Peaceful Distributed Microservice Architecture

Hello!

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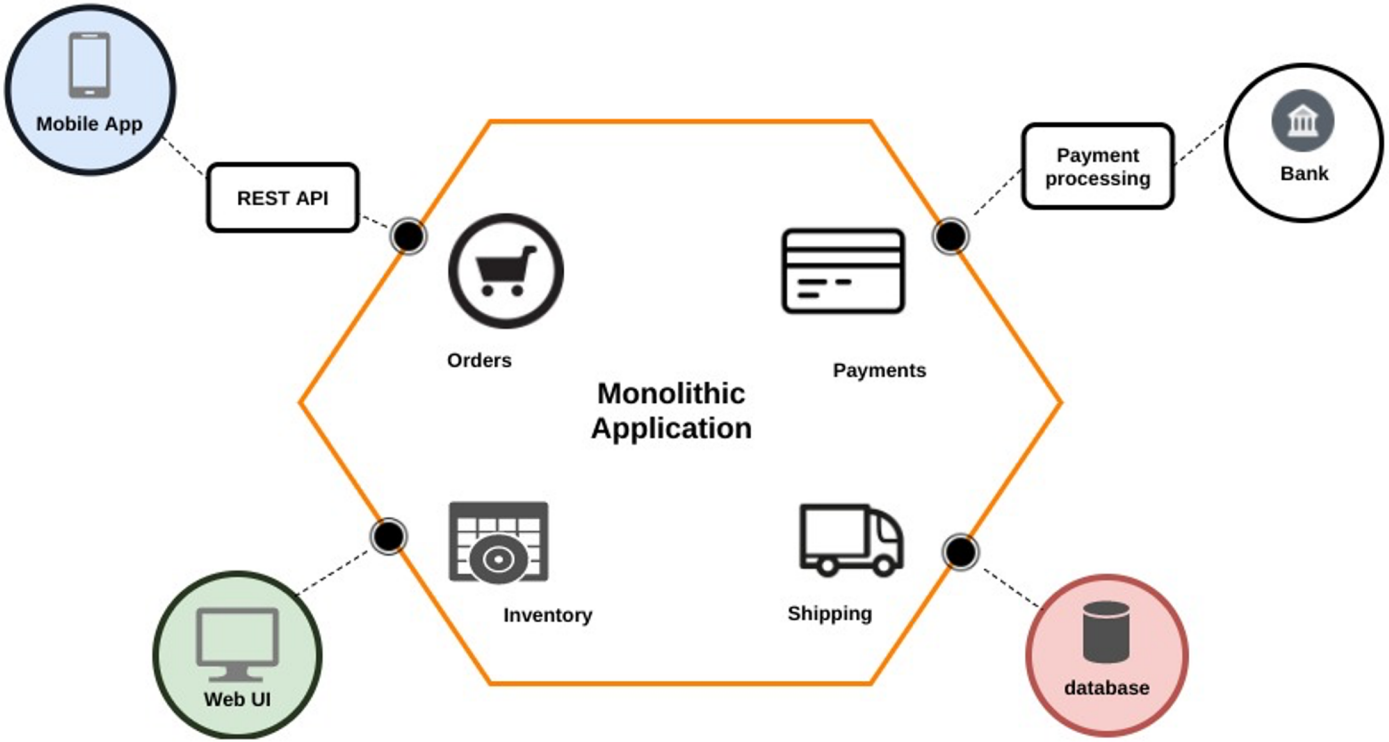
Monolithic

Overview of Monolithic Applications



Monolithic Application (continued)

1. Regardless of logical modular, application is packaged as a single monolith.
2. Packaging depends on the language … .war, .jar or directory structure
3. Simple to test and deploy
4. If simple, what is the issue? Simple and easy only at the beginning

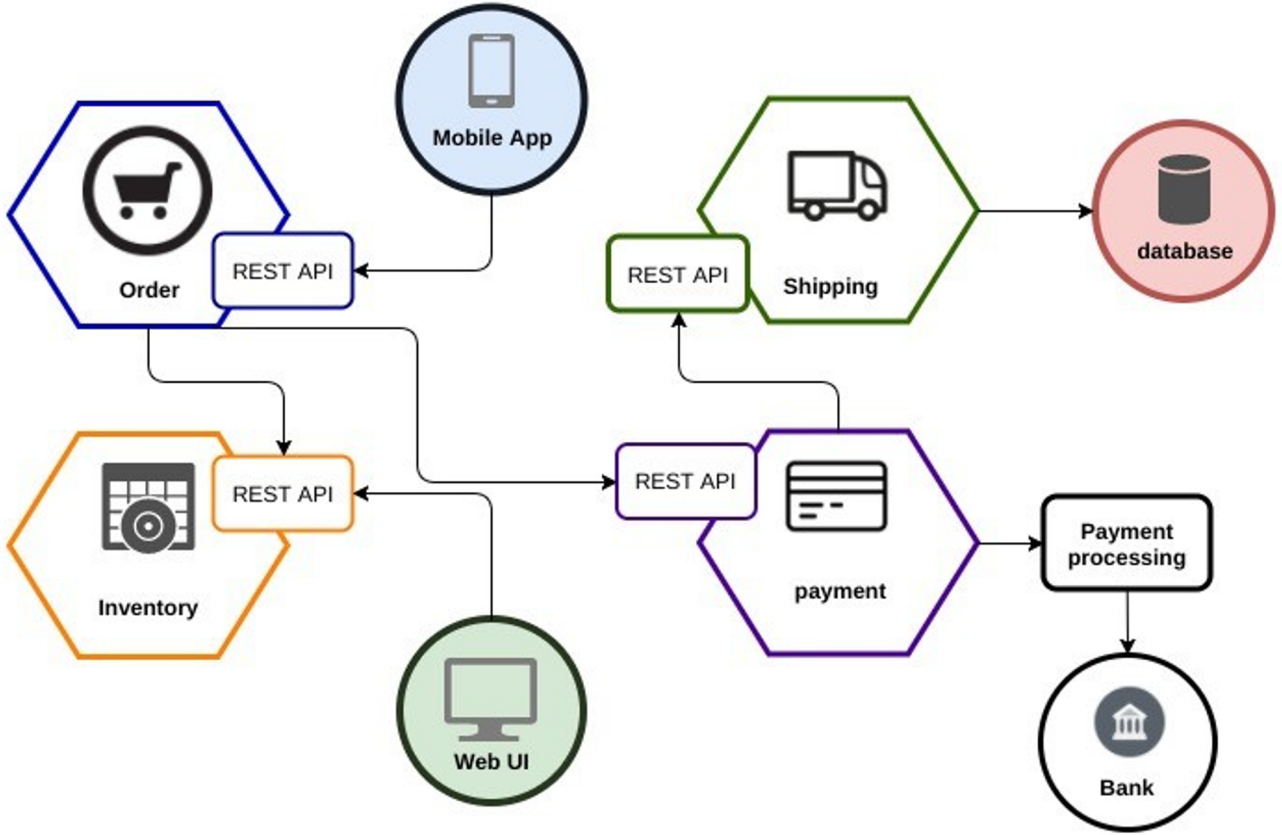
Problems with Monolithic applications.

Many Pain Points!!!!

- Increasingly difficult to make code changes
- Disrupts agile development
- Overtime, no single developer will understand the entire code. Changes will be error prone
- CI/CD would become painful
- Scaling would be difficult
- An issue in one component could potentially bring down the entire application
- Stuck with a single language

Microservices

Overview of Microservices



Microservices Architecture pattern

1. An application written as small interconnected services, each implementing distinct functionality
2. Self contained, maintains its own datastores
3. Each service may expose a REST API and most services use other services
4. Services may also use other Inter-process-communication methods to interact, such as queue etc.

Advantages with MSA

- Faster development
- Scalable
- Focused development
- Cloud Native
- Easy Deployment
- Less Downtime

Drawback of Microservices Architecture

Many Pain Points!!!!

- What the size limit of microservice?
- Inherent complexity of distribution of systems Handling transactions (partial failures)
- Multiple databases
- Need for advanced technology (service mesh, service discovery, circuit breaker, containers, orchestration etc)

MTTR vs MTTD

MTTR - Mean time to Recover?

How a Amature vs Pro Diagnose issues?

https://picture-funny.blogspot.com/2006/09/mechanical-genius.html

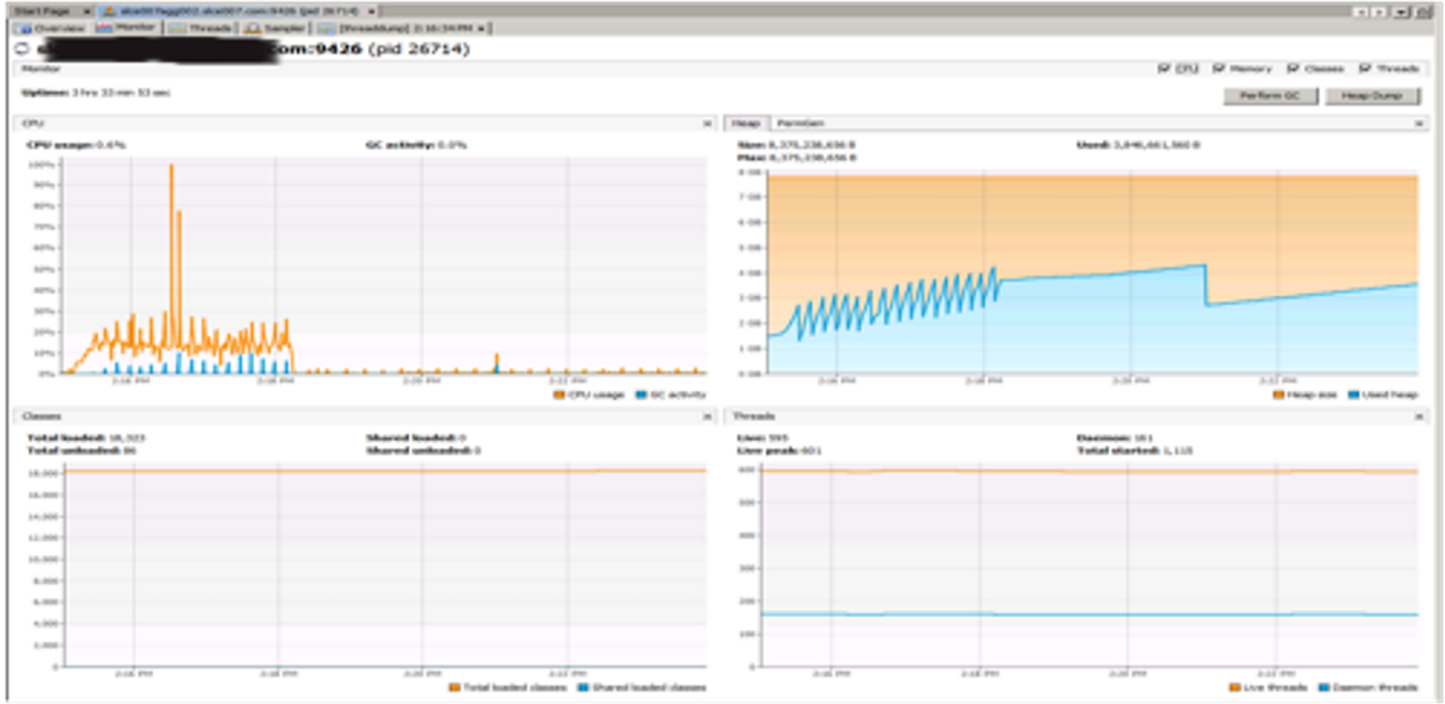
master diagnostic technician Kurt Juergens, of Foxborough

Optimize MTTD - Mean Time to Detect

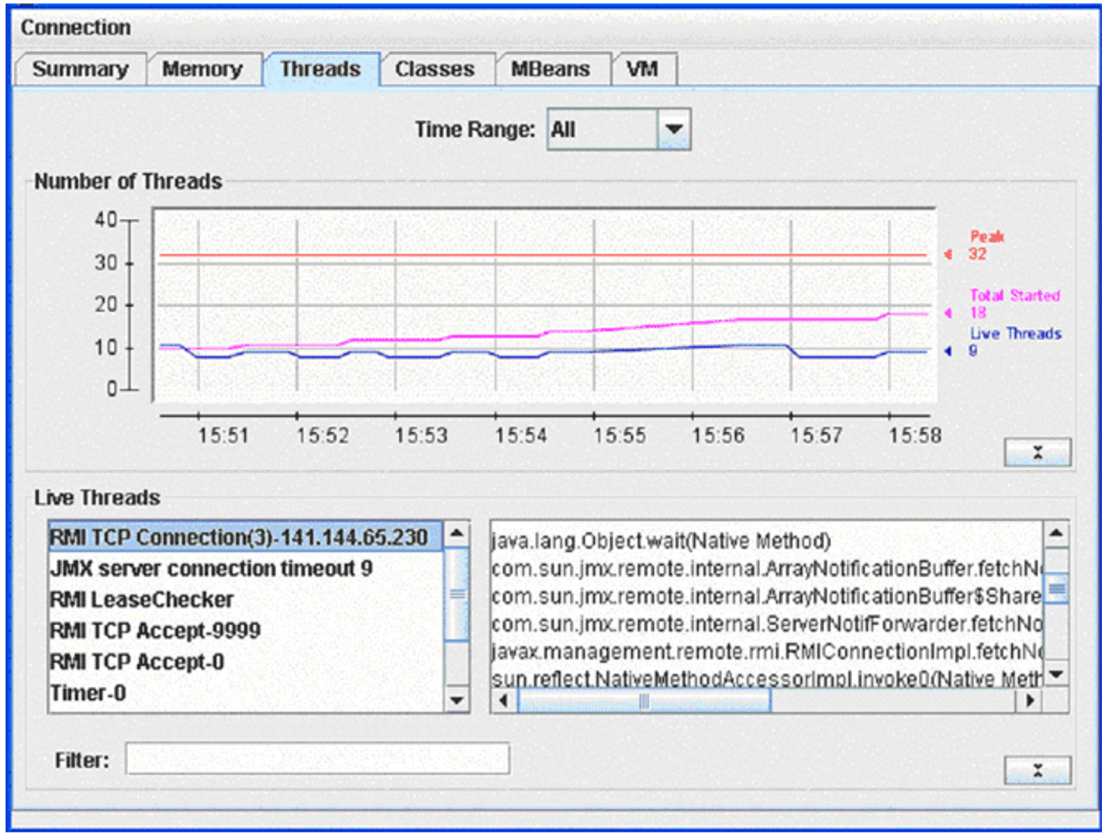
Observability vs Surveillance


Monitoring
Visualization
Observability
Log aggregation
Tracing
Alerting
People

Monitoring


[redacted]:9426 (pid 26714)
Monitor
CPU
Heap
Classes
Threads
Perform GC
Heap Dump

Monitoring

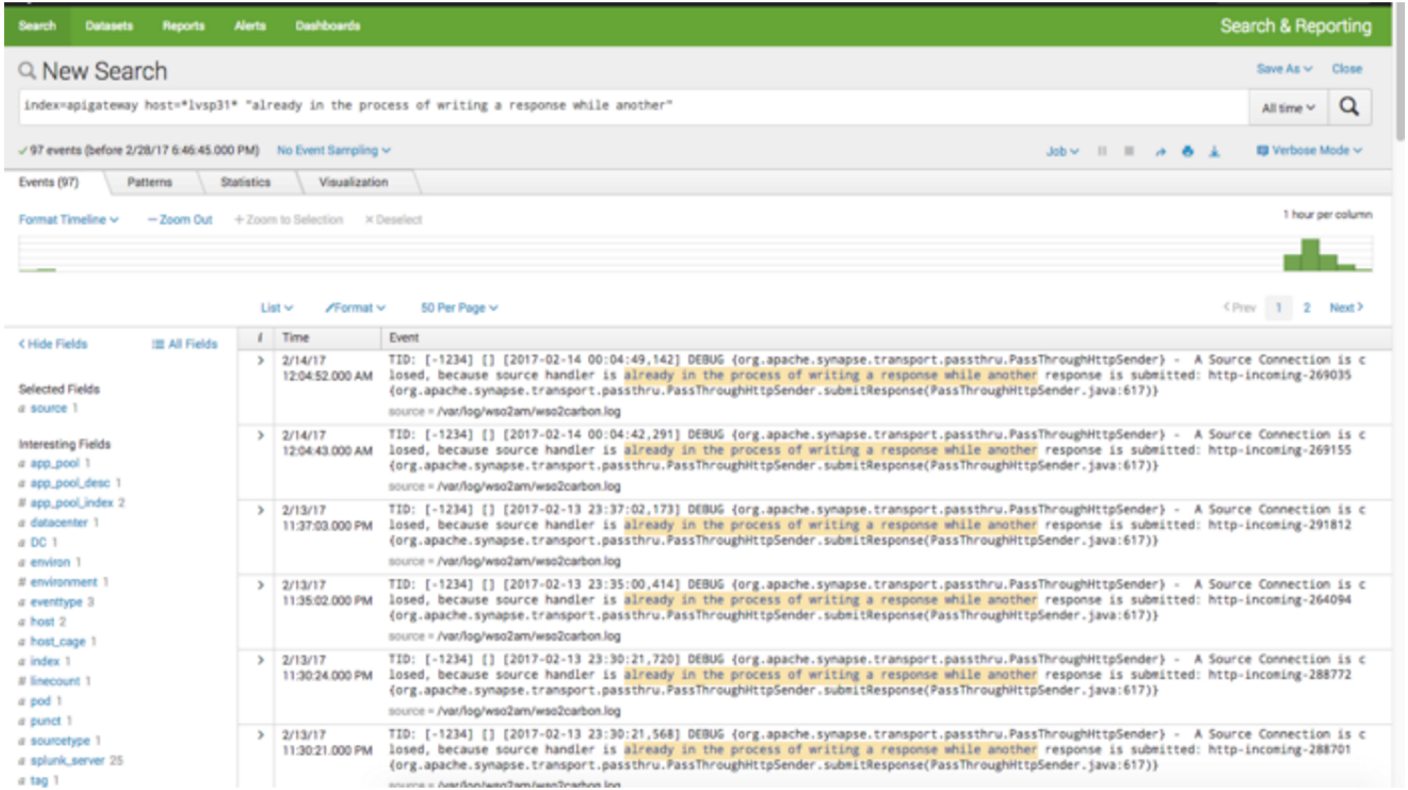

Connection
Summary
Memory
Threads
Classes
MBeans
VM
Time Range:
All
Number of Threads
40
30
20
10
0
15:51
15:52
15:53
15:54
15:55
15:56
15:57
15:58
Peak
32
Total Started
18
Live Threads
9
Live Threads
RMI TCP Connection(3)-141.144.65.230
JMX server connection timeout 9
RMI LeaseChecker
RMI TCP Accept-9999
RMI TCP Accept-0
Timer-0
java.lang.Object.wait(Native Method)
com.sun.jmx.remote.internal.ArrayNotificationBuffer.fetchN
com.sun.jmx.remote.internal.ArrayNotificationBuffer$Share
com.sun.jmx.remote.internal.ServerNotifForwarder.fetchNo
javax.management.remote.rmi.RMIConnectionImpl.fetchN
sun.reflect.NativeMethodAccessorImpl.invoke0(Native Meth
Filter:

Monitoring

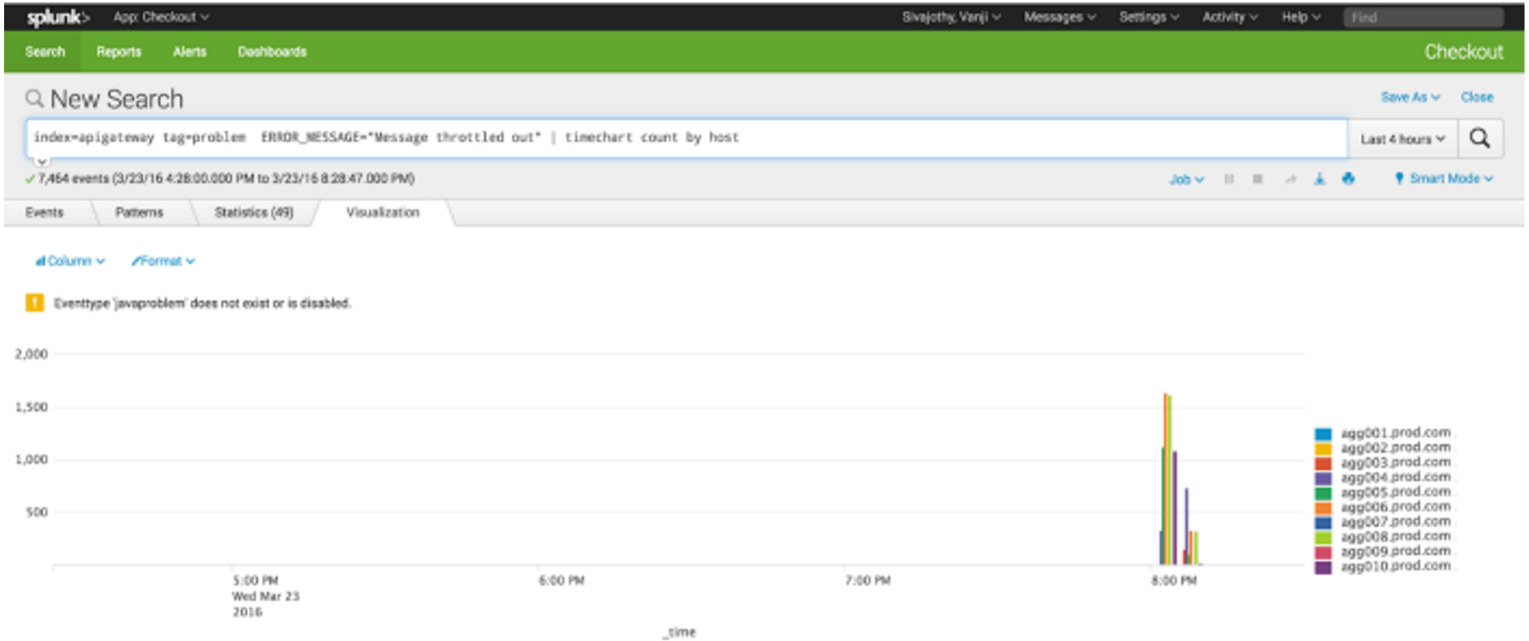

Application Dashboard
Business Transactions
Service Endpoints
Tiers & Nodes
Servers
Database Calls
Remote Services
Troubleshoot
More
Alert & Respond
Metric Browser
Configuration
Dashboard
Events
Top Business Transactions
Transaction Snapshots
Transaction Score
Actions
Application Flow Map
Events
Application Changes
Business Transaction Health
0 critical, 0 warning, 6 normal
Node Health
0 critical, 0 warning, 4 normal
Server Health
Transaction Scorecard
Normal 100.0 % 140
Slow 0.0 % < 1
Very Slow 0.0 % < 1
Stall 0.0 % < 1
Errors 0.0 % < 1
Exceptions
Exceptions - total - / min
HTTP Error Codes - total - / min
Error Page Redirects - total - / min
Legend
Not comparing against Baseline data
Load
140 calls
35 calls / min
Response Time (ms)
349 ms average
Errors
- %
- errors
< 1 errors / min

Tracing

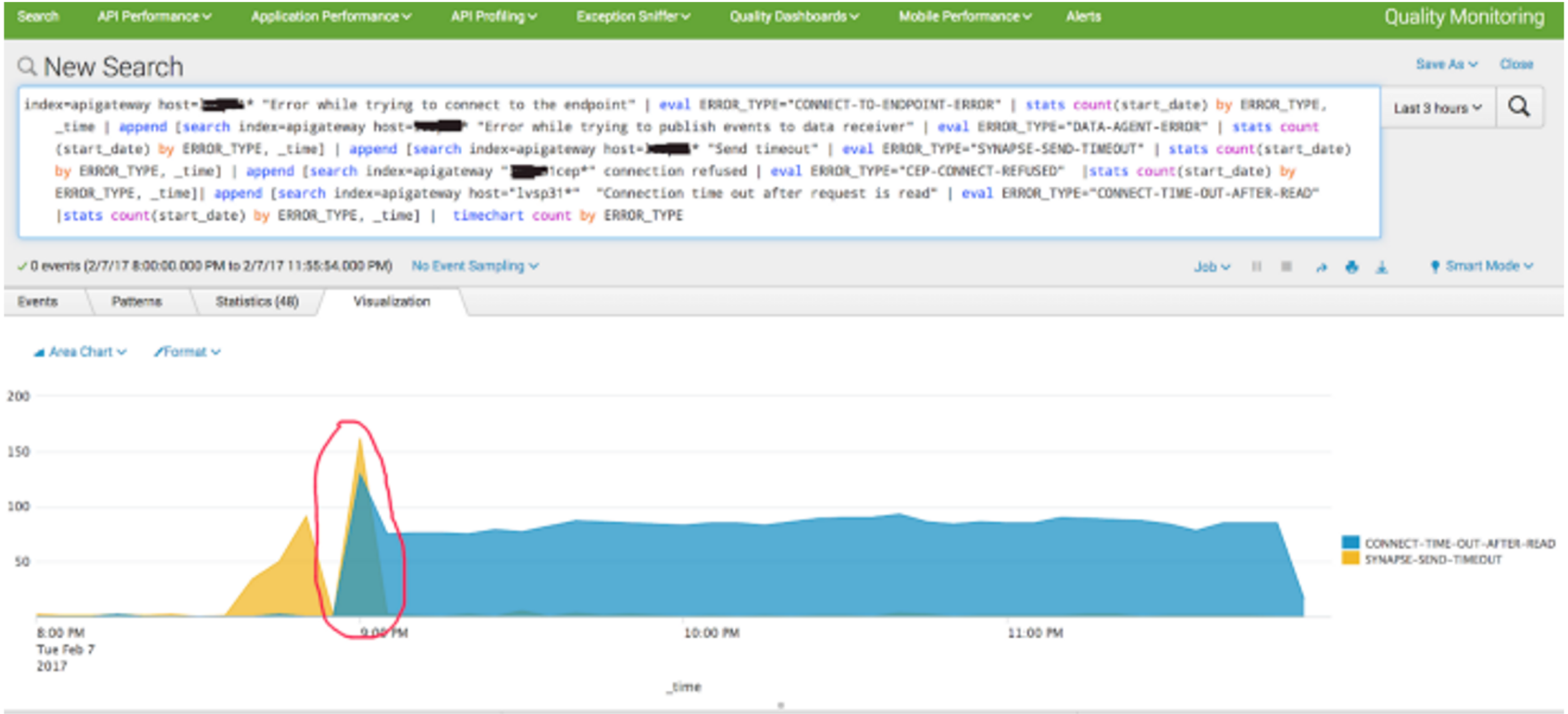
Log aggregation



Visualization



Visualization



Alerting

[redacted] Stall Policy

Summary of events occurring during the 1+ minute(s) prior to Wed Feb 08 01:44:36 UTC 2017:

Count	Event Type
1	Health Rule

New Critical Health Rule Violation

Wed Feb 08 01:43:55 UTC 2017 | agg-31 | [redacted]

AppDynamics has detected a problem with Business Transaction **All Other Traffic - [redacted]**

[redacted] **Stalls** started violating and is now **critical**.

All of the following conditions were found to be violating

For Business Transaction **All Other Traffic - [redacted]**

1) condition 1

condition 1's value **396.0** was **greater than** the threshold **100.0** for the last **30** minutes

Surveillance

Surveillance

- Targeted Surveillance
- Predefined Rules

Image by StockSnap from Pixabay

Surveillance

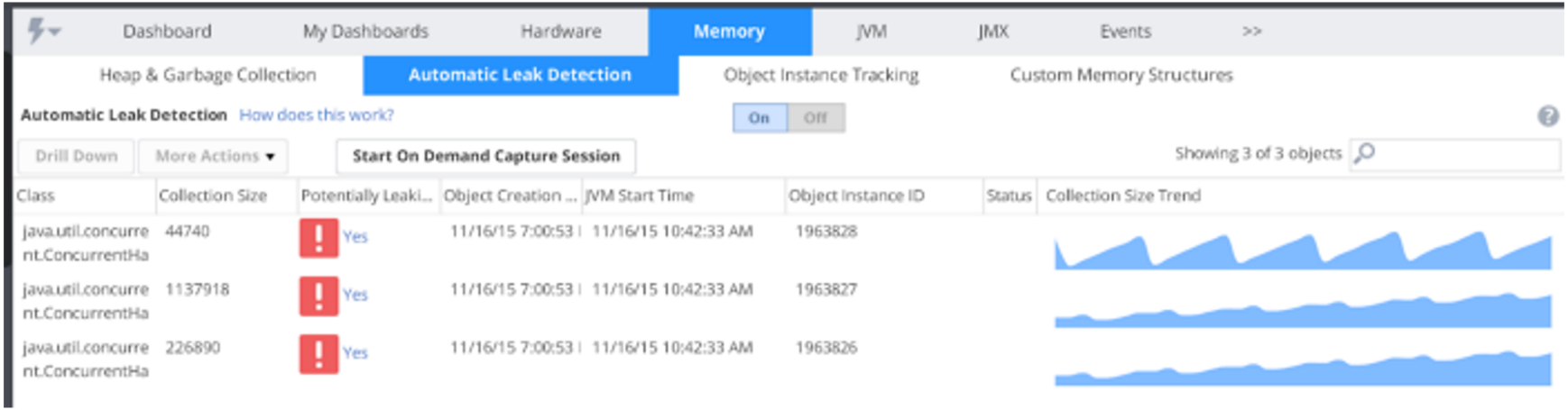


Image by StockSnap from Pixabay

Conclusion

Question Time!