bagisto

Performance Benchmarking Report

BAGISTO

v1.2.0

A Product of **Webkul Software**

Preface _

Bagisto is an eCommerce ecosystem designed for all to build and scale your business. It's a free and open-source eCommerce framework that offers you a wide range of functionality and lets you have total control of your store. Built on top of Laravel stack, it is coupled with easy product information management and fast time to market the product. Besides, the framework is very flexible and easy to use even for non-tech savvies.

The purpose of this whitepaper is to validate the performance Bagisto ecommerce store with 1 million products against concurrent users upto 500.

Store considered for benchmarking consists of two tier server architecture having application and database on separate nodes. Beside code structure optimisation, no other external cache or server side accelerator has been implemented on the server. Server specifications and nature of products present in the store have been mentioned in the next section of this report.

Server has been tuned to handle 500-600 concurrent user connections. Multiple iterations of benchmarking have been done mimicing various customer activities like home page browsing, sign up, sign in, add to cart and accessing products and categories.

Store Specifications _

Name	Value
Operating System	Ubuntu 18.04
Database	Mysql 5.7
Bagisto Version	1.2.0
Application Server RAM/CPU	8 GB RAM/2 vCPU cores
Application Storage space	80 GB
Swap Memory	4 GB
Mysql Server RAM/CPU	8 GB RAM/2 vCPU cores
Mysql Storage Space	30 GB
Apache2/Mysql Connections Limit	600
Cloud Platform	Amazon Web Services
Products	1.3 million SKUs through 896,248 configurable products & 424,085 individual simple products.
Categories	07
Customers	500
Attributes	30
Customer Groups	03
Number of Admins	01
Attribute Family	01

Bagisto Benchmarking with 1 Million Products using Jmeter

What is _
Apache JMeter ?

The **Apache Jmeter™** application is open-source software, a 100% pure Java application designed to load test functional behavior and measure performance. It was originally designed for testing Web Applications but has since expanded to other test functions.

Benchmarking Scenarions _

Following five scenario have been considered while benchmarking bagisto ecommerce store
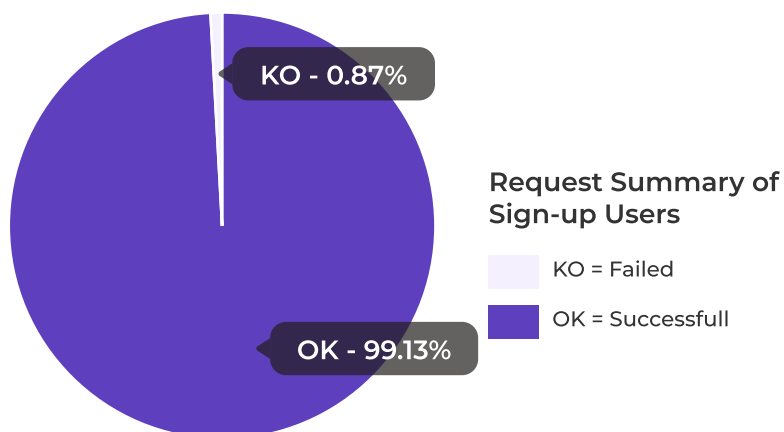
1.   User Sign up
2.   User Login
3.   Add to Cart
4.   Home Page
5.   Products and Categories

1. User Sign up _

In this scenario, multiple users are trying to register themselves on customer sign up page at the same time. Concurrent users in this case range from 50 to 500.

Case	Users	Ramp-Up	Ramp-Up Step	Hold on Target	Error%	Sign-Up Users
1	50	0	0	0	0.00	50
2	100	0	0	0	0.00	100
3	250	0	0	0	0.00	250
4	450	0	0	0	0.00	450
5	500	0	0	0	0.87	499

Requests Summary _

KO - 0.87%

OK - 99.13%

Request Summary of Sign-up Users

KO = Failed

OK = Successfull
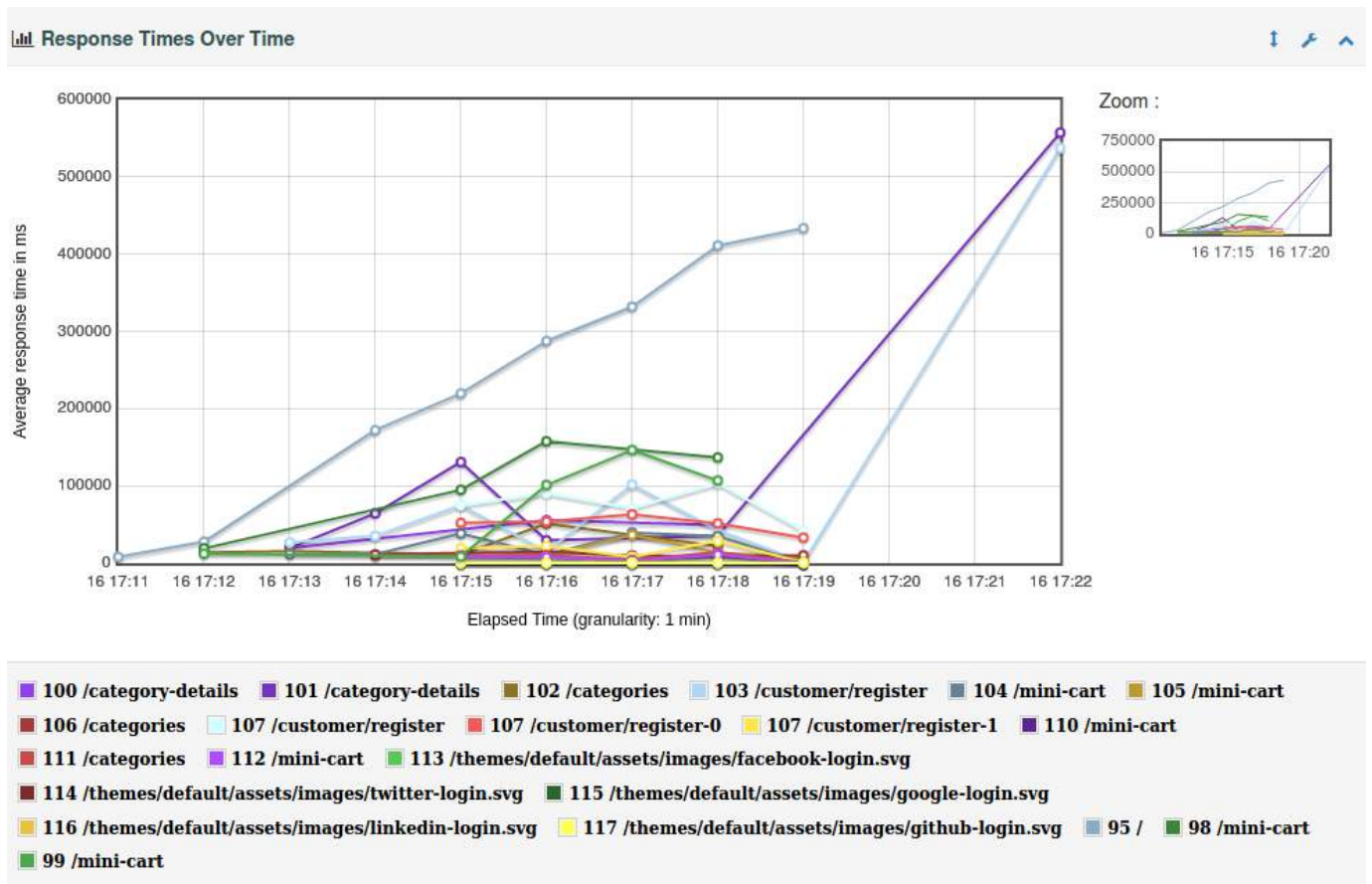
Response Time Graph _

Fig 1: Response Over Time Graph of Sign-up Users

Y-axis - It represents the response time in second or millisecond metrics.
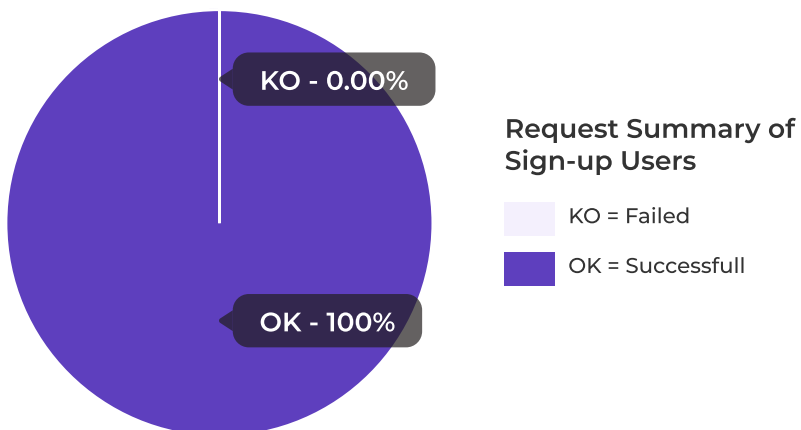X-axis - It shows the elapsed time. The elapsed time may be relative time or actual time as per the graph's setting.

2. User Login _

In this scenario, multiple registered users are attempting to login on customer sign-in page at the same time. Concurrent users in this case range from 50 to 500.

Case	Users	Ramp-Up	Ramp-Up Step	Hold on Target	Constant Timer(MS)	Error%
1	50	0	0	0	0	0.00
2	100	0	0	0	0	0.00
3	250	0	0	0	0	0.00
4	450	0	0	0	0	0.00
5	500	0	0	0	0	0.00

Requests Summary _

KO - 0.00%

OK - 100%

Request Summary of Sign-up Users

KO = Failed

OK = Successfull
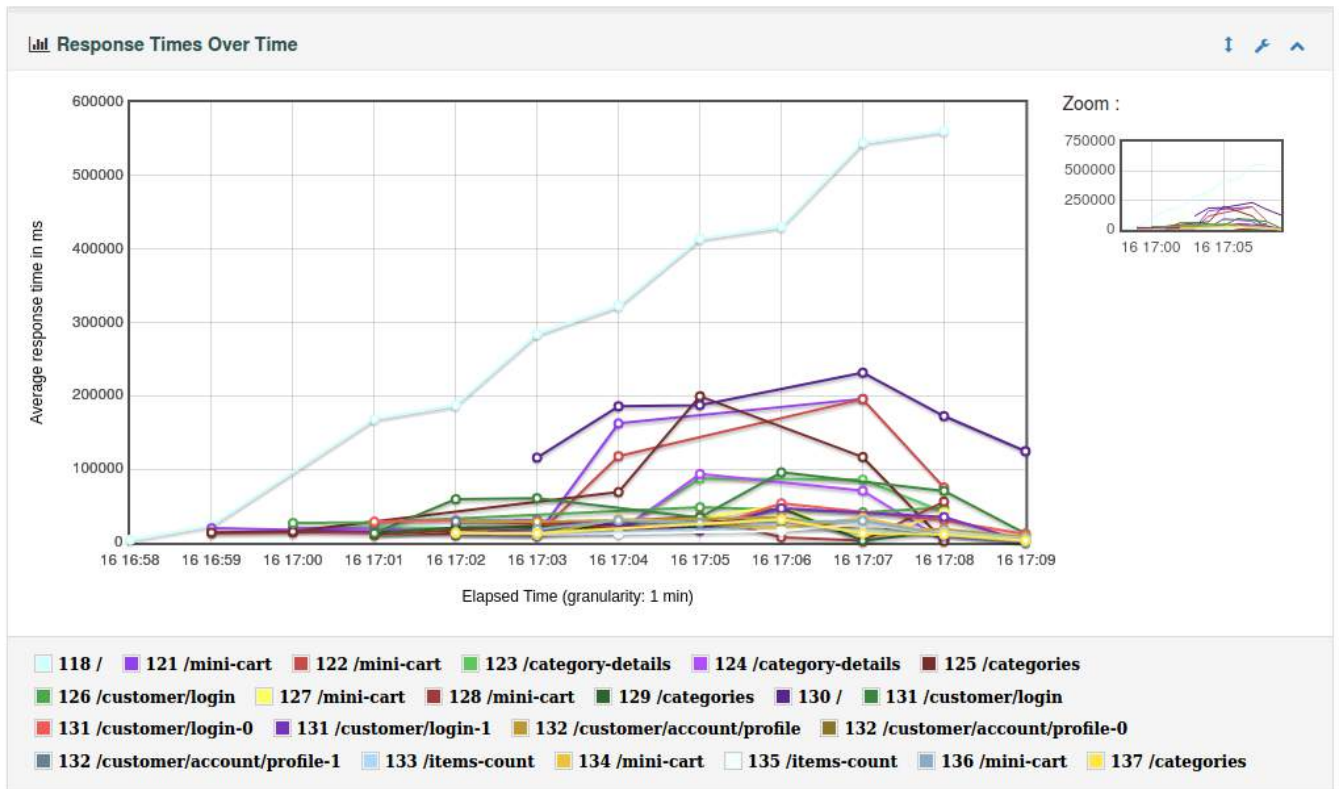
Response Time Graph _

Fig 2: Response Over Time Graph of Sign-in Users

Y-axis - It represents the response time in second or millisecond metrics.
X-axis - It shows the elapsed time. The elapsed time may be relative time or actual time as
per the graph's setting.

3. Add Product To Cart _

In the previous cases, multiple concurrent users have been able to register and login successfully. Now let's move forward and try adding products on cart.

In this iteration, multiple users are logging in and adding a product on cart at the same time. Concurrent users in this iteration range from 50 to 500.

Case	Users	Ramp-Up	Ramp-Up Step	Hold on Target	Constant Timer(MS)	Error%	Add to Cart Success (User)
1	50	0	0	0	0	0.00	50
2	100	0	0	0	0	0.00	100
3	300	0	0	0	0	0.00	300
4	400	0	0	0	0	0.00	400
5	500	0	0	0	0	0.00	500

Requests Summary _

KO - 0.00%

OK - 100%

Request Summary of Sign-up Users

KO = Failed

OK = Successfull
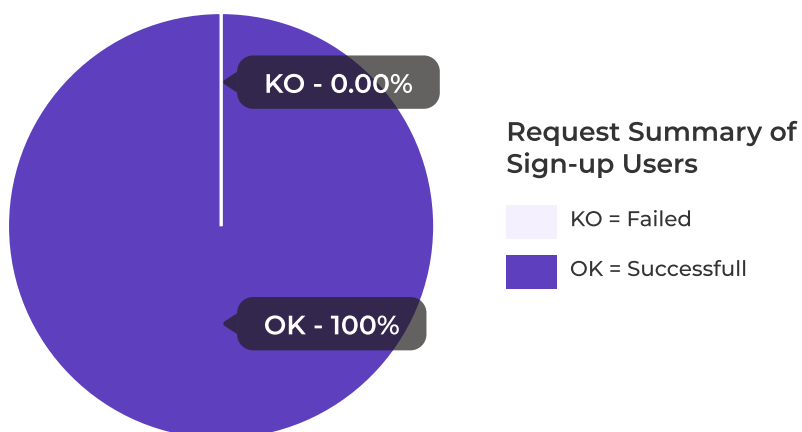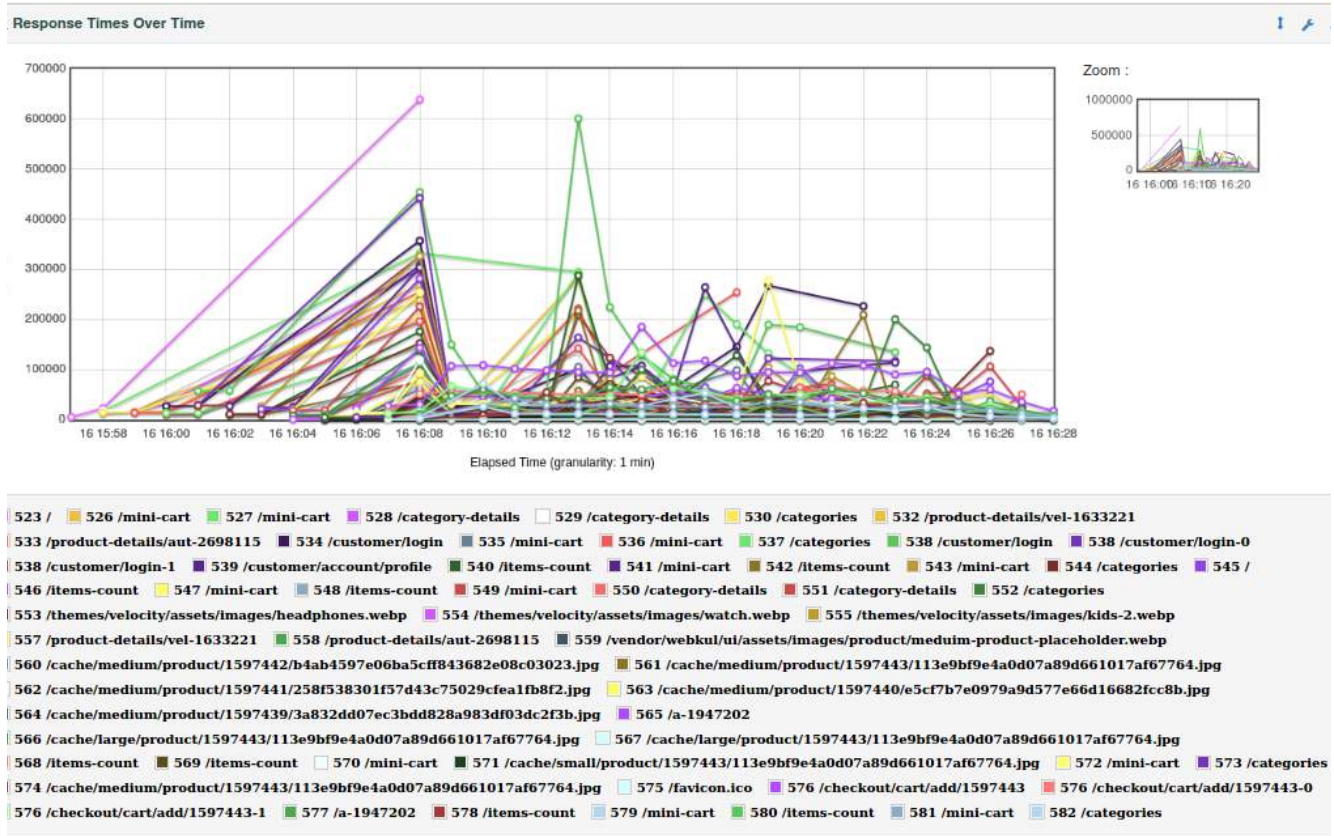
Response Time Graph _

Fig 3: Response Over Time Graph of Product Users Cart

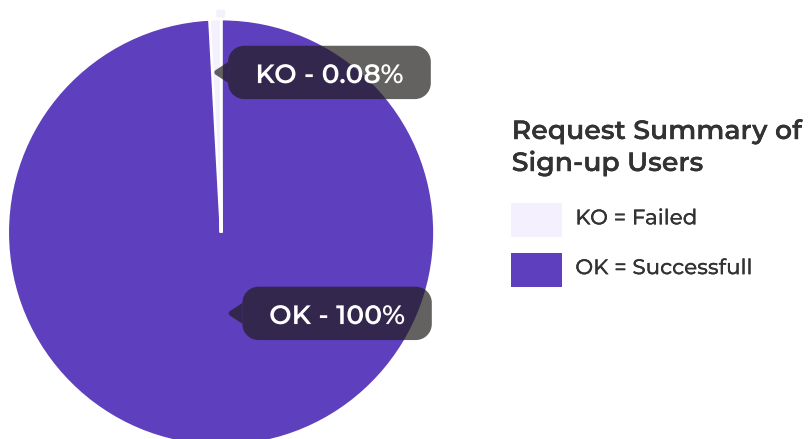Y-axis - It represents the response time in second or millisecond metrics.
X-axis - It shows the elapsed time. The elapsed time may be relative time or actual time as
      per the graph's setting.

4. Home Page Browsing _

In this scenarios, we are benchmarking home page with multiple concurrent users ranging from 50 to 500.

Case	Users	Ramp-Up	Ramp-Up Step	Hold on Target	Error%
1	50	0	0	0	0.00
2	100	0	0	0	0.00
3	100	0	0	0	0.00
4	100	0	0	0	0.00
5	100	0	0	0	0.08

Requests Summary _

KO - 0.08%

OK - 100%

Request Summary of Sign-up Users

KO = Failed

OK = Successfull
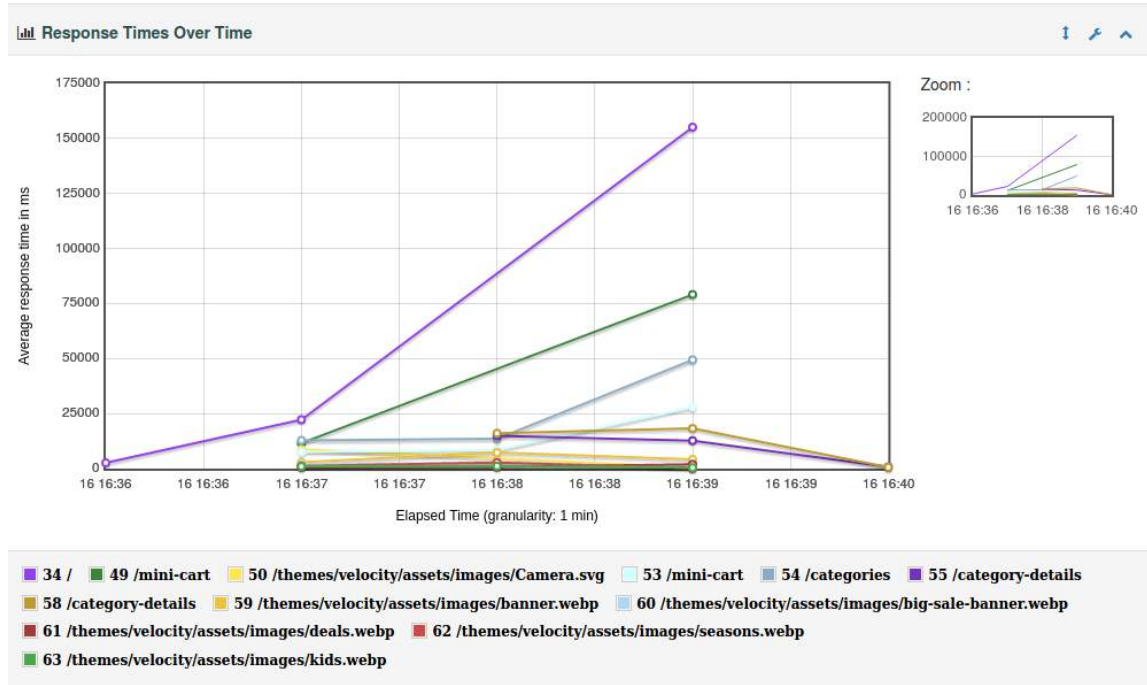
Response Time Graph _

Fig 4: Response Over Time Graph of Home Page Test

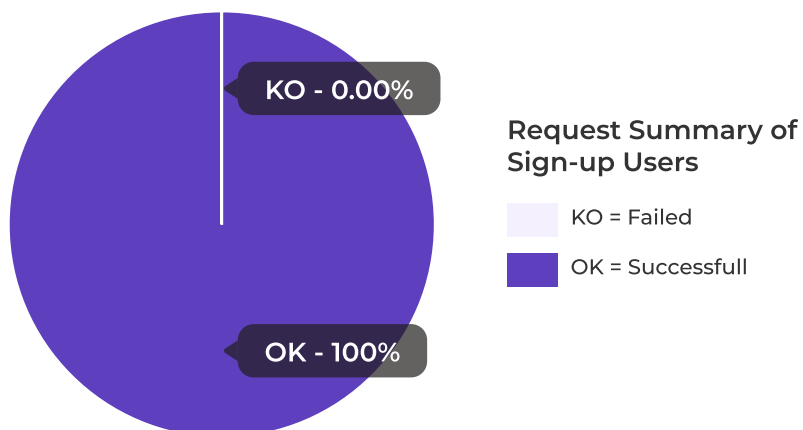Y-axis - It represents the response time in second or millisecond metrics.
X-axis - It shows the elapsed time. The elapsed time may be relative time or actual time as
per the graph's setting.

5. Product and Category Pages _

Now, we are benchmarking different categories and products with multiple concurrent users at the same time. Concurrent users accessing the category and product pages range from 50 to 500.

Case	Users	Ramp-Up	Ramp-Up Step	Hold on Target	Error%
1	50	0	0	0	0.00
2	100	0	0	0	0.00
3	300	0	0	0	0.00
4	450	0	0	0	0.00
5	500	0	0	0	0.00

Requests Summary _

KO - 0.00%

OK - 100%

Request Summary of Sign-up Users

KO = Failed

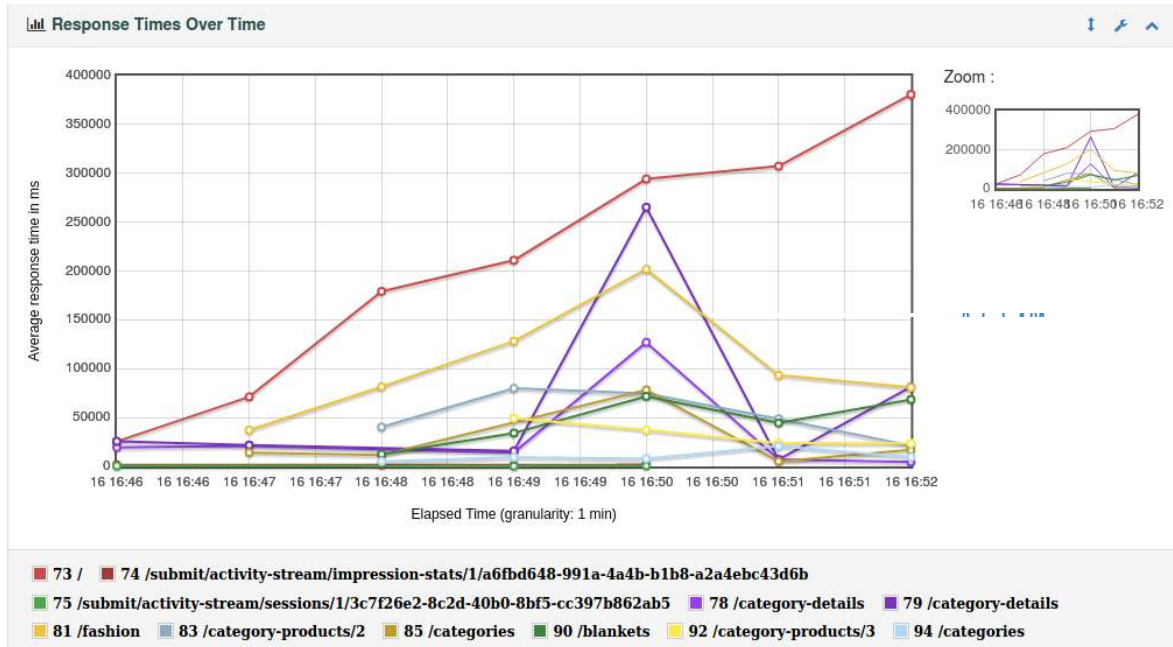OK = Successfull

Response Time Graph _

Fig 5: Response Over Time Graph of Product Category Test

Y-axis - It represents the response time in second or millisecond metrics.
X-axis - It shows the elapsed time. The elapsed time may be relative time or actual time as
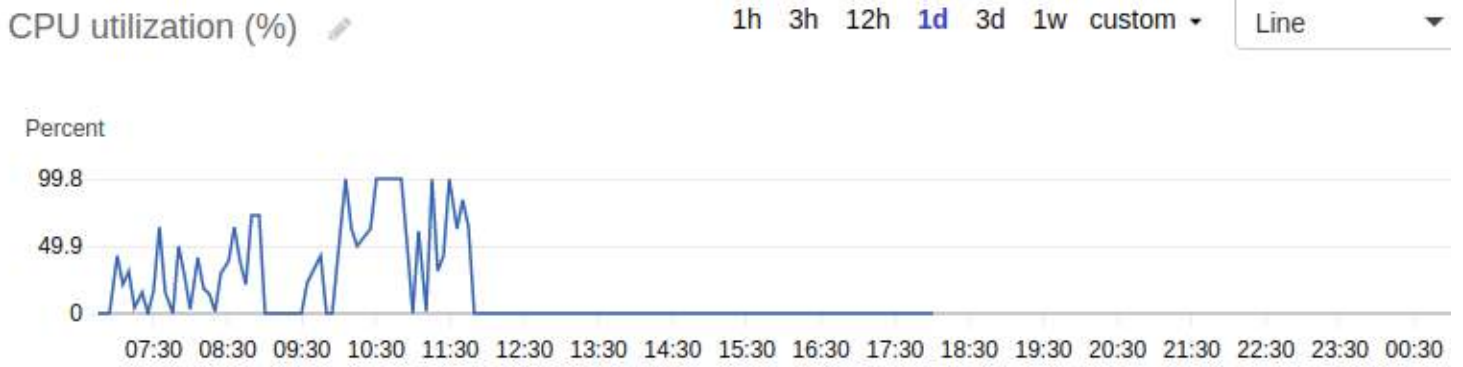per the graph's setting.

Resource Utilisation Graph _

Fig 6: Max CPU Utilisation over time

Fig 7: Max Database Connections over time

Conclusion _

Observing the response time graphs and resource utilisation reports of all the interations ran during benchmarking, it can be validated that Bagisto 1.2.0 store with 1 million SKUs can handle 500 concurrent users connections successfully, provided that server has been configured and tuned properly.

By analysing resouce consumption graph, we can conclude that server configuration (RAM, CPU cores, disk space etc) have been tuned properly. CPU cores and database connections are being utilised to the full extent.

Apache Jmeter Thread Group and Ramp-Up (seconds) period are same for all the operations (HomePage, Sign-up, Sign-in, Add to cart, Product Category).

A bagisto store can deal with the load of 500 concurrent users with aforementioned server configuration without any external cache or server side optimisation. With fine server optimisation techniques and use of external cache could further enhance the performance.