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2023 · 上海

# SkyWalking Summit



纵目



tetrate

# 演讲主题

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## 吴晟

Tetrate创始工程师 SkyWalking创始人

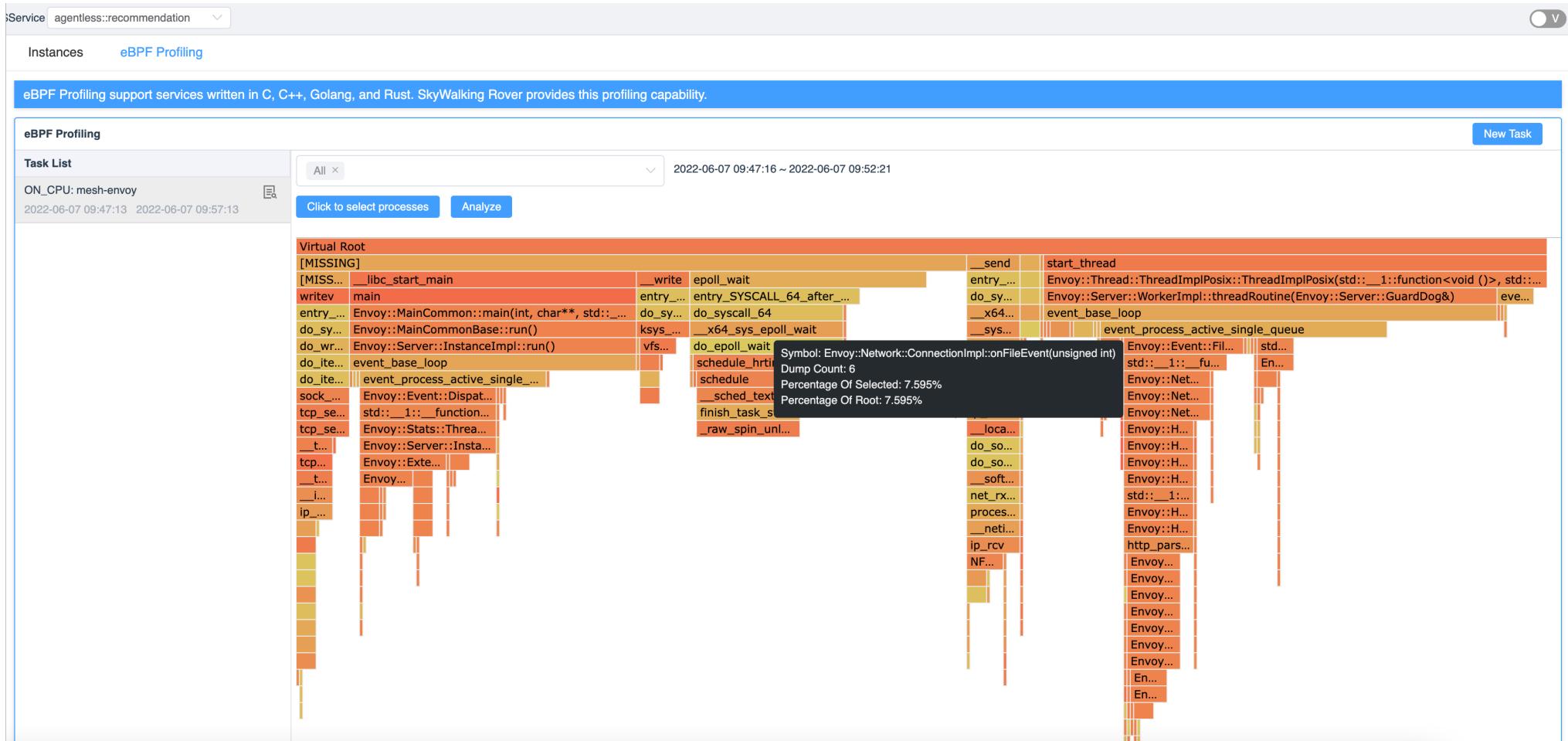
“ SkyWalking V9 In 2023  
- 5 featured releases”

01

# eBPF Stack

# eBPF Stack Support

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# eBPF Network Profiling

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Envoy Proxy Envoy Log Network Profiling



02

## Ecosystem Enhancement

# World Industry First – Native Go Agent

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## Tracing Plugins

The following plugins provide the distributed tracing capability, and the OAP backend would analyze the topology and metrics based on the tracing data.

- HTTP Server
  - `gin` : [Gin](#) tested v1.7.0 to v1.9.0.
  - `http` : [Native HTTP](#) tested go v1.17 to go v1.20.
  - `go-restfulv3` : [Go-Restful](#) tested v3.7.1 to 3.10.2.
  - `mux` : [Mux](#) tested v1.7.0 to v1.8.0.
  - `iris` : [Iris](#) tested v12.1.0 to 12.2.5.
  - `fasthttp` : [FastHttp](#) tested v1.10.0 to v1.50.0.
  - `fiber` : [Fiber](#) tested v2.49.0 to v2.50.0.
- HTTP Client
  - `http` : [Native HTTP](#) tested go v1.17 to go v1.20.
  - `fasthttp` : [FastHttp](#) tested v1.10.0 to v1.50.0.
- RPC Frameworks
  - `dubbo` : [Dubbo](#) tested v3.0.1 to v3.0.5.
  - `kratosv2` : [Kratos](#) tested v2.3.1 to v2.6.2.
  - `microv4` : [Go-Micro](#) tested v4.6.0 to v4.10.2.
  - `grpc` : [gRPC](#) tested v1.55.0 to v1.57.0.
- Database Client
  - `gorm` : [GORM](#) tested v1.22.0 to v1.25.1.
    - [MySQL Driver](#)
  - `mongo` : [Mongo](#) tested v1.11.1 to v1.11.7.
  - `sql` : [Native SQL](#) tested go v1.17 to go v1.20.
    - [MySQL Driver](#) tested v1.4.0 to v1.7.1.
- Cache Client
  - `go-redisv9` : [go-redis](#) tested v9.0.3 to v9.0.5.

## Metrics Plugins

The meter plugin provides the advanced metrics collections.

- `runtimetrics` : [Native Runtime Metrics](#) tested go v1.17 to go v1.20.

## Logging Plugins

The logging plugin provides the advanced logging collections.

- `logrus` : [Logrus](#) tested v1.8.2 to v1.9.3.
- `zap` : [Zap](#) tested v1.17.0 to v1.24.0.

# New Topology Layout

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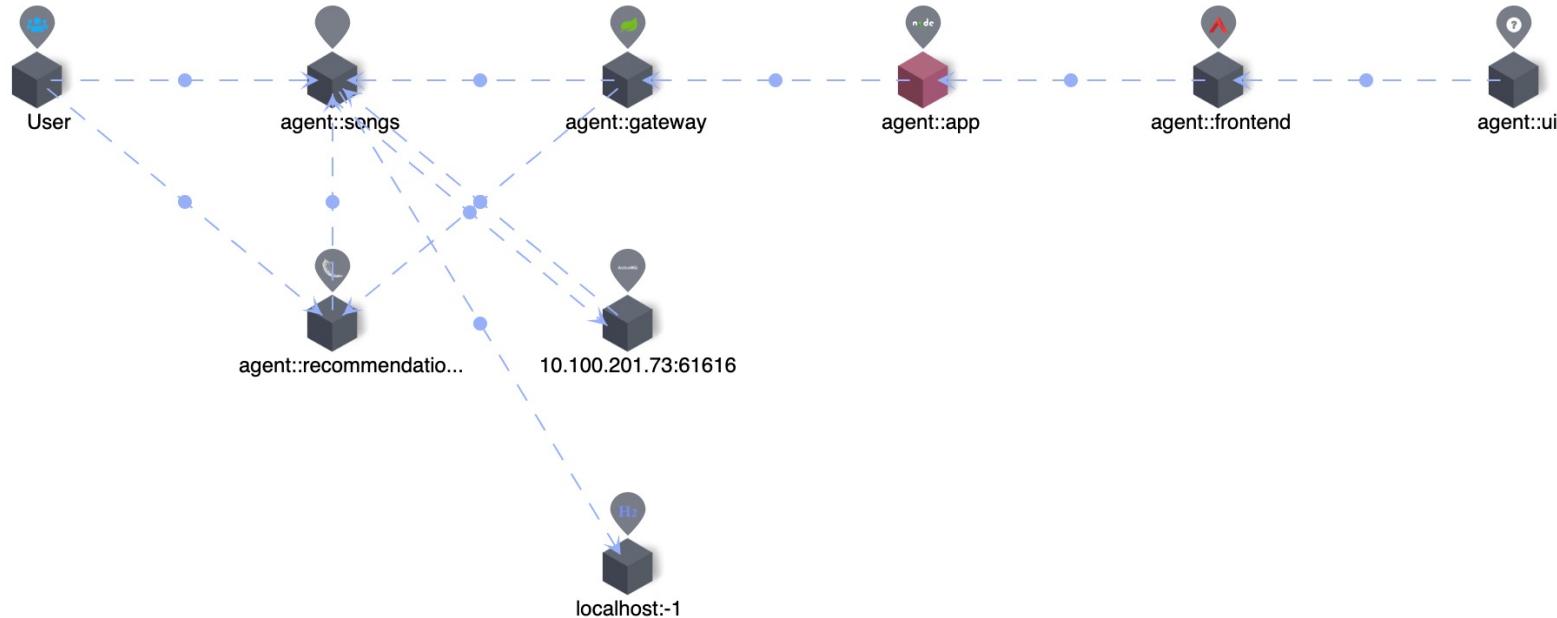
Healthy



Success Rate < 95% and Traffic > 1 calls / min

Current Depth

2



# Event and Metrics Association

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\$Service agent::songs

Instance: All Endpoint: All Event Type: All < 1 > Search

Alarm ID: 1064f23a-6eac-4812-a7cd-5d9a84d944c1 Name: Alarm Event Type: Error Start Time: 2022-08-30 16:46:16 End Time: 2022-08-30 16:51:16 Message: Alarm caused by Rule service\_resp\_time\_rule Service: agent::songs

6:46 16:47 16:48 16:49 16:55 16:56 16:57 16:58 16:59 17:00 17:01 17:02 17:03 17:04 17:05 17:06 17:07 17:08 17:09 17:10 17:11

Tue 30 August

Overview Instance Endpoint Topology Trace Trace Profiling eBPF Profiling Log

Service Apdex Success Rate Service Load (calls / min)

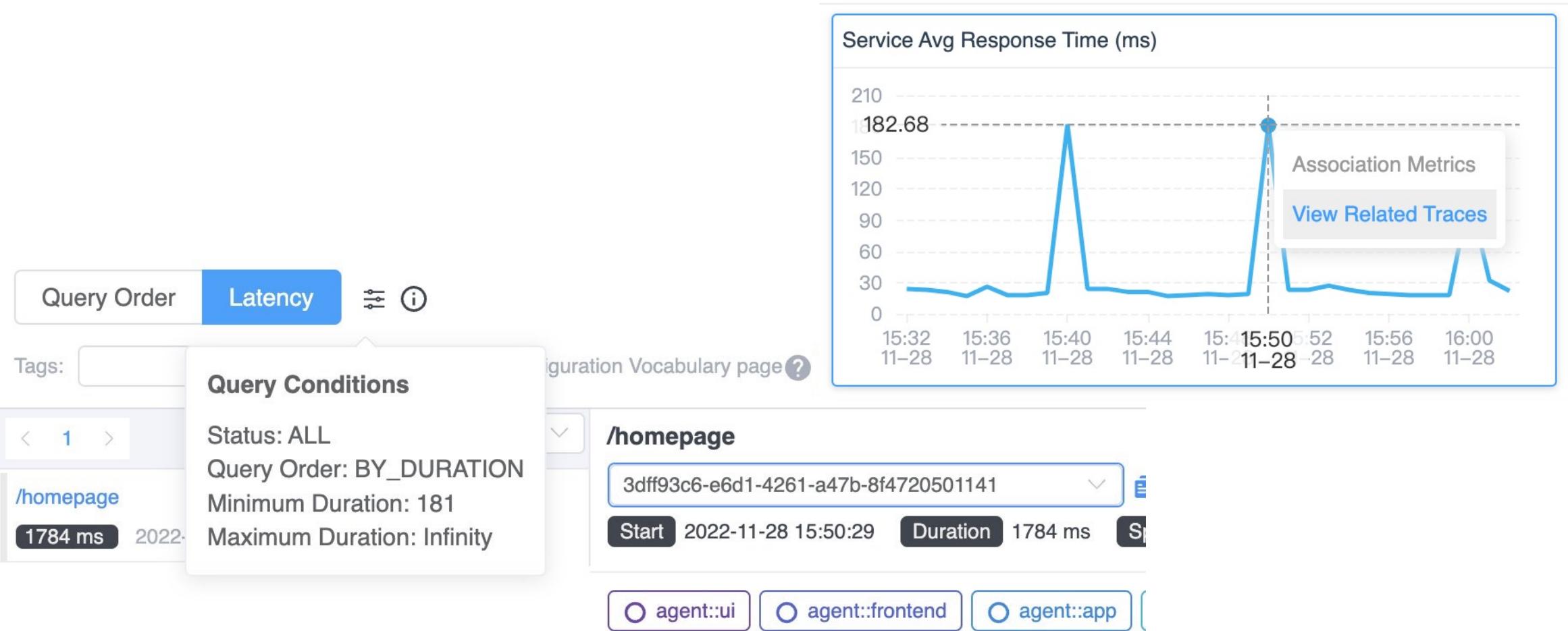
0.99 100.00 % 11.00 calls / min

Service Avg Response Time (ms) Service Apdex Service Response Time Percentile (ms) Service Load (calls / min)

This screenshot illustrates the Apache SkyWalking interface for monitoring and analyzing distributed systems. The top half shows a timeline of events, specifically focusing on an 'Alarm' event. The event details are displayed in a modal: ID: 1064f23a-6eac-4812-a7cd-5d9a84d944c1, Name: Alarm, Event Type: Error, Start Time: 2022-08-30 16:46:16, End Time: 2022-08-30 16:51:16, Message: Alarm caused by Rule service\_resp\_time\_rule, and Service: agent::songs. The timeline shows several other alarm events occurring at different times. The bottom half of the interface is divided into several cards: Service Apdex (value 0.99), Success Rate (100.00 %), Service Load (calls / min) (11.00 calls / min), Service Avg Response Time (ms) (line chart showing spikes around 16:50 and 17:10), Service Apdex (line chart showing a dip from 1 to ~0.95), Service Response Time Percentile (ms) (line chart showing P99 spikes around 16:50 and 17:10), and Service Load (calls / min) (line chart showing a fluctuating load between 8 and 12 calls/min). The interface uses a light blue color scheme and includes navigation tabs for Overview, Instance, Endpoint, Topology, Trace, Trace Profiling, eBPF Profiling, and Log.

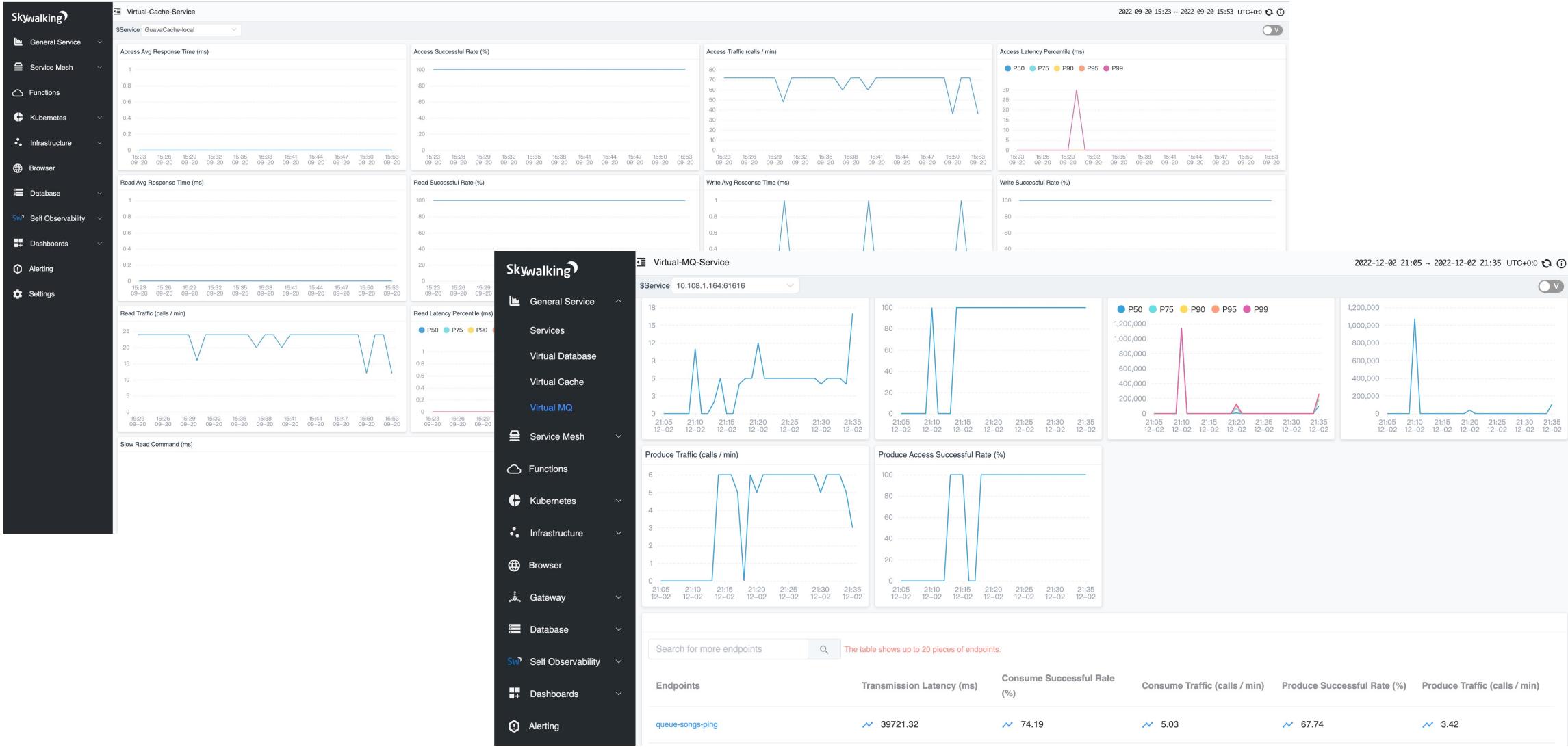
# Trace and Metrics Association

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# Virtual Cache and MQ

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# MQE And New Alerting Kernel

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```
rules:  
  # Rule unique name, must be ended with '_rule'.  
  endpoint_percent_rule:  
    # A MQE expression and the root operation of the expression must be a Compare Operation.  
    expression: sum((endpoint_sla / 100) < 75) >= 3  
    # The length of time to evaluate the metrics  
    period: 10  
    # How many times of checks, the alarm keeps silence after alarm triggered, default as same as period.  
    silence-period: 10  
    message: Successful rate of endpoint {name} is lower than 75%  
    tags:  
      level: WARNING  
    service_percent_rule:  
      expression: sum(service_sla / 100) < 85  
      # [Optional] Default, match all services in this metrics  
      include-names:  
        - service_a  
        - service_b  
      exclude-names:  
        - service_c  
      period: 10  
      message: Service {name} successful rate is less than 85%  
    service_resp_time_percentile_rule:  
      expression: sum(service_percentile{_=0,1,2,3,4} > 1000) >= 3  
      period: 10  
      silence-period: 5  
      message: Percentile response time of service {name} alarm in 3 minutes of last 10 minutes, due to more than one condition of p50 > 1000, p75 > 1000, p90 > 1000, p95 > 1000, p99 > 1000  
    meter_service_status_code_rule:  
      expression: sum(aggregate_labels(meter_status_code{_=4xx,5xx},sum) > 10) > 3  
      period: 10  
      count: 3  
      silence-period: 5  
      message: The request number of entity {name} 4xx and 5xx status is more than expected.  
    hooks:  
      - "slack.custom1"  
      - "pagerduty.custom1"  
  comp_rule:  
    expression: (avg(service_sla / 100) > 80) * (avg(service_percentile{_=0}) > 1000) == 1  
    period: 10  
    message: Service {name} avg successful rate is less than 80% and P50 of avg response time is over 1000ms in last 10 minutes.  
    tags:  
      level: CRITICAL  
    hooks:  
      - "slack.default"  
      - "slack.custom1"  
      - "pagerduty.custom1"
```

03

## Infra and Cloud Datasources

# On-demand Logs

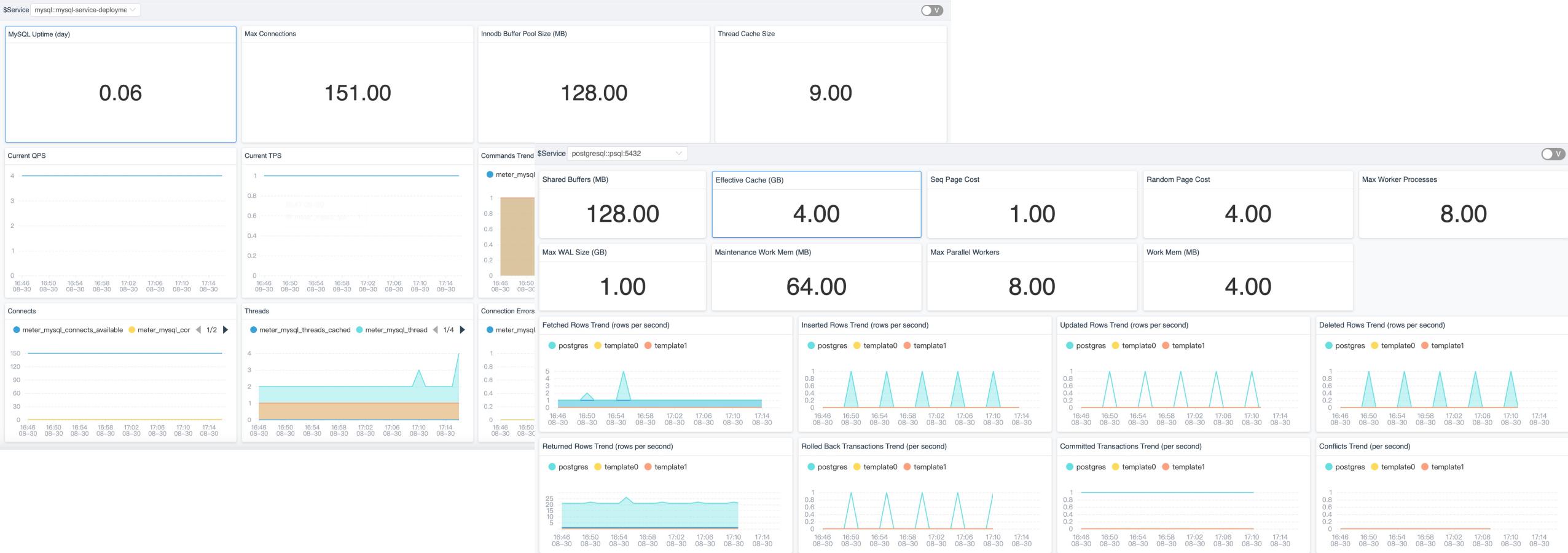
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The screenshot shows a web-based log viewer interface. At the top, there are dropdown menus for '\$Service' set to 'agentless::app' and '\$ServiceInstance' set to 'app-deployment-76867d57d4-28s7x'. Below these are tabs for 'Overview', 'Envoy Proxy', 'Envoy Log', and 'Pod Log', with 'Pod Log' being the active tab. Underneath are filters for 'Container: app', 'Duration: From 30 minutes ago -- Now', and 'Refresh Interval:'. There are also input fields for 'Keys Of Content' and 'Exclude Keys Of Content'. The main area displays log entries numbered 19 through 45. Each entry includes a timestamp, a log level (e.g., [app]), and a log message. The log messages mention the author of core-js, GitHub links, and ways to support the project.

```
19 [app] [96mAlso, the author of core-js ( [94m https://github.com/zloirock [96m) is looki
20 [app]
21 [app]
22 [app] > core-js@3.19.1 postinstall /app/ui/node_modules/core-js
23 [app] > node -e "try{require('./postinstall')}catch(e){}"
24 [app]
25 [app] [96mThank you for using core-js ( [94m https://github.com/zloirock/core-js [96
26 [app]
27 [app] [96mThe project needs your help! Please consider supporting of core-js: [0m
28 [app] [96m> [94m https://opencollective.com/core-js [0m
29 [app] [96m> [94m https://patreon.com/zloirock [0m
30 [app] [96m> [94m https://paypal.me/zloirock [0m
31 [app] [96m> [94m bitcoin: bc1qlea7544qtsmj2rayg0lthvza9fau63ux0fstcz [0m
32 [app]
33 [app] [96mAlso, the author of core-js ( [94m https://github.com/zloirock [96
34 [app]
35 [app]
36 [app] > core-js-pure@3.19.1 postinstall /app/ui/node_modules/core-js-pure
37 [app] > node -e "try{require('./postinstall')}catch(e){}"
38 [app]
39 [app] [96mThank you for using core-js ( [94m https://opencollective.com/core-js [0m
43 [app] [96m> [94m https://patreon.com/zloirock [0m
44 [app] [96m> [94m https://paypal.me/zloirock [0m
45 [app] [96m> [94m bitcoin: bc1qlea7544qtsmj2rayg0lthvza0
```

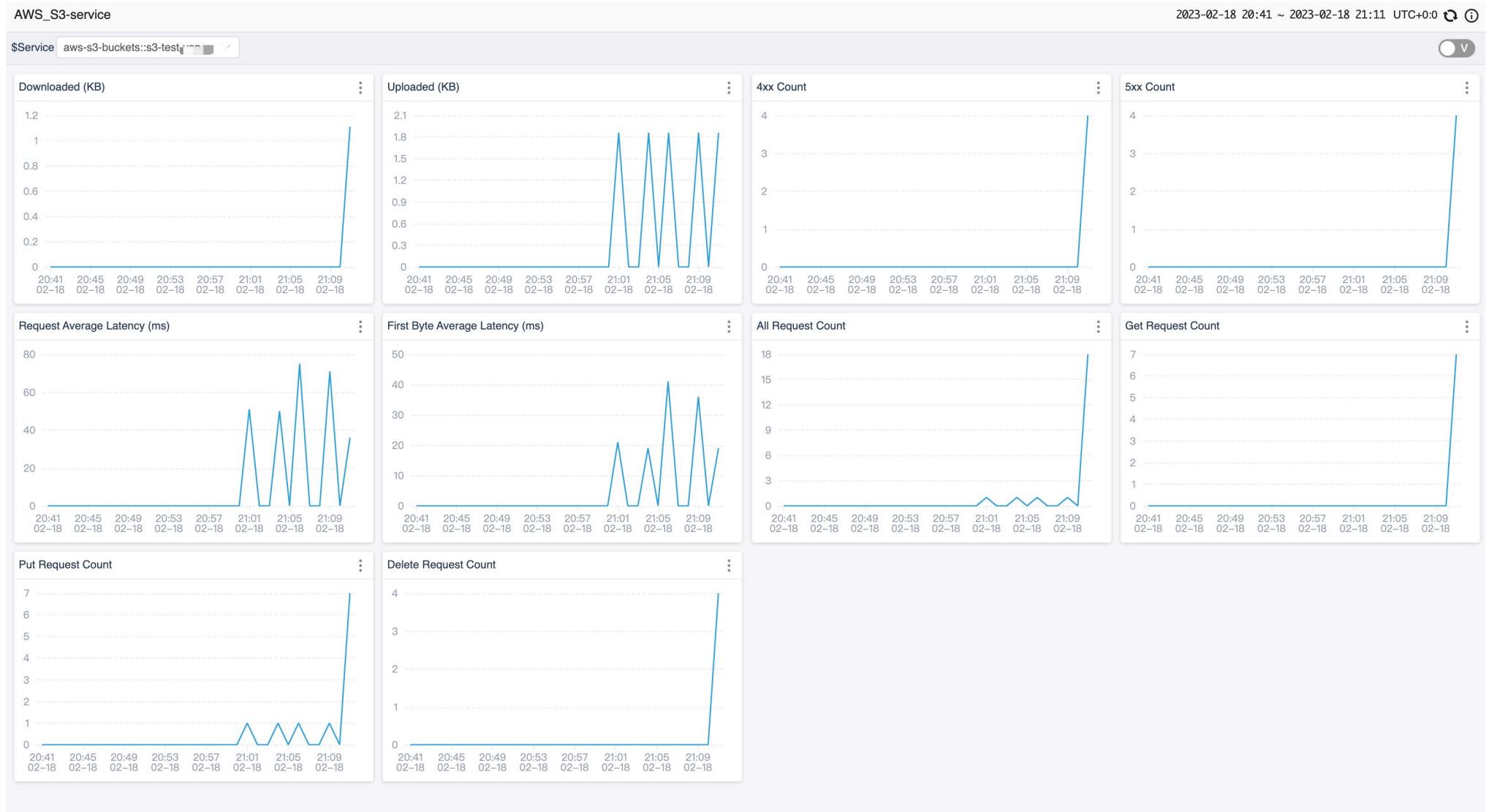
# MySQL/PostgreSQL/Elasticsearch

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# AWS Infra – S3, EKS, DynamoDB

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04

## Better Observability Integration

# Zipkin Alternative Server and Lens UI 2023 SUMMIT | APACHE • SkyWalking

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Mesh-Root      2023-03-09 11:28 ~ 2023-03-09 11:58 UTC+0:0

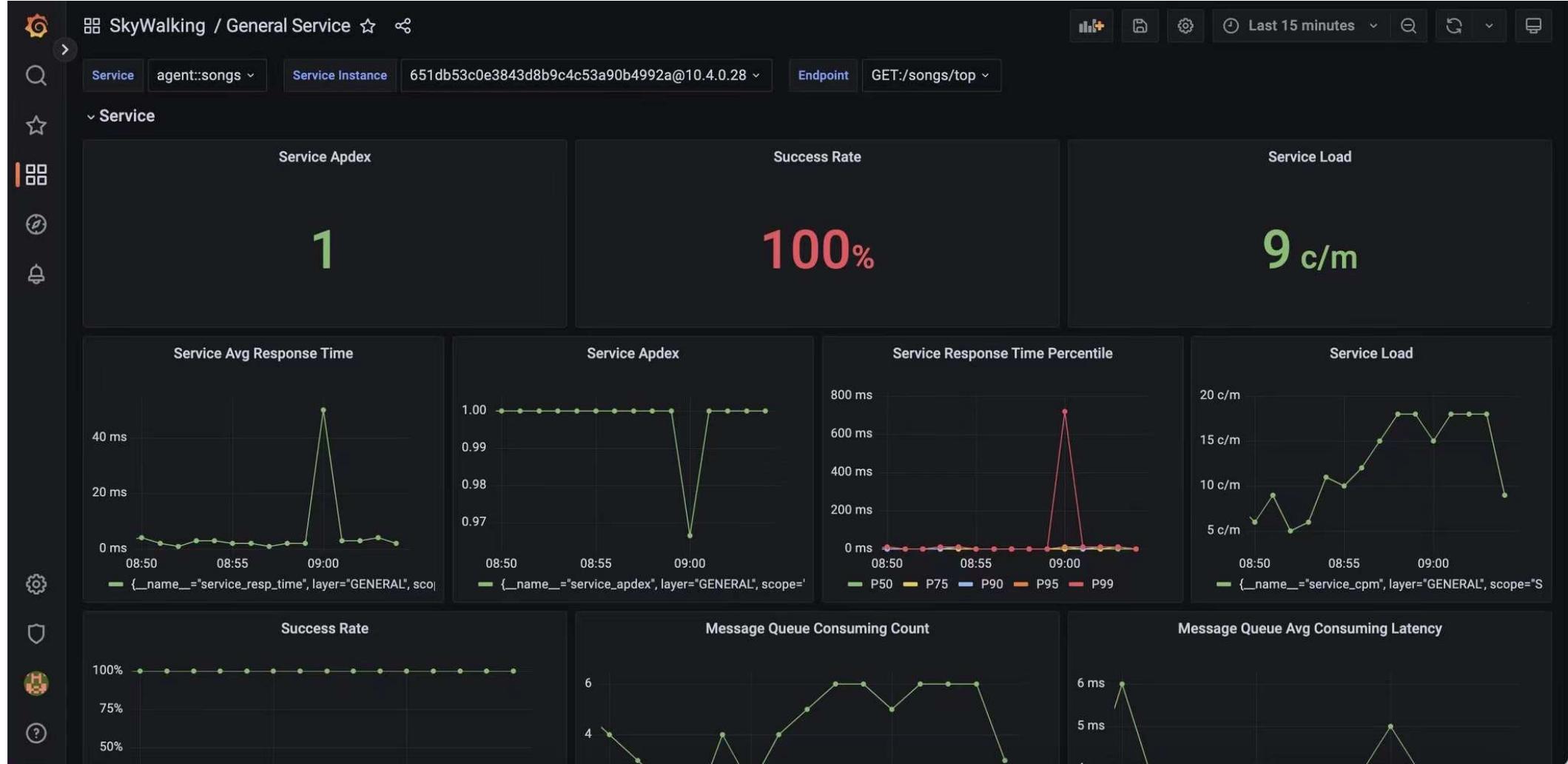
Zipkin Find a trace ENGLISH

10 Results Service filters

Root		Start Time	Spans	Duration		
grafana.default: oap.default.svc.cluster.local:9090/*		a few seconds ago	(03/09 11:58:21:014)	1	14.902ms	
elasticsearch-es-master-nodes.default:	elasticsearch-es-http.default.svc.cluster.local:9200/*	a few seconds ago	(03/09 11:58:21:442)	1	13.235ms	
elasticsearch-es-master-nodes.default:	elasticsearch-es-http.default.svc.cluster.local:9200/*	a few seconds ago	(03/09 11:58:19:841)	1	9.425ms	
grafana.default: oap.default.svc.cluster.local:9090/*		a few seconds ago	(03/09 11:58:21:003)	1	8.440ms	
elasticsearch-es-master-nodes.default:	elasticsearch-es-http.default.svc.cluster.local:9200/*	a few seconds ago	(03/09 11:58:19:925)	1	8.086ms	

# PromQL and Grafana Support

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# Loki LogQL and Grafana Support

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The screenshot shows the Grafana interface for monitoring logs. At the top, there's a navigation bar with Home, Dashboards, skywalking, Log, and a search bar labeled "Search or jump to...". Below the navigation is a row of filter buttons: Service (selected), agent:songs, Service Instance, All, Endpoint, All, Endpoint Keyword, Enter variable value, Endpoint Limit (set to 100), Trace Id, Enter variable value, Tags, +, KeywordOfContent, and Enter variable value. Underneath these filters is a section for "ExcludingKeywordOfContent" with an "Enter variable value" input field. The main area is titled "Logs" and contains a table of log entries. The first few log entries are:

```
> 2023-09-01 16:00:41.128 [TID:ca25184e-a59a-47a2-ab90-465f30b87485] [XNIO-1 task-1] INFO o.s.web.servlet.DispatcherServlet -Completed initialization in 4 ms
> 2023-09-01 16:00:33.103 [TID:N/A] [main] INFO o.a.s.s.s.SongServiceApplication -Started SongServiceApplication in 17.956 seconds (JVM running for 29.52)
> 2023-09-01 16:00:33.075 [TID:N/A] [main] INFO o.s.b.w.e.undertow.UndertowWebServer -Undertow started on port(s) 80 (http)
> 2023-09-01 16:00:32.958 [TID:N/A] [main] INFO org.jboss.threads -JBoss Threads version 3.1.0.Final
> 2023-09-01 16:00:32.742 [TID:N/A] [main] INFO org.xnio.nio -XNIO NIO Implementation Version 3.8.4.Final
> 2023-09-01 16:00:32.719 [TID:N/A] [main] INFO org.xnio -XNIO version 3.8.4.Final
> 2023-09-01 16:00:32.687 [TID:N/A] [main] INFO io.undertow -starting server: Undertow - 2.2.12.Final
> 2023-09-01 16:00:32.577 [TID:N/A] [main] INFO o.s.b.a.e.web.EndpointLinksResolver -Exposing 1 endpoint(s) beneath base path '/actuator'
> 2023-09-01 16:00:31.263 [TID:N/A] [main] WARN o.s.b.a.o.j.JpaBaseConfiguration$JpaWebConfiguration -spring.jpa.open-in-view is enabled by default. Therefore, database queries may be performed during view rendering. Explicitly configure spring.jpa.open-in-view to false.
> 2023-09-01 16:00:29.843 [TID:b291305e-eddb-47ee-9f89-dc74a6ed2301] [XNIO-1 task-2] INFO o.a.s.s.s.c.SongController -Listing all songs
> 2023-09-01 16:00:29.808 [TID:b291305e-eddb-47ee-9f89-dc74a6ed2301] [XNIO-1 task-2] INFO o.a.s.s.s.c.SongController -Listing top songs
> 2023-09-01 16:00:26.709 [TID:N/A] [main] INFO o.s.o.j.LocalContainerEntityManagerFactoryBean -Initialized JPA EntityManagerFactory for persistence unit 'default'
> 2023-09-01 16:00:26.688 [TID:N/A] [main] INFO o.h.e.t.j.p.i.JtaPlatformInitiator -HHH000490: Using JtaPlatform implementation: [org.hibernate.engine.transaction.jta.platform.internal.NoJtaPlatform]
> 2023-09-01 16:00:25.016 [TID:N/A] [main] INFO org.hibernate.dialect.Dialect -HHH000400: Using dialect: org.hibernate.dialect.H2Dialect
> 2023-09-01 16:00:24.502 [TID:N/A] [main] INFO o.h.annotations.common.Version -HCANN00001: Hibernate Commons Annotations {5.1.2.Final}
> 2023-09-01 16:00:24.011 [TID:N/A] [main] INFO org.hibernate.Version -HHH000412: Hibernate ORM core version 5.4.32.Final
> 2023-09-01 16:00:23.837 [TID:N/A] [main] INFO o.h.jpa.internal.util.LogHelper -HHH000204: Processing PersistenceUnitInfo [name: default]
> 2023-09-01 16:00:23.651 [TID:fa4ff44da0154fad905bbc768fba8426.1.16935840227410001] [main] INFO com.zaxxer.hikari.HikariDataSource -HikariPool-1 - Start completed.
> 2023-09-01 16:00:22.745 [TID:fa4ff44da0154fad905bbc768fba8426.1.16935840227410001] [main] INFO com.zaxxer.hikari.HikariDataSource -HikariPool-1 - Starting...
> 2023-09-01 16:00:21.964 [TID:N/A] [main] INFO o.s.b.w.s.c.ServletWebServerApplicationContext -Root WebApplicationContext: initialization completed in 4644 ms
> 2023-09-01 16:00:21.963 [TID:N/A] [main] INFO io.undertow.servlet -Initializing Spring embedded WebApplicationContext
> 2023-09-01 16:00:21.915 [TID:N/A] [main] WARN io.undertow.websocket.jsr -UT026010: Buffer pool was not set on WebSocketDeploymentInfo, the default pool will be used
> 2023-09-01 16:00:20.439 [TID:N/A] [main] INFO o.s.d.r.c.RepositoryConfigurationDelegate -Finished Spring Data repository scanning in 137 ms. Found 1 JPA repository interfaces.
> 2023-09-01 16:00:20.275 [TID:N/A] [main] INFO o.s.d.r.c.RepositoryConfigurationDelegate -Bootstrapping Spring Data JPA repositories in DEFAULT mode.
> 2023-09-01 16:00:19.835 [TID:246c9655-dc71-4a31-ad47-2d2cbf6f8d5a] [XNIO-1 task-2] INFO o.a.s.s.s.c.SongController -Listing all songs
```

05

## What Should We Expect in 2024?



## BanyanDB

- Releases
  - 0.4 Standalone Mode First Time Available
  - 0.5 Cluster Mode First Time Available
- Plans
  - 0.6 First Completed Feature Version
  - 0.7 – 0.9 Bug Fix, Stability and Performance

Q&A

欢迎提问交流  
(仅限2位提问)



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## 感谢您的观看



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