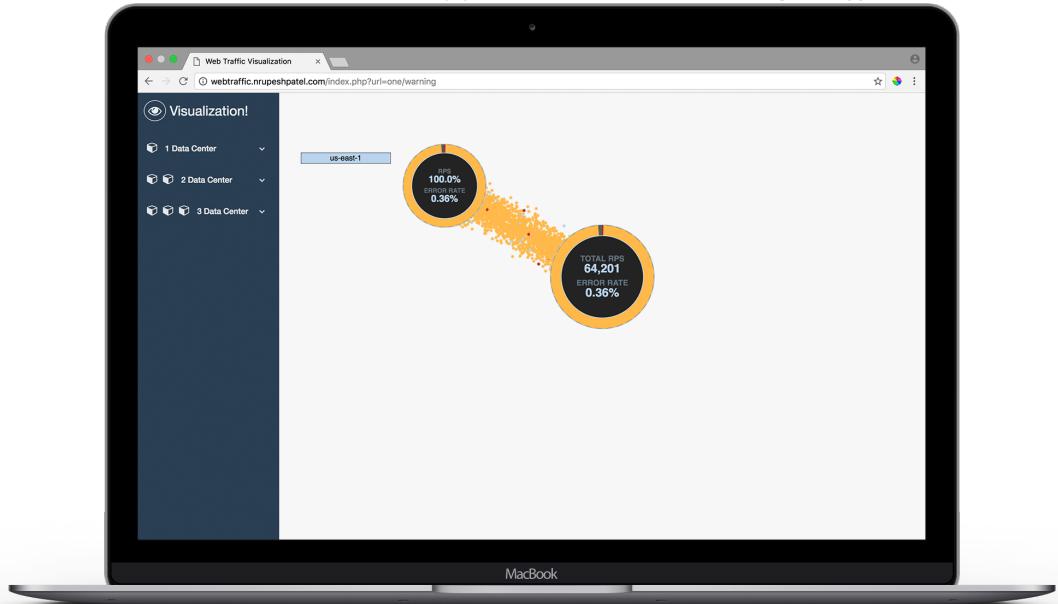
*Two Data Center Application with Danger Traffic*



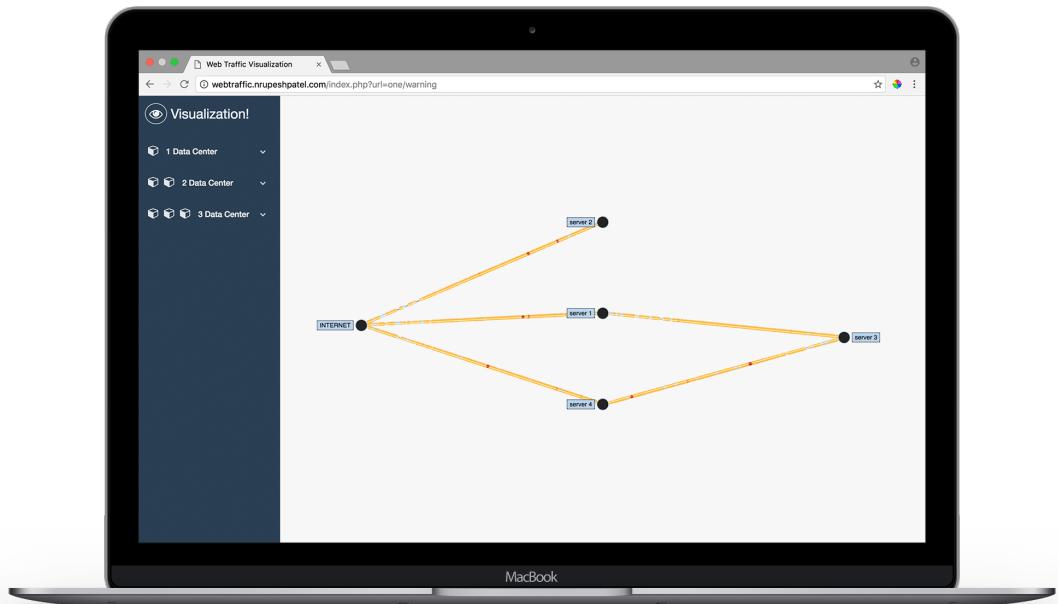
*Three Data Center Application with Normal Traffic*



## *One Data Center Application with Warning Traffic*



## *Level Two Visualization with Server View*

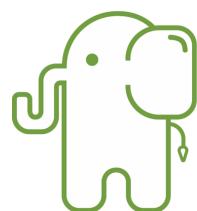


## TECHNOLOGIES USED



**VIZCERAL**

USED FOR VISUALIZATION



Slim Framework

Used for API



**MySQL®**

Used for Data Storage

## CONCLUSION

Web Traffic Visualizer is a tool to visualize web traffic data. Data was generated using custom API's and was not real. Key learnings from this assignment were:

- Usage of Netflix Vizceral
- Usage of Slim Framework
- Demo Data Generation