

The Multi-Workload Challenge: Predictable Failover Across the Stack

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Agenda

- Problem & Motivation
- Principles & Mental Model
- Architecture Diagram
- Outcomes & Takeaways

Problem & Motivation

The background of the slide is a dark blue gradient. It features a complex, abstract pattern of glowing lines and nodes. These lines, in shades of light blue and purple, resemble a circuit board or a network diagram, with some lines branching out and others connecting to small, bright points of light. The overall effect is a high-tech, digital aesthetic.

Outages Are Normal



Regional failures
are inevitable



Microservices
amplify blast radius



Unpredictable recovery
causes the real damage

Why Microservices Make It Worse



- APIs, databases, async pipelines, routing layers



- Each layer fails differently



- Recovery is gated by the slowest workload



Recovery, Not the Outage



Outages are
unavoidable

Recovery determines
customer impact

Humans under pressure
are the weakest link

The Hidden Problem



Fragmented, team-specific
failover approaches



Manual scripts and
tribal knowledge



Tested only during
real incidents



Why Runbooks Don't Scale



Context switching
during incidents



Tribal knowledge risk



Error-prone manual
execution

Principles & Mental Model

The background of the slide is a dark blue gradient. Overlaid on this are several glowing blue circuit-like patterns. These patterns consist of multiple parallel lines that branch out and connect at various points, resembling a complex network or a stylized representation of a circuit board. The lines have a slight glow and some small circular nodes at the junctions.

What We Mean by Boring Failover



Predictable and
repeatable



Fully automated



No heroics or
guesswork



Declarative Intent

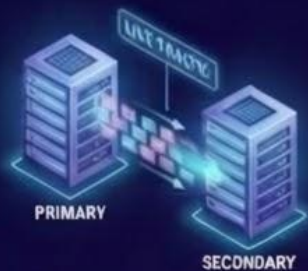
Services declare
what they need

Platform decides
how to execute

Consistent behavior
across workloads



Fail Over the Entire Stack



Compute



Async and batch workloads



Datastores and routing



Workload Diversity Matters



Different RTO / RPO requirements

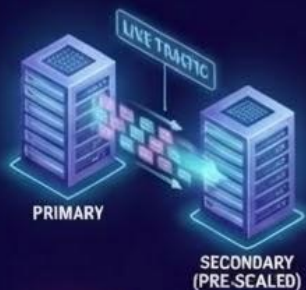


Customer-facing vs background workloads



Cost vs availability tradeoffs

Pre-Scale Capacity



Secondary region pre-scaled
using live traffic



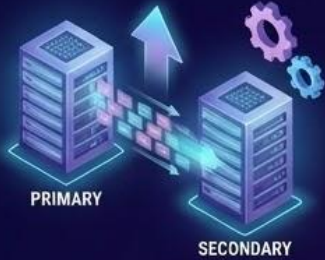
Avoid cold starts during
outages



Balance speed and cost



Data Is the Hard Part



Automated database
and cache promotion



Safety and consistency
checks



Correctness over speed



Traffic as a Control Plane



DNS and service
mesh-based routing



Health-driven
traffic shifts



Observable and
reversible

Failover Is a Workflow



Architecture Diagram & YAML schema

DR Procedure Example

stages:

Stage 1

prescale-east:

```
agent-id: "armador/v1"
capacity-compute:
  type: 'scale'
  cluster: 'cluster1'
  namespace: 'namespace1'
```

Stage 2

switch-db-primary-to-east:

```
agent-id: 'database/v1'
fail-over-global-clusters:
  global-cluster-identifier: 'ewok-sample-app-global-cluster-e2e'
  assume-role: 'arn:aws:iam::682033466980:role/database-switchover-role'
  switch-over: true
```

Stage 3

dial-traffic:

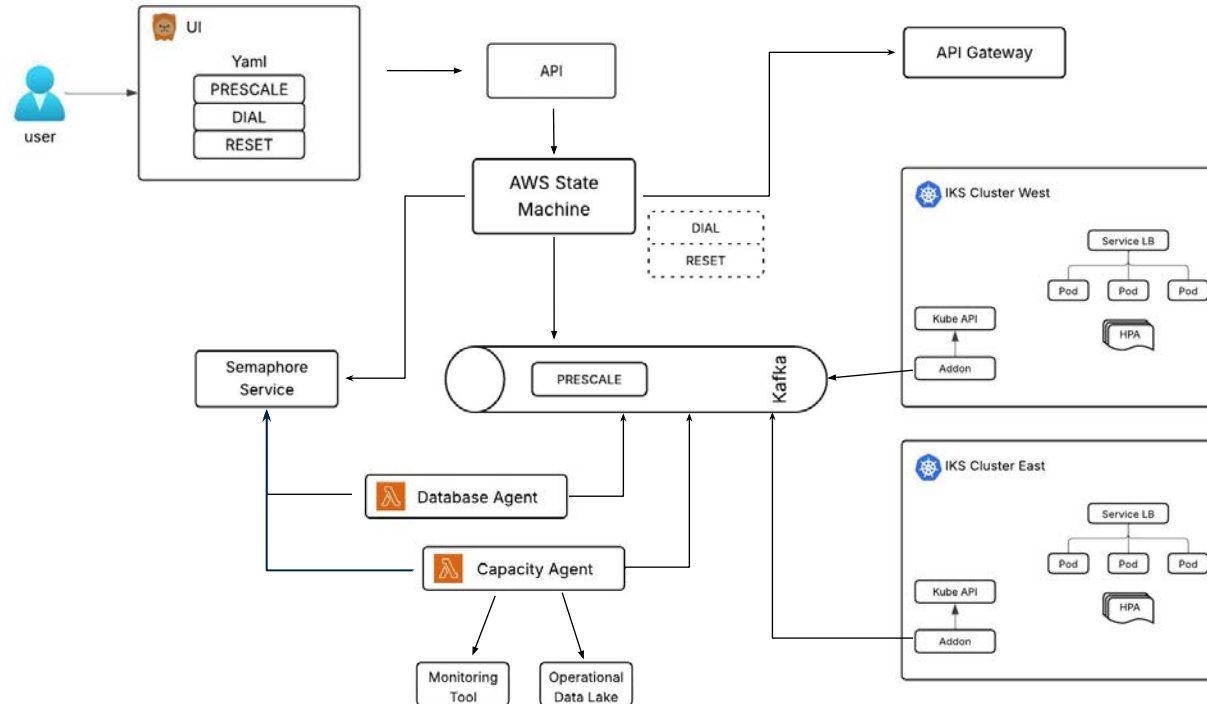
```
endpoints:
  - name: 'e2e.intuit.service1.com'
    failover-to-region: 'us-east-2'
```

Stage 4

reset-east:

```
agent-id: 'armador/v1'
capacity-compute:
  type: 'reset'
  cluster: 'cluster1'
  namespace: 'namespace1'
```

High Level Architecture



Safety & Operations

The background of the slide features a dark blue gradient with a complex, glowing circuit pattern. The pattern consists of numerous thin, light blue lines that form a dense, interconnected web, resembling a printed circuit board or a digital network. Some lines are more prominent and brighter than others, creating a sense of depth and movement. The overall aesthetic is high-tech and futuristic.

Guardrails Prevent Cascading Failures



Health gates before
traffic shift

Dependency
validation

Automated
rollback paths

Operational Readiness



Health gates and
dependency checks



Drift detection



No special
DR-only configs

Game Days Without Fear



Regular regional
failover drills



Low-stress,
repeatable execution



Confidence during
real incidents

Outcomes & Takeaways

The background of the slide is a dark blue gradient. Overlaid on this is a complex, glowing pattern of white and light blue lines that resemble a circuit board or a network diagram. These lines are more concentrated and brighter on the right side of the slide, creating a sense of depth and technological sophistication.

Anti-Patterns to Avoid



Ad hoc scripts



Untested assumptions



High cognitive load during outages

Outcomes at Scale



Faster recovery
times



Lower operational
overhead



Predictable and
boring incidents

Cultural Shift: From Fear to Confidence



Key Takeaways



Standardize failover
across workloads



Use declarative
intent



Pre-scale
intelligently



Practice
regularly

Thank You



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