EDGE DELTA

Best Practices for Reducing Observability Costs

How to Improve TCO Without Sacrificing Visibility

Many log monitoring solutions were originally architected when ingest volumes of data were measured in GBs per day.

Observability Practices Need a New Way to Solve Data Gravity

Data gravity refers to the difficulty of moving data as it grows in size and volume. As a byproduct, deriving value from your data becomes cost prohibitive and slow.

Data gravity is affecting observability practices in particular because log data volumes have ballooned over the past several years. According to a recent survey commissioned by Edge Delta, log data has grown 5x on average over the past three years [1].

At the same time, observability and monitoring tools haven't changed their approach to adapt to data growth. As Gartner® explains, "Many log monitoring solutions were originally architected when ingest volumes of data were measured in GBs per day." They continue, "Today, many large enterprises are ingesting higher than 10TBs per day, with an increasing number observed in the 100TB range.[2]"

[1] "Charting Observability 2023: A Voyage Into Data Growth and the ROI of Observability." Edge Delta, September 2023, edgedelta.com/charting-observability-2023.

[2] Gartner, *Cool Vendors in Observability and Monitoring for Logging and Containers*, Published 27 April 2022

Increase in Log File Consumption by Large Enterprises

Log Volume Ingested

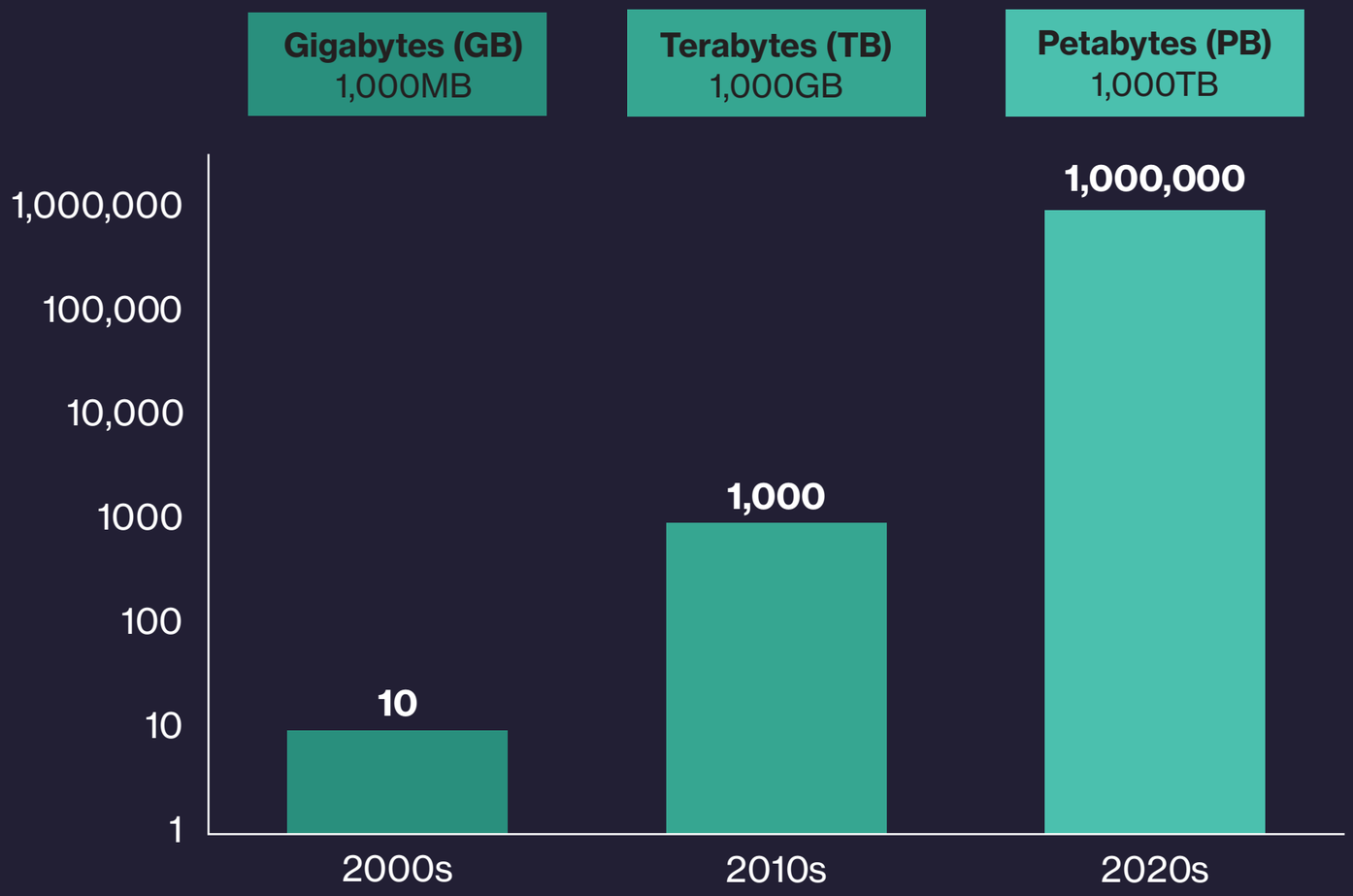


FIGURE 1: *Cool Vendors in Observability and Monitoring for Logging and Containers*, April 2022

The combination of unbounded data growth and outdated observability and monitoring architectures creates several challenges, ranging from poor performance to excessive costs.

In this guide, we'll offer recommendations on how customers can mitigate data gravity. We'll help you balance the needs of your team (e.g., uncovering real-time insights) and the business as a whole (e.g., adopting a budget-friendly solution). But first, let's look at the challenges in greater depth.

Data Growth Makes Observability Costly

FREQUENCY OF OVERAGES/COST SPIKES

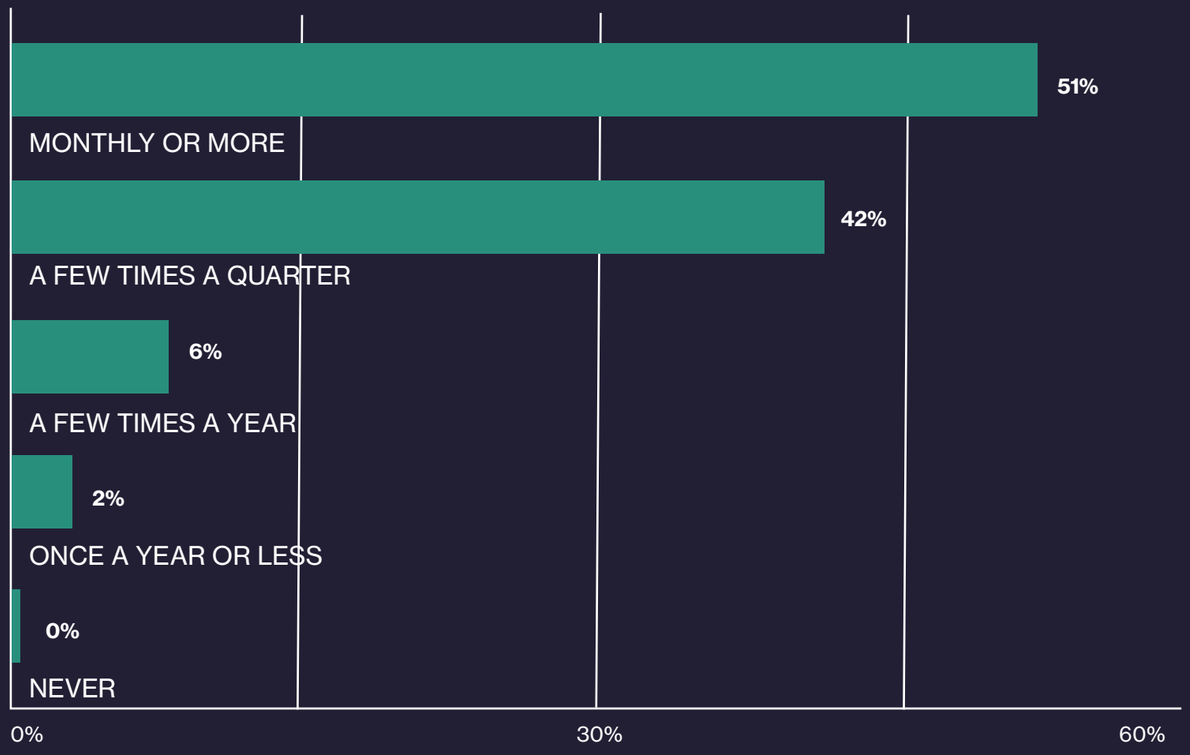


FIGURE 2: 98% experience overages or unexpected spikes in costs at least a few times a year

In the previous section, we established that most observability and monitoring platforms were architected in a previous era – when data volumes were comparatively smaller. These platforms typically charge customers based on the volume of data they ingest.

As a byproduct, it's becoming prohibitively expensive for companies to analyze all of their log data. How dire has this challenge become? In Datadog's 2023 first-quarter earnings call, it was revealed one cryptocurrency company spent a whopping $65 million on observability the previous year.[2] While this is an extreme example, there is growing sentiment that the value customers receive from their observability tools doesn't match the cost they pay.

In a recent survey, 84% of respondents agreed that the ROI of observability tooling has not grown at the same rate as costs. Moreover, 98% stated that they experienced overages or unexpected spikes.

[2] Datadog (DDOG) Q1 2023 Earnings Call Transcript

Reducing Observability Costs

In order to reduce costs, organizations have tried several strategies to limit the volume of log data they ingest into their observability platforms.

Dropping Events	100% of this data type is discarded
Sampling Events	1 out of every N of this data type is delivered, the rest are discarded
Dynamic Sampling	Low-volume data of this data type is delivered at 100%. As volume increases, the percentage of dropped data increases.
Suppression	No more than N copies of this data type are delivered per unit of time.
Parsing + Trimming Events	Removing unnecessary, unwanted, or overly verbose parts of an event.

These strategies can help companies reduce log ingestion volumes in the short term, but there is still an underlying issue: data volumes continue to grow and legacy architectures can't handle this scale.

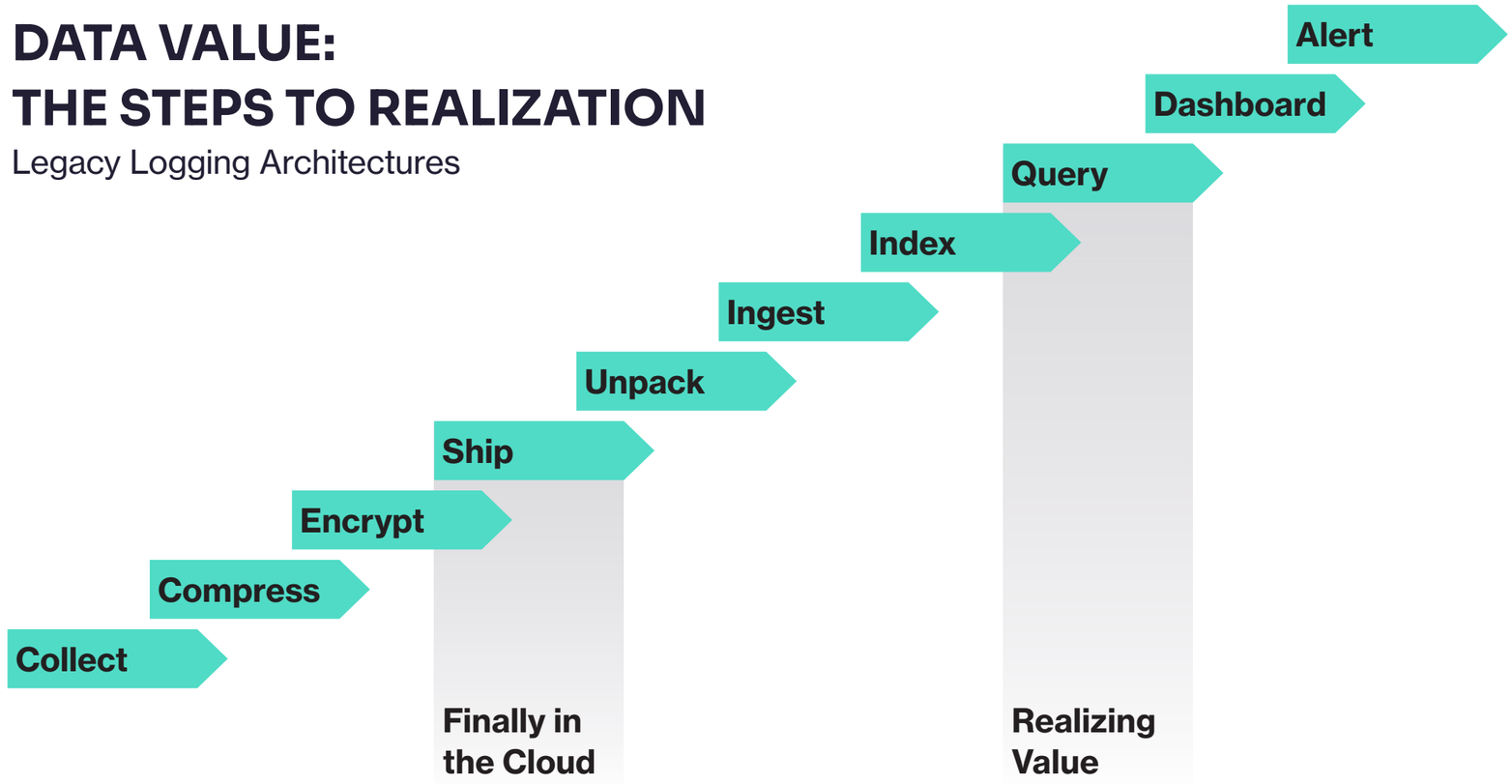
Additionally, each one of these strategies requires you to exclude data from your observability platform. In essence, you are required to foresee which data you'll need and which you are safe to neglect – a difficult task that creates blindspots for your team no matter how accurate you are. In the long term, the blindspots you create only get bigger as data volumes continue to grow, introducing risk to your observability practice.

Legacy Architectures Degrade Performance

The primary challenge organizations face is related to the cost of their observability tooling, but there is also the issue of performance.

DATA VALUE: THE STEPS TO REALIZATION

Legacy Logging Architectures



Centralizing log data is a complex process with many different failure points and bottlenecks that can slow analysis. Once data is finally indexed, your platform has to batch-process massive data volumes to generate analytics and return queries.

This process worked when data volumes were smaller, but now it creates bottlenecks that increase in severity as data volumes grow. At best, you can experience a delta between when your data is created and when it is finally analyzed. At worst, one of these points can fail and inhibit analysis altogether. Either way, teams struggle to support real-time use cases with this model.

Balancing User and Business Needs

Based on customer pain points, it's clear that the underlying challenge is architectural. It is not sustainable to collect, ship, ingest and analyze TBs of data each day. Before jumping to a better observability architecture, it's important to first audit how teams are using their data. There are typically two use cases:

REAL-TIME ANALYTICS

Running scheduled queries, populating dashboards, and triggering alerts to support real-time monitoring.

AD-HOC QUERIES

User-generated queries to troubleshoot production issues, investigate security incidents, and answer other questions.

Vendors have tried supporting both use cases with a centralize-then-analyze approach, but it's possible to support each use case by decoupling where you analyze data from where it's stored:

+ Process data upstream to support real-time use cases

+ Tier data across the optimal mix of storage targets for ad hoc queries

This gives teams the real-time insights they need from their data while protecting the business from excessive costs. In the sections that follow, we'll explain how this approach works at a deeper level.

Stream Processing for Real-Time Analytics

Many teams rely on software agents to collect and route data. However, teams ought to push compute upstream to where data is collected. Doing so enables you to:

- Derive analytics to better support real-time use cases
- Transform and enrich data for maximum data usability
- Detect known and unknown anomalies via machine learning

As a byproduct, stream processing your log data as it's created enables you to populate monitoring dashboards with lightweight analytics versus complete raw datasets.

This approach provides several advantages. First, teams no longer need to wait for data to be indexed before they are deriving value – they can analyze data and trigger alerts faster than before.

Second, the analytics created are based on 100% of your data rather than the percentage of data that is available after filtering and sampling rules have been applied. You'll receiving greater data coverage and able to monitor a broader set of services and systems than before.

Lastly, teams can dramatically reduce costs, given they are indexing analytics. In many cases, teams can avoid indexing the underlying raw data.

TAKEAWAYS

+ Derive analytics without paying to index complete raw datasets
+ Reduce the total volume of data you ship downstream to optimize cost and performance
+ Deliver faster insights to support real-time use cases by processing data upstream

Tiered Storage for Ad-Hoc Queries

Traditional observability providers are able to charge a premium, in part, because they offer a multitude of advanced features. However, when running ad hoc queries, teams seldom take advantage of these features. Instead, many teams rely largely on basic keyword searches (e.g., the service in question + “ERROR”). Moreover, a large percentage of indexed data is never intentionally queried. Thus, this is an area where you can leverage different tooling to maximize:

+ Cost-effectiveness
+ Data coverage
+ Data residency and security

It is also key to leverage an agent that can route data to different destinations. When you have this in place you can ship data to a combination of tools to support your use cases and desired cost efficiencies.

For example...

- Data that is frequently searched or needed for real-time analytics: Route to your primary observability tool
- Data that you search irregularly: Route to a secondary, lower-cost log search platform
- Data that you need for compliance: Route to archive storage for maximum cost savings

This approach enables you to preserve 100% of your data for troubleshooting and other investigations. As a result, your team no longer has to spend time setting rules and filters to capture the exact data they need. (And, more importantly, they no longer have to deal with blindspots in their datasets). Lastly, this approach enables you to minimize the TCO of your logging architecture.

TAKEAWAYS

+ Right-size costs by allocating frequently searched data to hot storage tiers, and lower-priority data to cost-effective storage
+ Greater data coverage: no more “blindspots”
+ Gain greater control over data security and residency to meet compliance and security needs

A New Approach to Observability

As a byproduct of log data growth, the current model of centralizing all raw data is no longer sustainable. Instead, teams need to audit their log data use and adopt a new approach that balances individual and business needs.

When you take this approach, you may land on the options detailed in this guide. You may also find alternatives that meet your team's unique needs. For example, perhaps you begin stream processing your log data for real-time analytics but continue relying on an index to maximize querying speed.

No matter the outcome, you need open and modular tooling to maximize the value of your log data both today and in the long term.

About Edge Delta

Edge Delta is a new way to do observability. We process your data as it's created and give you the freedom to route it anywhere. Make observability costs predictable, surface the most useful insights, and shape your data however you need.