## ElastiCache Shadow Instance Strategy

### Purpose:

The implementation of an ElastiCache shadow instance in another region serves several key purposes:

**Disaster Recovery**:

* 1. In the event of a regional failure, the shadow instance ensures continuous application functionality. The system can seamlessly switch to the mirror instance in the secondary region, maintaining availability even if the primary AWS region goes down.

**High Availability**:

* 1. For applications with a geographically distributed user base, deploying ElastiCache instances in multiple regions reduces latency. By serving users from the closest cache, performance is optimized across diverse regions.

**Data Durability**:

* 1. The shadow instance adds an extra layer of data protection. In case of accidental data deletion or modification, the data can be recovered from the secondary instance, preserving business continuity.

### Sizing Considerations:

The shadow instance in **US West (Oregon)** is currently sized identically to the production instance in **US East (N. Virginia)**, reflecting the primary requirement of disaster recovery.

**Matching Size for Failover**: The mirror instance should match the primary instance to handle the same workload in case of a disaster. A smaller instance could result in performance degradation if it cannot manage the load.

**Use Case for Temporary Failover**: If reduced performance during failover is acceptable, a smaller instance could be considered for cost optimization. This would only be a temporary solution until the primary instance is restored.

### Reservation Strategy:

When deciding between a **1-year** or **3-year** reservation, consider the following:

1. **Cost Efficiency**:
   * A 3-year reservation provides a significantly higher discount, making it a cost-effective option for long-term stability.
2. **Chances of Change**:
   * If the application is mature and unlikely to undergo substantial changes over the next 3 years, locking in a 3-year reservation could be a prudent choice.
   * If there is potential for growth or changes in infrastructure needs, a 1-year reservation offers more flexibility.