Observing the Service Network

Elton Stoneman

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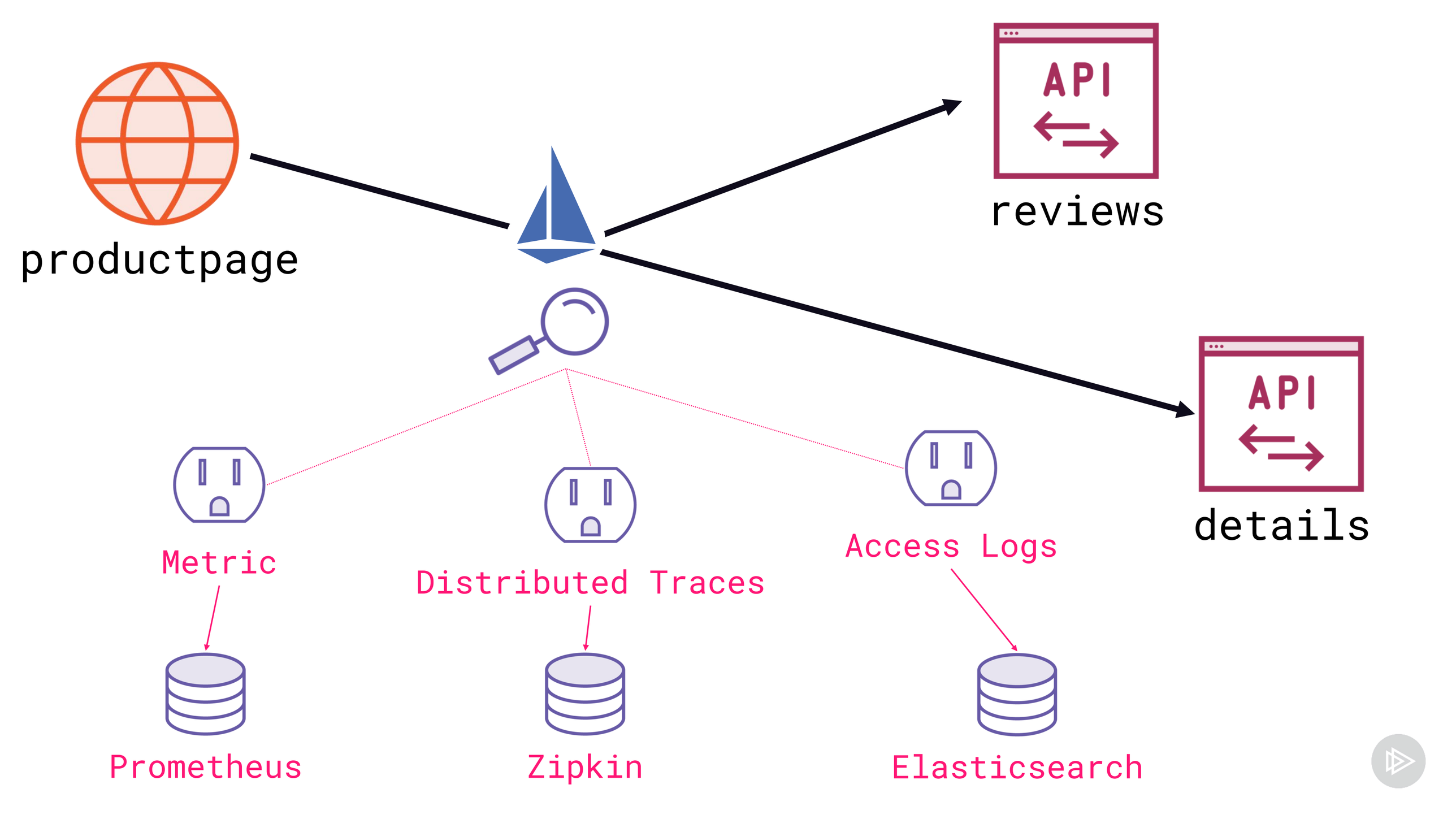
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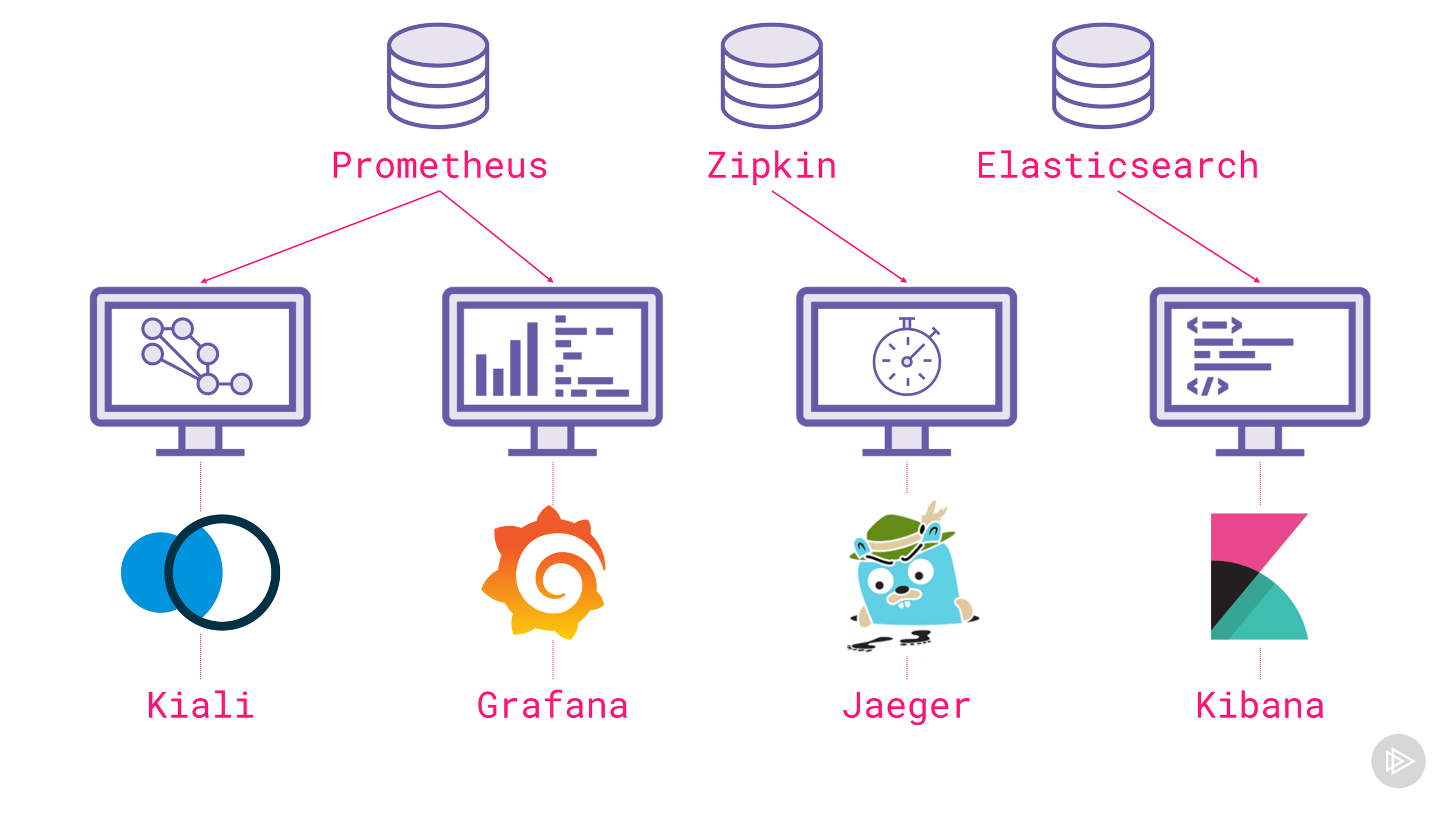
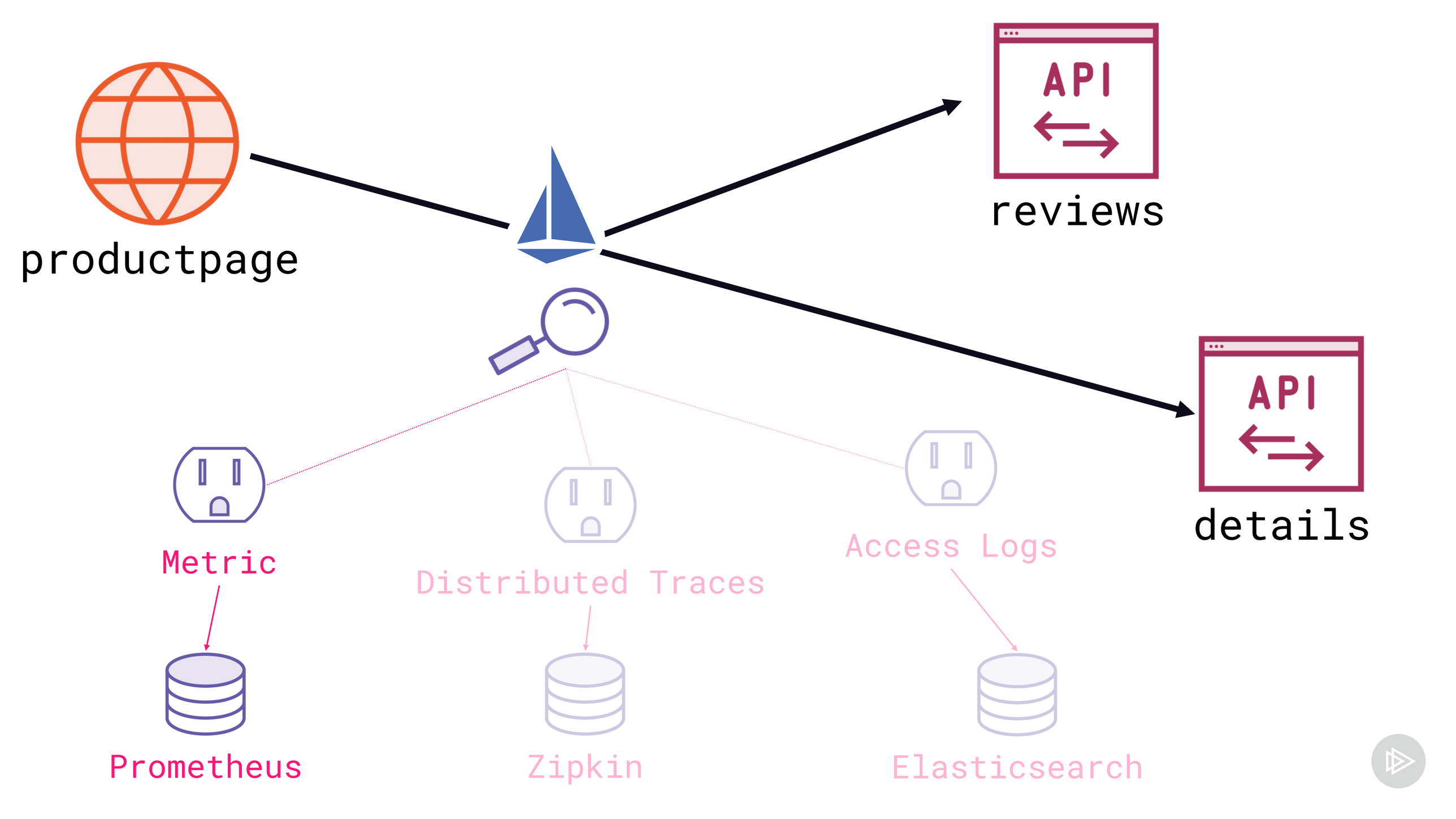
API
reviews
API
details
Metric
Distributed Traces
Access Logs
Prometheus
Zipkin
Elasticsearch


Prometheus
Zipkin
Elasticsearch
Kiali
Grafana
Jaeger
Kibana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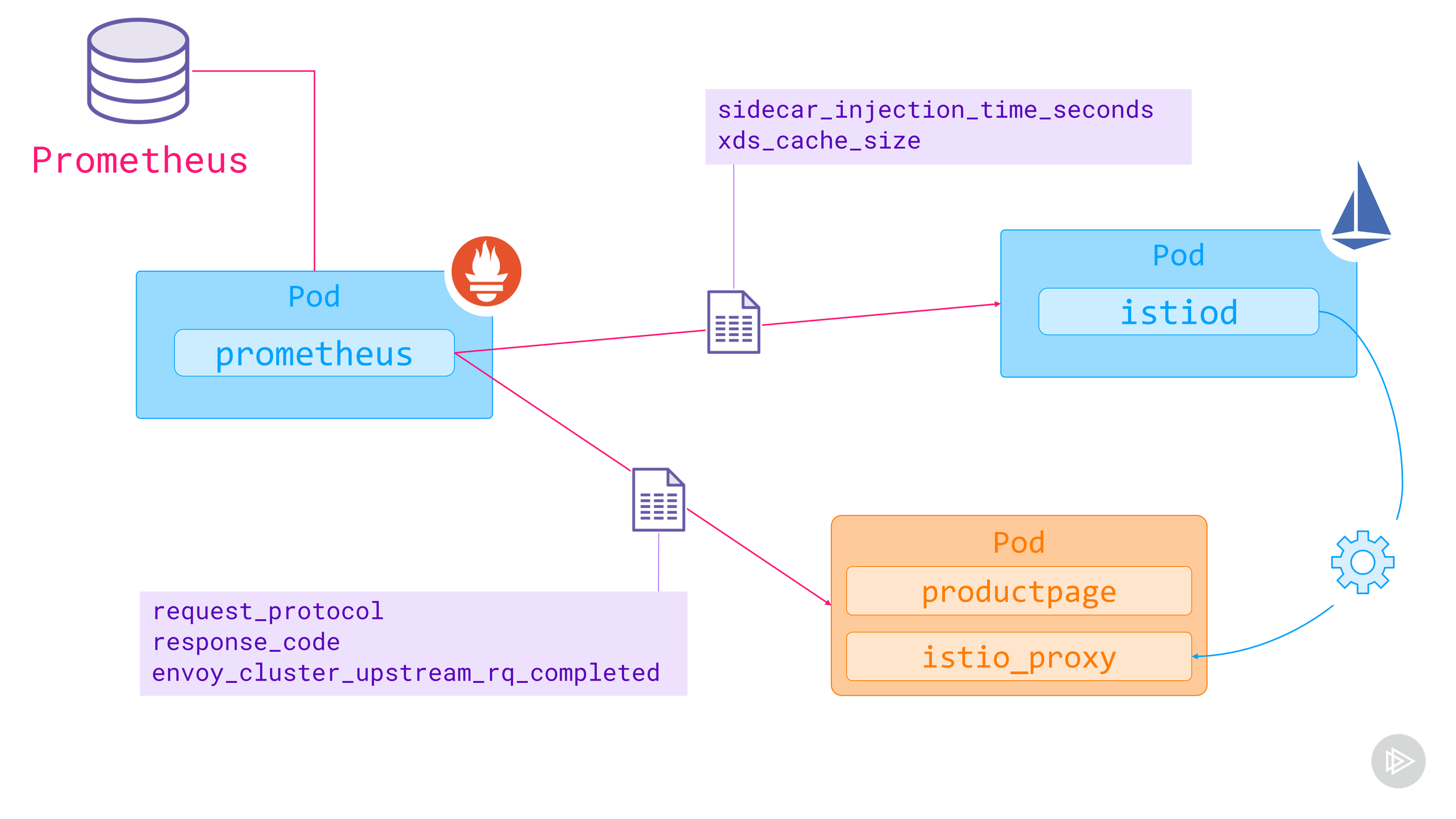
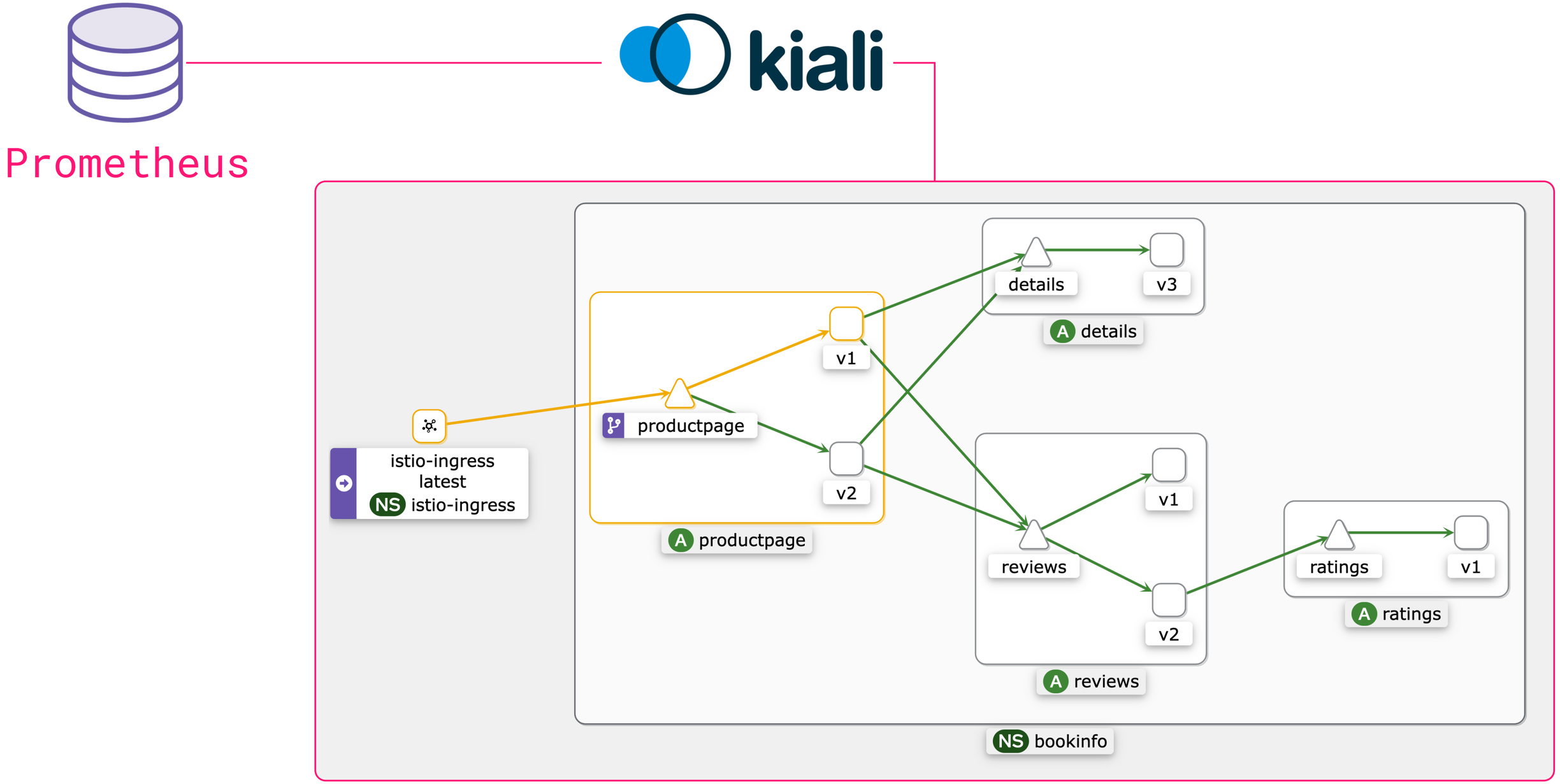

Prometheus
sidecar_injection_time_seconds
xds_cache_size
Pod
prometheus
Pod
istiod
request_protocol
response_code
envoy_cluster_upstream_rq_completed
Pod
productpage
istio_proxy


Prometheus
kiali
istio-ingress
latest
NS istio-ingress
productpage
v1
v2
A productpage
details
v3
A details
reviews
v1
v2
A reviews
ratings
v1
A ratings
NS bookinfo

Demo

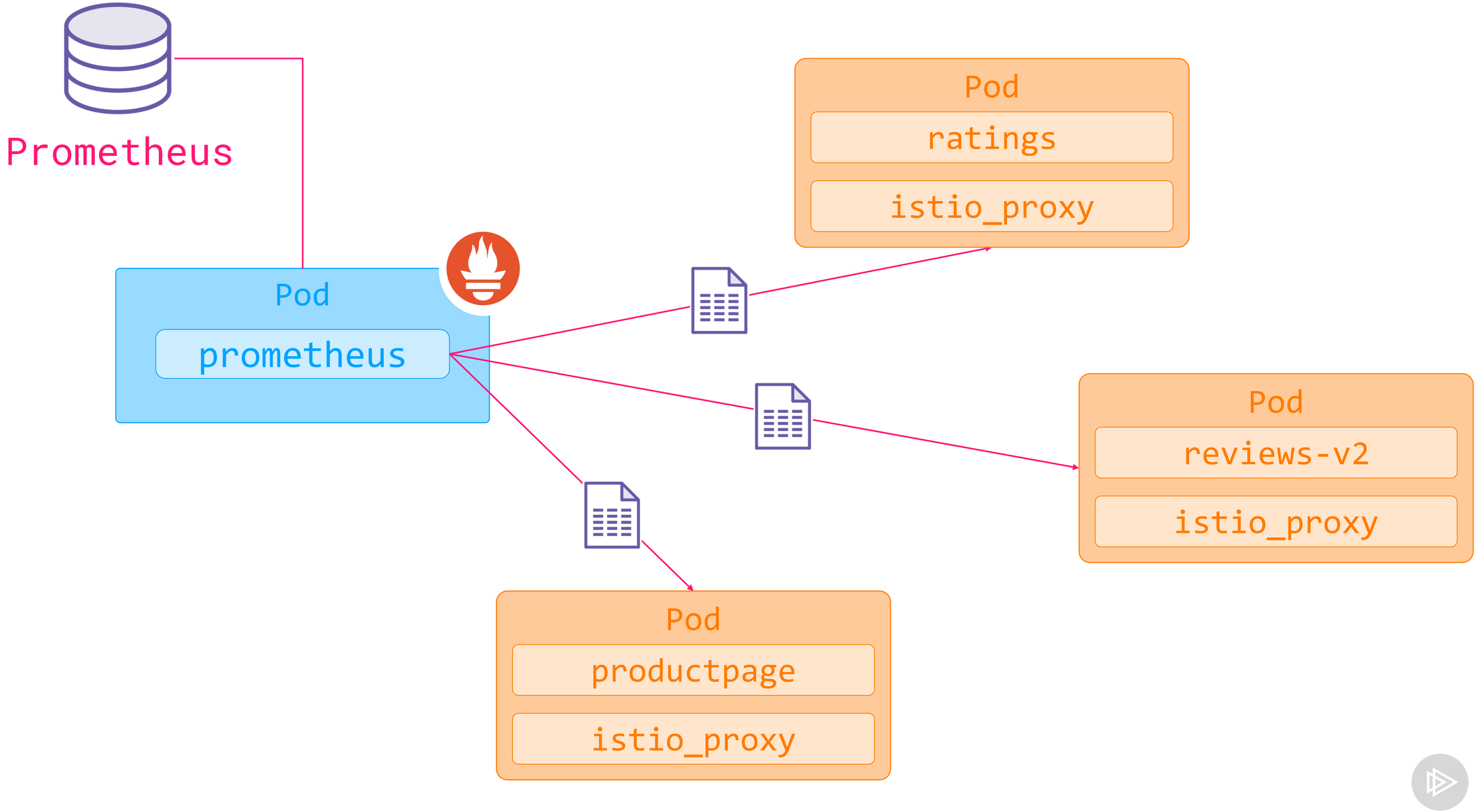
Visualizing the Service Mesh

- Deploying Prometheus and Kiali
- Exploring mesh graphs
- Monitoring canary rollouts

Demo

Dashboards for Services and Istio

- Deploying Grafana
- Exploring Istio's dashboards
- Tracking down failures


Prometheus
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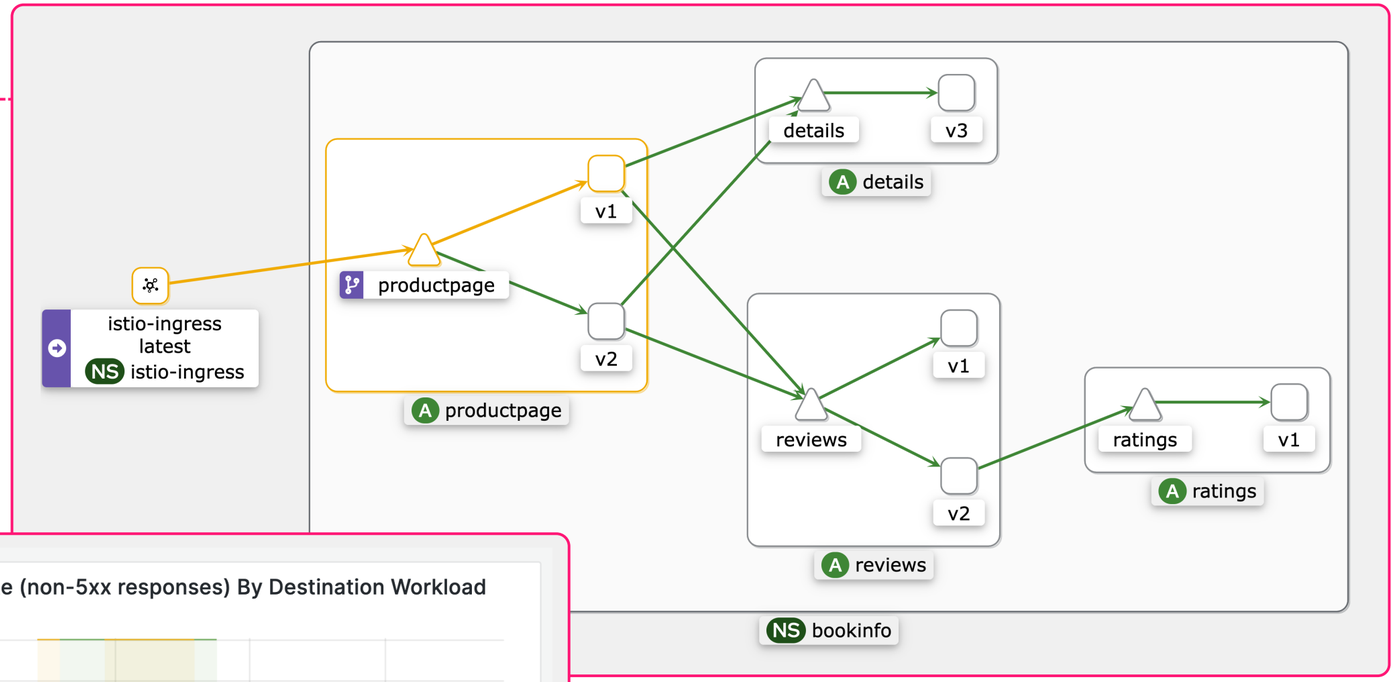
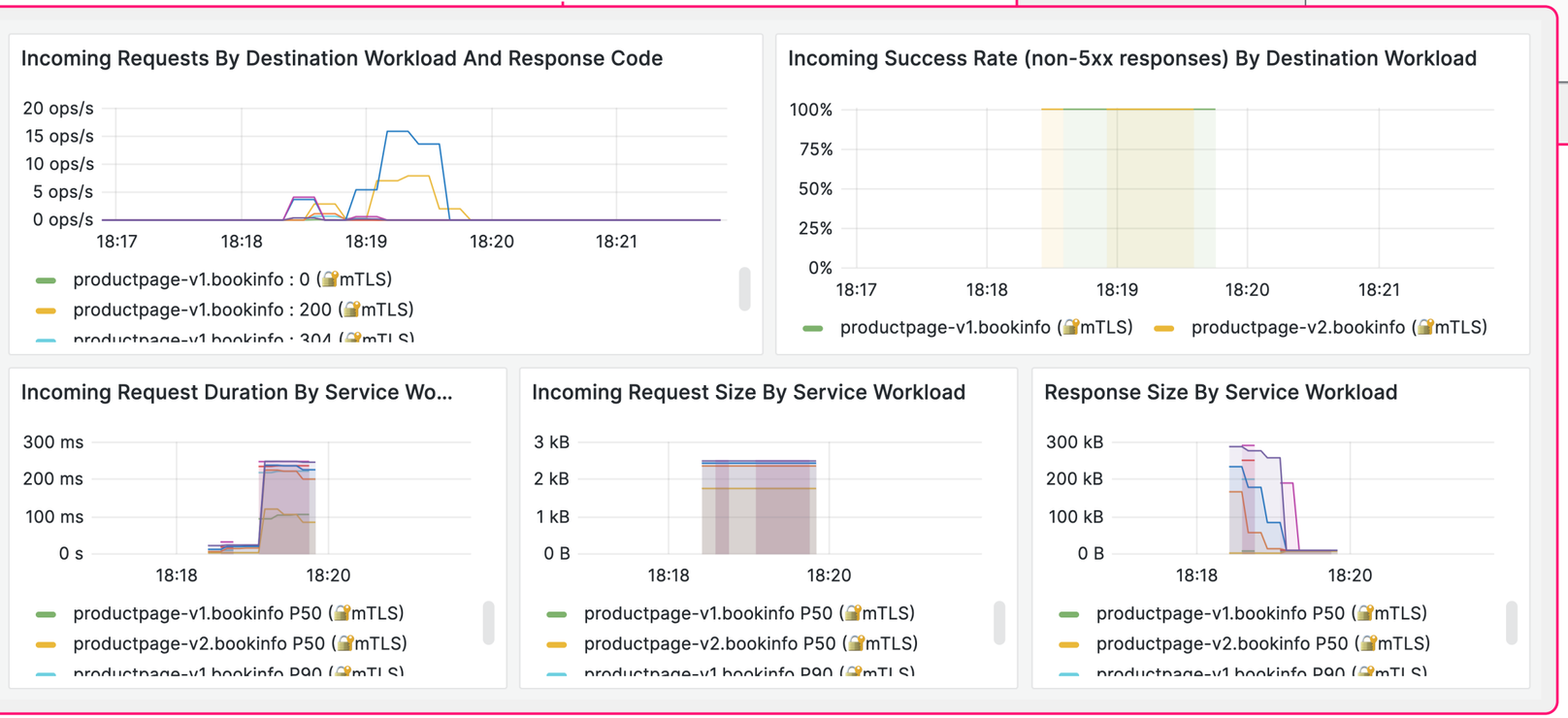
ratings
istio_proxy
Pod
reviews-v2
istio_proxy
Pod
productpage
istio_proxy

Prometheus



kiali



Grafana

Prometheus Introduction

Getting Started with Prometheus

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Detailed Metric Capture

Instrumenting Applications for Prometheus

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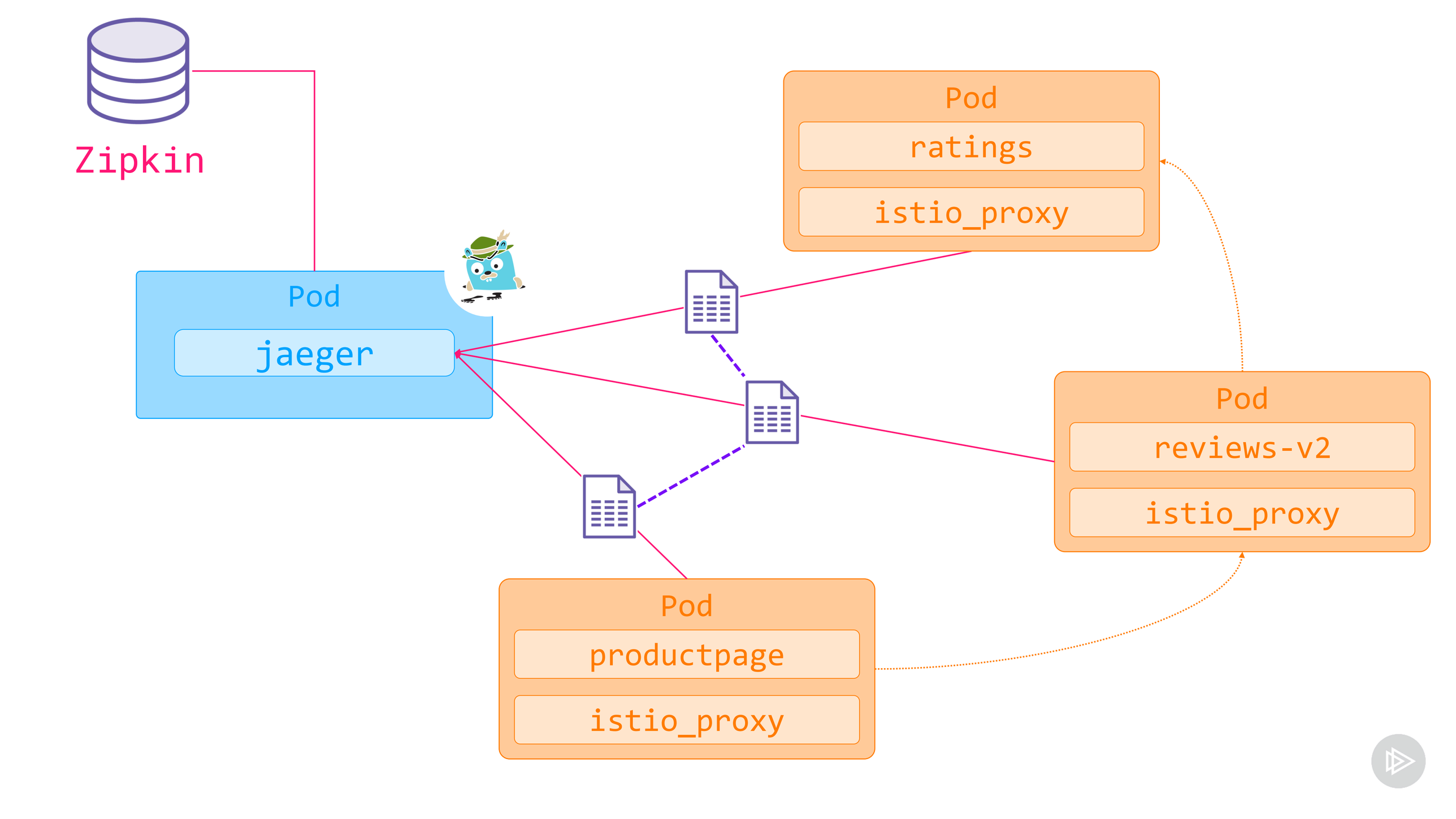
Zipkin
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jaeger
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ratings
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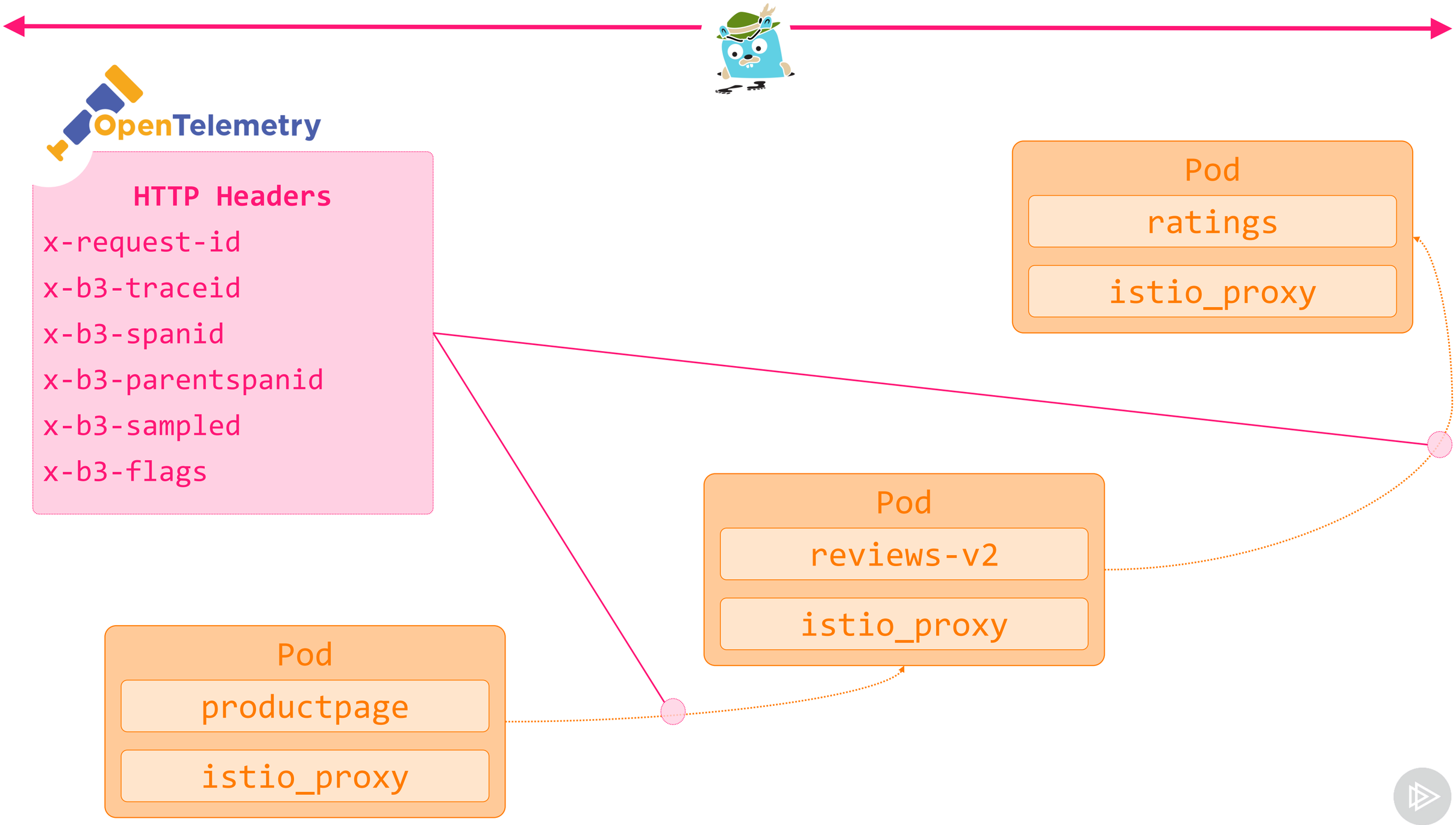
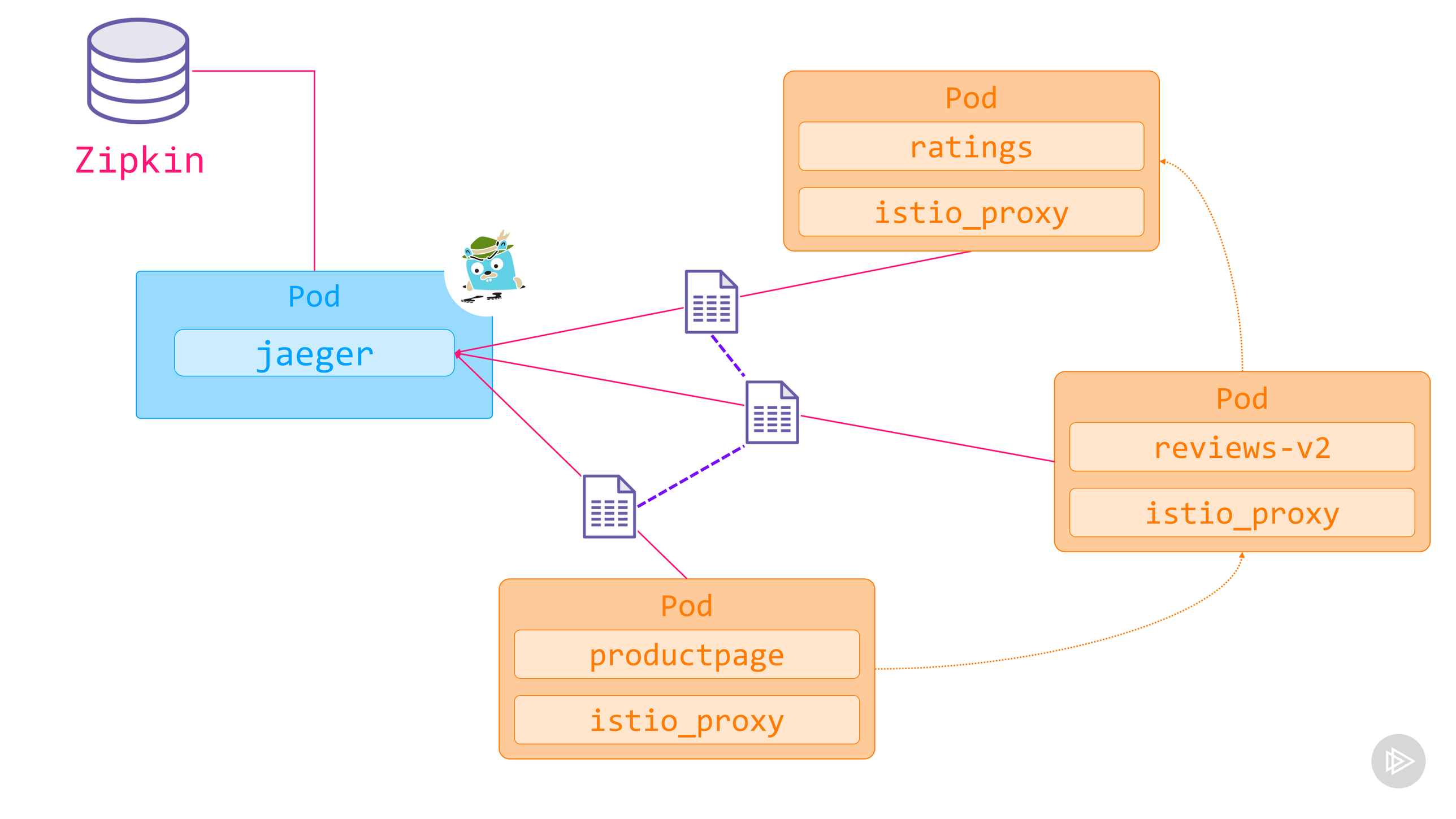
Pod
reviews-v2
istio_proxy
Pod
productpage
istio_proxy


OpenTelemetry
HTTP Headers
x-request-id
x-b3-traceid
x-b3-spanid
x-b3-parentspanid
x-b3-sampled
x-b3-flags
Pod
ratings
istio_proxy
Pod
reviews-v2
istio_proxy
Pod
productpage
istio_proxy

Demo

Distributed Tracing

- Deploying Jaeger
- Examining traces
- Investigating latency


Zipkin
Pod
jaeger
Pod
ratings
istio_proxy
Pod
reviews-v2
istio_proxy
Pod
productpage
istio_proxy

Configuring Metrics Providers

At mesh and namespace level

istio-configmap.yaml

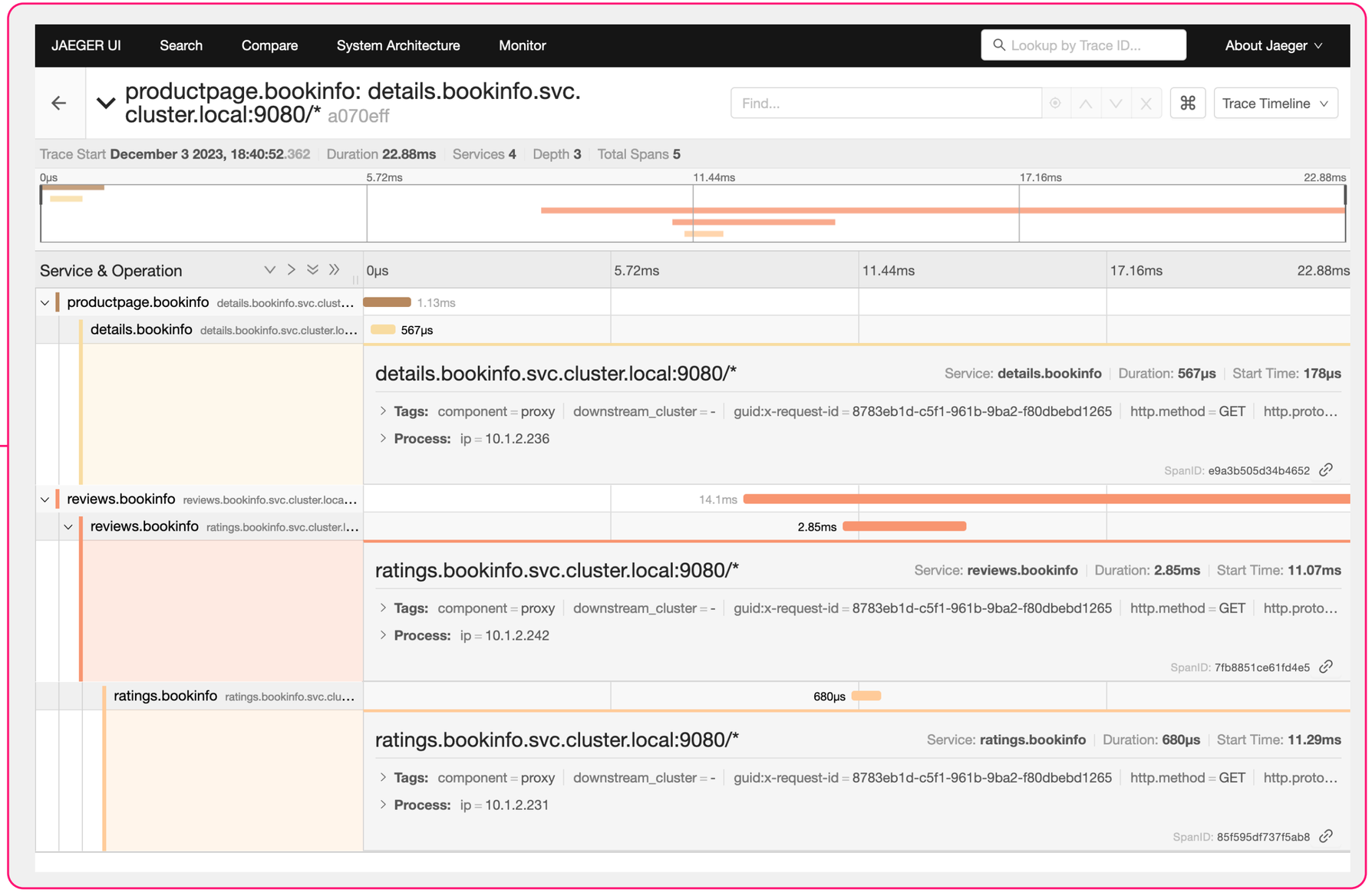
```
# ...
enableTracing: true
extensionProviders:
 - name: "zipkin"
   zipkin:
    service: "zipkin.istio-system"
   port: 9411
   maxTagLength: 56
```

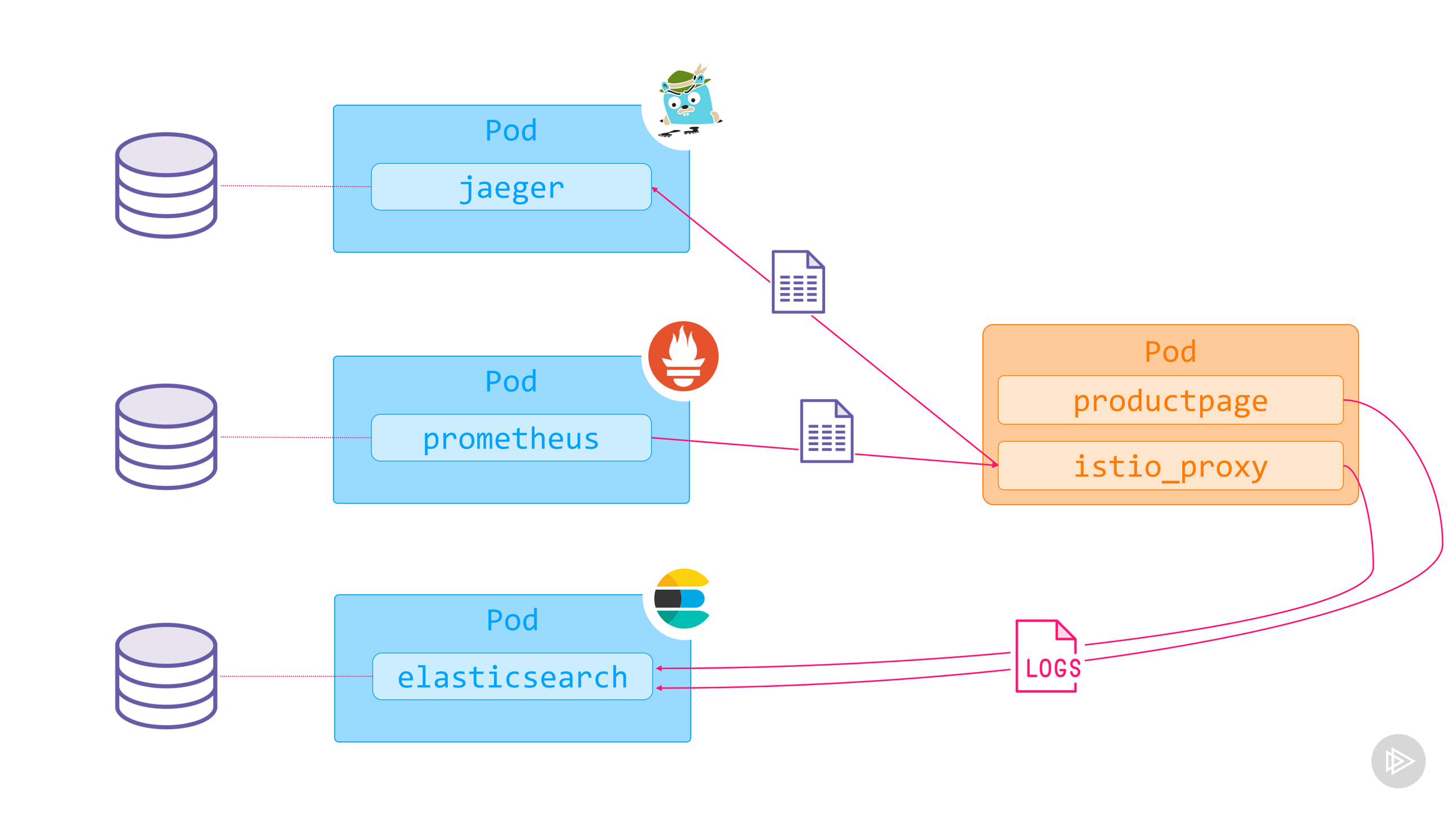
bookinfo-tracing.yaml

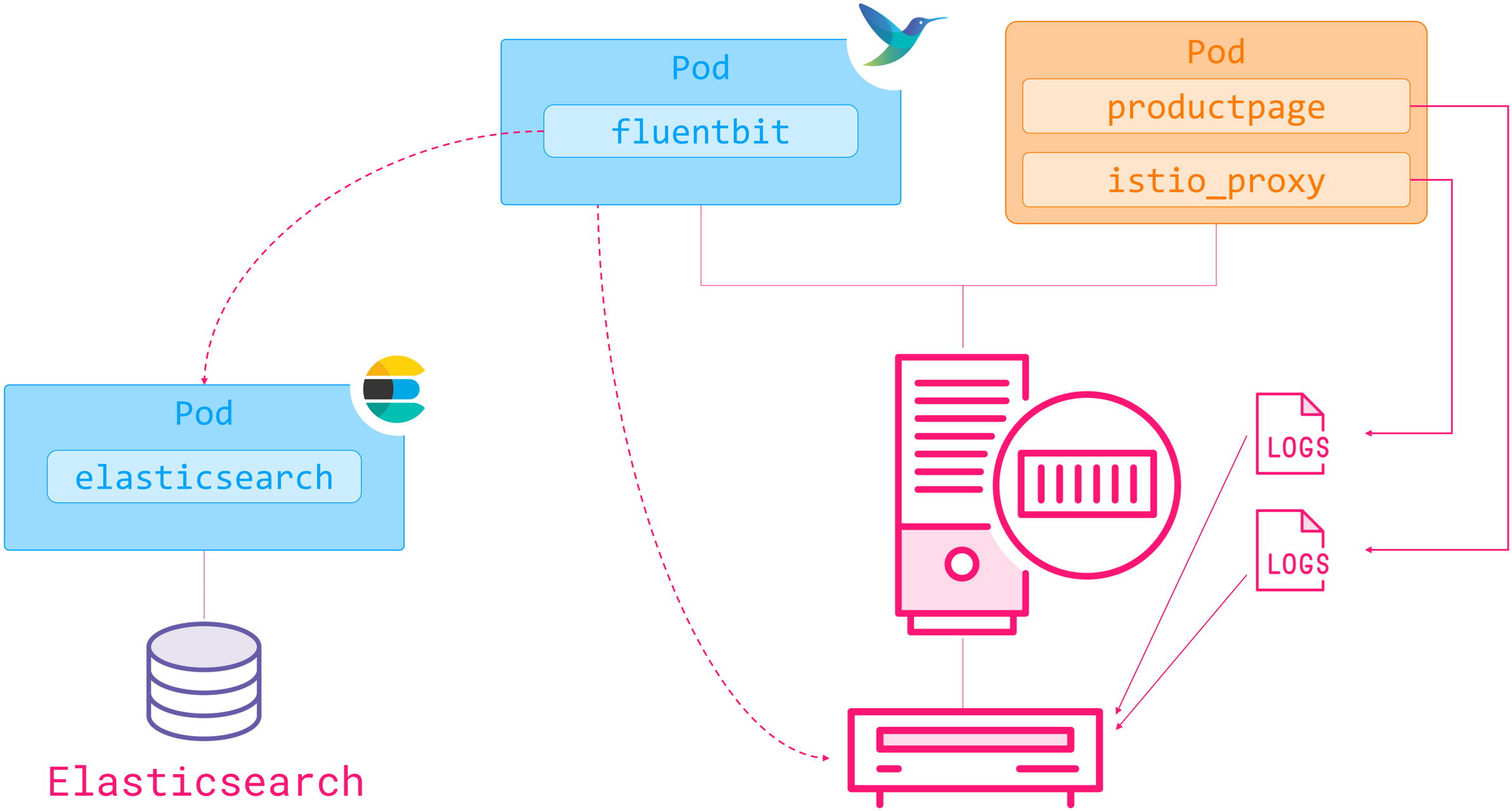
```
apiVersion:  telemetry.istio.io/v1alpha1
kind: Telemetry
metadata:
 name: tracing
 namespace: bookinfo
spec:
 tracing:
 - providers:
  - name: zipkin
  randomSamplingPercentage: 100
```

Zipkin

JAEGER



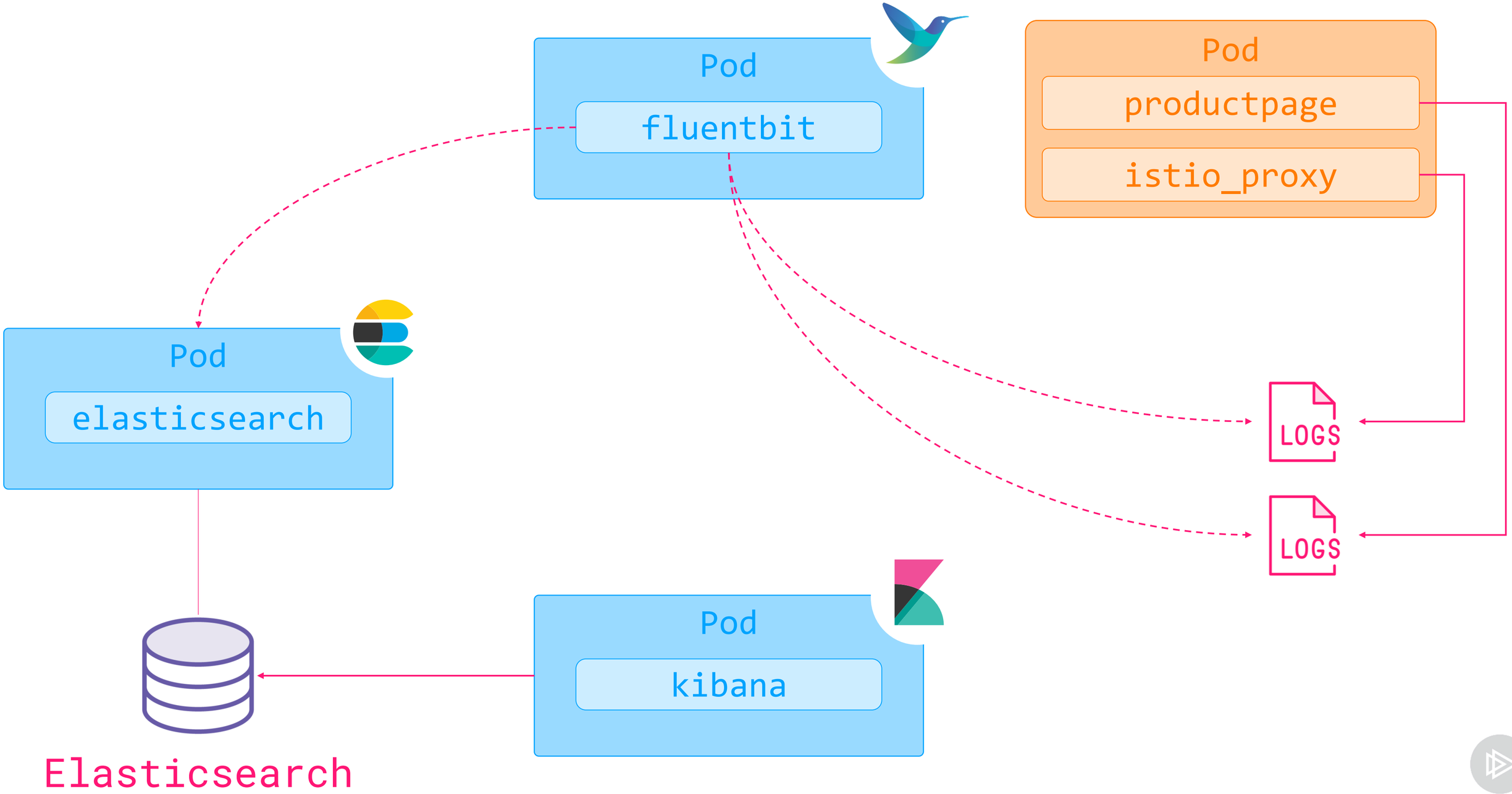

Pod
jaeger
Pod
prometheus
Pod
elasticsearch
Pod
productpage
istio_proxy
LOGS


Pod
fluentbit
Pod
productpage
istio_proxy
Pod
elasticsearch
LOGS
LOGS
Elasticsearch

Demo

Logging with Fluent Bit and Kibana

- Configuring logging
- Deploying the EFK stack
- Exploring Istio's log entries


Pod
fluentbit
Pod
productpage
istio_proxy
Pod
elasticsearch
LOGS
LOGS
Pod
kibana
Elasticsearch

Configuring Access Logging

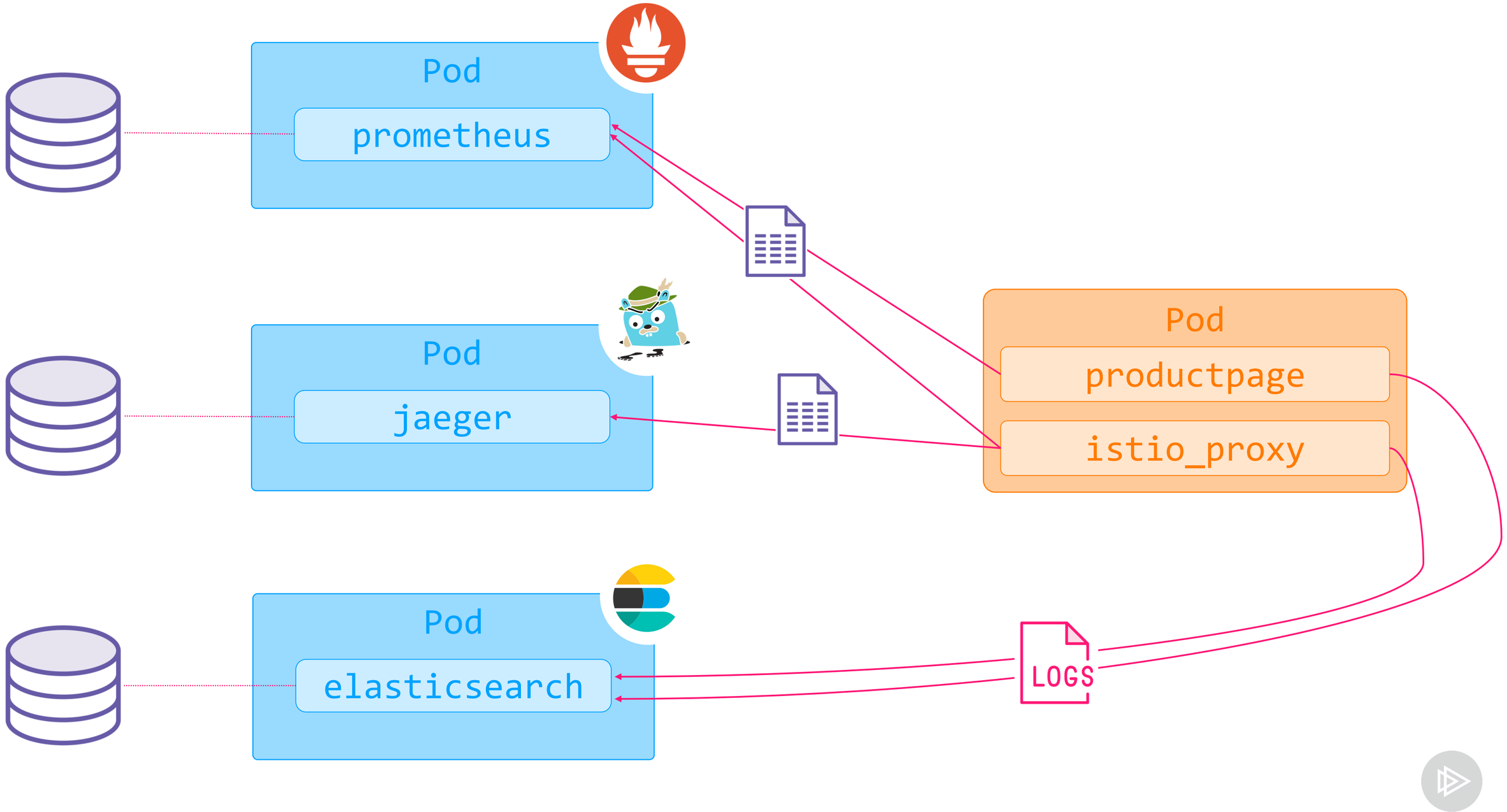
Writing output from proxy containers

istio-configmap.yaml

```
mesh: |-
  accessLogFile: /dev/stdout
  accessLogEncoding: JSON
  # ...
```

fluentbit-configmap.yaml

```
output.conf: |
  [OUTPUT]
    Name es
    Match kube.*.istio-proxy.*
    Host elasticsearch
    Index proxy-logs
    Generate_ID On
```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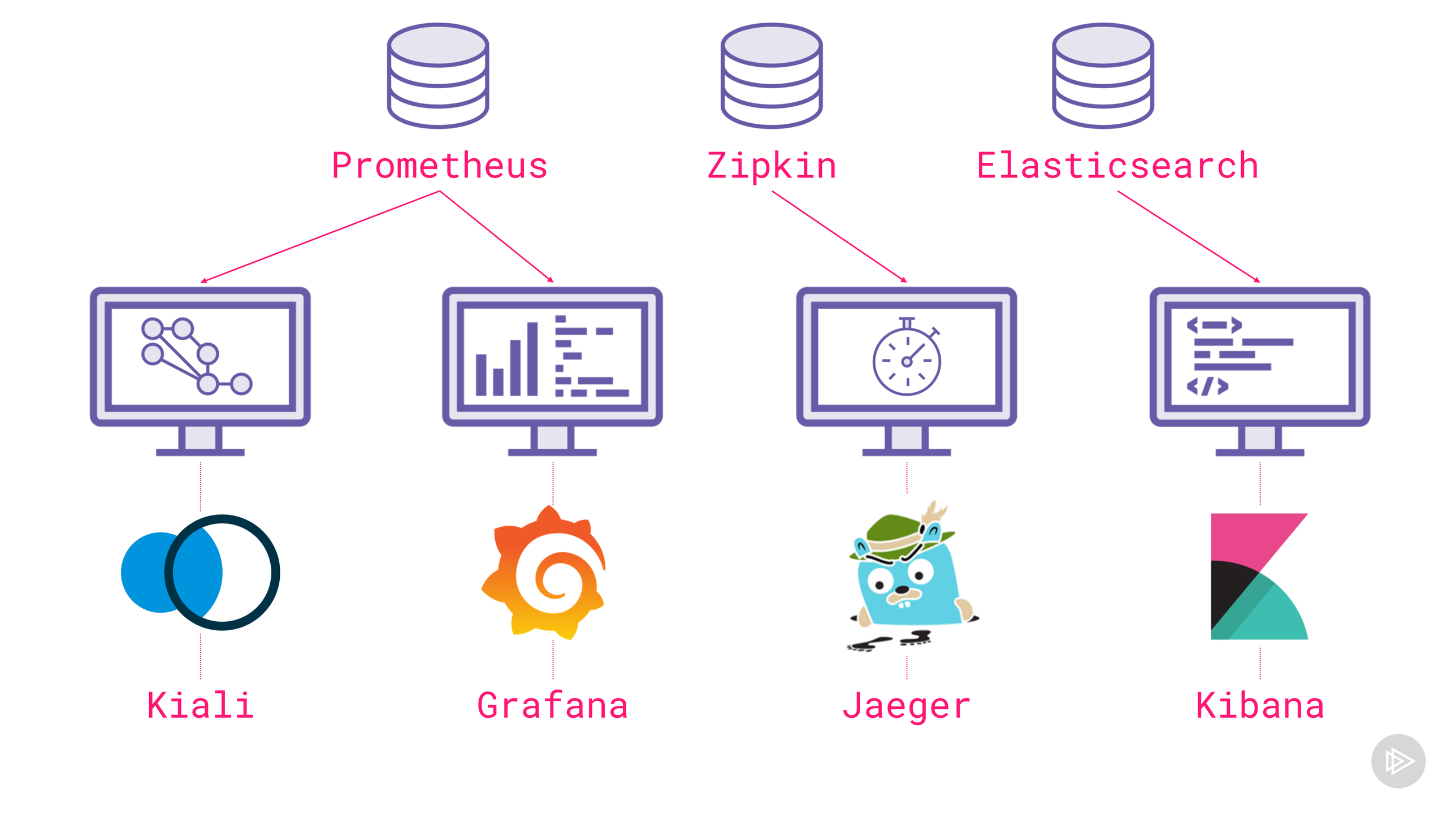
Prometheus
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Summary

Telemetry in Istio

- Metrics
- Distributed traces
- Access logs

Integrations

- Prometheus
- Zipkin (Stackdriver, Lightstep, Datadog)
- stdout -> Fluent Bit (Fluentd, Logstash)

Front-ends

- Kiali & Grafana
- Jaeger & SkyWalking
- Kibana

Up Next:

Running Istio in Production