

Enhancing Business Resilience: The Critical Role of Observability with APM Tools

Ts. Afiq Muzakkir bin Mat Ali
Jabatan Kerajaan Tempatan



Ts. AFIQ MUZAKKIR BIN MAT ALI



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PENOLONG PENGARAH KANAN
UNIT RANGKAIAN, TEKNIKAL & MULTIMEDIA
BAHAGIAN PENGURUSAN MAKLUMAT
JABATAN KERAJAAN TEMPATAN, KPKT

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PENOLONG PENGARAH
UNIT STRATEGIK INFRA & KESELAMATAN ICT
BAHAGIAN TEKNOLOGI DIGITAL
JABATAN PENGANGKUTAN JALAN



*EC-Council Certified
Incident Handler*



*EC-Council Hacking
Forensic Investigator*

What Is Business Resilience?

Business resilience is your organisation's ability to **adapt to disruptions** while maintaining business operations and safeguarding people, assets, and overall brand equity.

Important of Resilience

In a digital-first landscape, disruption are **INEVITABLE**. Resilience ensures **CONTINUITY** and competitiveness despite challenges

The Importance of Observability



Definition Observability

The ability to understand the internal state of a system by analyzing external outputs



Key Elements

Includes metrics, logs, and traces, providing real-time visibility into system behavior



Significance

Enables proactive identification and resolution of issues, reducing downtime

Observability and APM Tools as Pillars of Business Resilience

Optimizing Performance



Enables ongoing performance improvements via continuous monitoring

Proactive Monitoring



Enables detection of issues before impacting end-users

The Improvement in JPJ

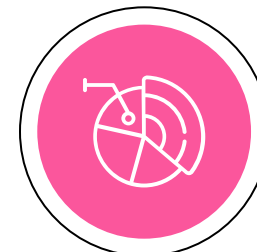
JPJ Data Center

PDSA

Network & Security Devices

Server

Database



MyJPJ

- Upgrade Firewall to **Telco Model**
- Upgrade Network Bandwidth

MyJPJ

- Fine tune PHP-FPM
- Fine tune backend communication **between Frontend and Mainframe**

JPJeBID

- Fine tune Wildfly
- **Scale down spec but add more server** to cater more workers (Wildfly)

AwAS

- Remove redundant info on dashboard

MyJPJ

- Spike 100%
- Fine Tune Database

JPJeBID

- Normalize Database
- Split the DB for Write/Read

AwAS

- Spike 100% even with small users
- Simplify the query to DB. **Prioritize only important info**

The Improvement in JKT

Public Cloud (AWS)

Network & Security Devices



Server



PBTPay Mobile Apps

- Direct traffic to ALB and then to server
- Bypass Cloudfront CDN since CDN only suitable for static transaction

PBTPay Mobile Apps

- Turn on the auto-scaling
- Setup clustering to balance the workload that being process
- Resizing the instance
- Utilized slaved redis clusters. Add sizing dan nodes for the redis clusters.



Cari

Pilih PBT

Sila Pilih PBT

Pilih Jenis Bit

Pilih Jenis Carian

Nombor Carian

Cari



Utama



Pilihan



Cari



Bakul



Bayaran

Cycle 1

No.	Test	APDEX Performance	Description
1	200 Concurrent Users	0.96 Excellent	<ul style="list-style-type: none">3,993 users completed all scenarios.0 users experience errors and failed
2	600 Concurrent Users	0.53 Poor	<ul style="list-style-type: none">12,131 users completed all scenarios.65 users experience errors and failed
3	1000 Concurrent Users	0.15 Poor	<ul style="list-style-type: none">1,854 users completed all scenarios.165 users experience errors and

Cycle 2

No.	Test	APDEX Performance	Description
1	1000 Concurrent Users	0.88 Good	<ul style="list-style-type: none">20,306 users completed all scenarios.0 users experience errors and failed
2	1400 Concurrent Users	0.88 Good	<ul style="list-style-type: none">28,533 users completed all scenarios.65 users experience errors and failed
3	2000 Concurrent Users	0.88 Good	<ul style="list-style-type: none">42,138 users completed all scenarios.269 users experience errors and

KONVENSYEN PIHAK BERKUASA TEMPATAN (PBT) 2024

26 OKTOBER 2024, DEWAN SIVIK MBPJ



Continues Monitoring in JKT

☰ ☰ 🔍 Search production...

📄 ⏪ Yesterday ⏩ 🗨️ 👤

Infrastructure Dashboard

Preset owned by puteri No tags applied > ★ Edit ...

Host Overview

Overall Usage Consumption

Problems

0/2

Host health

All fine 25

CPU usage

100.00 %
80.00 %
40.00 %
0.00 %

12. Nov 04:00 08:00 12:00 16:00 20:00 13. Nov

📌 KPKT_OSC3_DB_Prod_A1 10.29.24.9 📌 pbtpaydb2 10.29.26.187 📌 pbtpaydb3 10.29.26.188 📌 pbtpayapp1 10.29.26.161
📌 KPKT_OSC3_APP_Prod_B 10.29.24.136 📌 15 more

Memory utilization

100.00 %
80.00 %
40.00 %
0.00 %

12. Nov 04:00 08:00 12:00 16:00 20:00 13. Nov

📌 pbtpayapp1 10.29.26.161 📌 pbtpaydb2 10.29.26.187 📌 pbtpaydb3 10.29.26.188 📌 pbtpay-fusio 10.0.3.109
📌 pbtavapp3 10.29.26.148 📌 15 more

CPU Usage per Processes

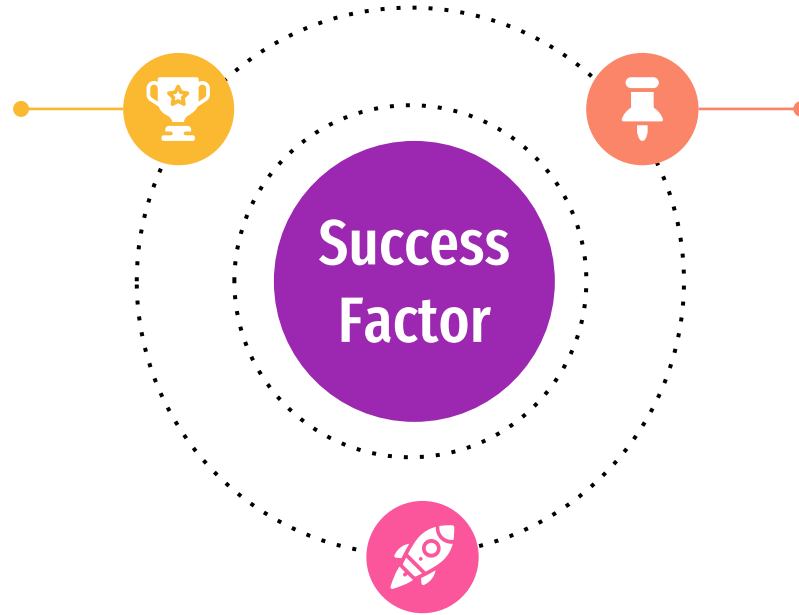
Host	Process	Process CPU usage
pbtpay-fusio 10.0.3...	aide	58.85 %
KPKT_OSC3_DB_Pro...	MySQL	39.24 %
pbtpaydb2 10.29.2...	MySQL	34.95 %
pbtpaydb3 10.29.2...	MySQL	33.17 %
pbtpay-checkout 1...	aide	32.67 %
pbtpayapp1 10.29.2...	PHP-FPM	17.64 %
KPKT_OSC3_APP Pr...	Apache Web Serve...	10.45 %
KPKT_OSC3_APP Pr...	mysqldump	10.41 %
KPKT_OSC3_APP Pr...	gzip	7.68 %
lb1 10.29.26.195	ds am	4.27 %
pbtavapp3 10.29...	ds am	3.27 %

Mem...

Host
pbtpa
pbtpa
KPKT
pbtpa
pbtpa
KPKT
pbtpa
KPKT
lb1 10
KPKT
pbtpa
pbtpa

People

- Must have **clear communication**
- Requires close coordination with various teams
- Skilled testers and analysts



Process

- Must have well define testing objectives (Response time, Resource Usage, No of User)
- **Iterative Testing** and Feedback (**test, analyze results, optimize and test again**)
- Realistic test scenario

Technology

- APM – Dynatrace, New Relic, AppDynamics, SolarWinds
 - Performance Tools – Jmeter, WAPT

Thank
You

