

Istio Service-Mesh

Reference:

<https://istio.io/latest/docs/setup/getting-started/>

Download Istio



Download Istio Installer Zip.



Unzip the folder and copy it on C:/ Drive



Go Inside the folder home and run the command on linux bash to add IstioCtl client to your path.

\$ export PATH=\$PWD/bin:\$PATH

Istio Installation

Run Command

\$ istioctl install --set profile=demo -y

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ istioctl install --set profile=demo -y
Detected that your cluster does not support third party JWT authentication. Falling
back to less secure first party JWT. See https://istio.io/v1.10/docs/ops/bes
t-practices/security/#configure-third-party-service-account-tokens for details.
! values.global.jwtPolicy is deprecated; use Values.global.jwtPolicy=third-party
-jwt. See http://istio.io/latest/docs/ops/best-practices/security/#configure-thi
rd-party-service-account-tokens for more information instead
✓ Istio core installed
✓ Istiod installed
✓ Ingress gateways installed
✓ Egress gateways installed
✓ Installation complete
Thank you for installing Istio 1.10. Please take a few minutes to tell us about your install/upgrade experience! https://forms.gle/KjkrDnMPByq7
akrYA
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ |
```

Automatically inject
Envoy Sidecar
proxies to default
namespace

Run Command

\$ kubectl label namespace default istio-injection=enabled

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl label namespace default istio-injection=enabled
namespace/default labeled
```

Deploying book-info app

Run Command

\$ kubectl apply -f samples/bookinfo/platform/kube/bookinfo.yaml

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl apply -f samples/bookinfo/platform/kube/bookinfo.yaml

service/details created
serviceaccount/bookinfo-details created
deployment.apps/details-v1 created
service/ratings created
serviceaccount/bookinfo-ratings created
deployment.apps/ratings-v1 created
service/reviews created
serviceaccount/bookinfo-reviews created
deployment.apps/reviews-v1 created
deployment.apps/reviews-v2 created
deployment.apps/reviews-v3 created
service/productpage created
serviceaccount/bookinfo-productpage created
deployment.apps/productpage-v1 created
```

Automatically check all services are deployed well
and automatically inject Envoy Sidecar proxies to default namespace

Run Command

`$ kubectl get services`

`$ kubectl get pods`

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl get services
NAME          TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
details       ClusterIP     10.100.4.141  <none>         9080/TCP         98s
kubernetes    ClusterIP     10.96.0.1     <none>         443/TCP          14d
productpage   ClusterIP     10.111.249.55 <none>         9080/TCP         98s
ratings       ClusterIP     10.107.194.154 <none>         9080/TCP         98s
reviews       ClusterIP     10.96.69.105  <none>         9080/TCP         98s
scaling-service NodePort      10.103.167.17 <none>         8080:30015/TCP  14d
```

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl get pods
NAME                                                    READY   STATUS             RESTARTS   AGE
app-scaling-deployment-7cc495d684-4q95j               1/1     Running            1          14d
details-v1-79f774bdb9-tsbxj                           2/2     Running            0          3m24s
productpage-v1-6b746f74dc-swk2x                       0/2     PodInitializing    0          3m23s
ratings-v1-b6994bb9-47fct                             0/2     PodInitializing    0          3m23s
reviews-v1-545db77b95-bj459                           2/2     Running            0          3m24s
reviews-v2-7bf8c9648f-82bvn                           2/2     Running            0          3m24s
reviews-v3-84779c7bbc-tqvmq                           0/2     PodInitializing    0          3m24s
```

Verify
everything
working
correctly or
not

Run Command

```
$ kubectl exec "$(kubectl get pod -l app=ratings -o  
jsonpath='{.items[0].metadata.name}')" -c ratings -- curl -sS  
productpage:9080/productpage | grep -o "<title>.*</title>"
```

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0  
$ kubectl exec "$(kubectl get pod -l app=ratings -o jsonpath='{.items[0].metadata.name}')" -c ratings -- curl -sS productpage:9080/productpage | grep -o "<title>.*</title>"  
  
<title>Simple Bookstore App</title>  
|
```

Apply Gateway
opening app from
outside

```
$ kubectl apply -f samples/bookinfo/networking/bookinfo-gateway.yaml
```

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl apply -f samples/bookinfo/networking/bookinfo-gateway.yaml

gateway.networking.istio.io/bookinfo-gateway created
virtualservice.networking.istio.io/bookinfo created
```


Finding Ingress IP and Port:

```
$ kubectl get svc istio-ingressgateway -n istio-system
```

```
3MX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl get svc istio-ingressgateway -n istio-system
```

NAME	AGE	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)
istio-ingressgateway	3d12h	LoadBalancer	10.106.110.243	localhost	15021:31888/TCP,80:32308/TCP,443:30613/TCP,31400:30779/TCP,15443:30032/TCP

Setting up Environment Variables

- `export INGRESS_HOST=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.status.loadBalancer.ingress[0].ip}')`
- `export INGRESS_PORT=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.spec.ports[?(@.name=="http2")].port}')`
- `export SECURE_INGRESS_PORT=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.spec.ports[?(@.name=="https")].port}')`
- `echo $SECURE_INGRESS_PORT`
- `echo $INGRESS_HOST`
- `export INGRESS_PORT=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.spec.ports[?(@.name=="http2")].nodePort}')`
- `export SECURE_INGRESS_PORT=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.spec.ports[?(@.name=="https")].nodePort}')`
- `echo $INGRESS_HOST`
- `export INGRESS_HOST=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.status.loadBalancer.ingress[0].hostname}')`



```

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl get svc istio-ingressgateway -n istio-system
NAME                                TYPE                CLUSTER-IP      EXTERNAL-IP      PORT(S)                                     AGE
istio-ingressgateway               LoadBalancer        10.106.110.243   localhost        15021:31888/TCP,80:32308/TCP,443:30613/TCP,31400:30779/TCP,15443:30032/TCP  2d12h

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ export INGRESS_HOST=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.status.loadBalancer.ingress[0].ip}')
$ export SECURE_INGRESS_PORT=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.spec.ports[?(@.name=="https")].port}')

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ export INGRESS_PORT=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.spec.ports[?(@.name=="http2")].port}')

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ export SECURE_INGRESS_PORT=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.spec.ports[?(@.name=="https")].port}')

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ echo $SECURE_INGRESS_PORT
443

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ echo $INGRESS_HOST

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ export INGRESS_PORT=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.spec.ports[?(@.name=="http2")].nodePort}')

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ export SECURE_INGRESS_PORT=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.spec.ports[?(@.name=="https")].nodePort}')

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ echo $INGRESS_HOST

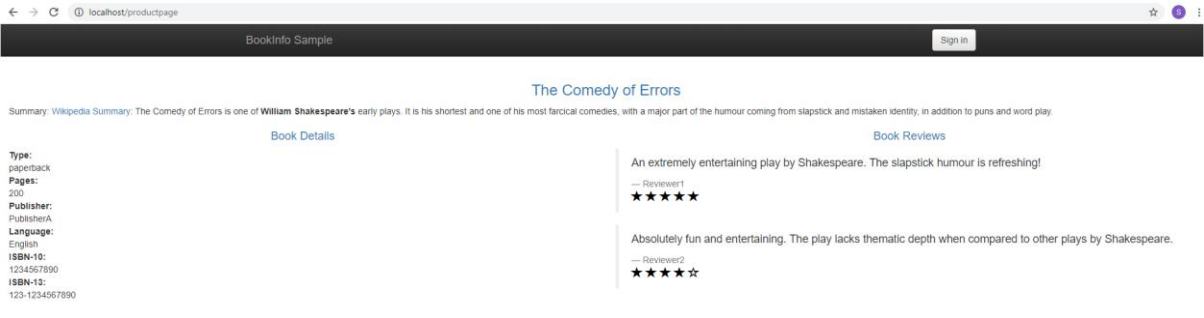
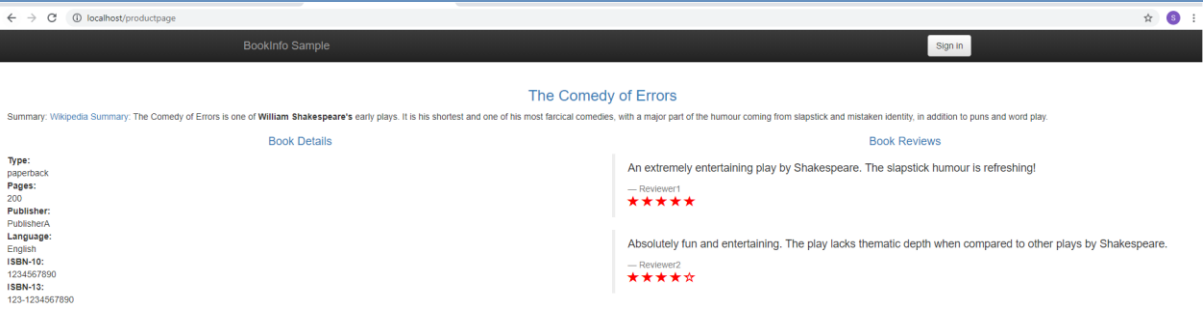
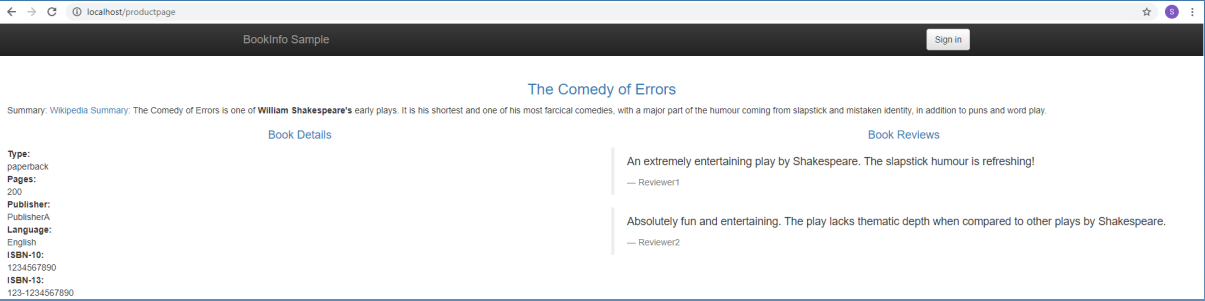
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ export INGRESS_HOST=$(kubectl -n istio-system get service istio-ingressgateway -o jsonpath='{.status.loadBalancer.ingress[0].hostname}')

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ echo $INGRESS_HOST
localhost

```



Access the App from Browser
(Distributing V1/V2/V3 Apps-Round
Robin Method):



- Install

```
$ kubectl apply -f samples/addons
```

[illegible]

Accessing Kiali Dashboard

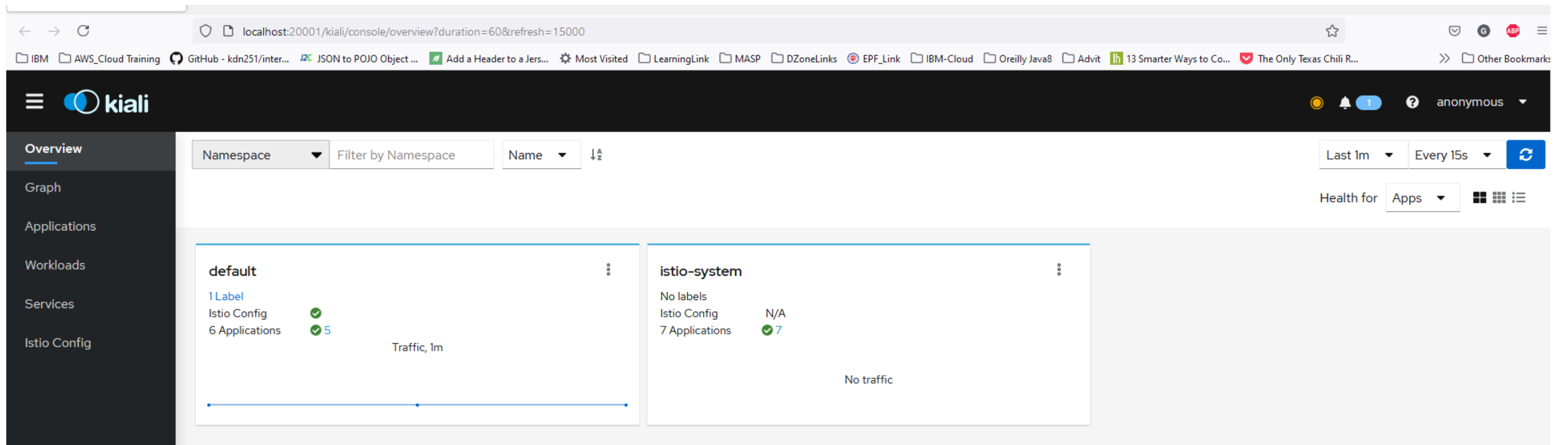
\$ istioctl dashboard kiali

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ export PATH=$PWD/bin:$PATH

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ istioctl dashboard kiali
http://localhost:20001/kiali
```



Kiali Dashboard UI



kiali

Overview

Graph

Applications

Workloads

Services

Istio Config

Namespace: 2 | App graph

Display Find... Hide...

Jun 10, 12:18:11 PM ... 12:19:11 PM

```
graph LR
    istio-ingressgateway[istio-ingressgateway] --> productpage[productpage]
    productpage --> details[details]
    details --> reviews[reviews]
    reviews --> ratings[ratings]
    reviews --> jaeger-collector[jaeger-collector]
    reviews --> trading[trading]
    details --> absservice-scaling[absservice-scaling]
    details --> zipkin[zipkin]
    productpage --> istio-egressgateway[istio-egressgateway]
    productpage --> ratings2[ratings]
    productpage --> istio-egressgateway2[istio-egressgateway]
    istiod[istiod]
    kiali[kiali]
    prometheus[prometheus]
    grafana[grafana]
    scaling-service[scaling-service]
```

Legend

istiod (istio-system)

kiali (istio-system)

prometheus (istio-system)

grafana (istio-system)

scaling-service (default)

kubernetes (default)

istiod

kiali

prometheus

grafana

istio-ingressgateway (istio-system)

istio-egressgateway (istio-system)

reviews (default)

details (default)

productpage (default)

ratings (default)

jaeger (istio-system)

jaeger-collector

trading

absservice-scaling (default)

zipkin (istio-system)

Current Graph:

NS default

NS istio-system N/A

12 apps (12 versions)

15 services

4 edges

Inbound

Outbound

Total

HTTP (requests per second):

Total	%Success	%Error
0.02	100.00	0.00

0

25

50

75

100

OK

3xx

4xx

5xx

NR

Namespace: 2

App graph

Last 1m

Every 15s



Display

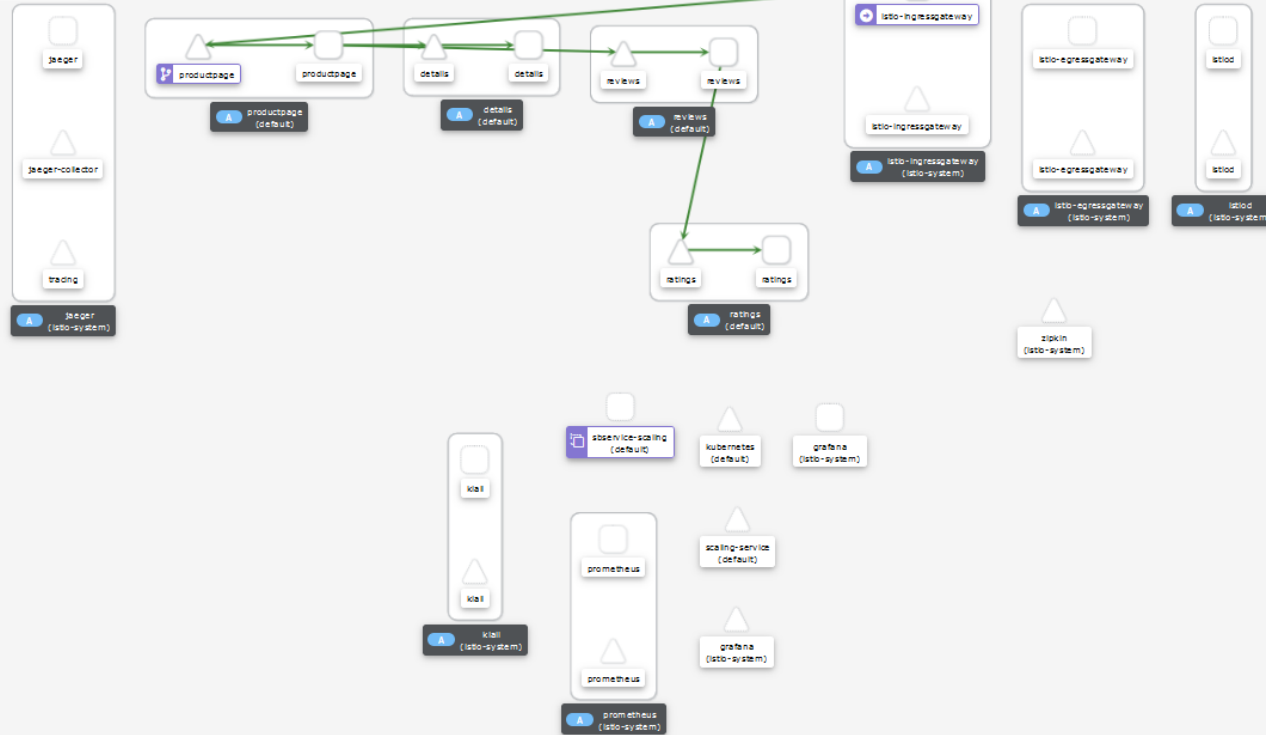
Find...

Hide...



Graph tour

Jun 10, 12:18:41 PM ... 12:19:41 PM



Current Graph:

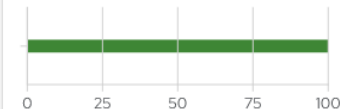
NS default ✓
NS istio-system N/A

12 apps (12 versions)
15 services
8 edges

Inbound Outbound Total

HTTP (requests per second):

Total	%Success	%Error
0.02	100.00	0.00



OK 3xx 4xx 5xx NR

Legend



Request Routing

Apply Default Destination Rules

```
$ kubectl apply -f samples/bookinfo/networking/destination-  
rule-all.yaml
```

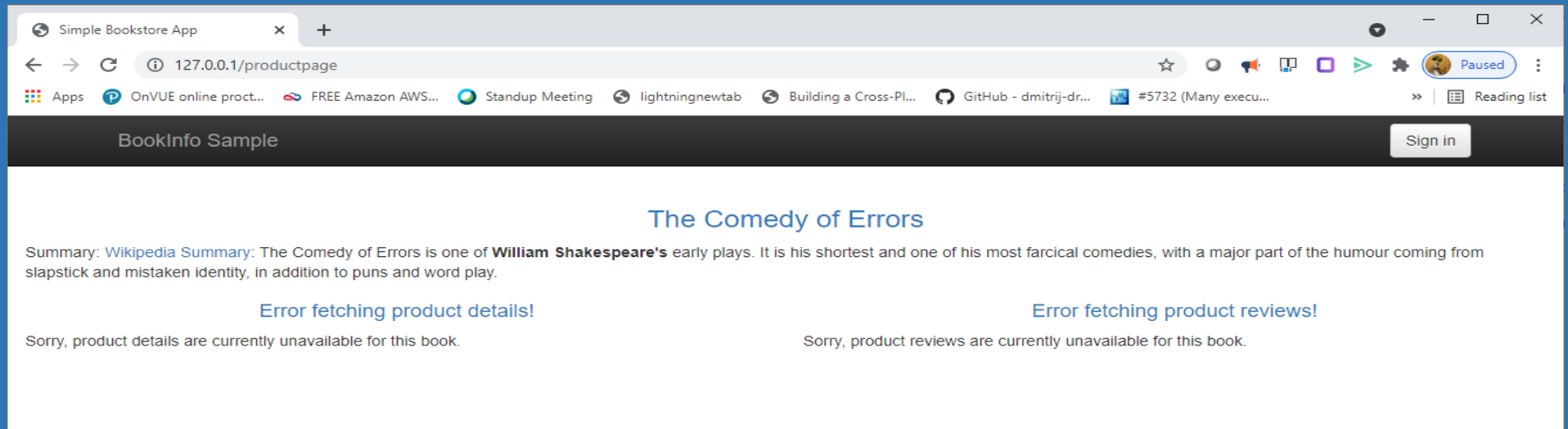
```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0  
$ kubectl apply -f samples/bookinfo/networking/destination-rule-all.yaml  
destinationrule.networking.istio.io/productpage created  
destinationrule.networking.istio.io/reviews created  
destinationrule.networking.istio.io/ratings created  
destinationrule.networking.istio.io/details created
```

Apply Virtual Service (All Requests Routes to V1):

```
$ kubectl apply -f samples/bookinfo/networking/virtual-service-all-v1.yaml
```

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl apply -f samples/bookinfo/networking/virtual-service-all-v1.yaml
virtualservice.networking.istio.io/productpage created
virtualservice.networking.istio.io/reviews created
virtualservice.networking.istio.io/ratings created
virtualservice.networking.istio.io/details created
```

With Multiple
Request Same
Page Display



Route User Based Identity

- `$ kubectl apply -f samples/bookinfo/networking/virtual-service-reviews-test-v2.yaml`

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl apply -f samples/bookinfo/networking/virtual-service-reviews-test-v2.yaml
virtualservice.networking.istio.io/reviews configured
```


Accessing Page (User:Jason Version-2 Displays)

← → ↻ ⓘ localhost/productpage

🔑 ☆ S ⋮

BookInfo Sample👤 jason ([sign out](#))

The Comedy of Errors

Summary: [Wikipedia Summary](#): The Comedy of Errors is one of **William Shakespeare's** early plays. It is his shortest and one of his most farcical comedies, with a major part of the humour coming from slapstick and mistaken identity, in addition to puns and word play.

Book Details

Type:
paperback

Pages:
200

Publisher:
PublisherA

Language:
English

ISBN-10:
1234567890

ISBN-13:
123-1234567890

Book Reviews

An extremely entertaining play by Shakespeare. The slapstick humour is refreshing!

— Reviewer1

★★★★★

Absolutely fun and entertaining. The play lacks thematic depth when compared to other plays by Shakespeare.

— Reviewer2

★★★★☆

Accessing Page (Default User. V1 Displays)

← → ↻ ⓘ localhost/productpage ☆ S ⋮

BookInfo SampleSign in

The Comedy of Errors

Summary: [Wikipedia Summary](#): The Comedy of Errors is one of **William Shakespeare's** early plays. It is his shortest and one of his most farcical comedies, with a major part of the humour coming from slapstick and mistaken identity, in addition to puns and word play.

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123-1234567890

Book Reviews

An extremely entertaining play by Shakespeare. The slapstick humour is refreshing!

— Reviewer1

Absolutely fun and entertaining. The play lacks thematic depth when compared to other plays by Shakespeare.

— Reviewer2

Cleanup

`$ kubectl delete -f samples/bookinfo/networking/virtual-service-all-v1.yaml`

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl delete -f samples/bookinfo/networking/virtual-service-all-v1.yaml
virtualservice.networking.istio.io "productpage" deleted
virtualservice.networking.istio.io "reviews" deleted
virtualservice.networking.istio.io "ratings" deleted
virtualservice.networking.istio.io "details" deleted
```



Fault Injection

Applying Fault Injection

- `$ kubectl delete -f samples/bookinfo/networking/virtual-service-all-v1.yaml`
- `kubectl apply -f samples/bookinfo/networking/virtual-service-all-v1.yaml`
- `kubectl apply -f samples/bookinfo/networking/virtual-service-reviews-test-v2.yaml`
- `kubectl apply -f samples/bookinfo/networking/virtual-service-ratings-test-delay.yaml`

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl apply -f samples/bookinfo/networking/virtual-service-all-v1.yaml
virtualservice.networking.istio.io/productpage created
virtualservice.networking.istio.io/reviews created
virtualservice.networking.istio.io/ratings created
virtualservice.networking.istio.io/details created

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl apply -f samples/bookinfo/networking/virtual-service-reviews-test-v2.yaml
virtualservice.networking.istio.io/reviews configured

GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0
$ kubectl apply -f samples/bookinfo/networking/virtual-service-ratings-test-delay.yaml
virtualservice.networking.istio.io/ratings configured
```

Simple Bookstore App

localhost/productpage

BookInfo Sample

Jason (sign out)

The Comedy of Errors

Summary: [Wikipedia Summary](#): The Comedy of Errors is one of **William Shakespeare's** early plays. It is his shortest and one of his most farcical comedies, with a major part of the humour coming from slapstick and mistaken identity, in addition to puns and word play.

Book Details

Type:
paperback
Pages:
200
Publisher:
PublisherA
Language:
English
ISBN-10:
1234567890
ISBN-13:
123-1234567890

Error fetching product reviews!

Sorry, product reviews are currently unavailable for this book.

Elements

Console

Sources

Network

Performance

Memory

Application

Security

Lighthouse

Filter

Hide data URLs

All

XHR

JS

CSS

Img

Media

Font

Doc

WS

Manifest

Other

Has blocked cookies

Blocked Requests

Name	Status	Type	Initiator	Size	Time	Waterfall
login	302	document / Re...	Other	327 B	84 ms	
productpage	200	document	login	4.2 kB	6.15 s	
bootstrap.min.css	200	stylesheet	productpage	(memory cache)	0 ms	
bootstrap-theme.min.css	200	stylesheet	productpage	(memory cache)	0 ms	
jquery.min.js	200	script	productpage	(memory cache)	0 ms	
bootstrap.min.js	200	script	productpage	(memory cache)	0 ms	
glyphicons-halflings-regular.woff2	200	font	bootstrap.min.css	18.4 kB	50 ms	

localhost/productpage

BookInfo Sample

Sign in

The Comedy of Errors

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200
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Elements

Console

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Filter

Hide data URLs

All

XHR

JS

CSS

Img

Media

Font

Doc

WS

Manifest

Other

Has blocked cookies

Blocked Requests

Name	Status	Type	Initiator	Size	Time	Waterfall
productpage	200	document	Other	4.4 kB	130 ms	
jquery.min.js	200	script	productpage	(memory cache)	0 ms	
bootstrap.min.js	200	script	productpage	(memory cache)	0 ms	

Aborting Injection of HTTP fault

```
$ kubectl apply -f samples/bookinfo/networking/virtual-  
service-ratings-test-abort.yaml
```

```
GMX+04828W744@DESKTOP-5KTEPAC MINGW64 /c/Softwares/istio-1.10.0-win/istio-1.10.0  
$ kubectl apply -f samples/bookinfo/networking/virtual-service-ratings-test-abort.yaml  
virtualservice.networking.istio.io/ratings configured
```

Simple Bookstore App

localhost/productpage

BookInfo Sample

Sign in

The Comedy of Errors

Summary: [Wikipedia Summary](#): The Comedy of Errors is one of **William Shakespeare's** early plays. It is his shortest and one of his most farcical comedies, with a major part of the humour coming from slapstick and mistaken identity, in addition to puns and word play.

The Comedy of Errors

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paperback

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Memory

Application

Security

Lighthouse

Filter

Hide data URLs

All

XHR

JS

CSS

Img

Media

Font

Doc

WS

Manifest

Other

Has blocked cookies

Blocked Requests

Name	Status	Type	Initiator	Size	Time	Waterfall
productpage	200	document	Other	4.7 kB	393 ms	
bootstrap.min.js	200	script	productpage	37.4 kB	157 ms	
bootstrap.min.css	200	stylesheet	productpage	122 kB	67 ms	
bootstrap-theme.min.css	200	stylesheet	productpage	23.8 kB	101 ms	
jquery.min.js	200	script	productpage	89.9 kB	120 ms	
glyphicons-halflings-regul...	200	font	bootstrap.min.css	18.4 kB	52 ms	

localhost/productpage

BookInfo Sample

Sign in

The Comedy of Errors

Summary: [Wikipedia Summary](#): The Comedy of Errors is one of **William Shakespeare's** early plays. It is his shortest and one of his most farcical comedies, with a major part of the humour coming from slapstick and mistaken identity, in addition to puns and word play.

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Type:

paperback

Pages:

200

Publisher:

PublisherA

Language:

English

ISBN-10:

1234567890

ISBN-13:

123-1234567890

Book Details

Book Reviews

Elements

Console

Sources

Network

Performance

Memory

Application

Security

Lighthouse

Filter

Hide data URLs

All

XHR

JS

CSS

Img

Media

Font

Doc

WS

Manifest

Other

Has blocked cookies

Blocked Requests

Name	Status	Type	Initiator	Size	Time	Waterfall
productpage	200	document	Other	4.4 kB	149 ms	
bootstrap.min.css	200	stylesheet	productpage	122 kB	109 ms	
bootstrap-theme.min.css	200	stylesheet	productpage	23.8 kB	93 ms	
jquery.min.js	200	script	productpage	89.9 kB	62 ms	
bootstrap.min.js	200	script	productpage	37.4 kB	93 ms	
favicon.ico	404	text/plain	Other	103 B	10 ms	

6 requests

277 kB transferred

275 kB resources

Finish: 344 ms

DOMContentLoaded: 323 ms

Load: 328 ms

Console

What's New

Coverage

Highlights from the Chrome 91 update

Web Vitals information pop up

Hover on a Web Vitals marker in the Performance panel to understand what's the indicator about.

View the CSS audit page





The End