



Erfolgreich in die Cloud migrieren? Geht das?

***Ja, und zwar mit den richtigen
Strategien und Werkzeugen!***

David Surey

Senior Solutions Architect
Amazon Web Services

Strategy

Business drivers for cloud migrations



AWS Migration Framework – migration phases

Create a case for change



Assess

Mobilization through experiences



Mobilize

Accelerate migration at scale



Migrate and modernize

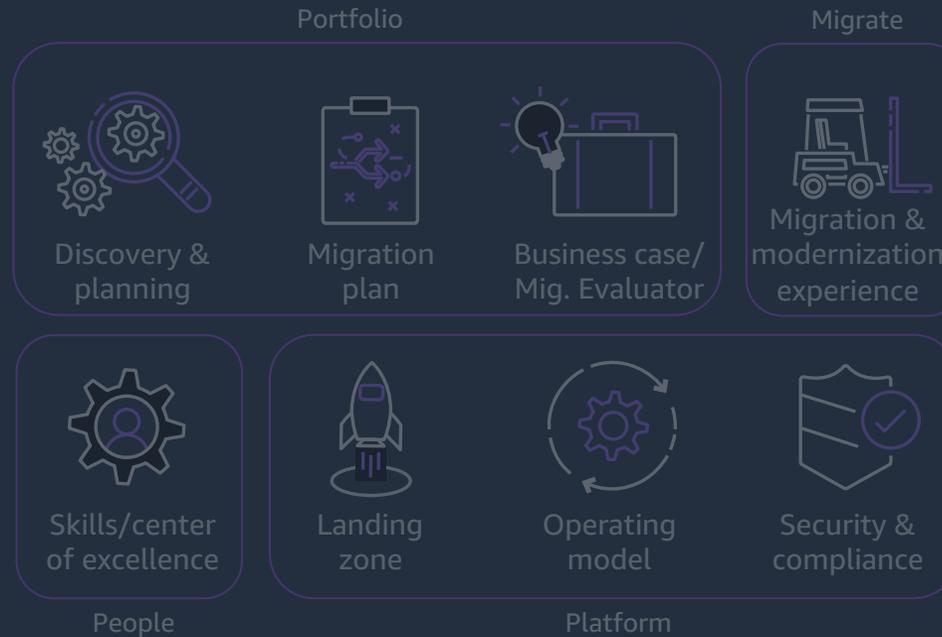


AWS Migration Framework – Assess

Assess

Mobilize

Migrate & Modernize



Create a case for change

Build readiness through experiences

Accelerate transformation at scale

Using a proven framework greatly increases your odds of success and speed to market



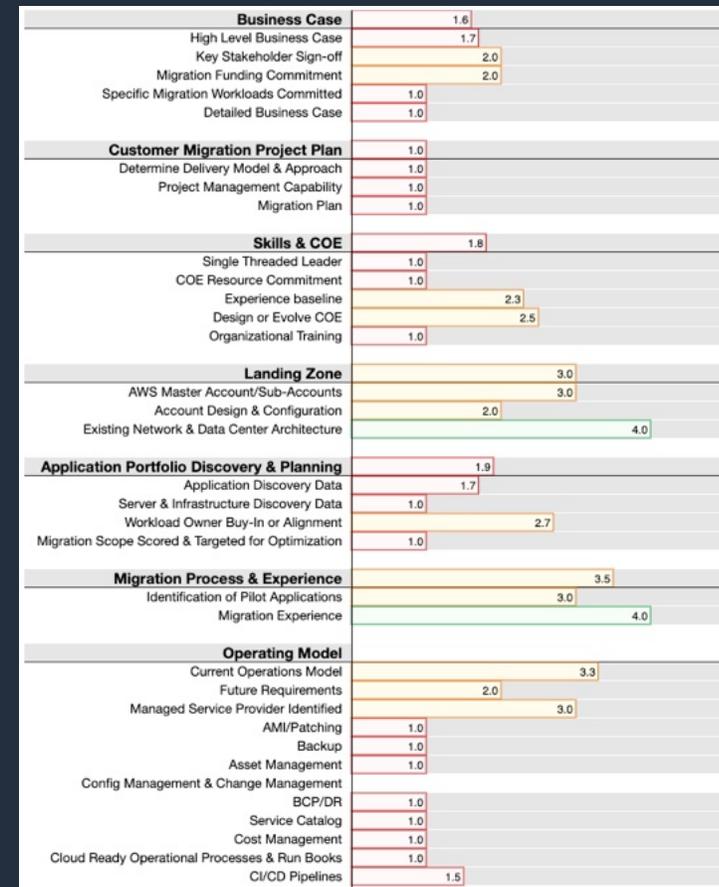
Migration Readiness Assessment – an overview

The assessment includes question survey and interactive activities conducted as a 1-day workshop:

- Alignment of leadership teams
- Consensus on decision-interdependency
- Identification of gaps and readiness

Action plan and proposal to close the gaps and accelerate to the next phase of adoption (e.g. Accelerators, Mobilize project)

Business Capability Focused	Business Value Realization
	People Roles and Readiness
	Governance Prioritization and Control
Technical Capability Focused	Platform Applications and Infrastructure
	Security Risk and Compliance
	Operations Hybrid and Dynamic



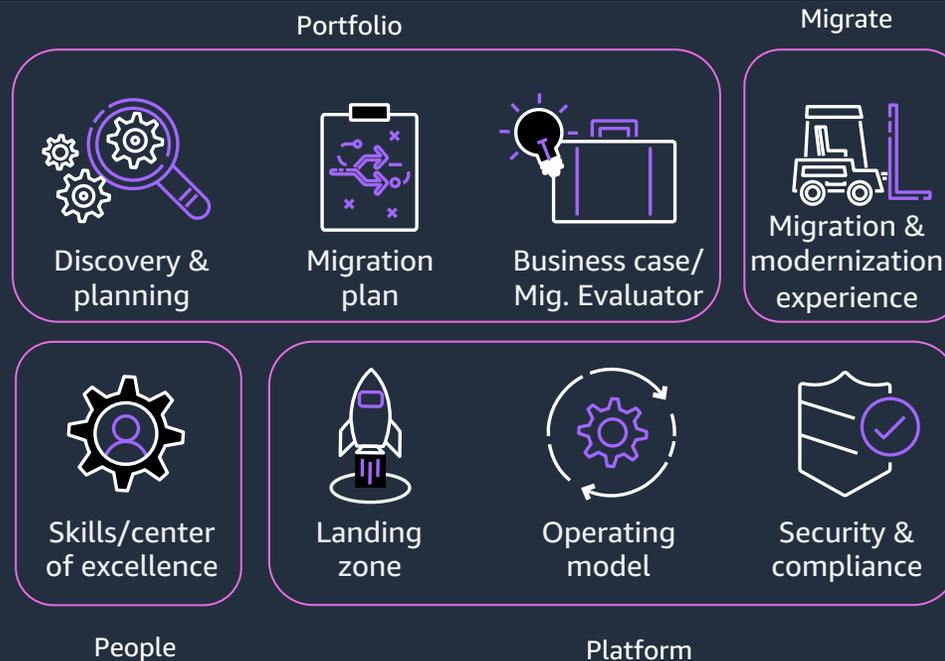
Diagnose migration readiness, align leadership teams, and build a case for change

AWS Migration Framework – Mobilize

Goals

- Build or validate AWS foundational environment to support targeted workloads and future initiatives
- Establish governance and security posture
- Scale enterprise operations to AWS
- Identify migration patterns
- Define team model and agile work streams
- Develop cost and resource model for the migration of a defined portfolio

Mobilize



Outcomes

Platform

- Landing Zone with security controls
- Adapted operational procedures

Portfolio

- 7R disposition & decision criteria
- App discovery & migration Wave Plan

Migration

- 3-5 applications migrated to AWS
- Hands-on migration experience & patterns for use to scale migrations

People

- CCoE structure, skills, & staffing
- Organization change management plan(s)

Enable readiness for a mass migration, modernization or greenfield

Establish Cloud Foundations



Guided path



Process



People



Technology

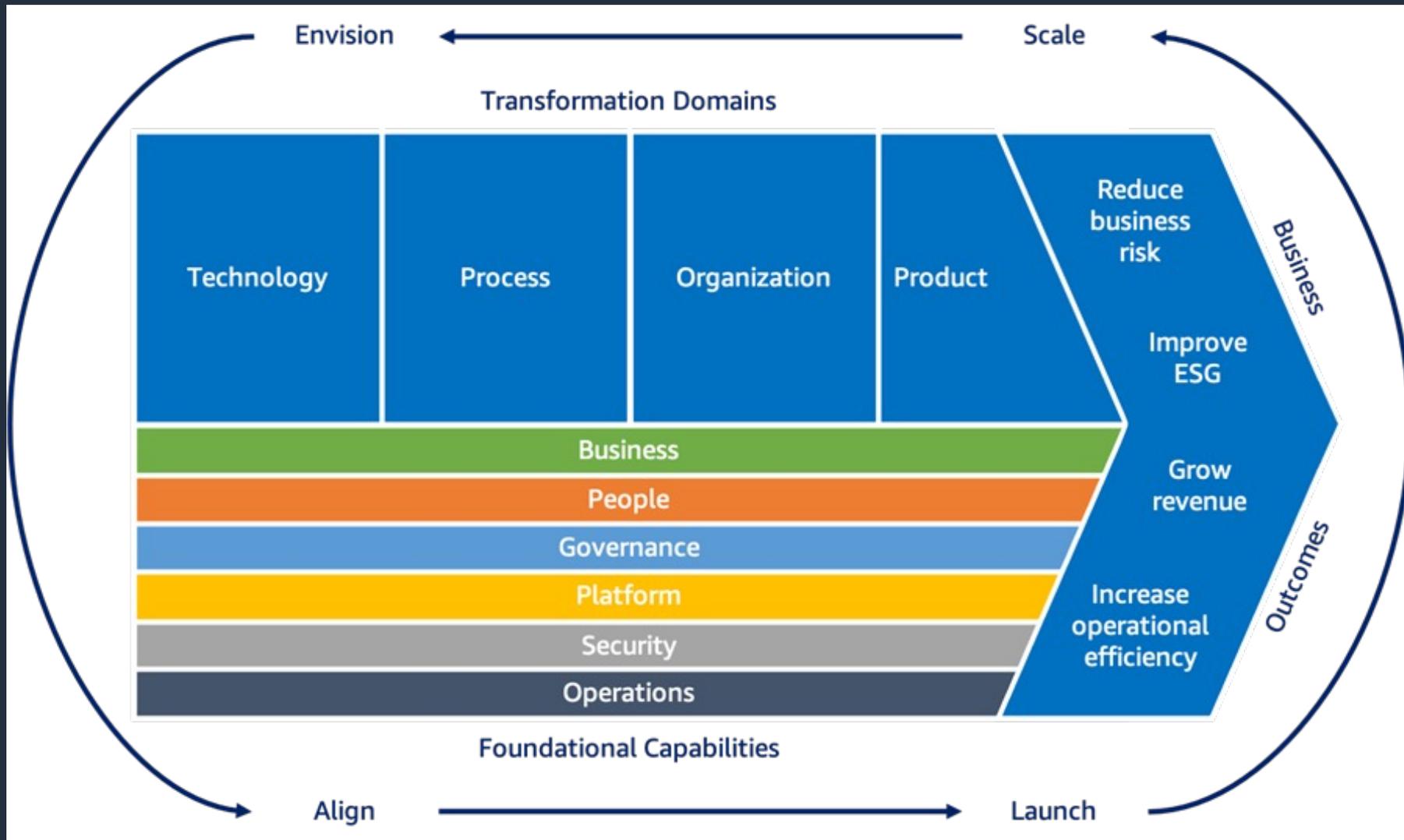
Deploy

Operate

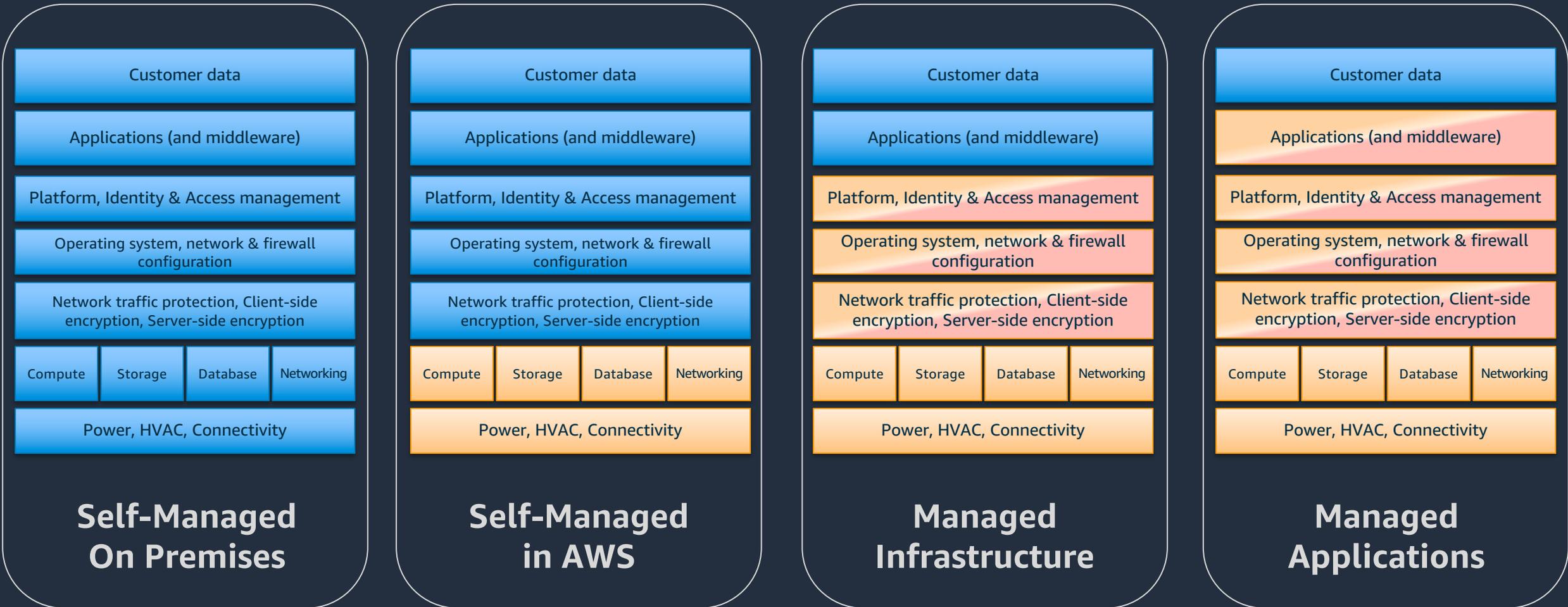
Govern

Production Workloads

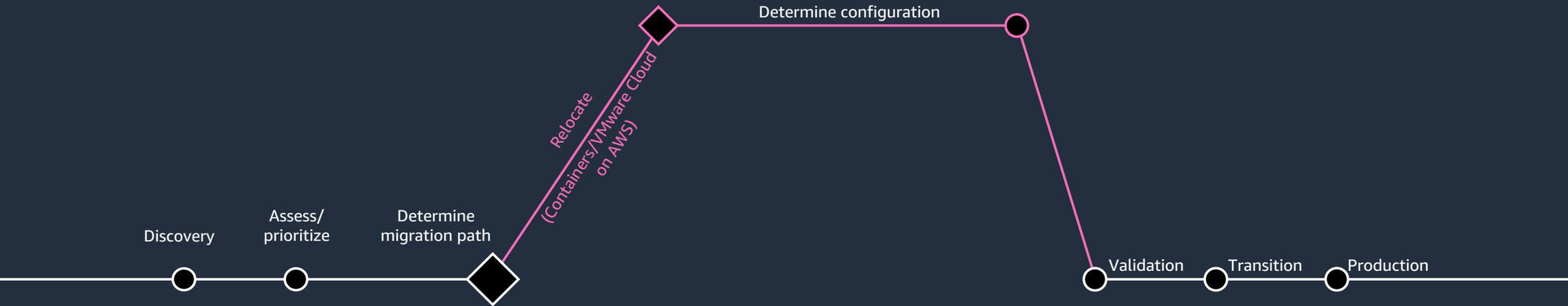
The Cloud Adoption Framework



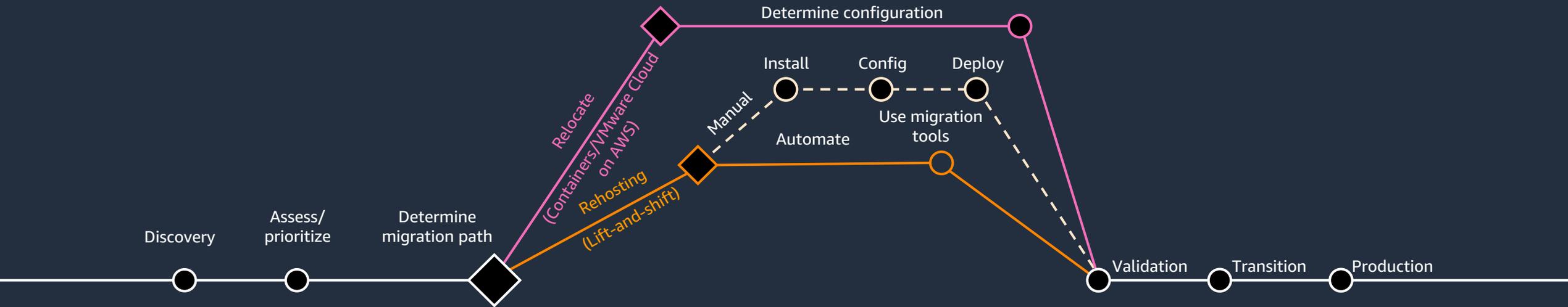
Cloud Infrastructure Operating Models



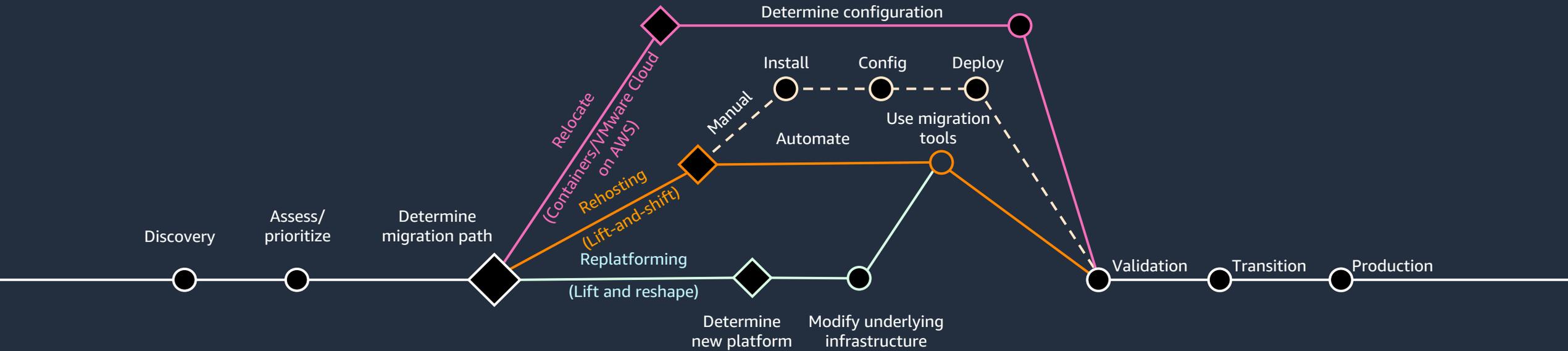
Application migration strategies: Relocate



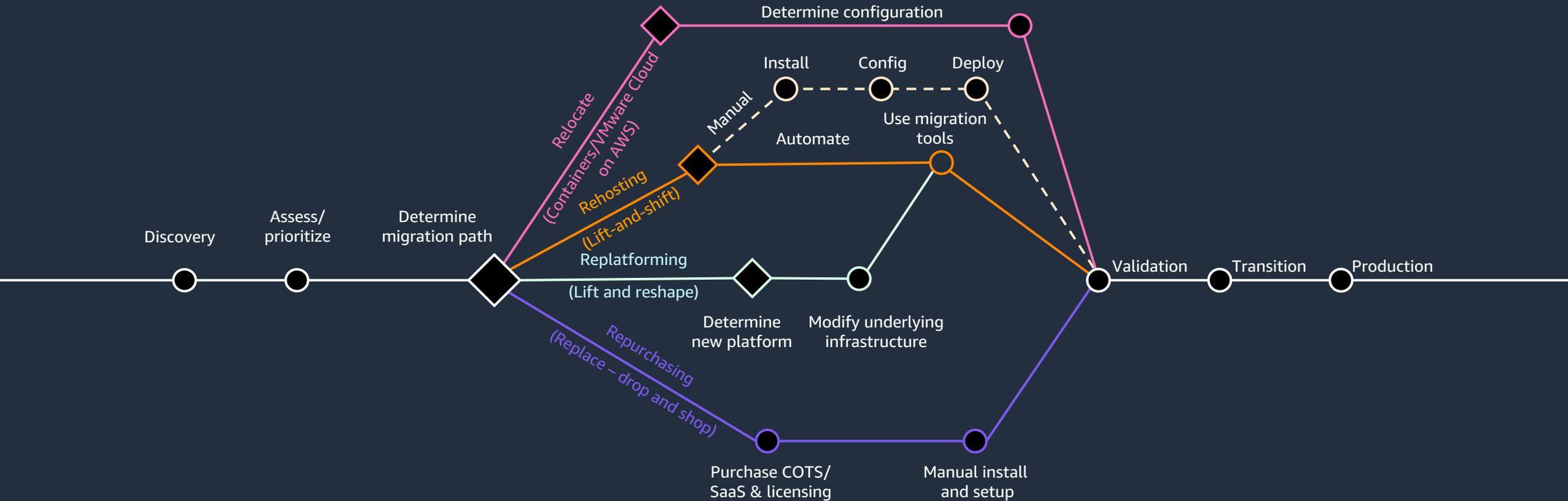
Application migration strategies: Rehost



Application migration strategies: Replatform



Application migration strategies: Repurchase



Cloud marketplaces deliver significant digital transformation advantages



Transform the enterprise digital supply chain with software and data you know and trust



Speed up procurement, improve governance, and optimize IT spend, all in one place



Software and data you know and love



Broad selection for app portfolio modernization



Make transactions & procurement processes easier



Enhance governance and control

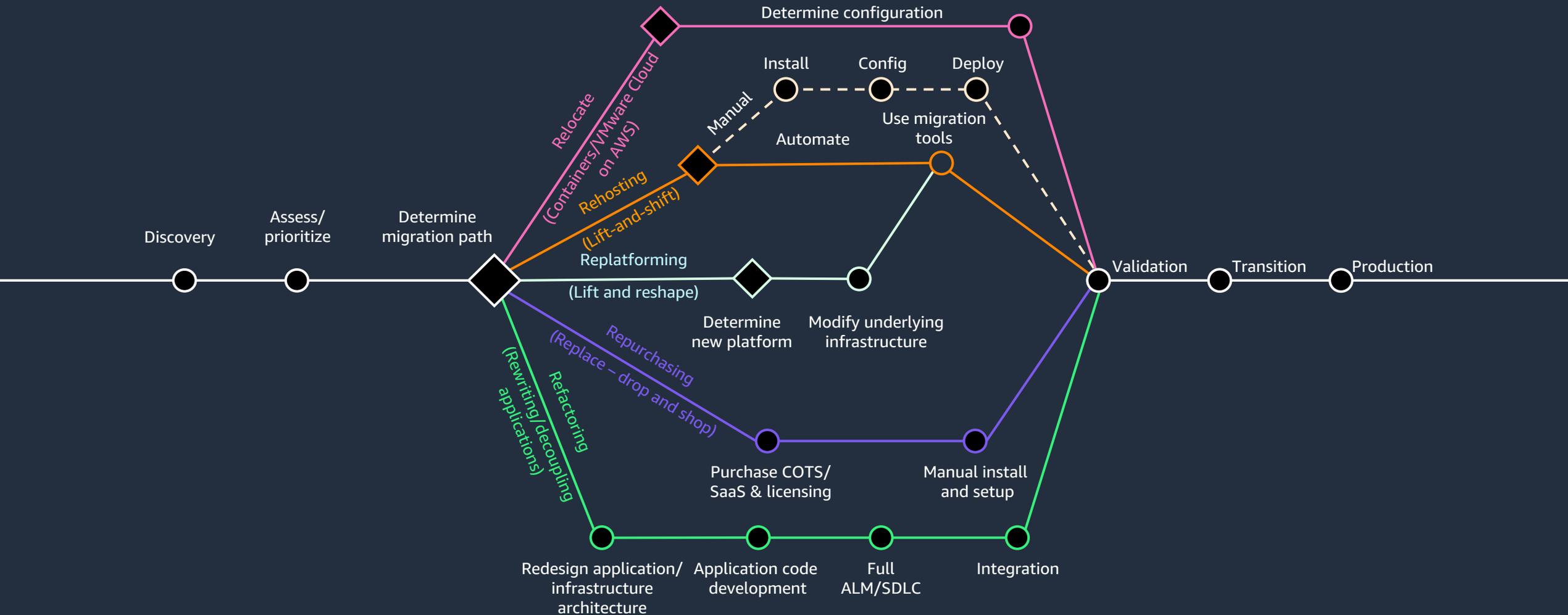


Incorporate professional support and expertise

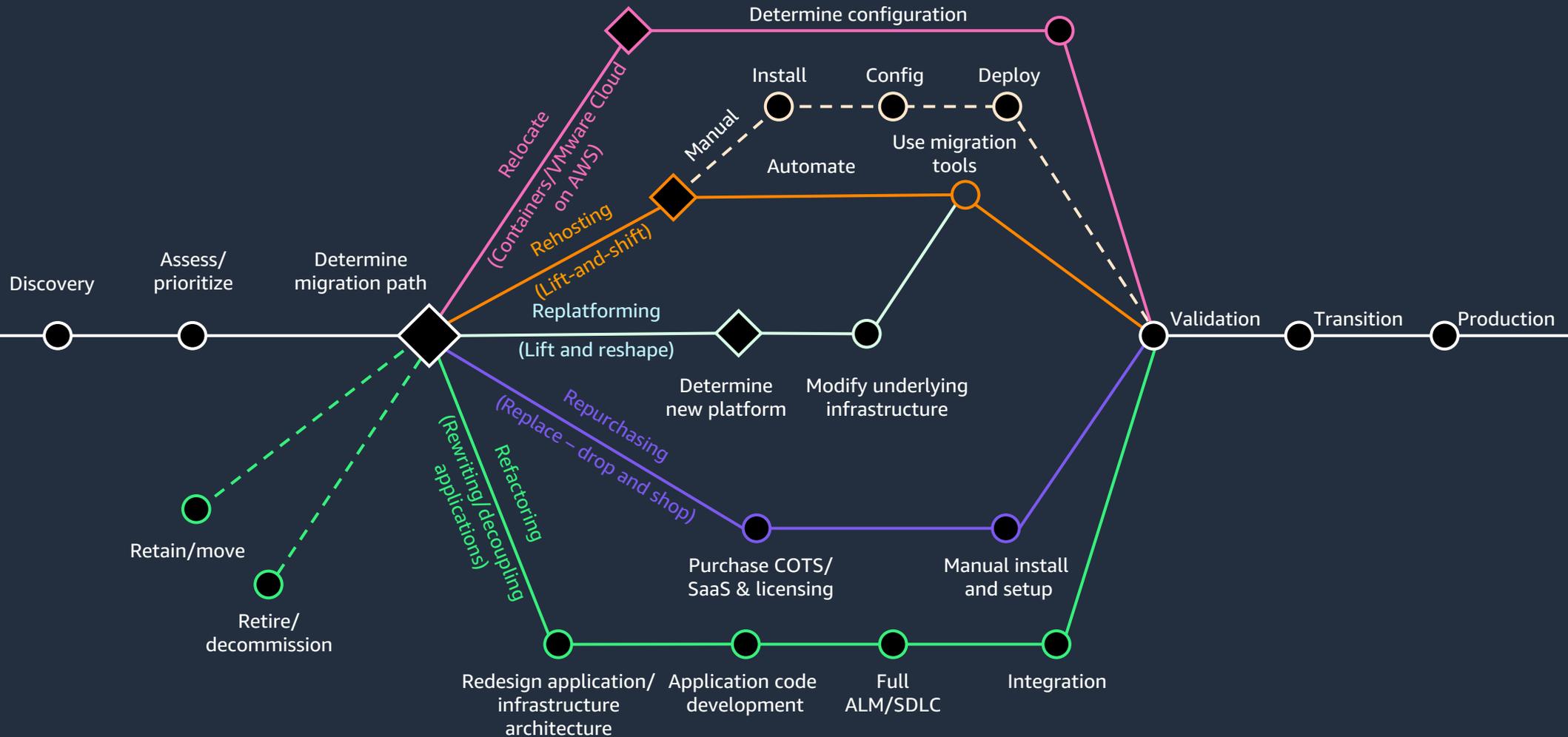


Optimize IT spend

Application migration strategies: Refactoring

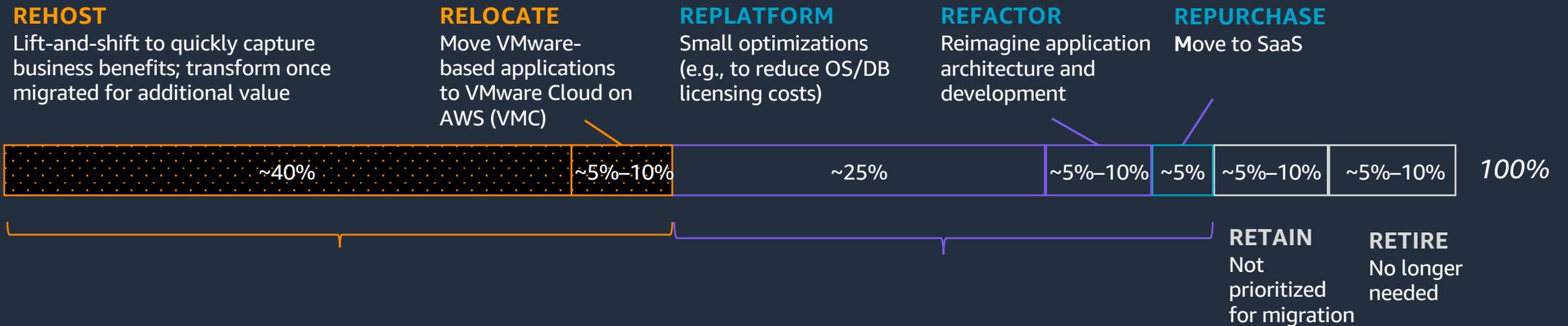


Application migration strategies: Retire and Retain



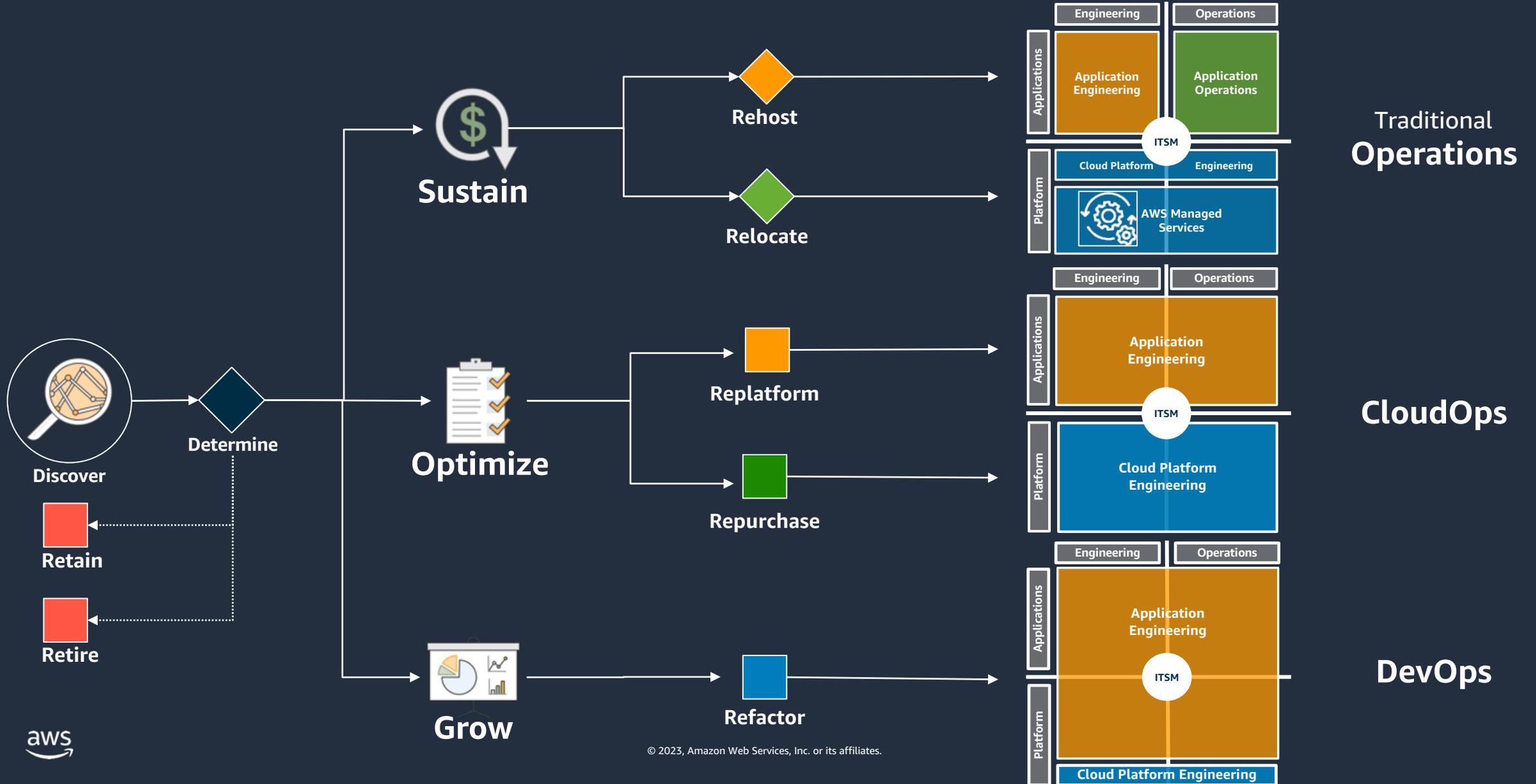
AVERAGE CUSTOMER ENVIRONMENT, BY MIGRATION PATTERN

(based on AWS experience)



Full spectrum of patterns is important for transformation – but up to ~50% of typical environment can be *rapidly migrated*, freeing time and budget to focus on modernization

Operating Model Effect on Migration Strategies



AWS Migration Framework – Migrate & Modernize

Assess

Mobilize

Migrate & Modernize

Rapid discovery
TCO report

Migration Readiness Assessment

Accelerators

Briefings & workshops

Immersion day

Portfolio

Migrate

Discovery & planning
Migration plan
Business case/
Mig. Evaluator

Migration & modernization experience

Skills/center of excellence

Landing zone

Operating model

Security & compliance

People

Platform

Migrate

Operate & optimize

Modernize

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Tooling

Migration Evaluator

Quick Insights

aws migration evaluator Formerly TSO Logic

Quick Insights

Generated: 11/16/2021

Right sizing workloads on AWS would result in an estimated annual cost of \$1,154,735 USD* for Amazon Elastic Cloud Compute (EC2) and Elastic Block Storage (EBS).

Based on your reported CPU and memory utilization, you could realize a 18% savings** compared to directly mapping your on-premises servers and storage. With AWS, you have access to more instances in every imaginable shape and size than you'll find elsewhere and we continue to add more so you can always find the right size based on your current needs.

Electing to repurchase non-optimized operating system licensing from AWS would add \$326,145 USD** to the Amazon EC2 and EBS costs shown above.

If you would like to learn more about migrating workloads to AWS including software license optimization and exploring managed services, please contact your AWS account team or email migration-evaluator@amazon.com.

About this report

The analysis is based on infrastructure, software licenses and utilization discovered from 11/09/2021 to 11/16/2021.

Servers

- 585 virtual machines
- 17 physical servers

Storage

- 845 TB of attached block storage

Licensing

- 002 servers (Linux, 206; Windows, 196; RHEL, 106; SUSE, 93)
- 21 servers running SQL Server (Standard & R)

Environment & Licensing

- 21 servers running SQL Server (Standard & R)

OS Instance Classification

- Linux: 48.9%
- Windows: 9.4%
- Ubuntu: 7.5%
- Zentao: 16.3%

Environment & Licensing

- Zentao: 15% (OS License-removed from base cost included)

OS Licenses: 22%

- Amazon EC2: 47%
- OS Licenses: 22%

Savings with Amazon EC2 Spot Instances

42.2% in Compute Savings from On-Demand to Spot Instance

For the 1220 servers we assessed across your entire portfolio, 79 are candidates for running on Amazon EC2 Spot Instances as they were:

- Non-Production
- Running BHEL or Linux
- Not running MS SQL Server Enterprise or Standard

For these 79 servers, switching to Amazon EC2 Spot Instances would save you 42.2% over running On-Demand and 68.2% over a 3 Year Reserved Instance

*Please note, Spot pricing is based on averages in US East (V2), optimized for the previous 30 day period.

Directional Business Case

Data Insights

Overview of the percentage of time servers were used, environment insights & licensing details.

OS Instance Classification

- Linux: 48.9%
- Windows: 9.4%
- Ubuntu: 7.5%
- Zentao: 16.3%

Environment & Licensing

- Zentao: 15% (OS License-removed from base cost included)

On-Premises Annual Cost Estimation

Included in On-Premises Cost Estimation

- Server hardware based on AWS benchmarks
- Attached storage
- Power
- Software licensing: OS (if applicable)
- MS SQL Server

ON-PREMISES INVENTORY WITH ESTIMATED COSTS: \$3,465,103.83

Reduce Costs Further with Amazon EC2 Spot Instances

Savings with Amazon EC2 Spot Instances

42.2% in Compute Savings from On-Demand to Spot Instance

Amazon EC2 Spot Instances are spare Amazon EC2 capacity available for up to a 90% discount compared to On-Demand prices. If AWS needs the capacity back, the instance will be terminated following a 2-minute warning. On average, instances are interrupted 45% of the time. Check out the [Spot Instance Advisor](#) page for interruption rates by instance type and region.

Common Amazon EC2 Spot workloads include:

- Containerized workloads (e.g. Kubernetes)
- Big data / analytics (e.g. Hadoop, Apache Spark)
- High performance computing
- Stateless applications
- Test and Development

Learn how [Dockerize](#) utilized Amazon EC2 Spot instances to cost effectively migrate their Kubernetes clusters out of their data centers to AWS.

If you would like to explore this option further, please let us know and we will engage you with one of our experts from our Amazon EC2 Spot solutions team.

Analytics Engine

aws migration evaluator

EC2 COST ANALYSIS

On-Demand: \$107,276.71
Spot: \$107,276.71
Total: \$214,553.42

SPOT INSTANCE ADVISOR

ON-PREMISES INVENTORY WITH ESTIMATED COSTS: \$3,465,103.83

Instance Type	Count	Estimated Cost
Non-Production	79	\$3,465,103.83

Automated (PDF & Export Available)

Available upon request





Migrate & modernize

AWS Migration Hub

- ➔ Track the migration status of your applications across multiple tools in one place
- ➔ Discover using AWS ADS or Import discovery data from existing sources
- ➔ Use the migration tools that best fit your needs—AWS or Partner tools integrated
- ➔ Available to all AWS customers at no additional charge

The screenshot shows the AWS Migration Hub dashboard with the following components:

- Dashboard:** Last updated: Oct 2, 09:18 AM. Includes a navigation menu for Discover, Migrate, and Help & Support.
- Most recently updated applications:** Three cards for Sales Tracking App (8 servers), Inventory App (10 servers), and Marketing App (4 servers, Completed).
- Discovery summary:** Servers: 825, Applications: 102, Agents: 350, Connectors: 2.
- Applications by migration status:** Horizontal bar chart showing Not started (~80), In-progress (~15), and Completed (~10).
- Migrated applications over time:** Line and bar chart showing the number of applications migrated from Mar. 2017 to Aug. 2017.
- Quick access:** Lists integrated discovery tools, migration tools, migration programs, documentation, support, and related links.



AWS Application Migration Service (MGN)

Flexible



Migrate from any source



Wide range of OS, application, and database support



Suitable for large-scale migrations

Reliable



Robust, predictable, non-disruptive continuous replication



Short cutover windows with minimal downtime



Highly secure

Ease of use



Minimal skill set required to operate



Easy, non-disruptive tests prior to cutover

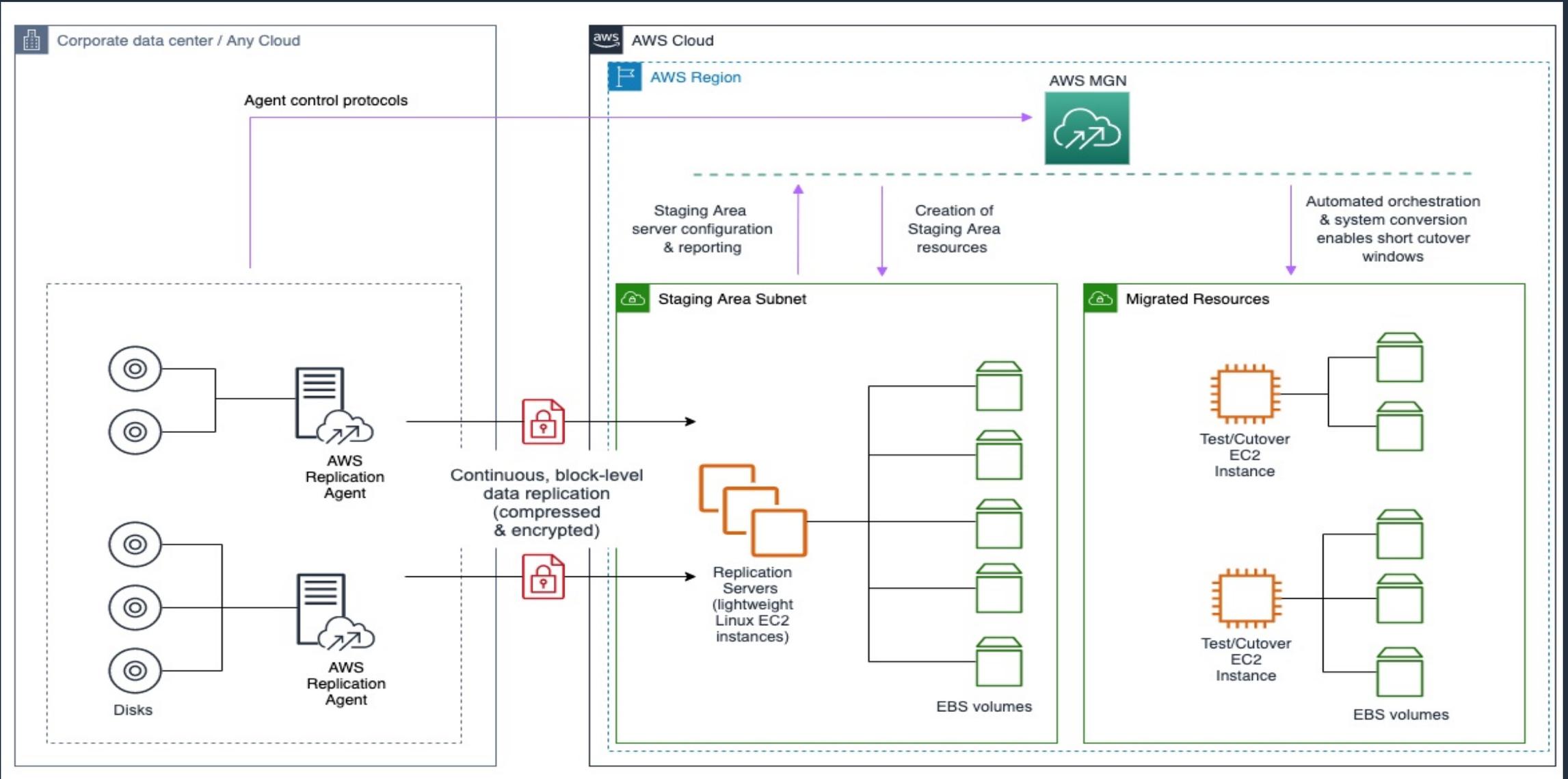


Easily plugs into migration factories and cloud COEs

Free for 90 days from the installation of the agent on the source machine.

Charged per hour after that period for active replications.

How AWS Application Migration Service Works



Wide Platform Support*

Any
Application



Any
Database



x86 Operating
Systems



Source
Infrastructure



* See documentation or contact Support for a complete list.



Database migration tooling



AWS Schema Conversion Tool (AWS SCT) converts your commercial database and data warehouse schemas to open-source engines or AWS-native services, such as Amazon Aurora and Amazon Redshift



AWS Database Migration Service (AWS DMS) easily and securely migrates and/or replicates your databases and data warehouses to AWS

Infrastructure as Code

Why Infrastructure As Code?

Speed 

Security 

Share & Enforce Best Practices 

Consistency 

Pattern Re-use 

Automation 

Continuous Integration / Continuous Deployment 

Roll Back 

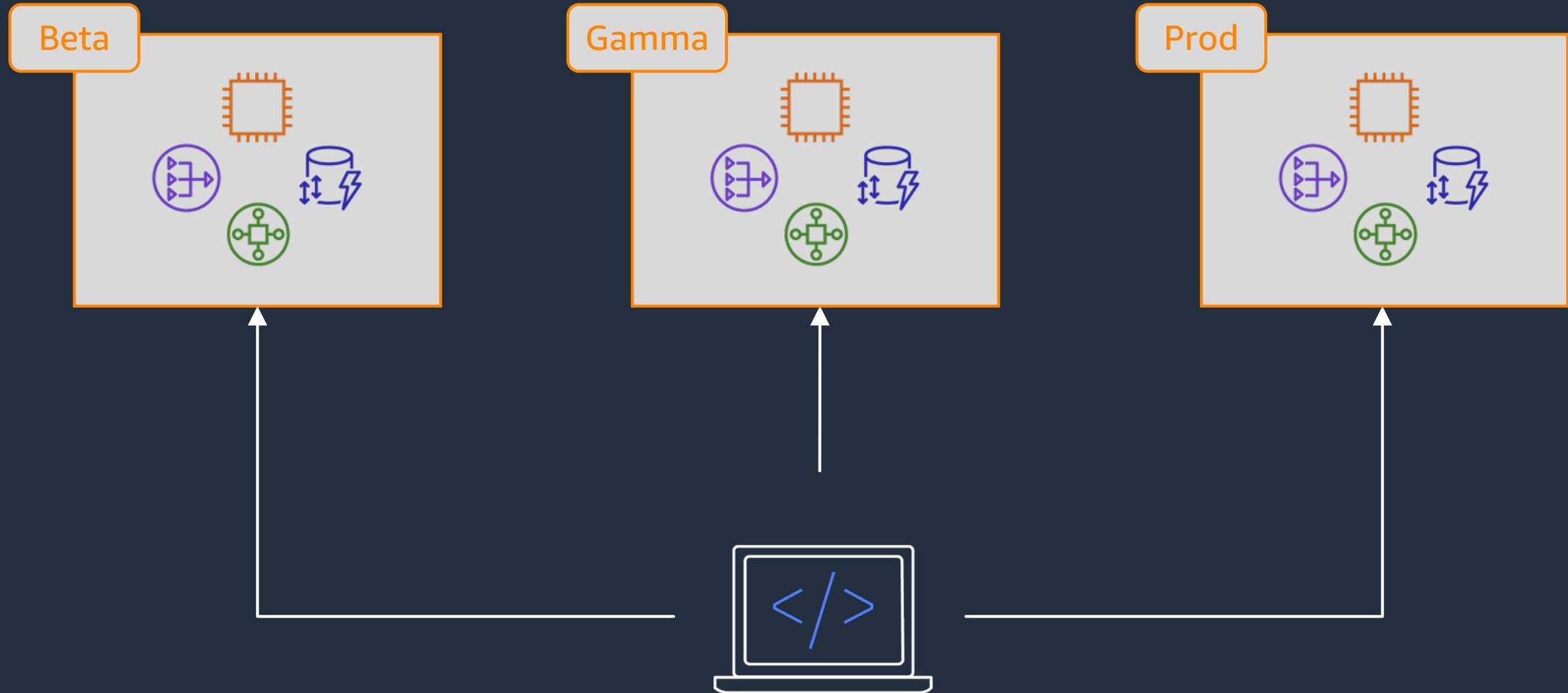
Single Source of Truth 

Lifecycle Management 

Version Control 

Drift Detection 

Consistent deployments



Infrastructure as Code (IaC) – Common Players

- Managing and provisioning of infrastructure through code instead of manual processes.
- Benefits



Self service



Safety



CI/CD validations



Version control



Reduce costs



Speed



Consistency



Reusability



Configuration drift

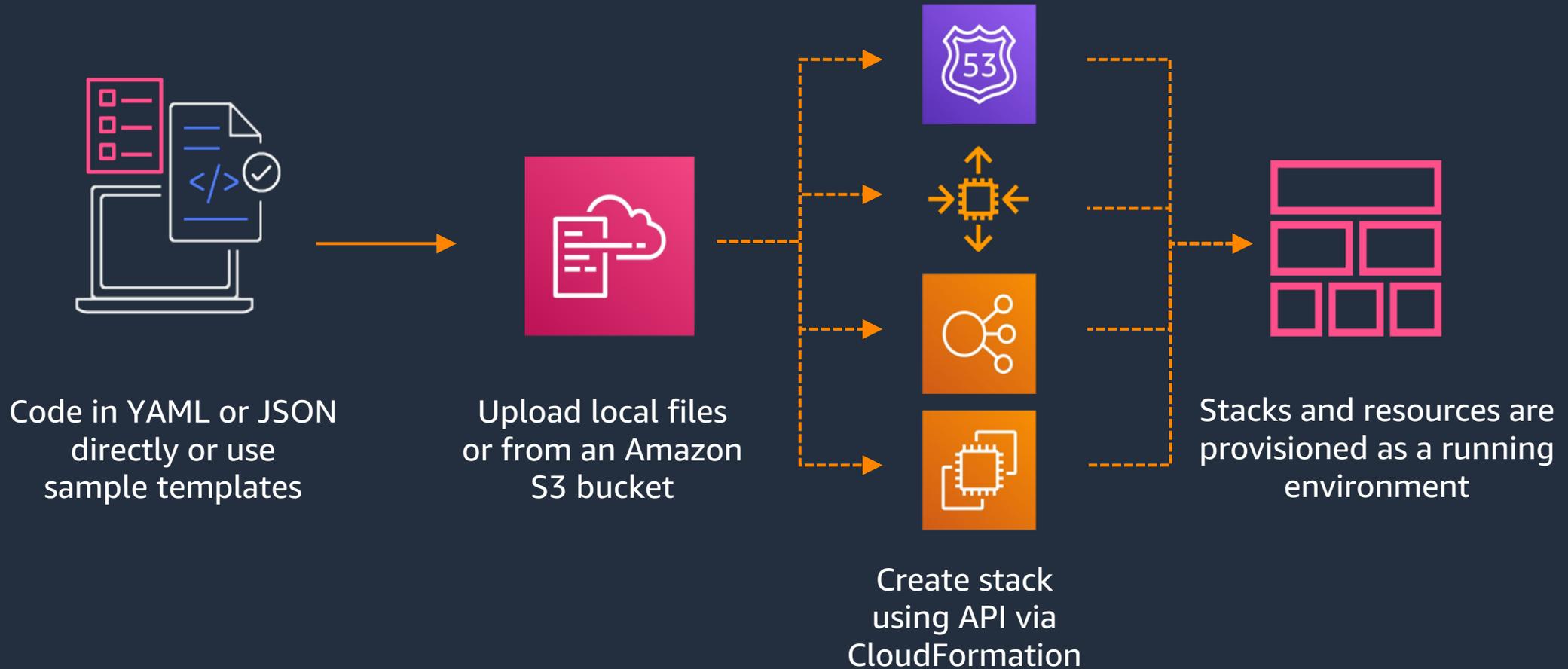


AWS CloudFormation



and many more...

AWS CloudFormation



AWS Cloudformation - Example

```
177
178 Pipeline:
179   Type: AWS::CodePipeline::Pipeline
180   Properties:
181     RoleArn: !GetAtt PipelineRole.Arn
182     ArtifactStore:
183       Type: S3
184       Location: !Ref ArtifactBucket
185     Stages:
186     - Name: Source
187       Actions:
188       - Name: GitHub
189         ActionTypeId:
190           Category: Source
191           Owner: AWS
192           Provider: CodeStarSourceConnection
193           Version: 1
194         Configuration:
195           ConnectionArn: !Ref GitHubConnectionArn
196           FullRepositoryId: !Ref RepoId
197           BranchName: !Ref Branch
198           DetectChanges: true
199         OutputArtifacts:
200         - Name: extensions-source
```

AWS Cloud Development Kit (AWS CDK)

A MULTI-LANGUAGE SOFTWARE DEVELOPMENT FRAMEWORK FOR MODELING CLOUD INFRASTRUCTURE AS REUSABLE COMPONENTS

```
class UrlShortener extends Stack {
  constructor(scope: App, id: string, props?: UrlShortenerProps) {
    super(scope, id, props);

    const vpc = new ec2.Vpc(this, 'vpc', { maxAzs: 2 });
    const cluster = new ecs.Cluster(this, 'cluster', { vpc: vpc });
    const service = new patterns.NetworkLoadBalancedFargateService(this, 'sample-app', {
      cluster,
      taskImageOptions: {
        image: ecs.ContainerImage.fromAsset('ping'),
      },
      dom
    });
    // Setup AutoScaling policy
    const scaling = service.service.autoScaleTask
    scaling.scaleOnCpuUtilization('CpuScaling',
      targetUtilizationPercent: 50,
      scaleInCooldown: Duration.seconds(60),
      scaleOutCooldown: Duration.seconds(60)
    });
  }
}
```

domainName	(property) patterns.NetworkLoadBalancedServiceBaseProps.domainName?: string undefined
domainZone	The domain name for the service, e.g. "api.example.com."
	@default
	- No domain name.



Familiar
Your language
Just code



Tool support
AutoComplete
Inline documentation



Abstraction
Sane defaults
Reusable classes



Java



Demo



Call to Action



[7R decision tree](#)



[Cloud Adoption Framework](#)



[Large scale migration strategy](#)



[Application Migration Service Demo Content](#)



Thank you!

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