BLEKINGE INSTITUTE OF TECHNOLOGY

User Documentation

TCP Evaluation in Semi-Live Streams

'Team Enigma'

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1. GLOSSARY AND ABBREVIATION:

RTT - Round Trip Time
The total time taken for a data unit to reach destination from source and the acknowledgement from destination to reach the source.

SST - Socket Setup Time
The time taken for the three-way handshake to be executed.

ACK - Acknowledgement
The packet indicating the acknowledgement number of the packet received.

SEQ - Sequence Number
The number assigned to the data packet, which is being sent to destination.

MySQL - Structured Query Language
Used for storing and managing data in relational database management system.

PHP - Hypertext Preprocessor
It is a server side scripting language for creating dynamic Web pages.

HTML - Hypertext Markup Language
This protocol defines how messages are transmitted and formatted and interaction with the web pages.

RRD tool - Round Robin Database Tool
The RRD tool handles time series data which includes RRD data for graphical representation of the retrieved or stored data.

TCP – Transfer Control Protocol
A Standard way in which the communication between two systems takes place.

SSH – Secure Socket Shell
A UNIX based command interface protocol for securely getting access to a remote computer.

DPMI – Distributed Passive Measurement Infrastructure
Efficient use of passive monitoring equipment providing up-to-date and relevant data.

GUI – Graphical User Interface
An interface that allows users to interact with electronic devices through graphical icons.

2. REQUIRED PREREQUISITES BEFORE THE USAGE OF THE TOOL:

- Basic knowledge about how to use the hardware
- Know-how about the web browser
- Computer physical interface connections and checking the IP address
- Basic knowledge about Linux Ubuntu and how to install the prerequisites in the terminal.
- Database information
- Information about Web GUI

3. KEY FEATURES OF THE DEVELOPED TOOL:

- The packets are captured from the consumer.
- The captured packets are analyzed.
- The user is allowed to select the threshold level and notifications are set.
- The tool calculates the RTT, SST and Data Rate per Stream for the TCP packets captured in the network.
- The data from the RRD tool is taken and the plotted graphs are displayed on the Web GUI.

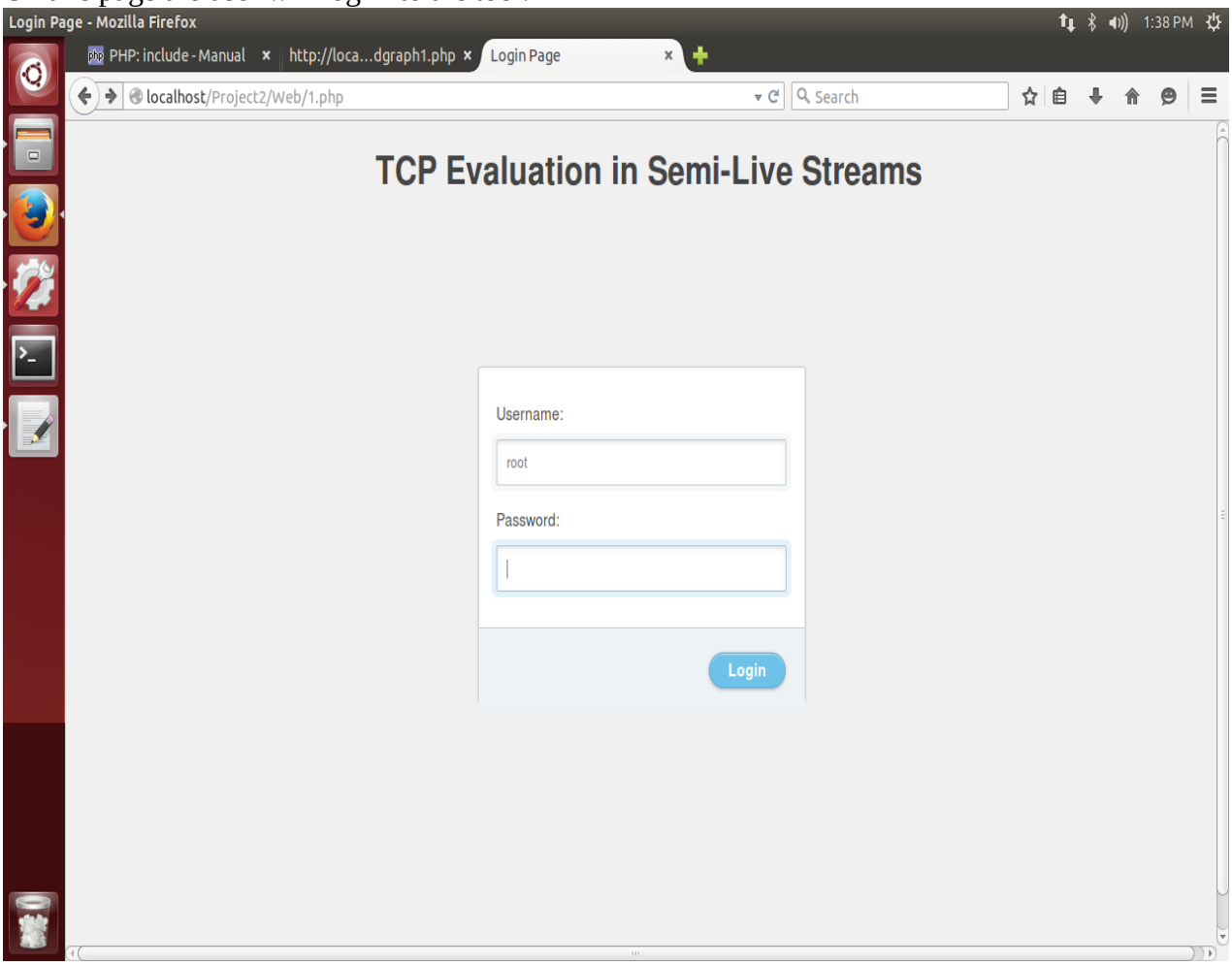
4. BASIC USAGE:

- First, the tool must be installed.
- Next, the user has to login to the localhost PHP and give the input credentials.
- The user has to select the metrics, device, and stream and has to set the threshold levels to receive the notifications if the threshold levels have been compromised.
- The RTT, SST and Data Rate per Stream are calculated by the tool and stored in the RRD.
- The user has to select the generation of graphs option after which he will be able to view the graphical format of the evaluated data on the Web GUI.
- All the information about the user credentials and device details will be saved into the MySQL database. These will be updated from time to time.
- If any 3rd party user requests cross correlation of data, device information is first checked in the RRD and MySQL databases and then is sent to the 3rd party through the RESTful API.

5. A VIEW OF THE TOOL:

a. Login page

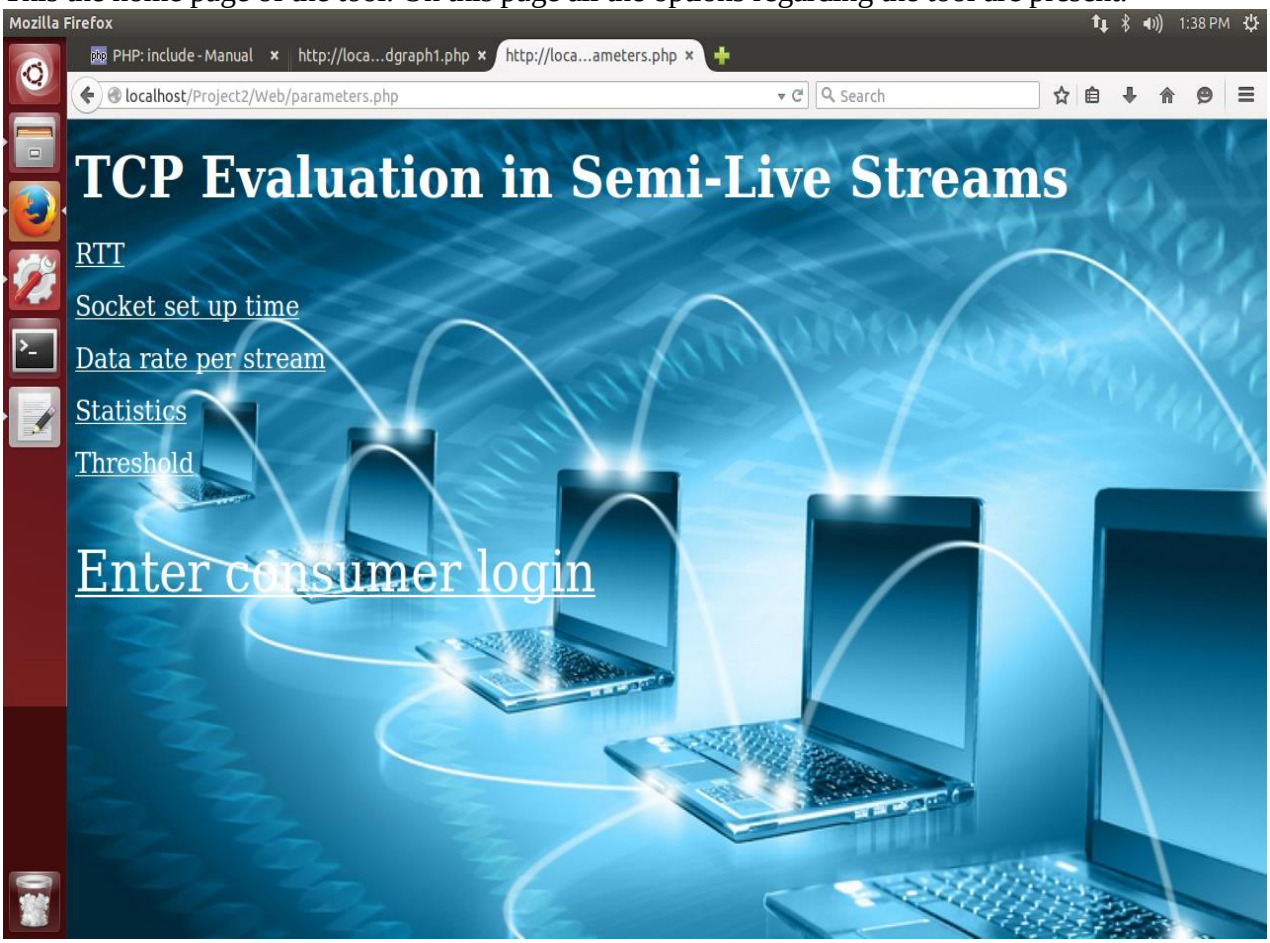
On this page the user will log in to the tool.



After authentication the simple dashboard of the tool will appear.

b. Simple Dashboard

This the home page of the tool. On this page all the options regarding the tool are present.



The user will now click on the ‘consumer login’ option.

c. Consumer detail page

The user will enter the details of the consumer in the given fields and click on the ‘submit’ button.

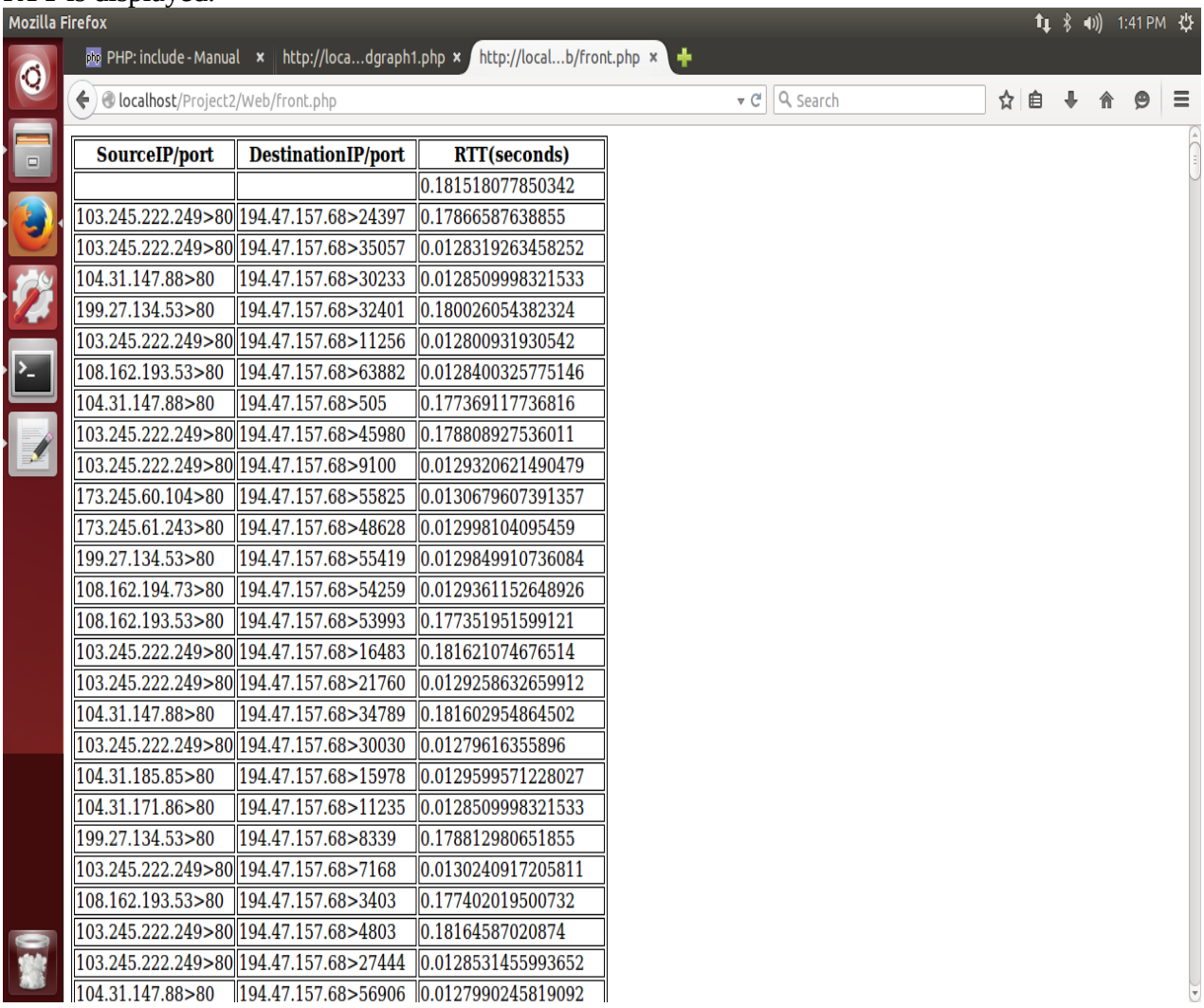
The user must come back to the previous page after clicking on the ‘submit’ button.

The user must open the terminal and change the directory into ‘project 2’ then into ‘web’.

Then type the command ***perl head.pl*** for the code to run

d. RTT page

On the home page of the tool the user will click on the 'RTT' button. Then the page with RTT is displayed.

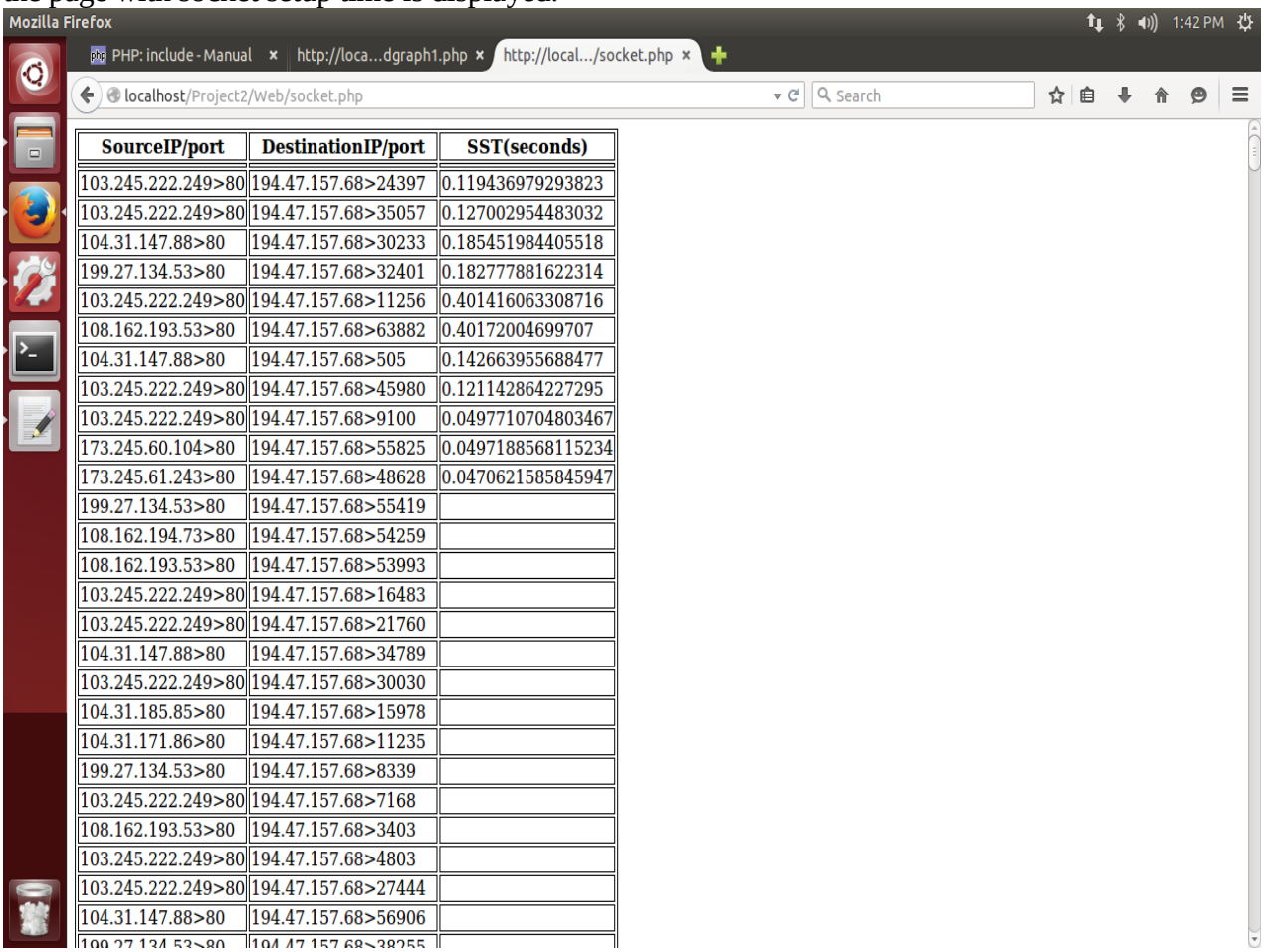


SourceIP/port	DestinationIP/port	RTT(seconds)
		0.181518077850342
103.245.222.249>80	194.47.157.68>24397	0.17866587638855
103.245.222.249>80	194.47.157.68>35057	0.0128319263458252
104.31.147.88>80	194.47.157.68>30233	0.0128509998321533
199.27.134.53>80	194.47.157.68>32401	0.180026054382324
103.245.222.249>80	194.47.157.68>11256	0.012800931930542
108.162.193.53>80	194.47.157.68>63882	0.0128400325775146
104.31.147.88>80	194.47.157.68>505	0.177369117736816
103.245.222.249>80	194.47.157.68>45980	0.178808927536011
103.245.222.249>80	194.47.157.68>9100	0.0129320621490479
173.245.60.104>80	194.47.157.68>55825	0.0130679607391357
173.245.61.243>80	194.47.157.68>48628	0.012998104095459
199.27.134.53>80	194.47.157.68>55419	0.0129849910736084
108.162.194.73>80	194.47.157.68>54259	0.0129361152648926
108.162.193.53>80	194.47.157.68>53993	0.177351951599121
103.245.222.249>80	194.47.157.68>16483	0.181621074676514
103.245.222.249>80	194.47.157.68>21760	0.0129258632659912
104.31.147.88>80	194.47.157.68>34789	0.181602954864502
103.245.222.249>80	194.47.157.68>30030	0.01279616355896
104.31.185.85>80	194.47.157.68>15978	0.0129599571228027
104.31.171.86>80	194.47.157.68>11235	0.0128509998321533
199.27.134.53>80	194.47.157.68>8339	0.178812980651855
103.245.222.249>80	194.47.157.68>7168	0.0130240917205811
108.162.193.53>80	194.47.157.68>3403	0.177402019500732
103.245.222.249>80	194.47.157.68>4803	0.18164587020874
103.245.222.249>80	194.47.157.68>27444	0.0128531455993652
104.31.147.88>80	194.47.157.68>56906	0.0127990245819092

The user must come back to the previous page after seeing the RTT values.

e. Socket set up time page

On the home page of the tool the user will click on the ‘Socket set up time’ button. Then the page with socket setup time is displayed.

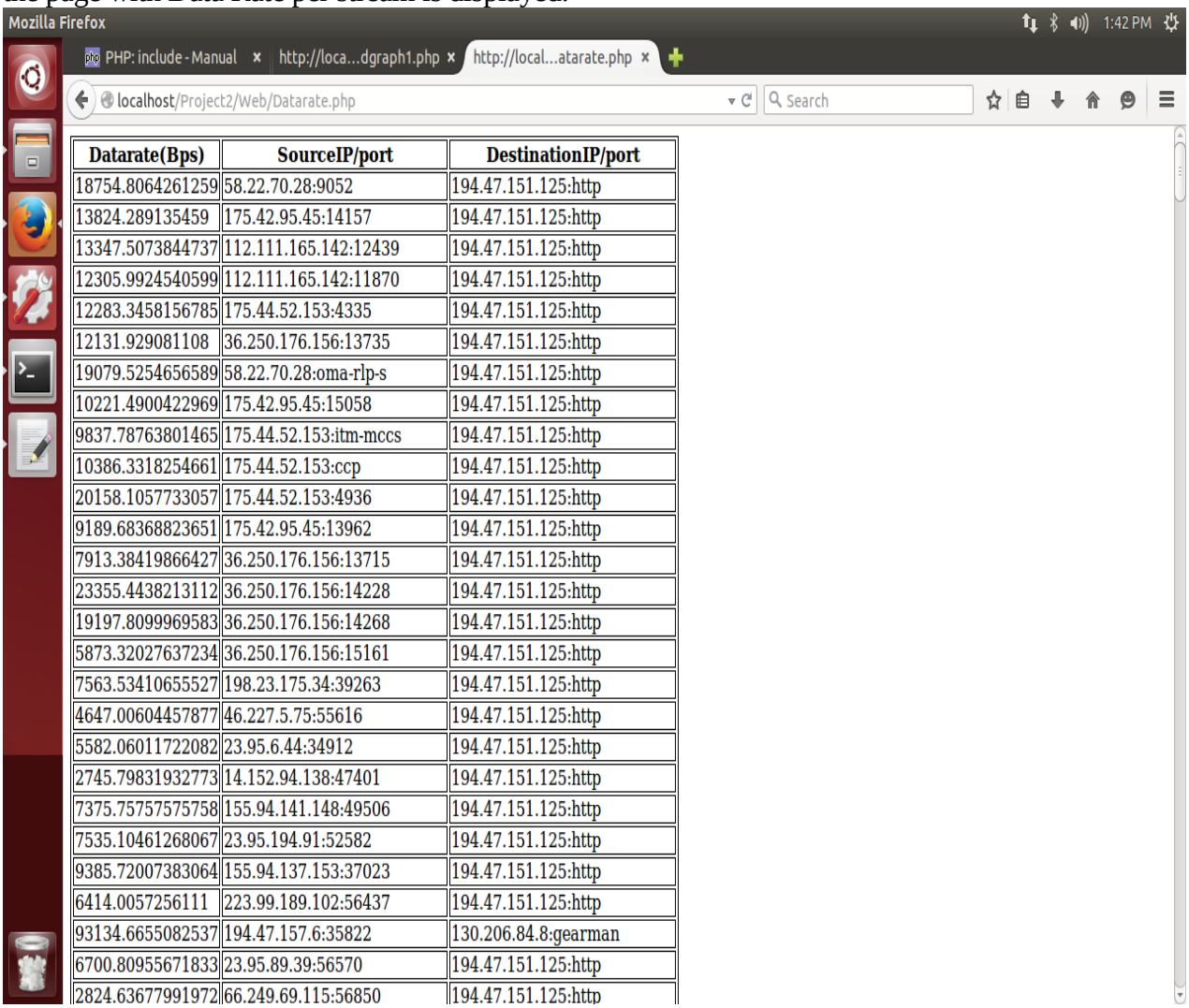


SourceIP/port	DestinationIP/port	SST(seconds)
103.245.222.249>80	194.47.157.68>24397	0.119436979293823
103.245.222.249>80	194.47.157.68>35057	0.127002954483032
104.31.147.88>80	194.47.157.68>30233	0.185451984405518
199.27.134.53>80	194.47.157.68>32401	0.182777881622314
103.245.222.249>80	194.47.157.68>11256	0.401416063308716
108.162.193.53>80	194.47.157.68>63882	0.40172004699707
104.31.147.88>80	194.47.157.68>505	0.142663955688477
103.245.222.249>80	194.47.157.68>45980	0.121142864227295
103.245.222.249>80	194.47.157.68>9100	0.0497710704803467
173.245.60.104>80	194.47.157.68>55825	0.0497188568115234
173.245.61.243>80	194.47.157.68>48628	0.0470621585845947
199.27.134.53>80	194.47.157.68>55419	
108.162.194.73>80	194.47.157.68>54259	
108.162.193.53>80	194.47.157.68>53993	
103.245.222.249>80	194.47.157.68>16483	
103.245.222.249>80	194.47.157.68>21760	
104.31.147.88>80	194.47.157.68>34789	
103.245.222.249>80	194.47.157.68>30030	
104.31.185.85>80	194.47.157.68>15978	
104.31.171.86>80	194.47.157.68>11235	
199.27.134.53>80	194.47.157.68>8339	
103.245.222.249>80	194.47.157.68>7168	
108.162.193.53>80	194.47.157.68>3403	
103.245.222.249>80	194.47.157.68>4803	
103.245.222.249>80	194.47.157.68>27444	
104.31.147.88>80	194.47.157.68>56906	
199.27.134.53>80	194.47.157.68>38255	

The user must come back to the previous page after seeing the socket setup time values.

f. Data Rate per stream page

On the home page of the tool the user will click on the ‘Data Rate per stream’ button. Then the page with Data Rate per stream is displayed.

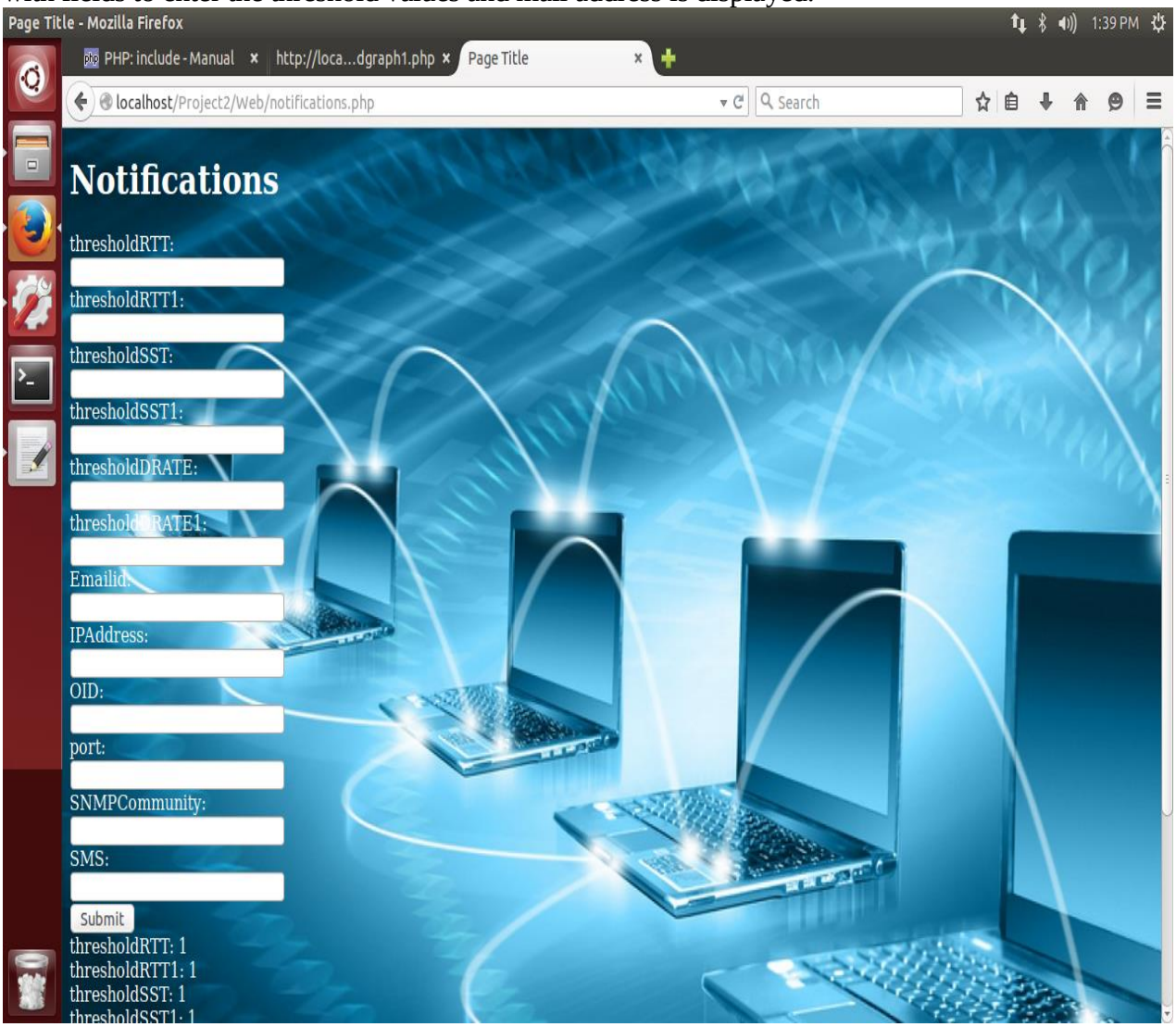


Datarate(Bps)	SourceIP/port	DestinationIP/port
18754.8064261259	58.22.70.28:9052	194.47.151.125:http
13824.289135459	175.42.95.45:14157	194.47.151.125:http
13347.5073844737	112.111.165.142:12439	194.47.151.125:http
12305.9924540599	112.111.165.142:11870	194.47.151.125:http
12283.3458156785	175.44.52.153:4335	194.47.151.125:http
12131.929081108	36.250.176.156:13735	194.47.151.125:http
19079.5254656589	58.22.70.28:oma-rlp-s	194.47.151.125:http
10221.4900422969	175.42.95.45:15058	194.47.151.125:http
9837.78763801465	175.44.52.153:itm-mccs	194.47.151.125:http
10386.3318254661	175.44.52.153:ccp	194.47.151.125:http
20158.1057733057	175.44.52.153:4936	194.47.151.125:http
9189.68368823651	175.42.95.45:13962	194.47.151.125:http
7913.38419866427	36.250.176.156:13715	194.47.151.125:http
23355.4438213112	36.250.176.156:14228	194.47.151.125:http
19197.8099969583	36.250.176.156:14268	194.47.151.125:http
5873.32027637234	36.250.176.156:15161	194.47.151.125:http
7563.53410655527	198.23.175.34:39263	194.47.151.125:http
4647.00604457877	46.227.5.75:55616	194.47.151.125:http
5582.06011722082	23.95.6.44:34912	194.47.151.125:http
2745.79831932773	14.152.94.138:47401	194.47.151.125:http
7375.75757575758	155.94.141.148:49506	194.47.151.125:http
7535.10461268067	23.95.194.91:52582	194.47.151.125:http
9385.72007383064	155.94.137.153:37023	194.47.151.125:http
6414.0057256111	223.99.189.102:56437	194.47.151.125:http
93134.6655082537	194.47.157.6:35822	130.206.84.8:gearman
6700.80955671833	23.95.89.39:56570	194.47.151.125:http
2824.63677991972	66.249.69.115:56850	194.47.151.125:http

The user must come back to the previous page after seeing the Data Rate per stream values.

g. Thresholds input page

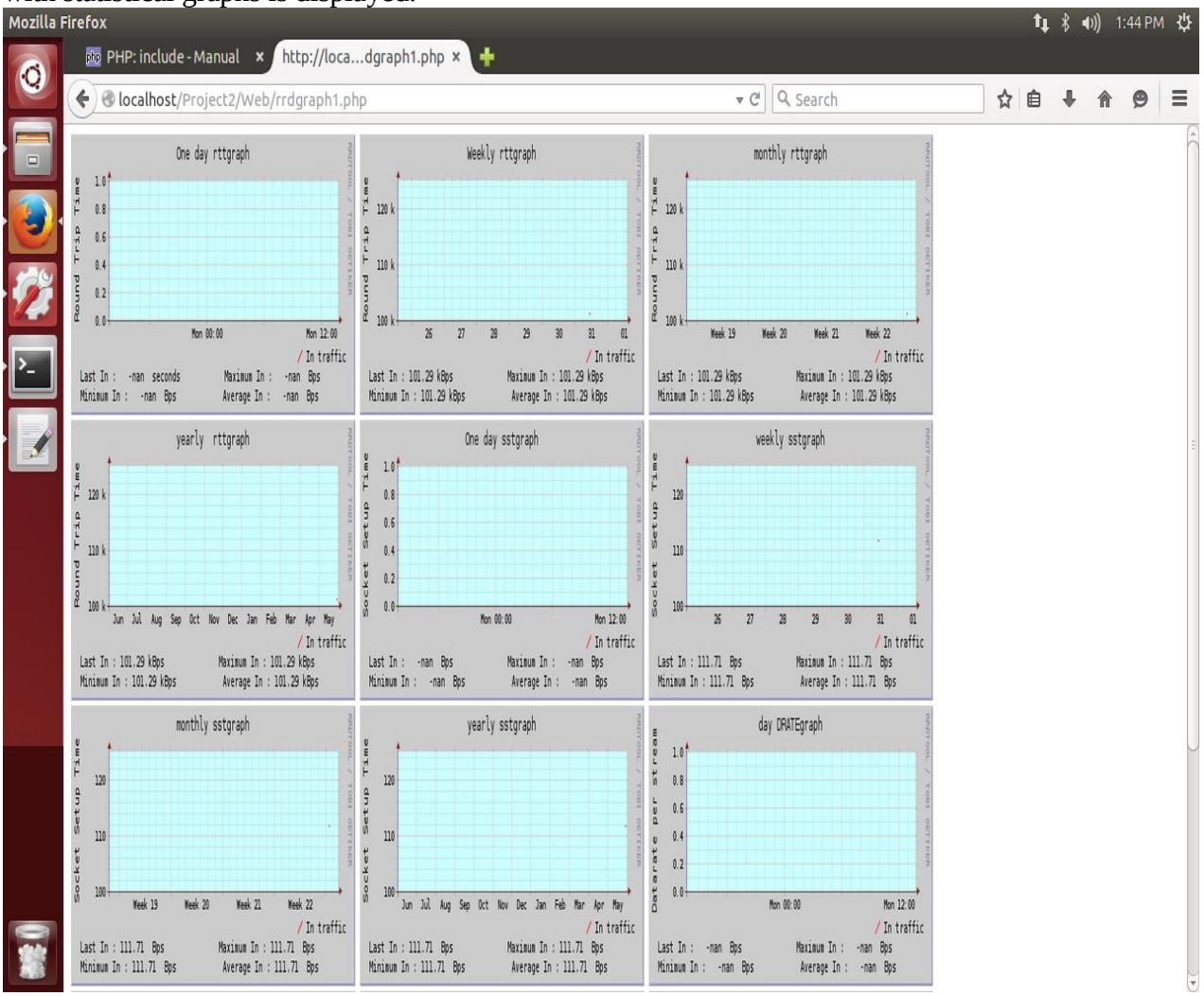
On the home page of the tool the user will click on the ‘Threshold’ button. Then the page with fields to enter the threshold values and mail address is displayed.



The user must come back to the previous page after entering the asked values in the fields specified.

h. Statistics page

On the home page of the tool the user will click on the ‘Statistics’ button. Then the page with statistical graphs is displayed.



6. FINAL RESULTS THE USER GETS TO KNOW FROM THE TOOL:

- The tool calculates the RTT, SST and the Data Rate of the stream selected by the user.
- The graphical format of the evaluated data is observed on the GUI.
- The evaluated data can also be exported to any 3rd party data through RESTful API
- Threshold notifications are generated which might be reach the user through email and traps