



aws INNOVATE

MODERN APPLICATIONS EDITION

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Application containerization patterns with VMware Cloud on AWS

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Customer challenges

1. Migrate large volume of VMs to cloud quickly
2. Accelerate application development
3. Minimize risks and disruption to business and operation

Agenda

1. Why microservices?

- Isolation of bugs and security issues
- Flexible scale out pattern
- Hybrid pattern

2. How to containerize your application?

- Pattern of containerization
- Container adoption journey of a VMC customer

3. Demo – Hybrid pattern

Why microservices?

What's the business outcome?

- What business outcomes are you actually trying to achieve?
- Why do you think moving to a microservices architecture will help?
- Could the problem could be partially addressed by organizational and infrastructure solutions?
- What's the volume and timeframe?
- How well do you know your application?
- What's the implication of ongoing operation?

Monolithic vs Microservices



Monolithic



Microservices



Isolation of bugs and security issues

Monolithic



Microservices

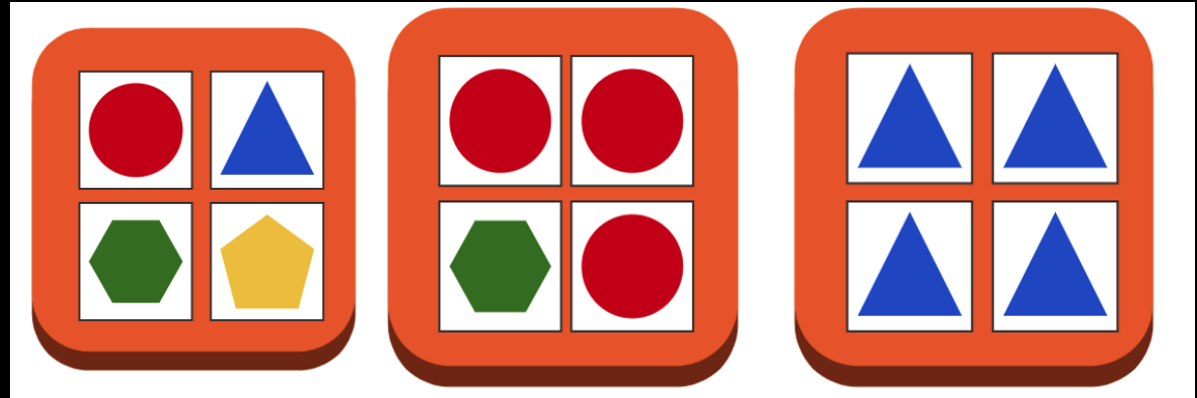


Flexible scale out pattern

Monolithic



Microservices

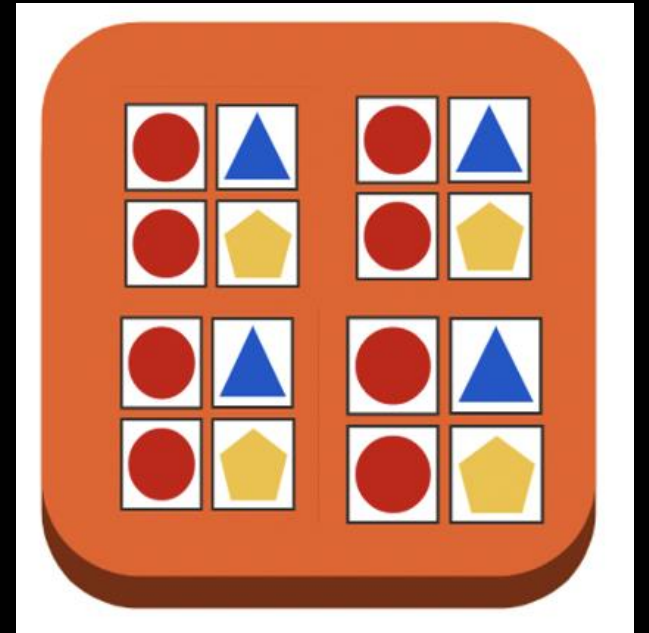


Patterns for application modernization

Monolithic



Microservices



Hybrid pattern for application modernization

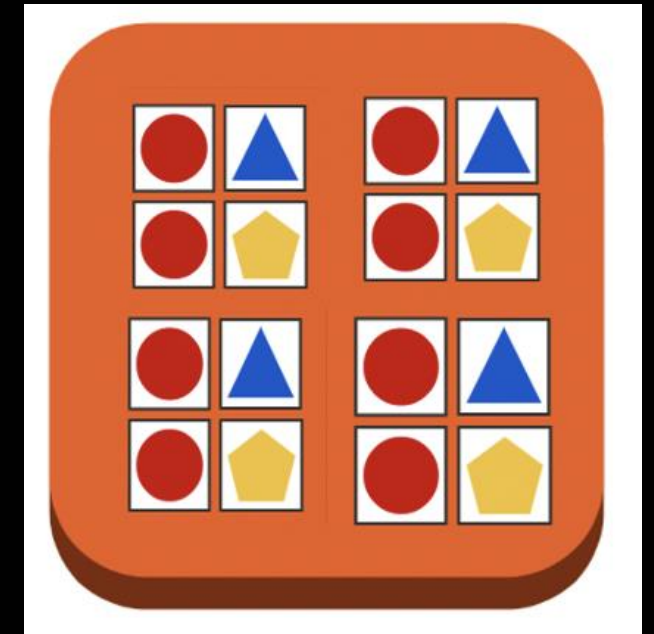
Monolithic



Hybrid



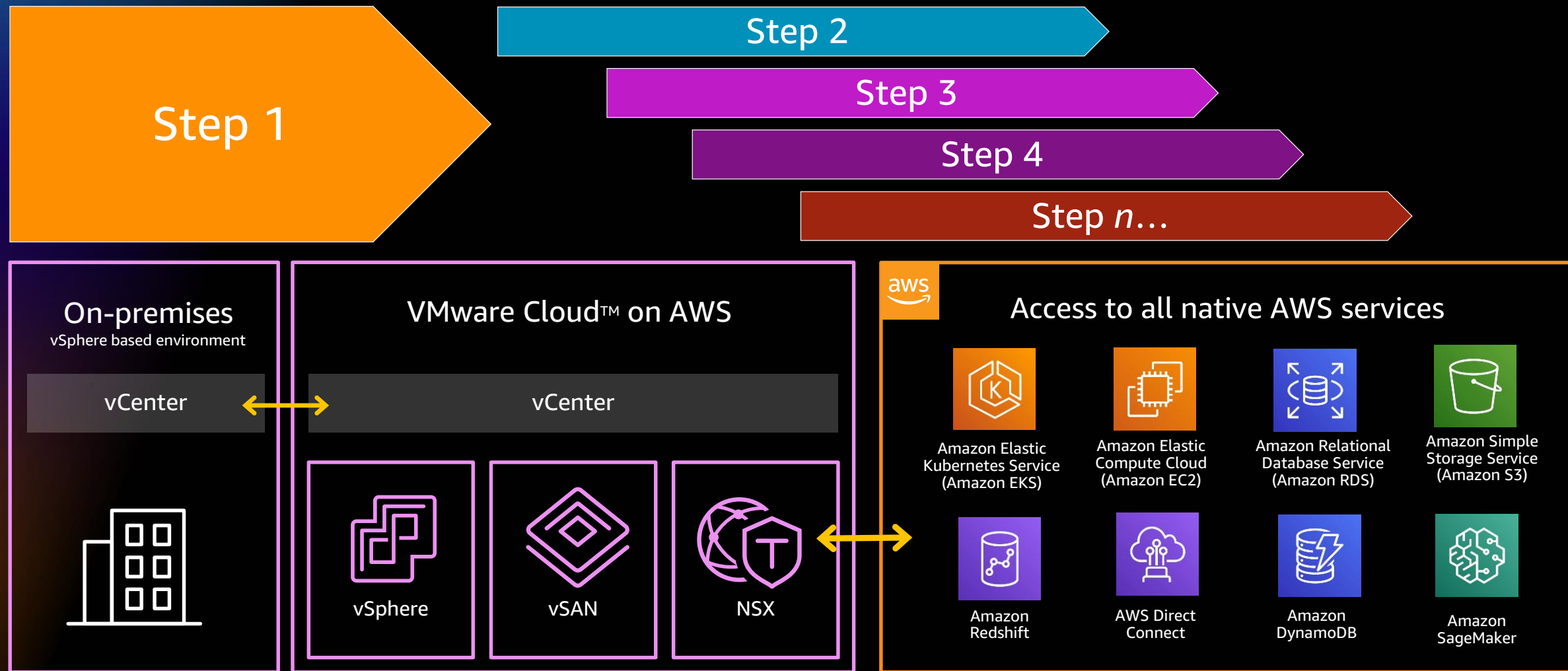
Microservices



VMware Cloud on AWS overview

Staged approach to modernization via VMC

Fast migration to AWS, staggered move to native



How to containerize your application

Pattern of containerization



Re-architect



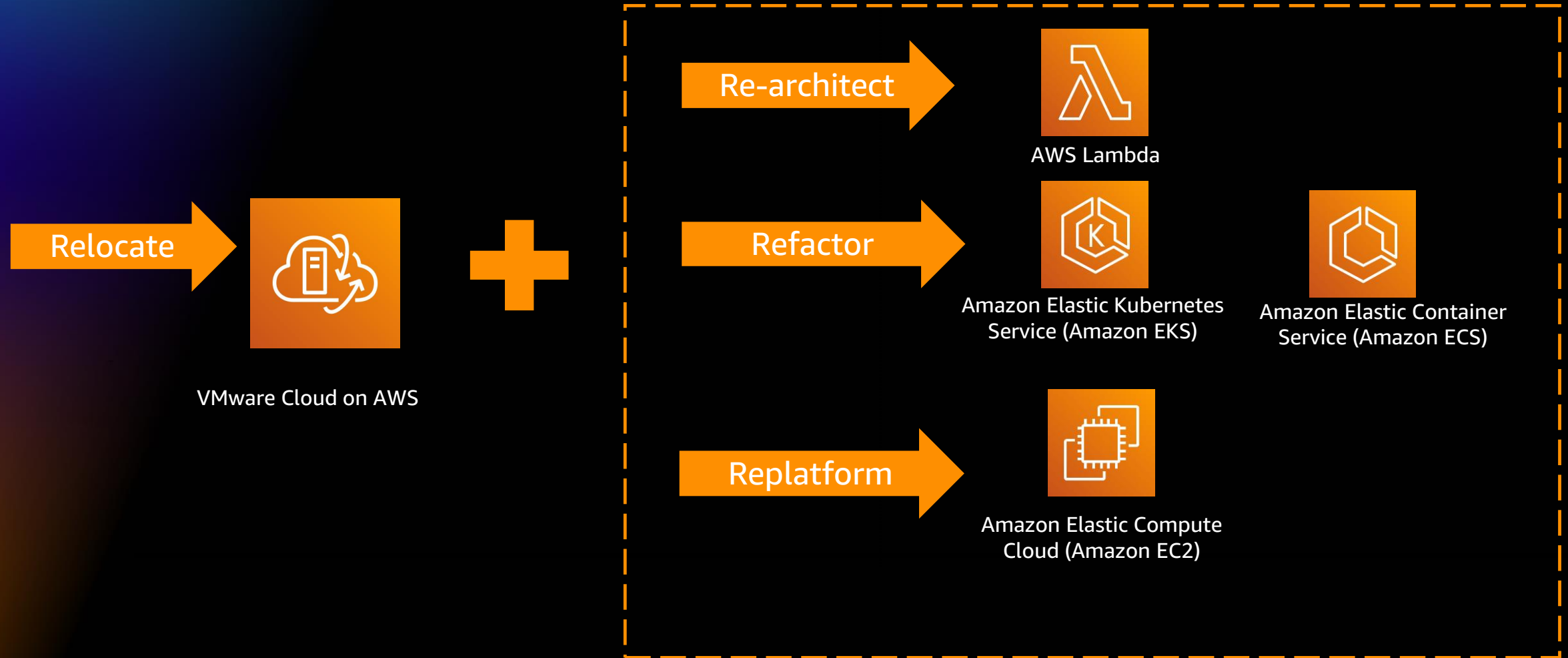
Relocate + Re-architect



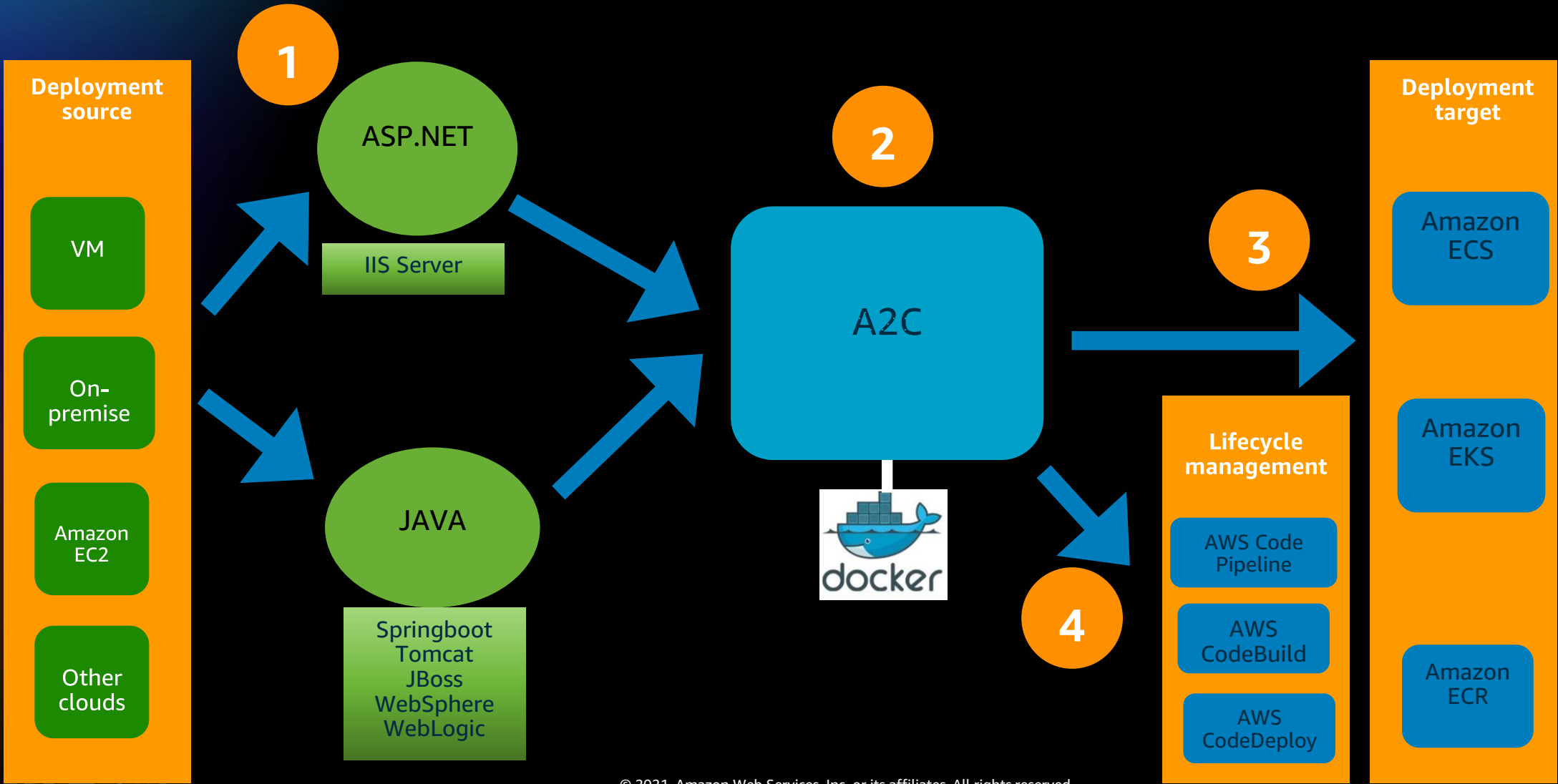
Relocate



Adoption journey

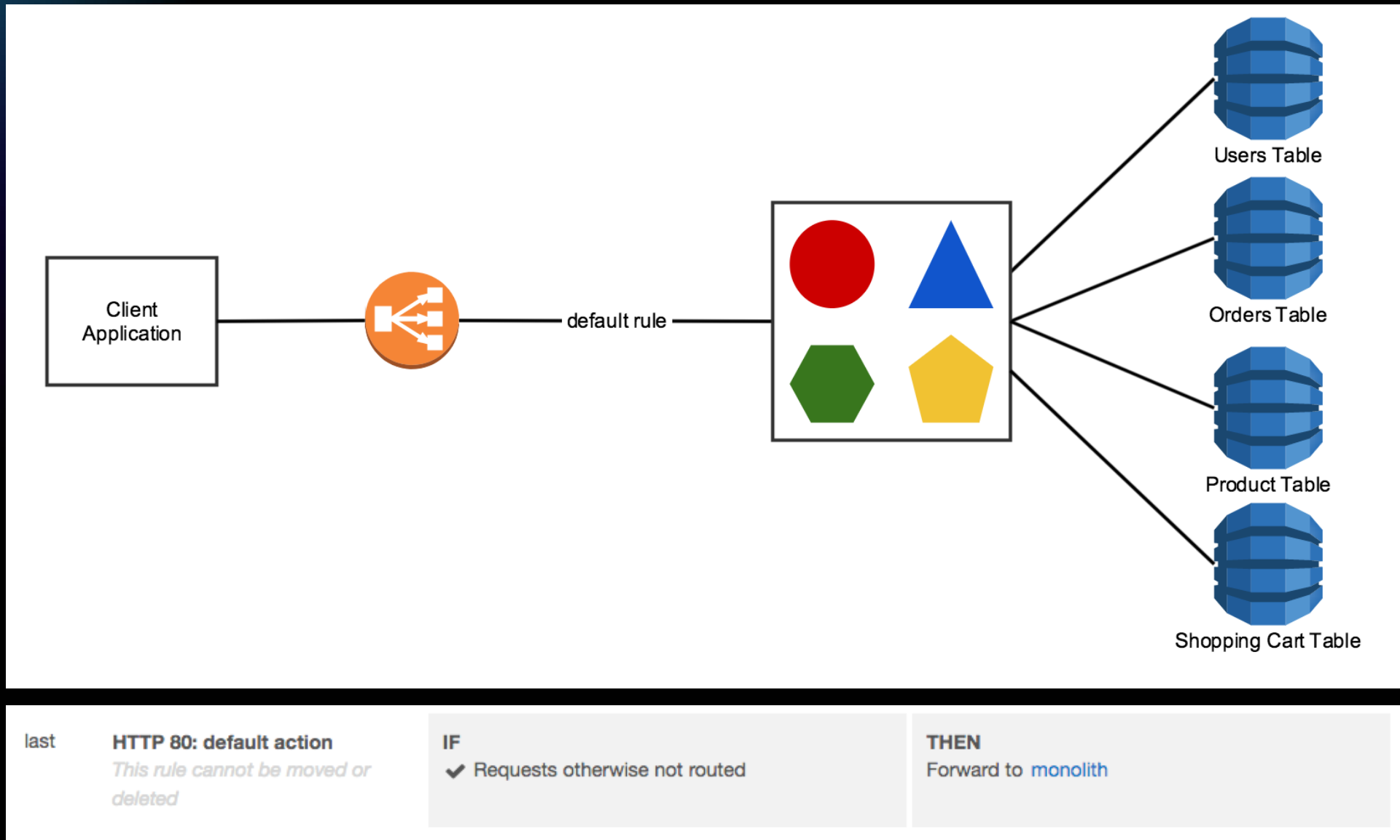


App2Container

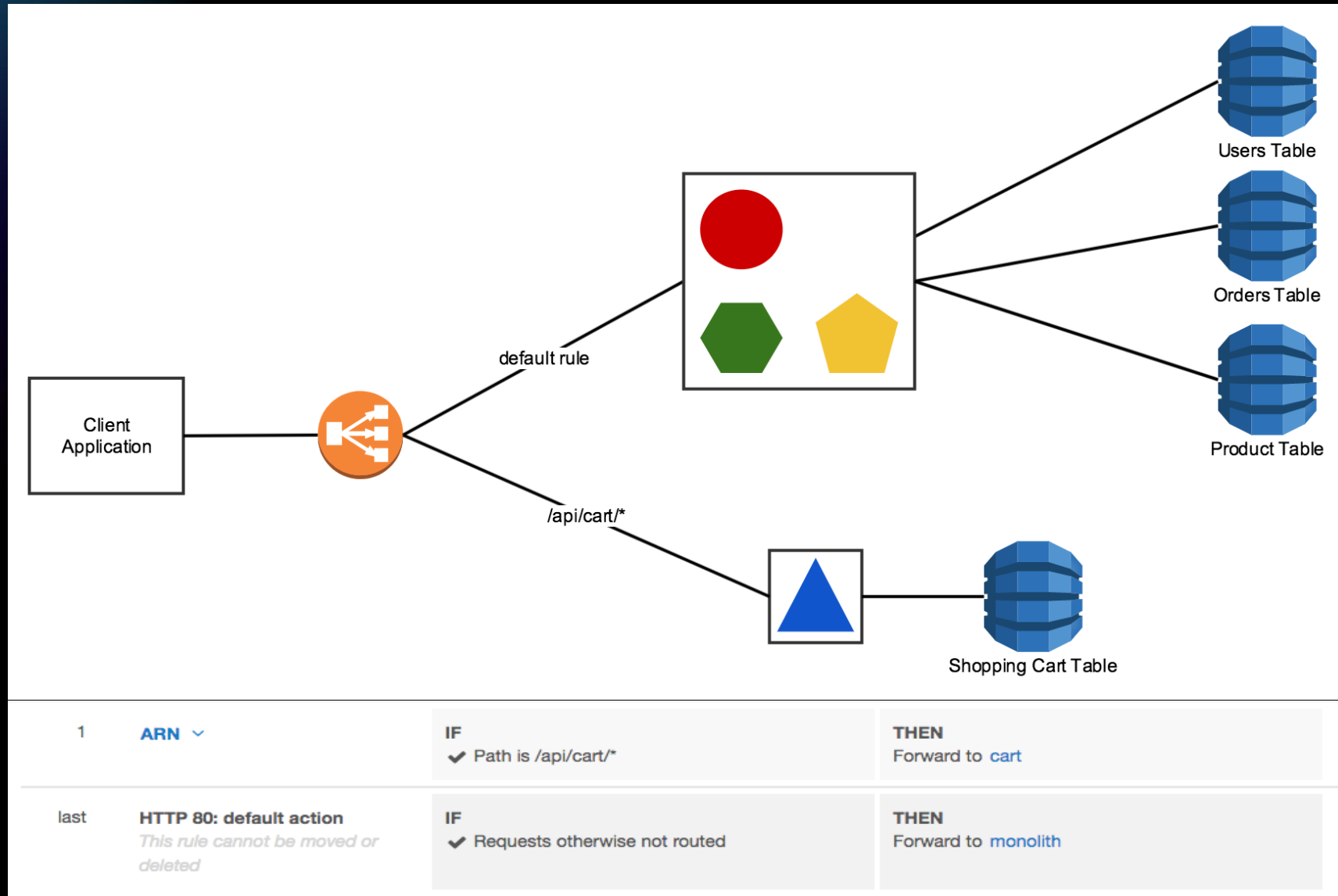


Hybrid pattern for application containeration

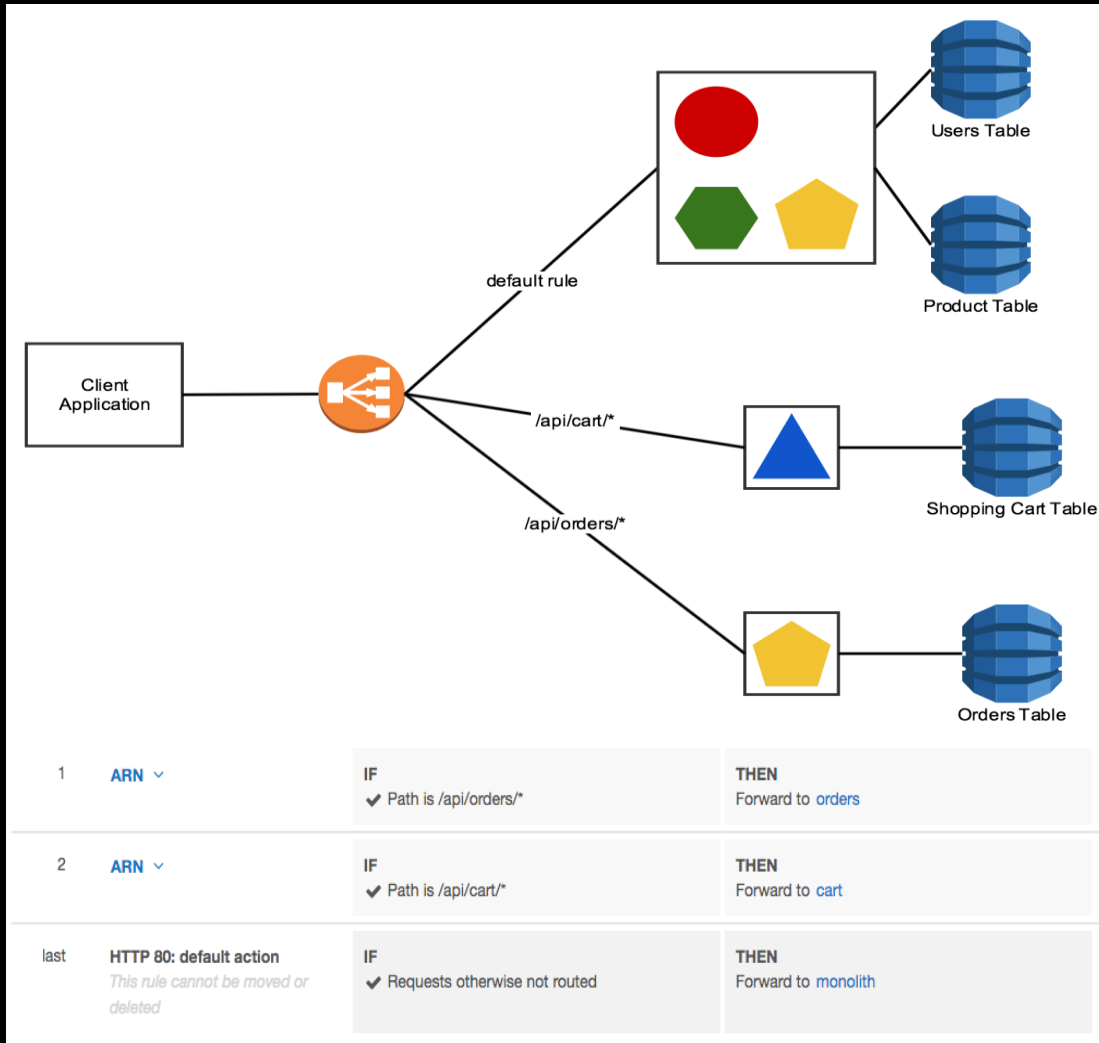
Start State



Step 1- Reducing the monolith feature set



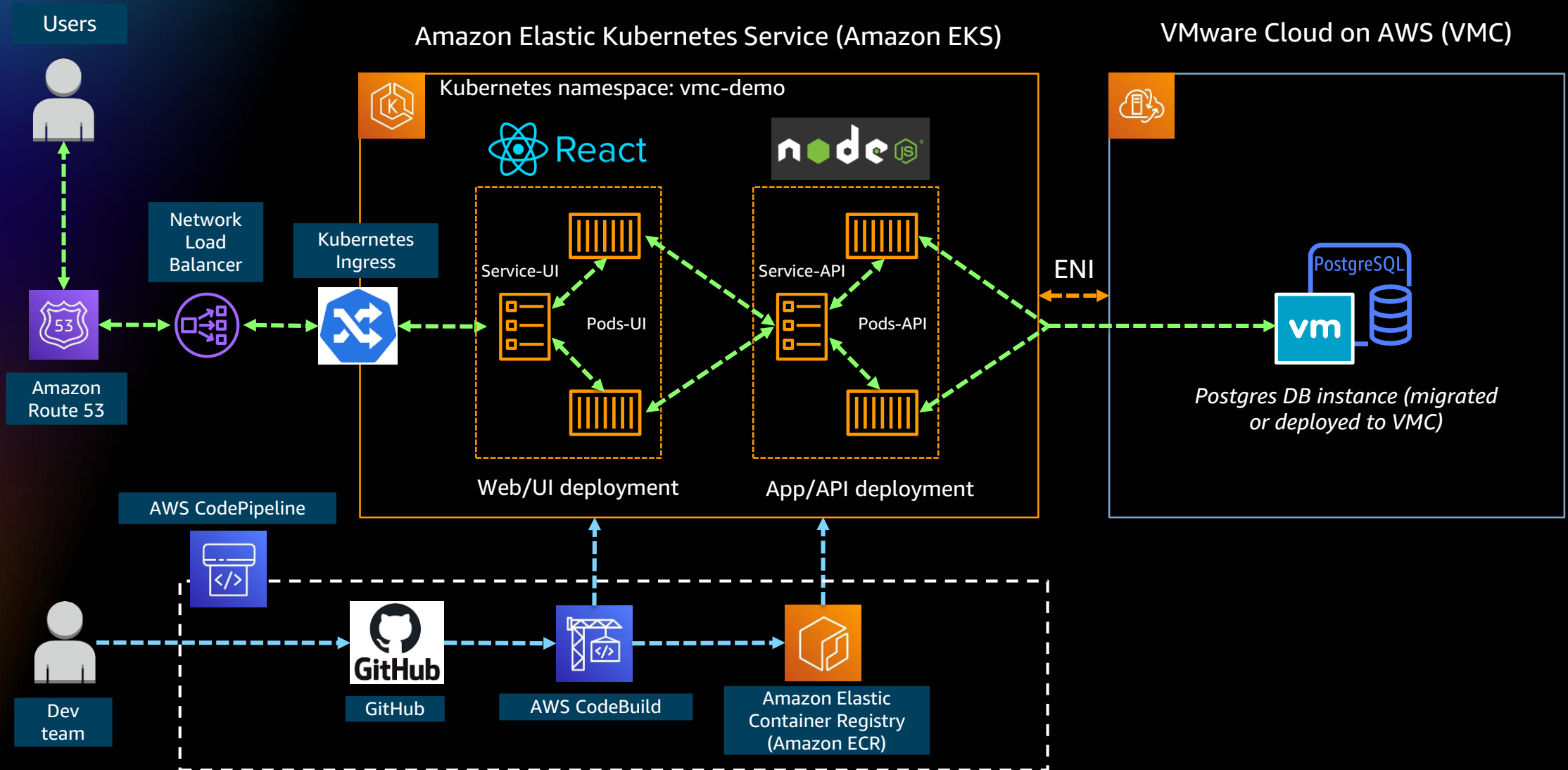
Step 2- Moving another feature out



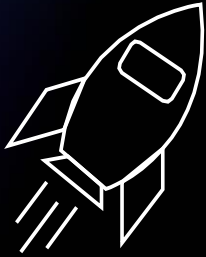
Demo

Application modernization with microservices architecture

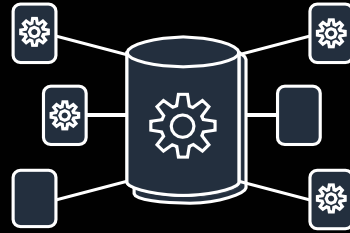
- Integrating VMware Cloud on AWS with Elastic Kubernetes Service (Amazon EKS)



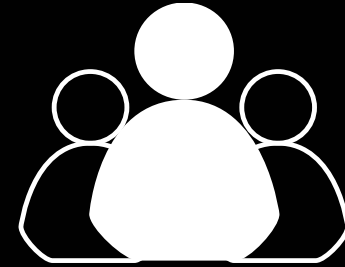
Recap



Accelerate
migration



Innovate **hybrid**
architecture



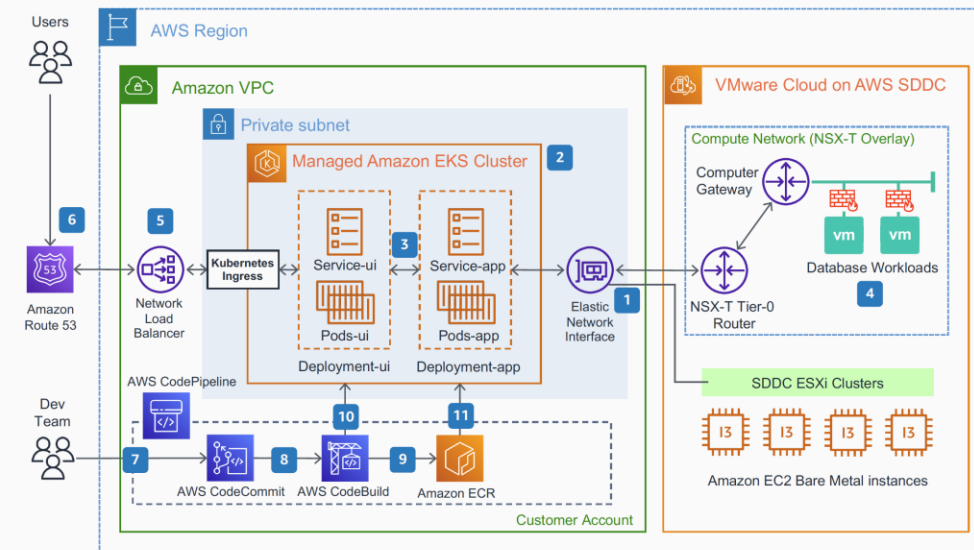
Boost **skills and**
experience for
speed and agility

Other resources

- AWS APN Blog - Application modernization using microservices architecture with VMware Cloud on AWS
<https://aws.amazon.com/blogs/apn/application-modernization-using-microservices-architecture-with-vmware-cloud-on-aws/>
- AWS Reference Architecture - Integrating Amazon EKS with VMware Cloud on AWS
<https://d1.awsstatic.com/architecture-diagrams/ArchitectureDiagrams/modernize-applications-with-microservices-using-amazon-eks-ra.pdf>

Modernize Applications with Microservices Architecture using Amazon Elastic Kubernetes Service (Amazon EKS)

Integrate Amazon EKS with VMware Cloud on AWS and use AWS DevOps tools to accelerate application modernization



Integrate Amazon EKS with VMware Cloud on AWS

- 1 The Elastic Network Interface is automatically attached to the EC2 bare metal (ESXi) hosts in **VMware Cloud on AWS** during the software-defined data center (SDDC) provisioning.
- 2 Provision fully managed **Amazon EKS** clusters for different environments (dev/test/production).
- 3 Use tools such as **AWS App2Container (A2C)** to accelerate refactoring/rearchitecting applications into containerized microservices, and use **Amazon EKS** to manage and automate the testing and deployment of container workloads.
- 4 Transform and containerize legacy systems to modern applications with minimum disruptions, while keep the existing database tier running on **VMware Cloud on AWS** to avoid the complexity and delay for database migrations.
- 5 Network Load Balancer integrates with Kubernetes Ingress controller, providing a secure and consistent approach for exposing applications.
- 6 **Amazon Route 53** resolves incoming requests to the Network Load Balancer in the primary AWS Region.

Use AWS DevOps tools with Amazon EKS

- 7 Dev team commits code to an **AWS CodeCommit** repository, which triggers **AWS CodePipeline** to start processing the code changes through the pipeline.
- 8 **AWS CodeBuild** packages the code changes and dependencies and builds a Docker image.
- 9 The new Docker image is pushed to **Amazon Elastic Container Registry (Amazon ECR)**.
- 10 **AWS CodeBuild** uses **Kubectl** command line tool to invoke Kubernetes API and update the image tag for the microservice deployment.
- 11 Kubernetes performs a rolling update of the pods in the application deployment as per the new docker image specified in **Amazon ECR**.



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AWS Reference Architecture



Visit the Modern Applications Resource Hub for more resources

Dive deeper with these resources to help you develop an effective plan for your modernization journey.

- Build modern applications on AWS e-book
- Build mobile and web apps faster e-book
- Modernize today with containers on AWS e-book
- Adopting a modern Dev+Ops model e-book
- Modern apps need modern ops e-book
- Determining the total cost of ownership: Comparing Serverless and Server-based technologies paper
- Continuous learning, continuous modernization e-book
- ... and more!



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