



PERFORMANCE TEST REPORT

Cycle 1

<date>

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OBJECTIVE

What we want to do

Objective

To measure the performance of <system> under predefined transaction volumes from end-user perspective and test the system for responsiveness and reliability.



SCOPE

Our Agreement

Scope

- 1) Number of concurrent user <a number>
- 2) Response time less than or equal to <a number > **second**
- 3) Server performance monitor by <APM>
- 4) <a number> business transaction
 - (Description)
- 5) Run smoke test and load test
- 6) Run stress test for <a number> concurrent user



Host Resources

1) Application Server

- **CPU info**
- **Memory info**

2) Database Server

- **CPU info**
- **Memory info**





TEST DEPLOYMENT AND EXECUTION

How it works



Test Deployment and Execution



OBSERVATIONS

What we observe

Scripting

- 1) Scripting has been done on <execution date>
- 2) Script 1
 - Klik daftar
 - Isi Maklumat Pengguna
 - Hantar
 - Log masuk
 - Kemaskini profil
 - Sertai program
 - Log keluar

Scripting Process

Load Testing Preparation

- 1) <a number> laptop is used as Load Controller (Master)
- 2) <a number> laptop is used for Load Generator (Slave)
- 3) Preparation of Load generator (Install Apache JMeter, JDK 8, Disable VM Network, Disable Firewall and Antivirus)



On site Preparation

Data Preparation

- 1) Received test data contains of <a number> records
- 2) Database Administration cleanup data (Duplicate data cannot be used for registration)





EVALUATION CRITERIA

What we evaluate

Evaluation Criteria

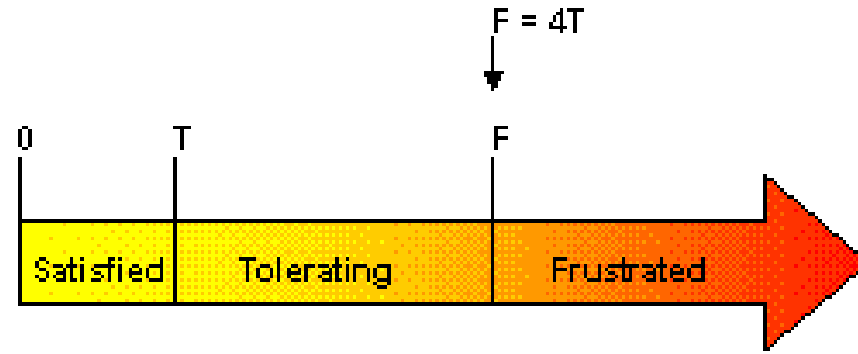
- 1) Transaction Response Time using Application Performance Index (APDEX)
- 2) Failure Rate
- 3) Systems Performances
- 4) Errors and Exceptions



Application Performance Index (APDEX)

- 1) Apdex (Application Performance Index) is an open standard developed by an alliance of companies that defines a standardized method to report, benchmark, and track application performance.
- 2) Apdex is a numerical measure of user satisfaction with the performance of enterprise applications. It converts many measurements into one number on a uniform scale of 0-to-1 (0 = no users satisfied, 1 = all users satisfied)
- 3) The index is based on three zones of application responsiveness:
 - **Satisfied:** The user is fully productive. This represents the time value (T seconds) below which users are not impeded by application response time.
 - **Tolerating:** The user notices performance lagging within responses greater than T, but continues the process.
 - **Frustrated:** Performance with a response time greater than F seconds is unacceptable, and users may abandon the process.

Application Performance Index (APDEX)



The Apdex formula is the number of satisfied samples plus half of the tolerating samples plus none of the frustrated samples, divided by all the samples:

$$\text{Apdex}_T = \frac{\text{Satisfied count} + \frac{\text{Tolerating count}}{2}}{\text{Total samples}}$$

For example, if there are 100 samples with a target time of 3 seconds, where 60 are below 3 seconds, 30 are between 3 and 12 seconds, and the remaining 10 are above 12 seconds, the Apdex is:

$$\frac{60 + \frac{30}{2}}{100} = 0.75$$

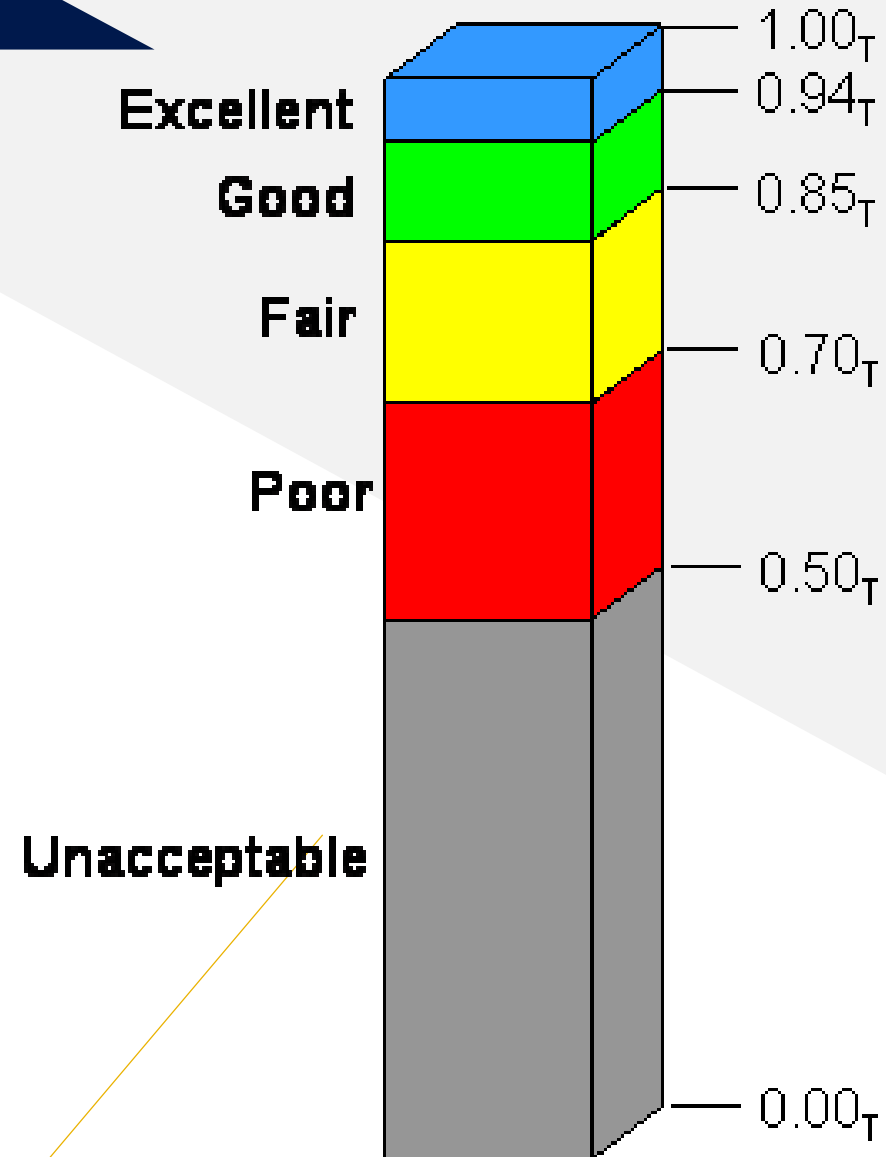
Application Performance Index (APDEX)

What is good APDEX value?

Apdex values fall between 0 and 1 where, 0 means that no users are satisfied and 1 indicates that all user samples were in the satisfied zone. Clearly, a higher number is better.



References: <http://www.apdex.org/>

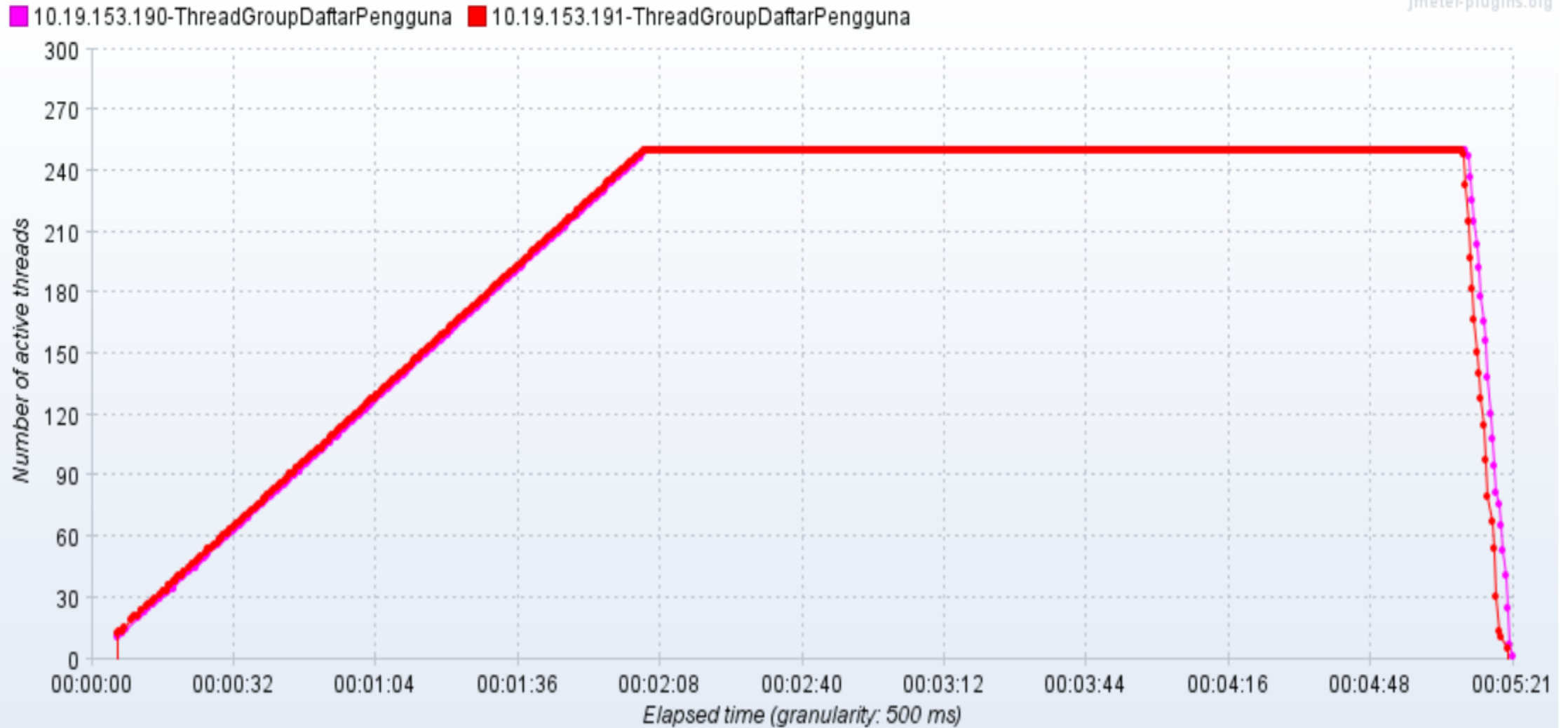




RESULTS

a) 1st Iteration - <a number>

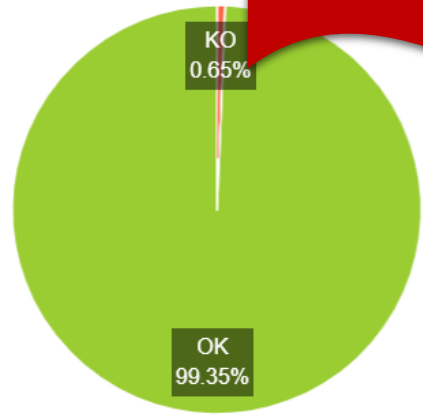
500 concurrent user



Result – 2nd Iteration – 500 concurrent user

APDEX : 0.883

Requests



Test and Report informations

"thread500UserCycle4.jtl"
"9/25/20 10:52 AM"
"9/25/20 10:57 AM"

APDEX (Application Performance Index)

Apdex	T (Toleration threshold)	F (Frustration threshold)	Label
0.883	5 sec	7 sec	Total

Requests	Executions			Response Times (ms)						Throughput	
	Label	#Samples	KO	Error %	Average	Min	Max	90th pct	95th pct		99th pct
Total		25522	165	0.65%	2636.64	31	65124	5741.00	8242.95	18025.20	80.17

Type of error	Number of errors	% in errors	% in all samples
Test failed: text expected to contain VPROFILV	153	92.73%	0.60%
504/Gateway Time-out	12	7.27%	0.05%



FINDINGS AND RECOMMENDATIONS

What happen and How
to improve

Findings

- 1) APDEX value for iteration 1 is <a number> . Baesd on APDEX value iteration 1 is <status> because it is below than 0.85.
- 2) Average Response Time is <a number> seconds
- 3) Main process affected response time are:
 - a)
 - b)



Recommendations

- 1) Tuning up configuration and application setting
- 2) Upgrade infra resources
- 3) Perform Cycle 2 performance test and repeat test for iteration 1, 2 and 3 after tuning up application and infra



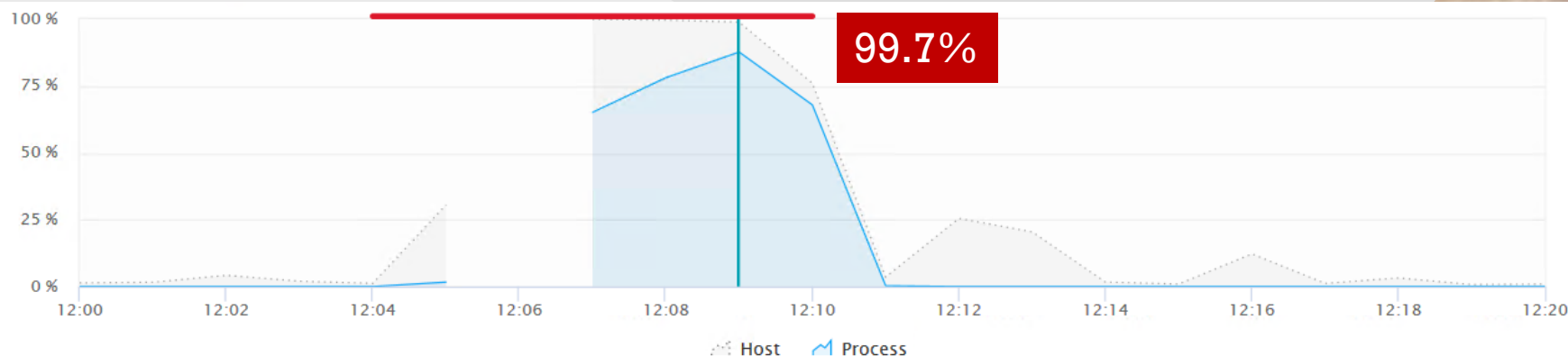


OBSERVATION & RECOMMENDATION

<Application Performance
Monitoring Tools>

EXAMPLE

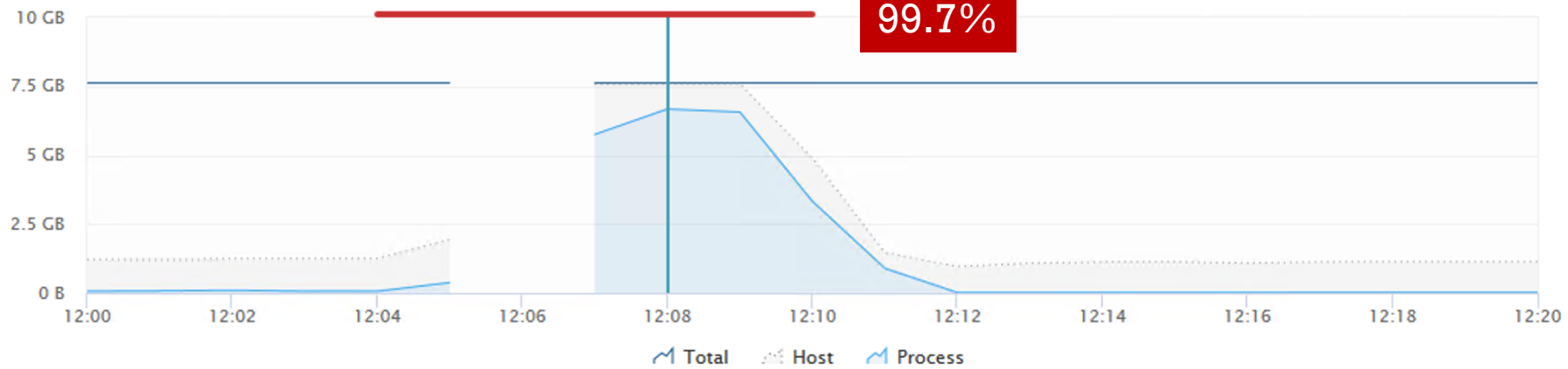
#1 Host Resources - CPU



Process	Type	CPU	Memory	Traffic	Retransmissions	Connectivity	File descriptors	I/O
PHP-FPM	PHP	88 %	6.57 GB	11.4 kbit/s	0 %	100 %	5.96 %	220 MB/s
Linux System	Linux	9.21 %	0 B	-	-	-	0.001 %	4.28 kB/s
OneAgent system monitoring	Dynatrace	0.65 %	19.2 MB	50.2 kbit/s	0 %	100 %	2.64 %	36.1 MB/s
MySQL	MySQL	0.21 %	144 MB	-	-	-	1.1 %	26.7 MB/s
nginx	Nginx	0.15 %	17.5 MB	5.42 kbit/s	1.49 %	100 %	2.15 %	20.1 MB/s
OneAgent log analytics	Dynatrace	0.15 %	2.92 MB	3.86 kbit/s	0 %	100 %	2.05 %	17.5 MB/s

EXAMPLE

#1 Host Resources - Memory



Process	Type	CPU	Memory	Traffic	Retransmissions	Connectivity	File descriptors	I/O
PHP-FPM	PHP	78 %	6.68 GB	21.9 kbit/s	0 %	100 %	9.07 %	297 MB/s
MySQL	MySQL	0.49 %	162 MB	3.63 kbit/s	4.55 %	1.64 %	0.89 %	26.7 MB/s
ds_agent	Other	0.41 %	68.6 MB	-	-	-	1.92 %	10.4 MB/s
nginx	Nginx	0.62 %	27.9 MB	11.9 kbit/s	0 %	100 %	2.15 %	25.4 MB/s
OneAgent network monitoring	Dynatrace	0.25 %	25.2 MB	-	-	-	1.27 %	10.2 MB/s

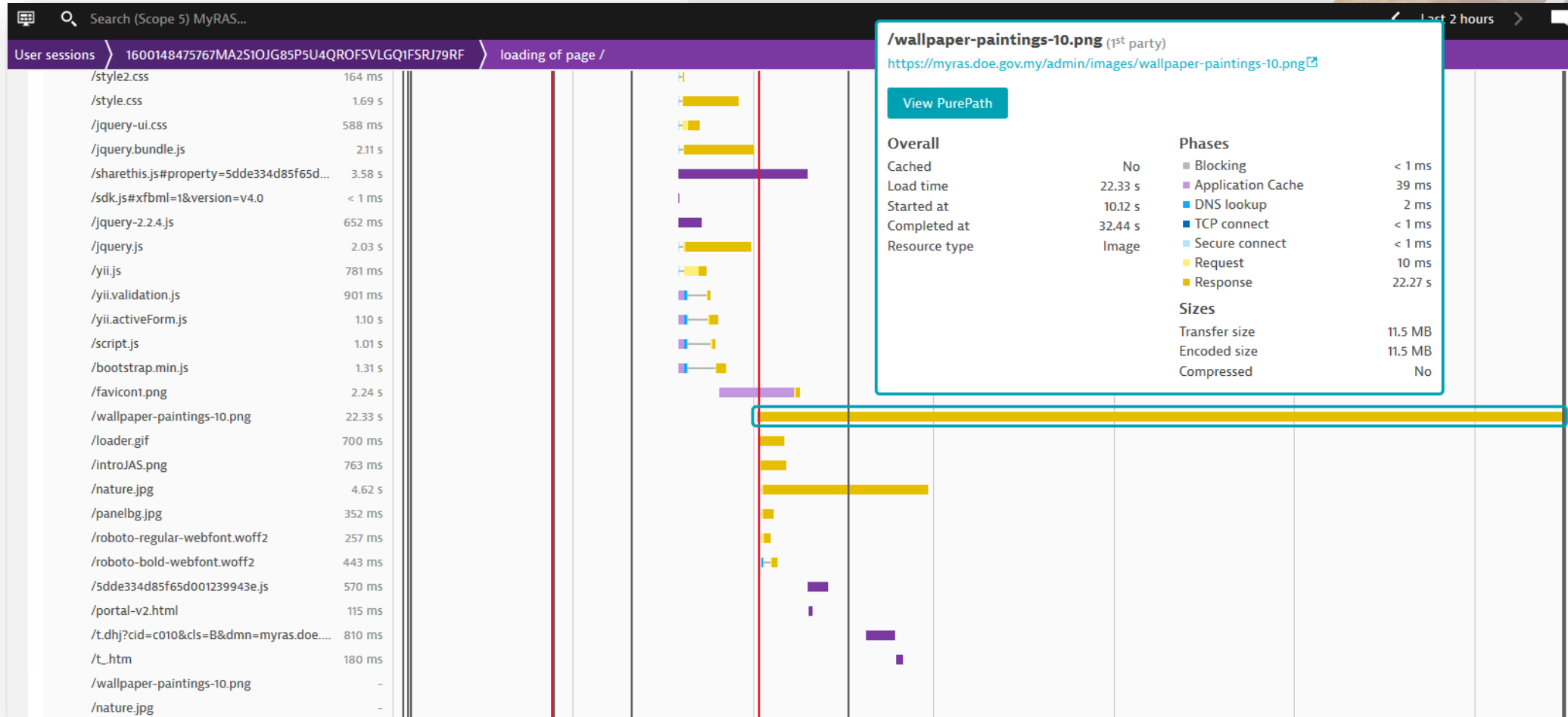
Recommendation

- Review the capacity of the servers.
- Separate the App and DB to easily identify and isolate the issues.



EXAMPLE

#2 Large Image File (Landing Page)



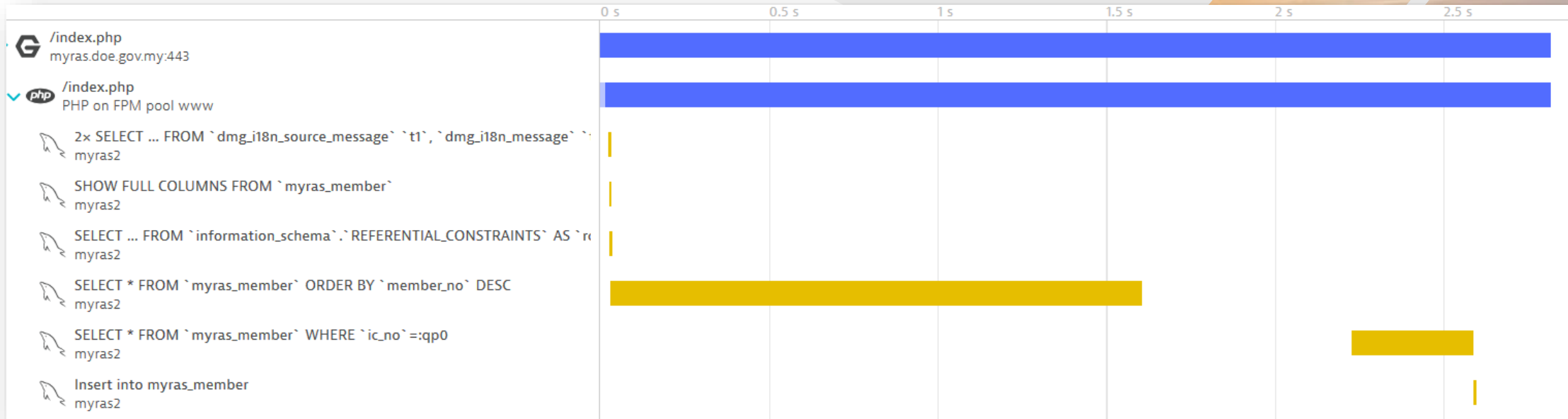
Recommendation

- Resize and compress the images.
- Text resources such as JavaScript, CSS and HTML can be compressed by enabling gzip.



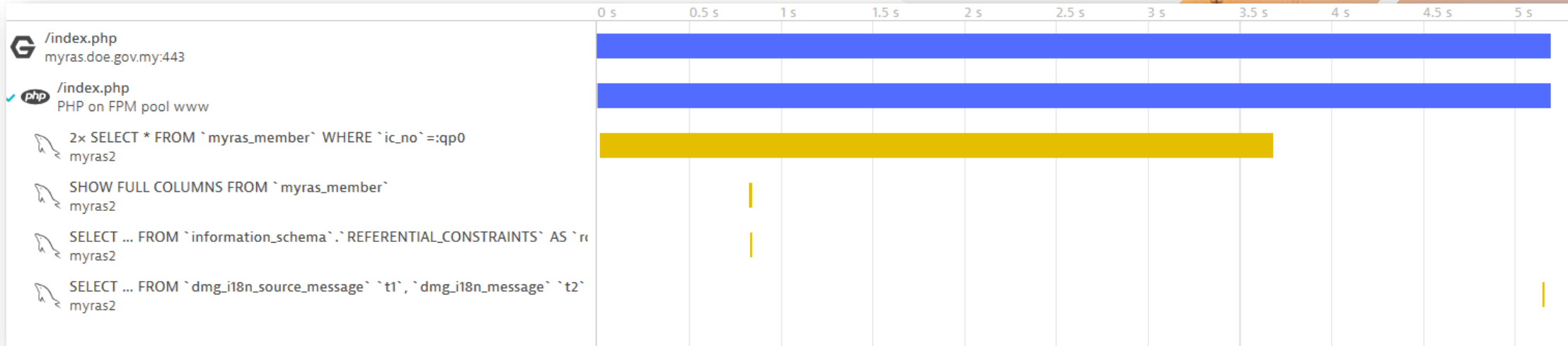
EXAMPLE

#3 Expensive Database Statement



EXAMPLE

#3 Expensive Database Statement



Summary of Result (500)

Evaluation Criteria	Cycle 3	Cycle 4
APDEX	0.802	0.883
Average Response Time	3.56 second	2.64 second
Error rate	0.96%	0.65%
Infra utilization		
1) Apps Server (CPU)	84%	70%
2) Apps Server (RAM)	19.4%	24.9%
3) DB Server (CPU)	99%	51%
4) DB Server (RAM)	19.1%	21.3%
Result	FAILED	PASS

Recommendation

- Review and optimized the expensive database statement.
- Database tuning and indexing.





THE MAKING OF PERFORMANCE TEST

Proof and documentation

Early Discussion

War Room/ Training Lab



Thank You.



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