

DPMI Bitrate and RESTAPI

‘Team Inferno’

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1. Preface:

The MP application does packet capturing, packet filtering and distribute measurement data. The bitrate application calculates the number of bits/time sample. This data should be stored in a database and should be accessible through a RESTAPI. A web-interface is used to start, add, remove, change, show, stop desired measurement streams by users.

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-initial release

The remainder of the document is organized as follows. In Section 2, Glossary and Abbreviations of terms used in the document is provided. Section 3 adds System Architecture. Section 4 includes Requirements- User and System Requirements. In Section 5, References are added.

2. Glossary and Abbreviations:

- **MP:** Measurement Point.

Measurement Point does the packet capturing. It is managed from MArC (Measurement Area Controller) and transfers data to consumers.

- **MAr:** Measurement Area.

Measurement Area is a common control point for one or more MPs.

- **DPMI:** Distributed Passive Measurement Infrastructure.

A passive measurement infrastructure consisting of coordinated MPs, arranged in MAr to give a view of what is going on in the network.

- **BITRATE:** The number of bits per time sample of the traffic in a network

- **API:** Application Programming Interface

API allows us to interface software components

- **GRAFANA:** It is an open source project for visualizing metrics.

3. SYSTEM ARCHITECTURE:

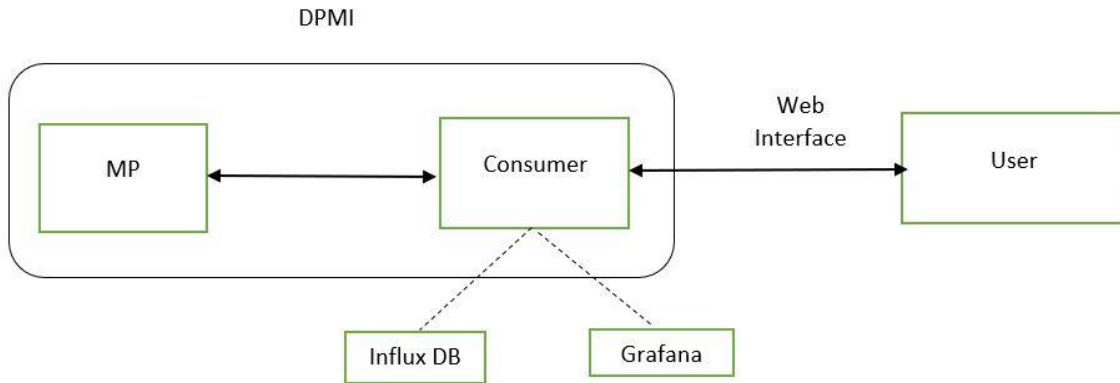


Figure 1: Architecture

3.1 MP:

The MP application taps one or more links and does packet capturing, packet filtering and distribute measurement data. It then transfers the captured data to the consumers attached to measuring area network (MArN).

3.2 Consumer:

Consumer filters the data transferred from MP and calculates the number of bits/time sample using bitrate application. Consumer is linked to an influx database which stores the data from bitrate application. The database stores the following:

- a. Bitrate values.
- b. Time stamp (Unix).
- c. Tags which correspond to a specific stream.

Grafana is an opensource software for real time analytics used for data visualization with support for various databases including Influx db. Grafana runs on default port 3000. The Grafana dashboard will display the following

- a. Data source which is linked to influx database.
- b. Measurement Value.
- c. Field key-value pairs.
- d. Tag key-value pairs.
- e. Time range.
- f. Graph of the data.

The server program runs on a default port 5000. So, all the requests from the user have to made to 5000 port.

3.3 User:

As the server program runs on default port 5000, the clients/users can access the server from terminal (using CURL) or the web browser. User should have following functionalities.

- a. User should be able to control measurement streams.
- b. User should be able to view the bitrate data within a specified time.
- c. Graphs and statistical analysis of the data should be displayed in Grafana.
- d. The web interface should be simple and easy to use

4. REQUIREMENTS:

4.1. User Requirements:

Requirements	Test	Description
Web Interface	UR_1	User requires simple web interface to control the desired measurement streams.
Flexibility	UR_2	The product should be able to flexibly control the measurement streams using start, stop, add, delete, change and show functions.
Response messages	UR_3	The user should be displayed with appropriate response messages for the functions chosen.
Retrieve data from database	UR_4	The user should also be able to retrieve the measurement data stored in the influx database.
Display the desired streams	UR_5	The user should be able to select specific tags corresponding to specific streams which are to be displayed in Grafana.
User manual	UR_6	User should be provided with a manual to handle the product.

4.2. System Requirements:

Requirements	Test	Description
Measurement Setup	SR_1	We need two additional computers and an Ethernet switch of suitable speed.
Operating System	SR_2	Linux operating system is required.
Dependency packages and required modules	SR_3	Ensure that all the dependency packages and required modules are installed and are properly working.
Database	SR_4	The captured data is stored in the database.
Grafana	SR_5	Grafana should be able to display the data stored in database on real time

5. REFERENCES:

- [1] Patrick Arlos, Markus Fiedler, and Arne A. Nilsson. A Distributed Passive Measurement Infrastructure. In Passive and Active Measurement Workshop (PAM05), US, 2005.
- [2] SOFTWARE ENGINEERING by Ian Sommerville ninth edition Pearson Education Inc.