EVALUATING HTTP PERFORMANCE FROM STREAMS

SOFTWARE REQUIREMENT SPECIFICATION (SRS)

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- **Document Type:** Software Requirements Specification(SRS)

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1. PREFACE:

This project concerns on how to evaluate HTTP performance from streams. We describe the updated version (v1.5) release where we elucidate on how to develop a tool to monitor the HTTP traffic in a typical data center.

The document is partitioned into various sections. Section 2 gives an overview of the abbreviations used in the document. Section 3 gives a description of the system architecture of the tool. Section 4 specifies the requirements of the user and the system. The last section suggests the references used to prepare this document.

Release v1.5 on 2015-08-24

- Updated release

Version history is as follows:

PUBLICATION DATE	VERSION	DESCRIPTION	CHANGES
2015-08-24	v1.5	Updated	Updated the following from the feedback of CEO • Modified the requirement IDs of the test tables. • Added requirement for REST API to import data from a 3rd party.
2015-06-01	v1.4	Updated	Updated the following from feedback of CEO • Modified the modules in the system design.
2015-05-20	v1.3	Updated	Updated the following from feedback of CEO: • And also changed the errors in the text of 3.1 module. • In the system and user requirements sections we have mentioned the required TESTs for the each requirements.

2015-05-14	v1.2	Updated	Updated the following from the feedback of CEO • System architecture Modified module 3 • Provided the required text for the modules. Provided the description for each module • Corrected the RESTful API module. • System requirements Changes made to SYS_FR1 split into two requirements.
2015-05-05	v1.1	Updated	Updated the following from Updated the following from the feedback of CEO • System architecture Provided the changes to modules of system architecture User requirements 1. Changes made to USR_REQ_FR1. 2. Changes made to USR_REQ_FR2. 3. Changes made to USR_REQ_FR5. 4. Changes made to USR_REQ_FR7. • System requirements 1. Changes made to SYS_FR1. 2. Changes made to SYS_FR3. 3. Changes made to SYS_FR4
2015-04-27	v1.0	Initial Release	

2. GLOSSARY AND ABBREVIATIONS:

HTTP: Hypertext Transfer Protocol

It is a protocol at the application level for communication of data between the network elements such as clients and servers.

GUI: Graphical User Interface

An interface which allows the users to communicate with the electronic devices through visual icons. In some cases, it contains audio feedback as well as voice control.

DPMI: Distributed Passive Measurement Infrastructure [1] [2]

This interface is used to read the data stream at various measuring points.

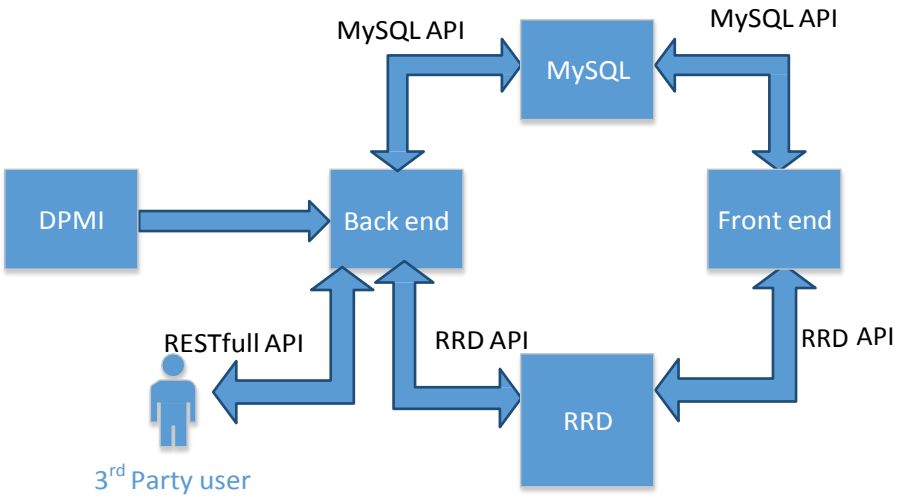
RESTful: Representational State Transfer

An architectural pattern to improve portability, scalability of the system.

API: Application Programming Interface

This specifies how software components should interact with each other.

3. SYSTEM ARCHITECTURE:

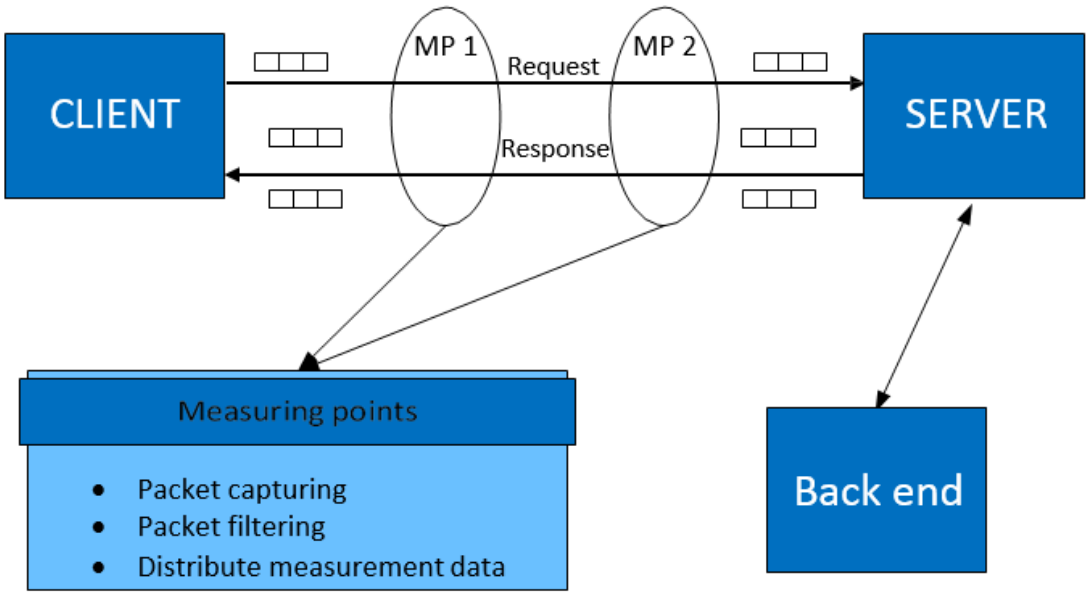


There are four modules in System Architecture:

1. Capturing of streaming packets.
2. Front end
3. Back end
4. RESTful API

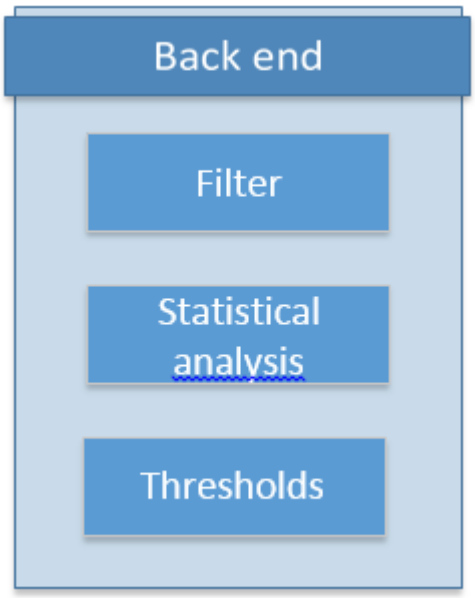
3.1 Module 1:
Capture of streaming packets:

The measuring points are placed in between server and client which are used to capture and filter the HTTP packets. The tool which is connected on the server side is used to display the statistical analysis on the user interface.

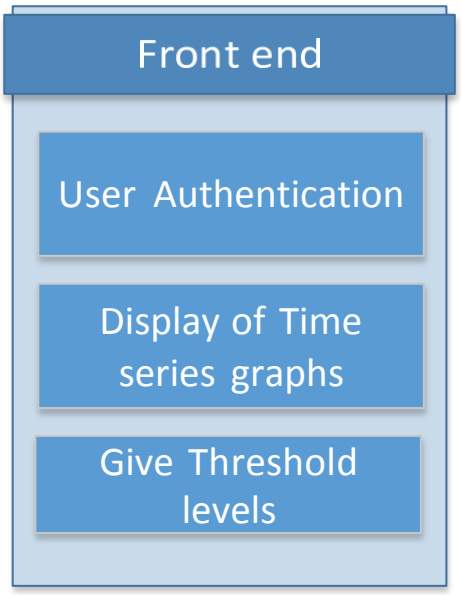


3.2 Module 2:
Back End

In the Backend module, we are providing the operation of our tool, to monitor the environment. In this, we are providing filter to capture the packets from DPMI. We provide the statistical information for the required metrics. And, we also provide the threshold levels per server.

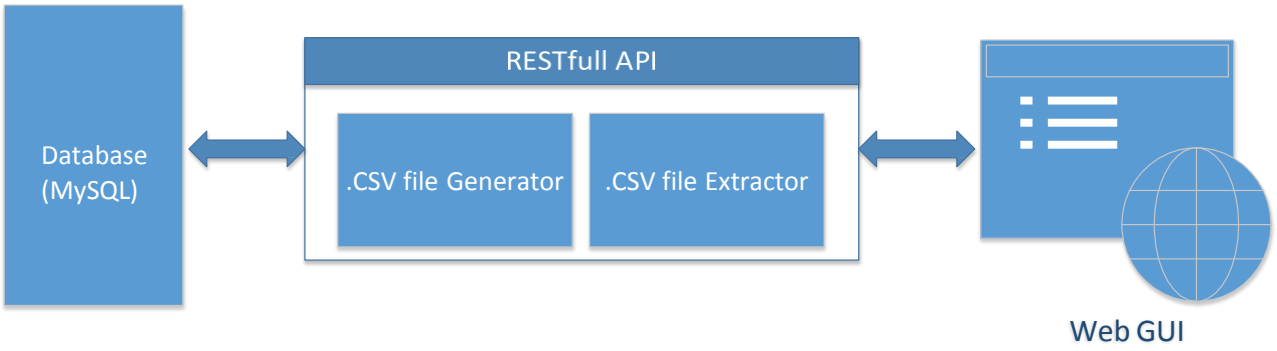


3.3 Module 3
Front end:



In the front end, there is a user authentication which can be used to login into the tool, to view the graphs for the performance metrics. And, we can also assign different threshold levels for the servers.

3.4 Module 4:
RESTful API:



This module is connected to the third party via a RESTful API, to import and export data from the Third party user .We provide ta CSV file Generator to the user Web GUI.

4. Requirements:

In the requirements section we divide the requirements into two parts i.e., User requirements and System requirements. For each and every requirement we will provide Functional and Non-functional requirements.

4.1 User Requirements:

This tool shall monitor the HTTP performance of servers present in the data center showing the response time and estimate the bit-rate from the web server.

4.1.1 Functional Requirements:

a. USR_REQ_FR1: Capture Streams from DPMI.

Requirement	USR_REQ_FR1
Creation date	28th April
Change date	
Module	DPMI
Type	Functional
Dependencies	
Test	TEST_MOD_1
Assignee	Phani Dutt
Description	System must capture HTTP packets from network using DPMI measurement points
Comment	

b. USR_REQ_FR2: Analysis for Request-Response time.

Requirement	USR_REQ_FR2
Creation date	28th April
Change date	
Module:	DPMI
Type	Functional
Dependencies	USR_FRQ_FR1
Test	TEST_MOD_2
Assignee	Divya
Description	System will Analyze Request-Response time
Comment	

c. USR_REQ_FR3: Analysis for Server bit-rate

Requirement	USR_REQ_FR3
Creation date	28th April
Change date	
Module:	DPMI
Type	Functional
Dependencies	USR_FRQ_FR1
Test	TEST_MOD_2
Assignee	Samuel
Description	This will analyze the Server bit-rate
Comment	

d. USR_REQ_FR4: Analysis for Lost requests

Requirement	USR_REQ_FR4
Creation date	28th April
Change date	
Module:	DPMI
Type	Functional
Dependencies	USR_FRQ_FR1
Test	TEST_MOD_2
Assignee	Suren
Description	This will analyze the lost requests.
Comment	

e. USR_REQ_FR5: Time series graphs presented in Web GUI by using graph generating tool.

Requirement	USR_REQ_FR5
Creation date	28th April
Change date	
Module:	RRD module
Type	Functional
Dependencies	
Test	TEST_MOD_4
Assignee	Rajeev, Prafull
Description	It will provide the time series graphs for Request-response time, server bit-rate, lost requests in Web-GUI.
Comment	

f. USR_REQ_FR6: Threshold of servers

Requirement	USR_REQ_FR6
Creation date	28th April
Change date	
Module:	
Type	Functional
Dependencies	
Test	TEST_MOD_7
Assignee	Poojitha
Description	We provide the threshold per server.
Comment	

g. USR_REQ_FR7: Fault Notifications

Requirement	USR_REQ_FR7
Creation date	28th April
Change date	
Module:	
Type	Functional
Dependencies	
Test	TEST_MOD_6
Assignee	Atla Prashant
Description	A fault notification in the form of email is sent when the threshold is exceeded.
Comment	

h. USR_REQ_FR8: User Authentication

Requirement	USR_REQ_FR8
Creation date	28th April
Change date	
Module:	
Type	Functional
Dependencies	
Test	TEST_MOD_3
Assignee	Sravya
Description	User authentication is provided to access to web interface change and add data
Comment	

i. USR_REQ_FR9: RESTful API to Export data

Requirement	USR_REQ_FR9
Creation date	28th April
Change date	
Module	RESTful
Type	Functional
Dependencies	
Test	TEST_MOD_8
Assignee	Sriram Prashanth
Description	It will export data from the third party user
Comment	

j. USR_REQ_FR10: RESTful API to Import data

Requirement	USR_REQ_FR10
Creation date	28th April
Change date	
Module	RESTful
Type	Functional
Dependencies	
Test	TEST_MOD_9
Assignee	Divya
Description	It will import data from the third party user
Comment	

4.1.2 Non-Functional Requirements:

a. USR_REQ_NFR1: Documentation

Requirement	USR_REQ_NFR1
Creation date	28th April
Change date	
Type	Non-functional
Assignee	Samuel
Description	In this, we will provide the required user with input guidelines on how to use the installed software.
Comment	

4.2 System Requirements:

In this section it provides detailed description of the software system's functions, services, and operational constraints. It defines what exactly to be implemented.

4.2.1 Functional Requirements:

a. SYS_FR1: Testing in Perl Modules

Requirement	SYS_FR1
Creation date	28th April
Change date	
Type:	Functional
Assignee	Ganesh
Description	It is used to develop the backend script for the monitoring tool.
Comment	

b. SYS_FR2: Operating System

Requirement	SYS_FR2
Creation date	28th April
Change date	
Type	Functional
Description	The requirement of the operating systems: • Ubuntu 14.04 with the RAM of 2GB • The newest version of web browser
Comment	

c. SYS_FR3: To use MySQL Database

Requirement	SYS_FR3
Creation date	28th April
Change date	
Type	Functional
Assignee	Sravya
Description	It is used to store the information of the devices, their performance metrics
Comment	

d.SYS_FR4: To use Administration tool

Requirement	SYS_FR4
Creation date	28th April
Change date	
Type:	Functional
Assignee	Suren
Description	PHPMyAdmin, is the tool used to administer the Mysql database of system
Comment	

5. References:

[1] DPMI: Distributed Passive Measurement Infrastructure,

URL: https://github.com/DPMI/libcap_utils

[2] Patrik Arlos, Markus Fiedler, and Arne A.Nilsson, A Distributed Passive Measurement Infrastructure in Passive and Active Measurement Workshop (PAM05), US, 2005