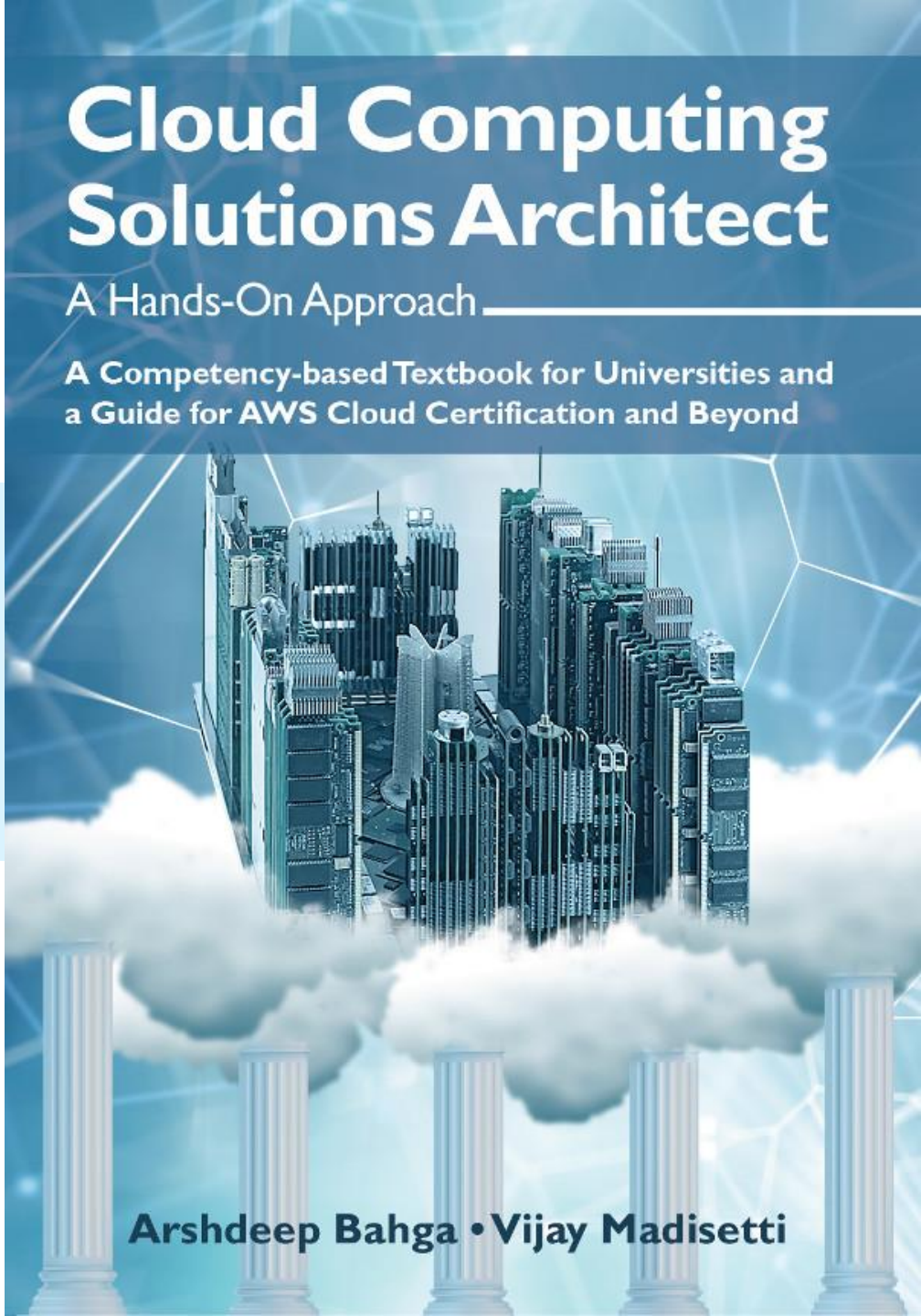
Chapter 20

Applying the Cost Optimization Pillar



Cost Optimization Pillar

- The Cost Optimization pillar includes the ability to run systems to deliver business value at the lowest price point.
- Within the Cost Optimization pillar, there are four best practice areas:
  - Expenditure Awareness
  - Cost-Effective Resources
  - Matching supply and demand
  - Optimizing Over Time

Design Principles for Cost Optimization Pillar

- Increase or decrease the usage of cloud resources based on your business requirements and stop any unused resources to save costs.
- Measure the efficiency of your system and the associated costs.
- Use cloud services instead of spending money on-premises data centers to save costs.
- Analyze your cloud expenditure to measure the return on investment (ROI) and optimize your resources to reduce costs.
- Use managed services provided by the cloud provider instead of running and operating them by yourself to save costs.

Best Practice Area: Expenditure Awareness

- The Expenditure Awareness best practice area highlights the importance of being aware of your cloud expenditure and tracking the costs of each cloud service and where you spend.
- To govern the usage of resources, you should develop policies that define how resources are managed by your organization and their cost aspects.
- To monitor usage and cost, configure cost and usage reports, billing and cost management tools, and implemer tagging across resources.
- To decommission resources, you should implement a method to track resources and a process to identify and decommission orphaned resources.

Pillar V: Cost Optimization - Best Practice Area: Expenditure Awareness	
Consideration	**Best practice**
Govern usage	Develop policies based on your organization requirements
	Implement an account structure
	Implement groups and roles
	Implement cost controls
	Track project lifecycle
Monitor usage and cost	Configure AWS Cost and Usage Report
	Identify cost attribution categories
	Establish organization metrics
	Define and implement tagging
	Configure billing and cost management tools
	Report and notify on cost optimization
	Monitor cost proactively
	Allocate costs based on workload metrics
Decommission resources	Track resources over their life time
	Implement a decommissioning process
	Decommission resources in an unplanned manner
	Decommission resources automatically

Best Practice Area: Cost-Effective Resources

- The Cost-Effective Resources best practice area highlights the importance of choosing the most cost-effective resources and using managed services instead of operating and maintaining your servers.
- To evaluate cost when you select services, you should analyze all components of your system and the cost of each component.
- To meet cost targets when you select resource type and size, you should perform cost modeling of the system and its components.
- To use pricing models to reduce cost, you should perform an analysis of each component of your system and then implement pricing models for all components.
- To plan for data transfer charges, you should perform data transfer modeling of your system and its components, and implement services to reduce data transfer costs.

Pillar V: Cost Optimization - Best Practice Area: Cost-Effective Resources	
Consideration	**Best practice**
Evaluate cost when you select services	Identify organization requirements for cost
	Analyze all components of this workload
	Perform a thorough analysis of each component
	Select components of this workload to optimize cost inline with organization priorities
	Perform cost analysis for different usage over time
Meet cost targets when you select resource type and size	Perform cost modeling
	Select resource type and size based on estimates
	Select resource type and size based on metrics
Use pricing models to reduce cost	Perform pricing model analysis
	Implement different pricing models, with low coverage
	Implement pricing models for all components of this workload
	Implement regions based on cost
Plan for data transfer charges	Perform data transfer modeling
	Select components to optimize data transfer cost
	Implement services to reduce data transfer costs

Best Practice Area: Matching supply and demand

- The Matching Supply and Demand best practice area highlights the importance of provisioning resources to match your demand.
- To match the supply of resources with demand, you should perform an analysis of the demand of your system or application and provision resources based on demand to avoid underutilization.

Pillar V: Cost Optimization - Best Practice Area: Matching supply & demand	
Consideration	**Best practice**
Match supply of resources with demand	Perform an analysis on the workload demand
	Provision resources reactively or unplanned
	Provision resources dynamically

Best Practice Area: Optimizing Over Time

- The Optimizing Over Time best practice area highlights the importance of continuously optimizing your system over time to ensure that it remains cost-effective.
- To evaluate new services, you should review your existing architecture, cloud costs, and usage and ensure that they continue to remain cost-effective.

Pillar V: Cost Optimization - Best Practice Area: Optimizing Over Time	
Consideration	**Best practice**
Evaluate new services	Establish a cost optimization function
	Develop a workload review process
	Review and implement services in an unplanned way
	Review and analyze this workload regularly
	Keep up to date with new service releases

Recipe for Cost Optimization Pillar

- With this recipe, we make the photo gallery application more cost-efficient by matching the supply and demand.
- For this recipe, we use the Auto Scaling, which allows you to add or remove resources to match demand without overspending.