



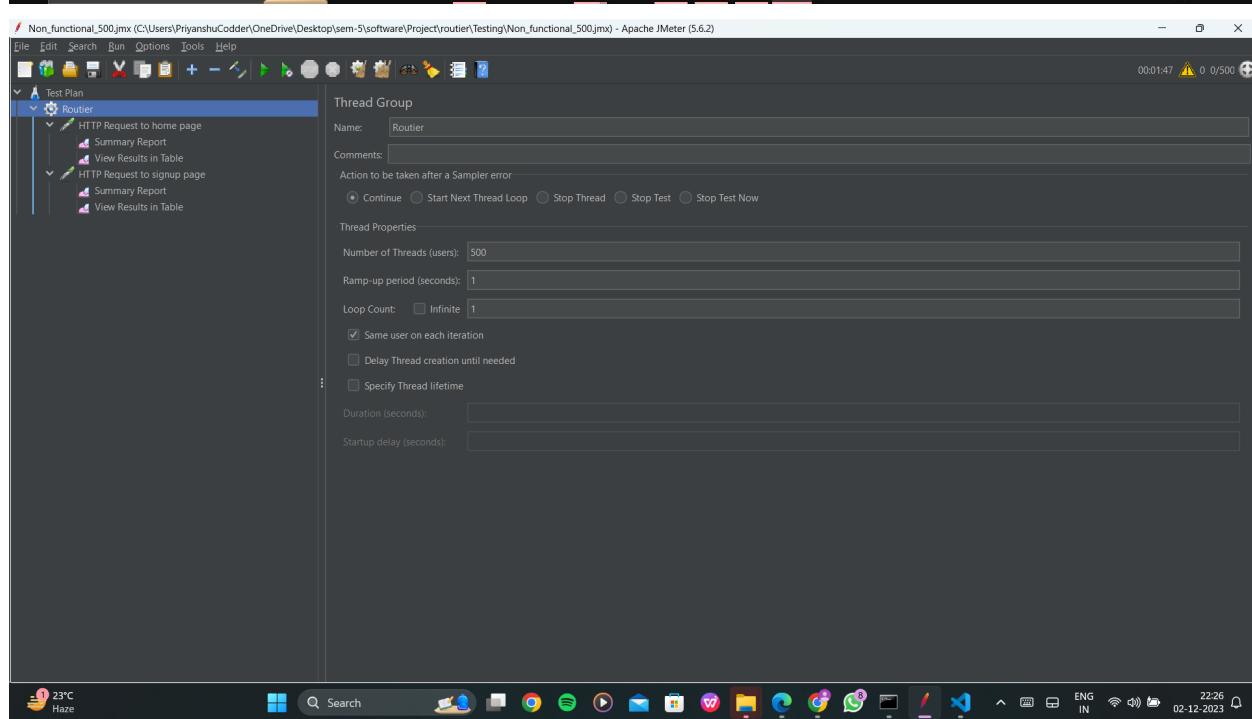
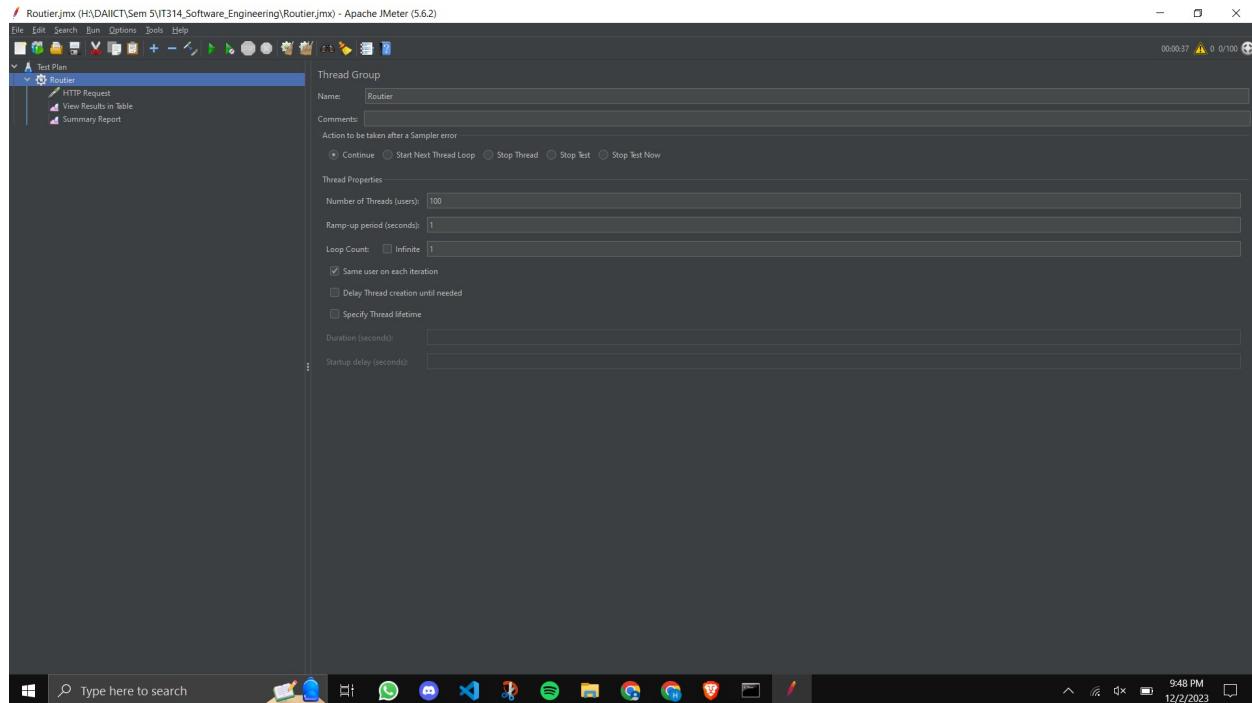
**ENGINEERS WITH
SOCIAL RESPONSIBILITY**

**IT-313 Software Engineering
Group-7
Routier
Non Functional Testing**

1) Load Balance Testing :

- Testing Home Module
GET request to PATH 'routier.vercel.app/'

Scenario: We have accessed the home page of routier with the same user from multiple hosts (100 and 500) and will be measuring the load balance and throughput of the system.



Non_functional_500.jmx (C:\Users\PriyanshuCoder\Desktop\sem-5\software\Project\routier\Testing\Non_functional_500.jmx) - Apache JMeter (5.6.2)

File Edit Search Run Options Tools Help

Test Plan

router

H1 IP Request to home page

- Summary Report
- View Results in Table

HTTP Request to signup page

- Summary Report
- View Results in Table

HTTP Request

Name: HTTP Request to home page

Comments:

Basic Advanced

Web Server

Protocol [http]: Server Name or IP: routier.vercel.app Port Number:

HTTP Request

GET Path: /

Redirect Automatically Follow Redirects Use KeepAlive Use multipart/form-data Browser-compatible headers

Parameters Body Data Files Upload

Send Parameters With the Request:

Name:	Value	URL Encode?	Content-type	Include Equals?

Detail Add Add from Clipboard Delete Up Down

23°C Haze 22:49 ENG IN 02-12-2023

Routier_Non_functional_1000.jmx (C:\Program Files\apache-jmeter-5.6.2\bin\Routier_Non_functional_1000.jmx) - Apache JMeter (5.6.2)

File Edit Search Run Options Tools Help

Test Plan

router

H1 IP Request to home page

- Summary Report
- View Results in Table

HTTP Request to signup page

- Summary Report
- View Results in Table

Summary Report

Name: Summary Report

Comments: Write results to file / Read from file

Filename:

Browse... Log/Display Only Errors Successes Configure

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB/sec	Sent KB/sec	Avg. Bytes
HTTP Request to...	500	44779	0	79846	10837.64	85.20%	6.2/sec	16.42	0.34	2693.0
TOTAL	500	44779	0	79846	10837.64	85.20%	6.2/sec	16.42	0.34	2693.0

Include group name in label? Save Table Data Save Table Header

23°C Haze 22:18 ENG IN 02-12-2023

Routier_Non_functional_1000.jmx (C:\Program Files\apache-jmeter-5.6.2\bin\Routier_Non_functional_1000.jmx) - Apache JMeter (5.6.2)

File Edit Search Run Options Tools Help

Test Plan routier

- HTTP Request to home page
- Summary Report
- View Results in Table**
- HTTP Request to signup page
- Summary Report
- View Results in Table

View Results in Table

Name: View Results in Table

Comments:

Write results to file / Read from file

Filename: Browse... Log/Display Only: Errors Successes Configure

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
1	22:16:09.846	Routier 1-39	HTTP Request to h...	37237	✓	1881	240	163	26
2	22:16:09.862	Routier 1-48	HTTP Request to h...	37423	✓	1881	240	147	13
3	22:16:09.900	Routier 1-67	HTTP Request to h...	37557	✓	1879	240	192	4
4	22:16:09.921	Routier 1-77	HTTP Request to h...	37537	✓	1881	240	151	3
5	22:16:09.915	Routier 1-74	HTTP Request to h...	37543	✓	1881	240	158	2
6	22:16:09.889	Routier 1-61	HTTP Request to h...	37569	✓	1880	240	184	6
7	22:16:09.981	Routier 1-107	HTTP Request to h...	37477	✓	1880	240	92	27
8	22:16:09.962	Routier 1-98	HTTP Request to h...	37496	✓	1881	240	116	23
9	22:16:09.850	Routier 1-42	HTTP Request to h...	37609	✓	1880	240	222	22
10	22:16:09.823	Routier 1-27	HTTP Request to h...	37636	✓	1881	240	249	32
11	22:16:09.879	Routier 1-56	HTTP Request to h...	37580	✓	1880	240	205	12
12	22:16:09.894	Routier 1-63	HTTP Request to h...	37570	✓	1856	240	180	3
13	22:16:09.811	Routier 1-22	HTTP Request to h...	37651	✓	1880	240	260	45
14	22:16:09.781	Routier 1-7	HTTP Request to h...	37682	✓	1881	240	291	75
15	22:16:09.916	Routier 1-75	HTTP Request to h...	37545	✓	1880	240	154	1
16	22:16:09.975	Routier 1-104	HTTP Request to h...	37490	✓	1881	240	97	11
17	22:16:09.839	Routier 1-36	HTTP Request to h...	37644	✓	1881	240	189	18
18	22:16:09.773	Routier 1-3	HTTP Request to h...	37717	✓	1880	240	230	84
19	22:16:09.766	Routier 1-1	HTTP Request to h...	37855	✓	1879	240	257	70
20	22:16:09.793	Routier 1-13	HTTP Request to h...	37838	✓	1881	240	215	63
21	22:16:09.948	Routier 1-90	HTTP Request to h...	37808	✓	1881	240	60	5
22	22:16:09.847	Routier 1-40	HTTP Request to h...	37913	✓	1881	240	160	25
23	22:16:09.782	Routier 1-8	HTTP Request to h...	37978	✓	1879	240	244	74
24	22:16:09.953	Routier 1-93	HTTP Request to h...	37809	✓	1880	240	55	4
25	22:16:09.810	Routier 1-71	HTTP Request to h...	37955	✓	1881	240	208	48

Scroll automatically? Child samples? No of Samples: 500 Latest Sample: 79831 Average: 44779 Deviation: 10837

23°C Haze

Search ENG IN 22:19 02-12-2023

Routier.jmx (H:\DAIICT\Sem 5\IT314_Software_Engineering\Routier.jmx) - Apache JMeter (5.6.2)

File Edit Search Run Options Tools Help

Test Plan routier

- Home
- Summary Report
- View Results in Table**
- Login
- View Results in Table
- Summary Report

View Results in Table

Name: View Results in Table

Comments:

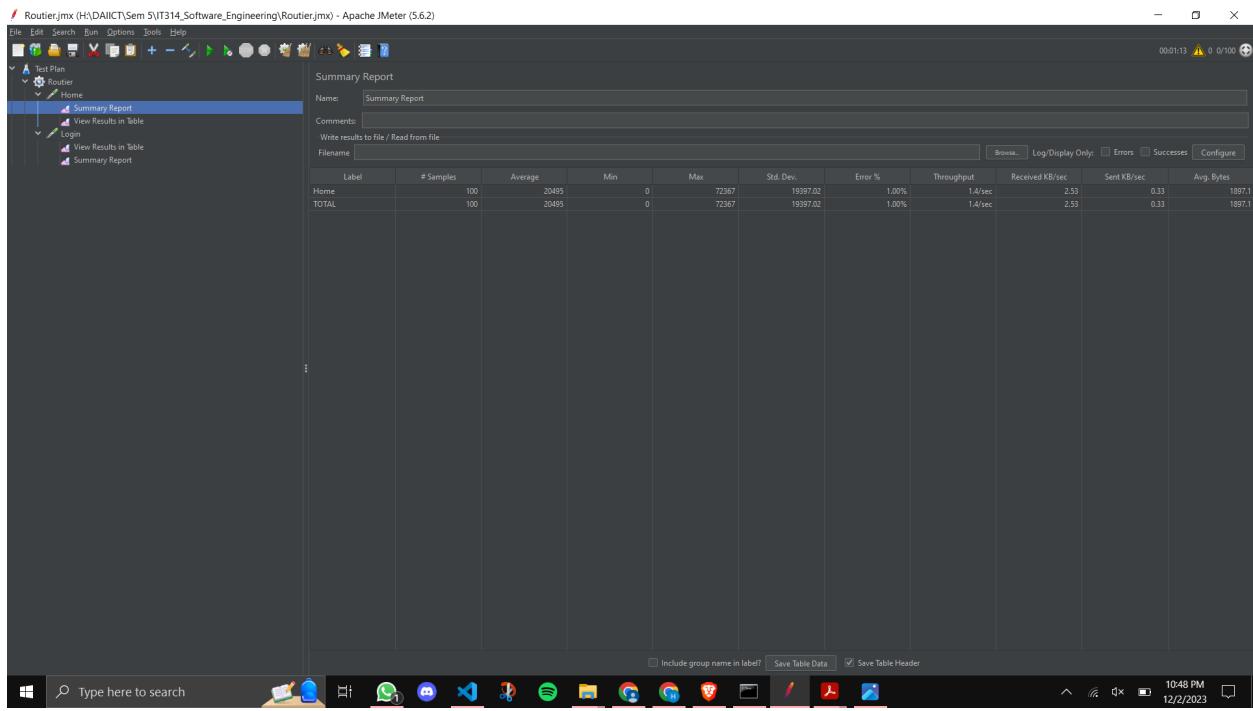
Write results to file / Read from file

Filename: Browse... Log/Display Only: Errors Successes Configure

Sample #	Start Time	Thread Name	Home	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
66	22:46:27.021	Routier 1-68	Home		36277	✓	1881	246	35117	36006
67	22:46:26.981	Routier 1-54	Home		36017	✓	1880	246	36120	36100
68	22:46:27.700	Routier 1-78	Home		36250	✓	1879	246	34211	36115
69	22:46:27.121	Routier 1-78	Home		36325	✓	1881	246	34190	36140
70	22:46:27.091	Routier 1-75	Home		36371	✓	1879	246	34221	36124
71	22:46:27.050	Routier 1-71	Home		36423	✓	1881	246	34261	36156
72	22:46:27.081	Routier 1-74	Home		36394	✓	1878	246	34230	36125
73	22:46:27.061	Routier 1-72	Home		36416	✓	1881	246	34250	36145
74	22:46:27.040	Routier 1-70	Home		36460	✓	1879	246	34272	36166
75	22:46:27.031	Routier 1-69	Home		36469	✓	1881	246	34280	36175
76	22:46:27.131	Routier 1-79	Home		36370	✓	1879	246	34181	36130
77	22:46:27.071	Routier 1-75	Home		36430	✓	1879	246	34240	36135
78	22:46:27.111	Routier 1-77	Home		36393	✓	1879	246	34200	36104
79	22:46:27.080	Routier 1-83	Home		36343	✓	1879	246	34231	36184
80	22:46:27.182	Routier 1-83	Home		36023	✓	1878	246	34216	36164
81	22:46:27.161	Routier 1-87	Home		36307	✓	1879	246	34231	36156
82	22:46:27.161	Routier 1-82	Home		36355	✓	1879	246	34244	36195
83	22:46:27.179	Routier 1-98	Home		36298	✓	1879	246	34201	36145
84	22:46:27.240	Routier 1-90	Home		36277	✓	1879	246	34180	36125
85	22:46:27.141	Routier 1-80	Home		36377	✓	1879	246	34264	36215
86	22:46:27.150	Routier 1-81	Home		36368	✓	1881	246	34253	36206
87	22:46:27.181	Routier 1-84	Home		36337	✓	1881	246	34224	36176
88	22:46:27.200	Routier 1-86	Home		36320	✓	1879	246	34220	36165
89	22:46:27.259	Routier 1-92	Home		36273	✓	1879	246	34185	36121
90	22:46:27.250	Routier 1-91	Home		36287	✓	1879	246	34180	36130
91	22:46:27.231	Routier 1-89	Home		36306	✓	1878	246	34189	36133
92	22:46:27.240	Routier 1-93	Home		36266	✓	1881	246	34174	36109
93	22:46:27.260	Routier 1-95	Home		36253	✓	1879	246	34159	36115
94	22:46:27.280	Routier 1-94	Home		36263	✓	1879	246	34170	36125
95	22:46:27.222	Routier 1-98	Home		36266	✓	1881	246	34178	36126
96	22:46:27.306	Routier 1-96	Home		36282	✓	1881	246	34194	36141
97	22:46:27.322	Routier 1-97	Home		36271	✓	1878	246	34178	36125
98	22:46:26.443	Routier 1-8	Home		43307	✗	3672	123	1189	2
99	22:46:27.337	Routier 1-99	Home		72367	✓	1881	246	34186	36136
100	22:46:27.353	Routier 1-100	Home		72364	✓	1881	246	34179	36150

Scroll automatically? Child samples? No of Samples: 100 Latest Sample: 72364 Average: 20492 Deviation: 19397

Type here to search 10:47 PM 12/2/2023



We can see in the above summary report that the throughput of the home page while we have 500 concurrent users is 6.2s and for 100 concurrent users is 1.4s.

- Testing Signup Module :

POST request to PATH 'routier.vercel.app/api/users/register'

Scenario: We have accessed the signup page of routier with the same user from multiple hosts (500) and will be measuring the load balance and throughput of the system

The screenshot shows the Apache JMeter interface with the following details:

- Test Plan:** Non_functional_500.jmx
- Thread Group:** Routier
- Selected Request:** HTTP Request to signup page
- Request Configuration:**
 - Protocol: http
 - Server Name or IP: routier.vercel.app
 - Port Number:
 - Method: POST
 - Path: /api/users/register
 - Content encoding:
- Parameters:**

```

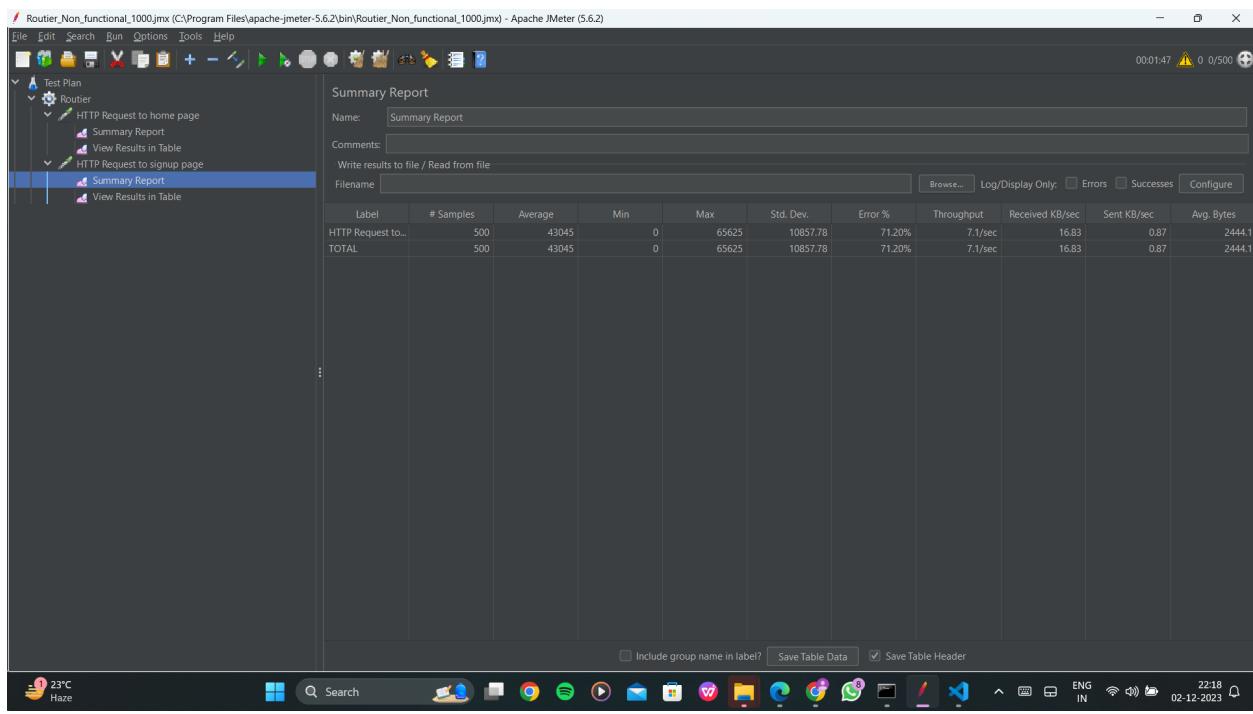
1 {
2   "name": "John Doe",
3   "email": "john.doe@example.com",
4   "password": "secure@12345678"
5 }

```

The screenshot shows the Apache JMeter interface with the following details:

- Test Plan:** Routier_Non_functional_1000.jmx
- Thread Group:** Routier
- Selected Listener:** View Results in Table
- Table Headers:**

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
----------	------------	-------------	-------	-----------------	--------	-------	------------	---------	------------------
- Table Data:** A large table containing 500 rows of sample data, each representing an HTTP request to the routier API.
- Table Footer:**
 - Sample # 477 - 500
 - Start Time 22:16:52.471 - 22:16:52.548
 - Thread Name routier 1-550 - routier 1-344
 - Label HTTP Request to ... - HTTP Request to ...
 - Sample Time(ms) 61805 - 65450
 - Status OK - OK
 - Bytes 1916 - 1916
 - Sent Bytes 439 - 439
 - Latency 24621 - 24430
 - Connect Time(ms) 24073 - 24057

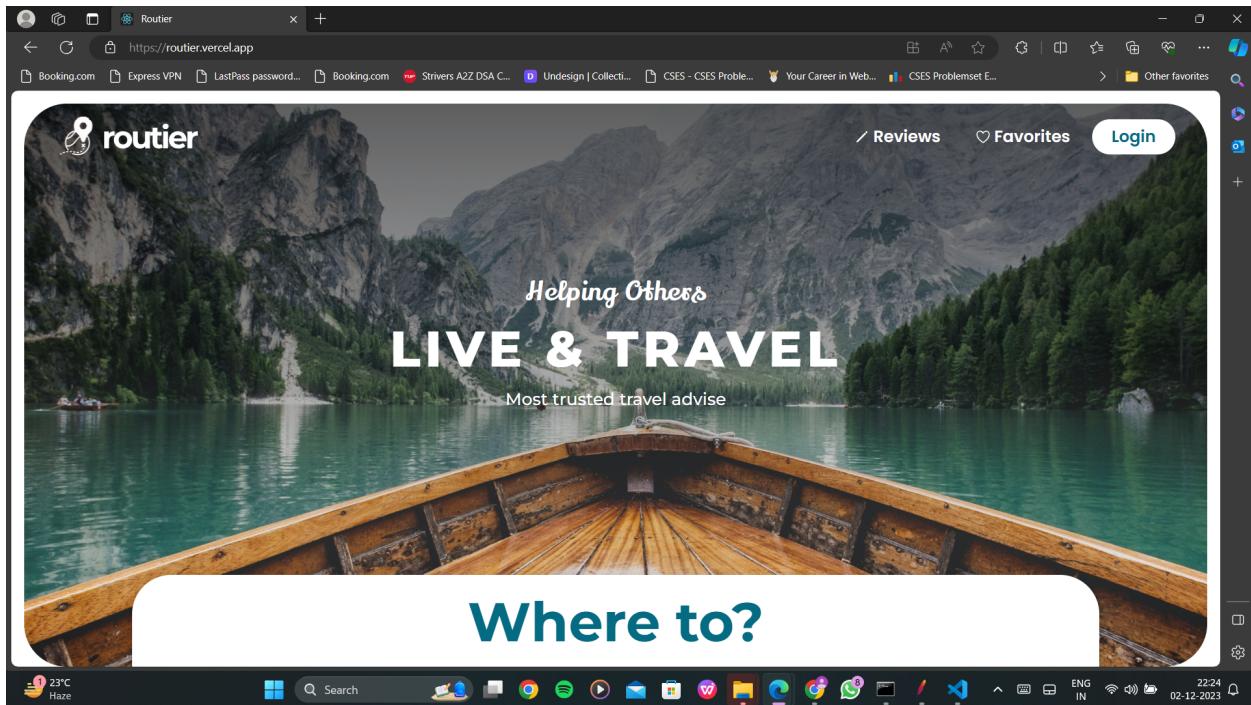


We can see in the above summary report that the throughput of the home page while we have 500 concurrent users is 7.1s.

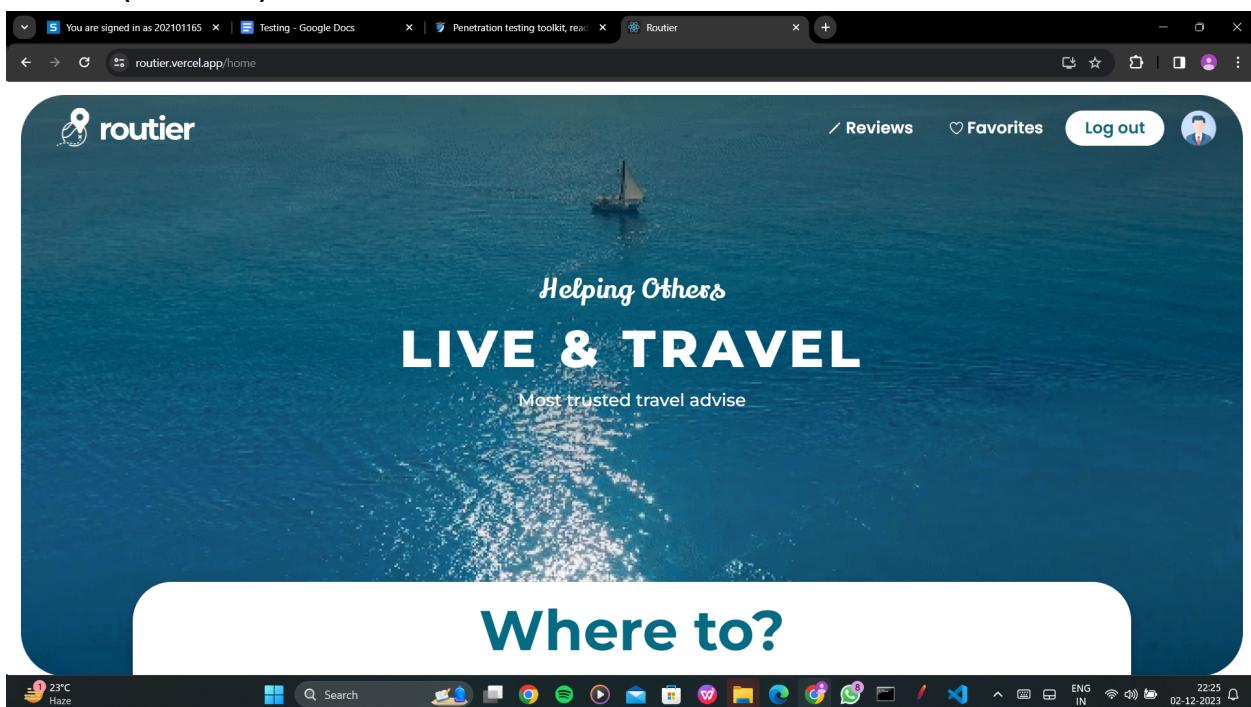
2. Compatibility testing

We've made sure that the website is compatible with the latest web browsers covering Edge, Chrome and Brave and also for all devices like mobile, Ipad, and laptops.

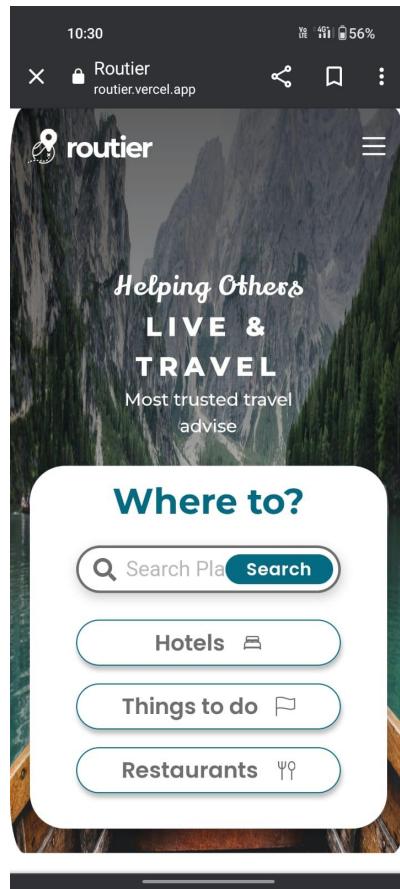
Edge:



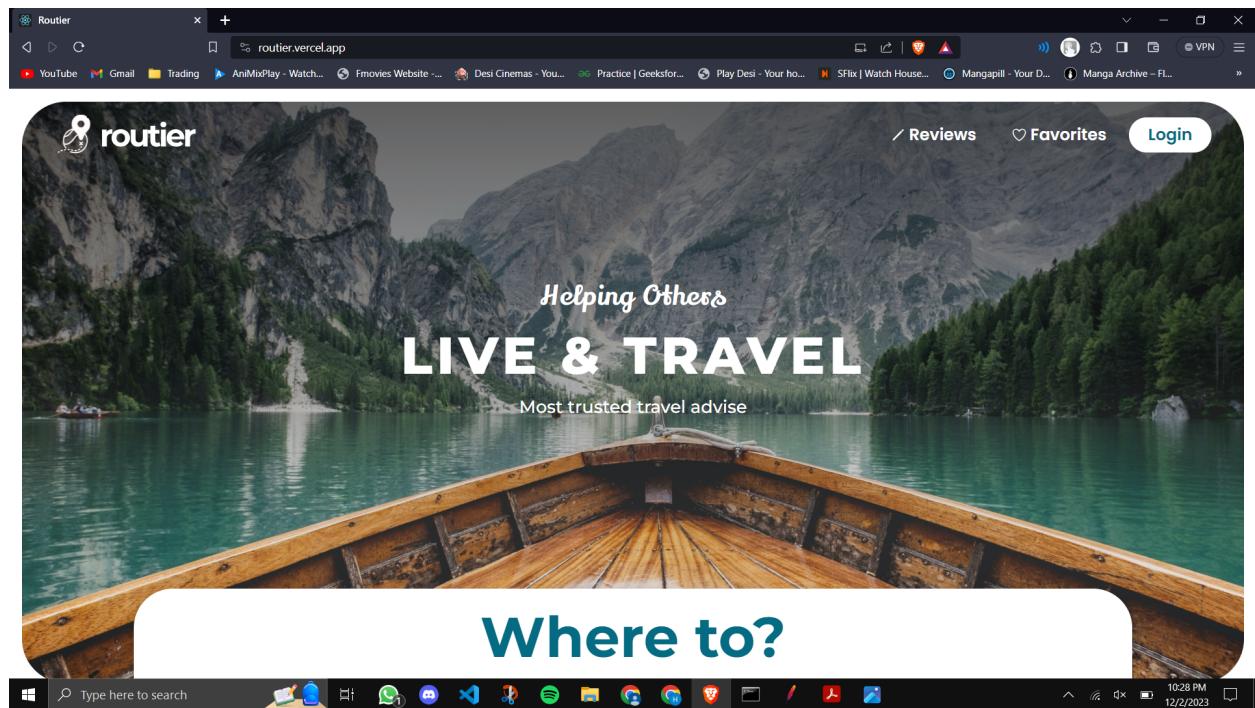
Chrome (Windows)



Chrome(Android)

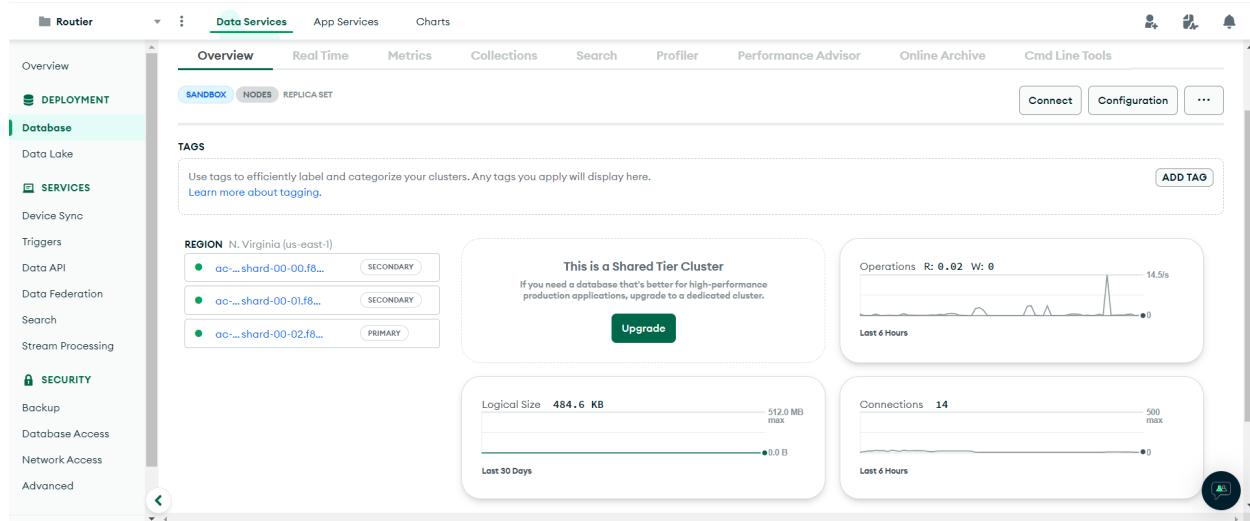


Brave:



3. Reliability testing

This testing evaluates how well the software functions over time, including its performance in handling failures and errors.



Our website's database is deployed across three distinct regions, ensuring fault tolerance and continuous data availability. In the event of an unexpected outage in one region, the remaining two regions seamlessly maintain operations, ensuring uninterrupted access to the most up-to-date data. This multi-regional architecture acts as a reliable safeguard against potential disruptions, guaranteeing continuous accessibility to critical data.

4. Security Testing:

Authentication and Authorization: Our system uses JWT authentication to authorize users when accessing various paths. This ensures that sensitive details remain secure, accessible only to authenticated users. Without logging into the system, no one can gain visibility into internal information.

Data Encryption: Passwords are encrypted using bcrypt with the addition of 10 salt rounds. This encryption ensures a high level of security, preventing even database administrators from viewing users' passwords. User data remains confidential and protected.

Session Management: Leveraging cookies for session management, we've implemented a mechanism allowing users to re-login within 1 hour, even if the browser is closed. This feature enhances user convenience without compromising security.

Also, we have scanned our website with a third party "<https://pentest-tools.com/>" Below is the report for the same.

Website Vulnerability Scanner Result

✓ <https://routier.vercel.app/>

Summary

Overall risk level: Low	Risk ratings: High: 0 Medium: 0 Low: 6 Info: 13	Scan information: Start time: Dec 02, 2023 / 19:05:40 Finish time: Dec 02, 2023 / 19:06:02 Scan duration: 22 sec Tests performed: 19/19 Scan status: Finished
---	---	---

└ Nothing was found for missing HTTP header - Strict-Transport-Security.

└ Nothing was found for domain too loose set for cookies.

└ Nothing was found for HttpOnly flag of cookie.

└ Nothing was found for Secure flag of cookie.

└ Nothing was found for unsafe HTTP header Content Security Policy.

└ Nothing was found for missing HTTP header - Strict-Transport-Security.

└ Nothing was found for domain too loose set for cookies.

└ Nothing was found for HttpOnly flag of cookie.

└ Nothing was found for Secure flag of cookie.

└ Nothing was found for unsafe HTTP header Content Security Policy.

List of tests performed (19/19)

- ✓ Checking for website accessibility...
- ✓ Checking for missing HTTP header - X-Frame-Options...
- ✓ Checking for missing HTTP header - Content Security Policy...
- ✓ Checking for missing HTTP header - X-Content-Type-Options...
- ✓ Checking for missing HTTP header - Referrer...
- ✓ Checking for website technologies...
- ✓ Checking for vulnerabilities of server-side software...
- ✓ Checking for client access policies...
- ✓ Checking for robots.txt file...
- ✓ Checking for absence of the security.txt file...
- ✓ Checking for use of untrusted certificates...
- ✓ Checking for enabled HTTP debug methods...
- ✓ Checking for secure communication...
- ✓ Checking for directory listing...
- ✓ Checking for missing HTTP header - Strict-Transport-Security...
- ✓ Checking for domain too loose set for cookies...
- ✓ Checking for HttpOnly flag of cookie...
- ✓ Checking for Secure flag of cookie...
- ✓ Checking for unsafe HTTP header Content Security Policy...

Scan parameters

Target: <https://routier.vercel.app/>
Scan type: Light