**Phase 4: Testing**

**Objective**

To verify that the disaster recovery (DR) system works as intended under various failure scenarios and meets the desired Recovery Time Objective (RTO) and Recovery Point Objective (RPO).

**Testing Scenarios & Procedures**

**1. Backup and Restore Test**

* **Script**: backup\_to\_s3.sh
* **Steps**:
  + Take a backup using the script.
  + Delete some files to simulate data loss.
  + Restore the files from S3 and validate data integrity.

**2. EC2 Instance Recovery**

* **Script**: lambda\_start\_ec2.py
* **Steps**:
  + Stop or terminate an EC2 instance manually.
  + Lambda should detect and auto-launch a new instance.
  + Verify new instance functionality.

**3. RDS Failover Test**

* **Steps**:
  + Simulate RDS primary failure (manually reboot or failover).
  + Monitor failover to secondary DB.
  + Test app connectivity post-failover.

**4. Route 53 Health Check**

* **Script**: create\_route53\_health\_check.sh
* **Steps**:
  + Deploy health checks for primary and secondary endpoints.
  + Simulate failure of the primary endpoint.
  + Verify Route 53 redirects to the healthy backup.

**5. Full Disaster Recovery Drill**

* **Steps**:
  + Simulate complete outage.
  + Trigger full DR recovery.
  + Record recovery times.
  + Compare with RTO/RPO targets.

**Testing Metrics**

| **Metric** | **Target** |
| --- | --- |
| Recovery Time Objective (RTO) | ≤ 15 minutes |
| Recovery Point Objective (RPO) | ≤ 5 minutes |
| Backup Success Rate | ≥ 95% |
| Failover Success Rate | 100% |

**Artifacts to Include in Repository**

testing/

├── test\_plan.md

├── test\_cases/

│ ├── ec2\_recovery\_test.md

│ ├── rds\_failover\_test.md

│ ├── backup\_restore\_test.md

│ ├── route53\_test.md

│ └── full\_drill\_test.md

└── test\_reports/

├── ec2\_recovery\_report.md

├── rds\_failover\_report.md

└── summary.md