# PERFORMANCE TEST REPORT

Cycle 1

<date>

# CONTENTS



# 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

EXAMPLE

# 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

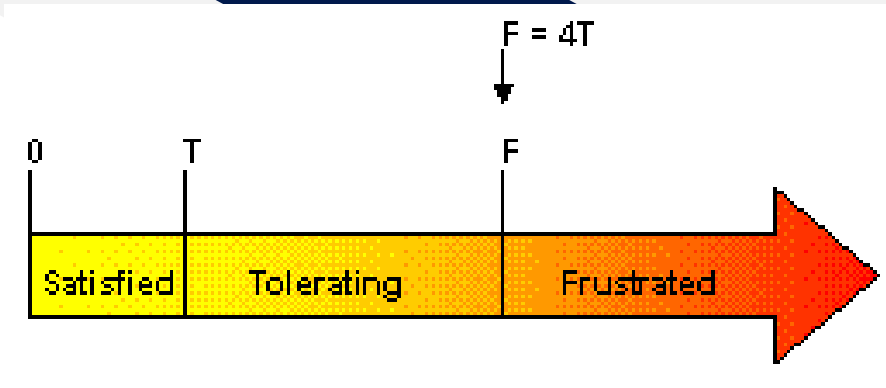
# Evaluation Criteria

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:

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

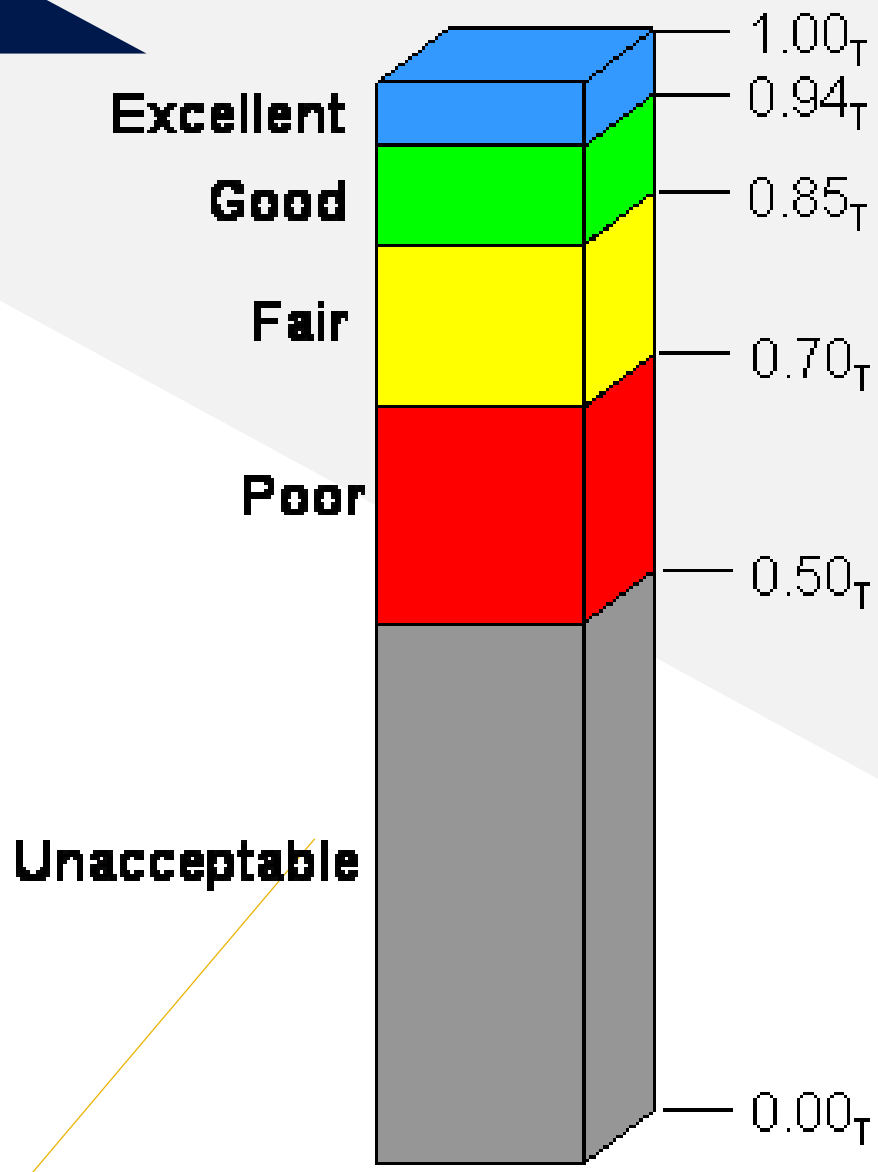
For example, if there are 100 samples with a target time of 3 seconds, where 60 are below 3 seconds, 30 are between 3 and 12 seconds, and the remaining 10 are above 12 seconds, the Apdex is:

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

# 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.



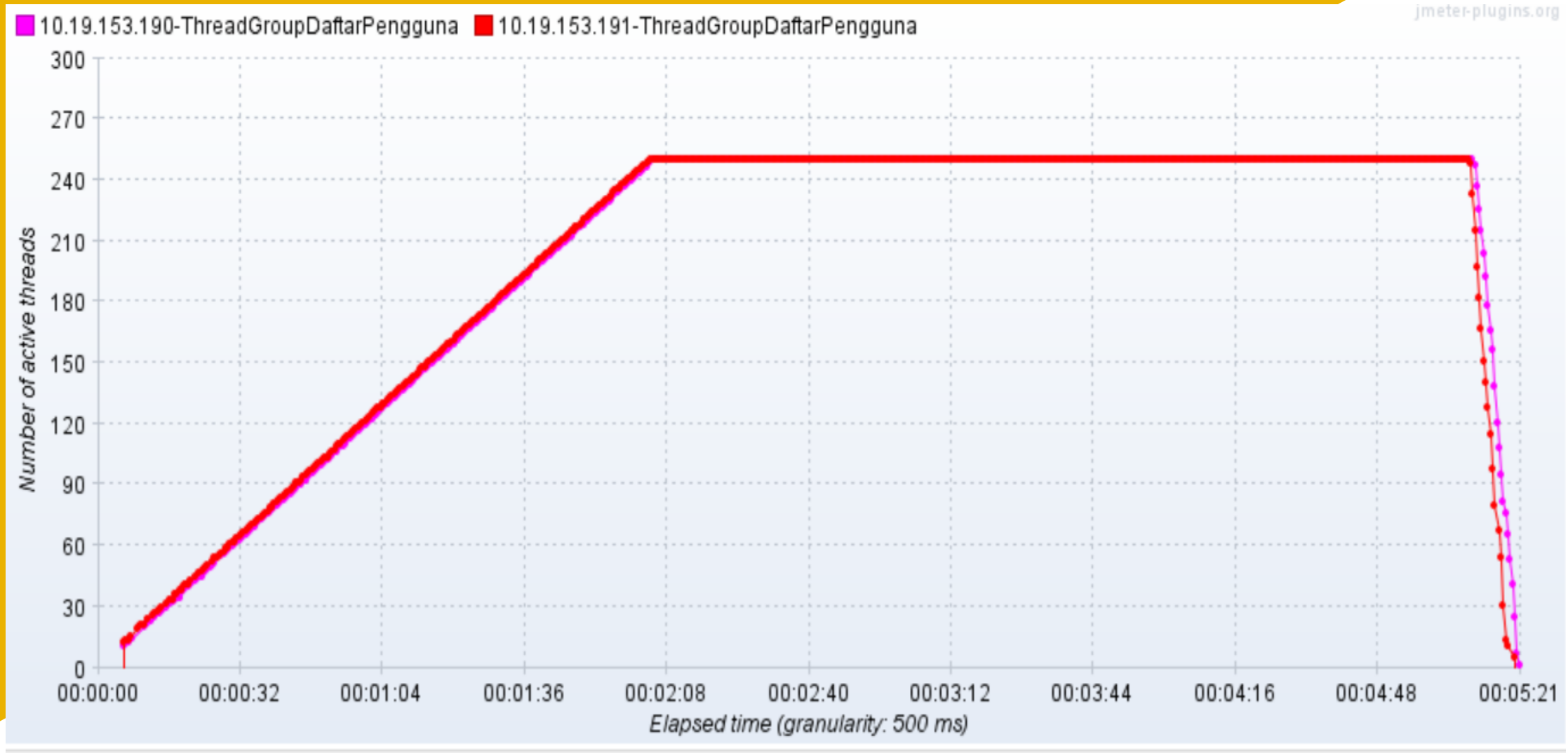

APDEX
Measuring What Matters™

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

# RESULTS

a) 1st Iteration - <a number>

# 500 concurrent user



# Result – 2nd Iteration – 500 concurrent user

EXAMPLE

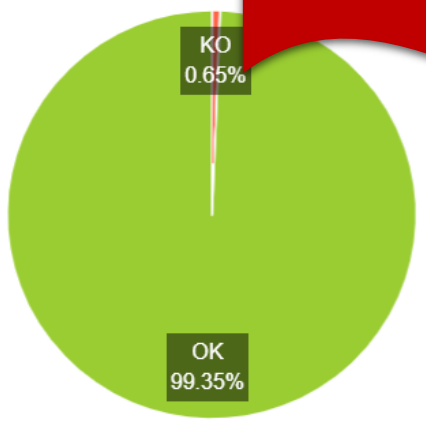
**APDEX : 0.883**

## 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 | Transactions/s |
| 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 \/PROFILV | 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

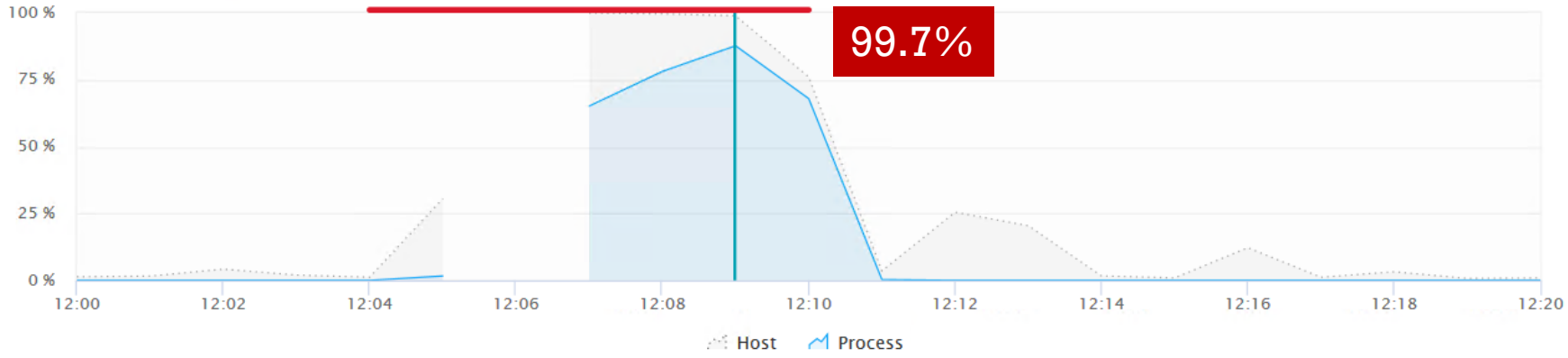
EXAMPLE


# OBSERVATION & RECOMMENDATION

<Application Performance Monitoring Tools>

EXAMPLE

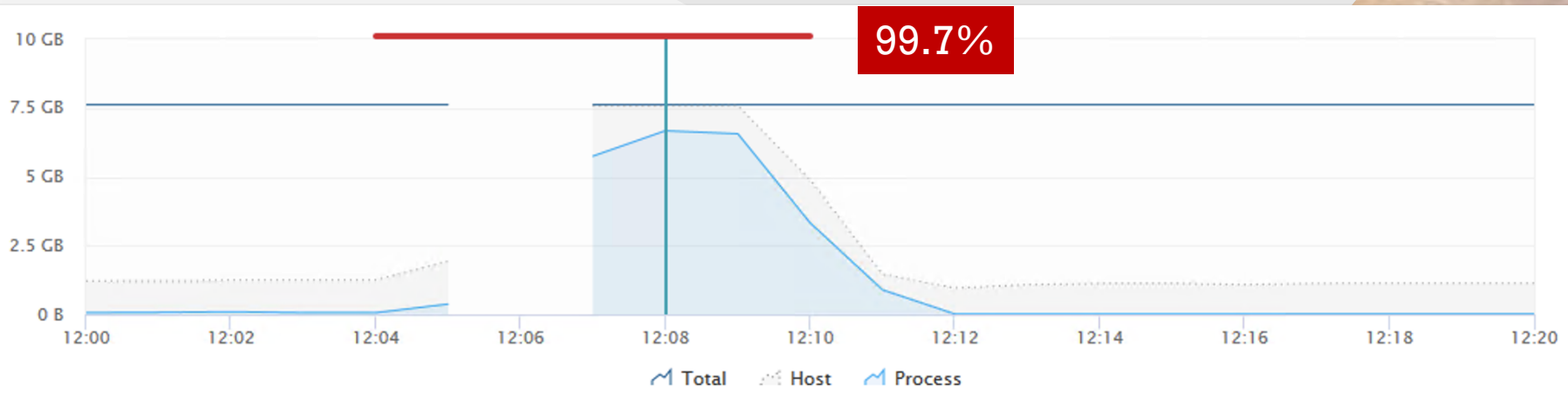
# #1 Host Resources - CPU




| 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



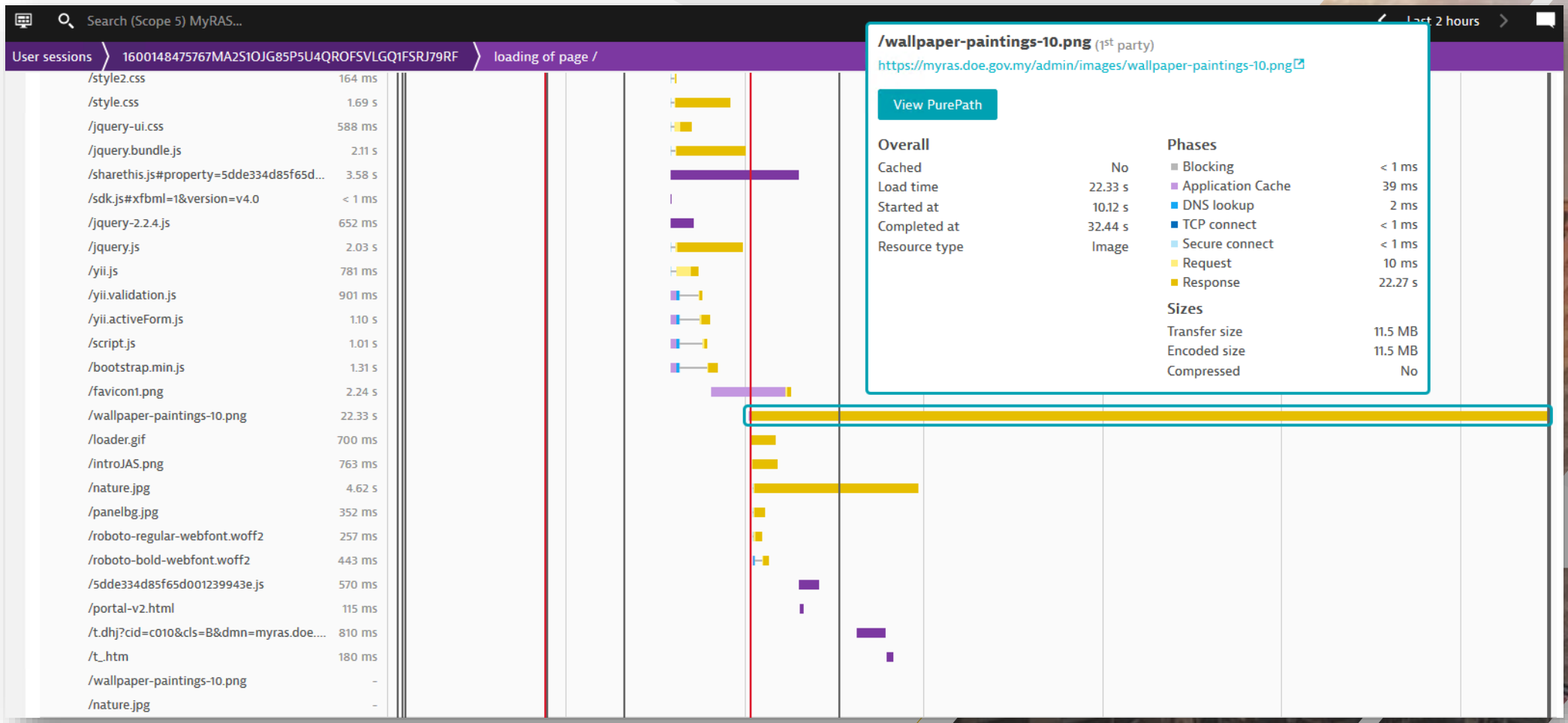

| Process | Type | CPU | Memory ▾ | Traffic | Retransmissions | Connectivity | File descriptors | I/O |
|---|---|---|---|---|---|---|---|---|
| PHP-FPM | PHP | 78 % | 6.68 GB | 21.9 kbit/s | 0 % | 100 % | 9.07 % | 297 MB/s |
| MySQL | MySQL | 0.49 % | 162 MB | 3.63 kbit/s | 4.55 % | 1.64 % | 0.89 % | 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)

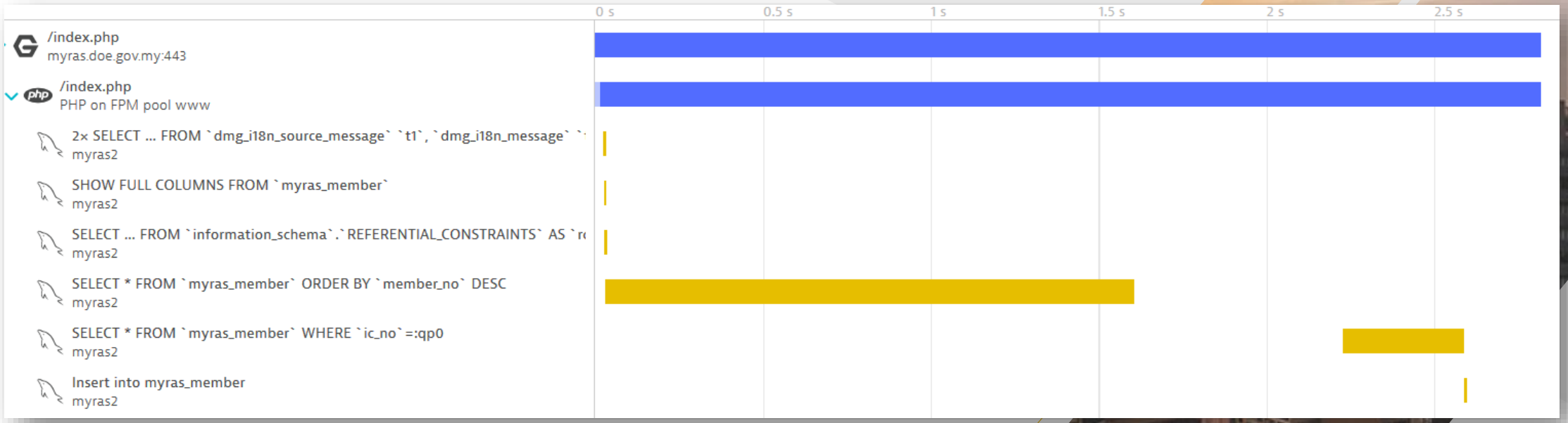


# Recommendation

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

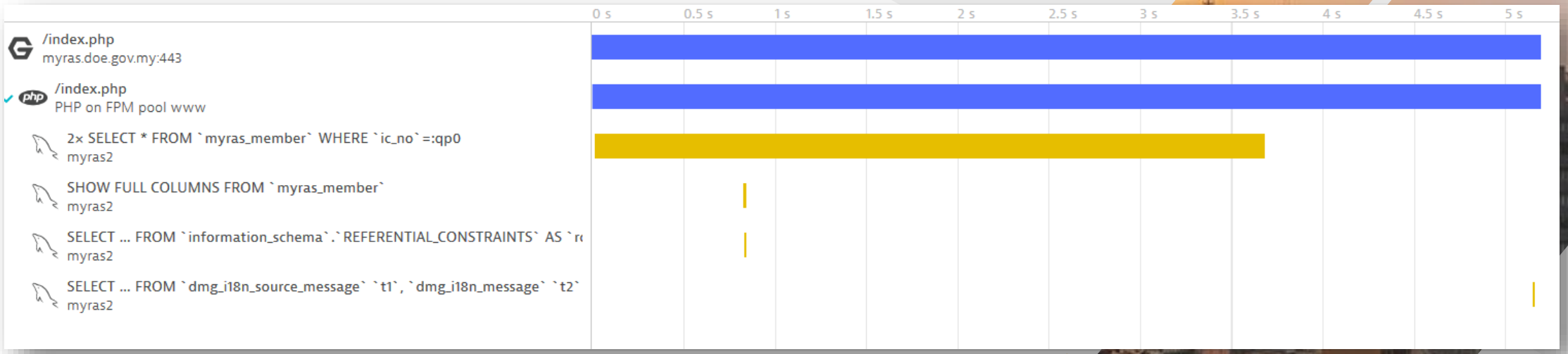
# #3 Expensive Database Statement

EXAMPLE



# #3 Expensive Database Statement

EXAMPLE



EXAMPLE

# 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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