Cloud Lab 5

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Task 1 - Traffic Shifting

Apply Initial Routing (All traffic to v1):

```
C:\Users\user\Documents\IstioProject\istio-1.25.0> 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
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Shift 50% Traffic to v3:

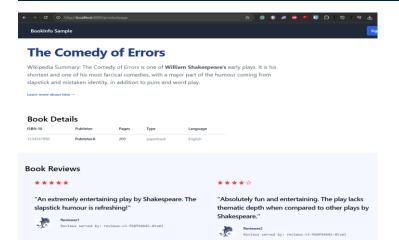
```
/irtualservice.networking.istio.io/details created
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl apply -f samples/bookinfo/networking/virtual-service-reviews-50-v3.yaml
/irtualservice.networking.istio.io/reviews configured
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Confirm VirtualService Weights:

```
generation: 2
name: reviews
namespace: default
resourceVersion: "8202"
uid: bd69da8b-0f4d-4cd6-8de7-ad9f7ff87de6
pec:
hosts:
- reviews
http:
- route:
- destination:
host: reviews
subset: v1
weight: 50
- destination:
host: reviews
subset: v3
subset: v3
S (:\Users\user\Documents\IstioProject\istio-1.25.6>
```

Shift 100% Traffic to v3:

PS C:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl apply -f samples/bookinfo/networking/virtual-service-reviews-v3.yaml /irtualservice.networking.istio.io/reviews configured
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>



Clean up

```
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> 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 "ratings" deleted
virtualservice.networking.istio.io "details" deleted
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Task 2: Request Routing.

Apply Initial v1 Routing Rules:

```
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> 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/ratings created virtualservice.networking.istio.io/details created PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Verify Virtual Services

```
:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl get virtualservices -o yaml
       resonceversion: 8980 uid: 437107644-95dc-437e-974c-f55e91668627
spec:
hosts:
- details
http:
- rote:
- destination:
- destination:
- subset: v1
apiVersion: networking.istio.io/v1
kind: VirtualService
metadata:
- annotations:
- kubectl. kubernetes.io/last-applied-configuration: |
- ("apiVersion:"networking.istio.io/v1", "kind":"VirtualService", "metadata": ("annotations": (), "name":"productpage", "namespace":"default"), "spec": ("hosts": ["productpage"], "htt
- ": ["router: ["destination:"chosts": "productpage", "subset":"v1"))))))
- creationTimestamp: "2025-03-26T14:43:182"
generation: 1
name: productpage
namespace: default
- resourceVersion: "8897"
uid: 57.674a1-0efb-488f-892b-63b215316d51
spec:
     resourceversion: 8097.

resour
       resourceVersion: "8899"
uid: ebb016-7ad1-4227-885f-142e706361c3

spec:
hosts:
- ratings
http:
- route:
- destination:
host: ratings
specty to the strings
specty to the strings
aniversion: networking.istio.io/v1
klnd: VirtualService metadata:
annotations:
kNot: ratings
with strings
with stri
uid: 85877368-4686-48e7-a43f-04f646fcff20
spec:
hosts:
- reviews
http:
- route:
- destination:
host: reviews
subset: v1
ind: List
hetadata:
resourceVersion: ""
SC:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Apply User-Based Routing Rule:

```
subset: vl

SC:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl apply -f samples/bookinfo/networking/virtual-service-reviews-test-v2.yaml
virtualservice.networking.istio.lo/reviews configured
SC:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Logged in - black stars

Bookinfo Sample



The Comedy of Errors

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.

Learn more about Istio →

Book Details

ISBN-10	Publisher	Pages	Туре	Language
1234567890	PublisherA	200	paperback	English

Book Reviews

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



Reviewer1

Reviews served by: reviews-v2-65cb66b45c-r546x



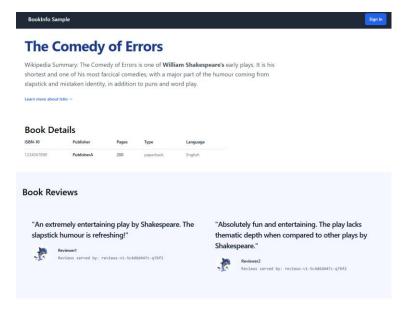
"Absolutely fun and entertaining. The play lacks thematic depth when compared to other plays by Shakespeare."



Reviewer2

Reviews served by: reviews-v2-65cb66b45c-r546x

Signed out



Cleanup

```
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl delete -f samples/bookinfo/networking/virtual-service-all-v1.yaml
Error from server (NotFound): error when deleting "samples/bookinfo/networking/virtual-service-all-v1.yaml": virtualservices.networking.istio.io "productpage
Error from server (NotFound): error when deleting "samples/bookinfo/networking/virtual-service-all-v1.yaml": virtualservices.networking.istio.io "reviews" no
Error from server (NotFound): error when deleting "samples/bookinfo/networking/virtual-service-all-v1.yaml": virtualservices.networking.istio.io "ratings" no
Error from server (NotFound): error when deleting "samples/bookinfo/networking/virtual-service-all-v1.yaml": virtualservices.networking.istio.io "details" no
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Task 3: Fault Injection.

Apply Prerequisite Routing Rules:

```
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> 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/ratings created
virtualservice.networking.istio.io/details created
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl apply -f samples/bookinfo/networking/virtual-service-reviews-test-v2.yaml
virtualservice.networking.istio.io/reviews configured
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

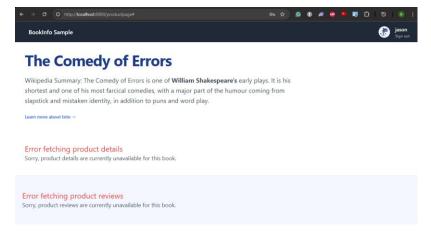
Inject HTTP Delay (for user 'jason' to 'ratings'):

```
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl apply -f samples/bookinfo/networking/virtual-service-ratings-test-delay.yaml pirtualservice.networking.istio.io/ratings configured
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Confirm rule

```
PS C:\Users\user\Documents\istioProject\istio-1.25.0> kubectl get virtualservice ratings = yaml
apiVersion: networking.istio.io/v1
kind: VirtualService
metadata:
    annotations:
    kubectl.kubennetes.io/last-applied-configuration:
    kubectl.kubennetes.io/last-applied-configuration:
    kubectl.kubennetes.io/last-applied-configuration:
    if "apiVersion::inetworking.istio.io/v1", windn': VirtualService", "metadata":("annotations":(), "name":"ratings", "namespace":"default"), "spec":("hosts":"citings", "inetworking.istio.io/v1", windn': VirtualService", "metadata":("end-user":("exact":'jason")))), "route":[("destination":("host":"ratings"), "winds":"citings", "subset":"v1")))))
    icroit ("inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking.inetworking
```

Logged in as Jason-test delay



Inject HTTP Abort (for user 'jason' to 'ratings'):

```
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> <mark>kubectl</mark> apply -f samples/bookinfo/networking/virtual-servio
virtualservice.networking.istio.io/ratings configured
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Clean up

```
C:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl delete -f samples/bookinfo/networking/virtual-service-all-v1.yaml
rtualservice.networking.istio.io "productpage" deleted
rtualservice.networking.istio.io "reviews" deleted
rtualservice.networking.istio.io "ratings" deleted
rtualservice.networking.istio.io "details" deleted
C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Task 4: Circuit Breaking

Deploy httpbin Service:

```
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl apply -f samples/httpbin/httpbin.yaml serviceaccount/httpbin created service/httpbin created deployment.apps/httpbin created PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Apply Circuit Breaker Destination Rule:

Created yaml file to run this

```
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> <mark>kubectl</mark> apply -f .\httpbin-dr.yaml
destinationrule.networking.istio.io/httpbin created
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Verify

Deploy fortio client

```
maxtjectionPercent: 100
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl apply -f samples/httpbin/sample-client/fortio-deploy.yaml
service/fortio created
deployment.apps/fortio-deploy created
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Pods verified

```
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl get pods
NAME
                                          READY STATUS
                                                             RESTARTS
                                                   Running
bookinfo-gateway-istio-76d7c74cf4-xrsg6
                                                                        67m
                                          1/1
                                                             0
details-v1-79dfbd6fff-7kb58
                                          2/2
                                                   Running
                                                             0
                                                                        70m
fortio-deploy-b6757cbbb-vnm5w
                                                  Running 0
                                          2/2
                                                                        15s
nttpbin-7b549f7859-1h8xh
                                          2/2
                                                   Running
                                                             0
                                                                        5m6s
                                                   Running
productpage-v1-dffc47f64-kz96b
                                          2/2
                                                             0
                                                                        70m
ratings-v1-65f797b499-9mcz2
                                          2/2
                                                   Running
                                                                        70m
                                                  Running 0
Running 0
Running 0
reviews-v1-5c4d6d447c-q76f2
                                          2/2
                                                                        70m
reviews-v2-65cb66b45c-r546x
                                           2/2
                                                                        70m
reviews-v3-f68f94645-8tsml
                                                                        70m
                                          2/2
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

set portio pod variable

```
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> echo $FORTIO_POD_
fortio-deploy-b6757cbbb-vnm5w
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Make single call from fortio

Trip circuit breaker 2 concurrent connections

Trip circuit breaker with 3 concurrent connections

```
### Comparison of the Comparis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             glevel Warning http://httpbin:8000/get
```

Check proxy status

```
S C:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl exec $FORTIO_POD -c istio-proxy -- pilot-agent request GET stats | Select-String
cluster.outbound|8000||httpbin.default.svc.cluster.local;.circuit_breakers.default.remaining_pending: 1
cluster.outbound|8000||httpbin.default.svc.cluster.local;.circuit_breakers.default.rq_pending_open: 0
cluster.outbound|8000||httpbin.default.svc.cluster.local;.circuit_breakers.high.rq_pending_open: 0
cluster.outbound|8000||httpbin.default.svc.cluster.local;.upstream_rq_pending_operive: 0
cluster.outbound|8000||httpbin.default.svc.cluster.local;.upstream_rq_pending_failure_eject: 0
cluster.outbound|8000||httpbin.default.svc.cluster.local;.upstream_rq_pending_overflow: 24
cluster.outbound|8000||httpbin.default.svc.cluster.local;.upstream_rq_pending_total: 27
 S C:\Users\user\Documents\IstioProject\istio-1.25.0>
```

Cleanup

```
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> kubectl delete destinationrule httpbin
destinationrule.networking.istio.io "httpbin" deleted
PS C:\Users\user\Documents\IstioProject\istio-1.25.0> <mark>kubectl</mark> delete -f samples/httpbin/sample-client/fortio-deploy.yaml
PS C:\Users\user\Documents\IstioProject\istio-1.25.0>
```