Fraud Application Hardening

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AT&T Business

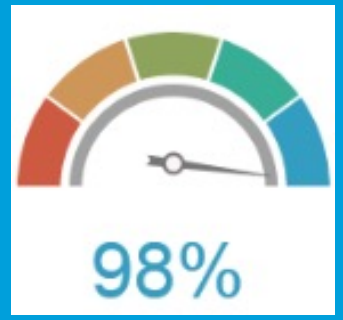
Agenda

1: Infrastructure
2: APIs
3: Tracers
4: Database
5: Messaging
6: Kafka
7: ML Models
8: Certs
9: Feeds
10: Alerting

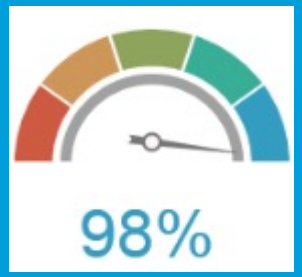
A release is like a boat. 80% of the holes plugged is not good enough.

1. Infrastructure

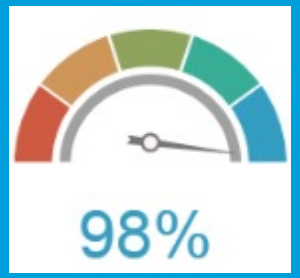
Infrastructure
Health Scorecard



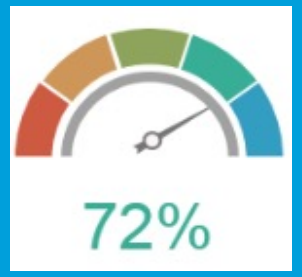
Overall Fraud Health



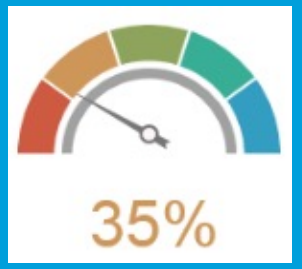
Avertack UI Health



Decision Engine Health



Internal APIs Health

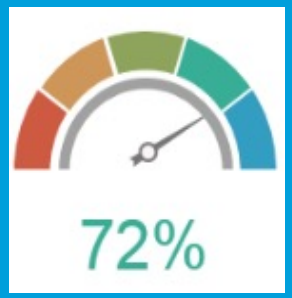


3rd Party/External APIs Health

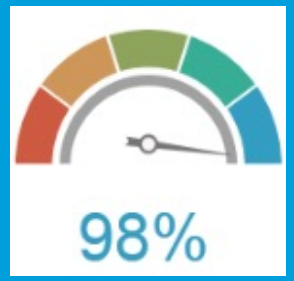
ML Models Health

MongoDB Health

Kafka Health



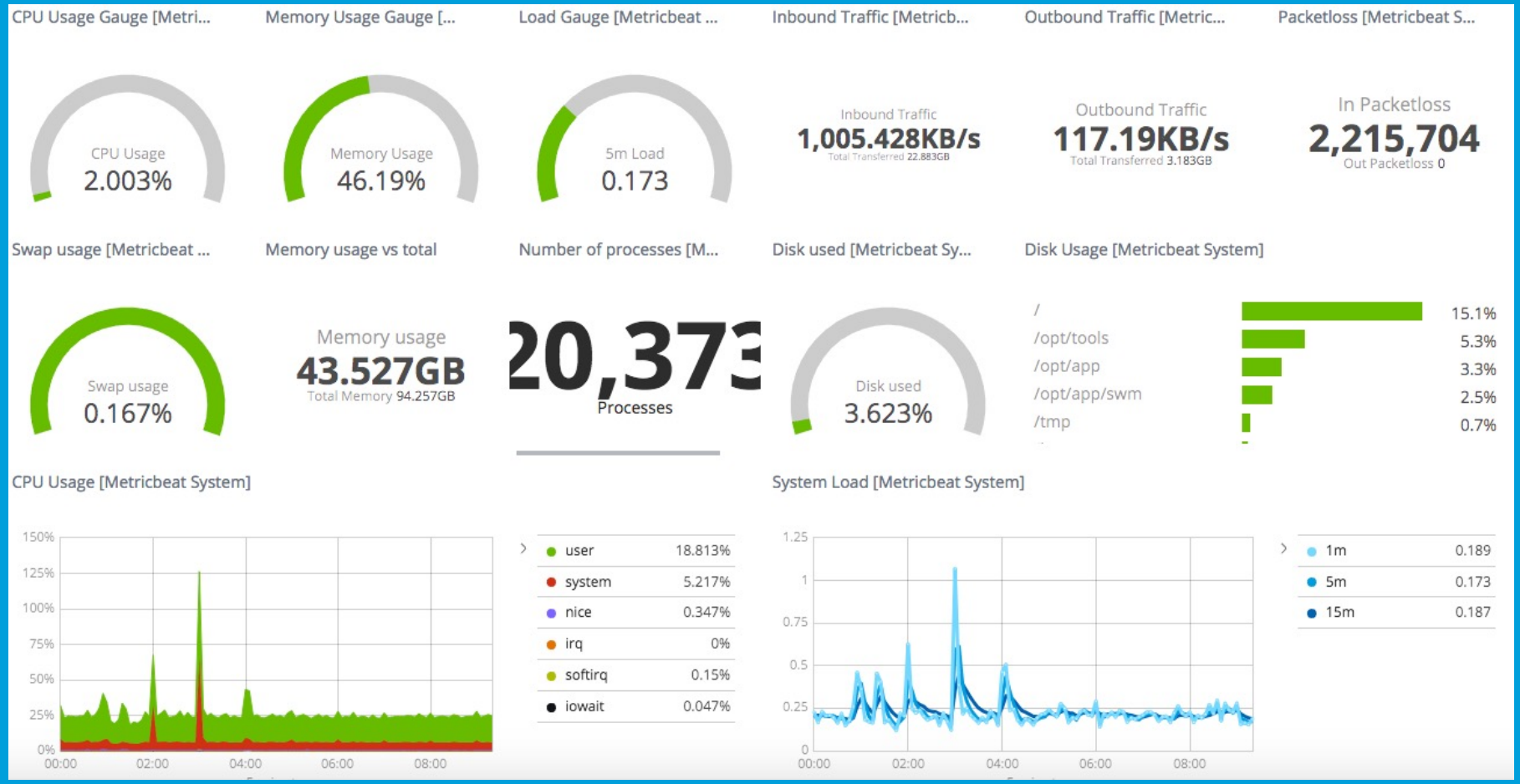
Redis Health



Infrastructure Health

Infrastructure
Health Scorecard

- Memory Usage
- Max CPI Memory Used
- Avg CPU Memory Used
- CPU Memory Promise Success
- Work Rescheduled
- Max CPU Memory Clock
- Max CPU Processor Clock
- CPU Memory Promised
- CPI Memory Available for Promise
- Max CPU Process Count



2. Internal and External APIs

Internal and External APIs

Internal

APIs exposed only to clients and developers within an organization.

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External

Developers use to integrate their applications with a third-party resource, such as a public cloud service or a SaaS application

Internal and External APIs

Monitoring

Implement monitors and remediation monitoring for all business-critical flows

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Response Time

Calling APIs, monitoring SLA and response within time (count), 200 and non-200)

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Ability to change the interval aggregation window by time period

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Store and generate volume statistics

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Volume Metrics

Decision engine to monitor standard deviation of volume

3. Tracers

Tracers

What is a tracer?

- Dummy message sent over the wire / simulation to Identify connectivity between two end points.
- Create tracers for systems that our system talks to.
- External third-party systems dummy request and get response back.
- SLA how long to get message back

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Portal for external connection

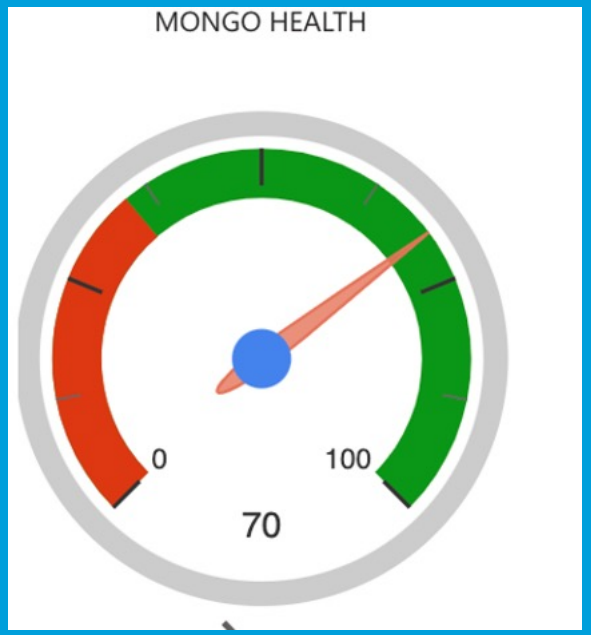
External third-party systems

- External entry point into AT&T network
- Third parties' access internal API through a portal
- Tracer used to send API as if we're an external third party

4. Database

Database (MongoDB)

Implement monitors and remediation for MongoDB for all business-critical flows.



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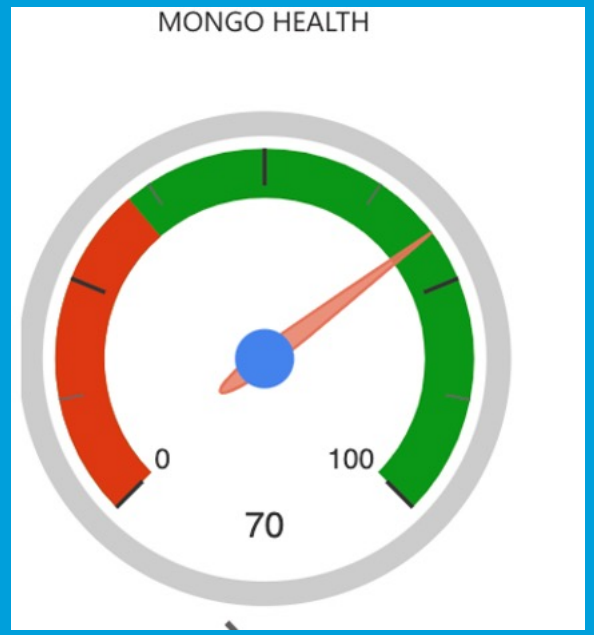

Disk space

 # connections made

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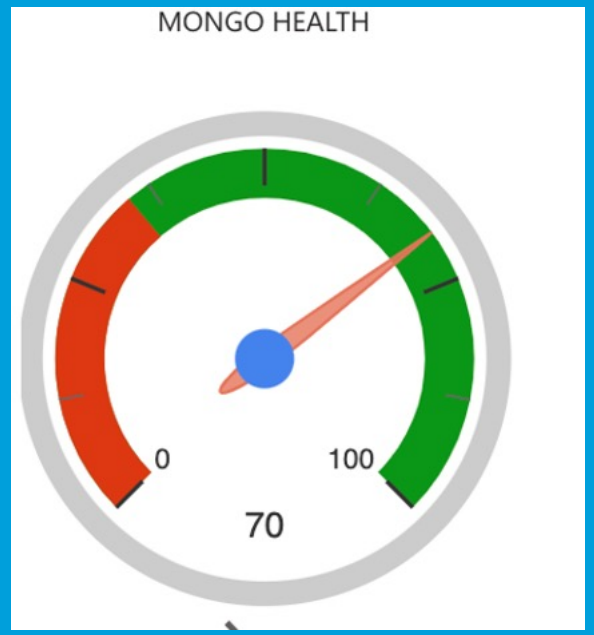

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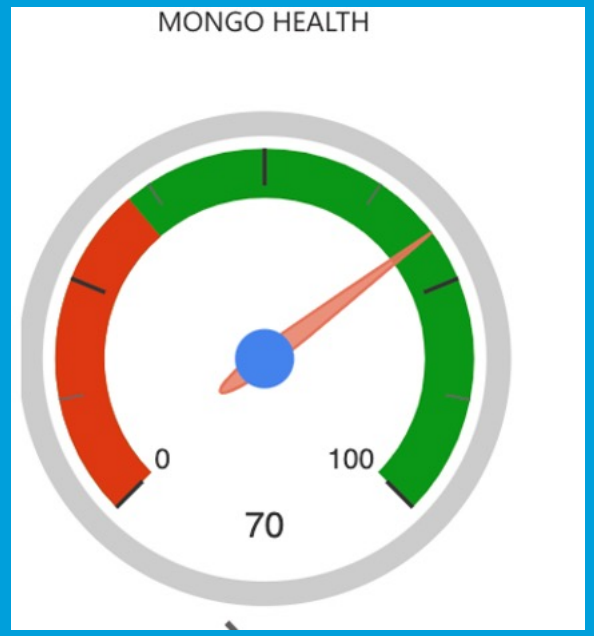

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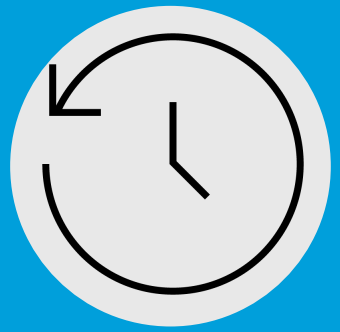

Query time

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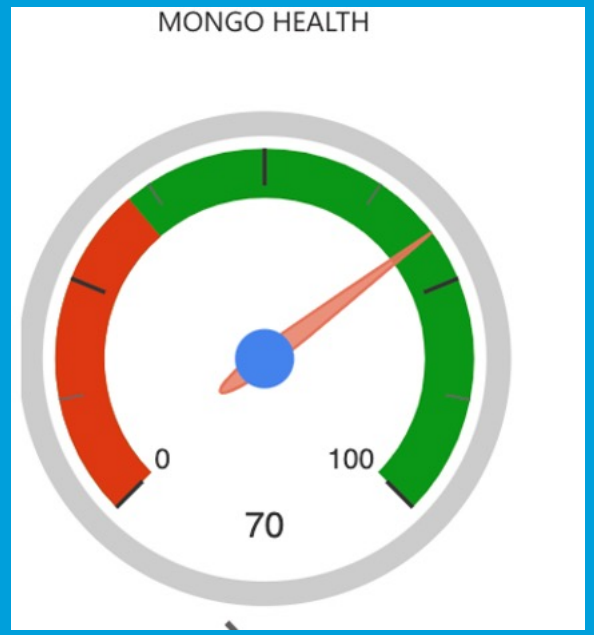

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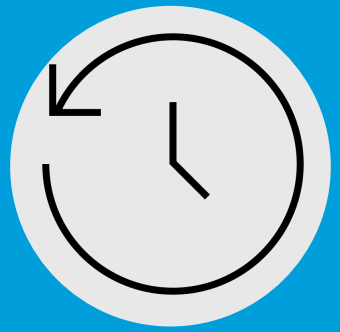


Query time

Heavy disk usage

5. Messaging System

Messaging System

Publish & Subscribe to Topics

Constantly aggregating messages published

- Configured to count on a time window
- Topic messages should never be zero
- Every 60 minutes, ensure something is published

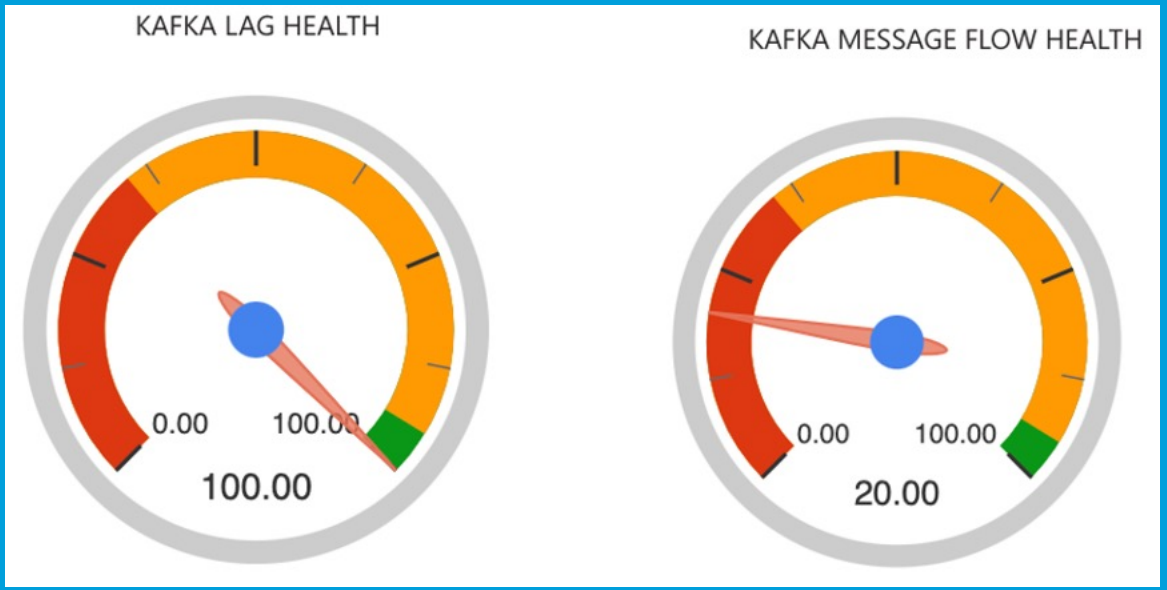
6. Kafka

Kafka

Kafka Lag Health

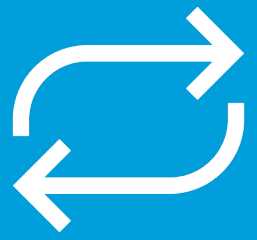
Produce & consume messages

- If lag exists, consumers are down
- Process when received
- Producer flow health



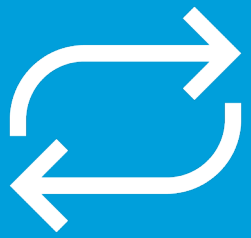
7. Machine Learning Models

Machine Learning Models
Monitoring and Maintenance



Models get stale, use a feedback loop

Machine Learning Models
Monitoring and Maintenance



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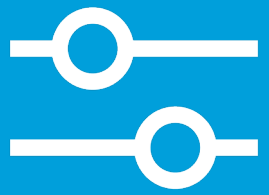

Scalability, accuracy, data & model drifting

Machine Learning Models
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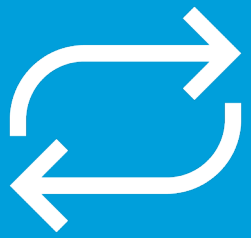

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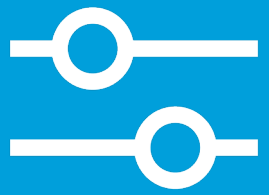

Scalability, accuracy, data & model drifting

Metrics, score, accuracy monitoring

Machine Learning Models
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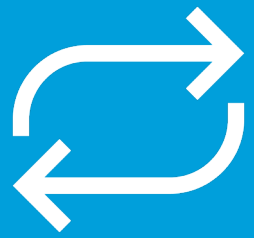

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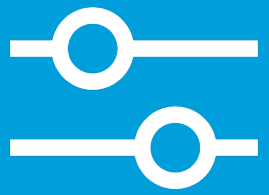

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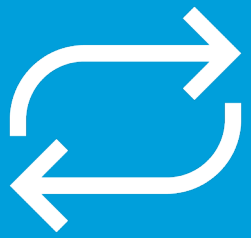

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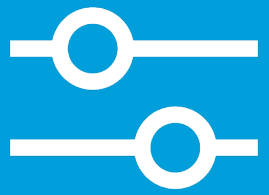

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SLA for ML models

Model quality and making connections

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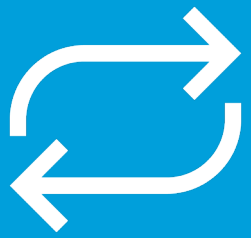

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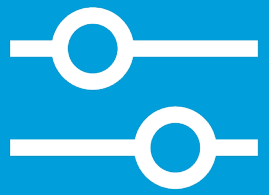

Scalability, accuracy, data & model drifting

Metrics, score, accuracy monitoring

SLA for ML models

Model quality and making connections

Test connection and service calls

Machine Learning Models
Tracer

Take Inventory of ML models.

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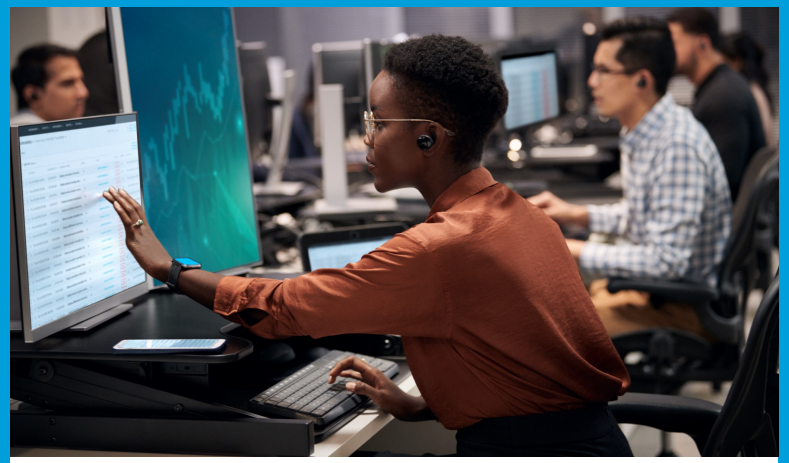

Create payload with dummy data.

Machine Learning Models
Tracer

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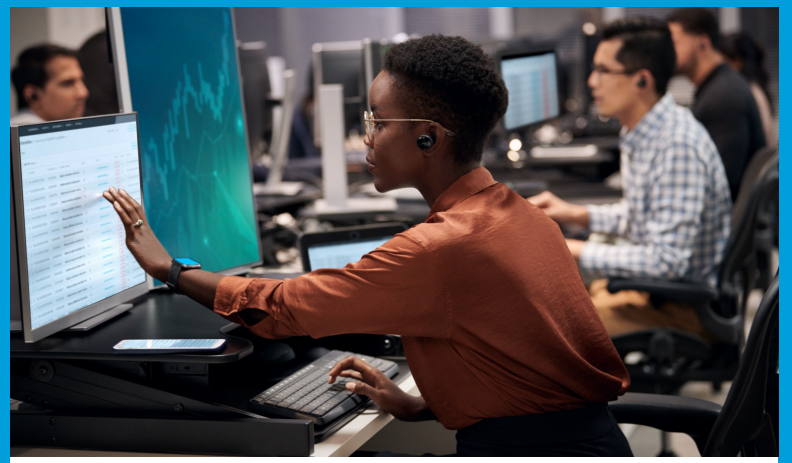

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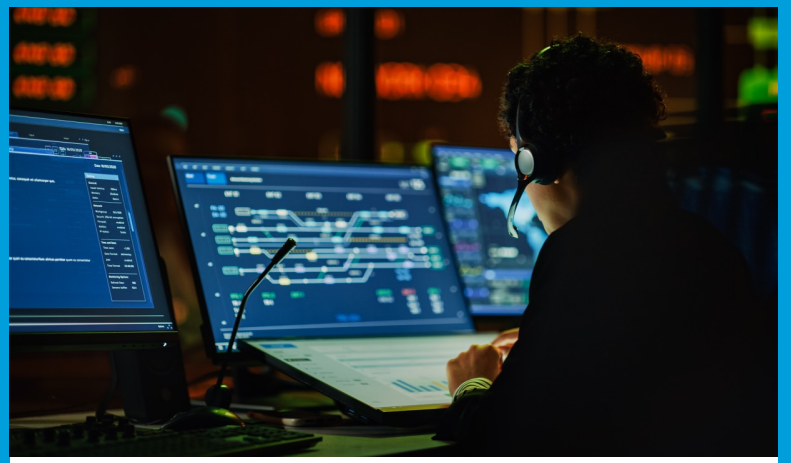

Verify results

8. Certificates

Certificates

Certificates are updated once a year. This impacts connections due to authentication.

Monitor rules for certificates

- All physical certificates on each server
- Based on physical machines, not systems
- Check is run every morning
- Certificate status, sends alert when certificate is about to expire

9. Feeds

Feeds

Record Absentee Detection

Rules run against Mongo DB collections

- Check as records are coming in
- If a feed goes away, we want to be alerted
- Application-level and case-level monitoring

10. Alerting

Alerting
Distribution of Alerts

Variety of methods (email, instant messaging, text message, phone calls, etc.)

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Correlating alerts across components and grouping into a single case

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Correlating alerts across components and grouping into a single case

Greatly reduce noise

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Distribution of Alerts

Variety of methods (email, instant messaging, text message, phone calls, etc.)

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Multi-escalation Engine, Production Support, Escalation Management

Correlating alerts across components and grouping into a single case

Greatly reduce noise

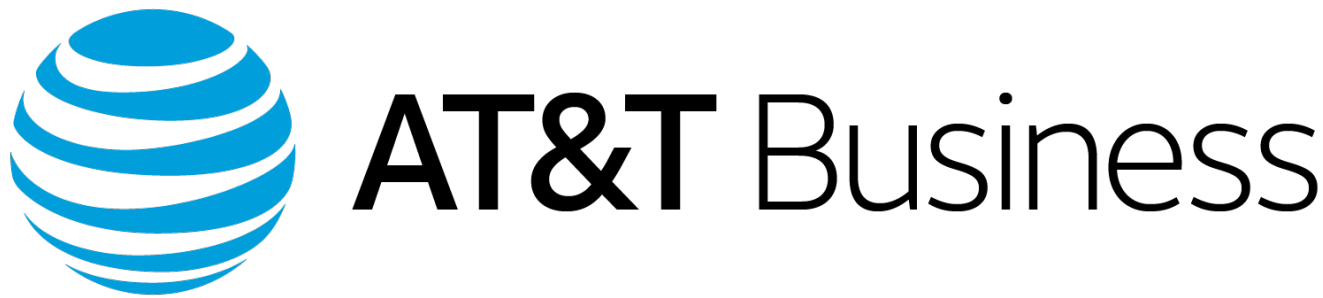
Created targeted remediation group for each business flow

Conclusion

All encapsulating monitoring and alerting tool

Fraud Application Hardening – complete protection

- Customized rules & logic
- Correlate all alerts based on unique key
- Aggregate and generate one alert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