

# Lab 8

## 1. Objective

Configure and test circuit breaking in Istio by applying DestinationRule policies and generating concurrent requests to trigger circuit breaker behavior.

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## 2. Environment Requirements

Kubernetes cluster running

Istio installed

kubectl + istioctl commands available

The screenshot shows a "Book Reviews" section with two entries. Each entry includes a small blue dolphin icon, the reviewer's name, and a truncated review text.

Reviewer	Review Text
Reviewer1	"An extremely entertaining play by Shakespeare. The slapstick humour is refreshing!"
Reviewer2	"Absolutely fun and entertaining. The play lacks thematic depth when compared to other plays by Shakespeare."

The page should able to open like lab 7 did.

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## Experiment 1 – Traffic Shifting

**Objective:** Validate weighted routing between multiple versions of the service in Istio.

1. Deploy the httpbin application and expose it through an Istio gateway.
2. Configure a VirtualService to split traffic between v1 and v2 using weight percentages.

3. Send repeated HTTP requests through the gateway to observe distribution.
4. Update the VirtualService to gradually increase traffic to the new version.
5. Confirm that routing shifts match configured percentages.

## Experiment 2 – Fault Injection

**Objective:** Demonstrate controlled delay or abort faults to test service resilience.

1. Deploy a baseline VirtualService routing traffic to the service.
2. Modify the VirtualService to introduce delay faults into requests.
3. Observe client-side latency behavior.
4. Modify configuration to inject abort faults instead of delay.
5. Confirm the expected HTTP response errors from the client.

## Experiment 3 – Request Timeouts and Retries

**Objective:** Configure and evaluate timeout and retry policies in Istio.

1. Deploy the service and apply a destination and virtual service policy.
2. Configure a timeout rule in the VirtualService.
3. Simulate slow upstream responses to trigger timeout conditions.
4. Enable retry policy and repeat slow request testing.
5. Verify that requests are retried according to configured rules.

## Experiment 4 – Connection Pooling and Outlier Detection

**Objective:** Limit connection load and automatically eject unhealthy hosts using

outlier detection.

1. Apply a DestinationRule defining connection pool constraints.
2. Enable outlier detection to eject endpoints with repeated errors.
3. Simulate traffic that triggers excessive 5xx failures.
4. Observe endpoint ejection and recovery based on base ejection time.
5. Monitor traffic behavior to verify pool and ejection control.

#### ScreenShots:

```
PS D:\istio-1.28.0> kubectl apply -f samples/bookinfo/networking/virtual-service-all-v1.yaml
virtualservice.networking.istio.io/productpage unchanged
virtualservice.networking.istio.io/reviews unchanged
virtualservice.networking.istio.io/ratings unchanged
virtualservice.networking.istio.io/details unchanged
PS D:\istio-1.28.0>
```

```
PS C:\Users\lenovo> kubectl get virtualservice reviews -o yaml
apiVersion: networking.istio.io/v1
kind: VirtualService
metadata:
  name: reviews
spec:
  hosts:
  - reviews
  http:
  - route:
    - destination:
        host: reviews
        subset: v1
        weight: 50
    - destination:
        host: reviews
        subset: v2
        weight: 50
```

```

PS C:\Users\lenovo> kubectl get virtualservice productpage -o yaml
apiVersion: networking.istio.io/v1
kind: VirtualService
metadata:
  name: productpage
spec:
  hosts:
  - productpage
  http:
  - match:
    - headers:
        end-user:
          exact: jason
    route:
    - destination:
        host: reviews
        subset: v2
  - route:
    - destination:
        host: reviews
        subset: v1

```

The screenshot shows a web browser window with the URL `localhost:8080/productpage`. The page title is "BookInfo Sample" and there is a "Sign in" button.

## 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	Type	Language
1234567890	PublisherA	200	paperback	English

### Book Reviews

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

Reviewer1  
Reviews served by: reviews-v1-8cf7b9cc5-vbx5b

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

Reviewer2  
Reviews served by: reviews-v2-8cf7b9cc5-vbx5b