



**ENGINEERS WITH
SOCIAL RESPONSIBILITY**

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



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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.

The screenshot shows the Apache JMeter 5.6.2 application window. The title bar reads "Routier.jmx (H:\DAIICIT\Sem 5\T314_Software_Engineering\Routier.jmx) - Apache JMeter (5.6.2)". The menu bar includes File, Edit, Search, Run, Options, Tools, Help. The toolbar has various icons for file operations. The left sidebar shows a tree structure with "Test Plan" expanded, containing "Router" which has "HTTP Request", "View Results in Table", and "Summary Report". The main panel displays the "Thread Group" configuration: Name: Router, Comments: [empty], Action to be taken after a Sampler error: Continue (radio button selected), Number of Threads (users): 100, Ramp-up period (seconds): 1, Loop Count: 1, Same user on each iteration (checkbox checked), Delay Thread creation until needed (checkbox unselected), Specify Thread lifetime (checkbox unselected), Duration (seconds): [empty], Startup delay (seconds): [empty]. The status bar at the bottom shows "0000:37 0/100" and the system tray indicates the date and time as "9:48 PM 12/2/2023".



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The screenshot shows the Apache JMeter 5.6.2 interface. The left sidebar displays the 'Test Plan' structure, which includes a 'Router' element containing two 'HTTP Request to home page' and two 'HTTP Request to signup page' elements, each with its own 'Summary Report' and 'View Results in Table' options. The main panel is titled 'Thread Group' and contains the following configuration:

- Name:** Router
- Comments:** Action to be taken after a Sampler error:
 - Continue
 - Start Next Thread Loop
 - Stop Thread
 - Stop Test
 - Stop Test Now
- Thread Properties**
 - Number of Threads (users):** 500
 - Ramp-up period (seconds):** 1
 - Loop Count:** Infinite 1
 - Same user on each iteration
 - Delay Thread creation until needed
 - Specify Thread lifetime
 - Duration (seconds):** [empty field]
 - Startup delay (seconds):** [empty field]

The bottom of the screen features a toolbar with various icons for file operations, search, and system status, along with system status indicators for battery level, signal strength, and network connection.



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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

00:01:47 0/0/500

Test Plan

HTTP 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

Method: GET Path: / Content encoding:

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

Search

22:49 02-12-2023 ENG IN



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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 00:01:47 0/500

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

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 Search ENG IN 22:18 02-12-2023



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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 00:01:47 0 0/500

Test Plan Routier

- HTTP Request to home page
- View Results in Table
- Summary Report
- HTTP Request to signup page
- View Results in Table
- 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	SampleTime(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	22:16:09.916	Routier 1-74	HTTP Request to h...	37543	✓	1881	240	158	2
6	22:16:09.886	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	22:16:09.876	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	22:16:09.918	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	22:16:09.764	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	22:16:09.808	Routier 1-21	HTTP Request to h...	37955	✓	1880	240	200	48

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

23°C Haze

Search

22:19 ENG IN 02-12-2023



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The screenshot shows the JMeter interface with a 'Test Plan' tree on the left containing 'Router' and 'Login' elements. A 'View Results in Table' listener is attached to the 'Router' element. The main area displays a 'View Results in Table' window with the following details:

- Name:** View Results in Table
- Comments:** Write results to file / Read from file
- Filename:** (empty)
- Buttons:** Browse, Log/Display Only, Errors, Successes, Configure

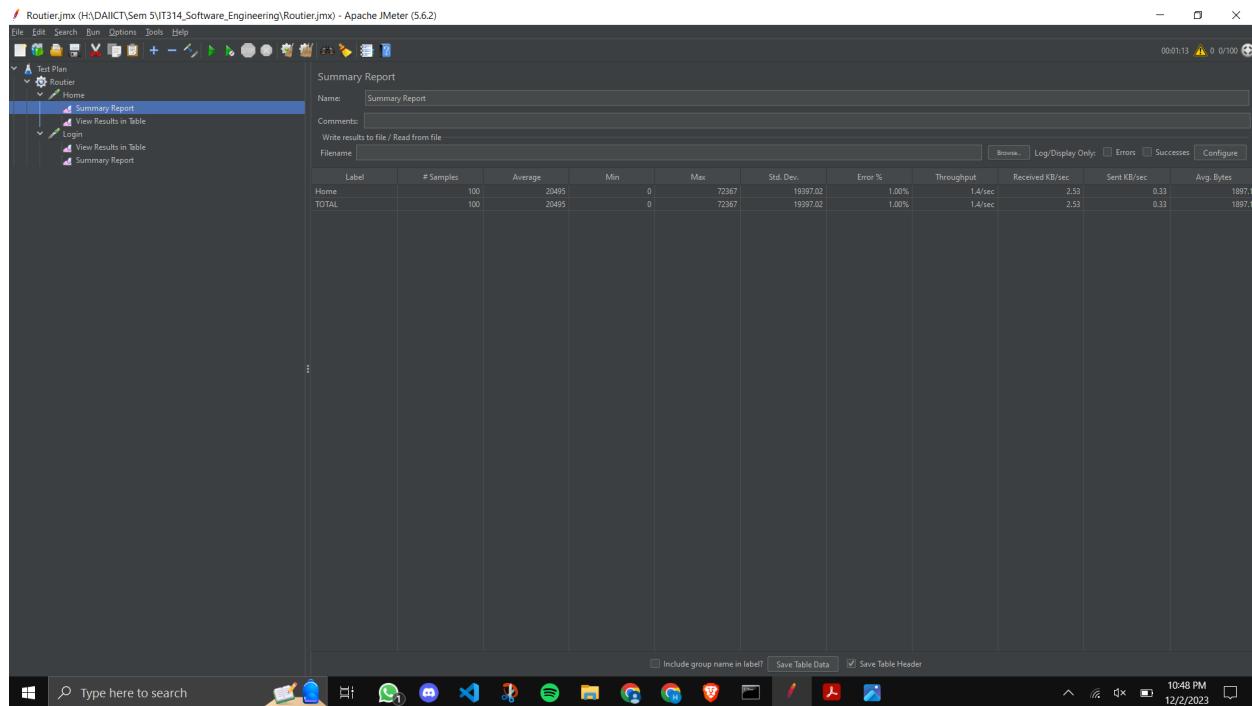
The data table has the following columns:

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
66	22:46:27.001	Routier-1-66	Home	36277	✓	1881	246	36117	36086
67	22:46:26.981	Routier-1-64	Home	36317	✓	1880	246	36129	36100
68	22:46:27.100	Routier-1-76	Home	36250	✓	1879	246	36211	36115
69	22:46:27.121	Routier-1-78	Home	36335	✓	1881	246	36190	36140
70	22:46:27.091	Routier-1-75	Home	36371	✓	1879	246	36221	36174
71	22:46:27.050	Routier-1-71	Home	36423	✓	1881	246	36261	36156
72	22:46:27.081	Routier-1-74	Home	36394	✓	1878	246	36230	36125
73	22:46:27.061	Routier-1-72	Home	36416	✓	1881	246	36250	36145
74	22:46:27.040	Routier-1-70	Home	36460	✓	1879	246	36272	36194
75	22:46:27.031	Routier-1-69	Home	36469	✓	1881	246	36280	36173
76	22:46:27.131	Routier-1-78	Home	36370	✓	1879	246	36181	36130
77	22:46:27.071	Routier-1-73	Home	36430	✓	1879	246	36240	36153
78	22:46:27.111	Routier-1-77	Home	36393	✓	1879	246	36207	36184
79	22:46:27.072	Routier-1-63	Home	36343	✓	1879	246	36031	36104
80	22:46:27.192	Routier-1-83	Home	36323	✓	1878	246	36216	36164
81	22:46:27.209	Routier-1-87	Home	36307	✓	1879	246	36211	36136
82	22:46:27.161	Routier-1-82	Home	36355	✓	1879	246	36244	36195
83	22:46:27.219	Routier-1-88	Home	36298	✓	1879	246	36201	36145
84	22:46:27.240	Routier-1-90	Home	36277	✓	1879	246	36180	36116
85	22:46:27.141	Routier-1-80	Home	36377	✓	1879	246	36264	36215
86	22:46:27.150	Routier-1-81	Home	36368	✓	1881	246	36253	36202
87	22:46:27.181	Routier-1-84	Home	36337	✓	1881	246	36224	36176
88	22:46:27.200	Routier-1-80	Home	36320	✓	1879	246	36220	36183
89	22:46:27.259	Routier-1-95	Home	36273	✓	1879	246	36185	36211
90	22:46:27.230	Routier-1-91	Home	36287	✓	1879	246	36180	36130
91	22:46:27.243	Routier-1-85	Home	36306	✓	1879	246	36159	36126
92	22:46:27.271	Routier-1-83	Home	36355	✓	1881	246	36174	36109
93	22:46:27.250	Routier-1-85	Home	36323	✓	1879	246	36159	36113
94	22:46:27.380	Routier-1-84	Home	36263	✓	1879	246	36170	36115
95	22:46:27.322	Routier-1-98	Home	36266	✓	1881	246	36178	36126
96	22:46:27.306	Routier-1-96	Home	36282	✓	1881	246	36194	36141
97	22:46:27.322	Routier-1-97	Home	36271	✓	1878	246	36178	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	36186	36138
100	22:46:27.353	Routier-1-100	Home	72364	✓	1881	246	36179	36150

At the bottom, there are checkboxes for 'Scroll automatically' and 'Child samples?', and performance metrics: No of Samples 100, Latest Sample 72364, Average 3045, and Deviation 1937.



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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.



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- 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



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The screenshot shows the Apache JMeter 5.6.2 interface. The top menu bar includes File, Edit, Search, Run, Options, Tools, and Help. The title bar indicates the file is "Non_functional_500.jmx" located at "C:\Users\PriyanshuCoder\Desktop\sem-5\software\Project\routier\Testing\Non_functional_500.jmx". The bottom right corner shows the date "02-12-2023", time "22:25", and system status "ENG IN".

The left sidebar displays the "Test Plan" tree, which includes a "Runner" node and a selected "HTTP Request to signup page" node. Under "HTTP Request to signup page", there are two child nodes: "Summary Report" and "View Results in Table".

The main panel is titled "HTTP Request" and contains the following configuration:

- Name:** HTTP Request to signup page
- Comments:** (empty)
- Basic Advanced** tab is selected.
- Web Server** section:
 - Protocol [http]:
 - Server Name or IP: routier.vercel.app
 - Port Number: (empty)
- HTTP Request** section:
 - Method: POST
 - Path: /api/users/register
 - Content encoding: (empty)
 - Checkboxes:
 - Redirect Automatically
 - Follow Redirects (checked)
 - Use KeepAlive (checked)
 - Use multipart/form-data
 - Browser-compatible headers
- Parameters** tab (selected):

```
1 {
2   "name": "John Doe",
3   "email": "john.doe@example.com",
4   "password": "securepassword123"
5 }
```
- Body Data** tab (disabled):

(disabled)
- Files Upload** tab (disabled):

(disabled)



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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 00:01:47 0 0/500

Test Plan

- Router
 - 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:

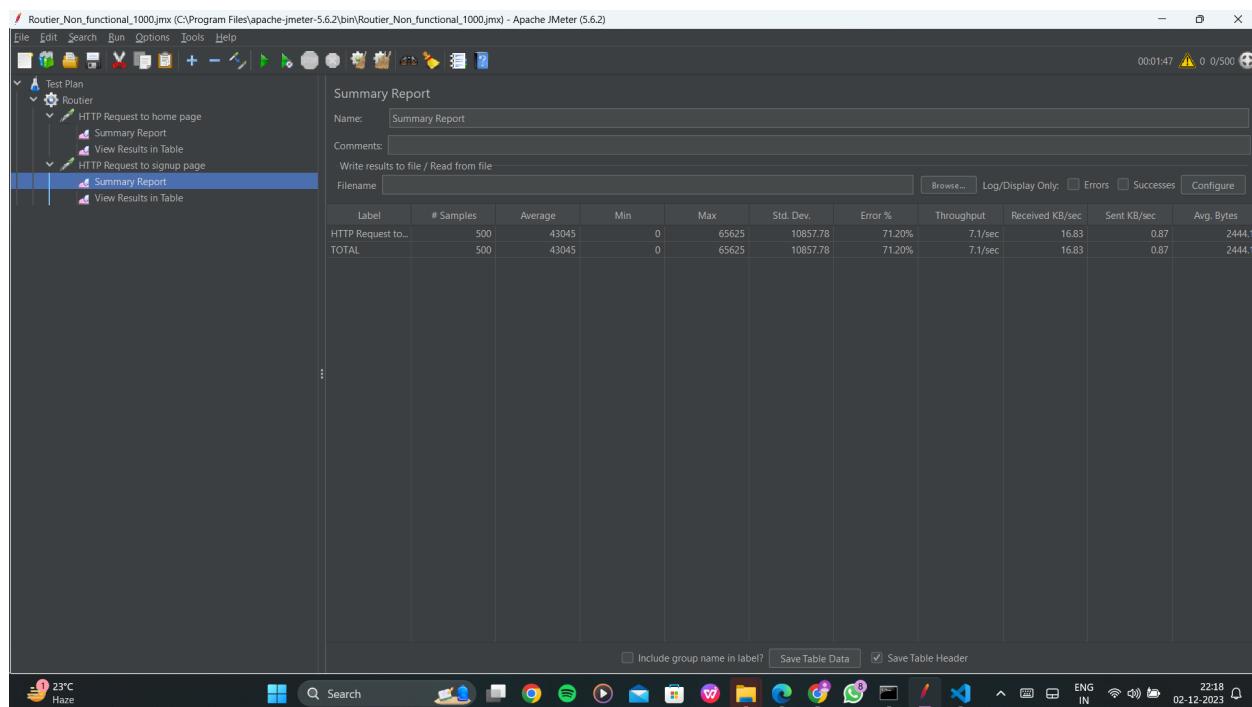
Browse... Log/Display Only: Errors Successes Configure

Sample #	Start Time	Thread Name	Label	SampleTime(ms)	Status	Bytes	Sent Bytes	Latency	Connect Time(ms)
4/6	22:16:52.303	router1-1-ssu	HTTP request to ...	611/1s	✓	1916	439	24221	24043
477	22:16:52.471	Router 1-313	HTTP Request to ...	61805	✓	1915	439	24250	24085
478	22:16:52.503	Router 1-318	HTTP Request to ...	61773	✓	1915	439	24221	24073
479	22:16:52.517	Router 1-342	HTTP Request to ...	63594	✓	1916	439	24242	24059
480	22:16:52.534	Router 1-41	HTTP Request to ...	64410	✓	1916	439	24226	24070
481	22:16:52.628	Router 1-382	HTTP Request to ...	64318	✓	1915	439	24134	24070
482	22:16:52.517	Router 1-336	HTTP Request to ...	64427	✓	1915	439	24242	24043
483	22:16:52.643	Router 1-400	HTTP Request to ...	64302	✓	1916	439	24123	24060
484	22:16:52.610	Router 1-371	HTTP Request to ...	64335	✓	1916	439	24150	24086
485	22:16:52.534	Router 1-343	HTTP Request to ...	64411	✓	1916	439	24225	24070
486	22:16:52.611	Router 1-373	HTTP Request to ...	64335	✓	1916	439	24149	24085
487	22:16:52.626	Router 1-385	HTTP Request to ...	64320	✓	1916	439	24133	24069
488	22:16:52.643	Router 1-397	HTTP Request to ...	64606	✓	1916	439	24402	24060
489	22:16:52.616	Router 1-375	HTTP Request to ...	64841	✓	1916	439	24408	24086
490	22:16:52.643	Router 1-390	HTTP Request to ...	65355	✓	1916	439	24409	24060
491	22:16:52.642	Router 1-389	HTTP Request to ...	65356	✓	1916	439	24396	24061
492	22:16:52.626	Router 1-394	HTTP Request to ...	65372	✓	1915	439	24425	24077
493	22:16:52.503	Router 1-331	HTTP Request to ...	65495	✓	1915	439	24480	24057
494	22:16:52.534	Router 1-345	HTTP Request to ...	65464	✓	1915	439	24522	24070
495	22:16:52.641	Router 1-393	HTTP Request to ...	65355	✓	1916	439	24408	24060
496	22:16:52.456	Router 1-312	HTTP Request to ...	65542	✓	1916	439	24510	24055
497	22:16:52.642	Router 1-380	HTTP Request to ...	65356	✓	1916	439	24409	24061
498	22:16:52.642	Router 1-399	HTTP Request to ...	65356	✓	1916	439	24408	24061
499	22:16:52.642	Router 1-388	HTTP Request to ...	65356	✓	1915	439	24394	24061
500	22:16:52.548	Router 1-344	HTTP Request to ...	65450	✓	1916	439	24430	24057

Scroll automatically? Child samples? No of Samples 500 Latest Sample 65450 Average 43045 Deviation 1085 22:18 ENG IN 02-12-2023



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



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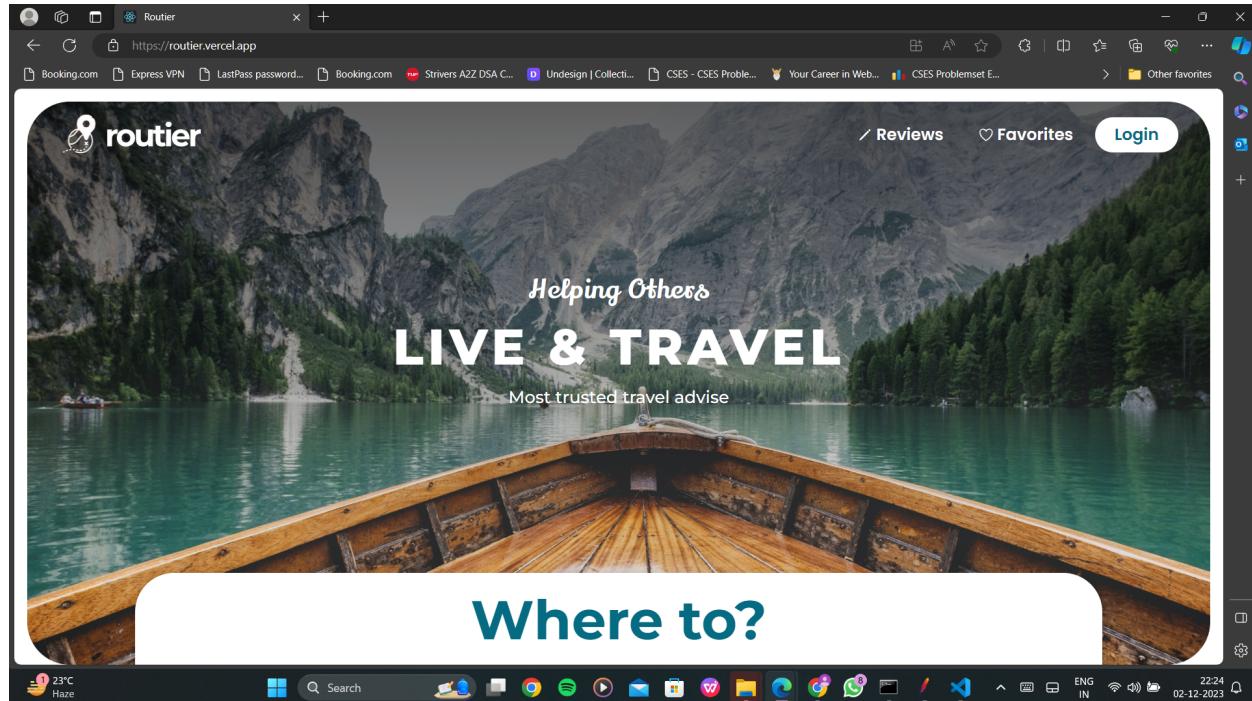


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2. Compatibility testing

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)



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You are signed in as 202101165 | Testing - Google Docs | Penetration testing toolkit, read | Routier

routier.vercel.app/home

routier

✓ Reviews ❤ Favorites Log out

Helping Others

LIVE & TRAVEL

Most trusted travel advise

Where to?

23°C Haze

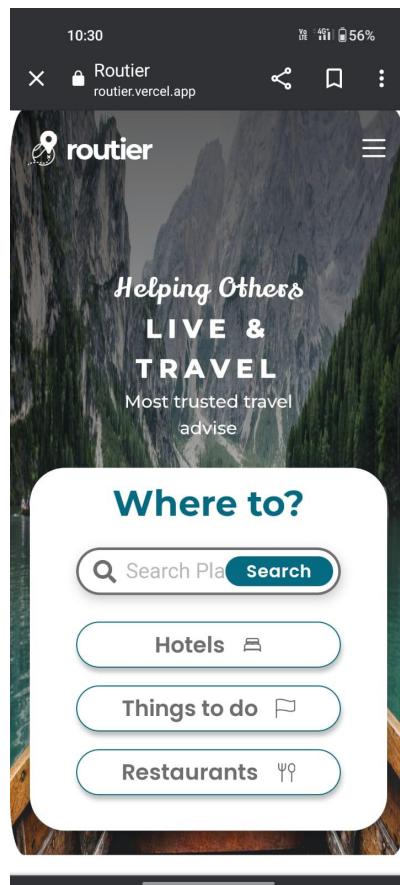
Search

22:25 02-12-2023 ENG IN

Chrome(Android)



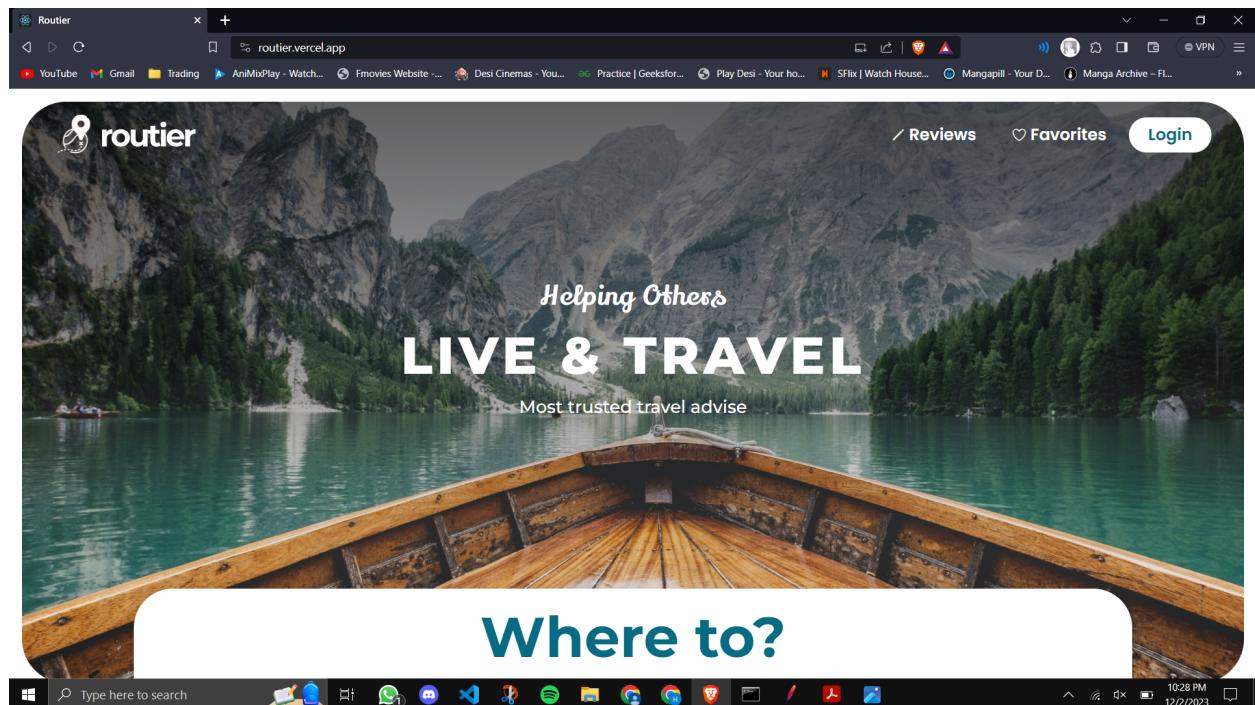
**ENGINEERS WITH
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Brave:



ENGINEERS WITH SOCIAL RESPONSIBILITY

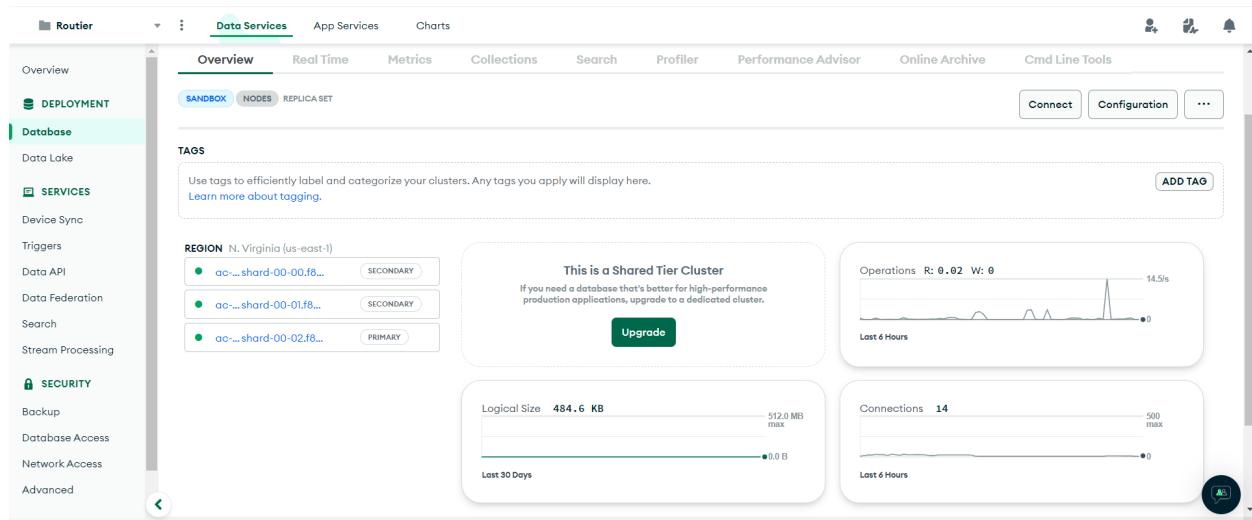


3. Reliability testing

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



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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.



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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.



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Website Vulnerability Scanner Result

[+ New Scan](#) [⟳ Rescan](#) [⬇ Export](#) [📅 Schedule periodic scan](#) [✖ Report incorrect 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**



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└ 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.



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└ 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.



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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