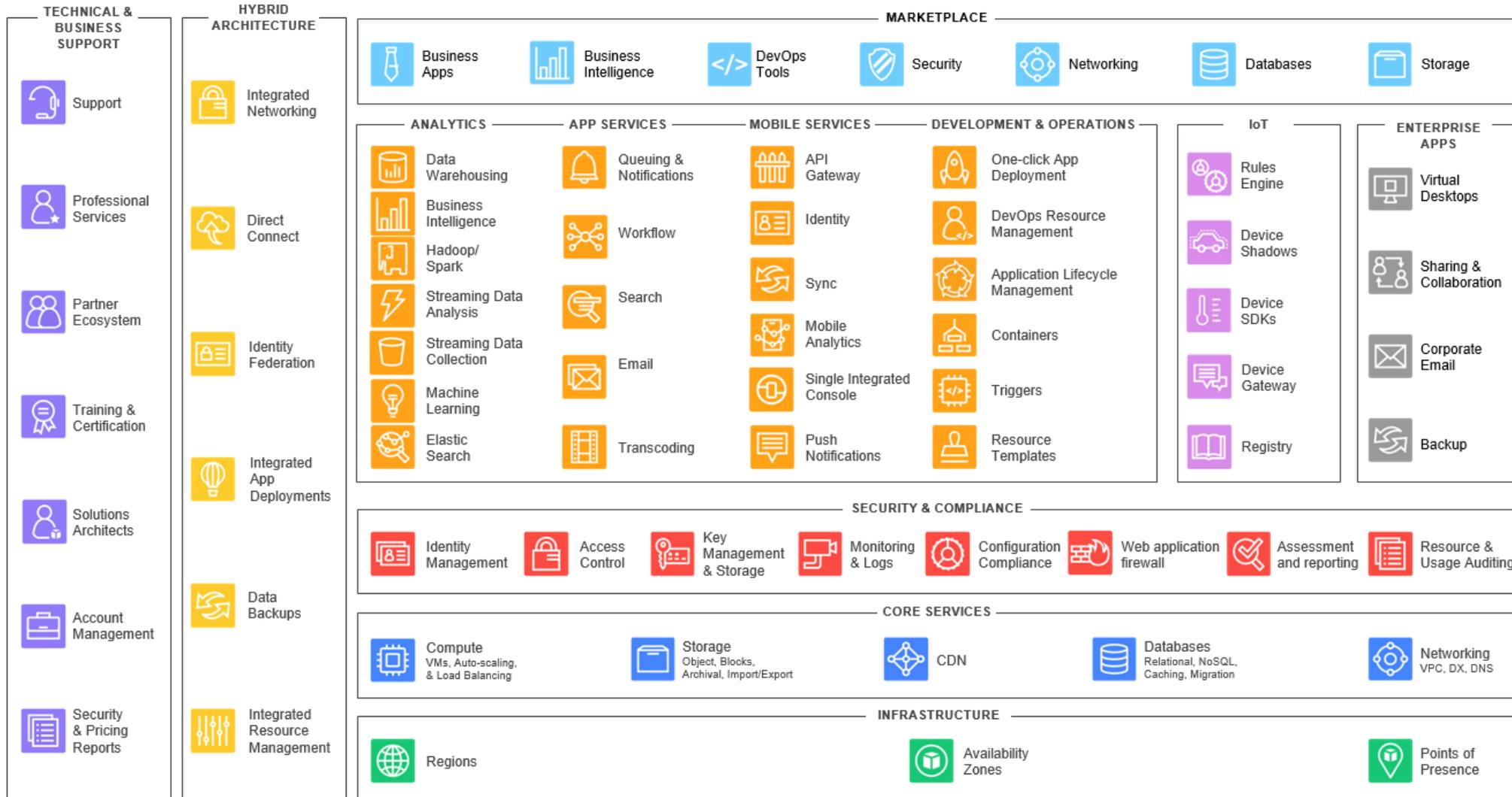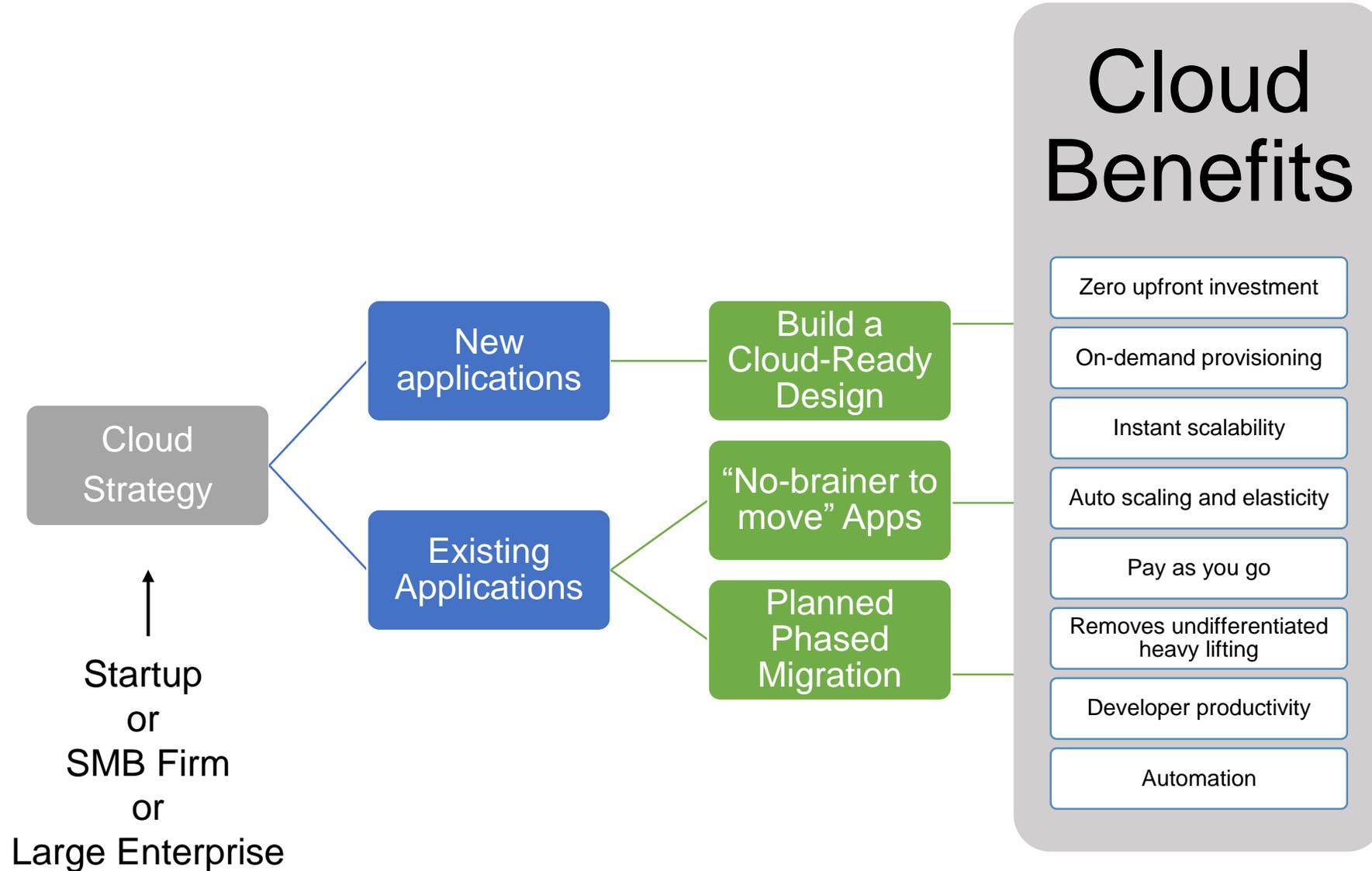# Planning a phased Cloud migration strategy

- Abhishek Mahanty, Solutions Architect, Amazon Web Services

The ever so evolving AWS cloud…
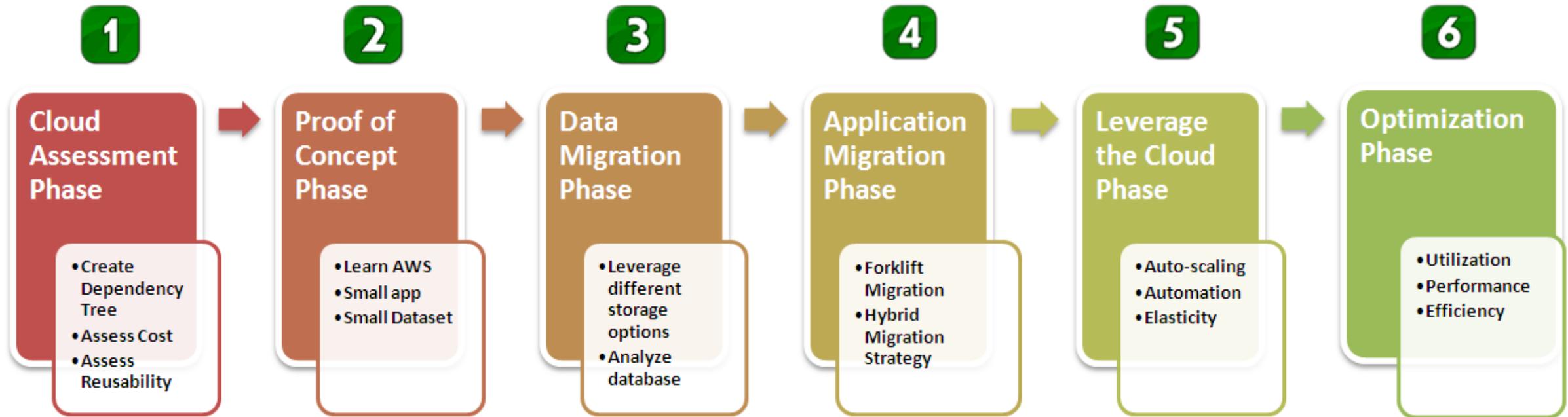
Building a Cloud Strategy

Cloud Strategy

New applications

Existing Applications

Build a Cloud-Ready Design

"No-brainer to move" Apps

Planned Phased Migration

Startup
or
SMB Firm
or
Large Enterprise

Cloud Benefits

- Zero upfront investment
- On-demand provisioning
- Instant scalability
- Auto scaling and elasticity
- Pay as you go
- Removes undifferentiated heavy lifting
- Developer productivity
- Automation

A Phased Strategy for Migration

1 **Cloud Assessment Phase**
- Create Dependency Tree
- Assess Cost
- Assess Reusability

2 **Proof of Concept Phase**
- Learn AWS
- Small app
- Small Dataset

3 **Data Migration Phase**
- Leverage different storage options
- Analyze database

4 **Application Migration Phase**
- Forklift Migration
- Hybrid Migration Strategy

5 **Leverage the Cloud Phase**
- Auto-scaling
- Automation
- Elasticity

6 **Optimization Phase**
- Utilization
- Performance
- Efficiency

Cloud Assessment Phase

1

Cloud Assessment Phase

- Create Dependency Tree
- Assess Cost
- Assess Reusability

Includes:

- Financial Assessment (TCO/ROI Analysis)
  - How much will it cost to run?
- Security & Compliance Assessment
- Technical Assessment
  - Choosing the right candidate
  - Migrating Licensed products
  - Identifying tools you can reuse
  - Functional/Architectural assessment
- Create a Roadmap and a Plan

Data Security

- You own the data, not AWS.

- You choose which geographic location to store the data.

- You can download or delete your data whenever you like.

- You can encrypt your data in transit and at rest.

- You manage access to your data.

Technical Assessment
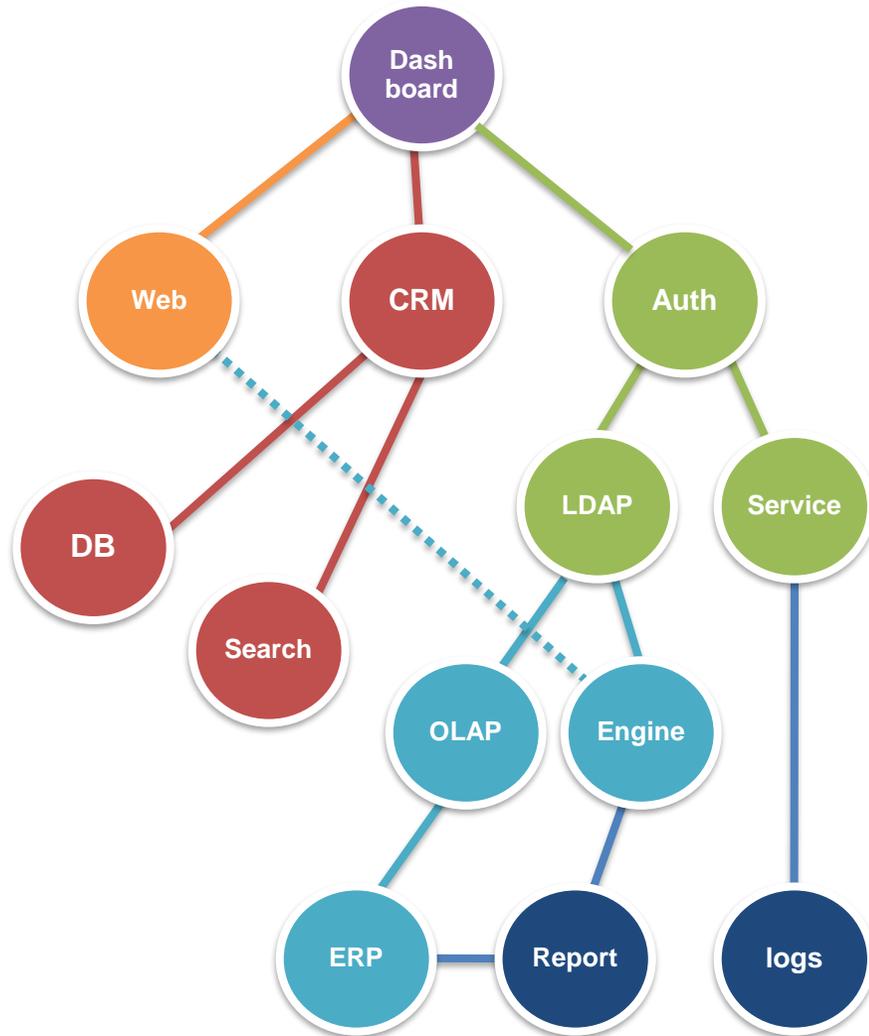
- List all your IT assets and create a dependency tree

- Identify upward and downward dependencies

- Start classifying your IT assets into different categories:

  - Applications with low, medium and high compliance requirements

  - Applications that are internal-only, partner-only or customer-facing

  - Applications with low, medium and high coupling

  - Applications with strict vs. relaxed licensing

Stack rank your IT assets

Rank	Asset Name	
1	Product Marketing Site	Today
2	Internal Batch Process	2 days
3	CRM System	5 days
4	Log Processing apps	1 week
5	ERP System	Phased Migration

- Select the low-hanging fruits first

- Search for under-utilized IT assets

- Applications that has immediate business need to scale

- Applications that are running out of capacity – Easiest to move today

- That Builds support within your organization and creates awareness and excitement

"No-brainer to move" Apps
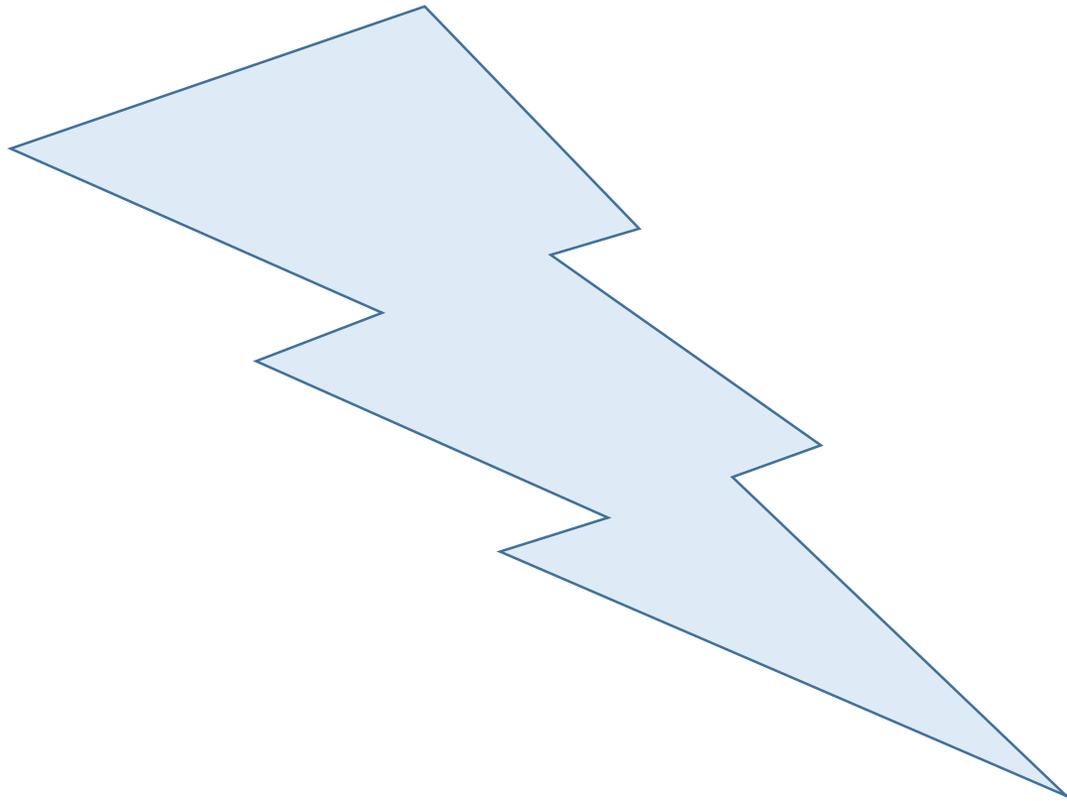
- Dev/Test applications

- Self-contained Web Applications

- Backup Systems

- Batch processing applications

- Customer Training Sites

- Video Portals (Transcoding and Hosting)

- Pre-sales Demo Portal

- Software Downloads

- Trial Applications

Identify tools you can use/reuse

- **Resource/System Management Tools**

    (AWS Management Console, S3Fox, NOC, RightScale, ….)

- **Resource Configuration Tools**

    (CloudFormation, Chef, Puppet, …..)

- **Development and Integration Tools**

    (SDKs, Libraries, Command Line Tools, AWS Resource Center)

Migrating Licensed Products

- **Bring Your Own License (BYOL)**

    (Oracle, Adobe, IBM, Micosoft….)

- **Pay-As-You-Go**

    - Use a **utility style pricing model** with a support package

    (Redhat, Microsoft, IBM, Wowza, ….)

- **Use an ISV Cloud Service**

    (Quantivo, Pervasive, Cast Iron, ...)

Create a Roadmap and a Plan
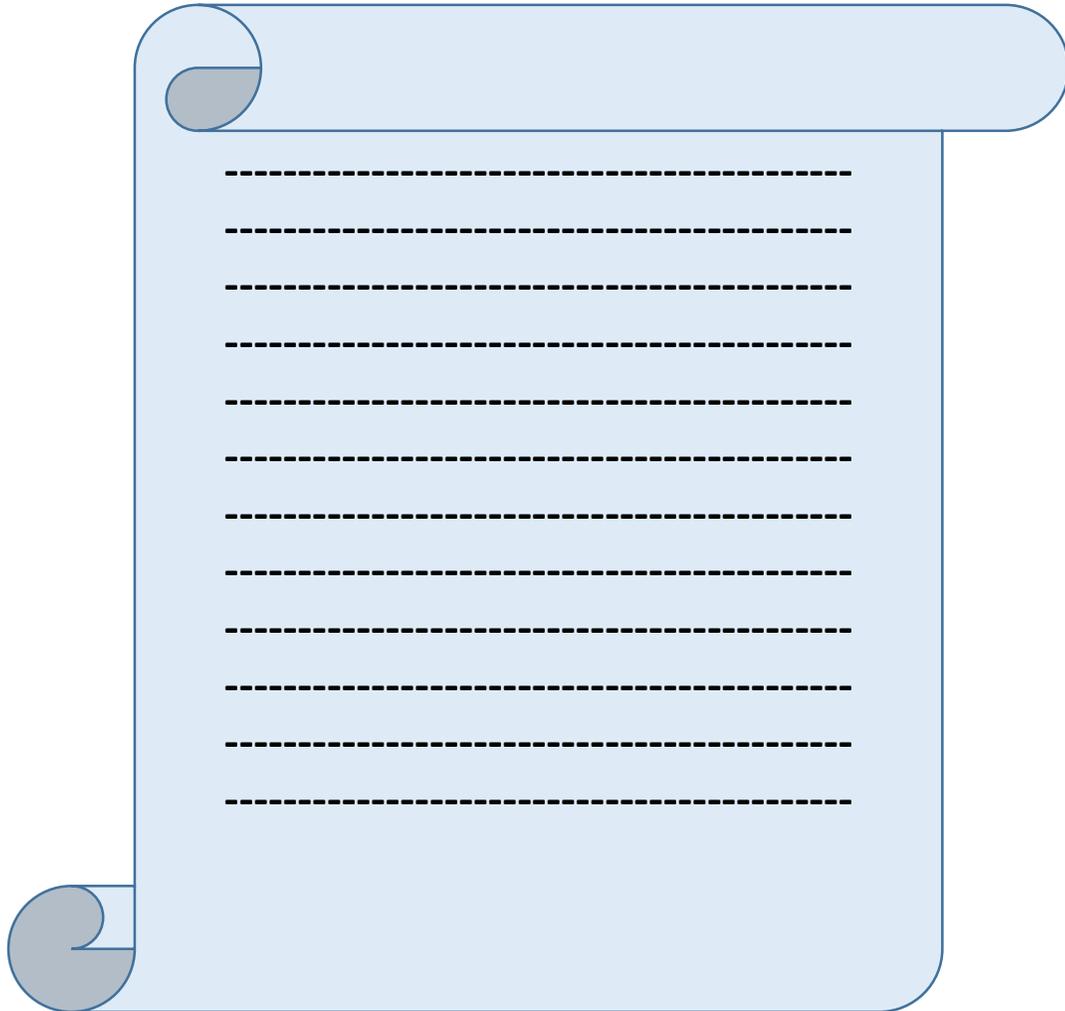
- Assessments
  - Financial
  - Security & Compliance
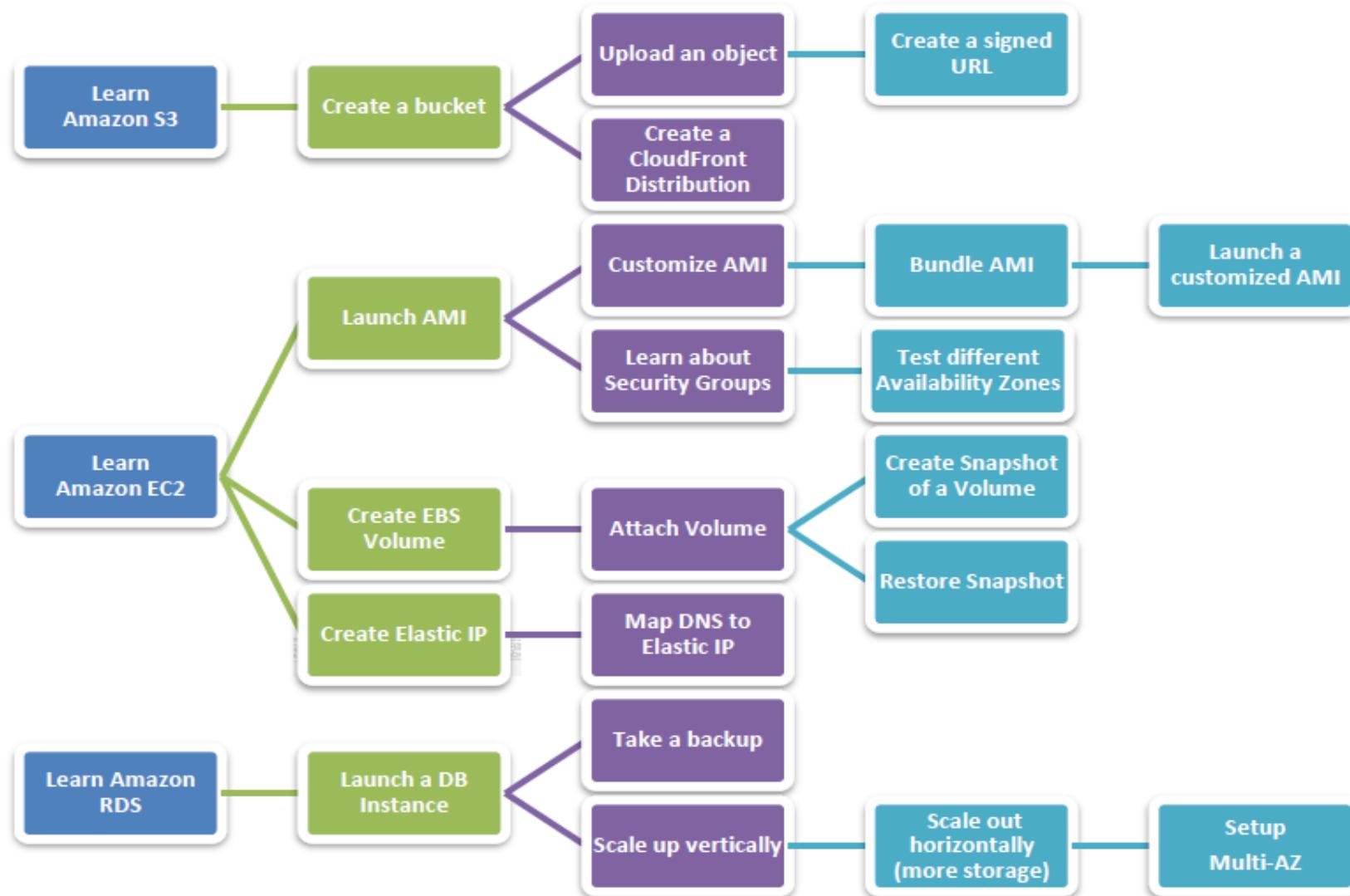 - Technical
- Create a Roadmap and a Plan
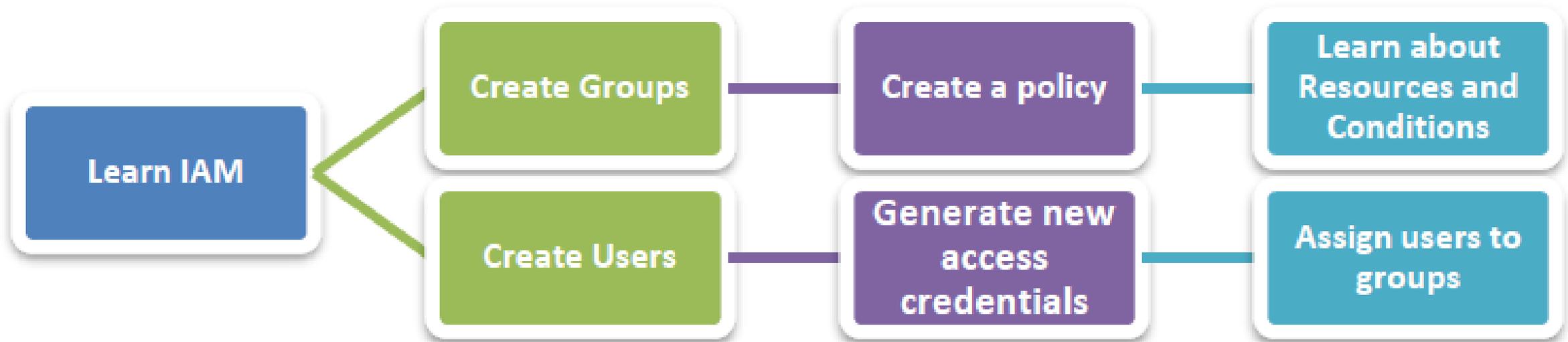
Proof of Concept Phase
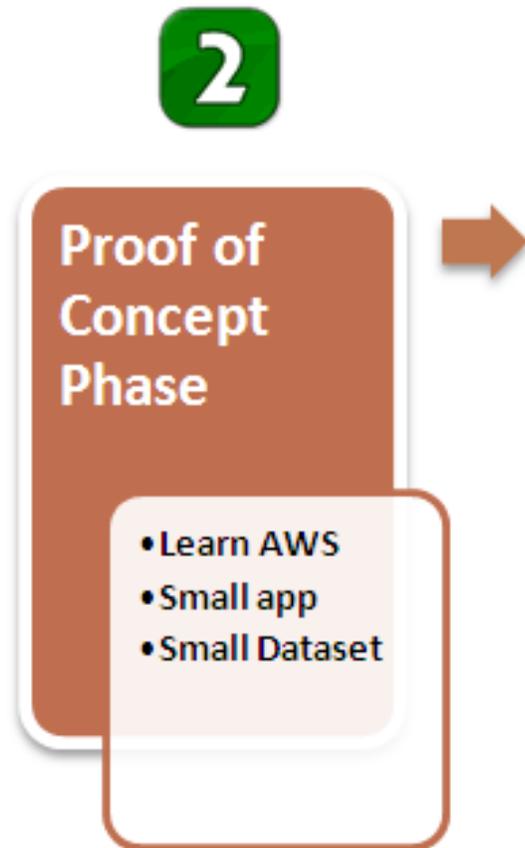
Includes:

- Get your feet wet with AWS
  - Learning AWS
  - Build reference architecture
  - Be aware of the security features
- Build a Prototype/Pilot
  - Build support in your organization
  - Validate the technology
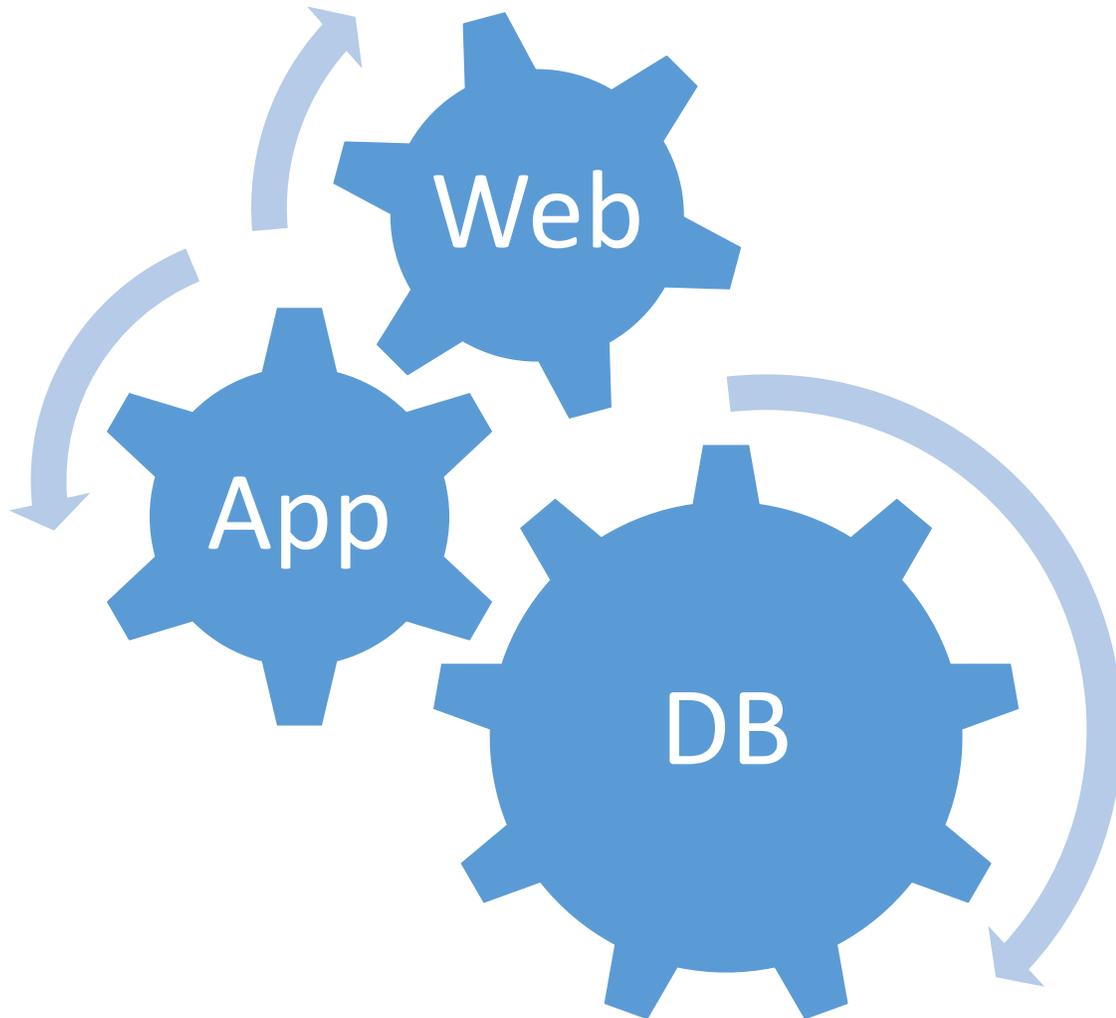 - Test legacy software in the cloud
  - Perform benchmarks

Try it out!

AWS Security Features

```
                    ┌──────────────┐        ┌──────────────┐        ┌──────────────────┐
                    │ Create Groups│────────│Create a policy│────────│  Learn about     │
                    │              │        │              │        │  Resources and   │
┌──────────────┐───<└──────────────┘        └──────────────┘        │  Conditions      │
│  Learn IAM   │                                                    └──────────────────┘
└──────────────┘───<┌──────────────┐        ┌──────────────┐        ┌──────────────────┐
                    │ Create Users │────────│ Generate new │────────│ Assign users to  │
                    │              │        │   access     │        │     groups       │
                    └──────────────┘        │ credentials  │        └──────────────────┘
                                            └──────────────┘
```
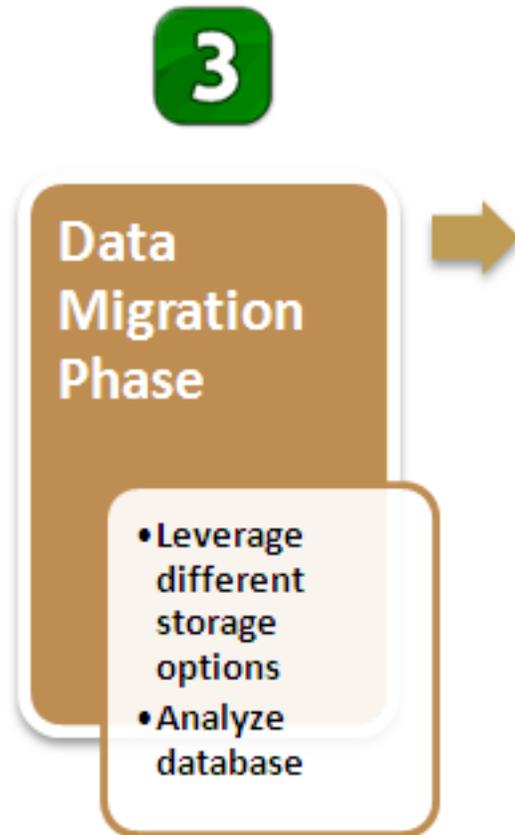
Build a Proof-of-Concept

- Deploying miniature models of your architecture

- Use minimal data

- Learn to build basic things

- Use IAM to manage access.

- Validate technology

- Perform necessary benchmarks

Data Migration Phase

Includes:

- Learning about different database storage options available today

- Uploading/Moving your data in Batches

- Analyzing your database/datasets

- Build necessary tools and scripts to migrate data

- Security of your data (Encryption)

AWS has a variety of storage options

Amazon EBS (Elastic Block Storage)

Amazon EC2 Instance Store (Ephemeral Volumes)

Amazon Elastic File System (EFS)

Amazon S3 (Simple Storage Service)

Amazon Glacier

AWS Storage Gateway

Amazon Import/Export Snowball

AWS also has a variety of database options

Amazon EC2 (Self Managed)

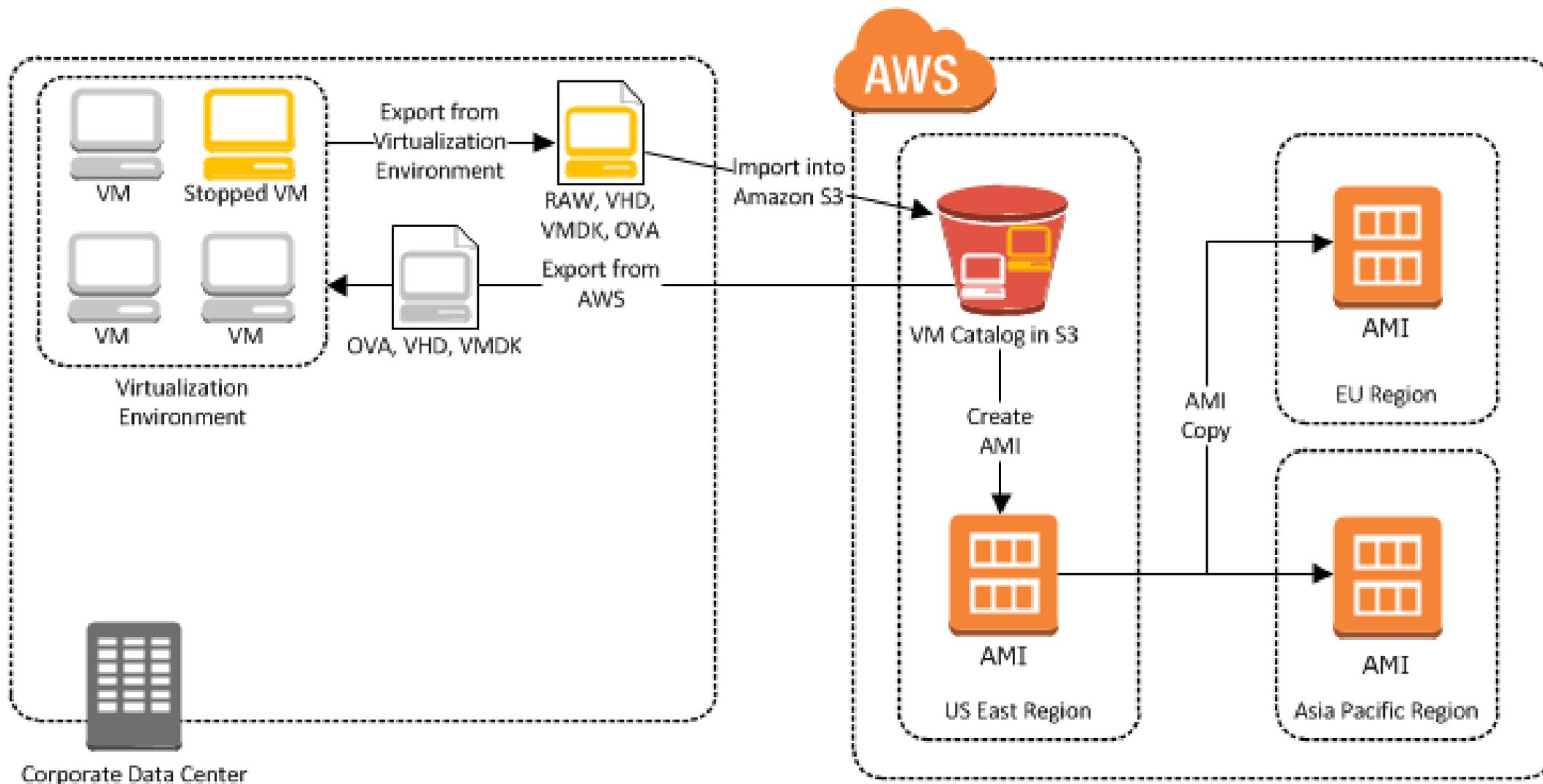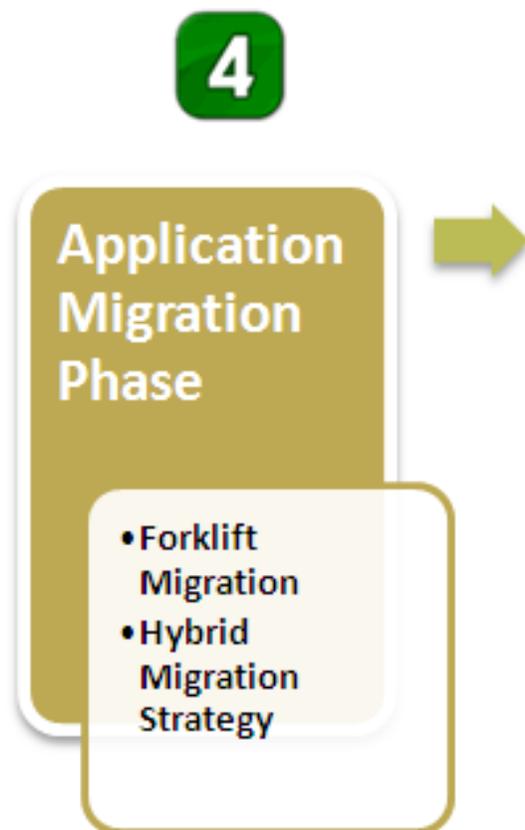Amazon RDS (Relational Database Service)

Amazon DynamoDB

Amazon ElastiCache

Amazon Redshift
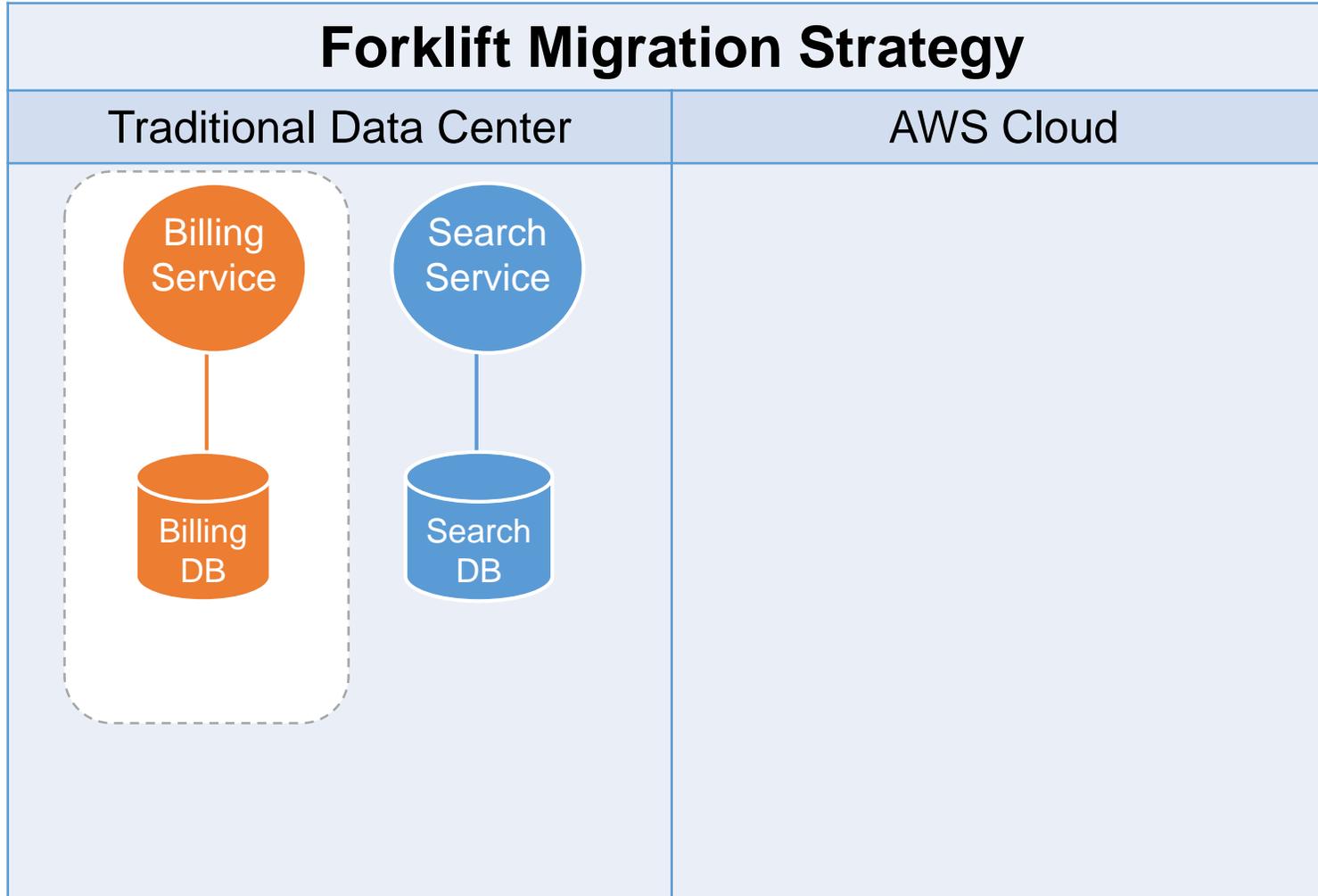
VM Import/Export

Application Migration Phase

Includes:

- Decide a strategy (Forklift/Hybrid)

- Automate your processes by creating AMIs

- Build "cloud-aware" layers of code for tightly coupled apps

Forklift Migration Strategy

Forklift Migration Strategy

Forklift Migration Strategy

Traditional Data Center | AWS Cloud

Billing Service

Search Service

Billing DB

Search DB

Billing Service

Billing DB
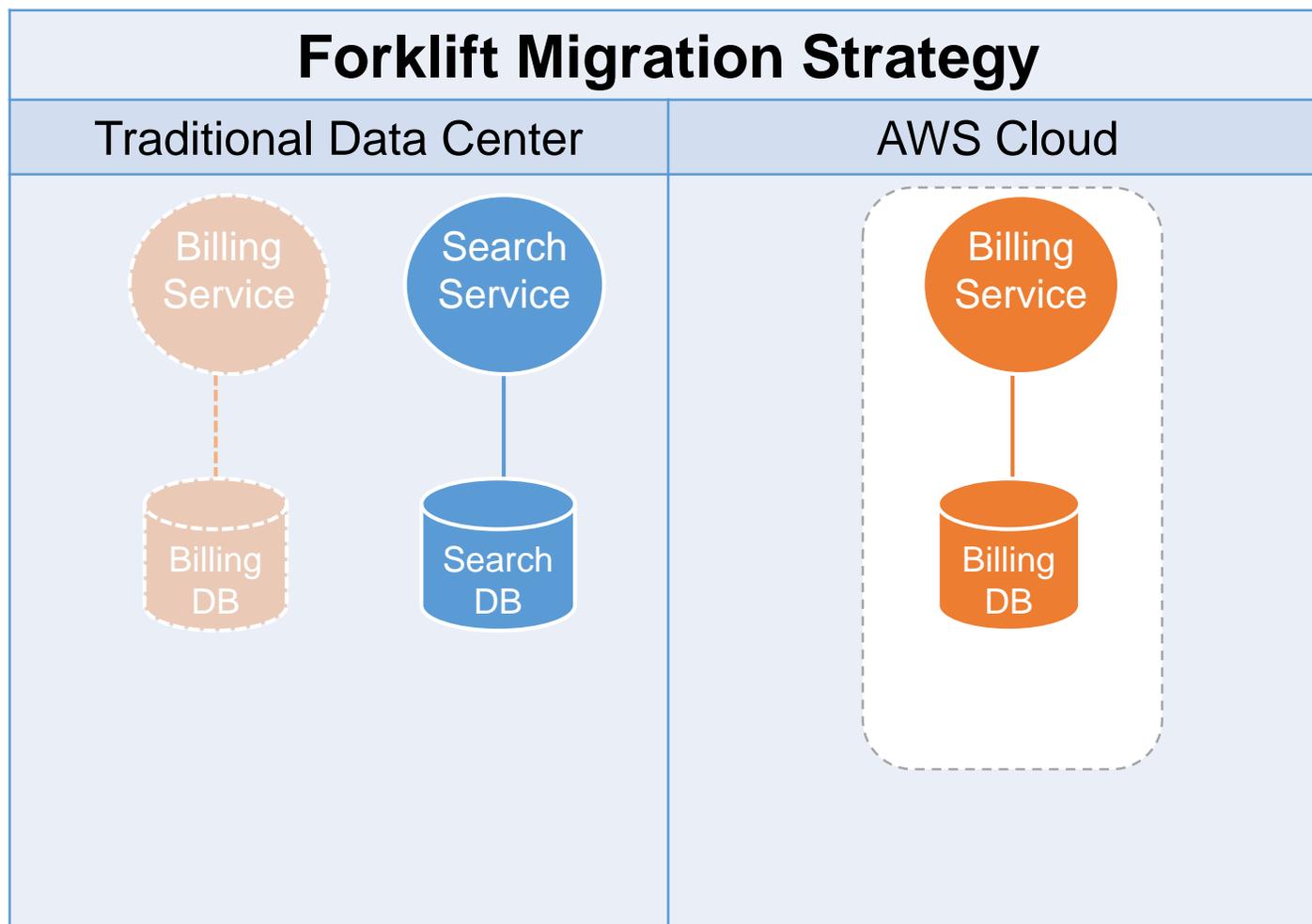
App-DB Combo

Hybrid: You can extend your Data center

Corporate Data Center

Amazon Virtual Private Cloud (VPC)

AWS Hardware VPN

AWS Direct Connect

Expanding Systems Into The Cloud

- **Amazon VPC** lets you provision a private, isolated section of the AWS Cloud with a topology that closely resembles your Network.

- Complete control of Networking including Private IPs, Subnets, ACLs, Route Tables, Gateways.

- Secure segregation of components and network access for internal Users and external customers/partners.

Corporate data centre

Corporate Users

Router & Firewall

VPN Connection

Customers/Partners
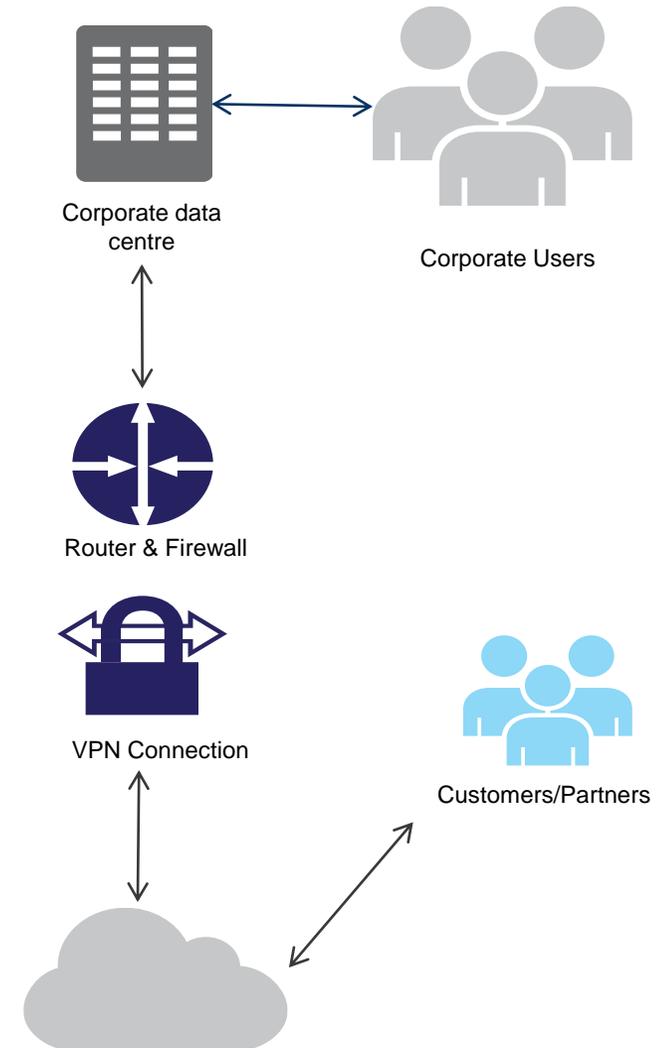
Leverage the Cloud Phase
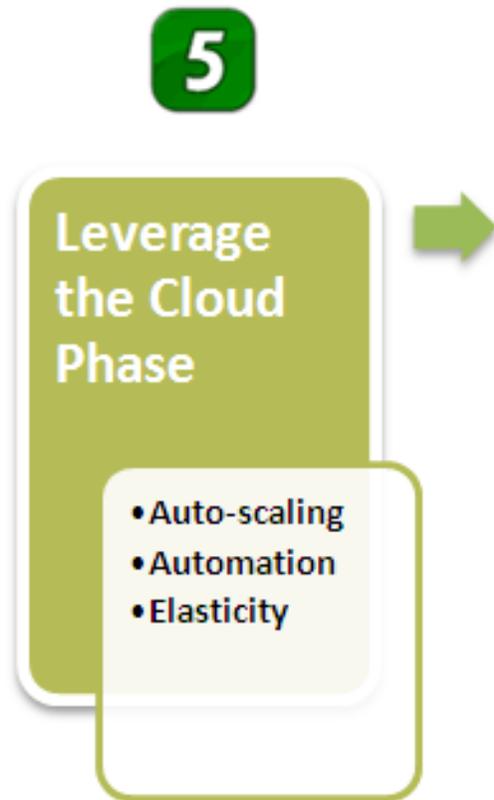
Includes:

- Leveraging other AWS services

- Implementing "Elasticity"

- Automating in-cloud software development and deployment lifecycle

- Increasing high availability by leveraging multiple Availability Zones

- Hardening Security

Leverage on the key tenets

- Elasticity
    - Proactive Cyclic Scaling
    - Proactive Event-based Scaling
    - Auto-scaling based on demand
- Reduce latency with Cloudfront
- Automate
    - APIs
    - Tools
- Leverage Multiple Availability Zones
    - Build resiliency

Harden Security

- Safeguard your AWS credentials
  - Timely rotate your AWS access credentials
  - Leverage multi-factor authentication (MFA)
- Restrict users to AWS resources
  - Use IAM features
  - Security Groups
- Protect your data by encrypting it at-rest (AES) and in-transit (SSL)
- Adopt a recovery strategy
  - Create periodic Amazon EBS snapshots and Amazon RDS backups.
  - Occasionally test your backups before you need them

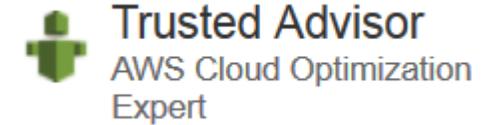# Optimization Phase

Includes:

- Understanding your usage patterns and managing cloud resources more effectively

- Optimizing to increase Performance, improve efficiency and save further costs

- Advanced Monitoring and telemetry

- Ensuring enhanced security

- Refactoring applications as necessary

- Leverage AWS Best Practices

Optimization Phase

- Utilization
- Performance
- Efficiency

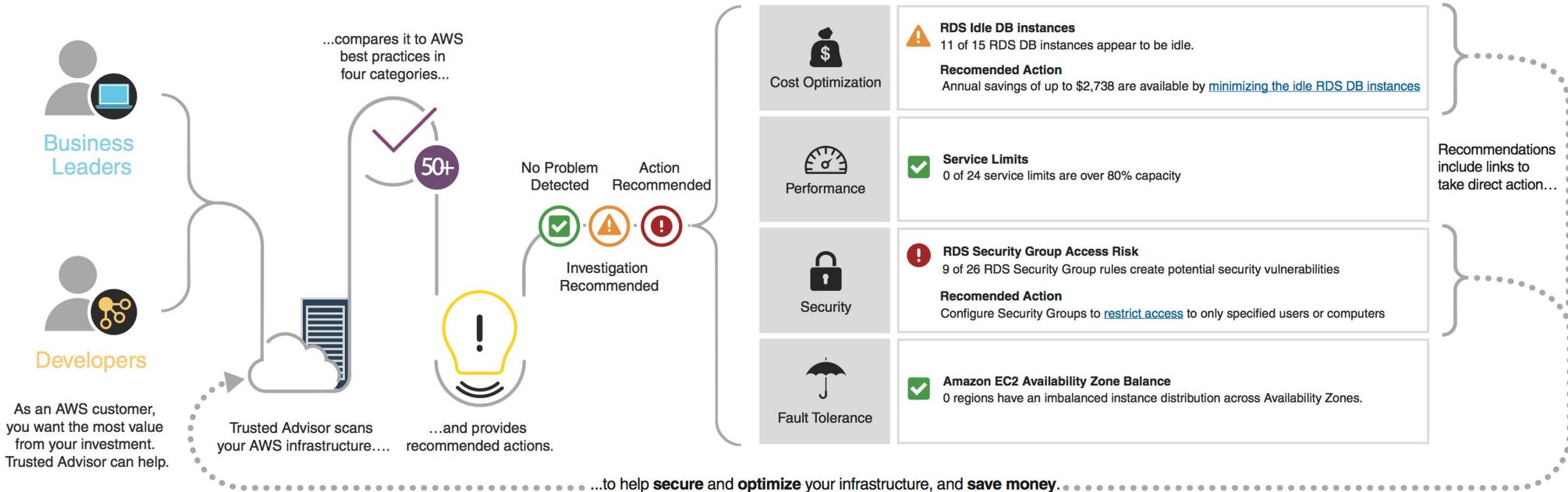# Optimize and get immediate RoI

- Understand your usage patterns and manage your cloud resources more effectively

  - Terminate your under-utilized instances

  - Invest in Reserved Instances

- Improve performance and efficiency

  - Caching at different levels

- Increase visibility of your apps by implementing advanced monitoring and telemetry

  - Create dashboards to monitor your business SLAs

Trusted Advisor

amazon web services

Trusted Advisor
AWS Cloud Optimization Expert

An Introduction to AWS Trusted Advisor

Business Leaders

Developers

As an AWS customer, you want the most value from your investment. Trusted Advisor can help.

...compares it to AWS best practices in four categories...

50+

Trusted Advisor scans your AWS infrastructure....

...and provides recommended actions.

No Problem Detected — Action Recommended

Investigation Recommended

Cost Optimization

⚠️ **RDS Idle DB instances**
11 of 15 RDS DB instances appear to be idle.

Recomended Action
Annual savings of up to $2,738 are available by minimizing the idle RDS DB instances

Performance

✅ **Service Limits**
0 of 24 service limits are over 80% capacity

Security

❗ **RDS Security Group Access Risk**
9 of 26 RDS Security Group rules create potential security vulnerabilities

Recomended Action
Configure Security Groups to restrict access to only specified users or computers

Fault Tolerance

✅ **Amazon EC2 Availability Zone Balance**
0 regions have an imbalanced instance distribution across Availability Zones.

Recommendations include links to take direct action...

...to help **secure** and **optimize** your infrastructure, and **save money**.

Define your Success Criteria

Cloud is not just about saving money!

- Developer Productivity

- Business Agility

- Reduced Time to Market

- Data Center Efficiency

- Redundancy

- Chargeback and Billing

- Eliminates "Heavy lifting"

- Foundation of 21st century Architectures

- Hardware Upgrades

- Less number of 24/7 Personnel

- NDTV Video is a cloud based application for premium video content NDTV's 5 national channels in India.

- In July 2010, NDTV started the migration of all it's video properties to the Amazon Web Services (AWS) Cloud in phases over a period of 6 months.

- Used their learning from this greenfield deployment and gradually migrate several other properties like ndtv.com, NDTV Profit and NDTV Social.

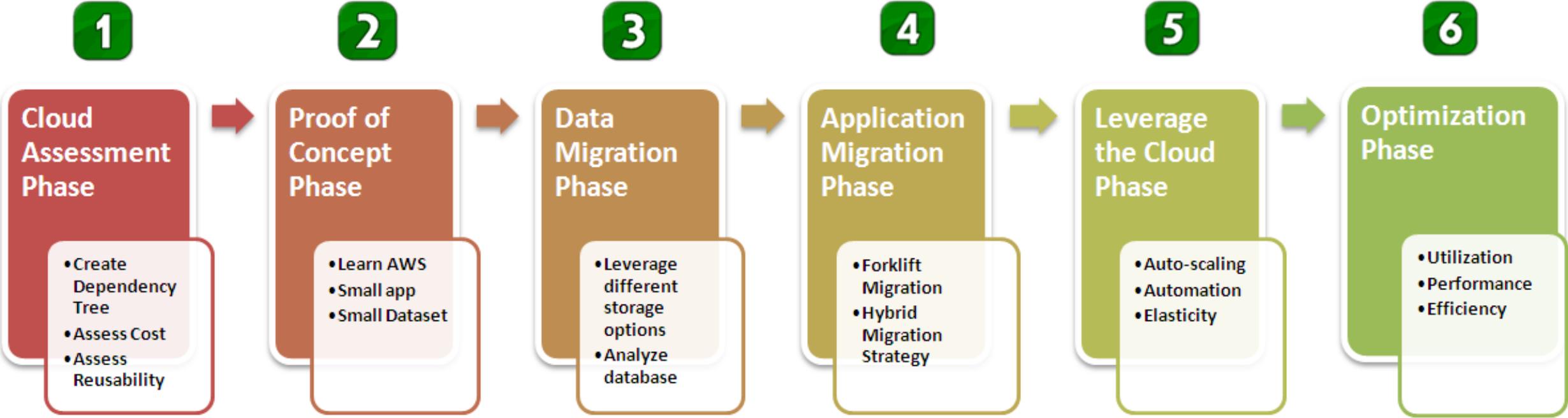- IT agility, faster time to market, elastic capacity and Cost savings were some of the clear benefits.

INMOBI

amazon web services

Use of AWS

- InMobi is the world's largest independent mobile advertising network.

- Migrated their Business Applications in Phases over the past 12 months with careful planning.

- Used Direct Connect and VPC to extend their current Data Centers into AWS.

Business Benefits

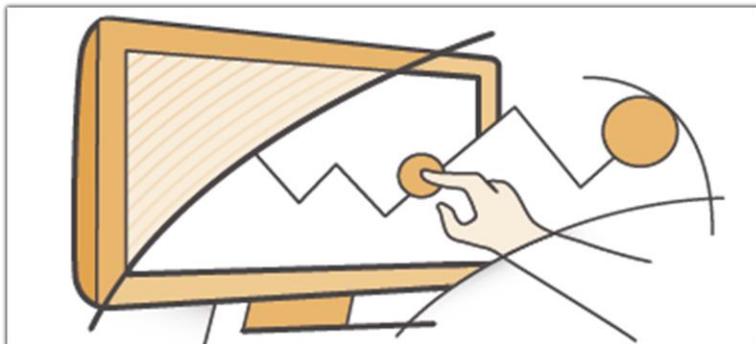- Scalability to support their rapid growth as well as Elasticity to expand and contract the IT Infrastructure as needed.

- Geographical distributed architecture to serve customers across continents.

- Faster Provisioning of Apps.

# Cloud Migration : A Phased-driven Strategy Whitepaper

1 **2** **3** **4** **5** **6**

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- Efficiency

http://aws.amazon.com/whitepapers

Online Labs & Training

Instructor Led Classes

AWS Certification
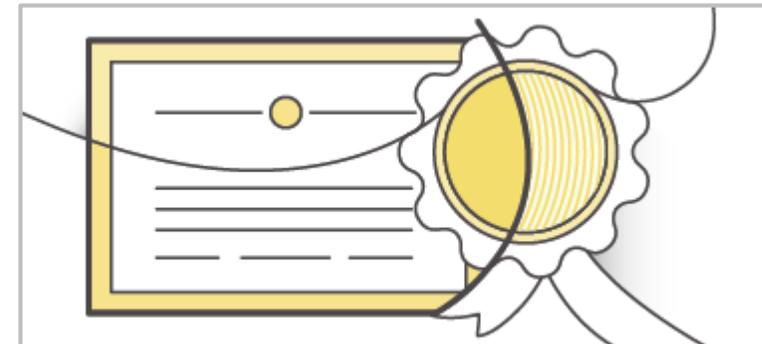
Gain confidence and hands-on experience with AWS.
Watch free Instructional Videos and explore Self-Paced Labs
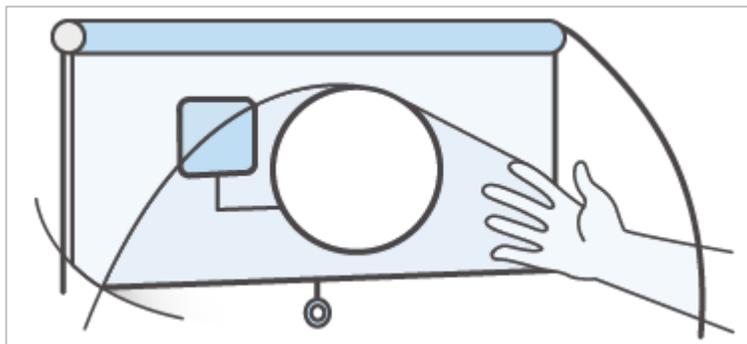
Learn how to design, deploy and operate highly available, cost-effective and secure applications on AWS in courses led by qualified AWS instructors

Validate your technical expertise with AWS and use practice exams to help you prepare for AWS Certification

More info at http://aws.amazon.com/training

Thank You for Attending AWS Innovate

We hope you found it interesting!
Do provide us with your feedback for the session and **complete the feedback form.**
Let us know your thoughts of today's event and how we can improve the event experience for you in the future.
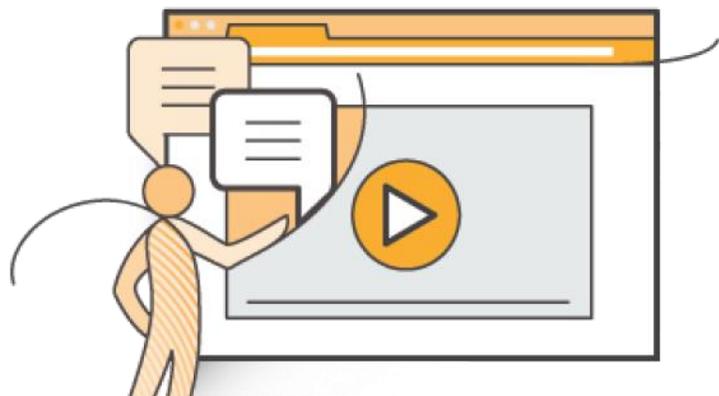
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slideshare.net/AmazonWebServices