



# Evolution of Envoy as a Dynamic Redis Proxy

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Workday

# Agenda

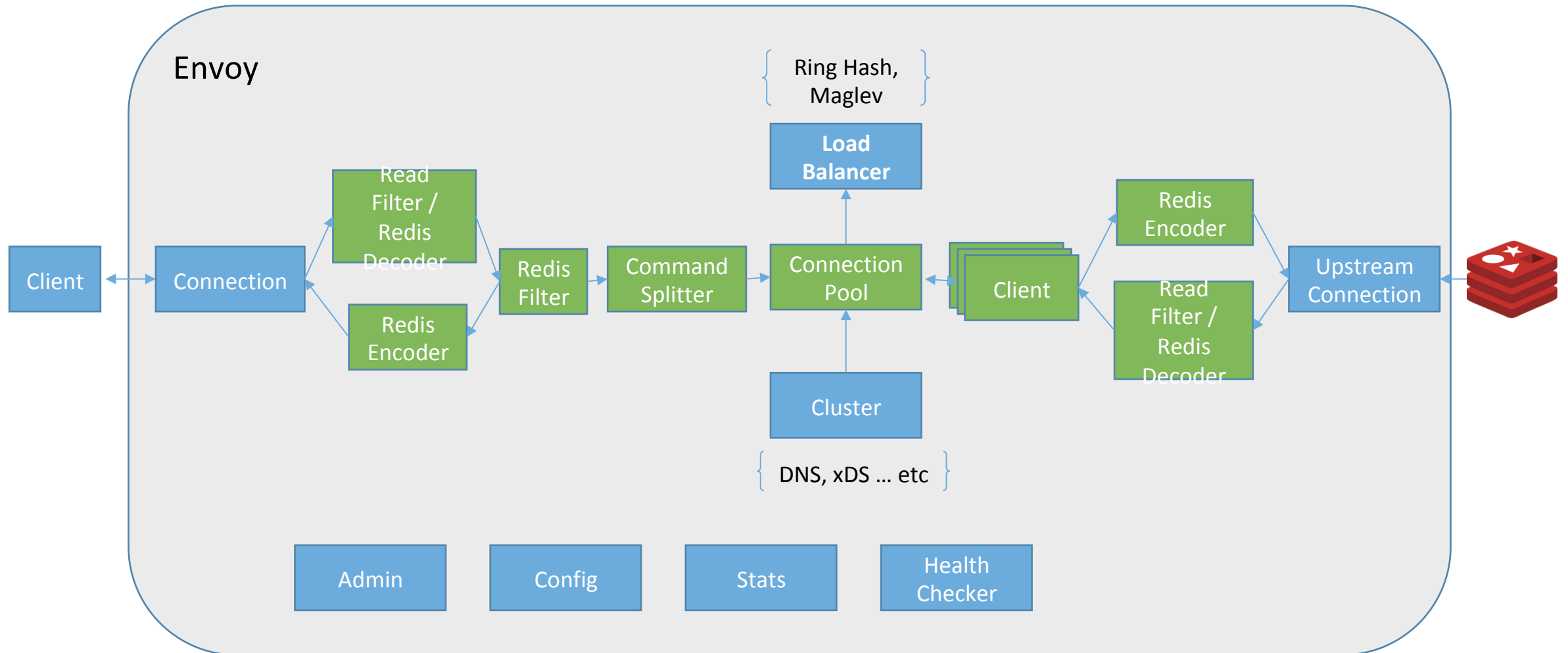


- Why Envoy?
- The Evolution of Redis Support
- Online Data Migrations
- What's Next
- Q&A

# Why Envoy?

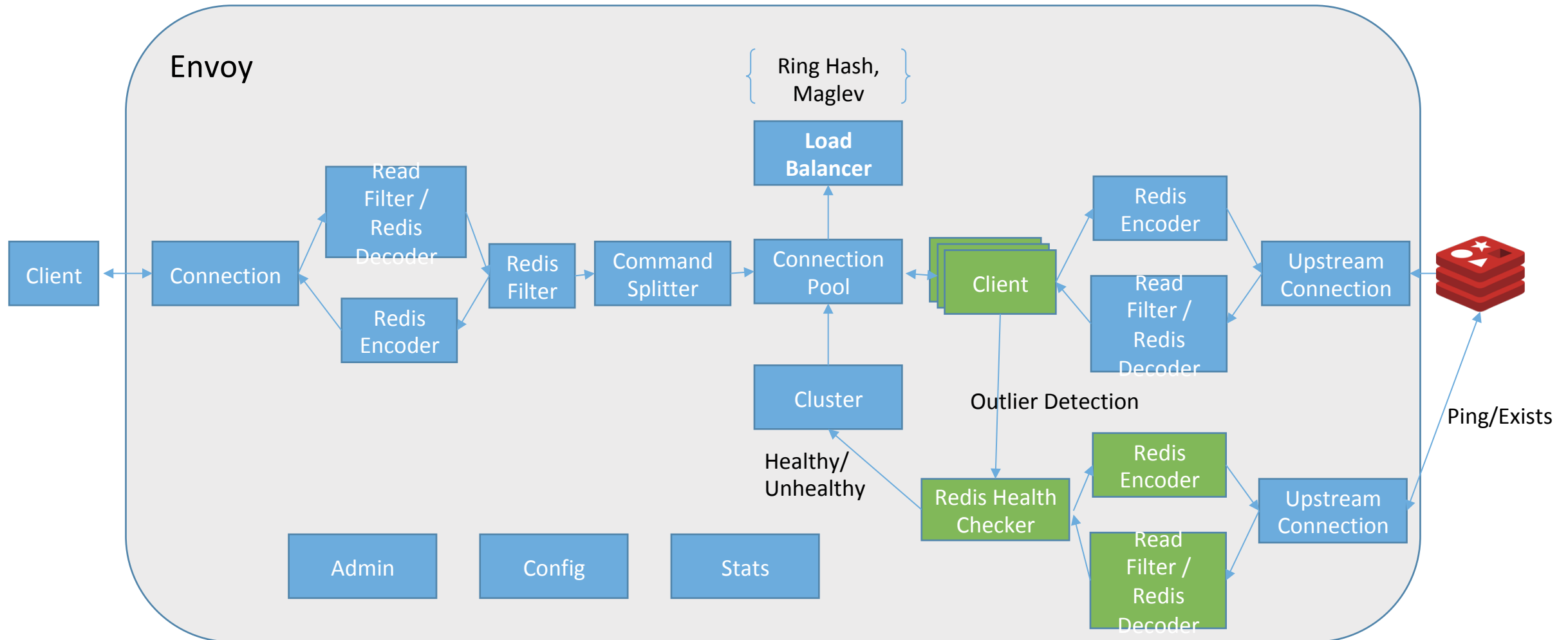
- Simple Redis client
- Supports complex operational environments
  - Dynamic configuration changes (dynamic cluster definition, hot restart)
  - Smart read policies
  - Federating via prefix routing
  - Zero-code change online data migrations
- Consistent observability
  - Metrics
  - Logs
- Flexibility, Flexibility, and Flexibility..
- Performance

# Consistent Hashing Proxy



- Hot restart
- Dynamic Config

# Redis Health Check



- Active and Passive Health Check

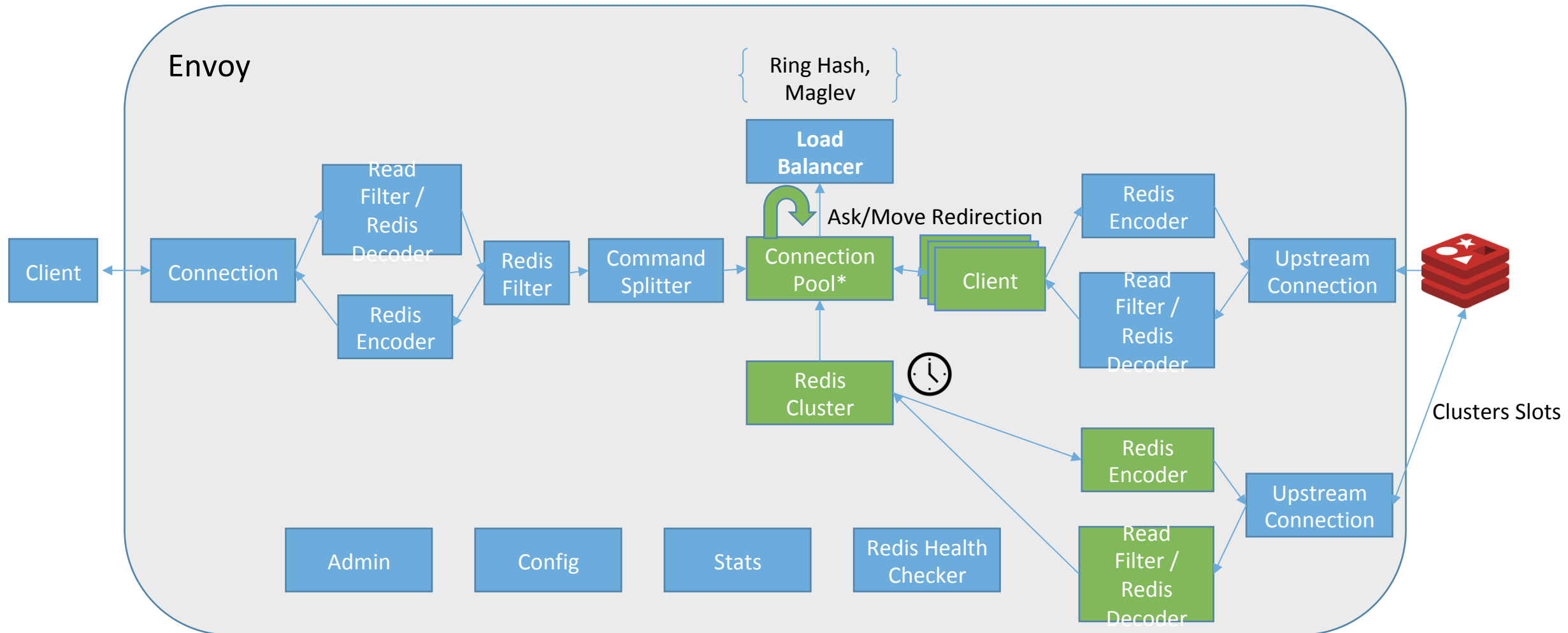
## Why Redis Cluster?

- Eventual consistency guarantee
- Predictable failover behavior
- Replication
- Redis community momentum

## Challenges

- Envoy eventually consistent membership
- More complex topology
- Inline redirection

# Redis Cluster



- Temporary hosts (drain/limits)

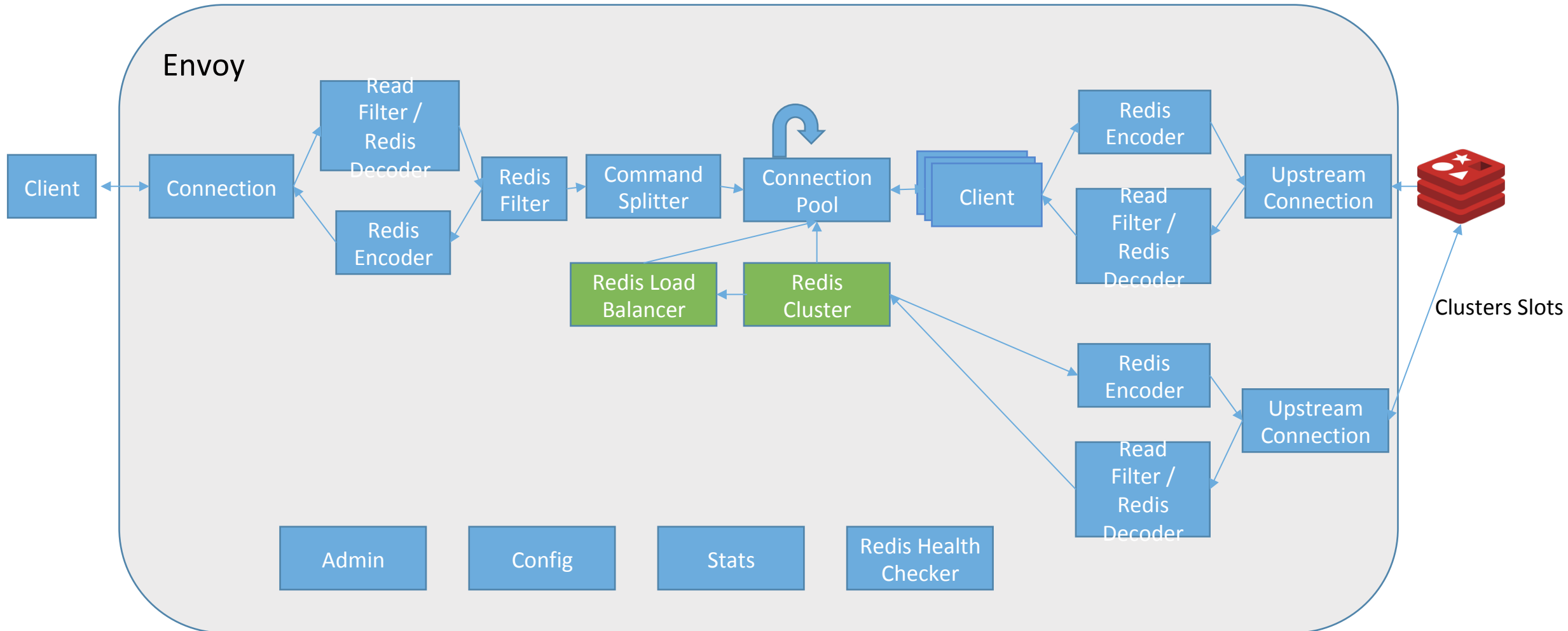
# Redis Load Balancer



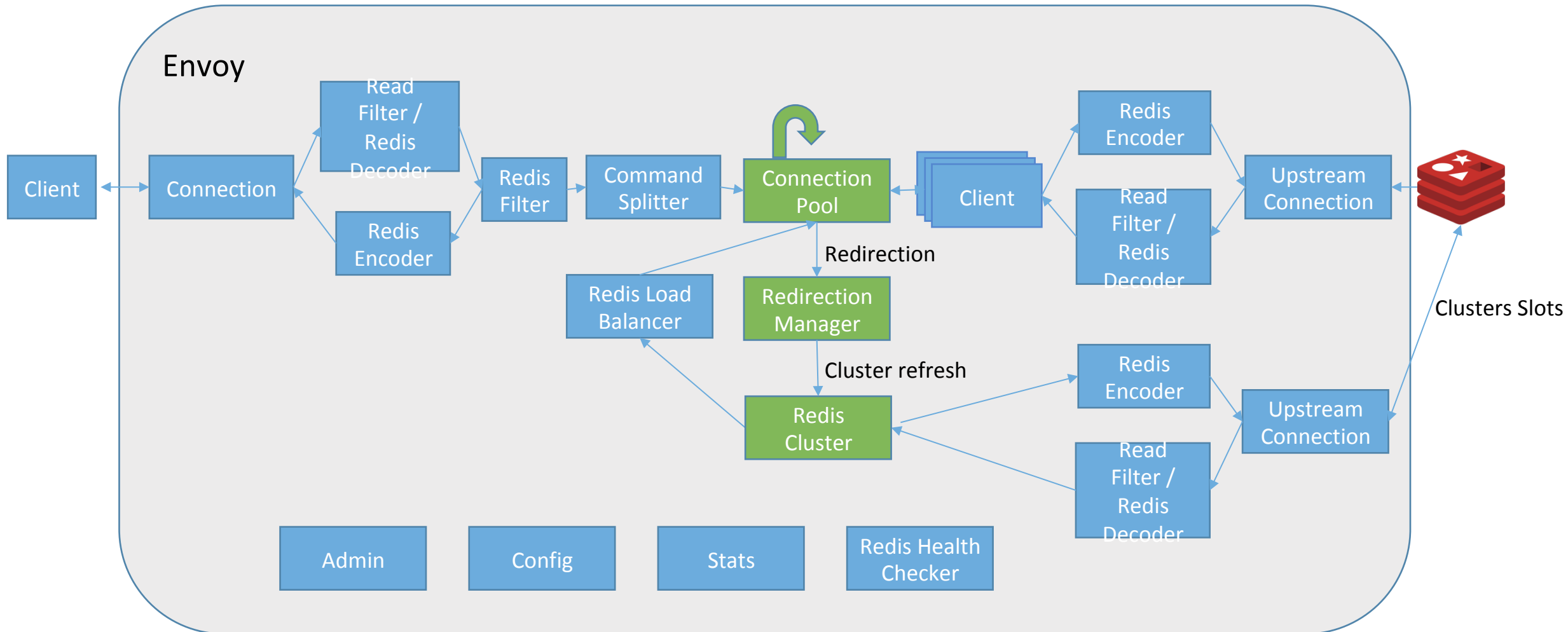
- Cluster topology
  - Shards
  - Replicas
- Read vs Write commands
- Read Policy
  - Master only
  - Master Preferred
  - Replica only
  - Replica Preferred
  - Any



# Redis Load Balancer

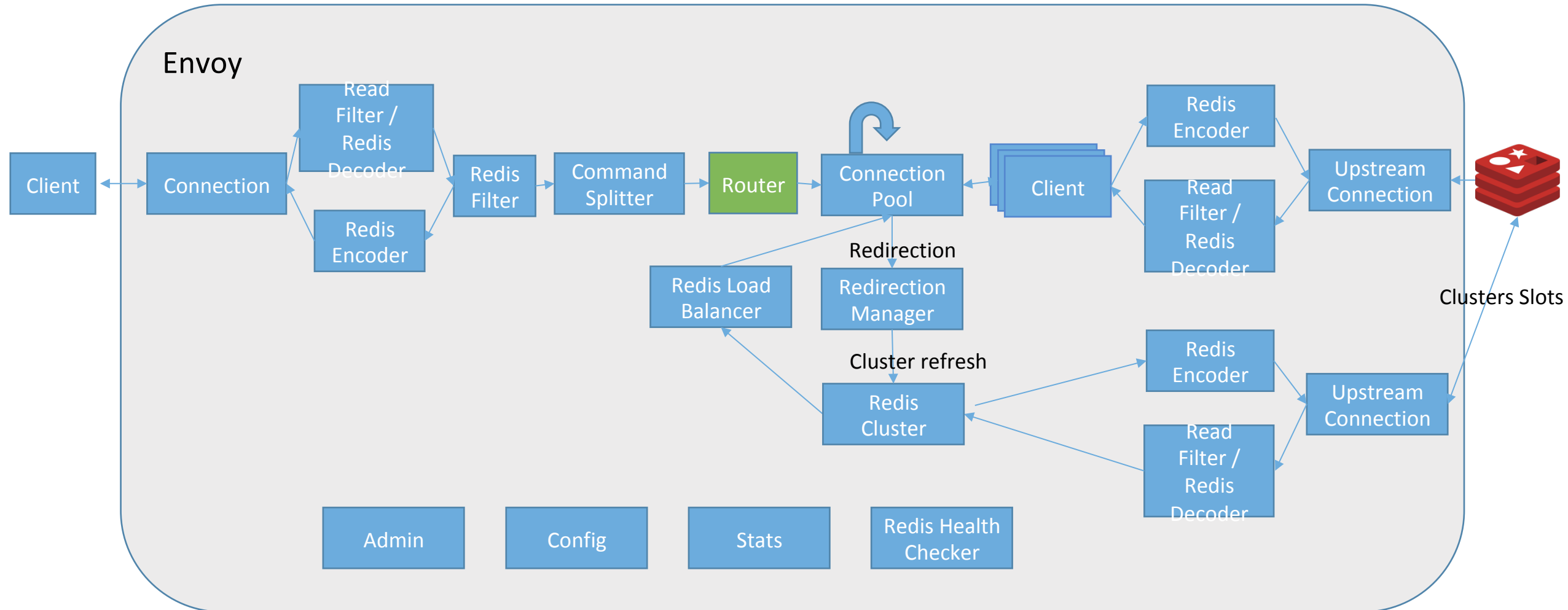


# Redirection Manager



- Adaptive topology update

# Router



- Prefix Routing
- Request Mirroring

# Online Data Migrations



Migrating Millions of QPS from Redis to Redis Cluster at Lyft:

- Hundreds of clusters
- 40+ Mqps peak across all clusters
- The biggest cluster has 200-500 master nodes and serves 10+ Mqps
- Hundreds of services in Python, Go and other languages

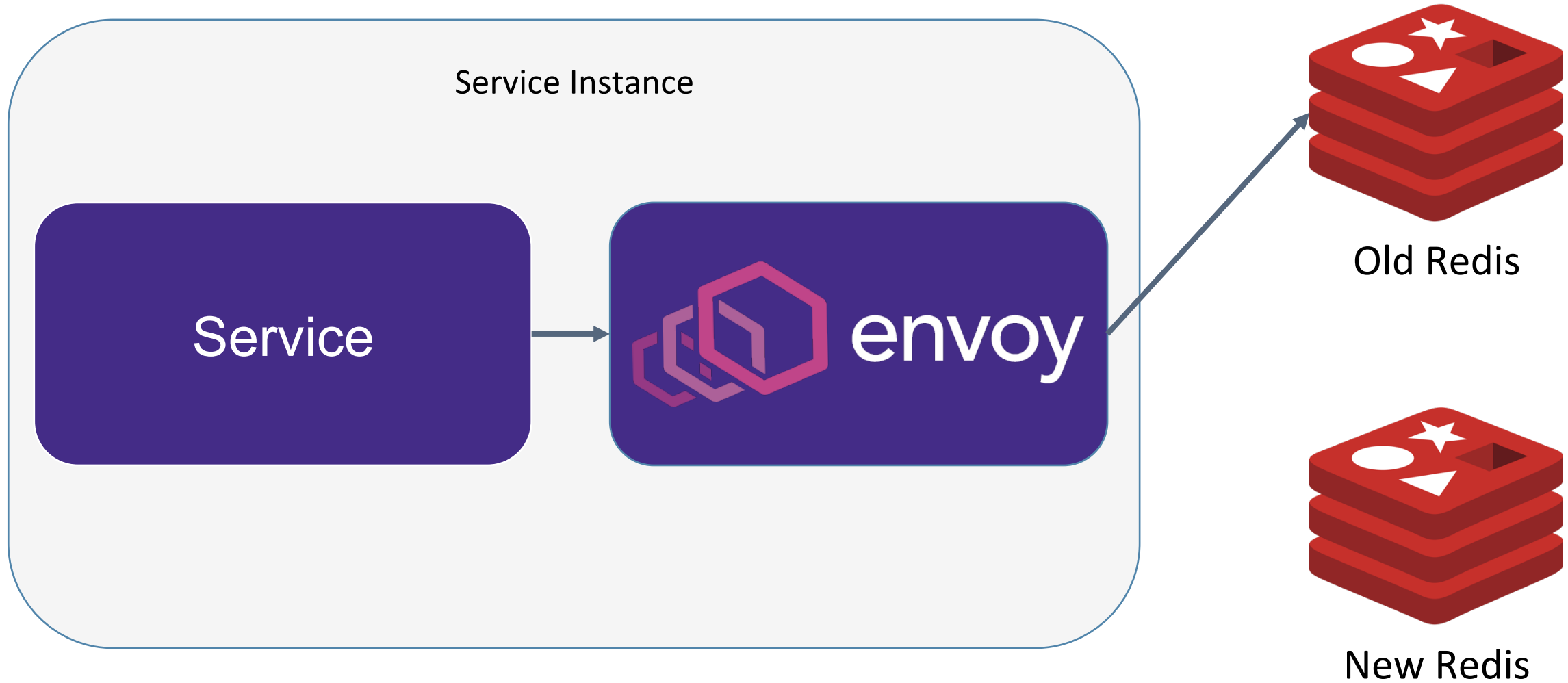
# Online Data Migrations



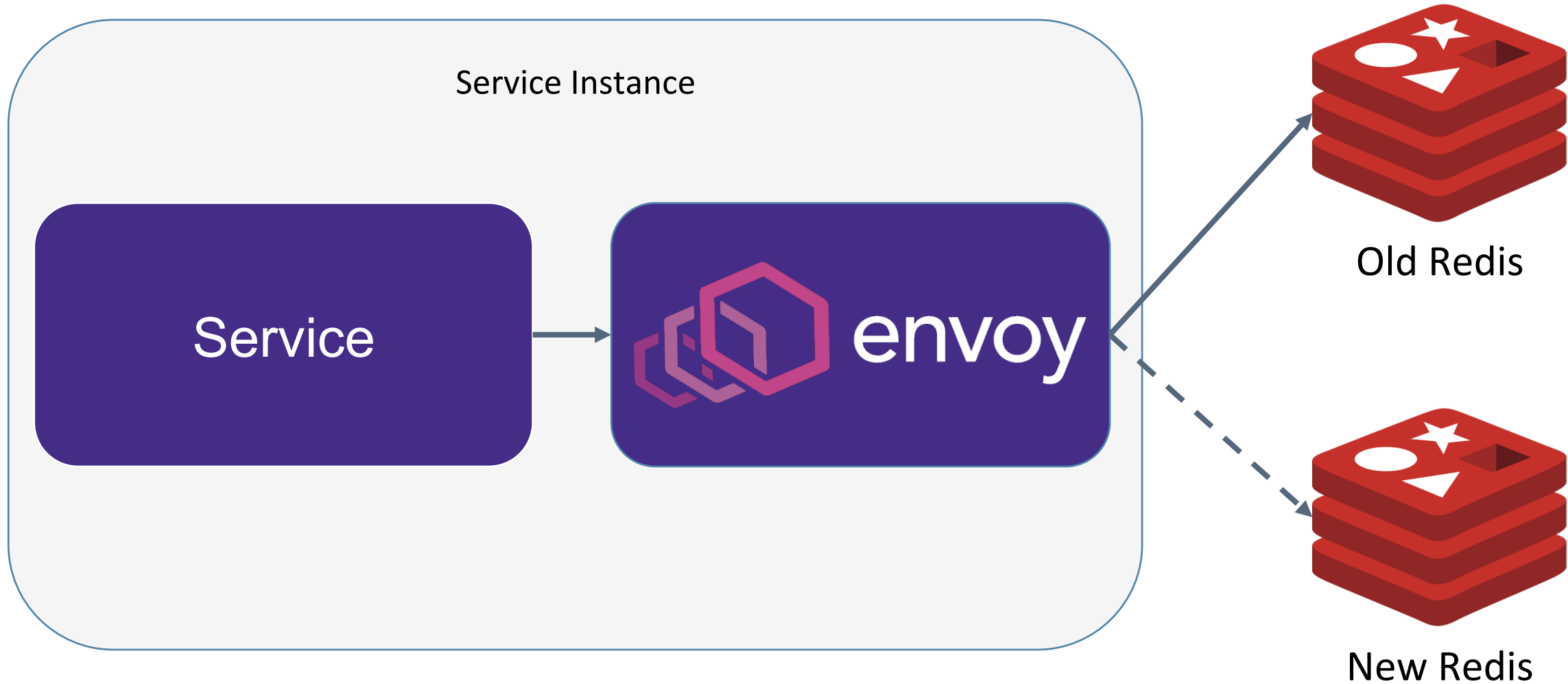
Envoy makes it easy to migrate from Redis to Redis Cluster:

- Zero application code changes
- Use existing non-cluster Redis client
- Upstream stats for each upstream Redis for free
- Mirror traffic from one Redis to another

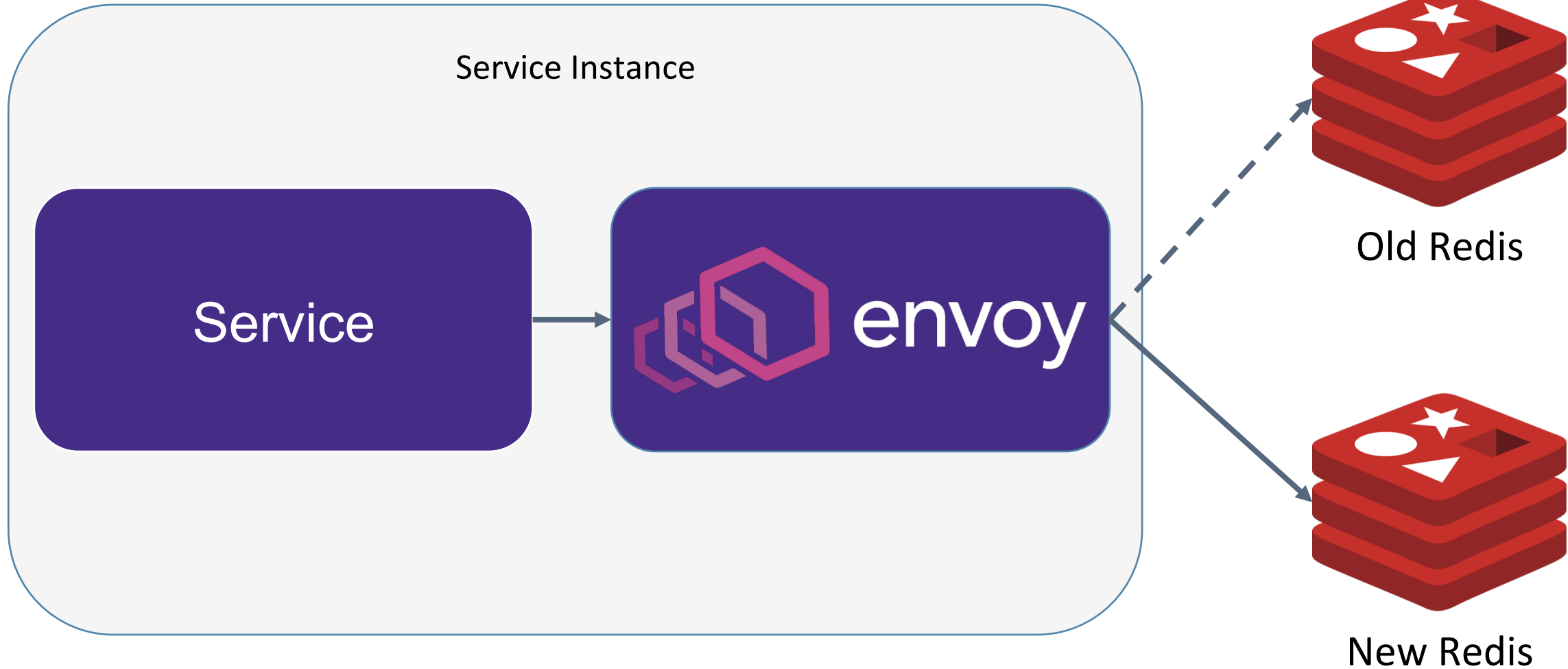
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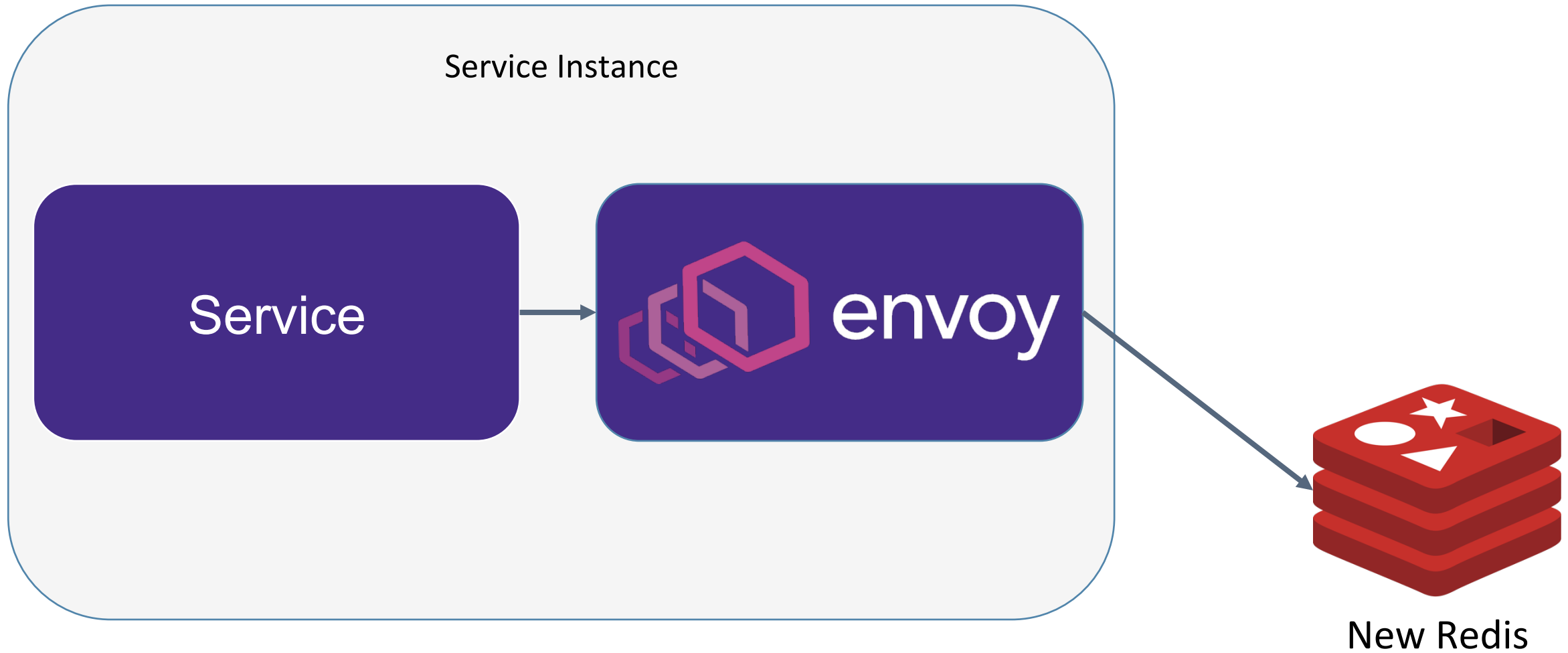


# Online Data Migrations





# Online Data Migrations



# What's Next



- Support more commands
  - Hyperloglog
  - Rename
  - Scan
- Streaming
- Fault Injection
- Retry
- Rate Limiting
- Compression Filter

Thanks!

We're hiring! <https://www.lyft.com/careers> <https://www.workday.com/en-us/company/careers.html>

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Participate in Envoy open source! <https://github.com/envoyproxy/envoy>



envoy



Join us for some local beer, wine, and tacos!

# Lyft Happy Hour

**Date:** Tuesday, Nov 19

**Time:** 7pm-10pm

**Where:** Thorn Barrio Logan (1745 National Avenue, San Diego, CA 92113)

**RSVP:** <https://lyft-kubecon.splashthat.com/> (you can also register at the door)



# Appendix: References

Examples of Envoy cluster/listener configuration:

<https://gist.github.com/FAYiEKcbD0XFqF2QK2E4viAHg8rMm2VbjYKdjTg/430d9f52d798d5e91f20944eeb9d89a3>