# UNHCR-REFWORLD

## Disaster Recovery Test on Cloud Web Hosting

**Date: 2023/11/22**

### Scenario: Availability Zone switchover

**Objective:**

Test Availability zone failure, simulate a failure in one datacentre (availability zone) in Ireland Region.

**Expected:**

The services, nodes and pods will be served by the health Availability zone.

Site is up and running and responding properly to requests.

The main features are working as expected.

**Site infrastructure on AWS:**

* Kubernetes workload (AW EKS):
  + Web containers;
  + Solr (search platform)
* AWS RDS Database;
* AWS ElastiCache Redis;
* AWS EFS Storage.

### Actions to simulate the availability zone failure

Failure zone: eu-west-1b

Available zone: eu-west-1a

A screenshot of a computer

Description automatically generated

1. Remove **AZ eu-west-1b** from AWS EFS

Before DR test, EFS have two Availability zones:

Metered size 
Network 
Availability zone 
eu-west-l a 
Monitoring 
Tags 
File system policy 
V 
Access points 
Subnet ID 
subnet- 
0752b94520d581ce 
b 
Network 
Replication 
Mount target ID 
fsmt-Odafb084a17e69a12 
Mount target state 
@Available 
IP address 
10.87.103.218 
V 
Network inte 
eni-04d7d05t 

**Remove mount target for eu-west-1b using AWS CLI**

aws efs delete-mount-target --mount-target-id fsmt-086716ac6ecf88f86

1. Move Pods web, Solr to the **AZ eu-west-1b;**

Pod: solr-0, Status: Running Node: ip-10-87-127-45.eu-west-1.compute.internal, Zone: eu-west-1b

Pod: web-686b5ff8f5-42mmp, Status: Running Node: ip-10-87-121-111.eu-west-1.compute.internal, Zone: eu-west-1b

Pod: web-686b5ff8f5-5nskh, Status: Running Node: ip-10-87-110-90.eu-west-1.compute.internal, Zone: eu-west-1a

Pod: web-686b5ff8f5-ckdzd, Status: Running Node: ip-10-87-101-29.eu-west-1.compute.internal, Zone: eu-west-1a

Pod: web-686b5ff8f5-lm86h, Status: Running Node: ip-10-87-118-137.eu-west-1.compute.internal, Zone: eu-west-1b

**After**

Pod: solr-0, Status: Running Node: ip-10-87-110-90.eu-west-1.compute.internal, Zone: eu-west-1a

Pod: web-84cf84f4f7-656nj, Status: Running Node: ip-10-87-101-29.eu-west-1.compute.internal, Zone: eu-west-1a

Pod: web-84cf84f4f7-7qwtn, Status: Running Node: ip-10-87-110-90.eu-west-1.compute.internal, Zone: eu-west-1a

Pod: web-84cf84f4f7-lpkz8, Status: Running Node: ip-10-87-107-107.eu-west-1.compute.internal, Zone: eu-west-1a

Pod: web-84cf84f4f7-nnhj9, Status: Running Node: ip-10-87-110-90.eu-west-1.compute.internal, Zone: eu-west-1a

1. Reboot the AWS RDS database instance with failover option to force the failover to **AZ eu-west-1a;**

Before was on AZ: **eu-west-1b**

EDS > Databases > unhcr-refworld-db 
unhcr-refworld-db 
Summary 
DB identifier 
unhcr-refworld-db 
Role 
Instance 
CPU 
3.50% 
Current activity 
O Connections 
Status 
@Available 
Engine 
MariaDB 

**After:**

> Databases > unhcr-refworld-db 
unhcr-refworld-db 
Summary 
DB identifier 
unhcr-refworld-db 
CPU 
5.18% 
Status 
@Available 

1. Force AWS ElastiCache to failover to **AZ eu-west-1a;**

Primary is on AZ: **eu-west-1b**

Nodes (2) 
Q Find nodes 
v 
Status 
O Available 
v 
Current role 
replica 
v 
c 
Endpoint 
Manage tags 
Failover primary 
Promote 
O 
Node name 
unhcr-refworId-OOI 
O unhcr-refworId-OOI.unhcr-refworId.rvfIxd.euwI.cache.amazonaws.com:6379 

**After**

Nodes (2) 
Q Find nodes 
Node name 
unhcr-refworId-OOI 
Status 
@Available 
v 
Current role 
primary 
v 
c 
Endpoint 
Manage tags 
Failover primary 
Promote 
O unhcr-refworId-OOI.unhcr-refworId.rvfIxd.euwI.cache.amazonaws.com:6379 

### Observations:

The Disaster recovery ran automatically without intervention.

Observed a short downtime of 30 seconds on site because of AWS RDS database failover from **eu-west-1b** to **eu-west-1a.**

All components still working after the migration to one availability zone.

Solr don’t needed to reindex all the data after DR test, the data persisted on EFS storage.

Elastic Search Uptime Monitor

Monitors 
Q Search by monitor ID, name, URL, port or tags 
Last 60 minutes 
1 Monitor 
Monitors 
Pings over time 
3 
2 
15:25 
IS:3S 
15:40 
Location 
IS:as 
IS.-SO 
All 
up 
Down 
up 
Down 
15:30 