

Serverless Sherlock Returns

Cracking Fargate Mysteries with New Relic Observability

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The Detective Journey



AWS Fargate in 30 Seconds

“AWS Fargate: Run containers—without managing servers, clusters, or VMs.”

- Serverless containers
- No infrastructure management



Photo by frank mckenna on Unsplash

A black and white portrait of Werner Vogels, CTO of Amazon.com. He is a middle-aged man with a beard and mustache, wearing a dark jacket over a dark t-shirt. The background is a blurred outdoor scene with trees and a path. A blue rectangular box is overlaid on the right side of the image, containing a quote and his name and title. The AWS logo and a partial text "ed the Turing tes" are visible in the bottom left corner.

**“Everything fails,
all the time.”**

Werner Vogels
CTO, Amazon.com



ed the Turing tes

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The Mystery Unfolds

Symptoms

- Average response times jumped from 200ms to 1200ms within 30 minutes
- Error rates spiked by 25%
- Unexplained task restarts



With each passing minute, user complaints were piling up, and our on-call team was scrambling for answers.

**Without direct server access,
where do you start solving this
mystery?**

Why Fargate Failure is mysterious



In the world of serverless, we've traded control for convenience. But when things go wrong, we find ourselves in a fog of abstraction.

Key challenges

- Limited visibility into the underlying infrastructure
- Ephemeral nature of Fargate task
- Lack of direct access to the host
- Difficulty in local reproduction
- Standard metrics and logs offer limited insight into dynamic issues.



Photo by Tracy Higashi on Unsplash

In the Dark...

“Logs everywhere. But no answers.”

- Overwhelming logs: High volume of unstructured log data from distributed services.
- Lack of context: Logs provide event details but lack correlation and causality.
- Investigative burden: Manual searching and filtering prolong incident resolution.



The Classic Clue Hunt

“CloudWatch shows you what happened—but not why.”

- Symptom visibility
- Fragmented evidence
- Manual correlation

CloudWatch: “All Evidence, No Links”

You have all the clues — logs, errors, metrics — but every new issue means starting from scratch. Nothing is connected, everything is scattered.



The Classic Clue Hunt

“CloudWatch shows you what happened—but not why.”

CloudWatch > Log groups > /ecs/fargate-fastapi > All events

CloudWatch

Favorites and recents

Dashboards [New](#)

▶ AI Operations [Preview](#)

▶ Alarms 0 0 0

▼ Logs

Log groups

Log Anomalies

Live Tail

Logs Insights [New](#)

Contributor Insights

▶ Metrics

▶ Events

▶ Application Signals [New](#) (APM)

▶ Network Monitoring

Log events

You can use the filter bar below to search for and match terms, phrases, or values in your log events. [Learn more about filter patterns](#)

error 1m 1h UTC timezone Display

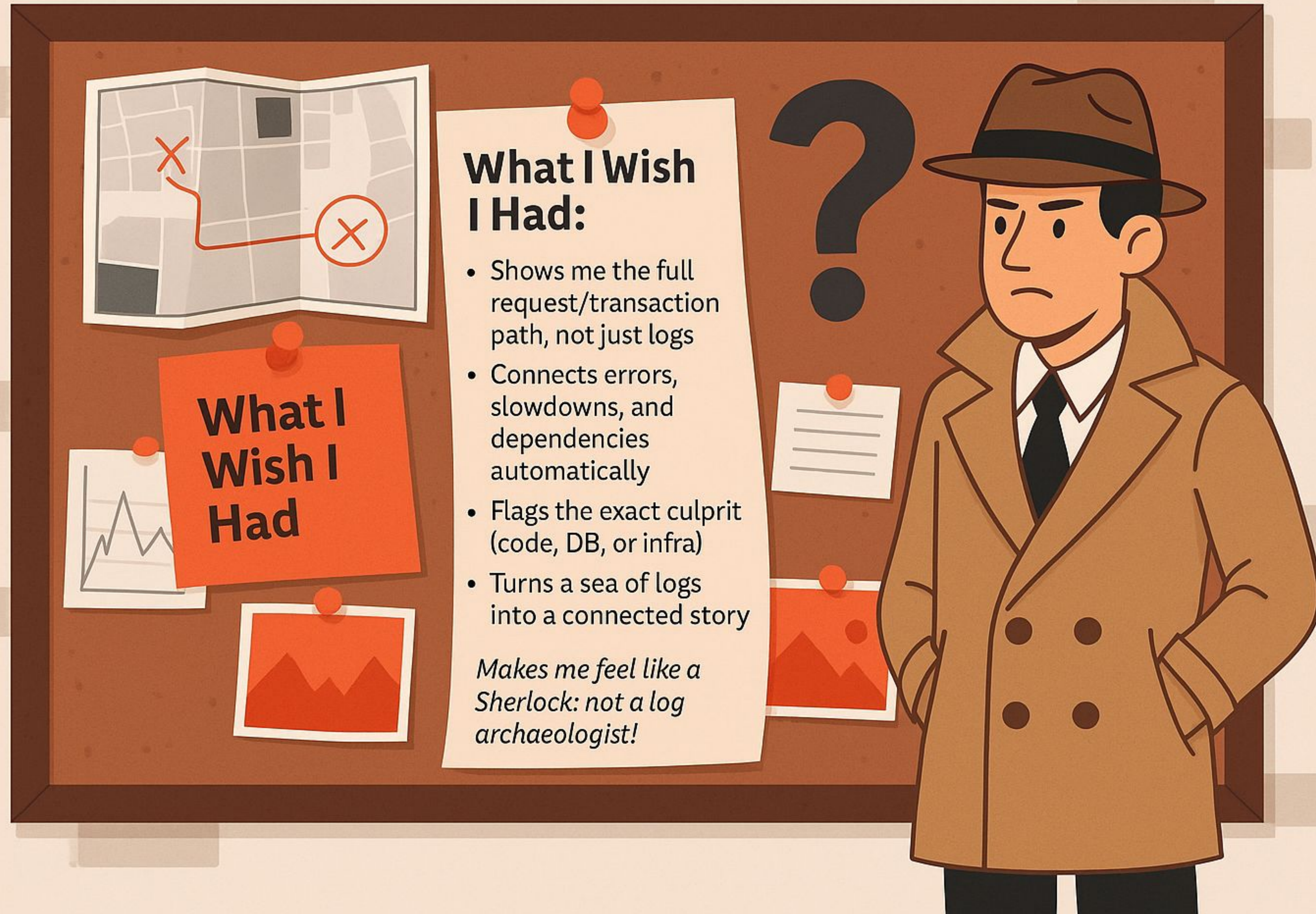
Timestamp	Message	Log stream n...
2025-06-12T00:32:03.298Z	2025-06-12 00:32:03,297 (1/MainThread) newrelic.config DEBUG - register module ('graphql...	ecs/fastapi/cdb...
2025-06-12T00:32:03.304Z	2025-06-12 00:32:03,304 (1/MainThread) newrelic.config DEBUG - register module ('starlet...	ecs/fastapi/cdb...
2025-06-12T00:32:04.797Z	2025-06-12 00:32:04,796 (1/MainThread) newrelic.config DEBUG - instrument module ((<modu...	ecs/fastapi/cdb...
2025-06-12T00:32:08.179Z	2025-06-12 00:32:08,179 (1/NR-Activate-Session/fargate-fast-api-demo) newrelic.common.ut...	ecs/fastapi/cdb...
2025-06-12T00:37:11.657Z	INFO: 10.0.1.124:44892 - "GET /error HTTP/1.1" 500 Internal Server Error	ecs/fastapi/cdb...
2025-06-12T00:37:11.662Z	File "/usr/local/lib/python3.11/site-packages/starlette/middleware/errors.py", line 186,...	ecs/fastapi/cdb...
2025-06-12T00:37:11.662Z	File "/usr/local/lib/python3.11/site-packages/starlette/middleware/errors.py", line 164,...	ecs/fastapi/cdb...
2025-06-12T00:37:11.662Z	File "/app/main.py", line 19, in trigger_error	ecs/fastapi/cdb...
2025-06-12T00:37:11.662Z	raise Exception("Simulated server error")	ecs/fastapi/cdb...
2025-06-12T00:37:11.662Z	Exception: Simulated server error	ecs/fastapi/cdb...
2025-06-12T00:37:14.550Z	2025-06-12 00:37:14,550 (1/NR-Harvest-Thread) newrelic.core.application DEBUG - Sending ...	ecs/fastapi/cdb...
2025-06-12T00:37:20.473Z	INFO: 10.0.1.124:44896 - "GET /error HTTP/1.1" 500 Internal Server Error	ecs/fastapi/cdb...

A Mystery from My ECS Days

- Months chasing a 502 timeout
- Logs pointed everywhere—app, DB, network
- We manually tuned infra, scaled up, added application logs
- Using PHP Xdebug done profiling of app flow

The real culprit?





What I Wish I Had:

- Shows me the full request/transaction path, not just logs
- Connects errors, slowdowns, and dependencies automatically
- Flags the exact culprit (code, DB, or infra)
- Turns a sea of logs into a connected story

Makes me feel like a Sherlock: not a log archaeologist!

The Detective's Toolkit

The Breakthrough

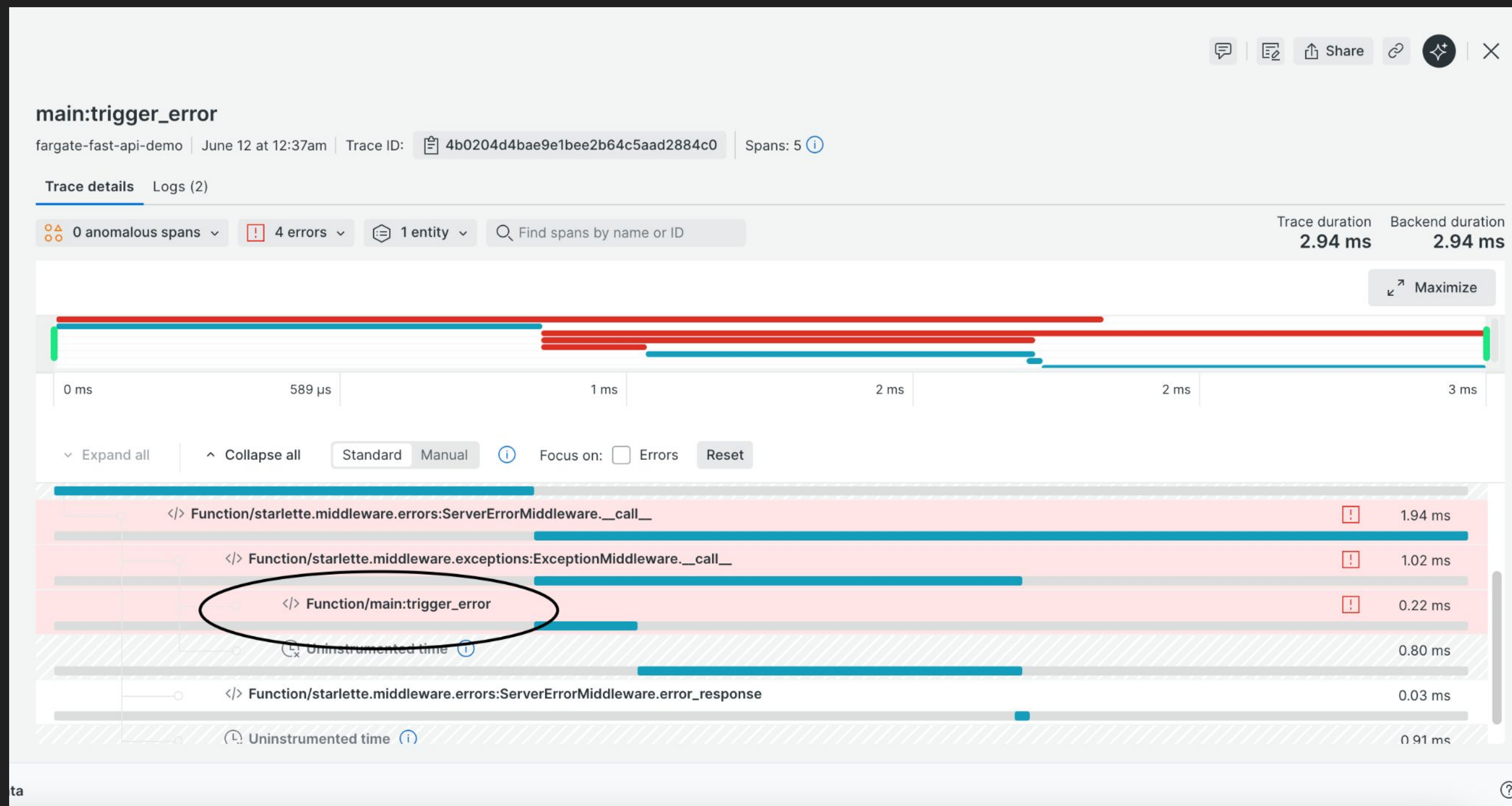
“New Relic pulls the clues together.”

- Correlation engine: New Relic automatically correlates logs, traces, metrics, and errors.
- Unified view: Presents a cohesive narrative from scattered observability data.
- Real-time insights: Enables fast diagnosis with visual linkages across stack layers.



The Breakthrough

“New Relic pulls the clues together.”



Want to Be a Sherlock?

“Add New Relic to your Fargate stack. Solve mysteries faster.”

Startup.sh

```
1  #!/bin/bash
2  envsubst < /app/newrelic.ini > /app/newrelic_runtime.ini
3  export NEW_RELIC_CONFIG_FILE=/app/newrelic_runtime.ini
4  exec newrelic-admin run-program uvicorn main:app --host 0.0.0.0 --port 8080
5
```

Want to Be a Sherlock?

Dockerfile

```
1 FROM python:3.11-slim
2
3 WORKDIR /app
4
5 # Install system dependencies
6 RUN apt-get update && apt-get install -y wget procs gettext && \
7     rm -rf /var/lib/apt/lists/*
8
9 # Install Python dependencies including New Relic agent
10 COPY requirements.txt .
11 RUN pip install --no-cache-dir -r requirements.txt newrelic
12
13 # Copy app code and config
14 COPY . .
15
16 # Copy static New Relic config file with placeholders
17 COPY newrelic.ini /app/newrelic.ini
18
19 # Copy custom startup script
20 COPY start.sh /app/start.sh
21 RUN chmod +x /app/start.sh
22
23 # Use entrypoint script to configure and run app
24 CMD ["/app/start.sh"]
25
```



Why Not X-Ray?

- AWS X-Ray – Great for AWS Service-Level Tracing
- Smoothly visualizes service maps for AWS API Gateway, Lambda, DynamoDB, ECS, etc
- Provides trace-level insight into AWS-managed services
- Lack of all programming language supports
- Still new

The Case Closed

- Reduced MTTR: New Relic cuts mean time to resolution by correlating clues instantly.
- Proactive diagnostics: Go beyond alerts—understand root causes before users are impacted.
- Mission accomplished: Detective work complete; issue understood, explained, and resolved.



Photo by Agnieszka De Val on Unsplash

***“As any good detective knows,
preventing crime is as important as
solving it”***

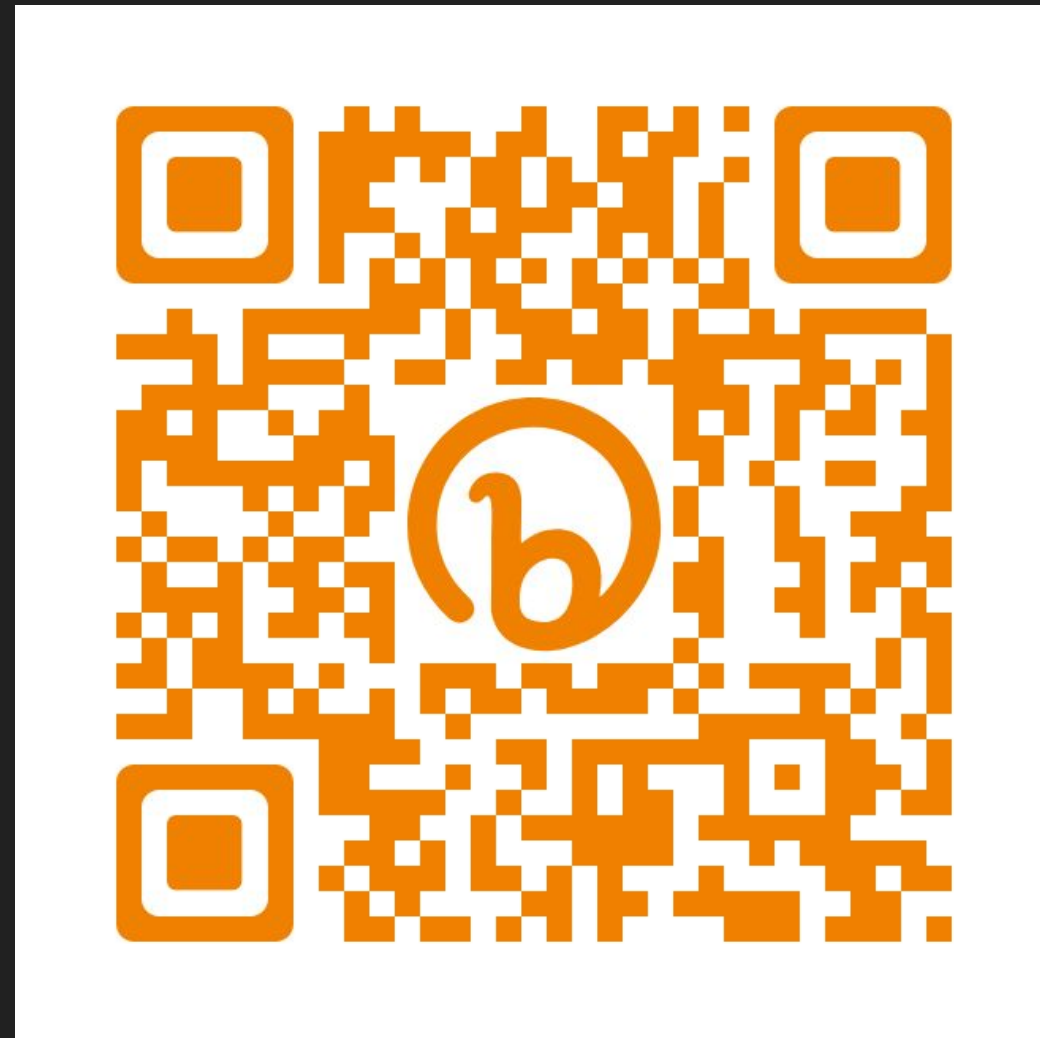
Implementing Proactive Measures

Key strategies

- Implement comprehensive logging, tracing, and status monitoring from the start.
- Set up proactive alerting using CloudWatch Alarms.
- Use AWS Fargate Platform latest version or later for enhanced debugging capabilities.
- Regularly review and optimize your task definitions.
- Embrace Infrastructure as Code for consistent, reproducible deployments.
- Implement and regularly check your application's status page for early warning signs.

“In the end, it’s not just about solving the mystery—it’s about preventing the next one.”

Thank You!



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