

The background features a dark navy blue field with abstract, overlapping shapes in vibrant magenta and deep red. Thin, light blue lines intersect diagonally across the composition. The text is positioned on the left side.

AWS re:Invent

DECEMBER 2 – 6, 2024 | LAS VEGAS, NV

JPMorganChase: Real-time fraud screening at massive scale



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Agenda

- 01 Threat landscape
- 02 Fraud by the numbers
- 03 J.P. Morgan Payments methodology & approach
- 04 How we built on AWS – deep dive
- 05 What we can deliver today
- 06 Cost optimizations
- 07 Key takeaways

Threat landscape

CYBERSECURITY

Business email compromise in New Haven, Conn., reaps \$6M

A business email compromise attack against a public school system reaped cybercriminals \$5.9 million, though \$3.6 million was recovered.

BY LINDSAY MCKENZIE • AUGUST 11, 2023

Shell Company Operators Sentenced in Multi-Million Dollar Wire and Payroll Fraud Scheme

by Construction Citizen | November 09, 2023

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Fraud: An Inevitable Symptom Of COVID-19

Jordan McKee Contributor

I cover digital transformation in payments and financial services

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Apr 10, 2020, 10:18am EDT

Ukraine war: Investigation finds hundreds of fake charity websites

5 May 2022

By Angus Crawford & Tony Smith
BBC News

Fraud by the numbers

80%

of organizations experienced payments fraud in 2023, a significant uptick from 2022 (and the highest rate reported since 2018)¹

10%

increase in commercial card fraud YOY¹

6%

increase in both ACH credit fraud and virtual card fraud YOY¹

71%

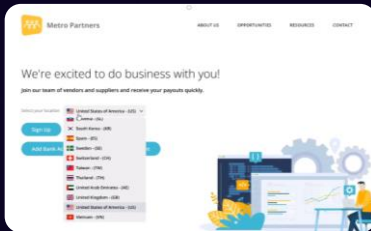
of companies reported being victims of fraud via email¹

¹Association for Financial Professionals, "2023 AFP Payments Fraud and Control Report."

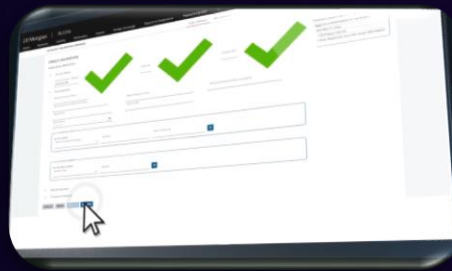
How J.P. Morgan Trust & Safety solutions approach the problem

We help protect clients at every stage of the commerce lifecycle, using our global expertise to build a suite of solutions that are at the forefront of emerging technology and innovation

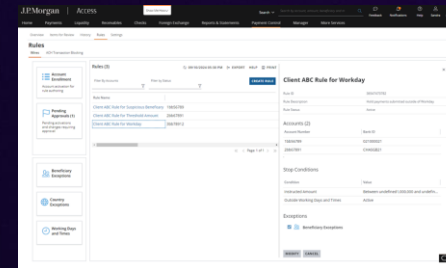
Validation Services



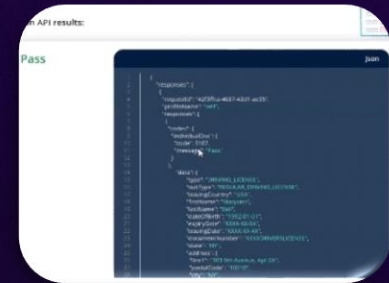
Account Confidence Score



Payment Control Center



Fraud Intelligence

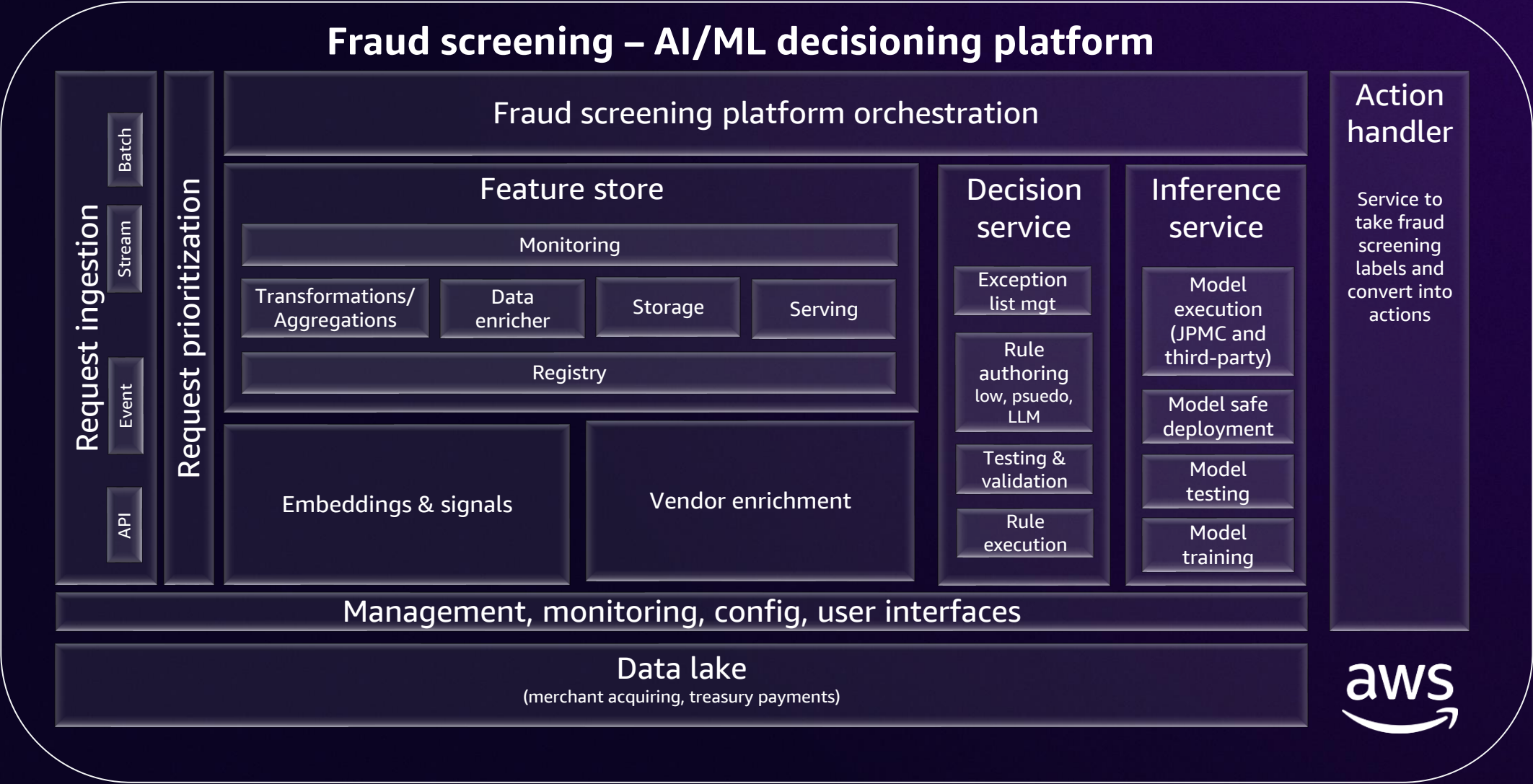


Real-time fraud monitoring
AI/ML model-based prediction

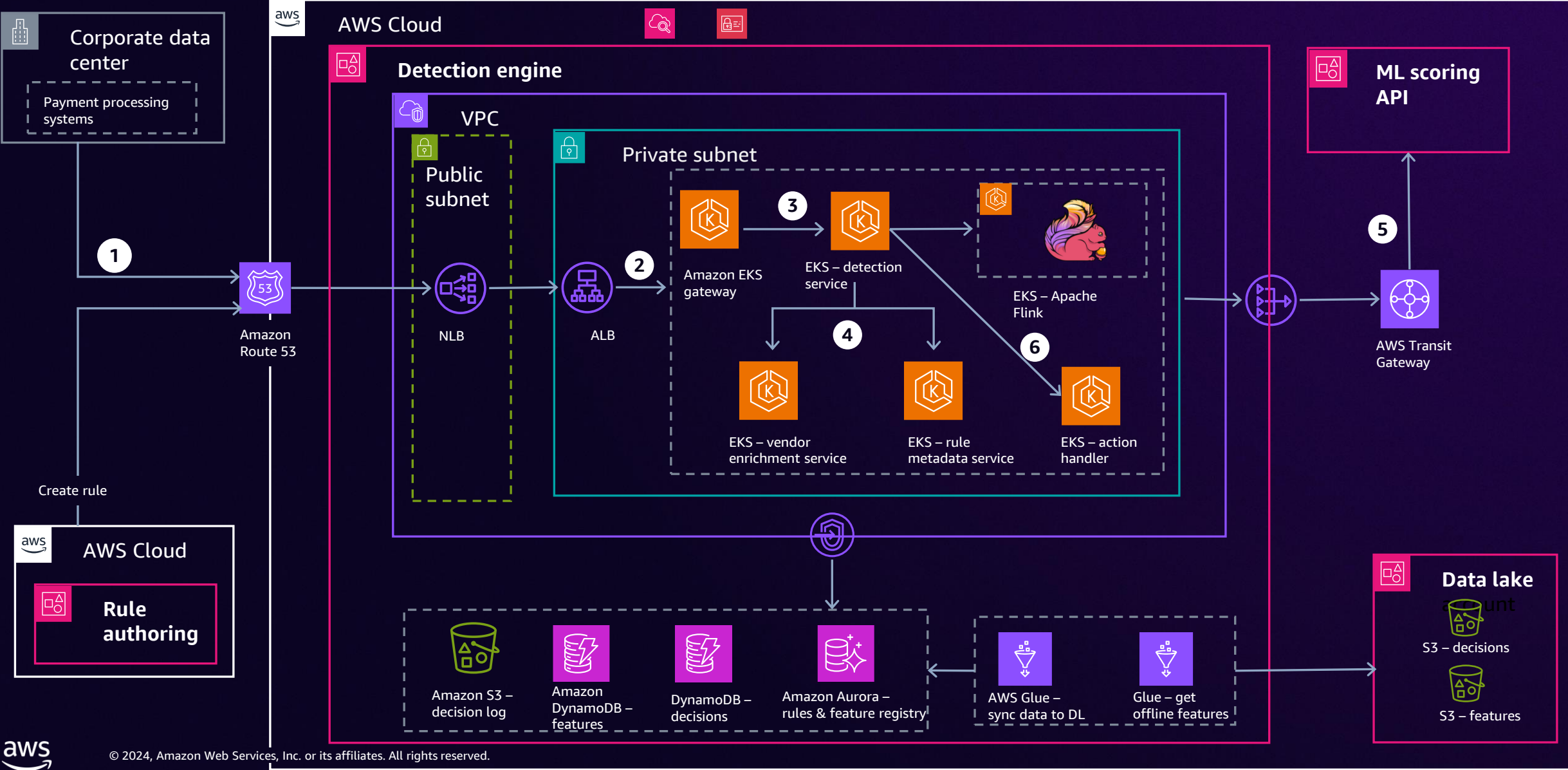
Building a fraud decisioning platform

- Real-time ingestion of payments
- Analyze payment data to detect potential fraud
- Auto-scalable to process high volumes
- Low-latency, highly available, resilient application
- Capability to have offline analysis of data
- Deliver new features in no time

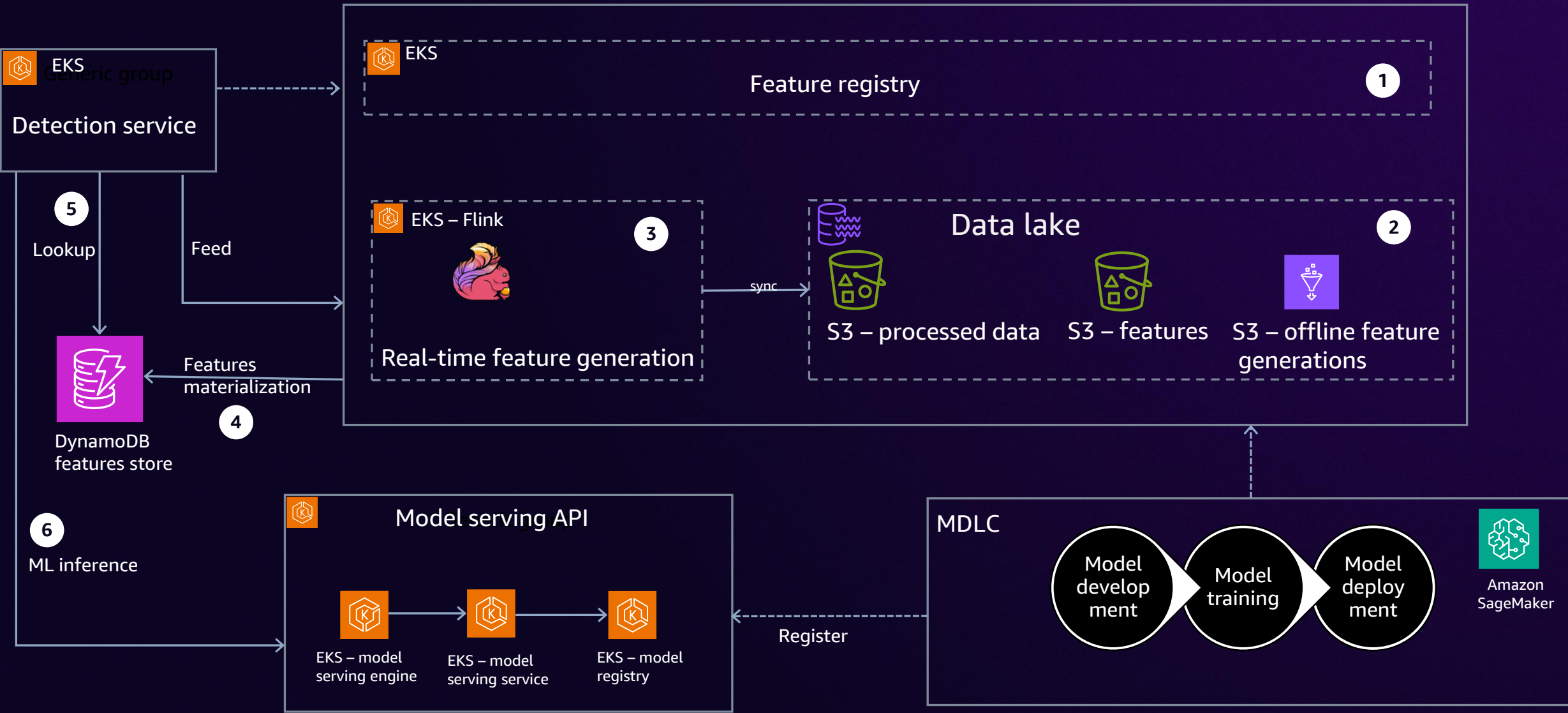
Fraud decisioning platform



Architecture

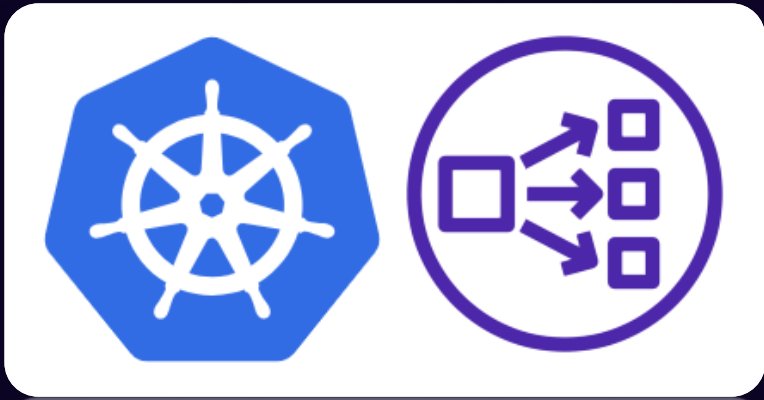


Feature engineering



Technical design elements – Deep dive

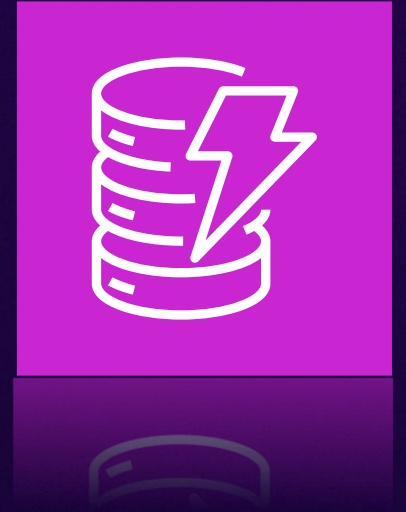
Reduce layers and latency



AWS Load Balancer
Controller



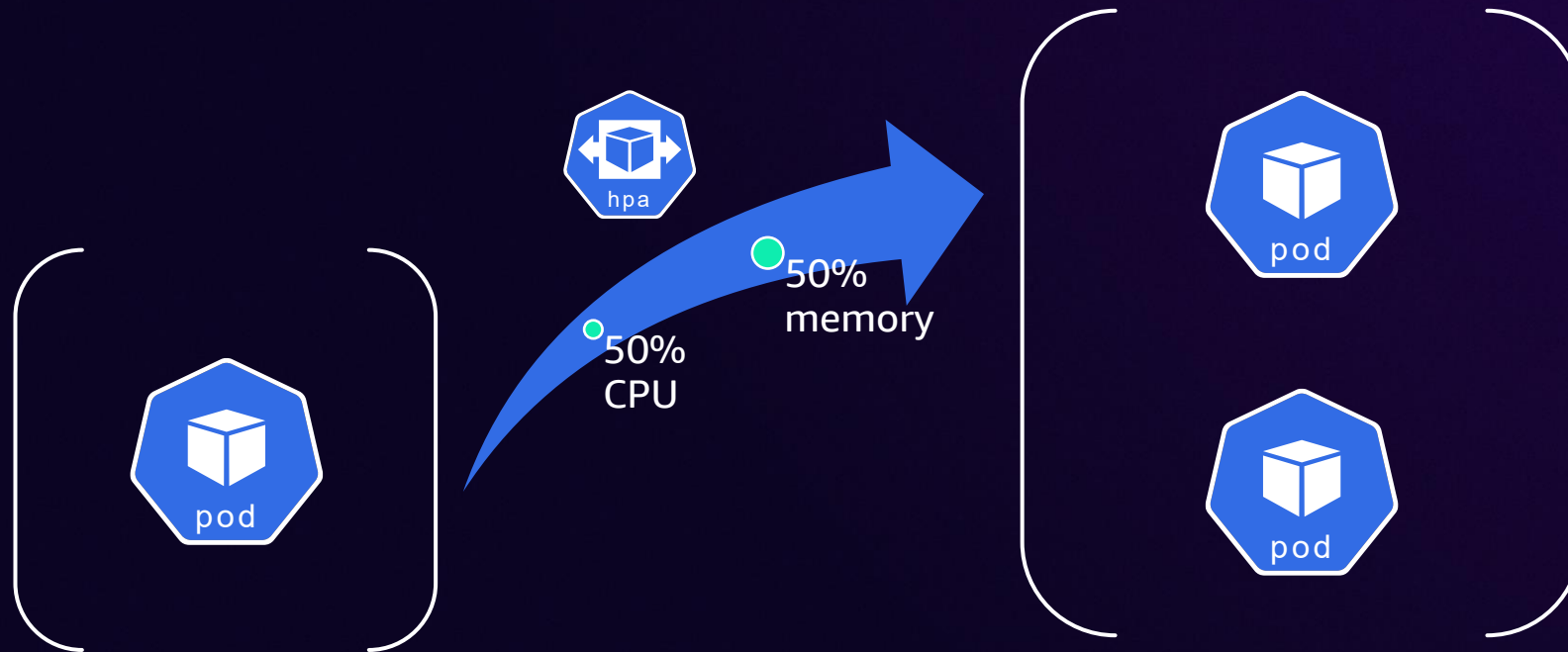
VPC endpoints



DynamoDB

Auto scaling

- Based on CPU, memory, Amazon SQS messages
- Scale early – act, don't react



Resiliency

Application – near-zero downtime

ALB



Details

 `arn:aws:elasticloadbalancing:us-east-1:123456789012:loadbalancer/app/my-alb:1`

Target type

IP

EKS



```
metadata:  
  labels:  
    elbv2.k8s.aws/pod-readiness-gate-  
inject: enabled
```

EKS



```
lifecycle:  
  preStop:  
    exec:  
      command: [ "/bin/sh", "-c", "sleep 300" ]
```

```
spec:  
  terminationGracePeriodSeconds: 360
```


Resiliency

In-Region resiliency

“Anti-” affinity

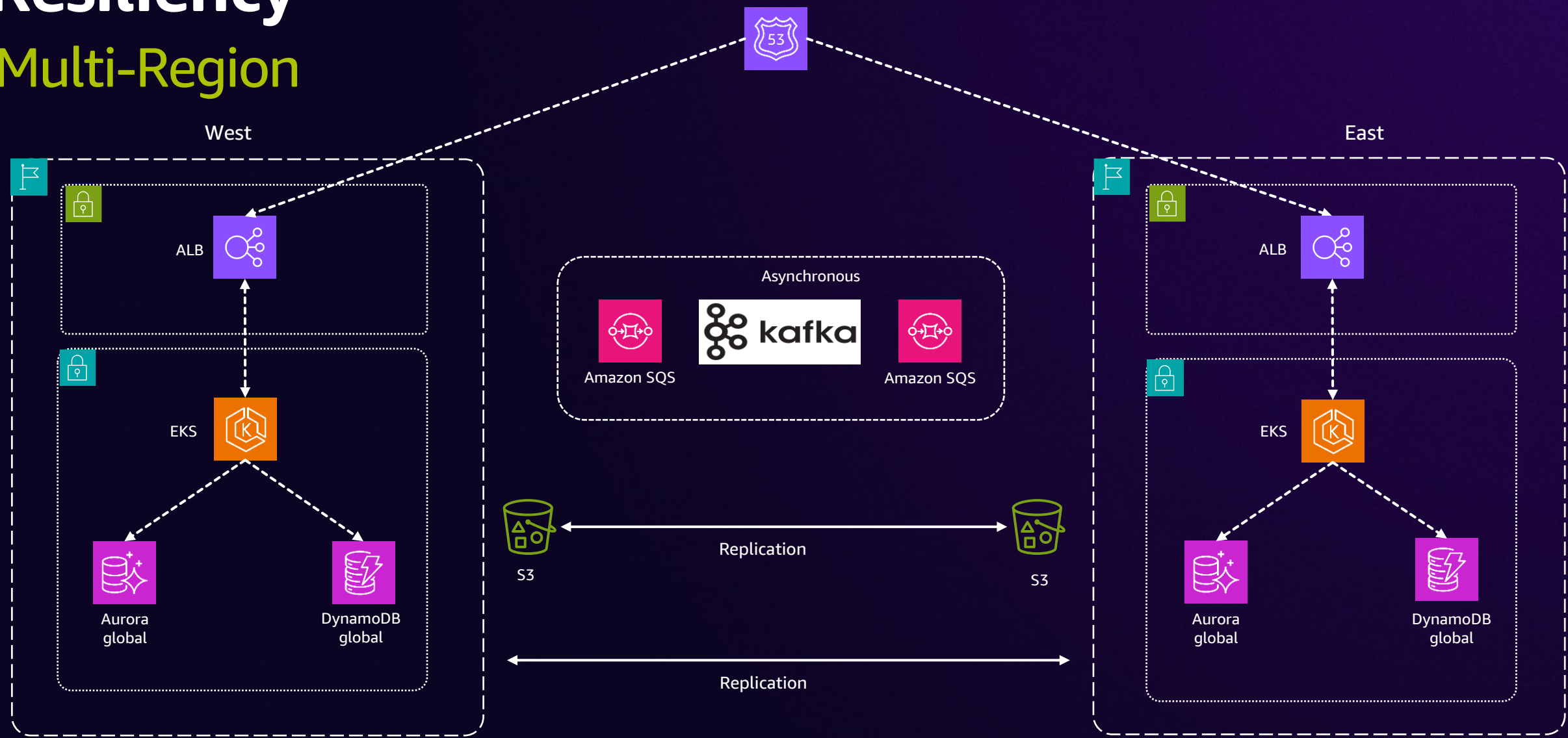
```
affinity:
  podAntiAffinity:
    preferredDuringSchedulingIgnoredDuringExecution:
      - podAffinityTerm:
          labelSelector:
            matchExpressions:
              - key: app
                operator: In
                values:
                  - app
          topologyKey: topology.kubernetes.io/zone
        weight: 100
```

Topology spread constraints

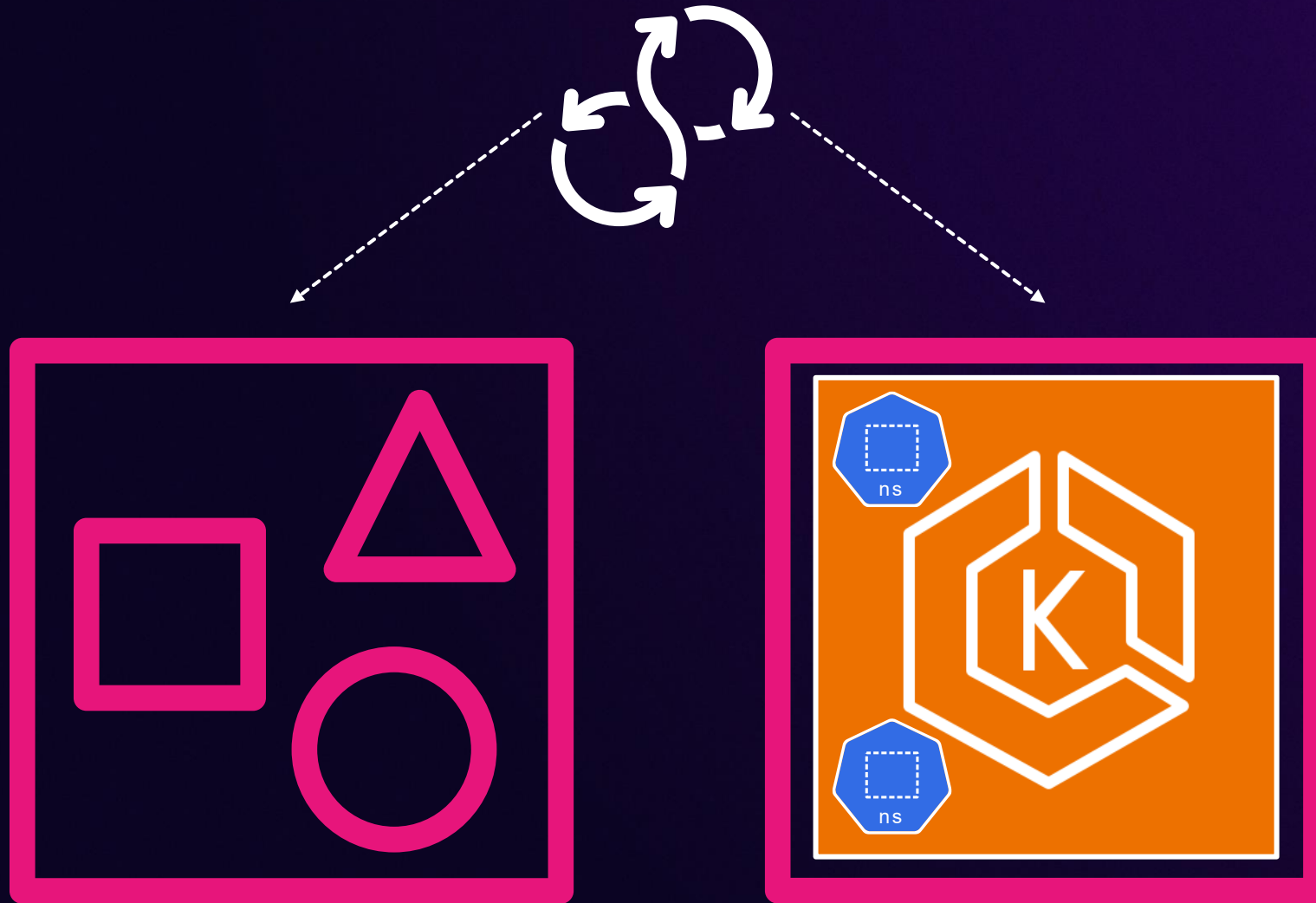
```
topologySpreadConstraints:
  - maxSkew: 1
    topologyKey: topology.kubernetes.io/zone
    whenUnsatisfiable: ScheduleAnyway
    labelSelector:
      matchLabels:
        app: app
  - maxSkew: 1
    topologyKey: kubernetes.io/hostname
    whenUnsatisfiable: DoNotSchedule
    labelSelector:
      matchLabels:
        app: app
```

Resiliency

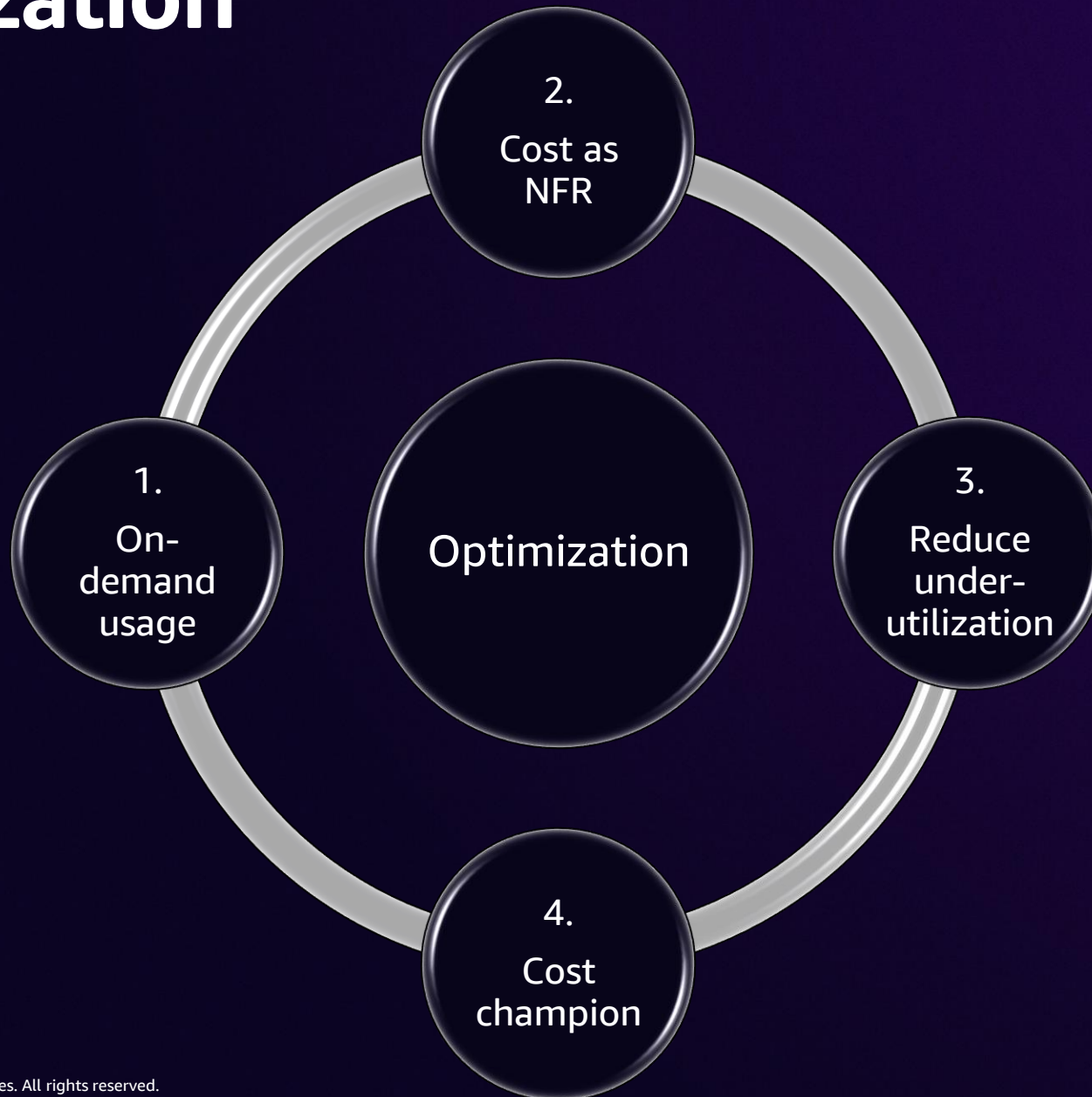
Multi-Region



Isolation – Physical and logical separation



Cost optimization



What we can deliver today

- Designed to support tens of millions of transactions/day
- Deploy 24x7
- Faster time-to-market
 - Localization
 - Regions
 - Provisioning

Key takeaways

- Focus on the business vs. infrastructure stability and maintenance
- Leverage readily available AWS services
- Strong foundation = extreme scale
- Cost optimization and security = day 1 activity

Questions?



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Thank you!

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