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Observe smartly to Manage Less: The OVM Story

Enabling Intelligent Observability Volume Management

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Your Clusters Are Trying to Tell you Something!

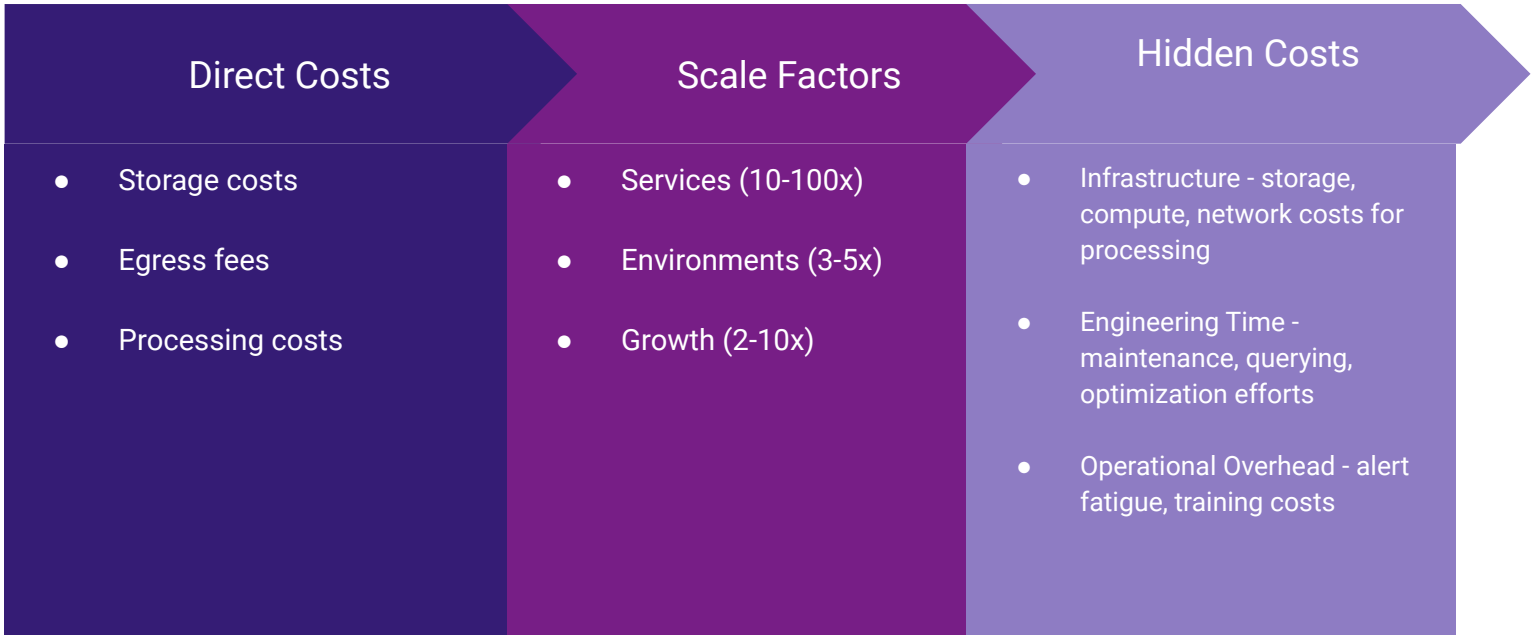
The Observability Crisis

- **Alert Fatigue**
  - Thousands of alerts daily
  - Low signal-to-noise ratio
  - Team burnout
- **Metric Overload**
  - Explosion of data points
  - Storage requirements growing
  - Processing overhead

Edge Makes It Worse

- **Bandwidth Limitations**
  - Often restricted by local infrastructure
  - Can vary from tens to hundreds of Mbps
  - Highly location dependent
- **Latency Challenges**
  - Typically 50-100ms to cloud
  - Can exceed 200ms for remote locations
  - Critical for real-time applications
- **Storage Constraints**
  - Edge devices often limited to hundreds of GB
  - Local storage costs can be significant
  - Backup and redundancy challenges

The Observability Tax



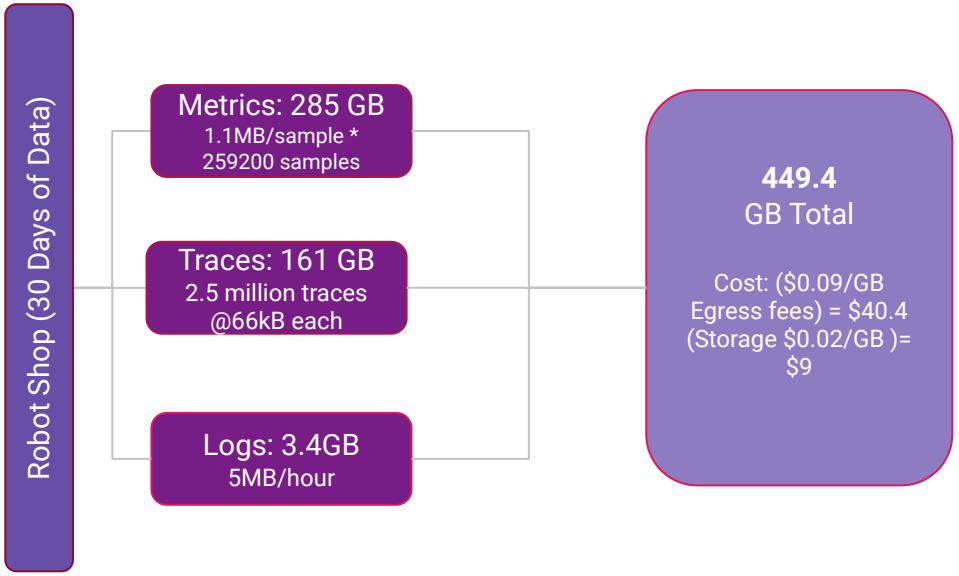
Ref: https://www.honeycomb.io/blog/cost-crisis-metrics-tooling-excerpt,
https://community.ibm.com/community/user/aiops/blogs/trent-shupe/2022/02/25/the-hidden-cost-of-observability-data-volume

Proving the Problem: Robot Shop Example

Setup

- 4 node Kubernetes cluster
- Monitoring stack
  - Prometheus
  - Jaegar
  - Fluentd
- Constant load over 24 hours

Volume & Cost Break Down



Ref:https://community.ibm.com/community/user/aiops/blogs/trent-shupe/2022/02/25/the-hidden-cost-of-observability-data-volume
https://grafana.com/blog/2021/07/08/how-salesforce-manages-service-health-at-scale-with-grafana-and-prometheus
https://grafana.com/blog/2023/01/04/4-billion-logs-120-tb-of-data-how-just-eat-takeaway.com-uses-grafana-cloud-to-scale

Survey Says: Naïve Data Reduction Isn't the Answer!

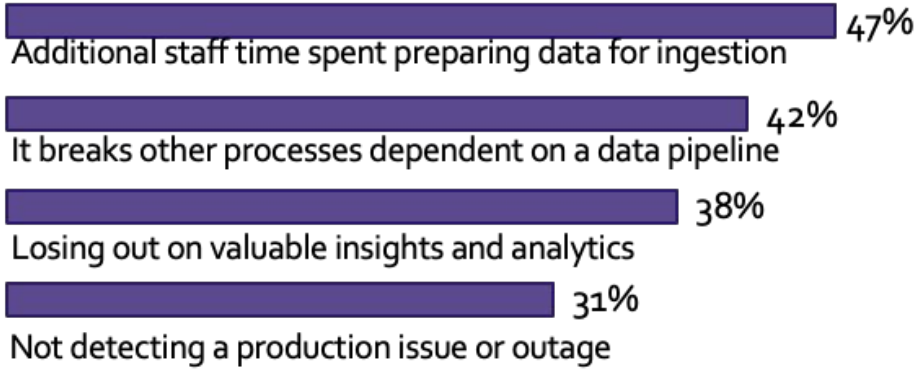
Respondents[1] stated that rising observability costs outweighed the benefits.

Respondents[1] said cloud-native stacks generate more data than humans can manage.

Respondents[2] agree that observability ROI has not grown at the same rate as costs

Respondents[2] stated that they limit observability data to save money.

Why naïve volume reduction won't work?[2]



1 Observability Survey Report by Dynatrace.

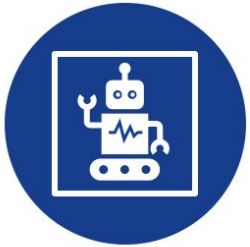
2 Observability Survey Report by Edge Delta.

Time to listen to your Clusters' Needs!

(with Observability Volume Manager, OVM)

Observe Smartly to Manage less, with no impact to any of the observability tasks

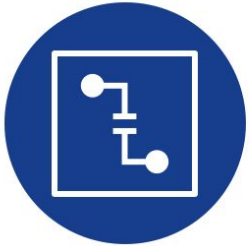
What does OVM Bring ?



Automation: Dynamic monitoring and enforcement of user-defined transformations without requiring user intervention.

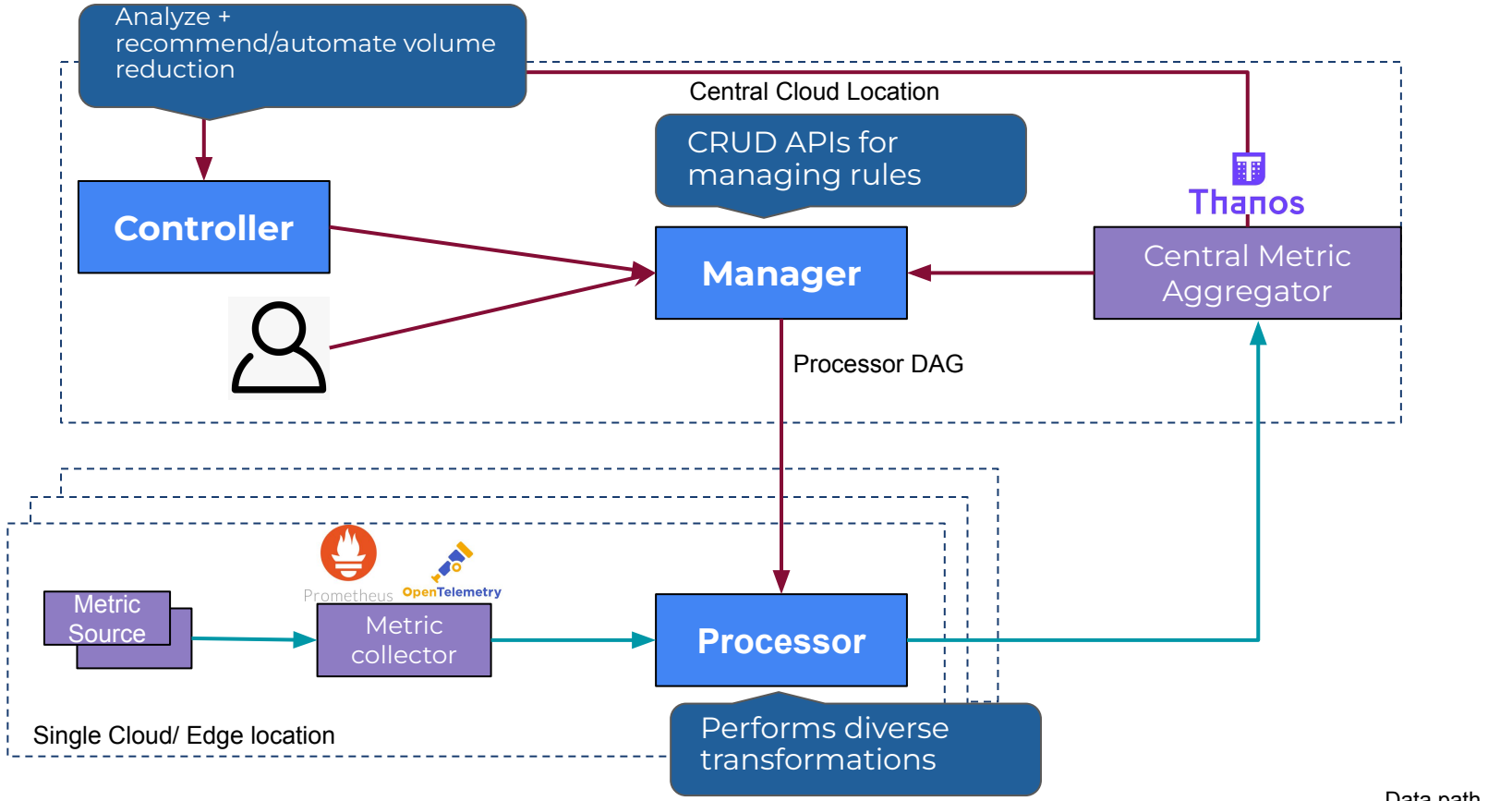
Specificity: Fine-grained control per edge location/ per metric on an edge.

Intelligent pruning: Recommend/Automate transformation based on pattern in observability data such as correlation and similarity.



Adaptive Monitoring: Based on change in risk level of the edge.

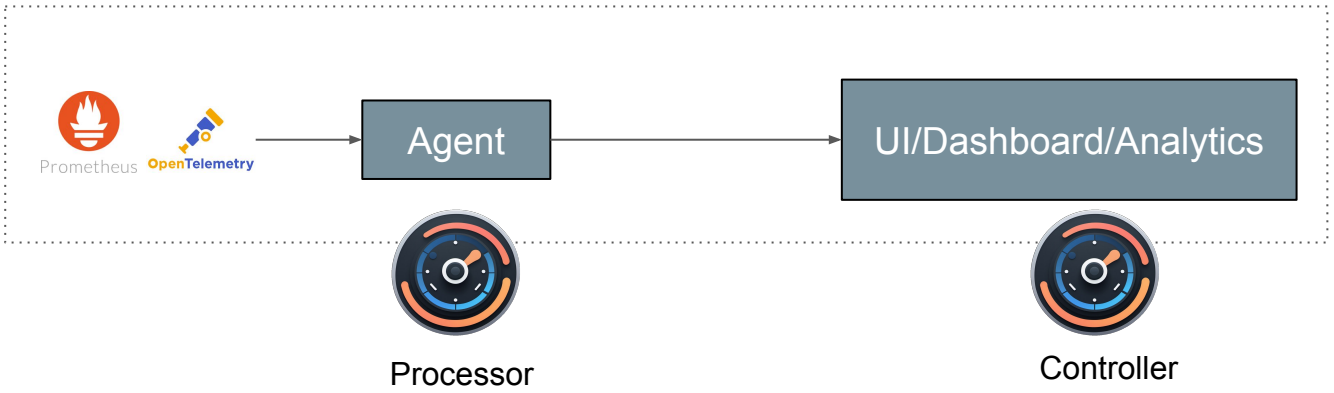
Architecture Overview



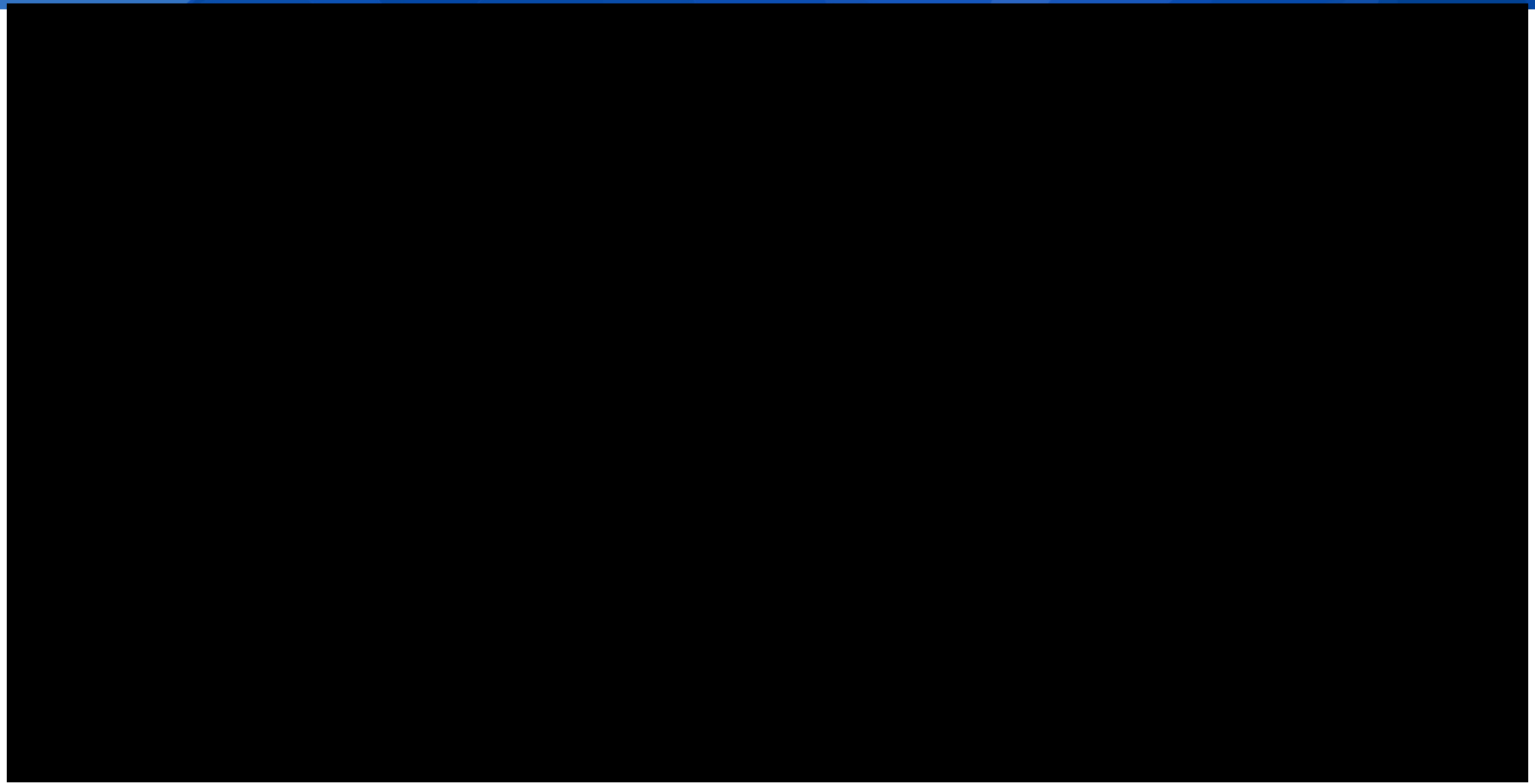
How do we fit in?

new relic | splunk | instana | meezmo

DataDog | dynatrace | grafana | coralogix | honeycomb.io



See it in Action!



Benefits of OVM

High bandwidth consumption

Metrics sent at max Frequency (1sec)

OVM bandwidth = Prometheus bandwidth (freq:30s)
OVM intelligently & dynamically adapts to collect important metrics at finer granularity

Limited bandwidth consumption

Metrics sent at min Frequency (100 sec)

Prometheus

Ideal Anomaly Detection Performance

OVM reduces impact on anomaly perf by 600x compared to Prometheus (freq:30s)

Anomaly Detection Performance for Prometheus while consuming same bandwidth as OVM

Most impact on anomaly detection performance

These results have been collected over 50 anomalies

What's Next?

- Support log and trace modalities
- Route data to multiple destinations
- Enrich + aid PII masking
- Keep making OVM more intelligent!

Join The Conversation

- **Blog**: Observability Volume Management, (Linkedin)
- **Blog**: Master Observability with OVM and OpenTelemetry, (Medium)
- **Paper**: Enabling Programmable Metric Flows (IEEE Cloud 2024)
- **Reachout:** observolmgt@gmail.com

https://github.com/observ-vol-mgt/observ-vol-mgt

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Thank You!!

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George Zaronikas
Myriam Fentanes
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Vaishnavi Hire
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