



backyards

Integrated service mesh observability with Backyards



In general, Observability is the process of generating detailed telemetries, consisting of metrics, logs and traces, regarding all inter-service communications and individual service behaviour. Observability helps understanding the current state of services and infrastructure while also provides a baseline to define what the ideal state should be.

A microservice architecture is heavily dependent on observability as without it application downtime and failure are more likely to occur without anyone noticing and can last long enough to severely hinder business continuity and efficiency.

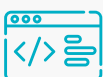
As a means to establish monitoring capabilities and transparency while lessening manual labor in an application driven infrastructure, organizations often implement a service mesh, which provides unified telemetry for any application in any programming language. A service mesh essentially provides the foundation for observability relatively out of the box.

Ideally, through observability organizations could gather, measure and evaluate valuable insights coming from the service mesh and make crucial decisions based on them, but in reality this is often easier said than done. Reason being is that service mesh on its own won't solve everything, it is only responsible for providing telemetry and not processing it.

The Values



From a **business** perspective observability can offer more flexibility to adapt to business trends by understanding customer behaviour and taking preemptive actions based on monitoring info.



From a **development** perspective observability can offer better understanding of application behaviour and identifying the need for debugging through monitoring feedback loops.



From an **operational** perspective observability can empower users to understand the state of the infrastructure and enables them to establish Service Level Agreements and Objectives.

The telemetries



Network access logs: A complete record of each service request, including source and destination metadata.



Distributed traces: Distributed trace spans for service call flow and dependencies.



Metrics: Metrics are based on the so-called four "golden signals" including: latency, traffic, errors, and saturation. They are essential for monitoring and understanding service behaviour.

The Challenge

The real challenge with service mesh observability lies in achieving it in a way that from all the vast amounts of gathered data only what is truly relevant is presented, and done so in a way that allows users to make decisions based on them. In addition, the level of complexity and the amount of possible open-source approaches associated with service meshes can make the realization of observability a daunting task to overcome.

How can Backyards help?

This is where Backyards, an Istio based service mesh platform, comes into the picture by providing a combination of open source technologies and commercial features as integrated and opinionated solutions in a production ready state.

Backyards both simplifies and takes observability to the next level through integrated features and services such as monitoring, tracing, tapping, drill down, topology, SLO and dashboards all combined in an opinionated manner based on industry best practices.

From telemetry to topology & drill down

Metrics, traces and logs already provide values on an individual level but their true potential lies in being correlated and presented in a way that they can transparently provide context and measurement over everything occurring in the mesh. Lacking the right tools and technical know-how can make this process extremely complex and difficult.

Backyards unifies, aggregates and correlates all generated observability telemetries and presents it via an intuitive topology view. The highest level of the topology view is the service mesh layer. This layer contains the most important network-level details and can be filtered based on namespaces, resources and show request rates, throughput, latencies and security details on edge labels. Through the topology view it is possible to drill down and trace back any issue from the top-level service mesh layer by navigating deeper into the stack, and see the status and the most important telemetry of the Kubernetes controllers, pods, and nodes.



From access logs to traffic tap

Access logs contain information on reporter proxy, source and destination workloads, request, response, as well as the timings. Primarily raw access logs are hard to digest by users as they are presented in an unstructured format.

The traffic tap feature of Backyards enables users to monitor live access logs conveniently through dashboards and filter them based on direction, source, destination, scheme, method, path, latency and status. The traffic tap feature helps with debugging and root-cause analytics.

From distributed to integrated tracing

Distributed tracing is the process of tracking individual service requests throughout their whole call stack in the system. But without the right tools in place proper tracing is extremely hard to accomplish.

Backyards' integrated and preconfigured tracing, powered by Jager, provides correlation between traces and other metrics, and the service topology. Integrated tracing makes it possible to visualize full call stacks, to see which service called which service, how long each call took and how much were the network latencies between them. It is possible to tell where a request failed or which service took too much time to respond.



From metrics to dashboards

Metrics consist of every piece of information regarding all traffic in, out, and within the mesh, for example, the overall traffic volumes, the error rates within the traffic, and the response times for requests.

Backyards comes with integrated Grafana dashboards by default as a production ready monitoring system built on Prometheus and Thanos. Grafana is preconfigured to collect metrics from Envoy proxies in the mesh along with other important metrics, like kube-state-metrics. In addition Backyards provides a custom UI from which corresponding services and workloads are accessible with a single click in Grafana. Backyards accumulates all Istio generated metrics and presents it in an easily readable format, providing detailed information on server, client, and service request volumes, request duration, success rates, responses and more.

From traditional to SLO based incident handling

When it comes to incident handling the real concern is not whether or not an error will occur but rather how frequently and on what level of severity. To support this approach what is truly needed is a means to prioritize among incidents. In this case traditional incident handling processes may not be the right way to go as they often end up producing way too many false positive or false negative alerts. As a solution organizations often utilize Service Level Objective based incident measuring. But their true challenge comes via the lack of reliable metrics.

Through unified, aggregated and correlated telemetries Backyards provides, out-of-the-box, Service Level Objective-based monitoring and alerting as an integrated and opinionated solution, built on industry best practices. Backyards enables users to establish Service Level Indicators (SLI) and Service Level Objectives (SLO) regarding performance and availability to measure Compliance. SLOs are enforced using Burn Rate based alerting which enables users to prioritize incident handling, define different alerting strategies and utilize chaos engineering all through the Backyards User Interface .



In conclusion

To get the most out of service mesh, your observability solution must provide and present telemetries in a clearly understandable way that enables development, operations and product teams to make the right decisions. Banzai Cloud Backyards solves this challenge through integrated services that aggregate, correlate and present telemetries in a clear, intuitive and centrally accessible fashion.

About Banzai Cloud

Banzai Cloud is changing how private clouds are built: simplifying the development, deployment, and scaling of complex applications, and putting the power of Kubernetes in the hands of cloud first Organizations and Enterprises alike.

Contact Us

If you wish to learn more about Backyards feel free to [schedule a meeting with one of our experts](#), [join our slack community](#) or [subscribe to our engineering blog](#).