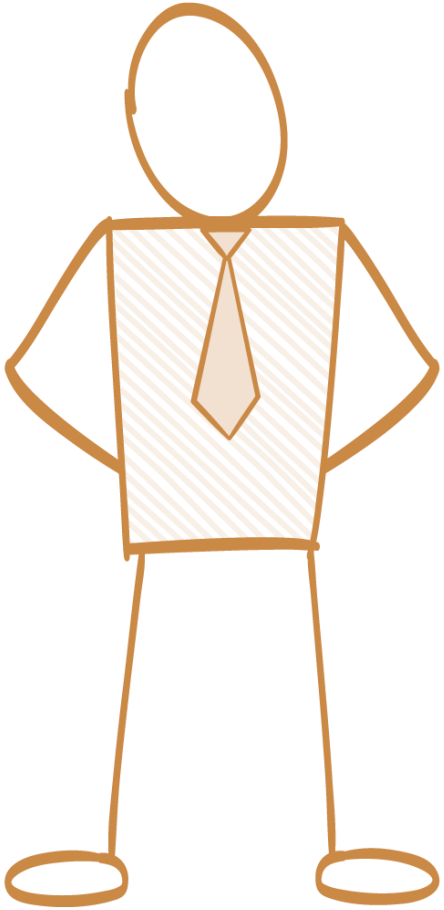

Module 14: Migrating Applications to the AWS Cloud

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Topics

- Defining cloud strategies
- Planning migrations
- Deploying applications
- Optimizing applications

Topics

- Defining cloud strategies
- Planning migrations
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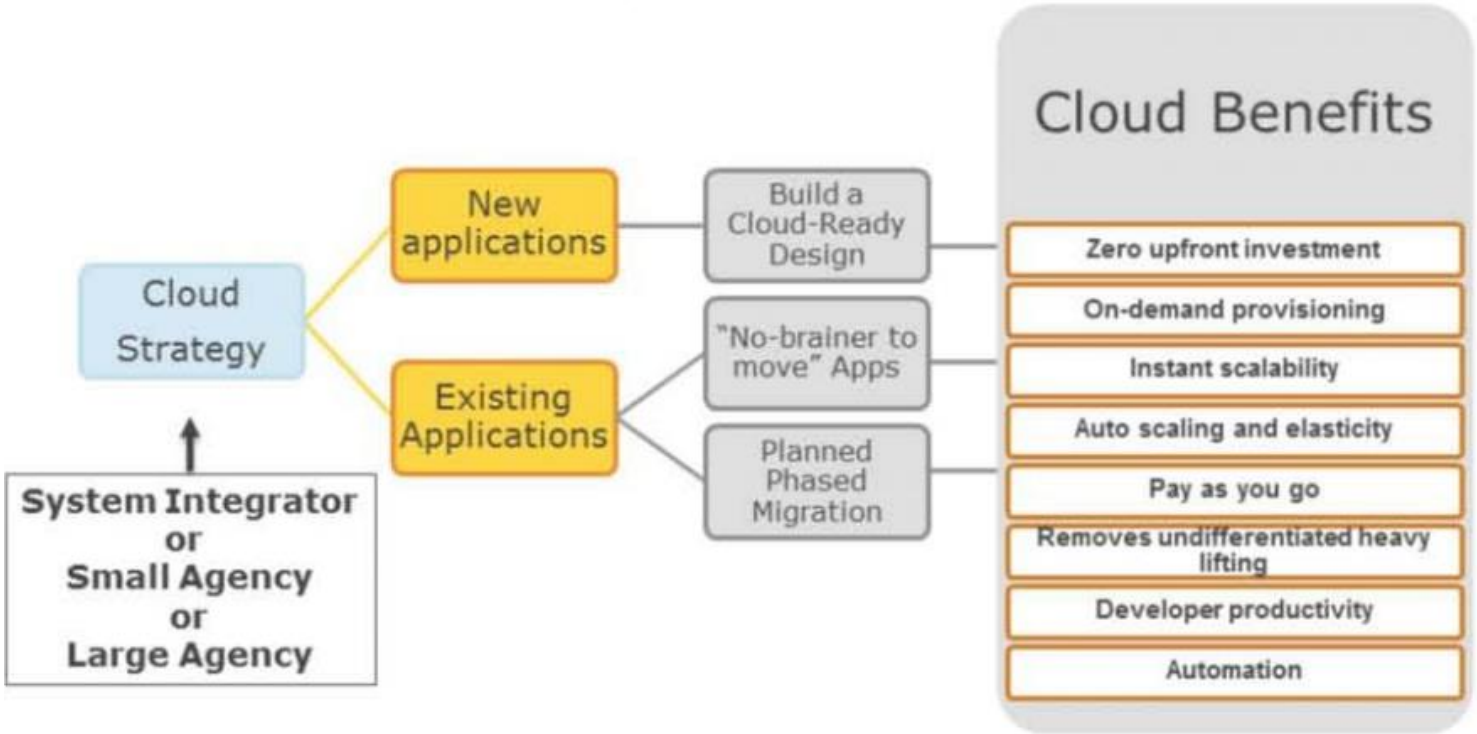
Building a Cloud Strategy



“No-brainer to move” Apps

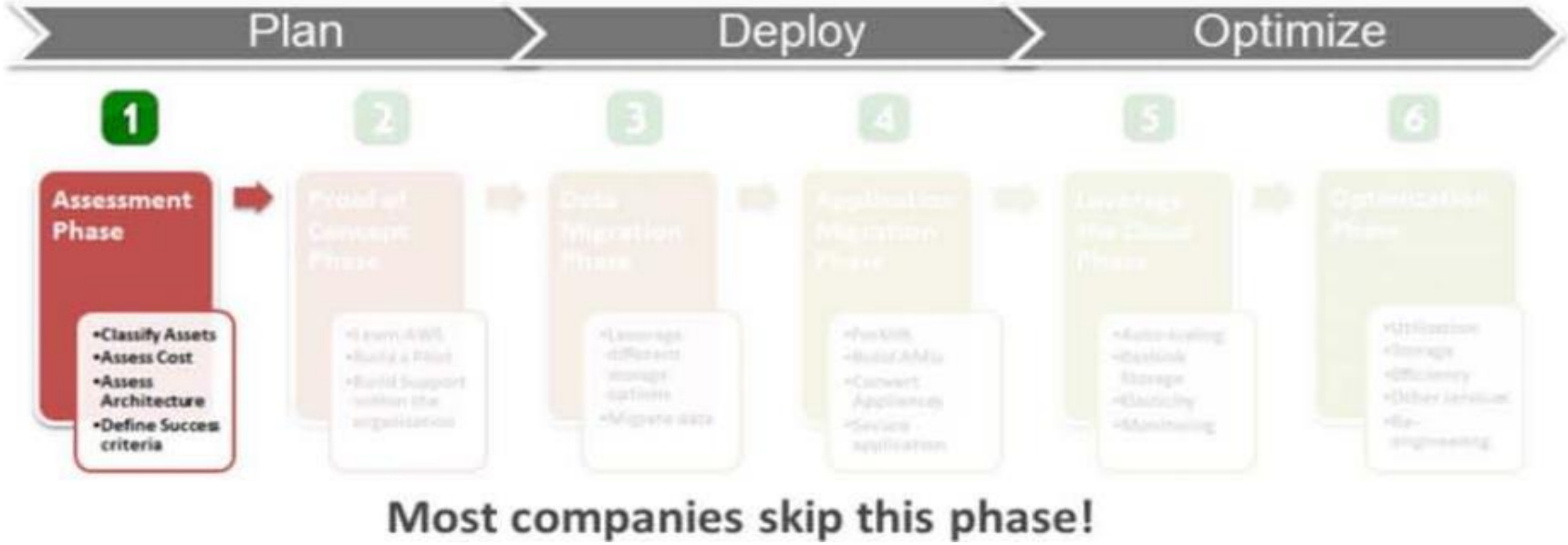
- Dev/Test applications
- Self-contained Web applications
- Social Media Product Marketing Campaigns
- Customer Training Sites
- Video Portals (Transcoding and Hosting)
- Pre-sales Demo Portal
- Software Downloads
- Trial Applications

Topics

- Defining cloud strategies
- Planning migrations
- Deploying applications
- Optimizing applications

Phased Approach to Plan Migrations

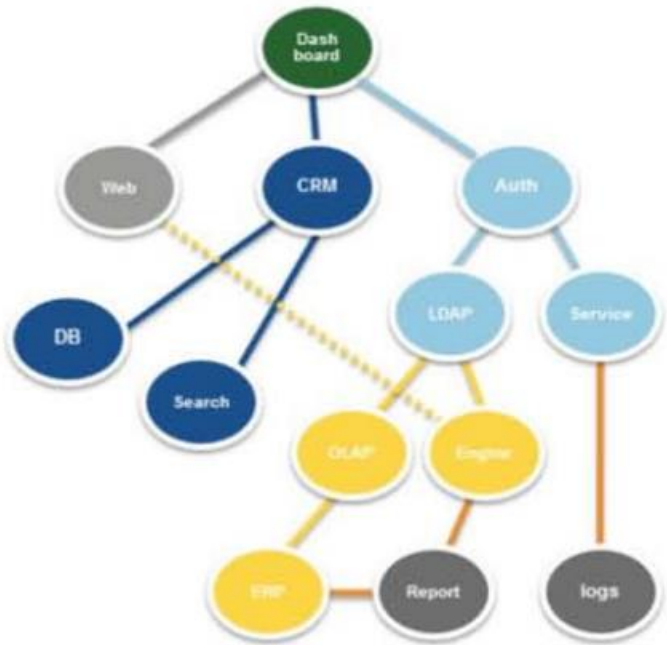
- Goal: Identify which application to move first



Planning Migrations: Assessment phase

- Questions you need to ask:
  - Which business applications should move to the cloud first?
  - Does the cloud provide all of the infrastructure building blocks you require?
  - Can you reuse your existing resource management and configuration tools?
  - What are my legal, governance and compliance requirements?
  - What are your criteria to measure success? How will you measure it?

Classifying your IT Assets



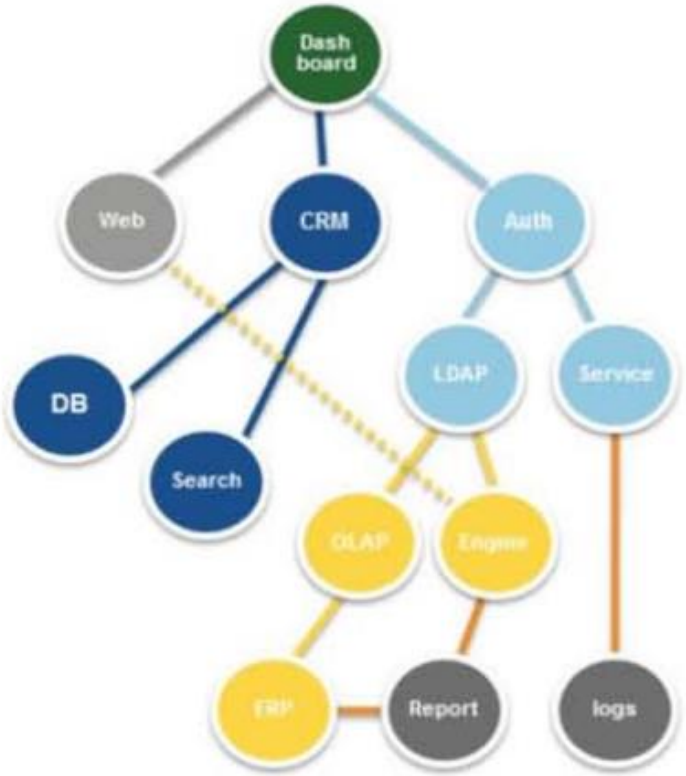
- List all your IT assets
- Identify upward and downward dependencies
- Start classifying your IT assets into different categories:
  - Applications with Classified, Sensitive, or Public data sets
  - Applications with low, medium and high compliance requirements
  - Applications that are internal-only, partner-only or customer-facing
  - Applications with low, medium and high coupling
  - Applications with strict, relaxed licensing

Stack rank your IT assets; select the low-hanging fruits first

- Search for under-utilized IT assets
- Applications that have 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

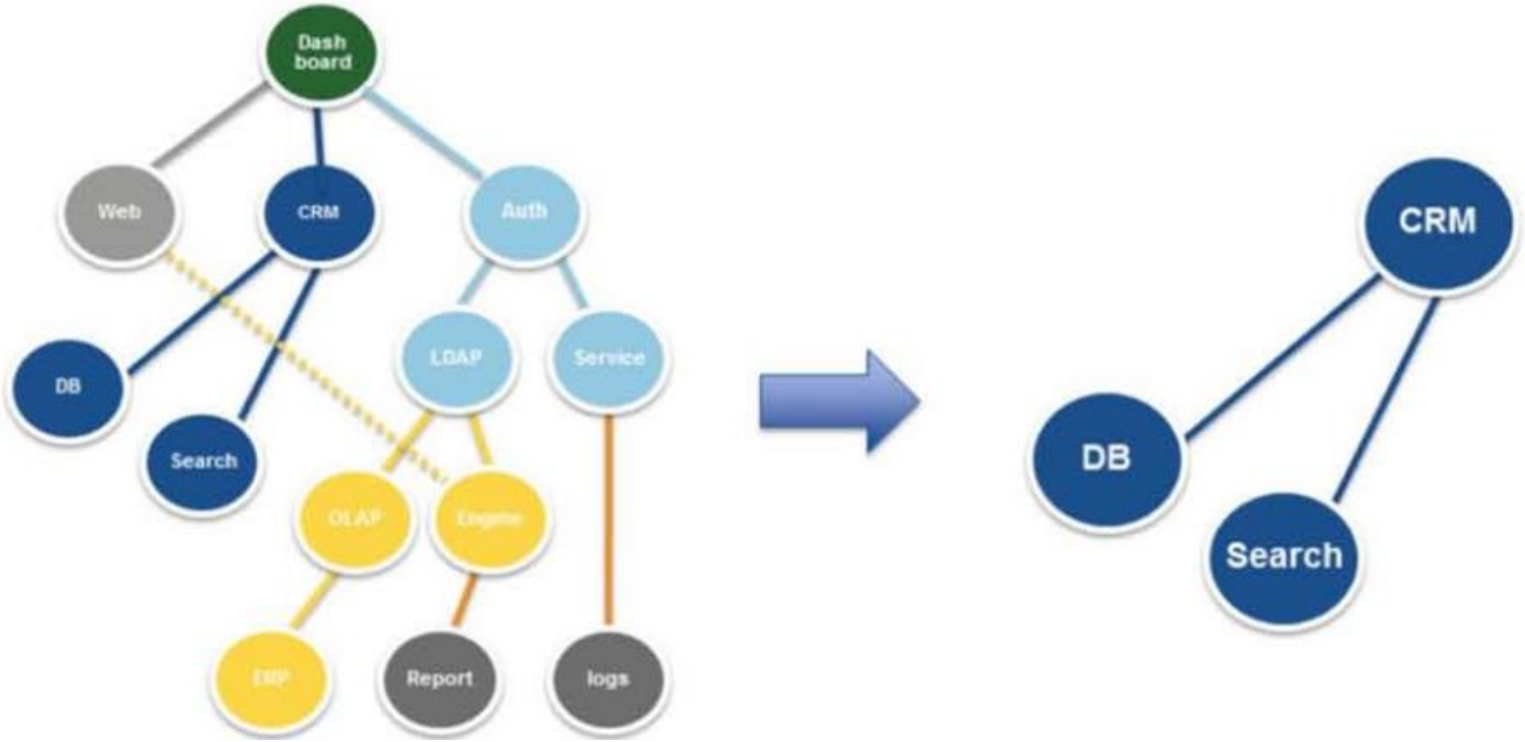
Rank	Asset Name	
1	Product Marketing Site	Today
2	Internal Batch Process	2 days
3	CRM System	5 days
4	Log Processing apps	1 week
5	ERP System	Phased Migration

Pick the Low-hanging fruit



- Example
  - Web Applications
  - Batch Processing systems
  - Content Management Systems
  - Digital Asset Management Systems
  - Log Processing systems
  - Collaborative Tools
  - Big Data Analytics Platforms

Move Application by Application



Manage Costs

Pricing Model	One-time Upfront			Monthly		
	AWS	Co-lo	On-Site	AWS	Co-lo	On-Site
Server Hardware	0	$$$	$$	$$	0	0
Network Hardware	0	$$	$$	0	0	0
Hardware Maintenance	0	$$	$$	0	0	0
Software OS	0	$$	$$	$	0	0
Power and Cooling and Data Center Efficiency	0	0	$$	0	0	$
Data Center/co-lo Space	0	$$	$$	0	0	0
Personnel	0	$$	$$	$	$$	$$$
Storage and Redundancy	0	$$	$$	$	0	0
Bandwidth	$	$$	$	$$	$	$
Resource Management Software	0	0	0	$$	$	0
Total						

Cost to run in AWS?

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Flexible Licensing Options Available Today

- Bring Your Own License(BYOL)
- Use a utility style pricing model with a support package
- Use ISV Cloud Service

Define your Success Criteria

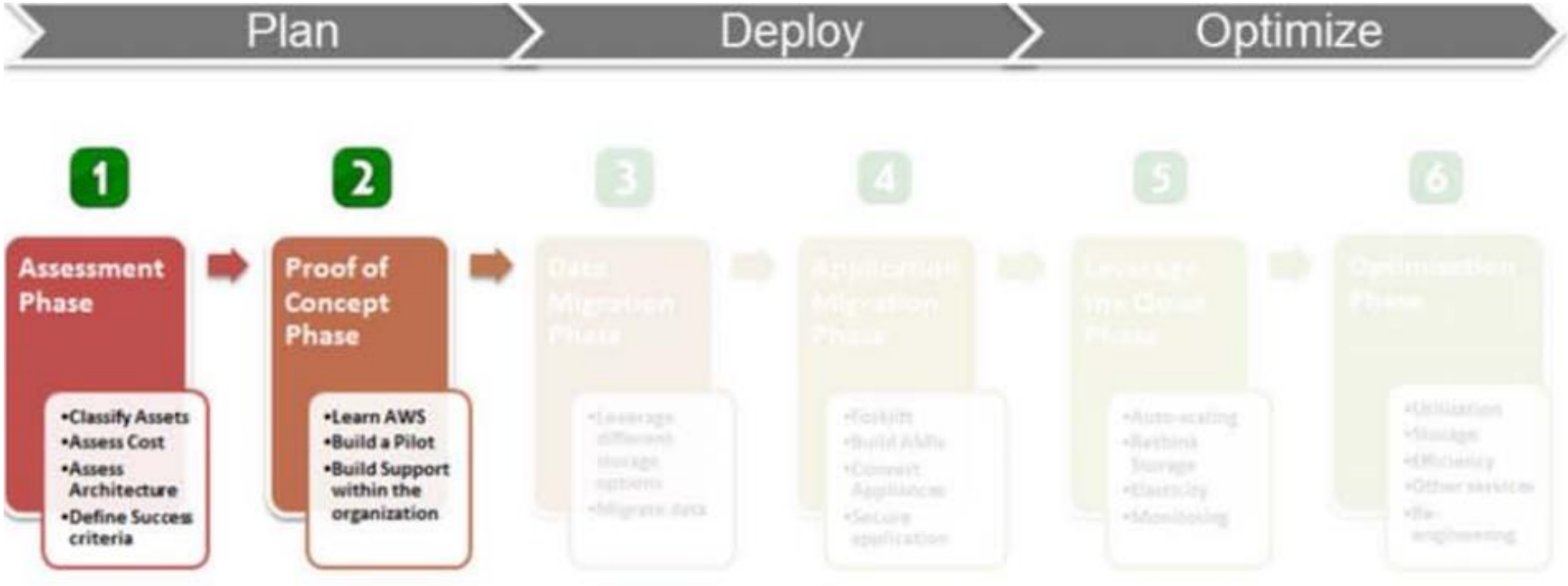
Cloud is no just about saving money

- Developer Productivity
- Business Agility
- Reduced Time to Market
- Data center efficiency
- Redundancy
- Chargeback and Billing
- Eliminates “Heavy lifting”
- Foundation of 21st century architectures
- Reduced waste/recycle
- Hardware upgrades
- Less number of 24/7 Personnel

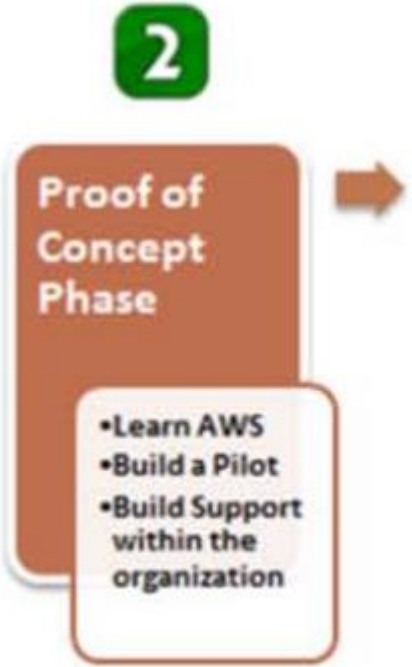
Define your Success Criteria and measure it

Success Criteria Examples	Old	New
Cost (CapEx)	$1M	$300K
Cost (OpEx)	$20K/Year	$10K/Year
Hardware procurement efficiency	10 machines in 7 months	100 machines in 5 minutes
Time to market	9 months	1 month
Reliability	unknown	Redundant
Security	5 products launched in 1 year	15 products launched
Flexibility and Productivity	Fixed Stack	Any Stack
New opportunities	10 projects backlog	0 backlog, 5 new projects identified

Planning Migrations



Planning Migrations: Proof of Concept



- Questions you need to ask:
  - Will I learn different aspects of the AWS cloud by building this proof of concept?
  - How much effort is required to port a small dataset and small app?
  - Will this proof of concept build support and create awareness within the organization?
  - What is the best way to capture all my lessons learned? A whitepaper?
  - Which applications can I move immediately after this proof of concept?

Invest in Proof of Concept Early

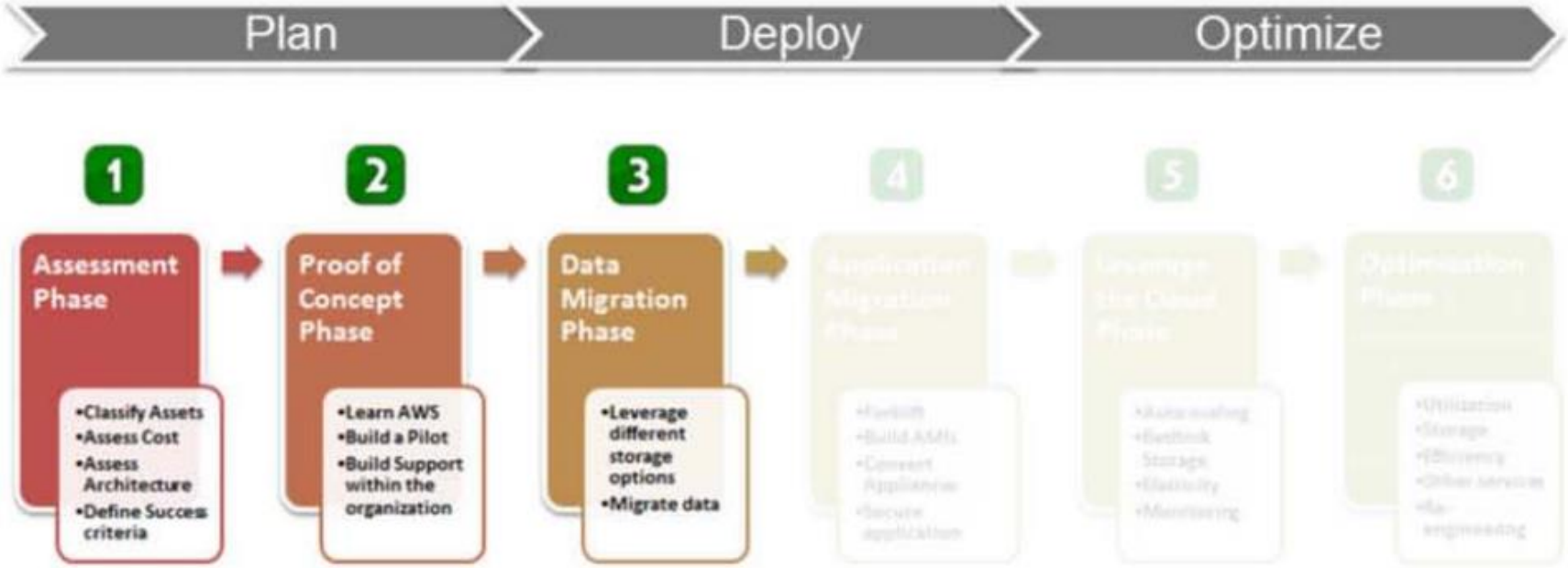
Proof of concept will answer tons of questions quickly

- Get your feet wet with Amazon Web Services
  - 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 and set expectations

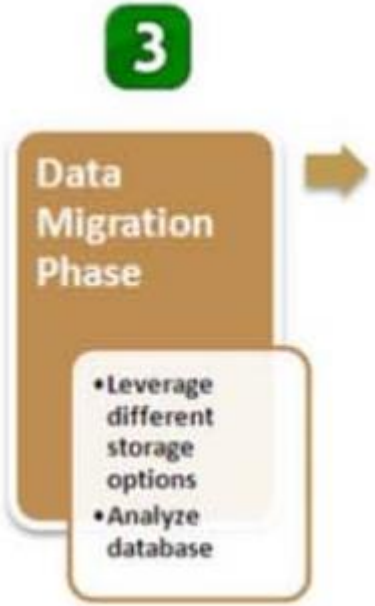
Topics

- Defining cloud strategies
- Planning migrations
- Deploying applications
- Optimizing applications

Planning Migrations: Deploy



Planning Migrations: Deploy Applications



- Includes:
  - Learning about different database storage options available today
  - Upload/Moving your data in Batches
  - Analyzing your database/datasets
  - Build necessary tools and scripts to migrate data
  - Security of your data (Encryption)

Deploy Applications

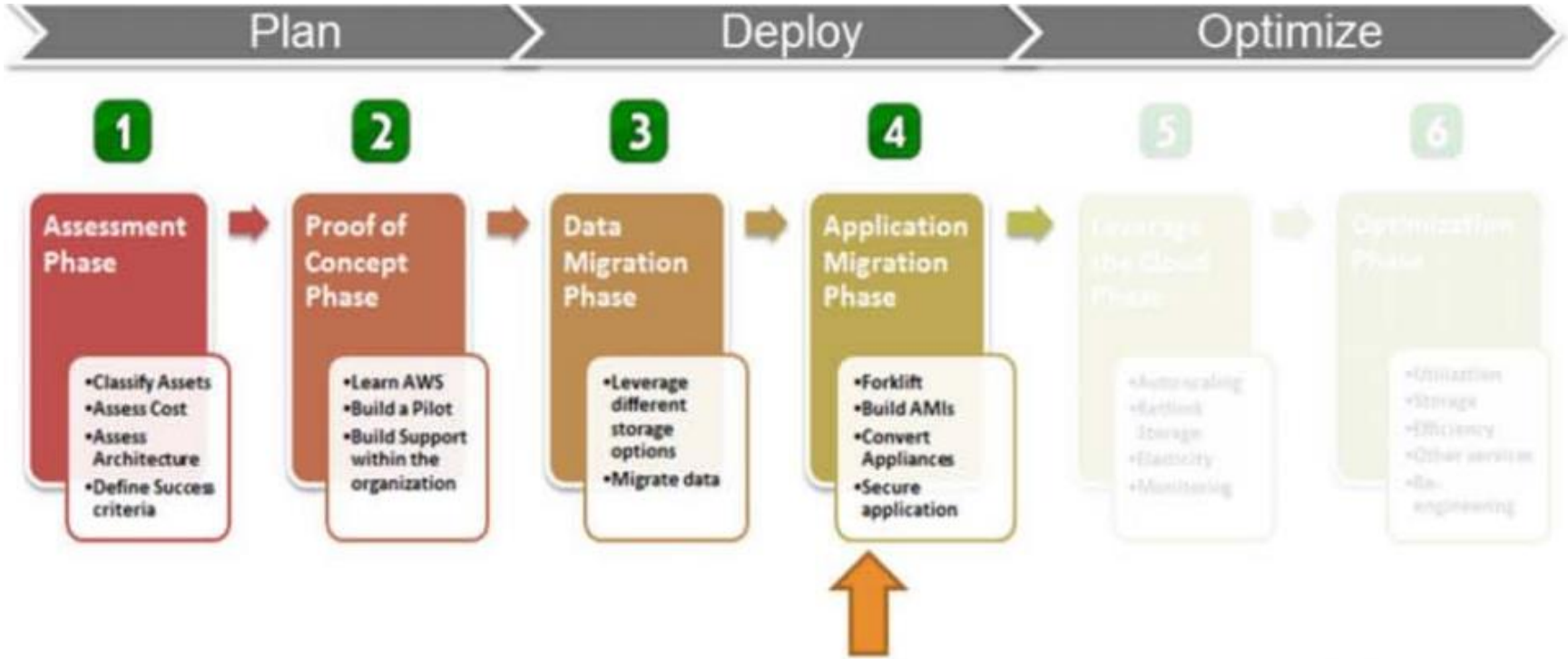
Deploying Applications

- Cutting Over Your Master Data Store

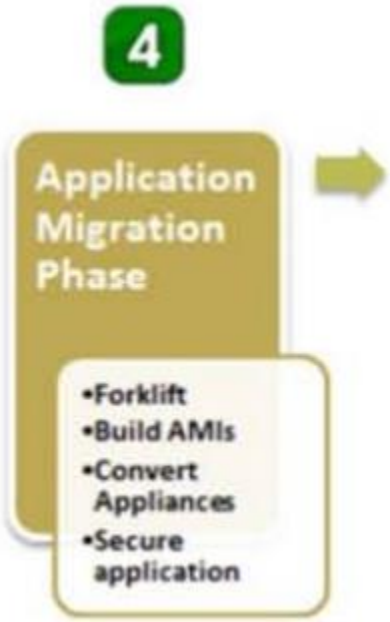
Deploying Applications

	Amazon S3 + CloudFront	Amazon EC2 Ephemeral Store	Amazon EBS	Amazon DynamoDB	Amazon RDS
Ideal for	Storing large write-once, read-many types of objects, Static Content Distribution	Storing local caches of state that can be easily re-built when needed	Off-instance persistent storage for any kind of data including File systems	Query-able light-weight attribute data	Storing and querying structured relational and referential data
Ideal examples	Media files, audio, video, images, Backups, archives, versioning	Config data, scratch files, TempDB	Clusters, boot data, Log or data of commercial RDBMS like Oracle, DB2	Querying, Indexing Mapping, tagging, click-stream logs, metadata, Configuration, catalogs	Web apps, Complex transactional systems, inventory management and order fulfillment systems
Not recommended for	Querying, Searching	Storing database logs or backups, customer data	Static data, Web-facing content, key-value data	Complex joins or transactions, BLOBs Relational, Typed data	Clusters
Not recommended examples	Database, File Systems	Shared drives, Sensitive data	Content Distribution	OLTP, DW cube rollups	Clustered DB, Simple lookups

Planning Migrations: Application Migration

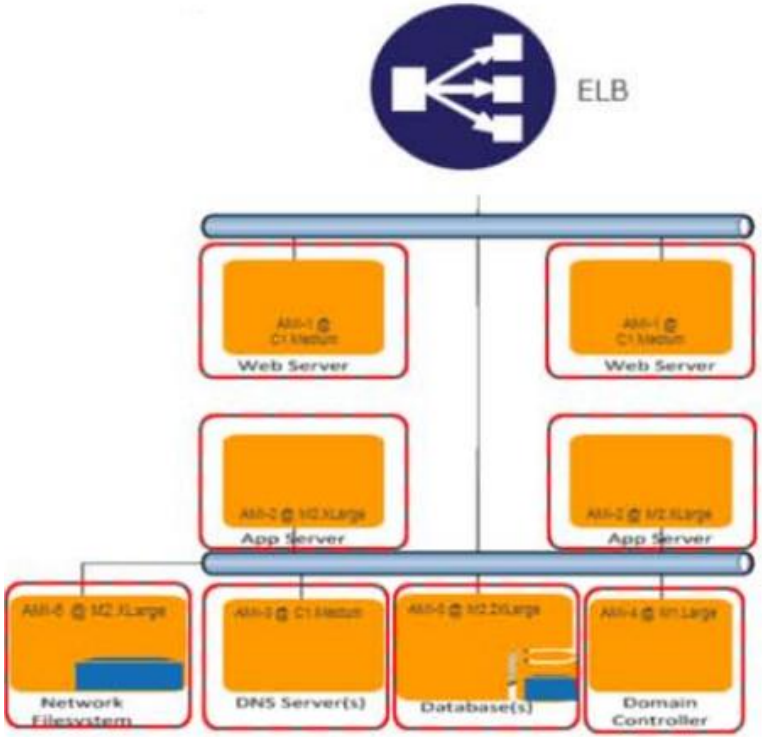


Planning Migrations: Application Migration



- Includes-Forklift:
  - Match your HW resources to the cloud
  - Build AMIs
  - Convert to virtual appliances
  - Deploy supporting components(SAN, NAS, Domain controllers…..)
  - Secure your application
  - Reuse existing management and monitoring tools or use cloud tools

Forklift Steps



Forklift steps:

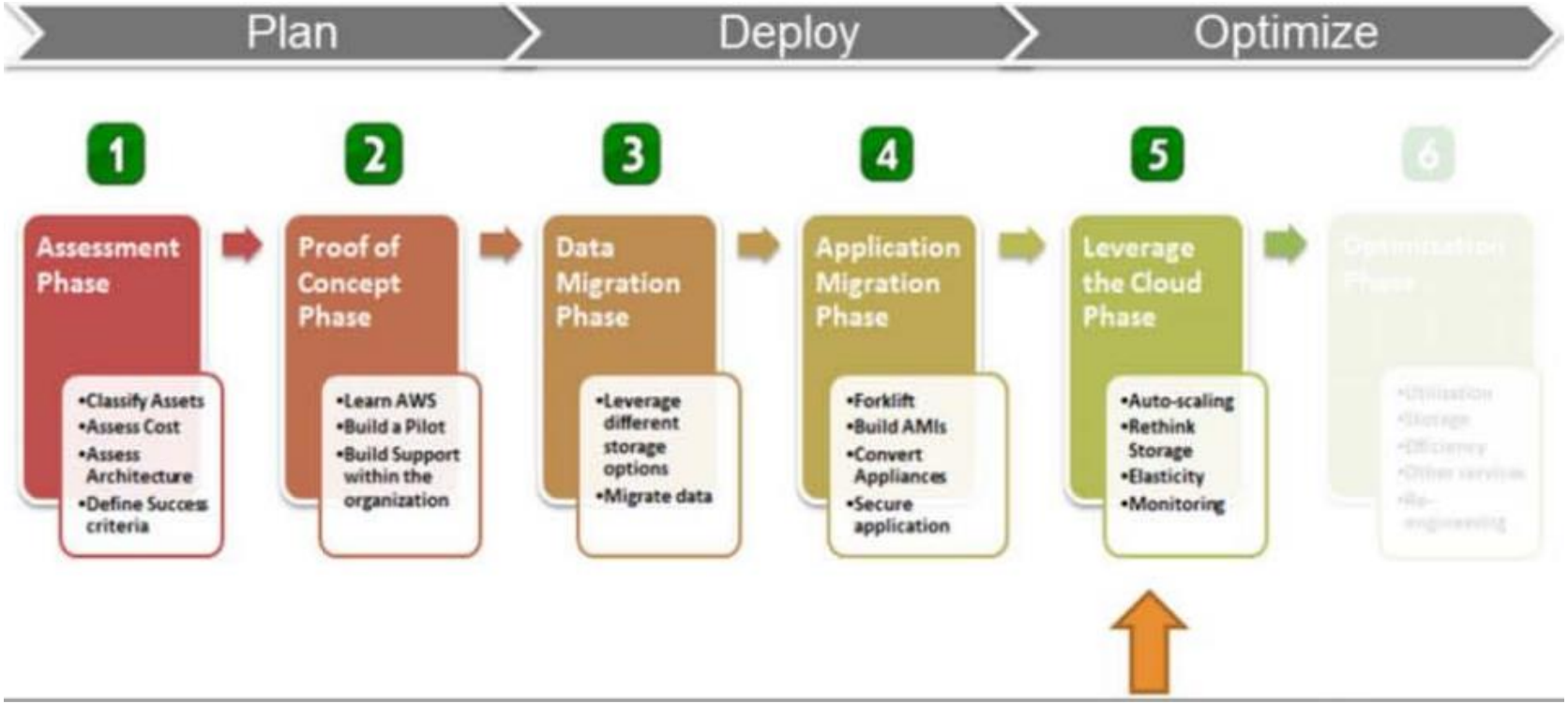
Match resources and build AMIs
- Thinks about application needs not server specs
- Build out custom AMI for application roles

Convert appliances:
- Map appliances to AWS services or virtual appliance AMIs

Deploy supporting components:
- SAN replacements
- DNS
- Domain controllers

Secure the application components:
- Use layered security groups to replicate firewalls

Planning Migrations: Leveraging the Cloud



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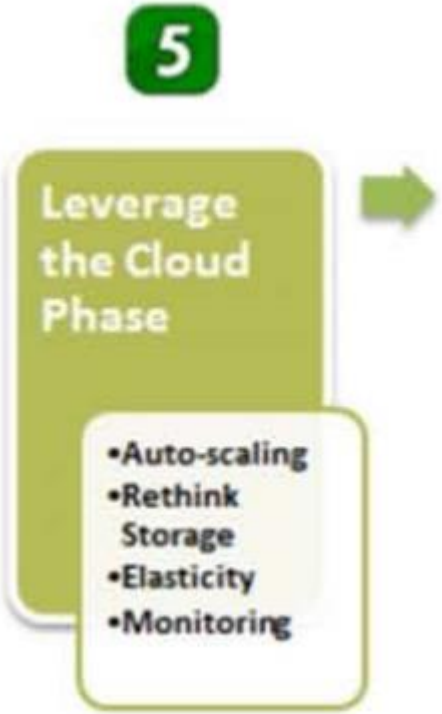
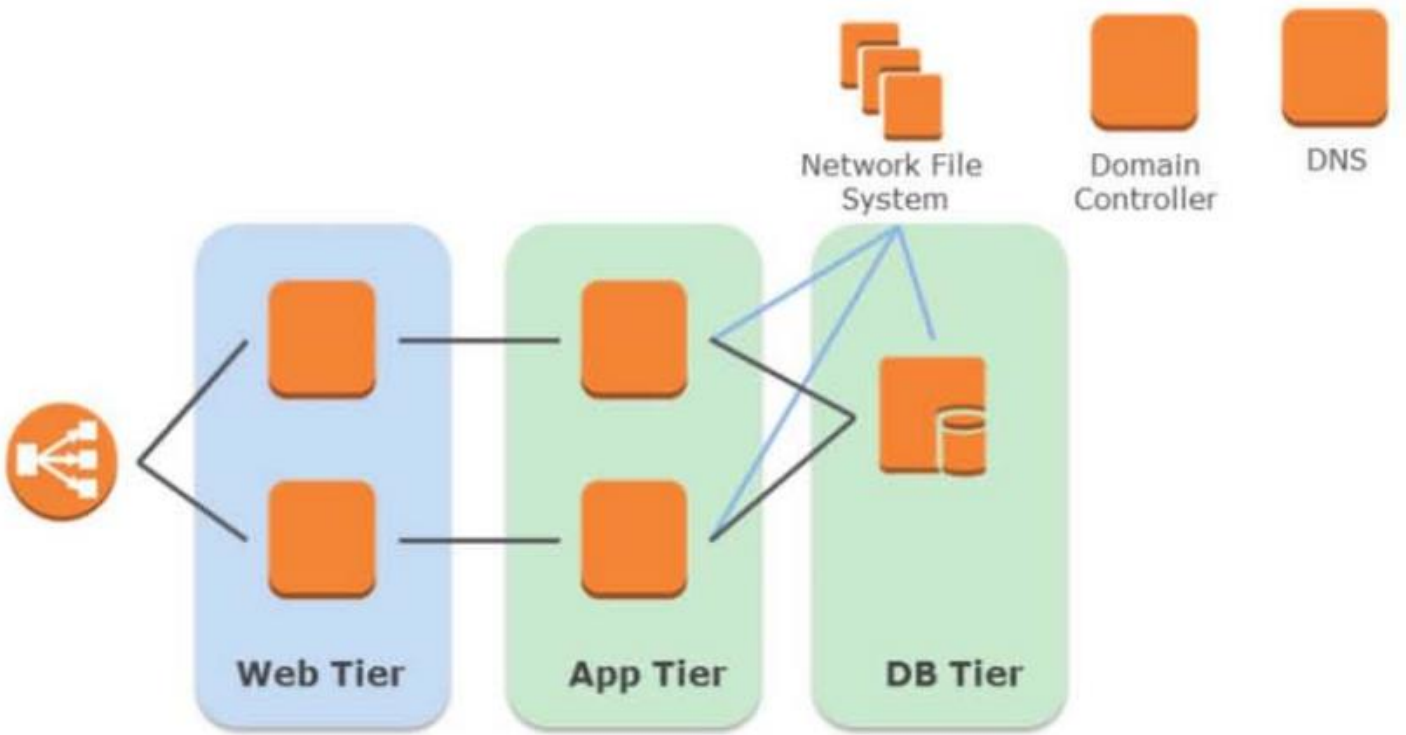
Planning Migrations: Leveraging the Cloud

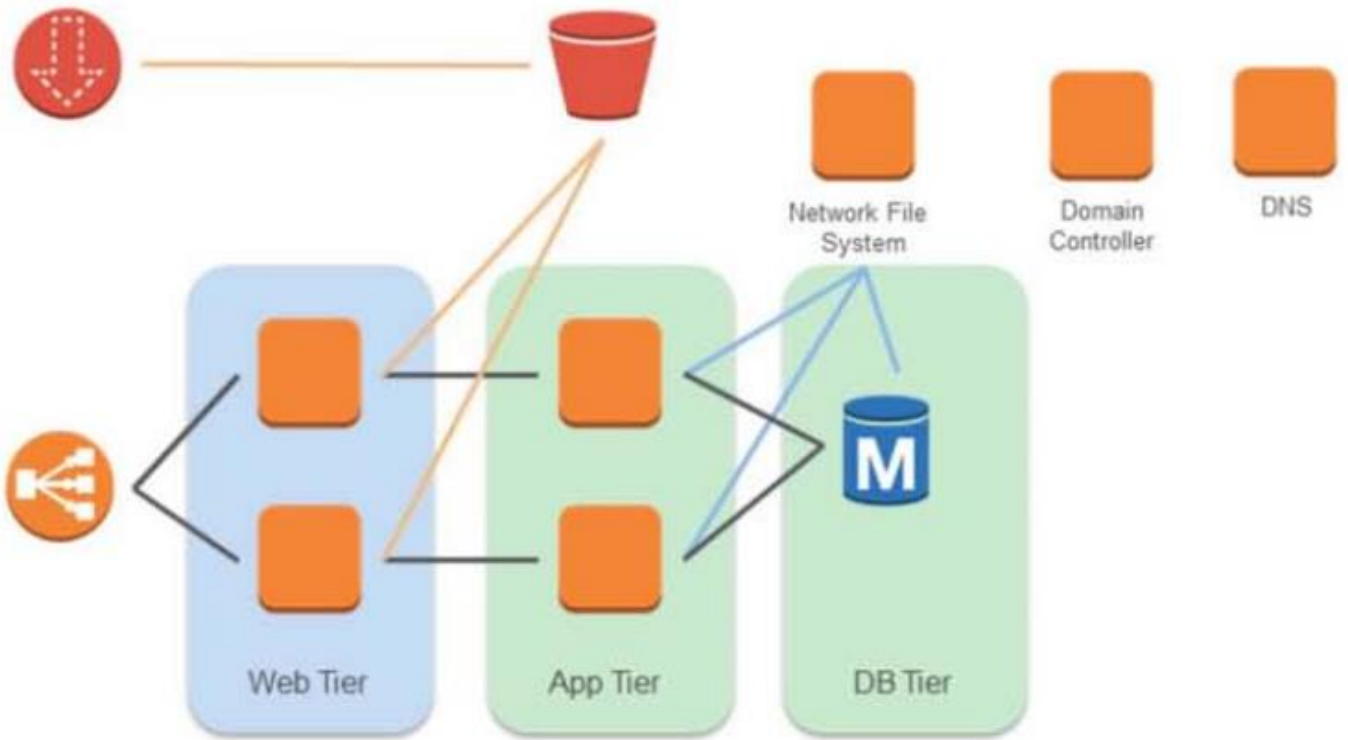


- Embrace and Implement Elasticity
- Bootstrap AMIs
- Automate processes
- Leverage Auto Scaling
- Leverage new storage options by AWS
- Harden Security (IAM)

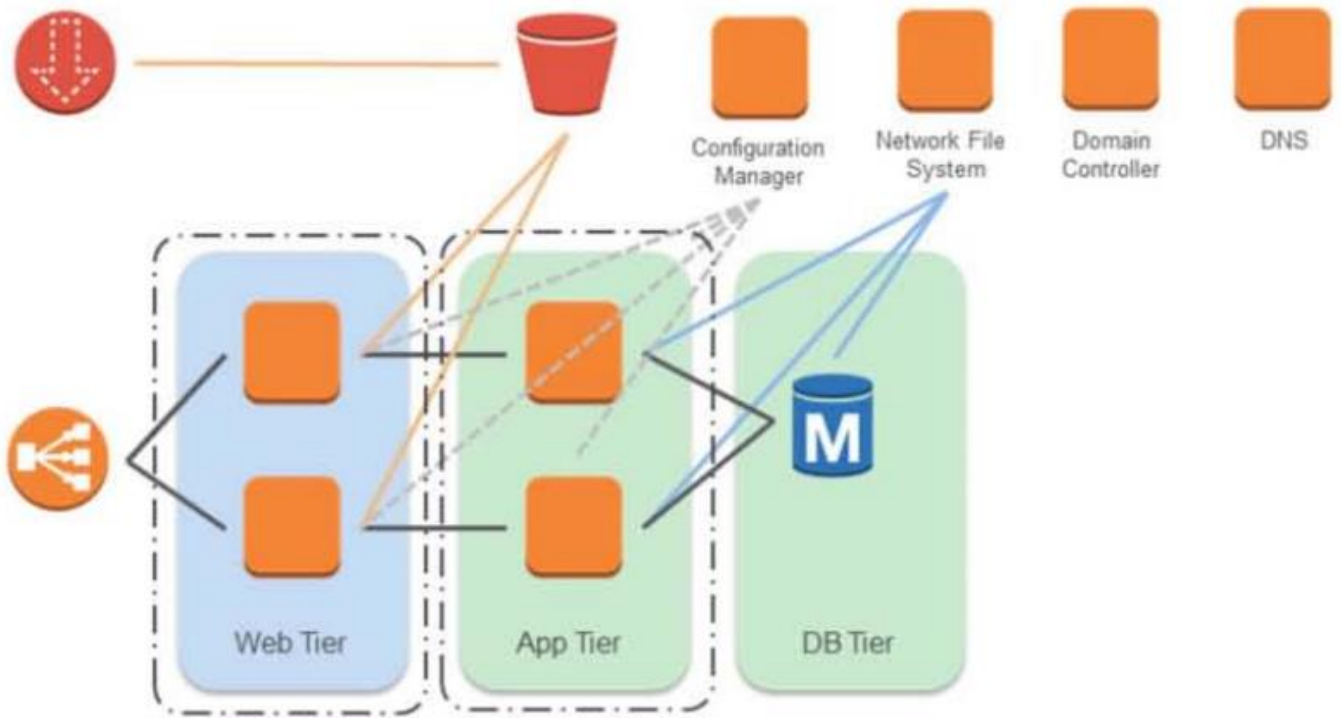
Planning Migrations: Leveraging the Cloud



Planning Migrations: Leveraging the Cloud



Planning Migrations: Leveraging the Cloud



Accelerate the cloud adoption within your organization

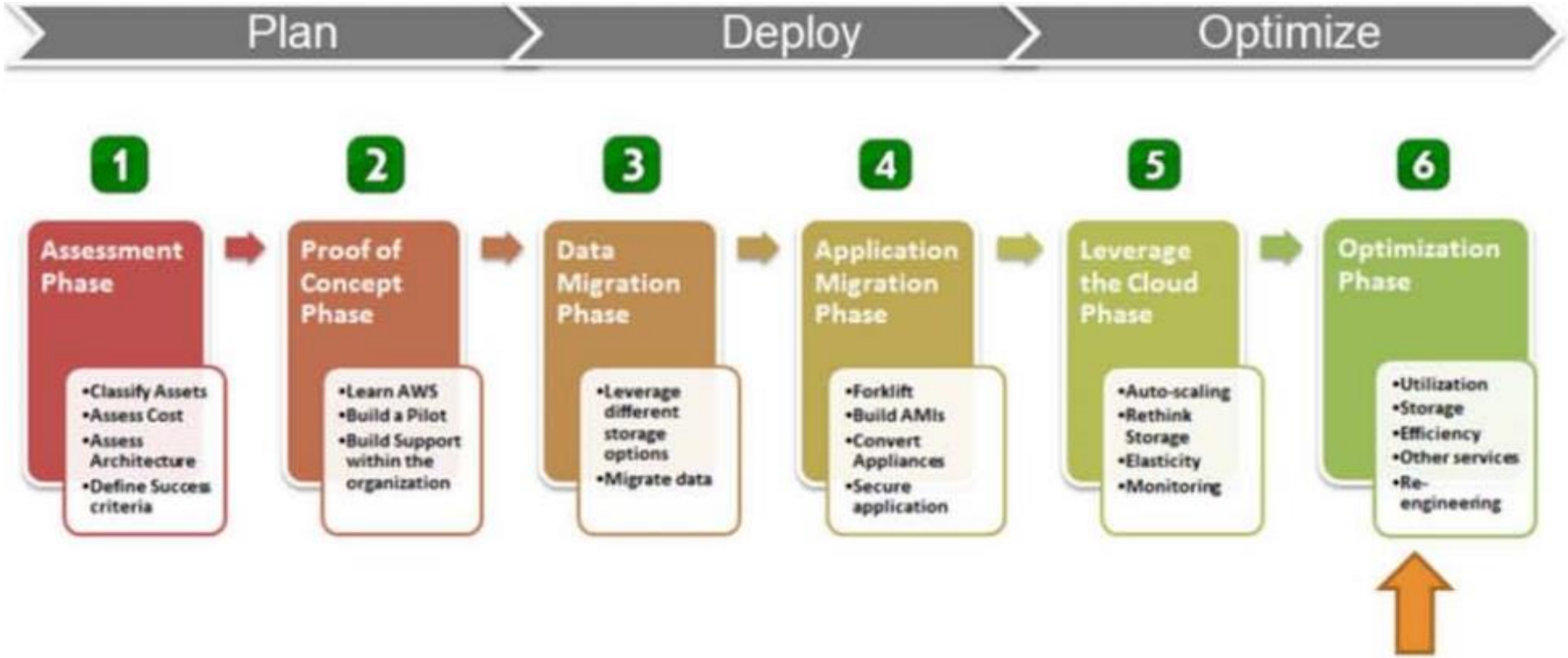
Be the Cloud Champion within your company or team

- Be a Cloud Advocate
- Starting a weekly sync meeting
- Share Lessons Learned (Brownbags)
- Document Best Practices
- Reuse tools, scripts, How-Tos
- Start Cloud Computing practices or Cloud Computing Center Of Excellence
- Educate and Evangelize

Topics

- Defining cloud strategies
- Planning migrations
- Deploying applications
- Optimizing applications

Planning Migrations: Optimize applications



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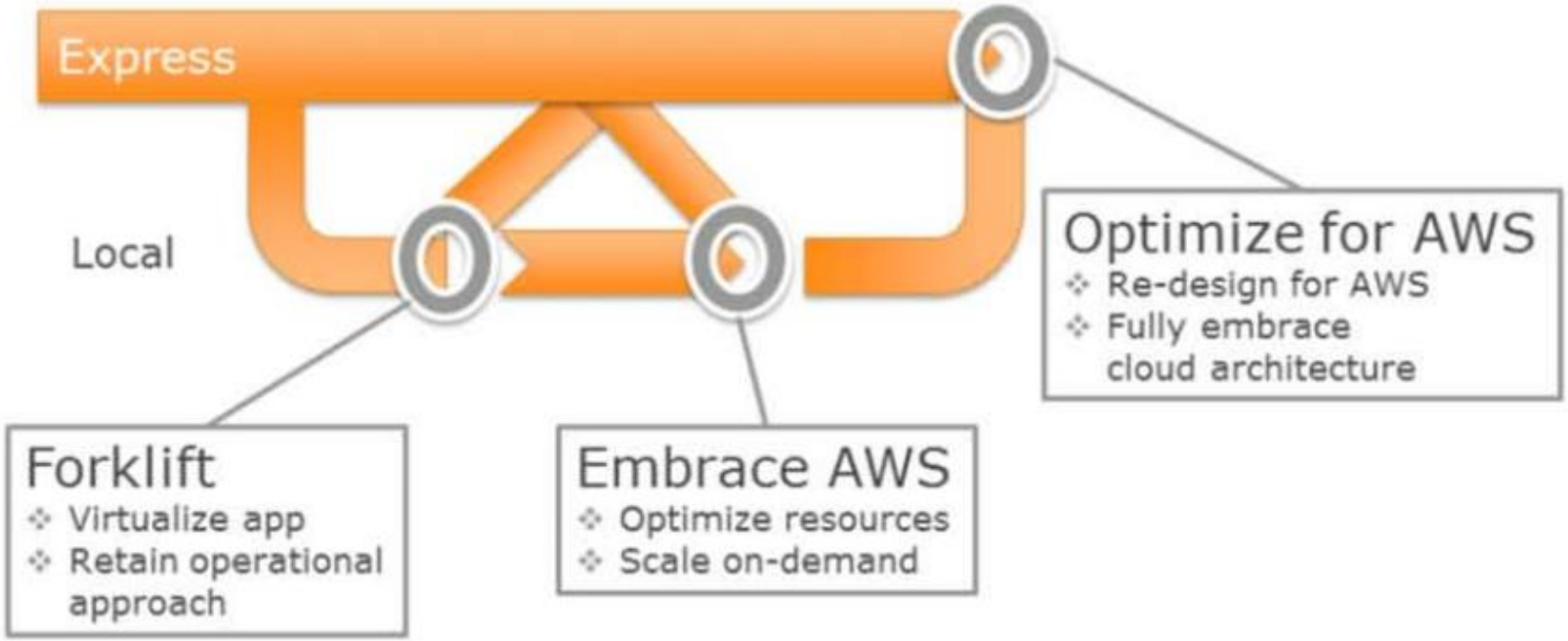
Planning Migrations: Optimize applications

- Improve efficiency:
  - Re-rethink Storage
  - Parallel processing
  - Optimize for cost
  - Optimize for availability
  - Leverage scalable on-demand services like SNS, SQS

Optimize applications

- Re-re-think storage
  - Break up datasets across storage solutions based on best fit and scalability
- Parallelize processing
  - Spread loads across multiple resources
  - Decouple components for parallel processing
- Use spot instances where possible to reduce costs
- Embrace scalable, on-demand services
  - Scale out systems with minimal effort
  - Route 53
  - SES, SQS, SNS

Finding your first stop……



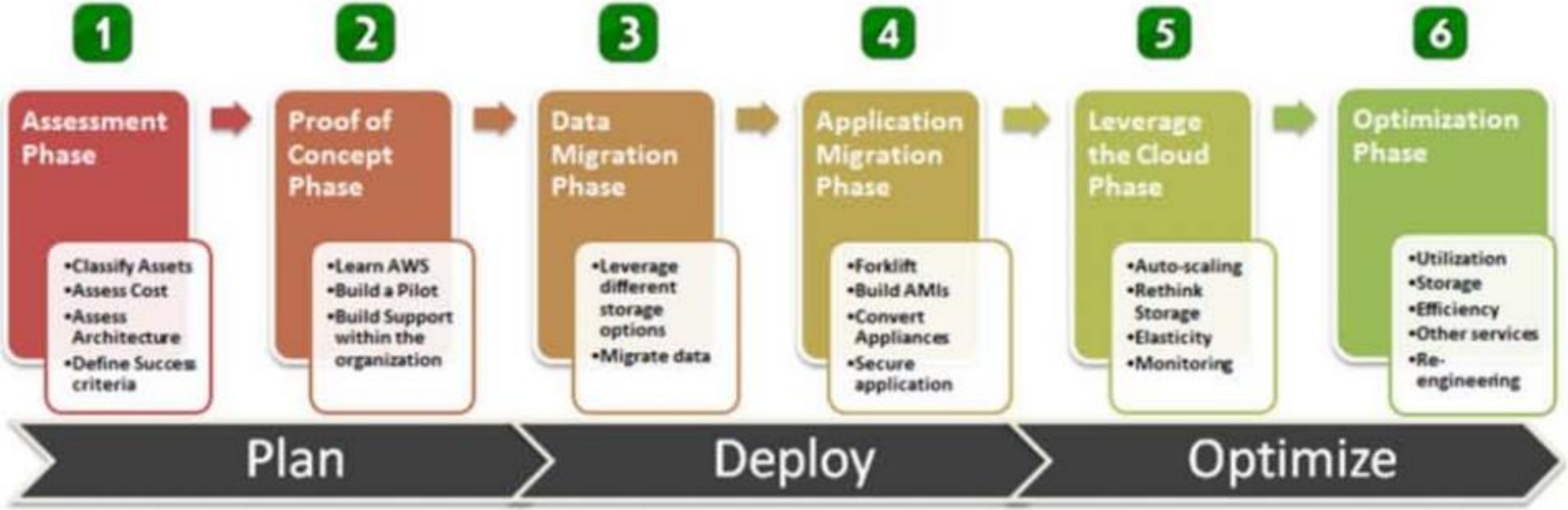
The Migration Continuum

Forklift	Embrace AWS	Optimize for AWS
• May be only option for some apps • Run AWS like a virtual co-lo • Does not optimize for on-demand	• Minor modifications to improve cloud usage • Automating servers can lower operational burden • Leveraging more scalable storage	• Re-design with AWS in mind • Embrace scalable services • Closer to fully utilized resources at all times

Key Takeaways

- Classify and stack rank your apps and move the easy ones first, gain confidence and define your success criteria
- Dive into a Proof of Concept quickly as it will answer several questions quickly
- Leverage multiple storage options-one size does not fill all
- Migrate with confidence: Forklift-Leverage-Optimize
- Be the Cloud Champion within your agency, department or team

Cloud Migration: A phased approach



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