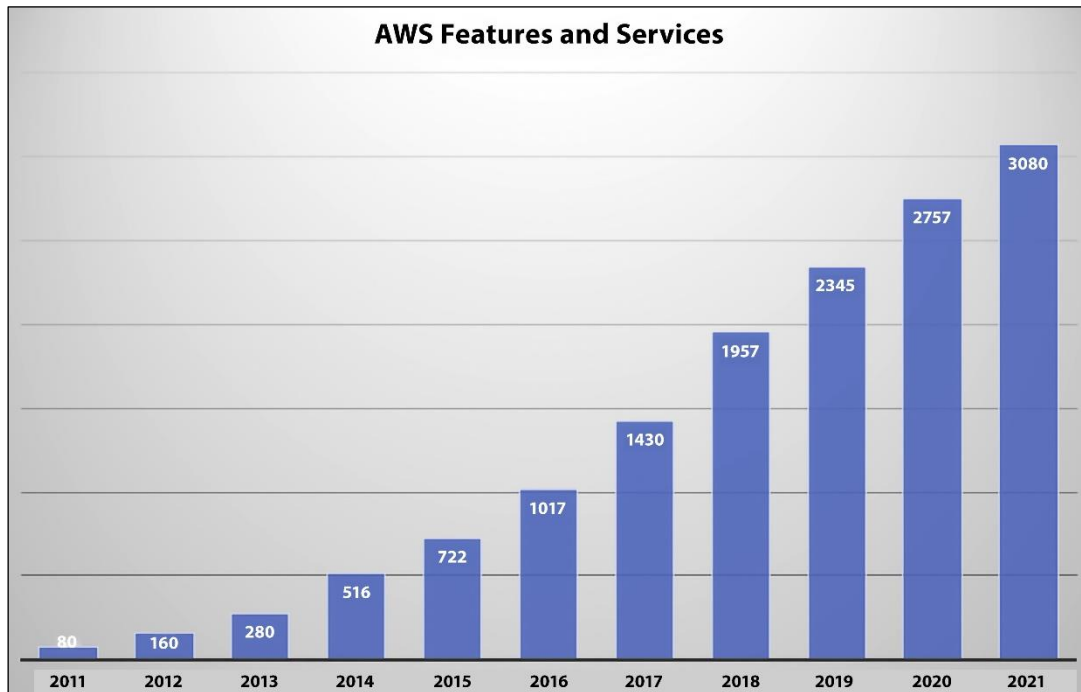


Chapter 1: Understanding AWS Principles and Key Characteristics



Service	AWS	Azure	GCP
Compute	<ul style="list-style-type: none"> • Amazon EC2 • Lightsail 	<ul style="list-style-type: none"> • Azure Virtual Machines • Virtual Machine Scale Sets 	<ul style="list-style-type: none"> • Google Compute Engine • Graphics Processing Unit (GPU)
Containers	<ul style="list-style-type: none"> • Amazon Elastic Container Service (ECS) • Amazon Fargate • Elastic Container Service for Kubernetes • Elastic Container Registry • Batch • Amazon EMR 	<ul style="list-style-type: none"> • Azure Kubernetes Service (AKS) • Container Instances • Batch • Service Fabric • Cloud Services 	<ul style="list-style-type: none"> • Google Kubernetes Engine • Knative • Container Security

Service	AWS	Azure	GCP
Serverless Technologies	<ul style="list-style-type: none"> • AWS Lambda 	<ul style="list-style-type: none"> • Azure Functions 	<ul style="list-style-type: none"> • Google Cloud Functions
Relational Databases	<ul style="list-style-type: none"> • Amazon Relational Database Service (RDS) • Aurora • Redshift 	<ul style="list-style-type: none"> • Azure SQL Database • Data Warehouse • Server Stretch Database • Table Storage • Redis Cache • Data Factory 	<ul style="list-style-type: none"> • Google Cloud SQL • Cloud Spanner
NoSQL Databases (Key Value)	<ul style="list-style-type: none"> • Amazon DynamoDB 	<ul style="list-style-type: none"> • Azure Table Storage 	<ul style="list-style-type: none"> • Google Cloud Datastore • Google Cloud Bigtable
NoSQL Databases (Indexed)	<ul style="list-style-type: none"> • Amazon SimpleDB 	<ul style="list-style-type: none"> • Azure Cosmos DB 	<ul style="list-style-type: none"> • Google Cloud Datastore
Object Storage	<ul style="list-style-type: none"> • Amazon Simple Storage Service (S3) 	<ul style="list-style-type: none"> • Azure Blob Storage 	<ul style="list-style-type: none"> • Google Cloud Storage
File Storage	<ul style="list-style-type: none"> • Amazon Elastic Block Store (EBS) • Snowball • Snowball Edge • Snowmobile • Amazon Elastic File System (EFS) 	<ul style="list-style-type: none"> • Azure Managed Disks • Azure File Storage 	<ul style="list-style-type: none"> • Google Compute Engine Persistent Disks • Persistent Disk • ZFS/Avere • Transfer Appliance • Transfer Service
Archival Storage	<ul style="list-style-type: none"> • Amazon Glacier 	<ul style="list-style-type: none"> • Azure Archive Storage 	<ul style="list-style-type: none"> • Google Cloud Storage Nearline and Coldline

Service	AWS	Azure	GCP
Domain Name Service (DNS)	<ul style="list-style-type: none"> • Amazon Route 53 	<ul style="list-style-type: none"> • Azure DNS 	<ul style="list-style-type: none"> • Google Cloud DNS
Peering	<ul style="list-style-type: none"> • Amazon DirectConnect 	<ul style="list-style-type: none"> • Azure ExpressRoute 	<ul style="list-style-type: none"> • Google Cloud Interconnect
Virtual Networking	<ul style="list-style-type: none"> • Amazon Virtual Private Cloud (VPC) 	<ul style="list-style-type: none"> • Azure Virtual Networks (VNETs) 	<ul style="list-style-type: none"> • Google Virtual Private Cloud
Elastic Load Balancing	<ul style="list-style-type: none"> • Amazon Elastic Load Balancer 	<ul style="list-style-type: none"> • Azure Load Balancer 	<ul style="list-style-type: none"> • Google Cloud Load Balancing
PaaS services	<ul style="list-style-type: none"> • AWS Elastic Beanstalk • VMware Cloud on AWS 	<ul style="list-style-type: none"> • App Service and Cloud Services 	<ul style="list-style-type: none"> • Google App Engine
Machine Learning	<ul style="list-style-type: none"> • SageMaker • Machine Learning • Rekognition • Lex • Polly • Comprehend • Translate • Transcribe • DeepLens • Deep Learning AMIs 	<ul style="list-style-type: none"> • Machine Learning • Azure Bot Service • Cognitive Services 	<ul style="list-style-type: none"> • Google Cloud Machine Learning Engine • Dialogflow • Google Cloud Natural Language • Google Cloud Speech API • Google Cloud Translation API • Google Cloud Video Intelligence • Google Cloud Job Discovery

Chapter 2: Understanding AWS Well-Architected Framework and Getting Certified

Operational Excellence0/11

Security0/10

Reliability0/13

Performance Efficiency0/8

Cost Optimization0/10

Well-Architected Tool > Workloads > AWS for Solutions Architects workload > AWS Well-Architected Framework > Review workload

AWS Well-Architected Framework

Add a link to your architectural design

COST 3. How do you monitor usage and cost? Info

Establish policies and procedures to monitor and appropriately allocate your costs. This allows you to measure and improve the cost efficiency of this workload.

☒ Question does not apply to this workload Info

Select from the following

☐ Configure detailed information sources Info

☐ Identify cost attribution categories Info

☐ Establish organization metrics Info

☐ Configure billing and cost management tools Info

☐ Add organization information to cost and usage Info

☐ Allocate costs based on workload metrics Info

☐ None of these Info

▶ Mark best practice(s) that don't apply to this workload

Helpful resources

Managing AWS Cost and Usage Reports

AWS tagging strategies

Analyzing your costs with Cost Explorer

Analyzing your costs with AWS Budgets

Configure detailed information sources

Configure the AWS Cost and Usage Report, and Cost Explorer hourly granularity, to provide detailed cost and usage information. Configure your workload to have log entries for every delivered business outcome.

Identify cost attribution categories

Identify organization categories that could be used to allocate cost within your organization.

Establish organization metrics

Establish the organization metrics that are required for this workload. Example metrics of a workload are customer reports produced or web pages served to customers.

Configure billing and cost management tools

Configure AWS Cost Explorer and AWS Budgets inline with your organization policies.

Add organization information to cost and usage

Security0/10

SEC 1. How do you securely operate your workload?

SEC 2. How do you manage identities for people and machines?

SEC 3. How do you manage permissions for people and machines?

SEC 4. How do you detect and investigate security events?

SEC 5. How do you protect your network resources?

SEC 6. How do you protect your compute resources?

SEC 7. How do you classify your data?

SEC 8. How do you protect your data at rest?

SEC 9. How do you protect your data in transit?

Well-Architected Tool > Workloads > AWS for Solutions Architects workload > AWS Well-Architected Framework > Review workload

AWS Well-Architected Framework

Add a link to your architectural design

OPS 1. How do you determine what your priorities are? Info

Ask an expert

Everyone needs to understand their part in enabling business success. Have shared goals in order to set priorities for resources. This will maximize the benefits of your efforts.

☒ Question does not apply to this workload Info

Select from the following

☐ Evaluate external customer needs Info

☐ Evaluate internal customer needs Info

☐ Evaluate governance requirements Info

☐ Evaluate compliance requirements Info

☐ Evaluate threat landscape Info

☐ Evaluate tradeoffs Info

☐ Manage benefits and risks Info

☐ None of these Info

▶ Mark best practice(s) that don't apply to this workload

▼ Reliability0/13

REL 1. How do you manage service quotas and constraints?

REL 2. How do you plan your network topology?

REL 3. How do you design your workload service architecture?

REL 4. How do you design interactions in a distributed system to prevent failures?

REL 5. How do you design interactions in a distributed system to mitigate or withstand failures?

REL 6. How do you monitor workload resources?

REL 7. How do you design your workload to adapt to changes in demand?

REL 8. How do you implement change?

Well-Architected Tool > Workloads > AWS for Solutions Architects workload > AWS Well-Architected Framework > Review workload

AWS Well-Architected Framework

Add a link to your architectural design

REL 1. How do you manage service quotas and constraints? Info

For cloud-based workload architectures, there are service quotas (which are also referred to as service limits). These quotas exist to prevent accidentally provisioning more resources than you need and to limit request rates on API operations so as to protect services from abuse. There are also resource constraints, for example, the rate that you can push bits down a fiber-optic cable, or the amount of storage on a physical disk.

☒ Question does not apply to this workload Info

Select from the following

☐ Aware of service quotas and constraints Info

☐ Manage service quotas across accounts and regions Info

☐ Accommodate fixed service quotas and constraints through architecture Info

☐ Monitor and manage quotas Info

☐ Automate quota management Info

☐ Ensure that a sufficient gap exists between the current quotas and the maximum usage to accommodate fallover Info

☐ None of these Info

▶ Mark best practice(s) that don't apply to this workload

▼ Performance Efficiency0/8

PERF 1. How do you select the best performing architecture?

PERF 2. How do you select your compute solution?

PERF 3. How do you select your storage solution?

PERF 4. How do you select your database solution?

PERF 5. How do you configure your networking solution?

PERF 6. How do you evolve your workload to take advantage of new releases?

PERF 7. How do you monitor your resources to ensure they are performing?

PERF 8. How do you use tradeoffs to improve performance?

Well-Architected Tool > Workloads > AWS for Solutions Architects workload > AWS Well-Architected Framework > Review workload

AWS Well-Architected Framework

Add a link to your architectural design

PERF 1. How do you select the best performing architecture? Info

Often, multiple approaches are required for optimal performance across a workload. Well-architected systems use multiple solutions and features to improve performance.

☒ Question does not apply to this workload Info

Select from the following

☐ Understand the available services and resources Info

☐ Define a process for architectural choices Info

☐ Factor cost requirements into decisions Info

☐ Use policies or reference architectures Info

☐ Use guidance from your cloud provider or an appropriate partner Info

☐ Benchmark existing workloads Info

☐ Load test your workload Info

☐ None of these Info

▶ Mark best practice(s) that don't apply to this workload

▼ Cost Optimization

0/10

Well-Architected Tool > Workloads > AWS for Solutions Architects workload > AWS Well-Architected Framework > Review workload

AWS Well-Architected Framework

Add a link to your architectural design

COST 1. How do you implement cloud financial management?

COST 2. How do you govern usage?

COST 3. How do you monitor usage and cost?

COST 4. How do you decommission resources?

COST 5. How do you evaluate cost when you select services?

COST 6. How do you meet cost targets when you select resource type, size and number?

COST 7. How do you use pricing models to reduce cost?

COST 8. How do you plan for data transfer charges?

Well-Architected Tool > Workloads > AWS for Solutions Architects workload > AWS Well-Architected Framework > Review workload

AWS Well-Architected Framework

Add a link to your architectural design

COST 1. How do you implement cloud financial management? Info

Implementing Cloud Financial Management enables organizations to realize business value and financial success as they optimize their cost and usage and scale on AWS.

☒ Question does not apply to this workload Info

Select from the following

☐ Establish a cost optimization function Info

☐ Establish a partnership between finance and technology Info

☐ Establish cloud budgets and forecasts Info

☐ Implement cost awareness in your organizational processes Info

☐ Report and notify on cost optimization Info

☐ Monitor cost proactively Info

☐ Keep up to date with new service releases Info

☐ None of these Info

▶ Mark best practice(s) that don't apply to this workload

▼ Operational Excellence

0/11

Well-Architected Tool > Workloads > AWS for Solutions Architects workload > AWS Well-Architected Framework > Review workload

AWS Well-Architected Framework

Add a link to your architectural design

OPS 1. How do you determine what your priorities are?

OPS 2. How do you structure your organization to support your business outcomes?

OPS 3. How does your organizational culture support your business outcomes?

OPS 4. How do you design your workload so that you can understand its state?

OPS 5. How do you reduce defects, ease remediation, and improve flow into production?

OPS 6. How do you mitigate deployment risks?

OPS 7. How do you know that you are ready to support a workload?

Well-Architected Tool > Workloads > AWS for Solutions Architects workload > AWS Well-Architected Framework > Review workload

AWS Well-Architected Framework

Add a link to your architectural design

OPS 1. How do you determine what your priorities are? Info

Everyone needs to understand their part in enabling business success. Have shared goals in order to set priorities for resources. This will maximize the benefits of your efforts.

☒ Question does not apply to this workload Info

Select from the following

☐ Evaluate external customer needs Info

☐ Evaluate internal customer needs Info

☐ Evaluate governance requirements Info

☐ Evaluate compliance requirements Info

☐ Evaluate threat landscape Info

☐ Evaluate tradeoffs Info

☐ Manage benefits and risks Info

☐ None of these Info

▶ Mark best practice(s) that don't apply to this workload

Sustainability0/6

SUS 1. How do you select Regions to support your sustainability goals?

SUS 2. How do you take advantage of user behavior patterns to support your sustainability goals?

SUS 3. How do you take advantage of software and architecture patterns to support your sustainability goals?

SUS 4. How do you take advantage of data access and usage patterns to support your sustainability goals?

SUS 5. How do your hardware management and usage practices support your sustainability

Well-Architected Tool > Workloads > AWS for Solutions Architects workload > AWS Well-Architected Framework > Review workload

AWS Well-Architected Framework

Add a link to your architectural design

Question has updated lens content

SUS 2. How do you take advantage of user behavior patterns to support your sustainability goals? Info

The way users consume your workloads and other resources can help you identify improvements to meet sustainability goals. Scale infrastructure to continually match user load and ensure that only the minimum resources required to support users are deployed. Align service levels to customer needs. Position resources to limit the network required for users to consume them. Remove existing, unused assets. Identify created assets that are unused and stop generating them. Provide your team members with devices that support their needs with minimized sustainability impact.

Question does not apply to this workload Info

Select from the following

Scale infrastructure with user load Info

Align SLAs with sustainability goals Info

Stop the creation and maintenance of unused assets Info

Optimize geographic placement of workloads for user locations Info

Well-Architected Tool > Workloads > Define workload

Step 1Specify properties

Step 2Apply lenses

Apply lenses

Lenses Applied: 4

Search by lens name

AWS Well-Architected Framework

AuthorAWSAWS Official Content

DescriptionThe AWS Well-Architected Framework Lens provides a set of foundational questions for you to consider for all of your cloud architectures.

FTR Lens

AuthorAWSAWS Official Content

DescriptionThe AWS Foundational Technical Review (FTR) Lens provides a set of specific questions for ISVs to perform a workload self-assessment prior to requesting the Foundational Technical Review in the AWS Partner Network (APN).

Serverless Lens

AuthorAWSAWS Official Content

DescriptionThe AWS Serverless Application Lens provides a set of additional questions for you to consider for your serverless applications.

SaaS Lens

AuthorAWSAWS Official Content

DescriptionThe AWS SaaS Lens provides a set of additional questions for you to consider for your Software-as-a-Service (SaaS) applications.

Operational Excellence 0/2

OPS 1. How do you evaluate your Serverless application's health?

OPS 2. How do you approach application lifecycle management?

Security 0/3

Reliability 0/2

Performance Efficiency 0/1

Cost Optimization 0/1

Well-Architected Tool > Workloads > AWS for Solutions Architects workload lenses > Serverless Lens > Review workload

Serverless Lens

Add a link to your architectural design

OPS 1. How do you evaluate your Serverless application's health? Info

Evaluating your metrics, distributed tracing, and logging gives you insight into business and operational events, and helps you understand which services should be optimized to improve your customer's experience.

Question does not apply to this workload Info

Select from the following

Understand, analyze, and alert on metrics provided out of the box Info

Use distributed tracing and code is instrumented with additional context Info

Use structured and centralized logging Info

Use application, business, and operations metrics Info

None of these Info

Mark best practice(s) that don't apply to this workload

Helpful resources

Amazon CloudWatch Metrics and Dimensions

AWS Personal Health Dashboard

Amazon CloudWatch Automated Dashboard

AWS Serverless Monitoring Partners

reInvent 2019 - Production-grade full-stack apps with AWS Amplify

Understand, analyze, and alert on metrics provided out of the box

Each managed service emits metrics out of the box. Establish key metrics for each managed service as the basis for comparison, and for identifying under and over performing components. Examples of key metrics include function errors, queue depth, failed state machine executions, and response times.

FOUNDATIONAL

Six months of fundamental AWS Cloud and industry knowledge

PROFESSIONAL

























Two years of experience designing, operating, and troubleshooting solutions using the AWS Cloud









ASSOCIATE

One year of experience solving problems and implementing solutions using the AWS Cloud

SPECIALTY

Technical AWS Cloud experience in the Specialty domain as specified in the exam guide

  <p>Machine Learning Specialist Partner Learning Plan</p> <p>FREE</p> <p>6 courses 26h 50m</p> <p>Learning Plan</p>	  <p>Database Partner Learning Plan</p> <p>FREE</p> <p>2 courses 2h 00m</p> <p>Learning Plan</p>	  <p>DevOps Engineer Partner Learning Plan (Amazon)</p> <p>FREE</p> <p>12 courses 17h 10m</p> <p>Learning Plan</p>	  <p>Data Analytics Specialist Partner Learning Plan (Amazon)</p> <p>FREE</p> <p>22 courses 18h 34m</p> <p>Learning Plan</p>	  <p>IoT Architect Partner Learning Plan (Amazon)</p> <p>FREE</p> <p>18 courses 33h 40m</p> <p>Learning Plan</p>	  <p>Migration Specialist Partner Learning Plan (Amazon)</p> <p>FREE</p> <p>16 courses 22h 30m</p> <p>Learning Plan</p>
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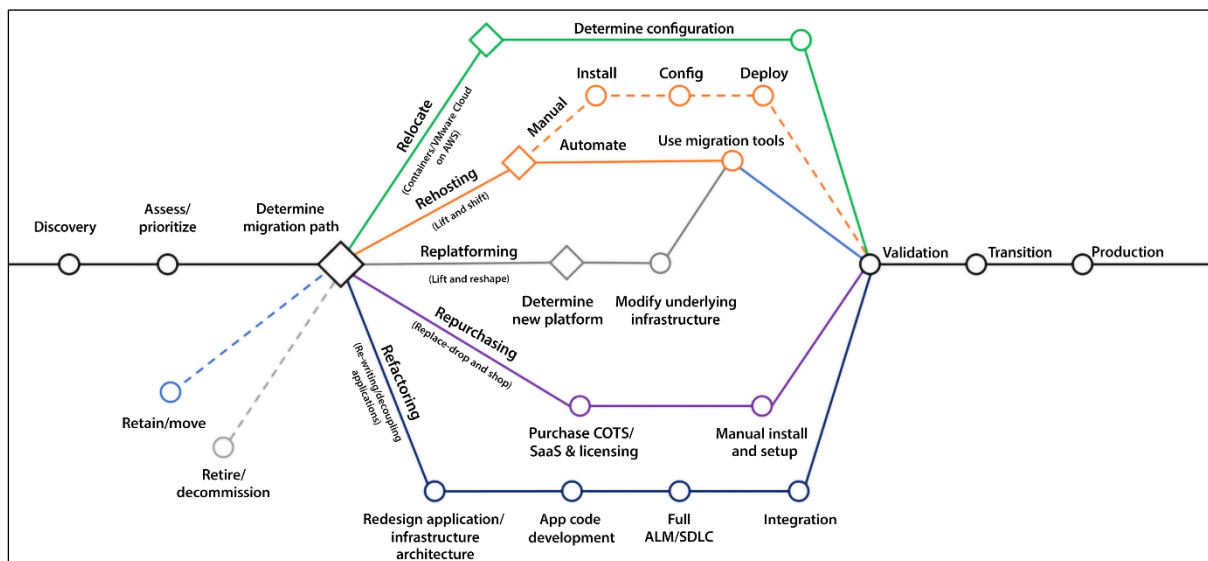
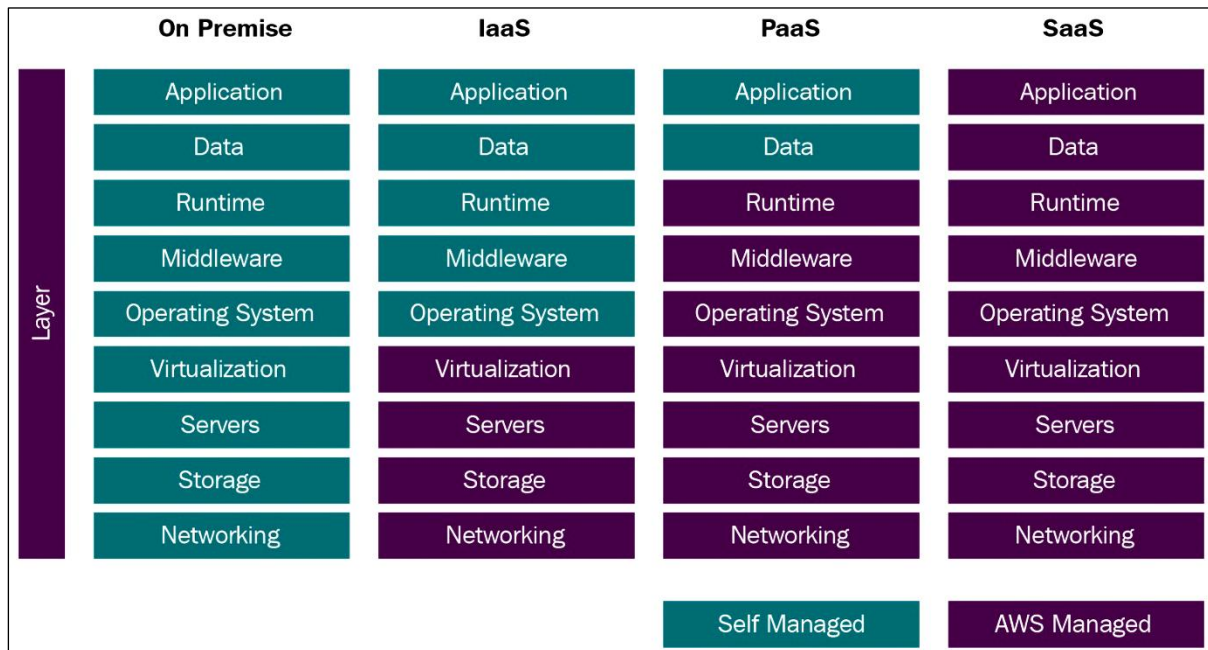
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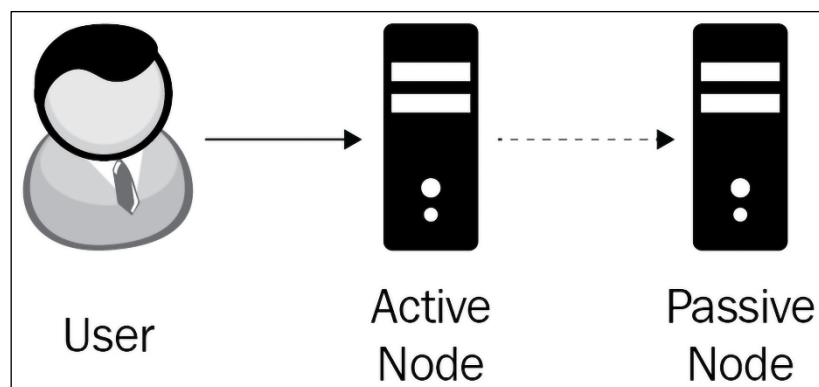
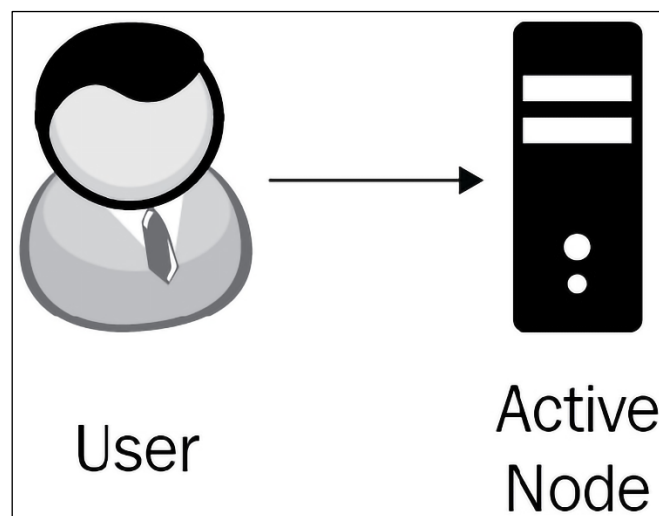
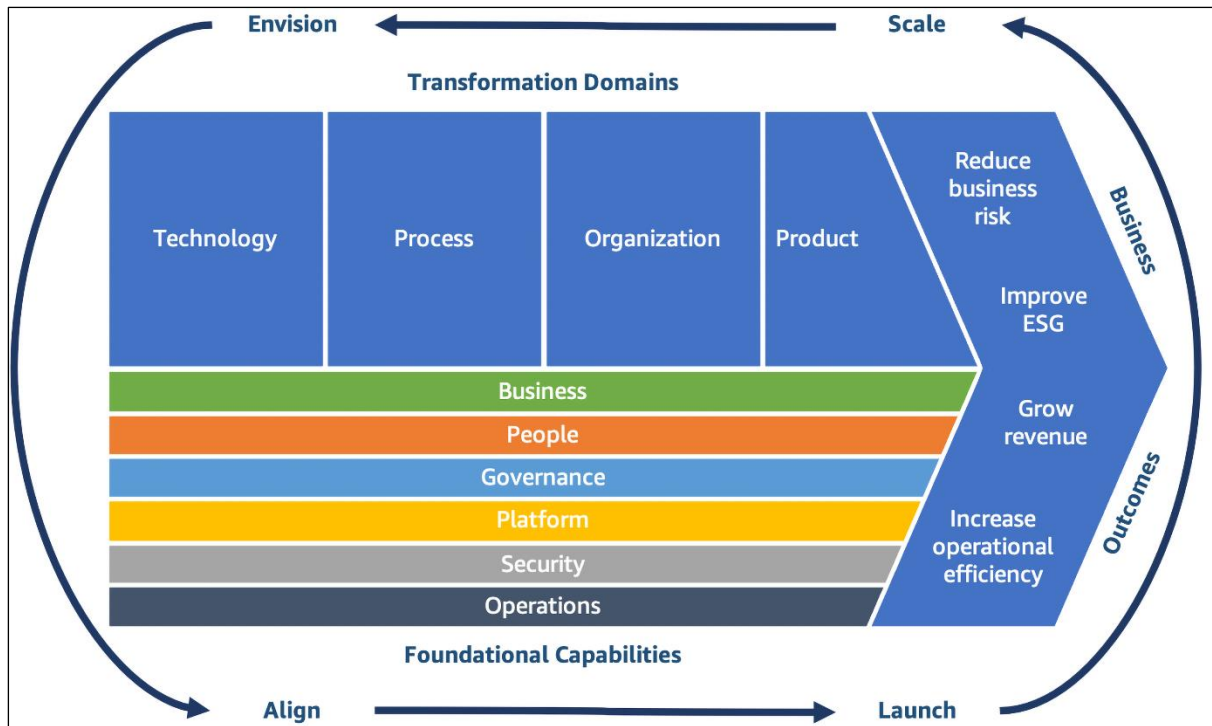
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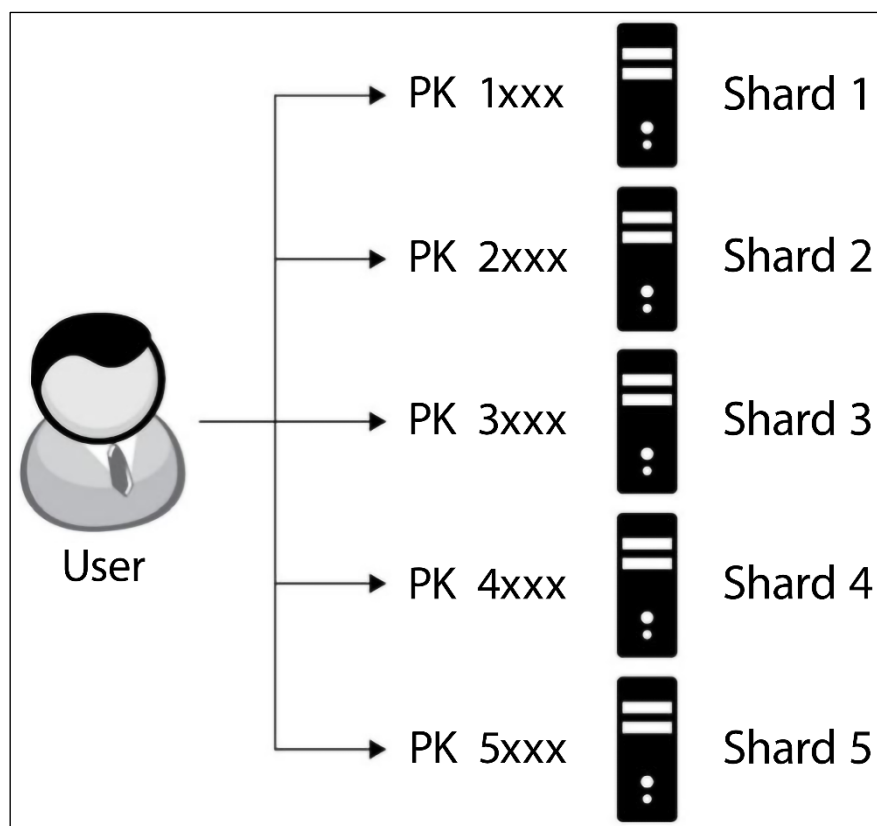
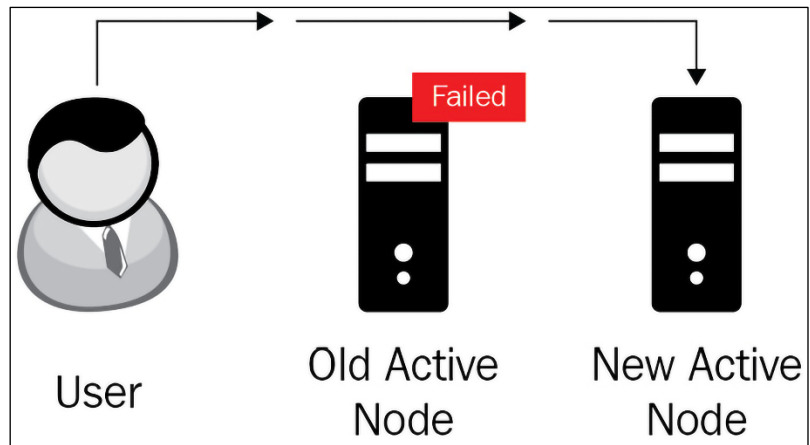
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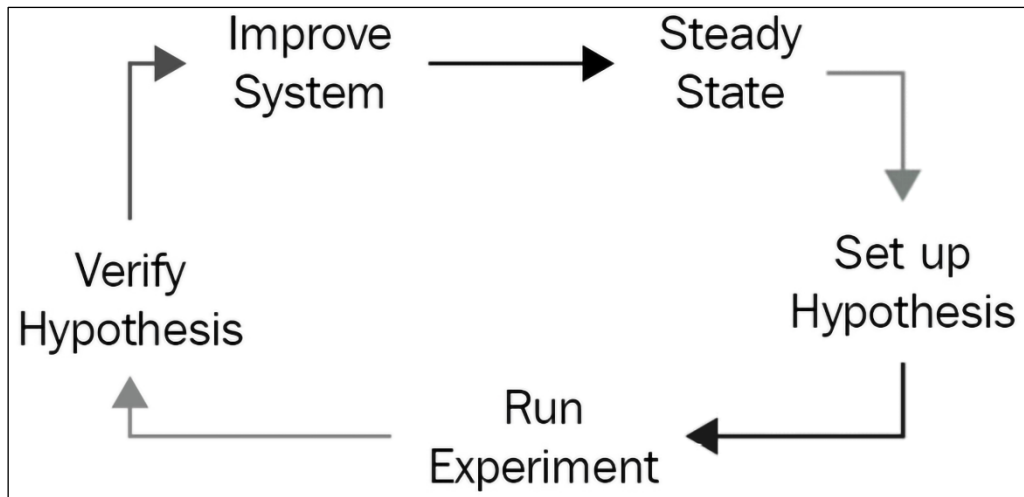
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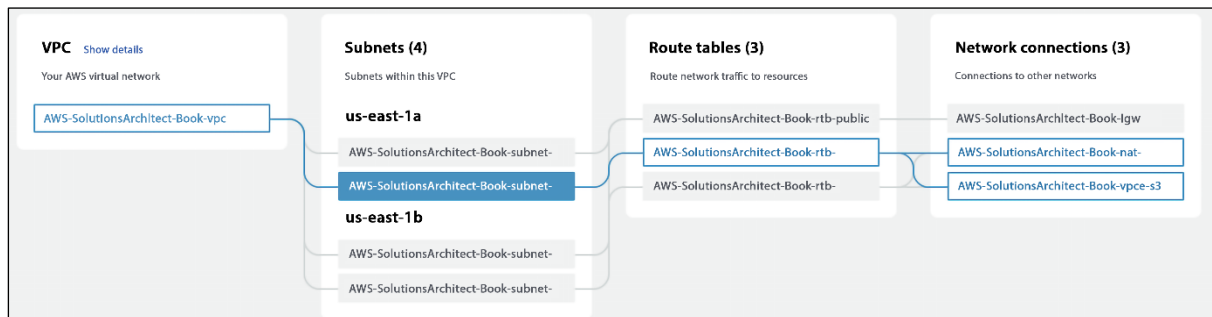
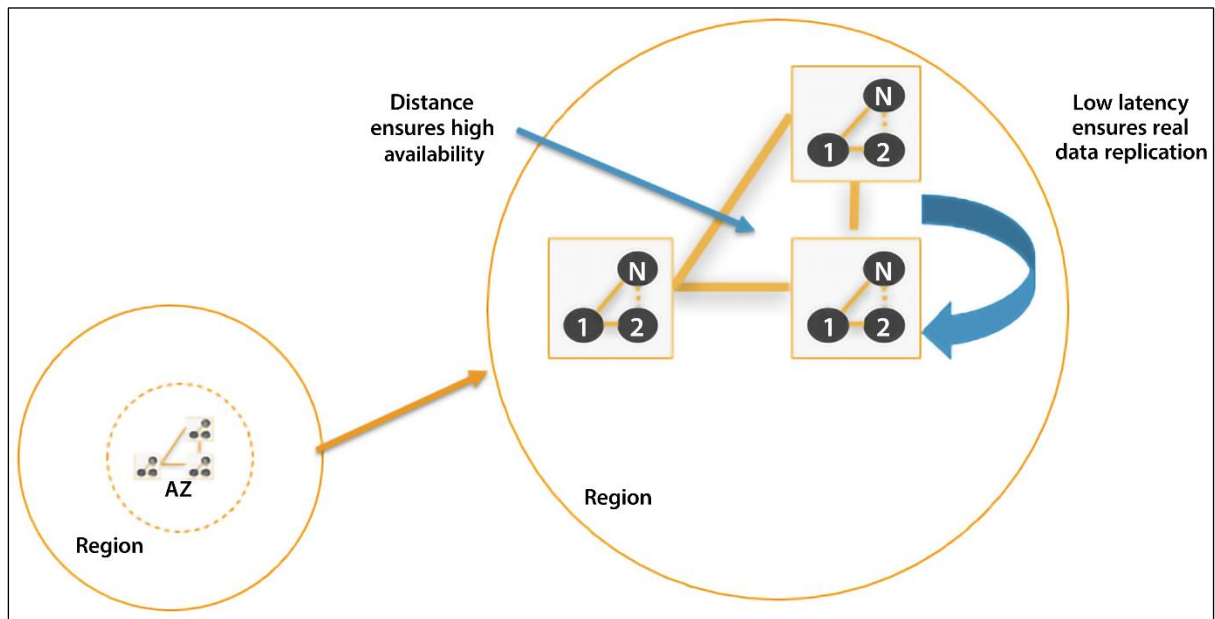


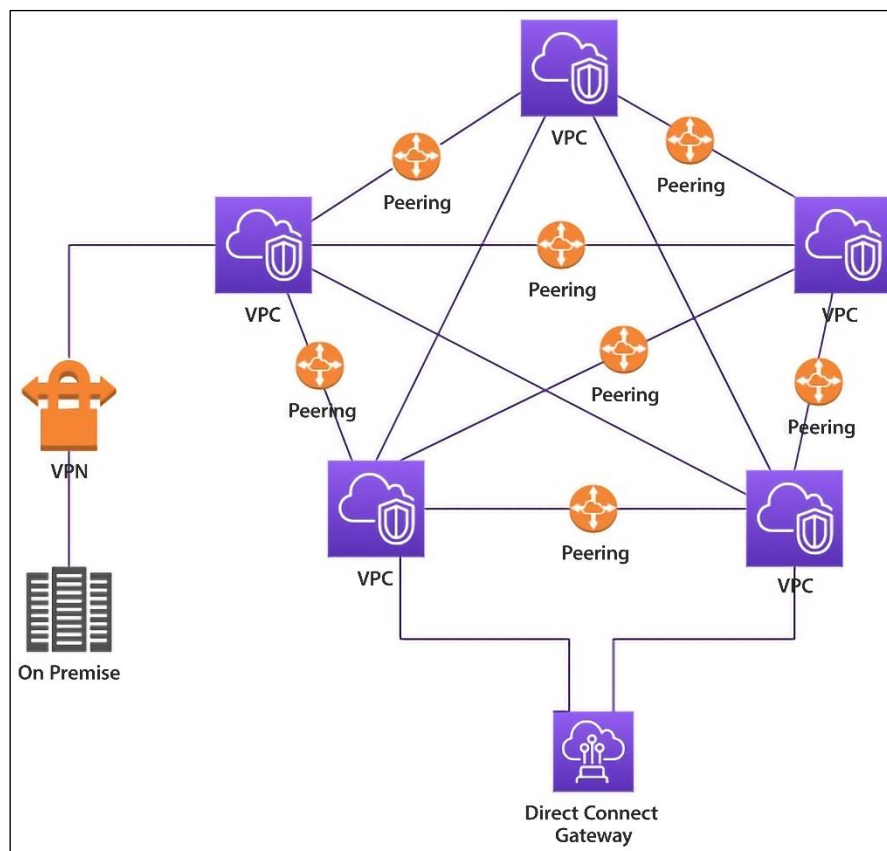
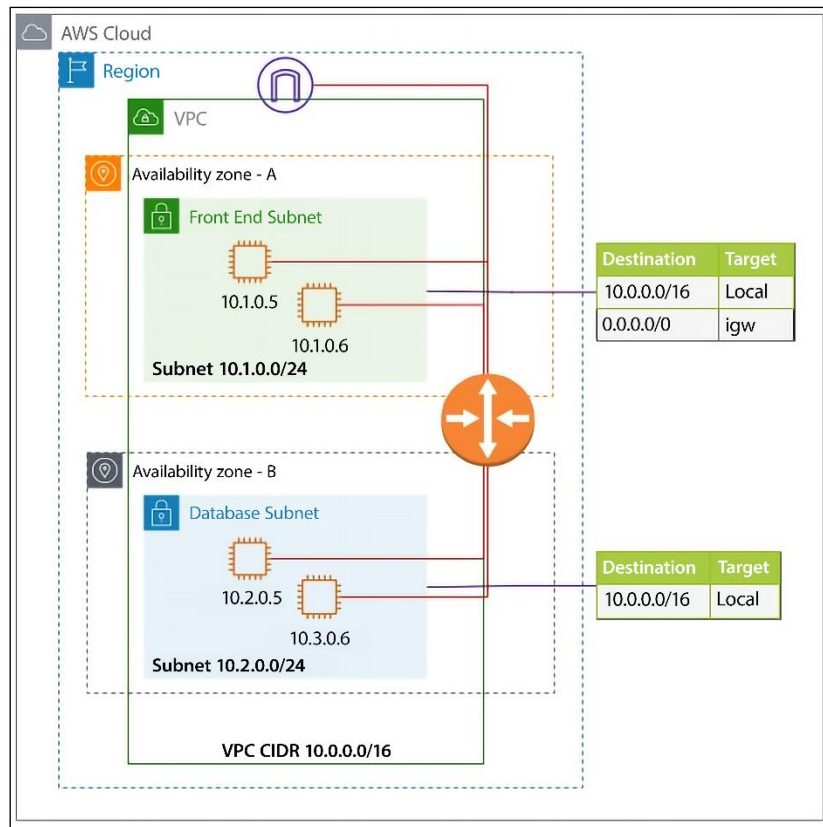


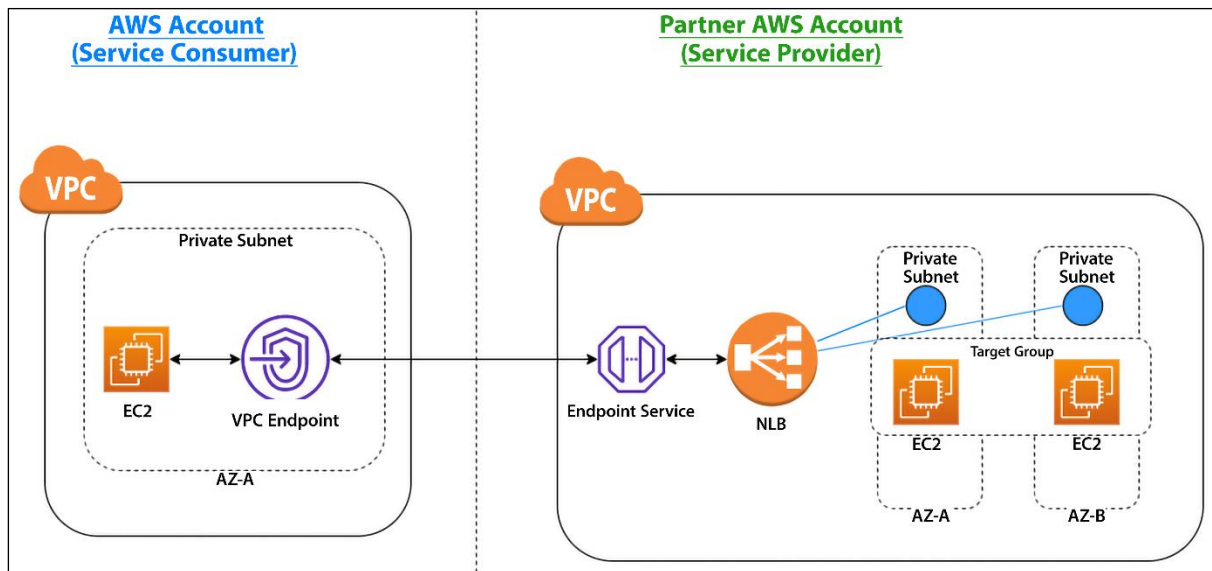
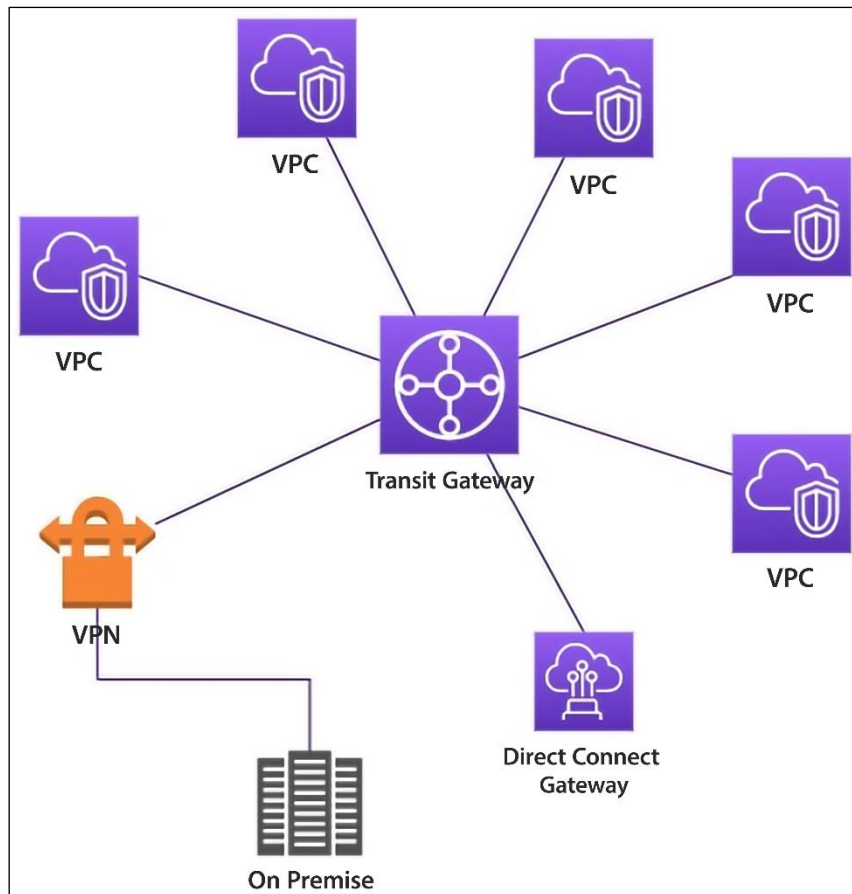


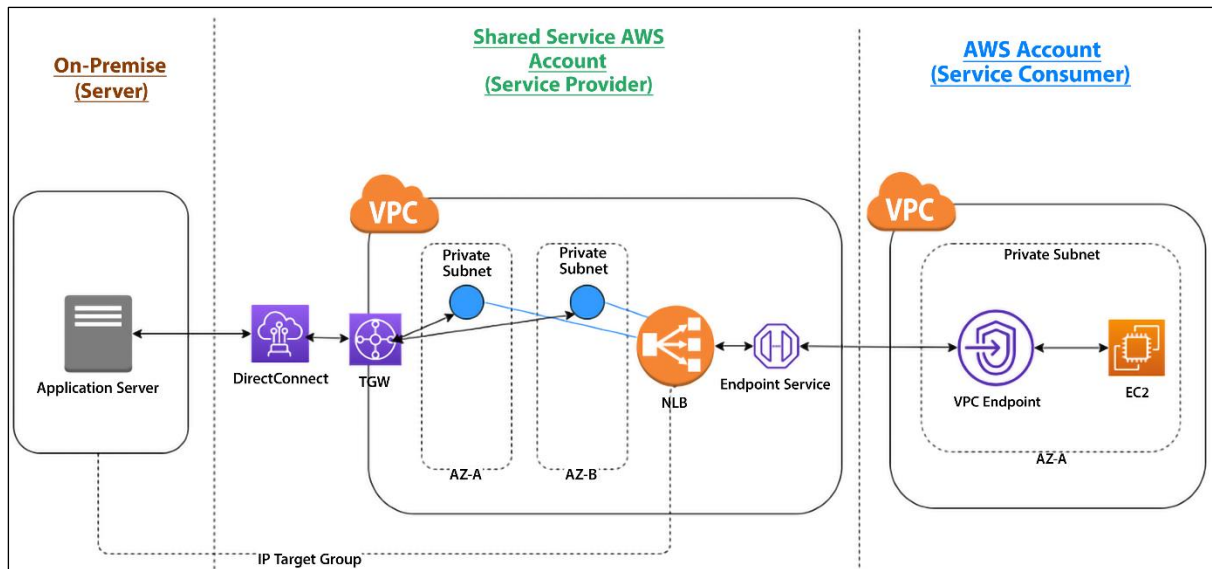


Chapter 4: Networking in AWS







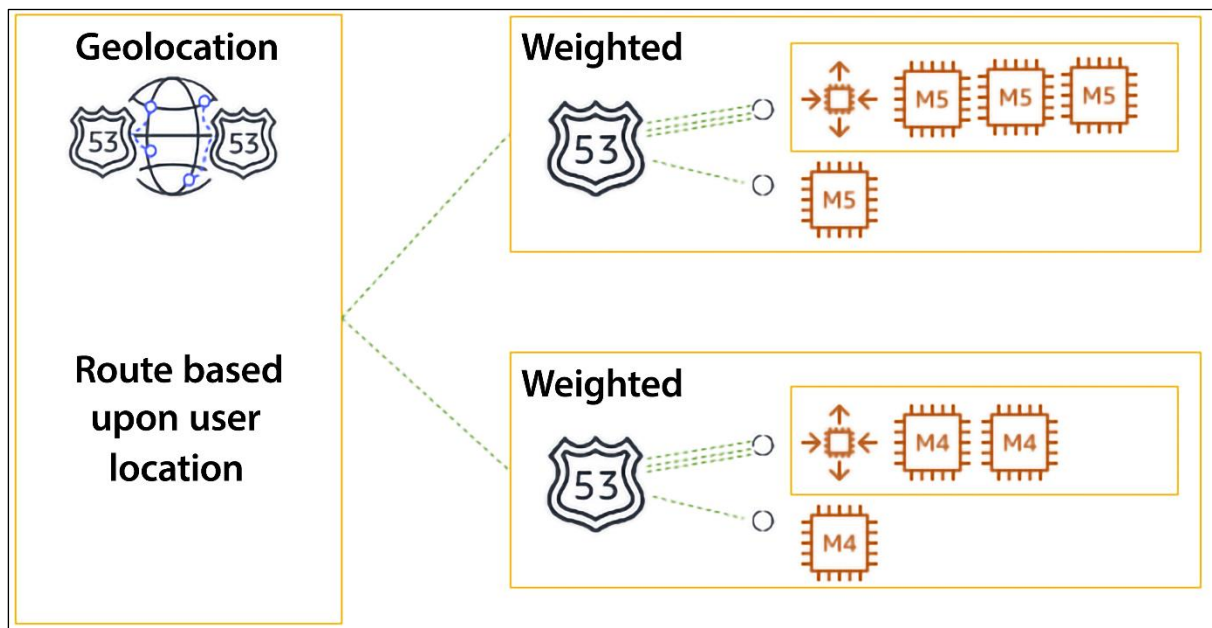


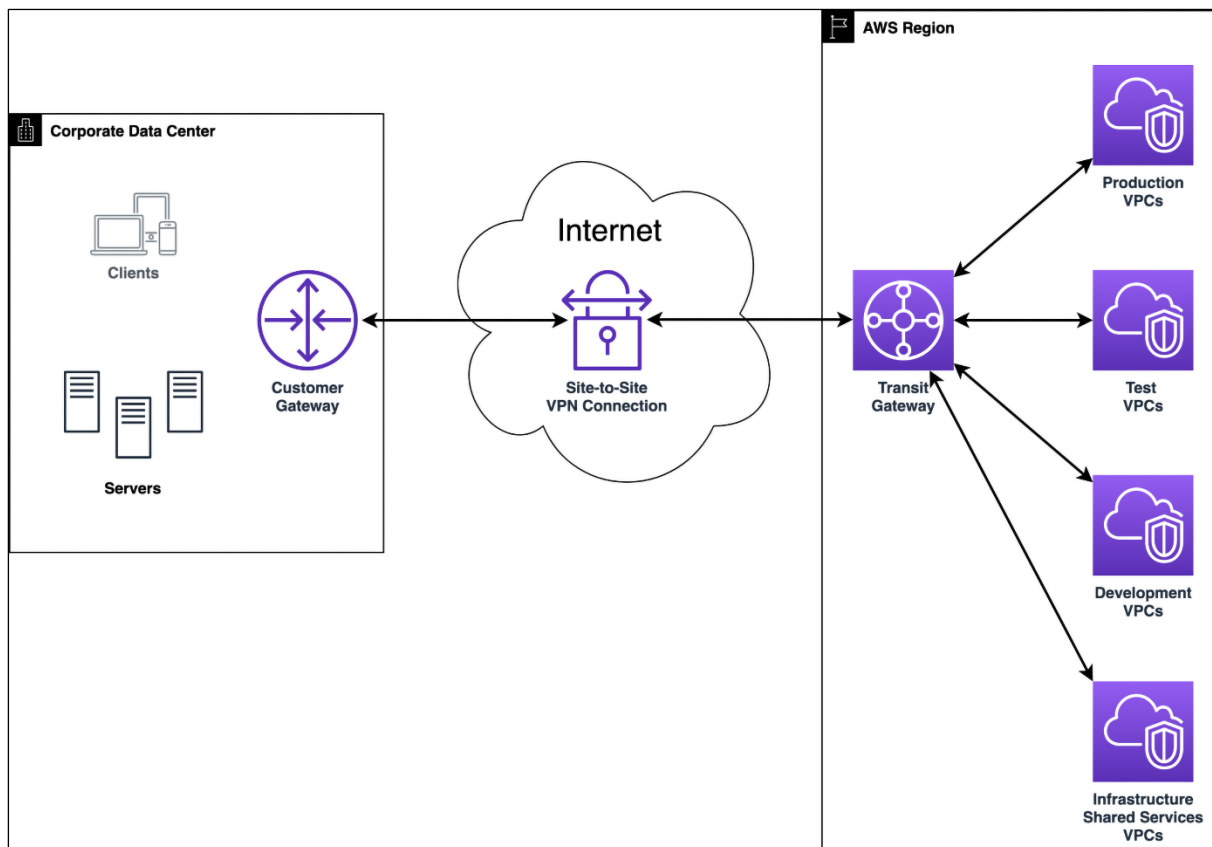
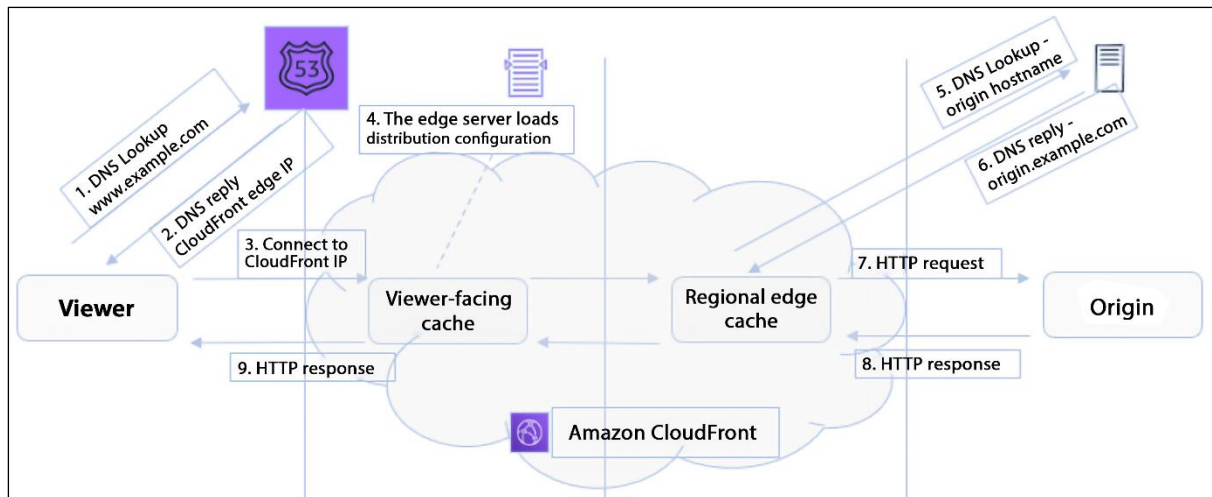
Route 53 > Hosted zones > examples.com

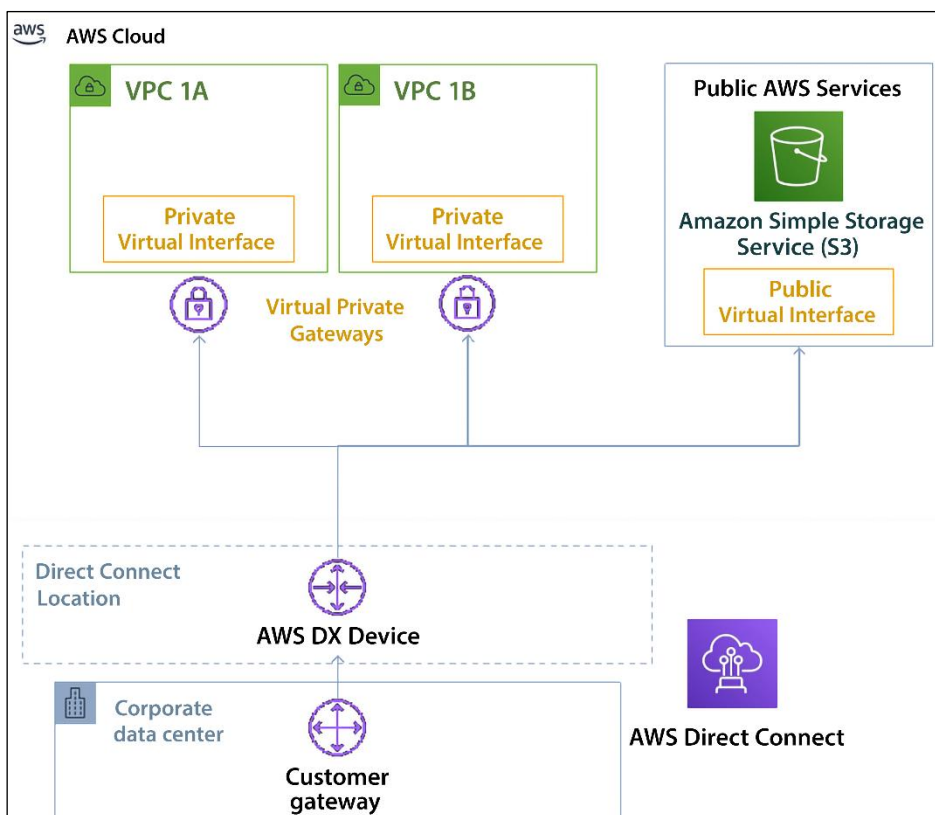
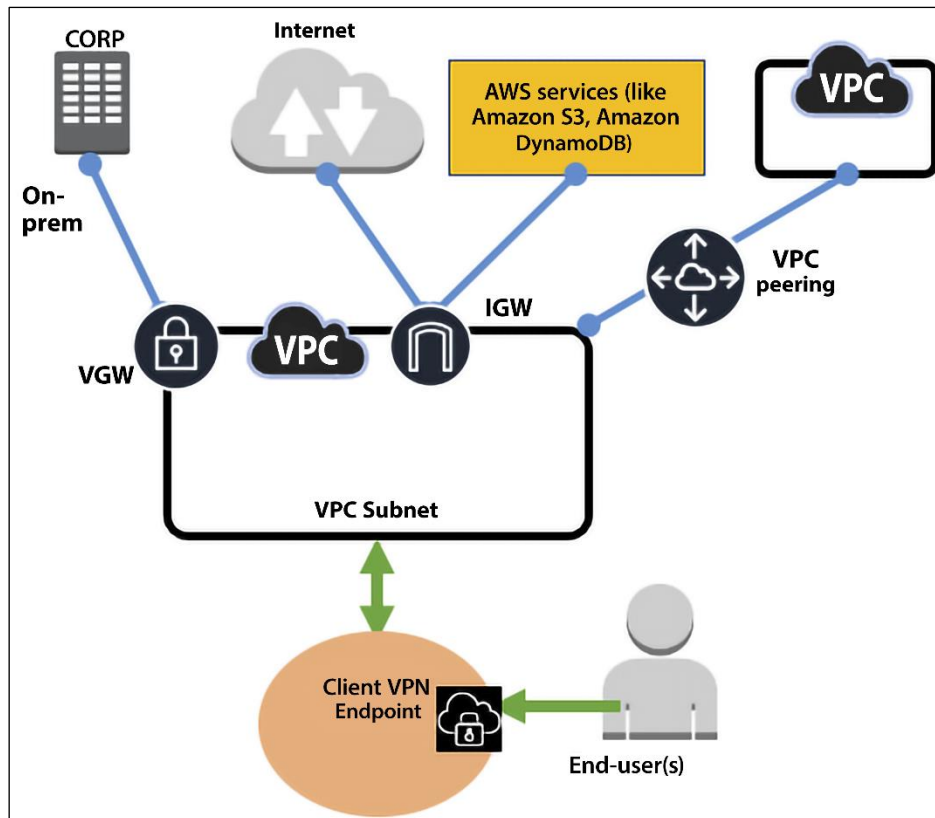
examples.com [Info](#) Delete Test record Configure query logging

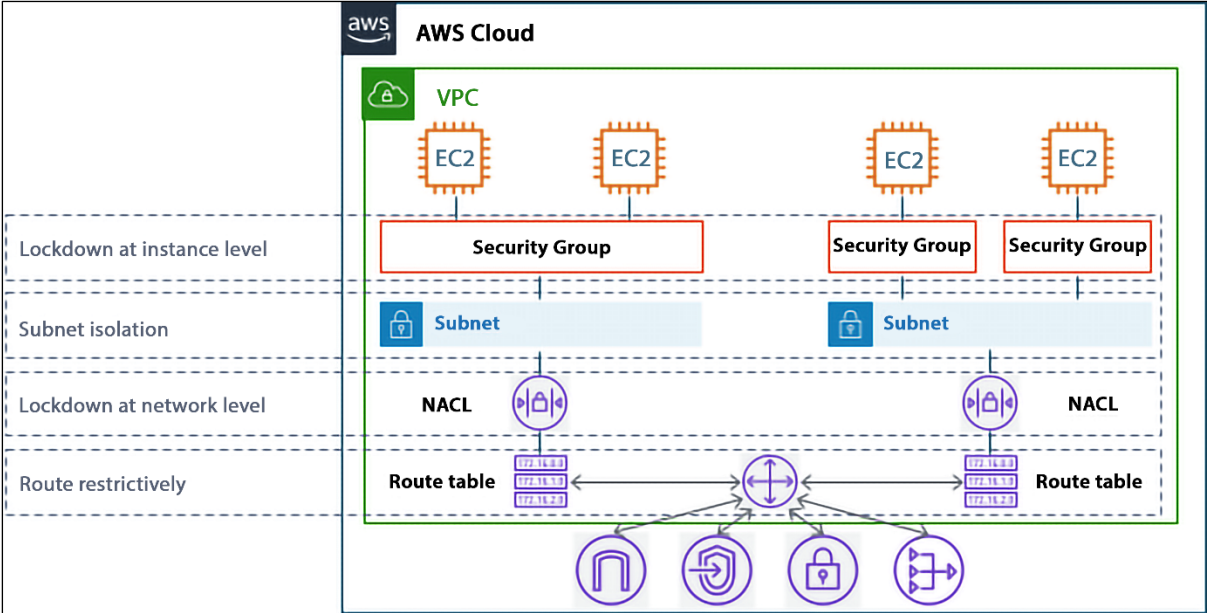
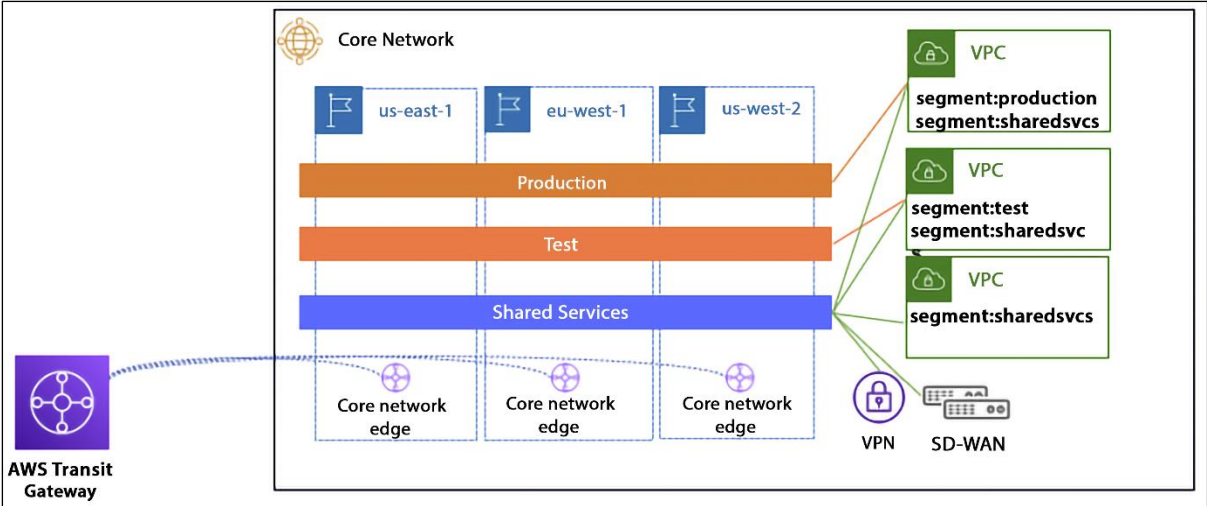
▼ Hosted zone details Edit

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Description -	Record count 2	

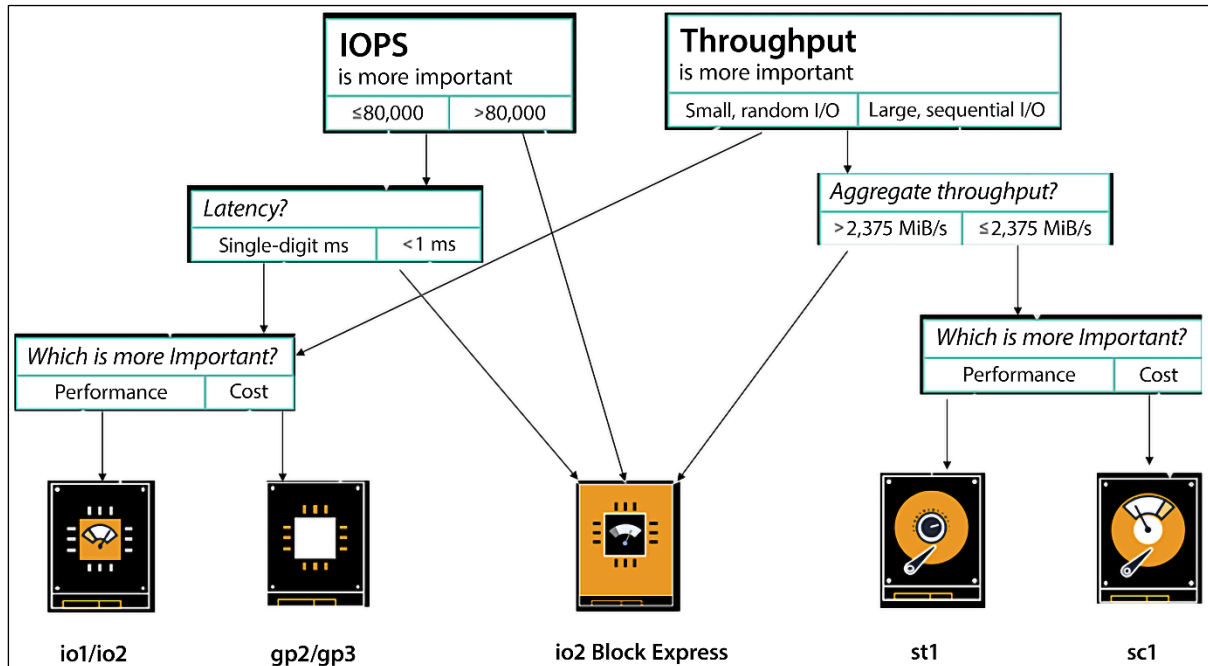






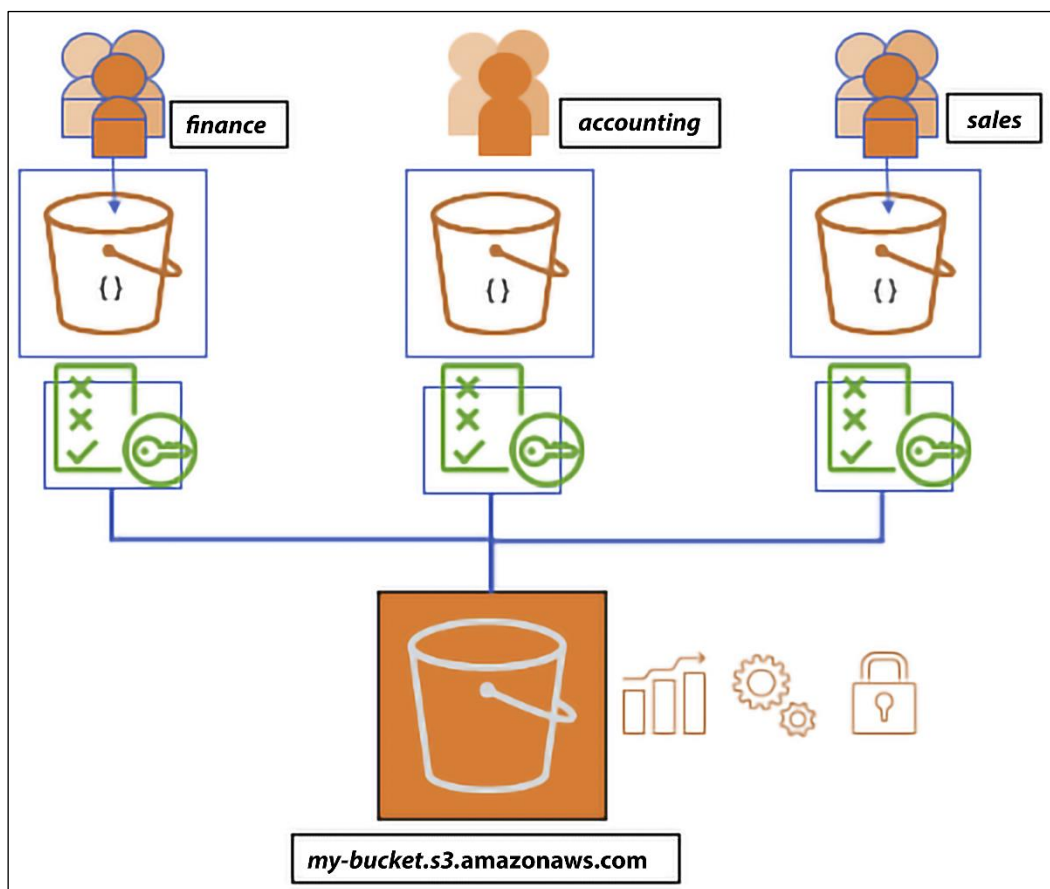


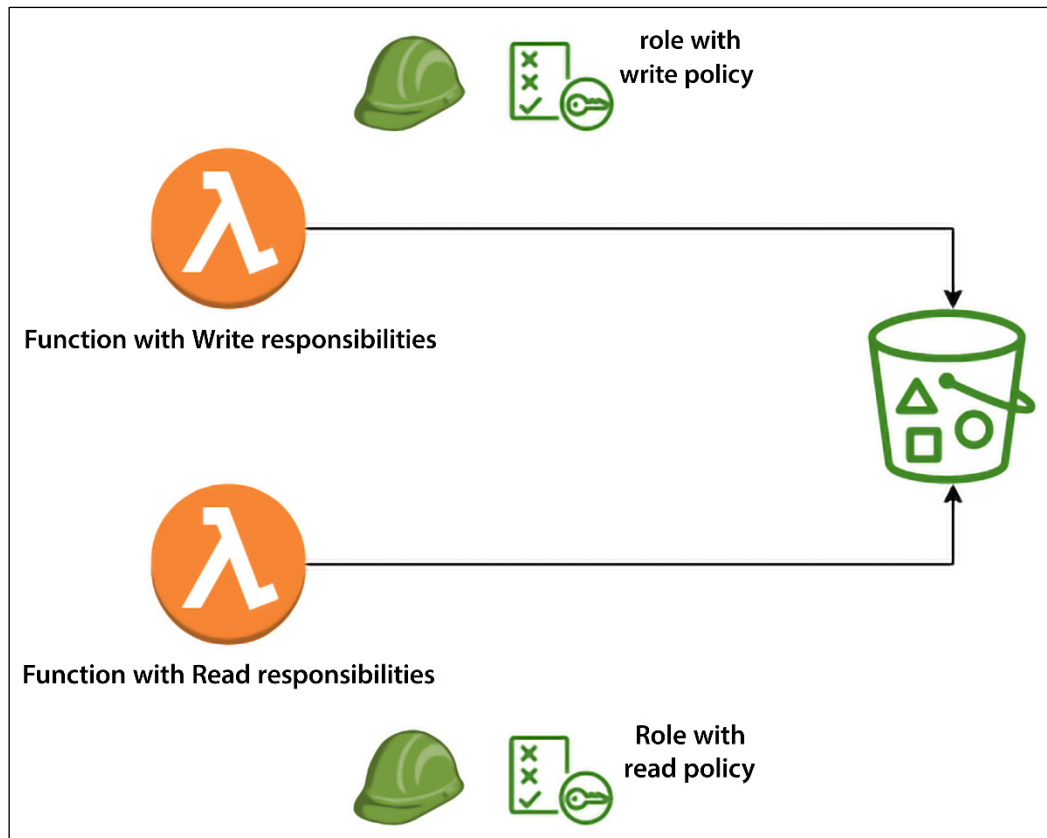
Chapter 5: Storage in AWS - Choosing the Right Tool for the Job



	S3 Standard	S3 Intelligent-Tiering*	S3 Standard-IA	S3 One Zone-IA†	S3 Glacier Instant Retrieval	S3 Glacier Flexible Retrieval	S3 Glacier Deep Archive
Designed for durability	99.999999999% (11 9s)	99.999999999% (11 9s)	99.999999999% (11 9s)	99.999999999% (11 9s)	99.999999999% (11 9s)	99.999999999% (11 9s)	99.999999999% (11 9s)
Designed for availability	99.99%	99.9%	99.9%	99.5%	99.9%	99.99%	99.99%
Availability SLA	99.9%	99%	99%	99%	99%	99.9%	99.9%
Availability Zones	≥3	≥3	≥3	1	≥3	≥3	≥3
Minimum capacity charge per object	N/A	N/A	128 KB	128 KB	128 KB	40 KB	40 KB
Minimum storage duration charge	N/A	N/A	30 days	30 days	90 days	90 days	180 days
Retrieval charge	N/A	N/A	per GB retrieved	per GB retrieved	per GB retrieved	per GB retrieved	per GB retrieved
First byte latency	milliseconds	milliseconds	milliseconds	milliseconds	milliseconds	select minutes or hours	select hours

	Performance	Cost	Availability	Storage Limit	File Size Limit
Amazon S3	By default, it supports 100 requests per second and scalable to 300	Average of \$0.0235 per GB/month	99.99 % availability	No limit on the number of objects	5TB object limit
Amazon EBS	Provisioned IOPS can deliver 4000 operations per second	Anywhere from \$0.025 to \$0.100 per GB/month	99.99 % availability	Maximum storage size Of 16 TB	File size of up to 16 TB
Amazon EFS	Capable of up to 7000 operations per second	From \$0.30 to \$0.36 per GB/month	No SLA in force	No limit on system size	File size of up to 52 TB





```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "s3:PutObject",
        "s3:GetObject",
        "s3:GetObjectVersion",
        "s3:DeleteObject",
        "s3:DeleteObjectVersion"
      ],
      "Resource": "arn:aws:s3:::DOC-EXAMPLE-BUCKET1/Mary/*"
    }
  ]
}
```

```

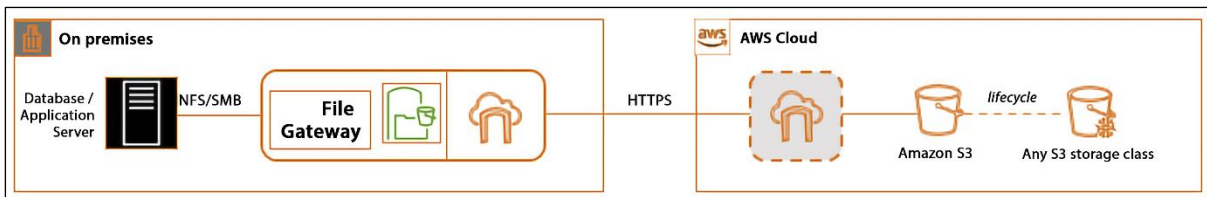
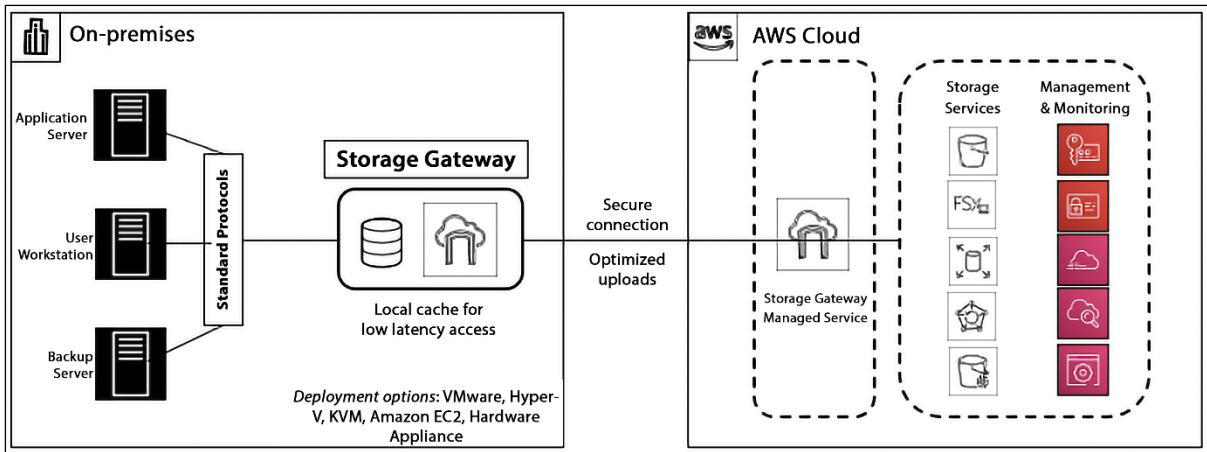
{
  "Version": "2012-10-17",
  "Id": "Access-to-bucket-using-specific-endpoint",
  "Statement": [
    {
      "Sid": "Access-to-specific-VPCE-only",
      "Effect": "Deny",
      "Principal": "*",
      "Action": "s3:*",
      "Resource": ["arn:aws:s3:::bucket_name",
                  "arn:aws:s3:::bucket_name/*"],
      "Condition": {
        "StringNotEquals": {
          "aws:sourceVpce" : "vpce-La2b3c4d"
        }
      }
    }
  ]
}

```

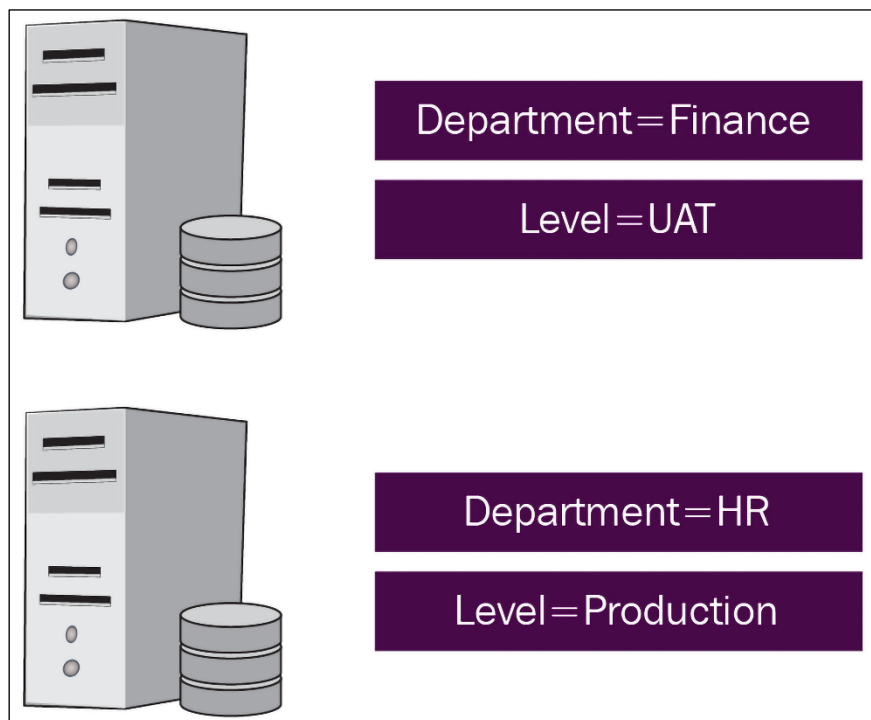
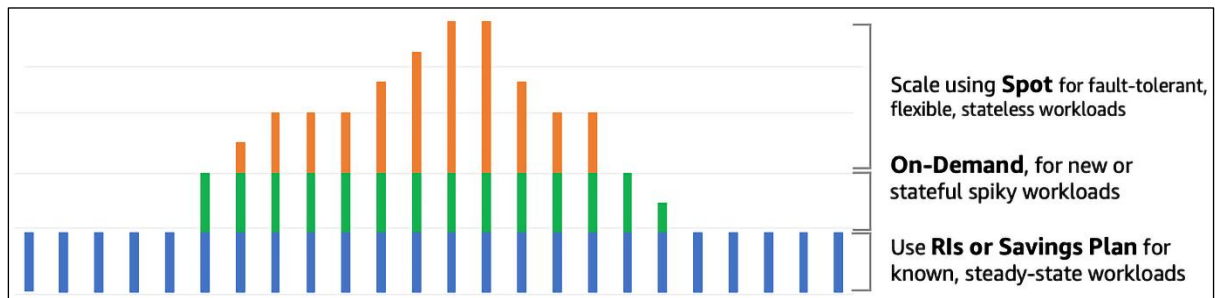
```

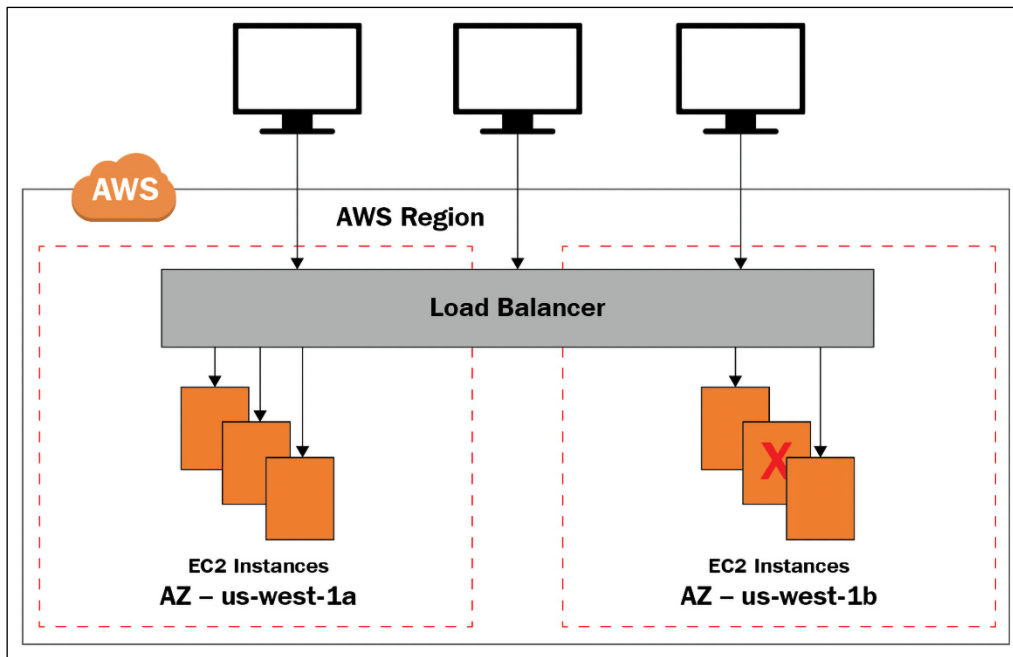
{
  "Version": "2012-10-17",
  "Id": "Access-to-bucket-using-specific-endpoint",
  "Statement": [
    {
      "Sid": "Access-to-specific-VPCE-only",
      "Effect": "Deny",
      "Principal": "*",
      "Action": "s3:*",
      "Resource": ["arn:aws:s3:::example_bucket",
                  "arn:aws:s3:::example_bucket/*"],
      "Condition": {
        "StringNotEquals": {
          "aws:sourceVpce" : "vpce-La2b3c4d"
        }
      }
    }
  ]
}

```

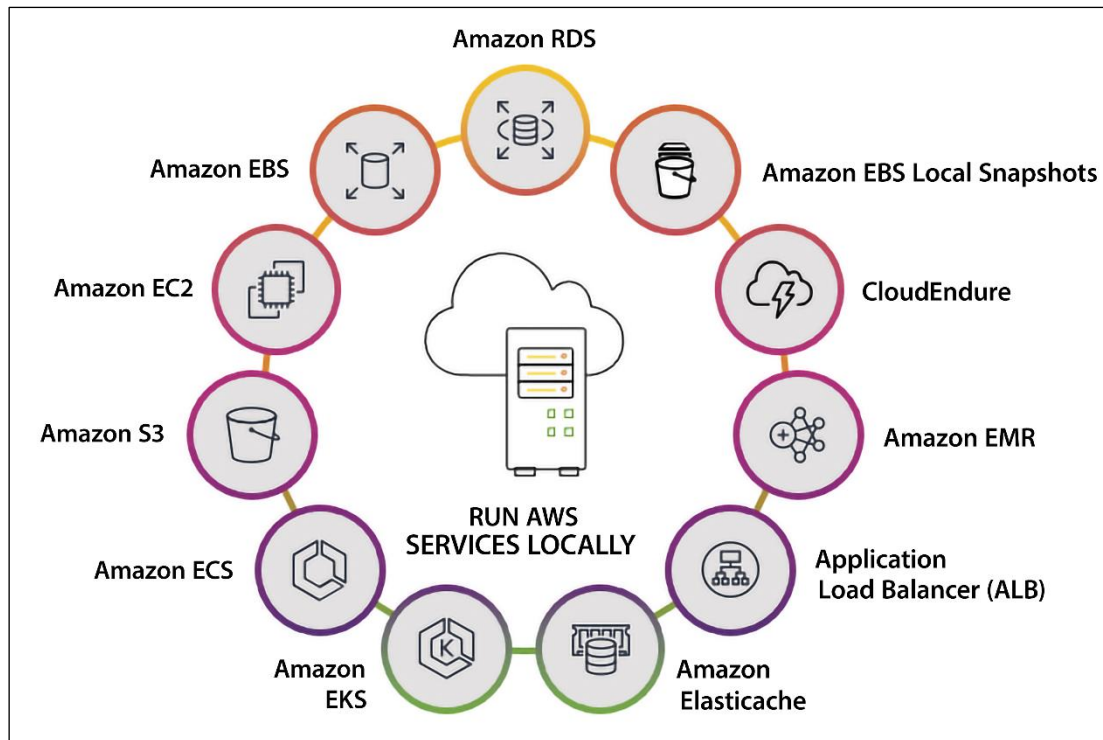


Chapter 6: Harnessing the Power of Cloud Computing



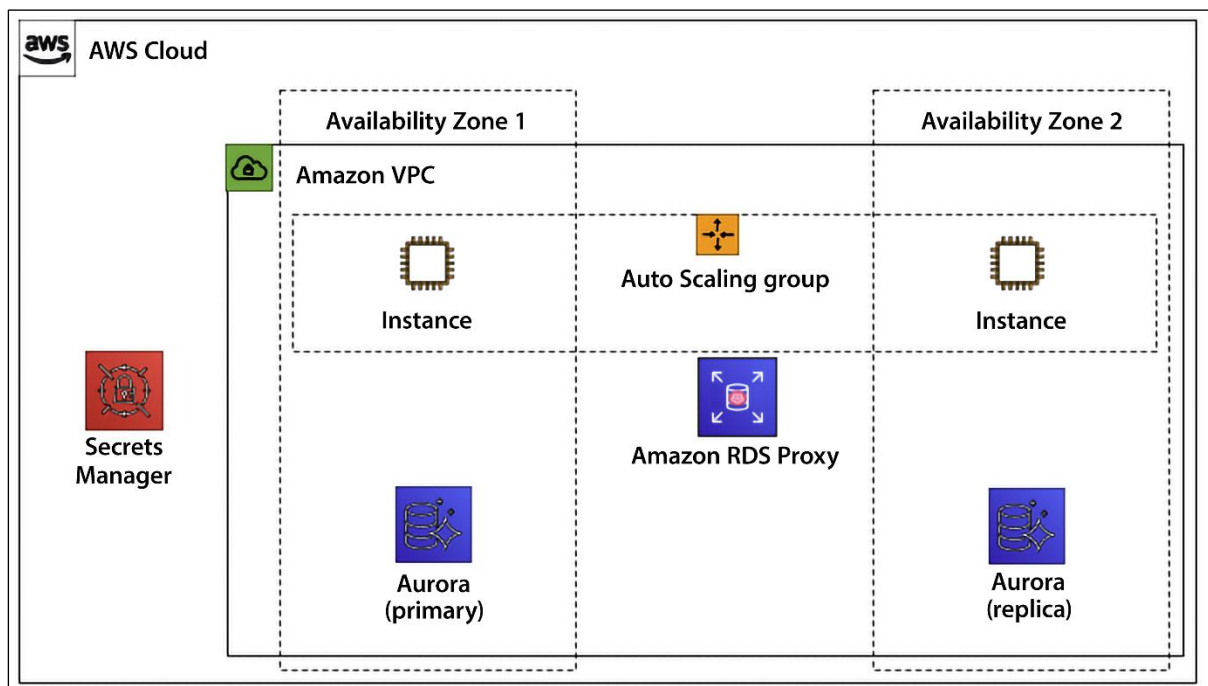


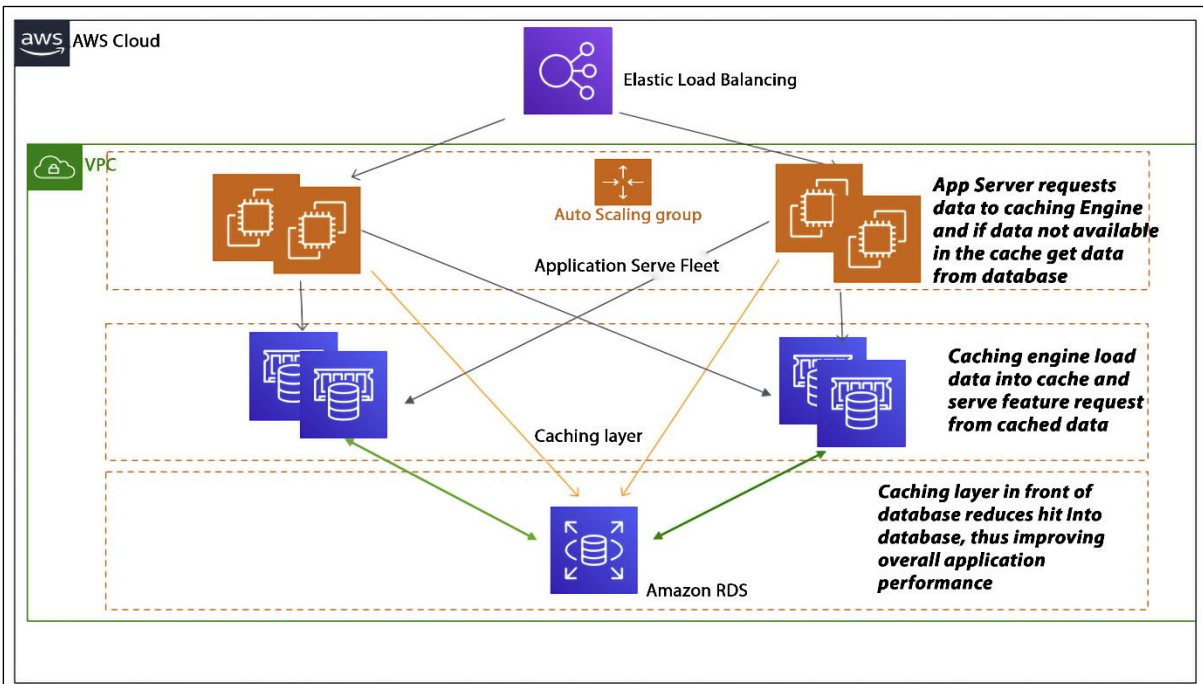
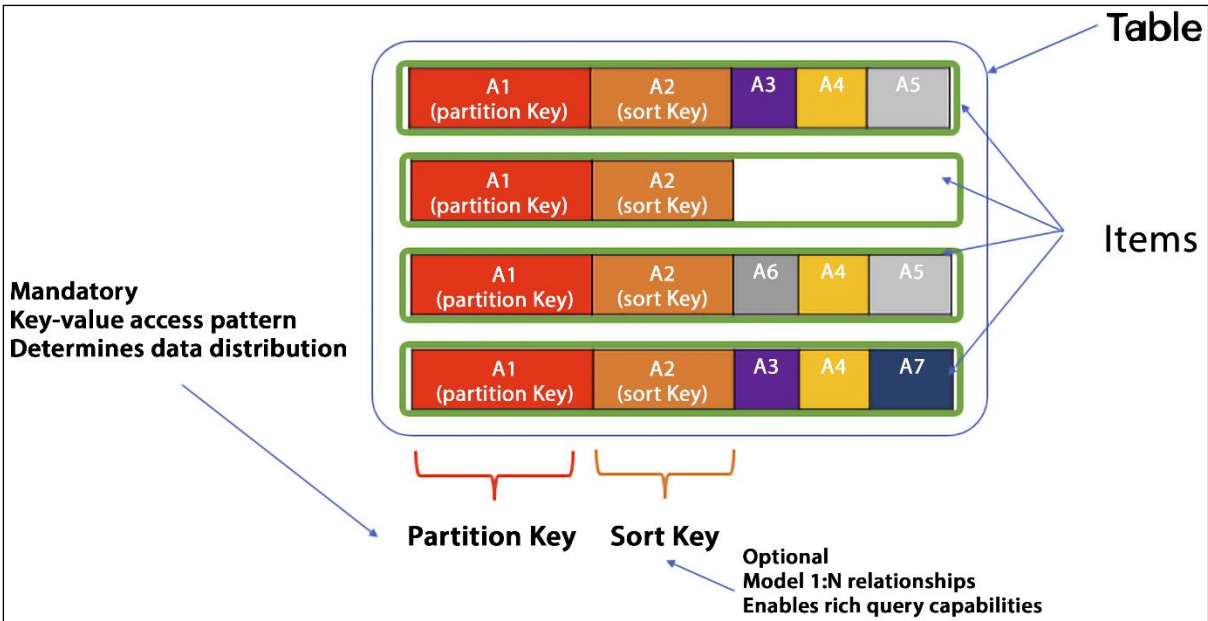
Feature	Application Load Balancer	Network Load Balancer	Classic Load Balancer
Protocols	HTTP, HTTPS	TCP, UDP, TLS	TCP, SSL/TLS, HTTP, HTTPS
Platforms	VPC	VPC	EC2-Classic, VPC
Layer	Layer 7		Layer 4
Generation	Newer Tech	Newer Tech	Old Tech
Performance	High	Highest	High
Health Checks	✓	✓	✓
Cloudwatch metrics	✓	✓	✓
Logging	✓	✓	✓
AZ fail-over	✓	✓	✓
Load balancing to multiple ports	✓	✓	✓
IP addresses as targets	✓	✓	
Cross-zone load balancing	✓	✓	✓
Sticky sessions	✓	✓	✓
Static and Elastic IPs		✓	
Path/Host based routing	✓		
Redirects	✓		
SSL offloading	✓	✓	✓
Server Name Indication	✓	✓	
User authentication	✓		



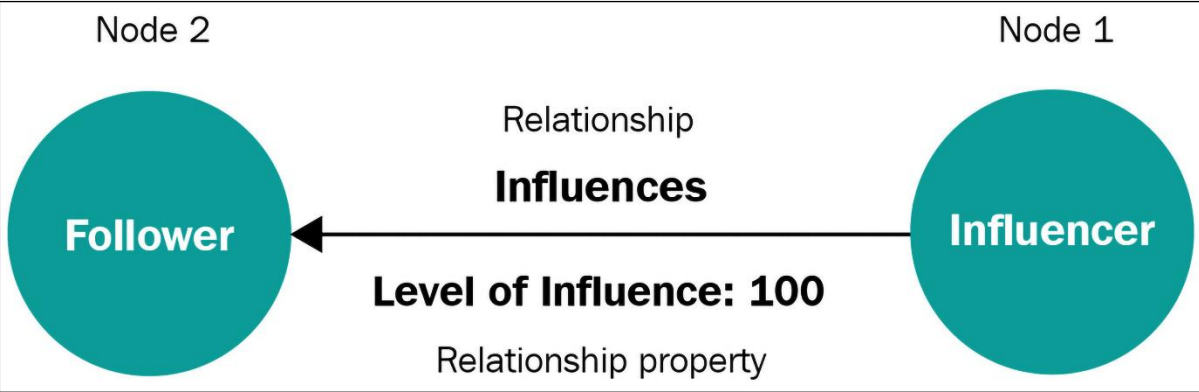
Chapter 7: Selecting the Right Database Service

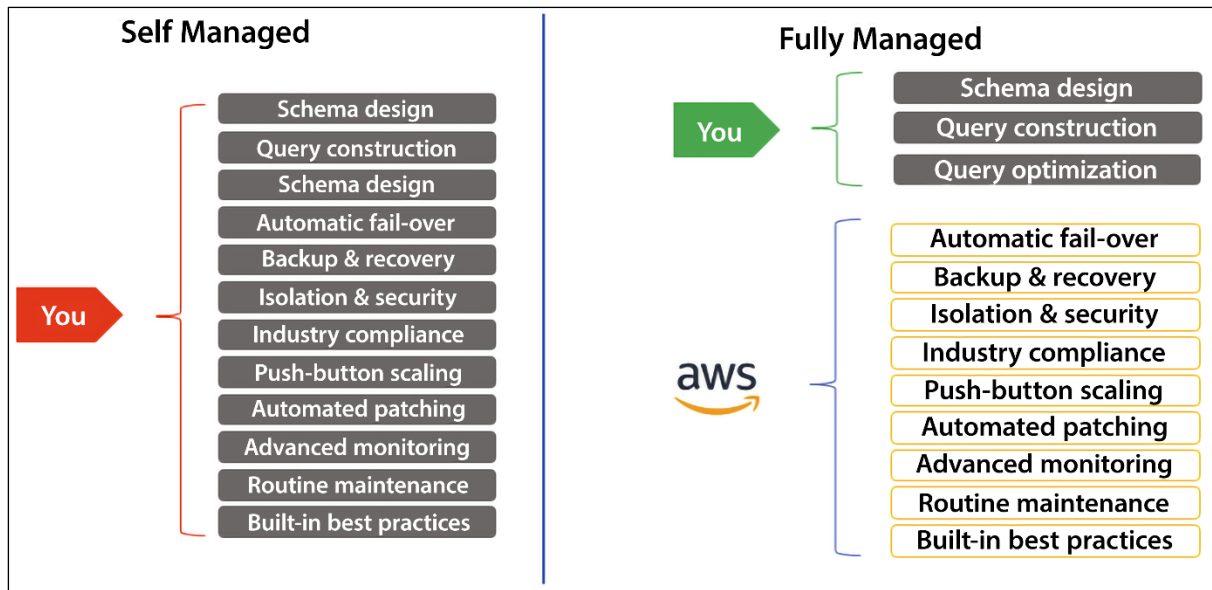
	OLTP	OLAP
Focus	Insertion and modification of data.	Retrieval and analysis of data.
Data	OLTP data is normally the source of truth and original data.	OLAP systems are fed by OLTP systems.
Transaction	OLTP has short transactions. Usually a combination of updates and inserts.	OLAP has long transactions. Usually just inserts.
Time	Low processing time of transactions.	High processing time of transactions.
Queries	Simpler queries.	Complex queries.
Normalization	Usually normalized (3NF).	Usually not normalized.
Integrity	Important. Normally ACID.	Not as important. BASE can be used.





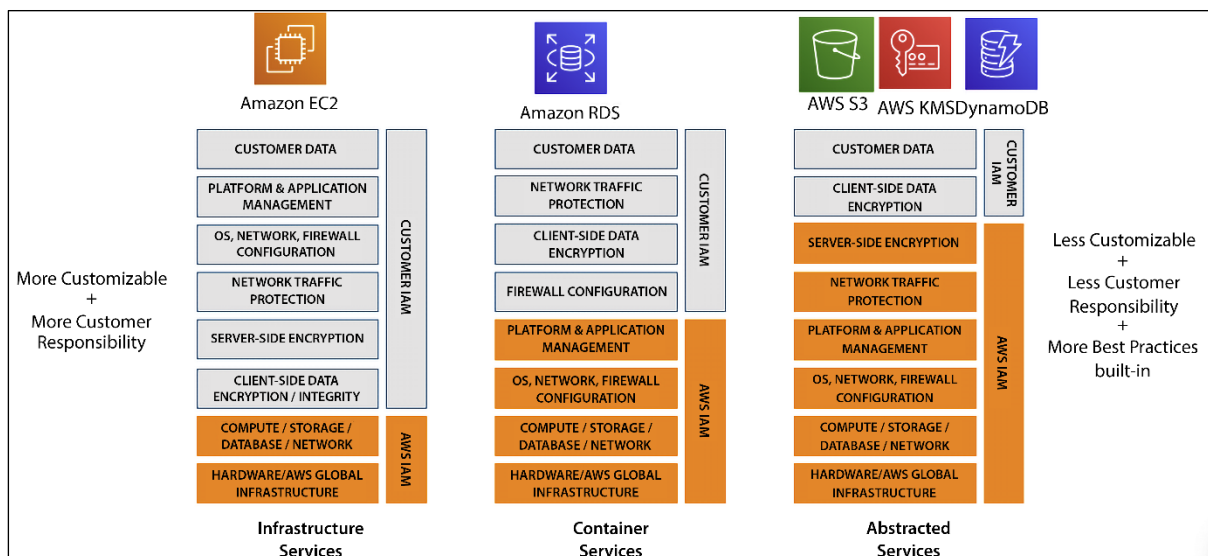
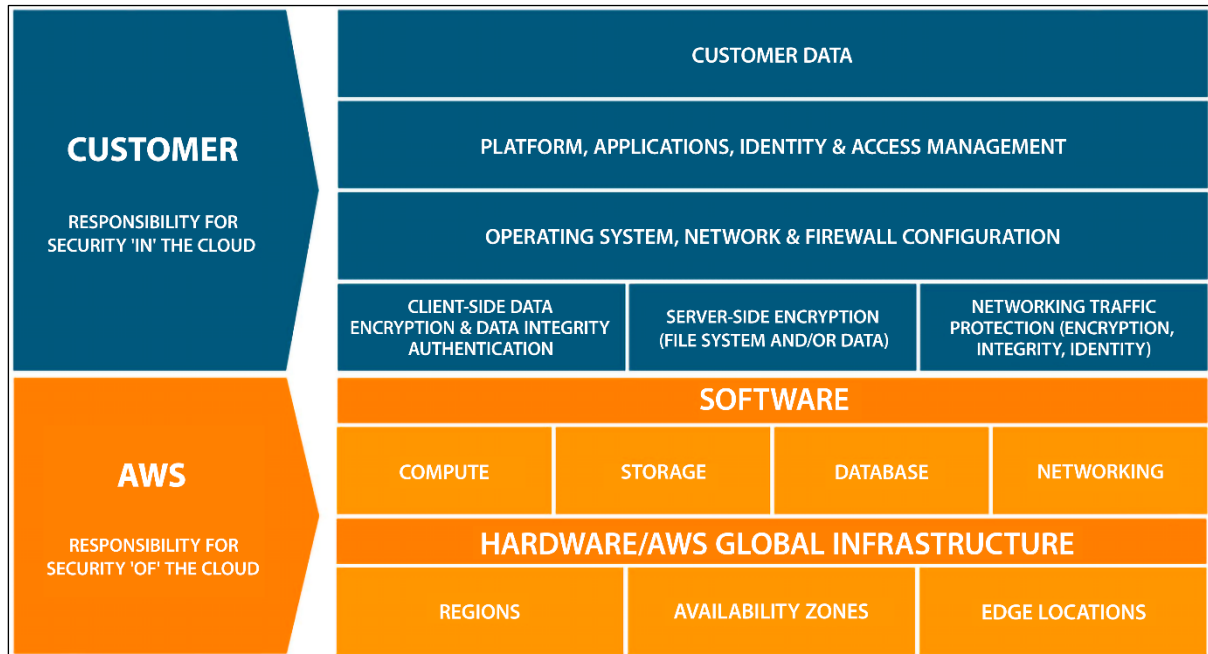
	Memcached	Redis
Sub-millisecond latency	Yes	Yes
Developer ease of use	Yes	Yes
Data partitioning	Yes	Yes
Support for a broad set of programming languages	Yes	Yes
Advanced data structures	N/A	Yes
Multithreaded architecture	Yes	N/A
Snapshots	N/A	Yes
Replication	N/A	Yes
Transactions	N/A	Yes
Pub/Sub	N/A	Yes
Lua scripting	N/A	Yes
Geospatial support	N/A	Yes



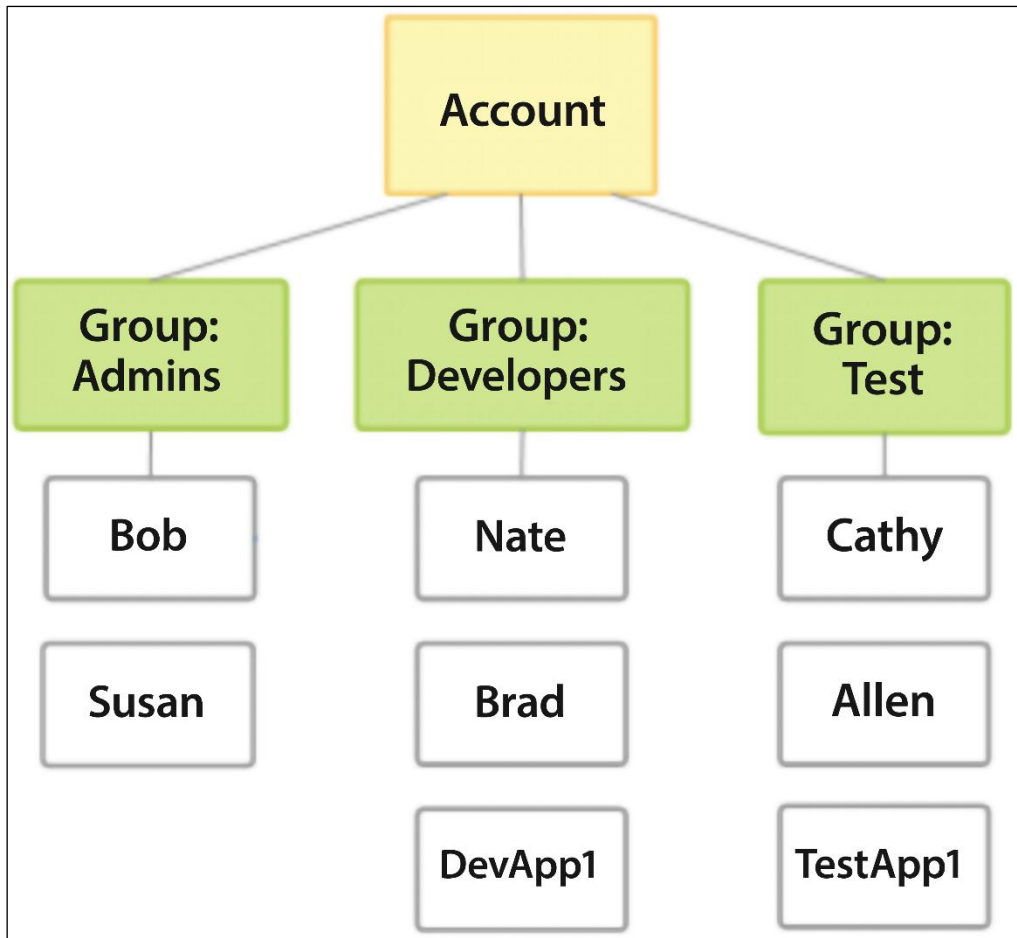


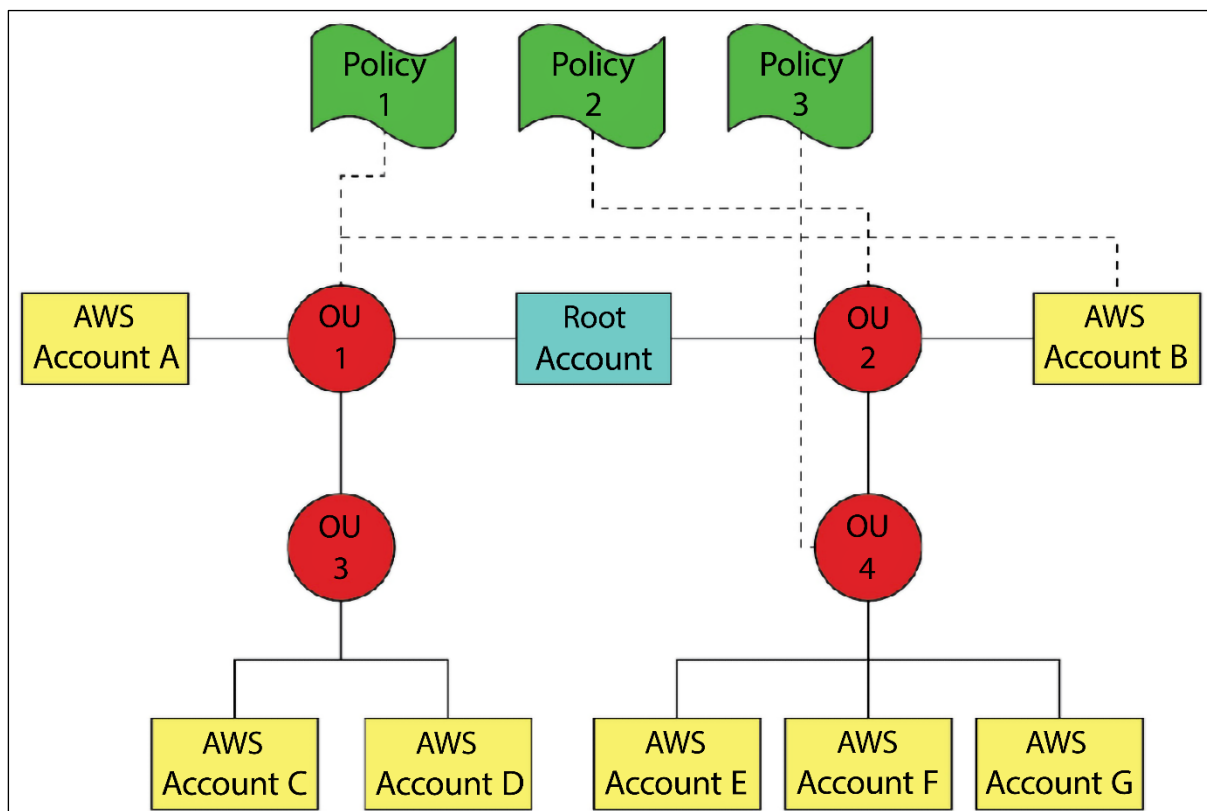
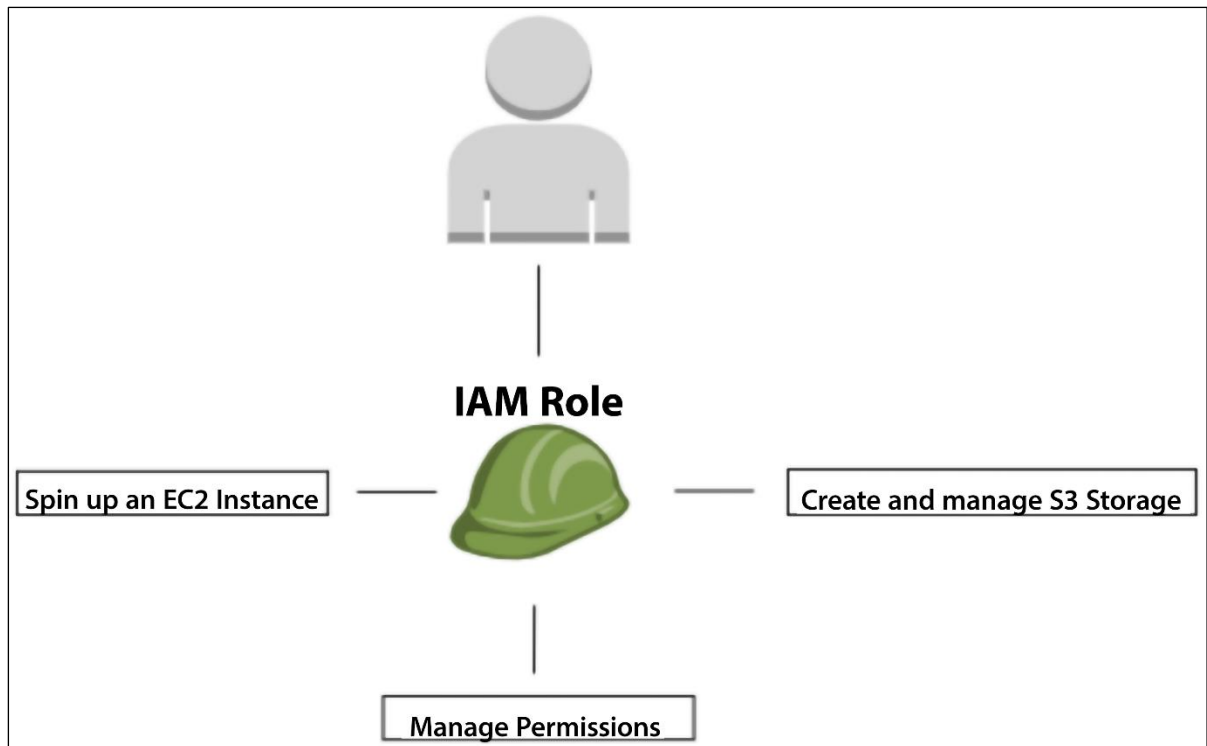
	Relational	Key-value	Document	In-memory	Graph	Time-series	Ledger	Wide Column
	Referential integrity, ACID transactions, schema-on-write	High throughput, Low latency reads and writes, endless scale	Store documents and quickly access querying on any attribute	Query by key with microsecond latency	Quickly and easily create and navigate relationships between data	Collect, store, and process data sequenced by time	Complete, immutable, and verifiable history of all changes to application data	Scalable, highly available, and managed Apache Cassandra-compatible service
Common Use Cases	Lift and shift, ERP, CRM, finance	Real-time bidding, shopping cart, social, product catalog, customer preferences	Content management, personalization, mobile	Leaderboards, real-time analytics, caching	Fraud detection, social networking, recommendation engine	IoT applications, event tracking	Systems of record, supply chain, health care, registrations, financial	Build low-latency applications, leverage open source, migrate Cassandra to the cloud
AWS Service(s)	Aurora RDS	DynamoDB	DocumentDB	ElastiCache	Neptune	Timestream	QLDB	Keyspaces Managed Cassandra

Chapter 8: Best Practices for Application Security, Identity, and Compliance





Identity and access management	Detective controls	Infrastructure protection	Data protection	Incident response	Compliance
AWS Identity and Access Management (IAM) AWS IAM Identity Center (successor to AWS SSO) AWS Organizations AWS Directory Service Amazon Cognito AWS Resource Access Manager	AWS Security Hub Amazon GuardDuty Amazon Inspector Amazon CloudWatch AWS Config AWS CloudTrail VPC Flow Logs AWS IoT Device Defender	AWS Firewall Manager AWS Network Firewall AWS Shield AWS WAF Amazon VPC AWS PrivateLink AWS Systems Manager	Amazon Macie AWS Key Management Service (KMS) AWS CloudHSM AWS Certificate Manager AWS Secrets Manager AWS VPN Server-Side Encryption	Amazon Detective Amazon EventBridge AWS Backup AWS Security Hub AWS Elastic Disaster Recovery	AWS Artifact AWS Audit Manager





Organizational structure

▼   **Root**
r-4y40

▼   **Finance**
ou-4y40-c515ieps

▶   **Marketing**
ou-4y40-1yatnlgs

▶   **Sales**
ou-4y40-v1qescr4

  **user2_ou1**
 | user2@amazon.com

▼   **HR**
ou-4y40-bzbq15fs

▶   **Marketing**
ou-4y40-mos85fry

▶   **Payroll**
ou-4y40-154iqwfo

  **user3_ou2**
 | user3@amazon.com

  **user4_ou2**
 | user4@amazon.com

GuardDuty

Findings

Usage

Malware scans

Settings

Lists

S3 Protection

EKS Protection

Malware Protection

RDS Protection

Accounts

What's New

Partners

GuardDuty > Usage

Usage

Estimated total daily cost

About GuardDuty pricing

Some features are still in free trial. You pay nothing for these features while free trials are in effect. These estimates reflect what you can expect to pay after your free trial ends.

Breakdown by data source

CloudTrail

Daily average based on most recent usage per account

\$0.03

VPC Flow Logs

Daily average based on most recent usage per account

\$0.00

DNS Logs

Daily average based on most recent usage per account

\$0.00

S3 Data Events

Daily cost will be available 7 days after enabling data source.

Free trial ends January 28 (30 days remaining)

Pending

Kubernetes Audit Logs

Daily cost will be available 7 days after enabling data source.

Free trial ends January 28 (30 days remaining)

Pending

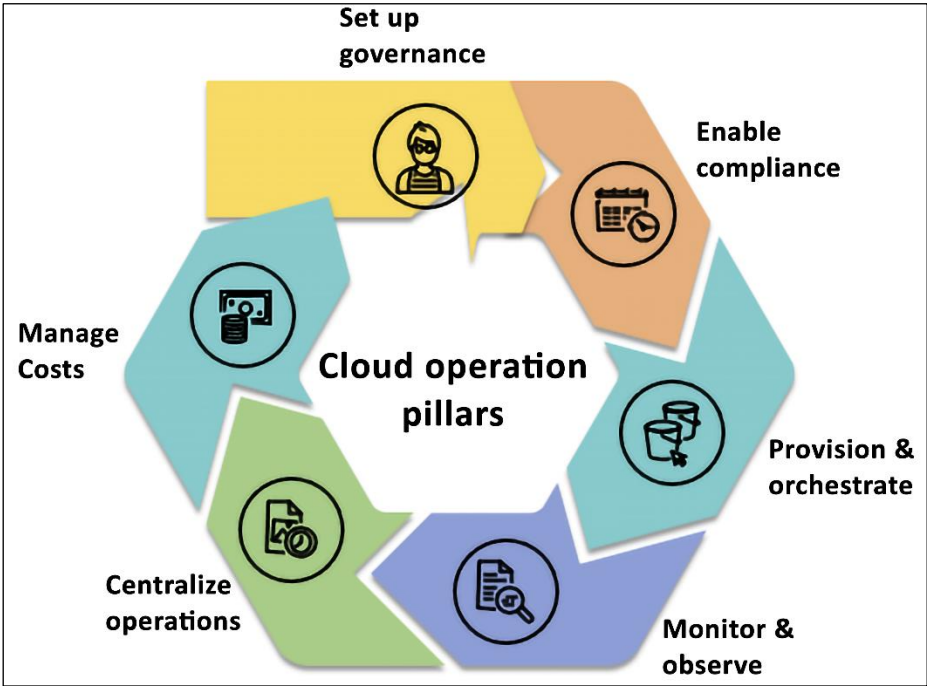
Malware Protection

Daily cost will be available 7 days after enabling data source.

Free trial ends January 28 (30 days remaining)

Pending

Chapter 9: Driving Efficiency with CloudOps



Amazon EventBridge > Rules > aws-sa-book-event-rule

aws-sa-book-event-rule

EditDisableDeleteCloudFormation Template

Rule detailsInfo

Rule name

aws-sa-book-event-rule

Description

AWS Event rule to send information to Elastic Search using Lambda for an instance start failure during autoscaling

Status

Enabled

Rule ARN

arn:aws:events:us-east-1:;rule/aws-sa-book-event-rule

Event bus name

default

Event bus ARN

arn:aws:events:us-east-1:;event-bus/default

Type

Standard

Event patternTargetsMonitoringTags

Targets

Targets

Target Name	Type	Arn	Input	Role
LogsToElasticsearch_loges	Lambda function	arn:aws:lambda:us-east-1:;function:LogsToElasticsearch_loges	Matched event	-

Input to target:

Matched event

Additional parameters:

--

Dead-letter queue (DLQ):

-

▼ Operations Management

Explorer

OpsCenter

CloudWatch Dashboard

Incident Manager

▼ Application Management

Application Manager

AppConfig

Parameter Store

▼ Change Management

Change Manager

Automation

Change Calendar

Maintenance Windows

▼ Node Management

Fleet Manager

Compliance

Inventory

Hybrid Activations

Session Manager

Run Command

State Manager

Patch Manager

Distributor

Features

Remote connect

Quickly and securely access your Amazon EC2 Instances through an interactive one-click browser-based shell or through the AWS CLI without the need to open inbound ports, maintain bastion hosts, or manage SSH keys.

Explore Session Manager

Resource grouping

Make sense out of your AWS footprint by grouping your resources into applications.

Explore Resource Groups

Insights & dashboards

View account-level and group-related insights through operational dashboards.

Explore built-in insights

Running tasks on group resources

Use built-in automations or build your own to accomplish complex operational tasks at scale.

Explore Automation

Remote execution

Safe and secure remote execution across instances at scale without SSH or PowerShell.

Explore Run Command

Parameter store

Centralized hierarchical store for managing secrets or plain-text data.

Explore Parameter Store

Service Catalog > Applications > sa-book-app

sa-book-app Info

Delete Edit View in Application Manager

Application details

Application description

AWS Service Catalog AppRegistry repository for collecting and managing application resources

Date created

Mon, Jan 2, 2023, 9:43:05 PM PST

Application ID

0exs6lb0n1qbi2p7hechg23kjl

Application ARN

arn:aws:servicecatalogus-east-:applications/0exs6lb0n1qbi2p7hechg23kjl

Resource Group ARN

arn:aws:resource-groupsus-east-:group/AWS_AppRegistry_Application-sa-book-app

Created by

789211807855 (This account)

Share configuration

Resource collections (4)

Attribute groups (0)

Share (0)

Tags (1)

Resource collections associated to application (4)

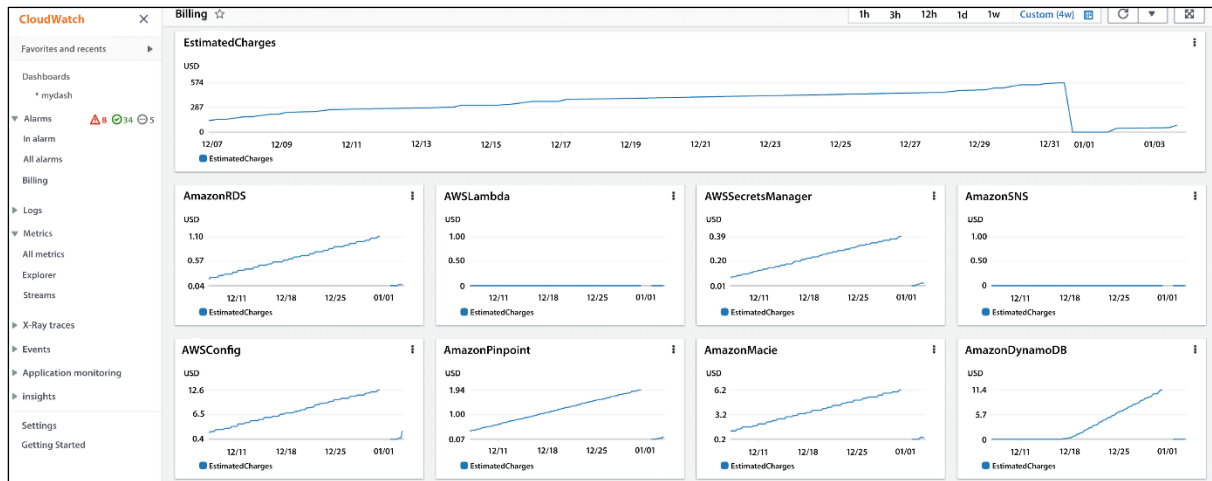
Info

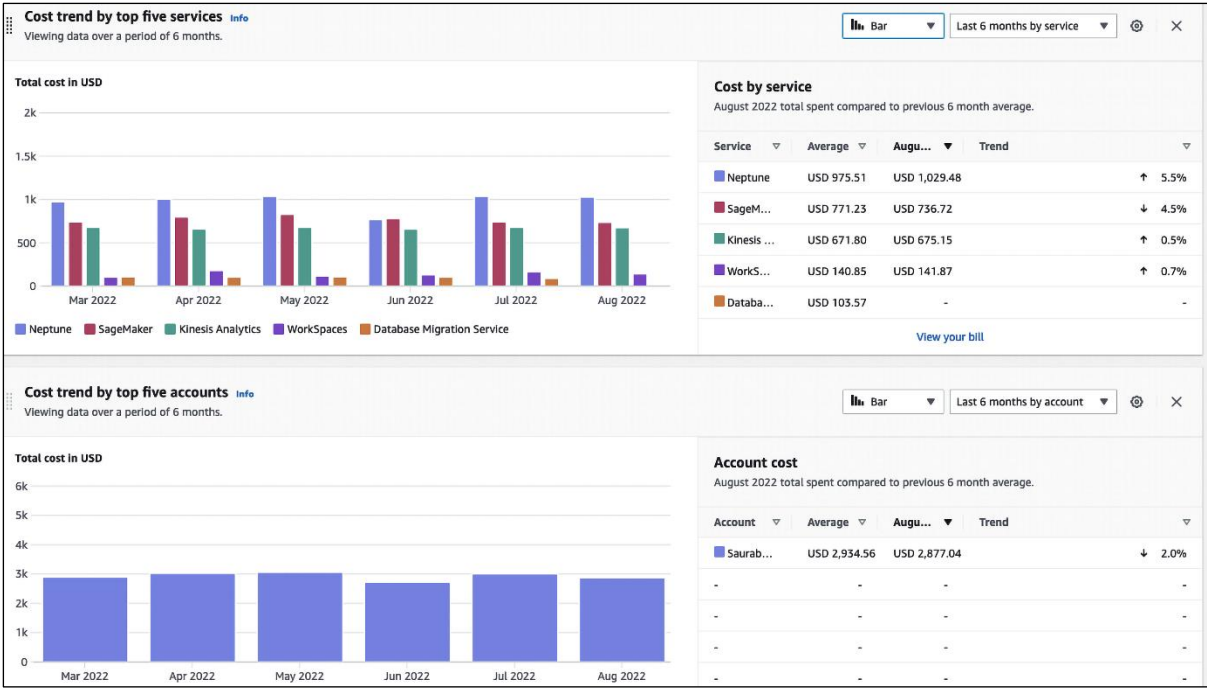
A list of resources from accounts that allow associations to this application.

Q Search resource collections

< 1 > @

<input type="checkbox"/>	Resource collection name	Resource collection ARN	Association type	Associated by
<input type="checkbox"/>	Create-PatchBaseline	arn:aws:cloudformationus-east-:stack/Create-PatchBaseline/d63bada0-8901-11eb-abf8-0a2fada68a5	CFN Stack	(This account)





Cost trend by top five accounts info

Viewing data over a period of 6 months.

Bar

Last 6 months by account

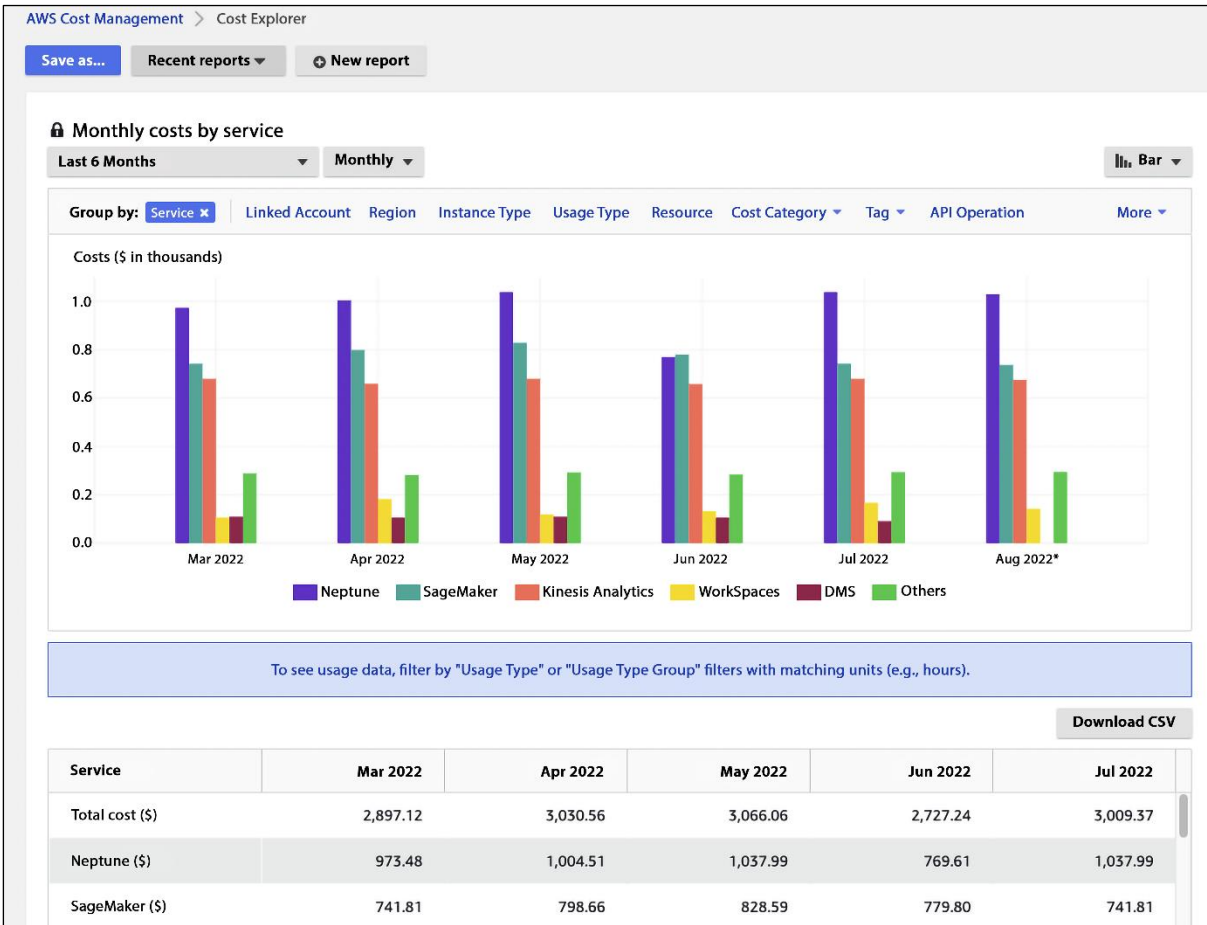
Total cost in USD

Month	Saurab...
Mar 2022	3000
Apr 2022	3000
May 2022	3000
Jun 2022	2800
Jul 2022	3000
Aug 2022	2800

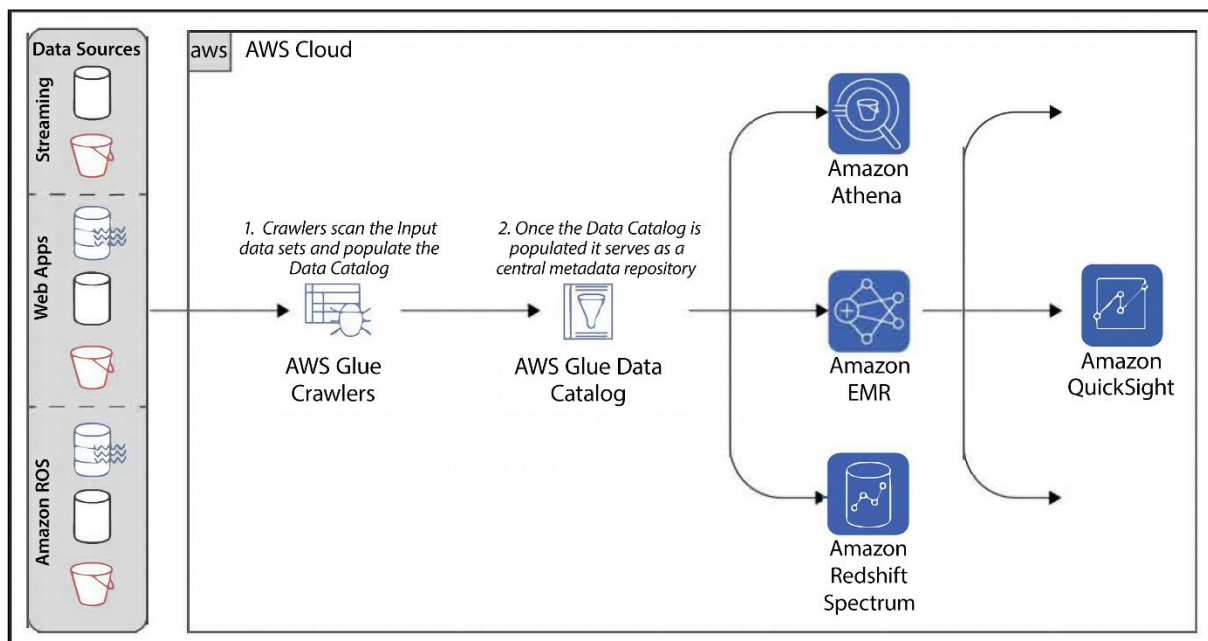
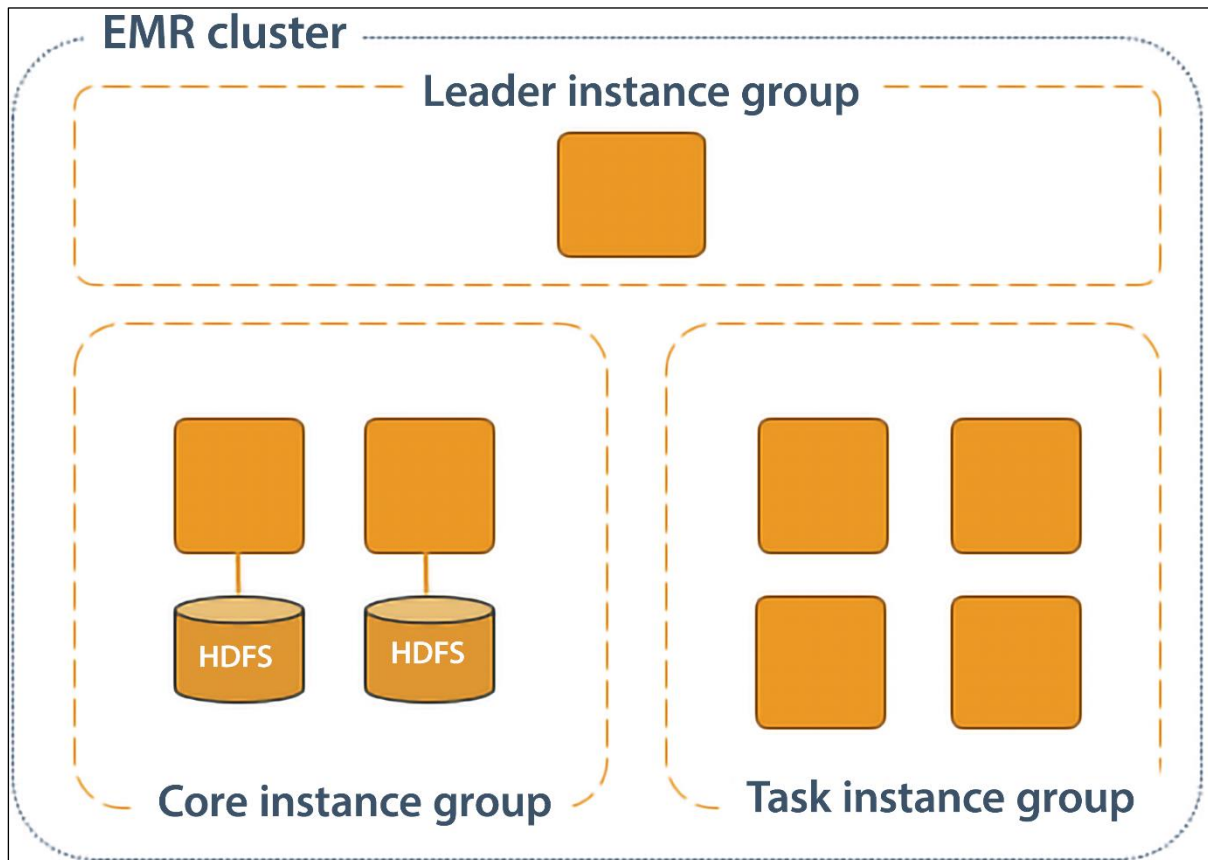
Account cost

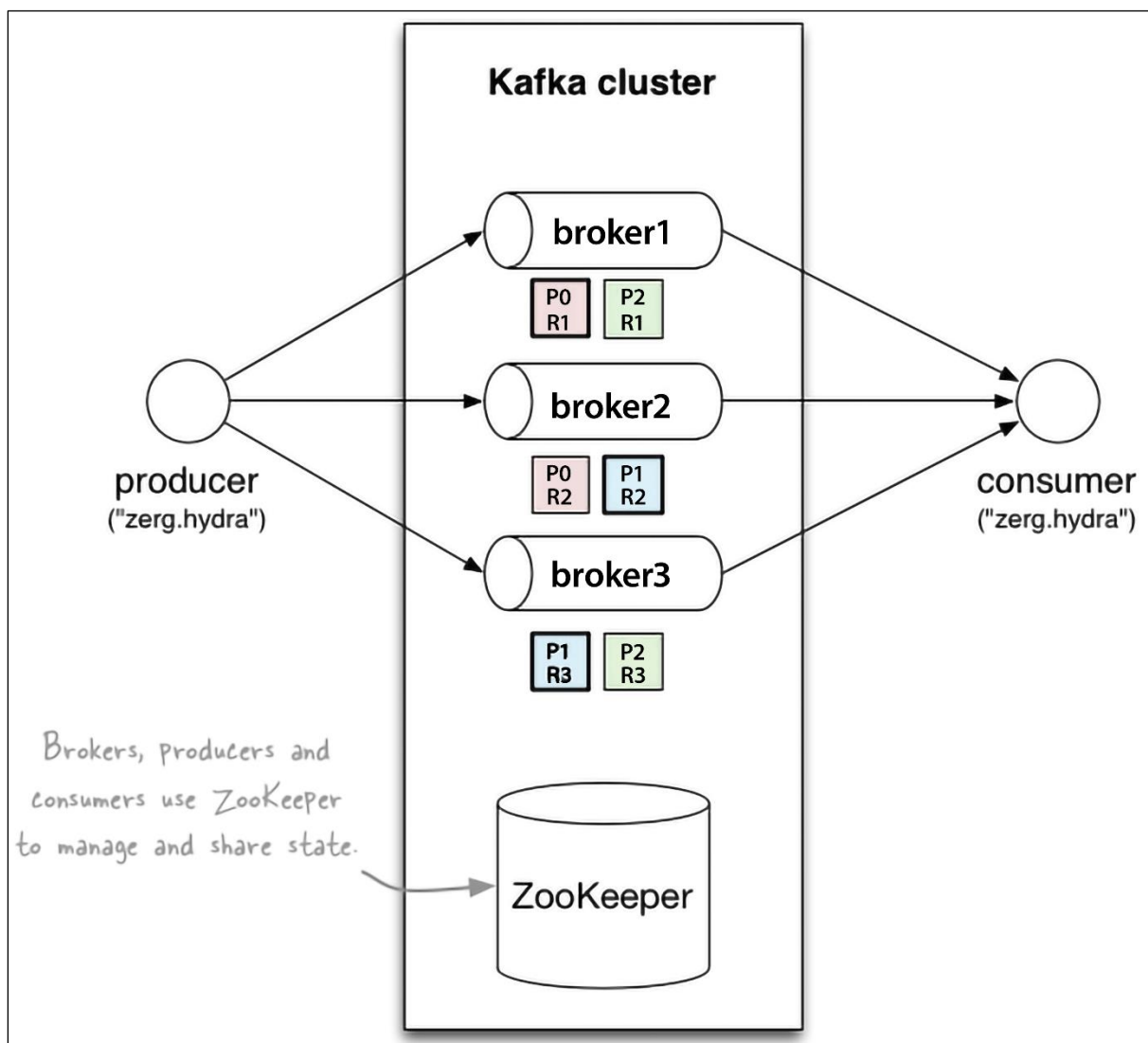
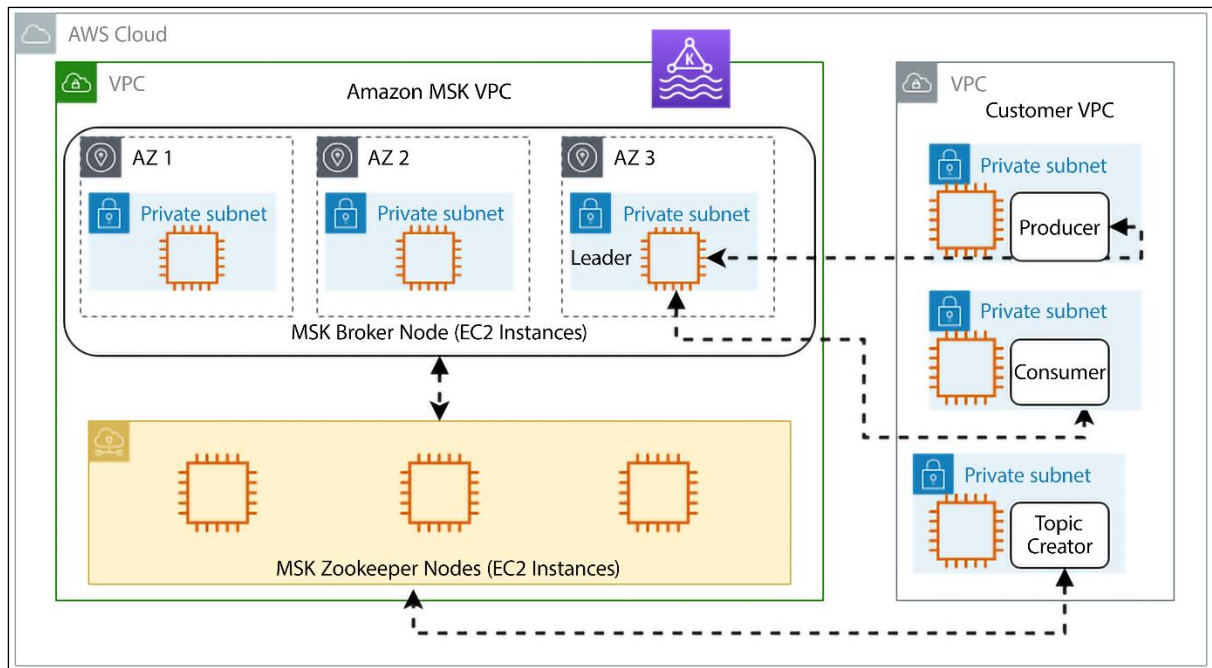
August 2022 total spent compared to previous 6 month average.

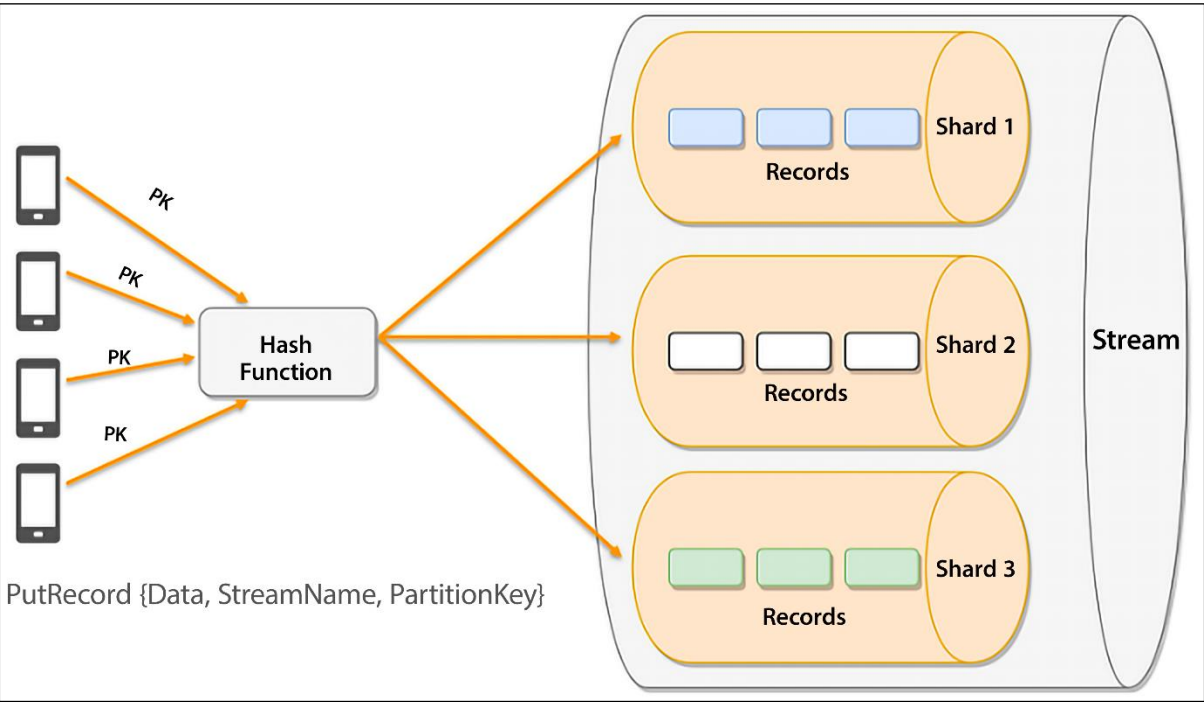
Account	Average	Augu...	Trend
Saurab...	USD 2,934.56	USD 2,877.04	↓ 2.0%
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-



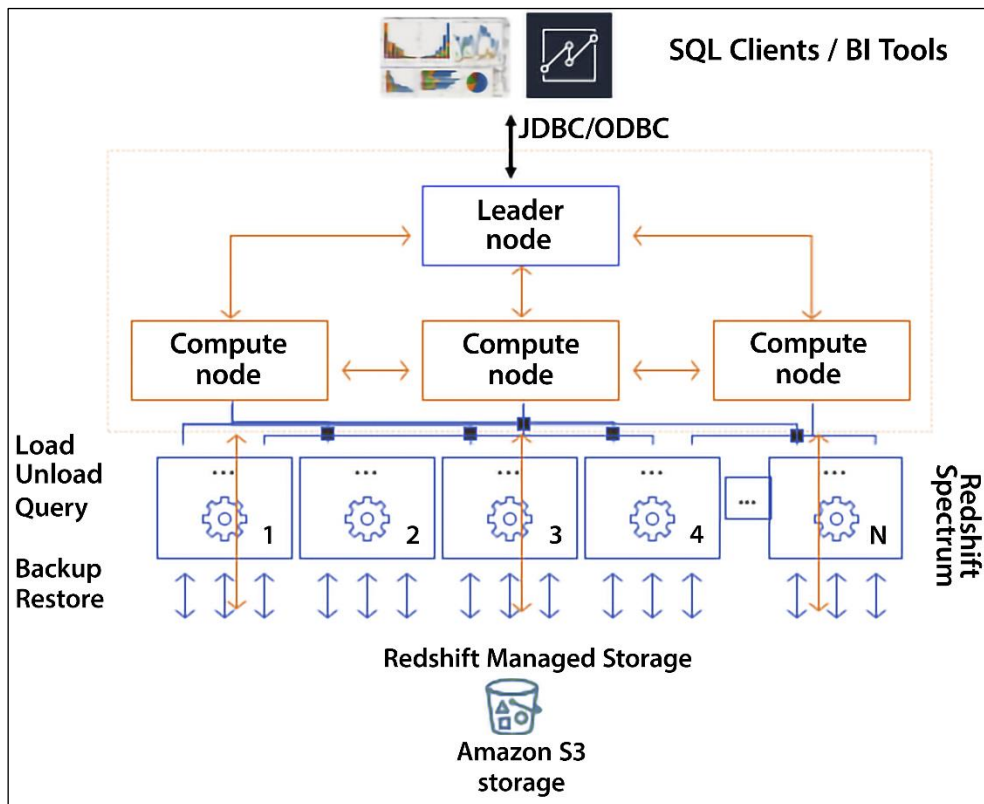
Chapter 10: Big Data and Streaming Data Processing in AWS

















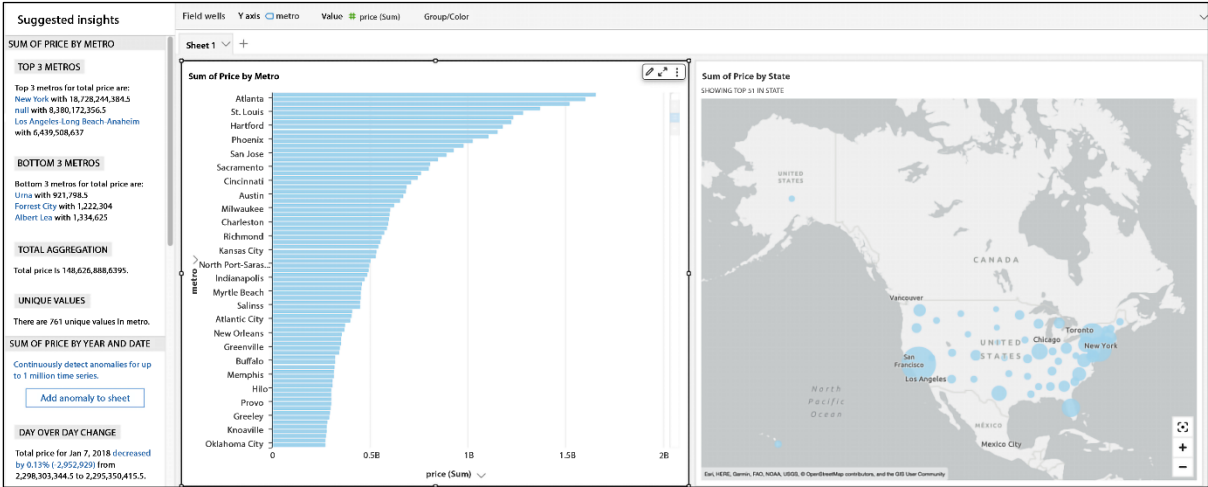


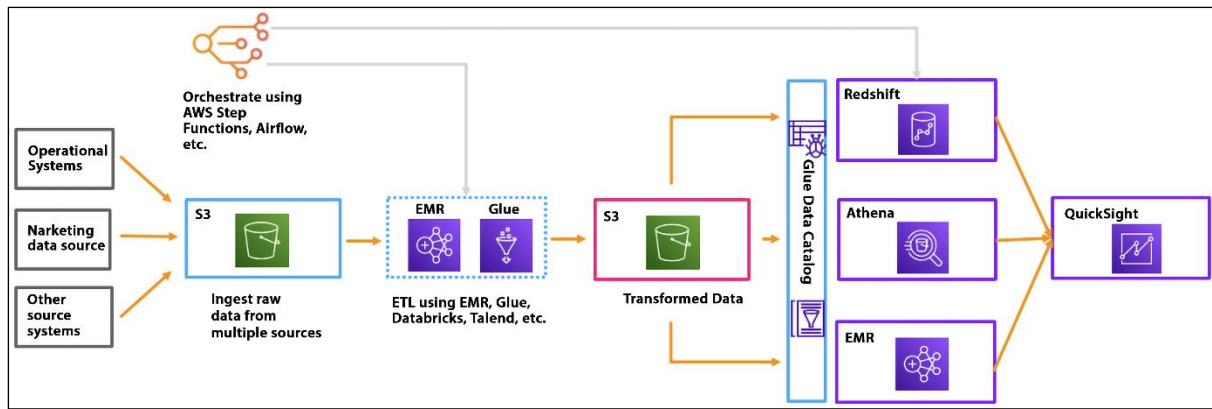
Chapter 11: Data Warehouses, Data Queries, and Visualization in AWS



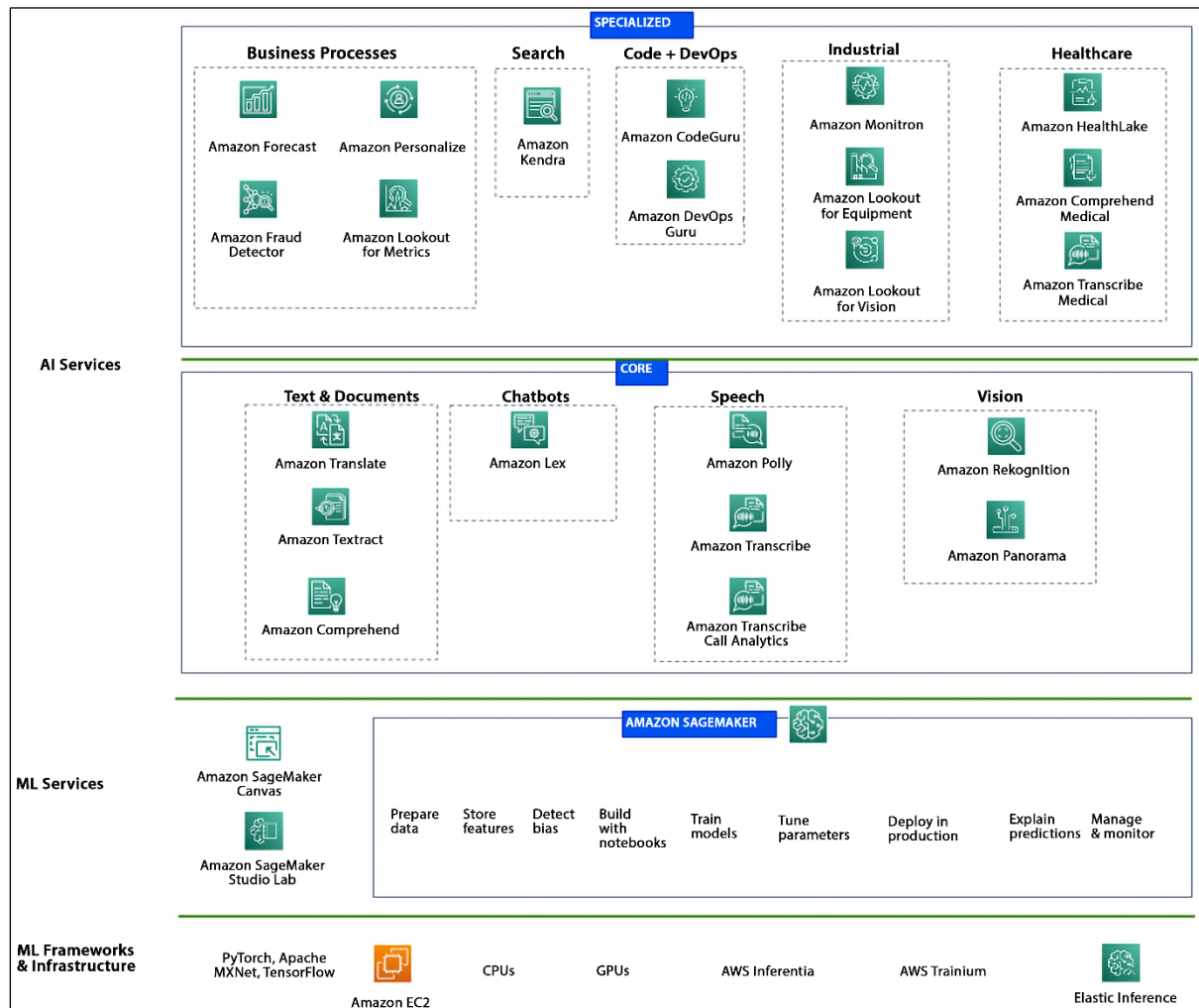
Format	Can be split	Degree of compression	Compression speed
Gzip	No		
Snappy	No		
Bzip2	Yes		
LZO	Only when indexed		
Very High		High	Medium
			
			Low
			

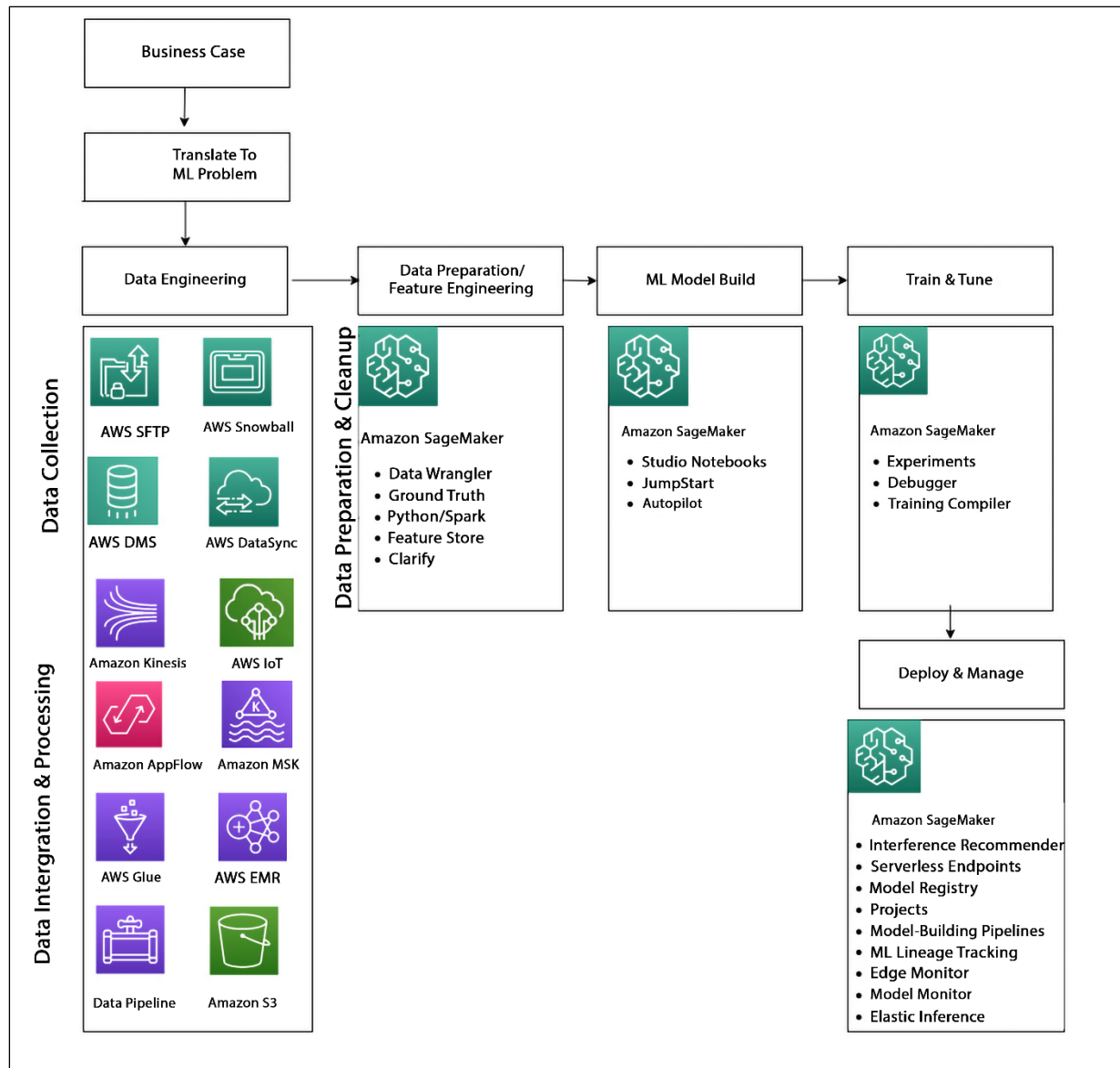
File 1	File 2	File 3
Stats: Min=1; Max 3	Stats: Min=4; Max 6	Stats: Min=7; Max 9
Value	Value	Value
1	4	7
2	5	8
3	6	9

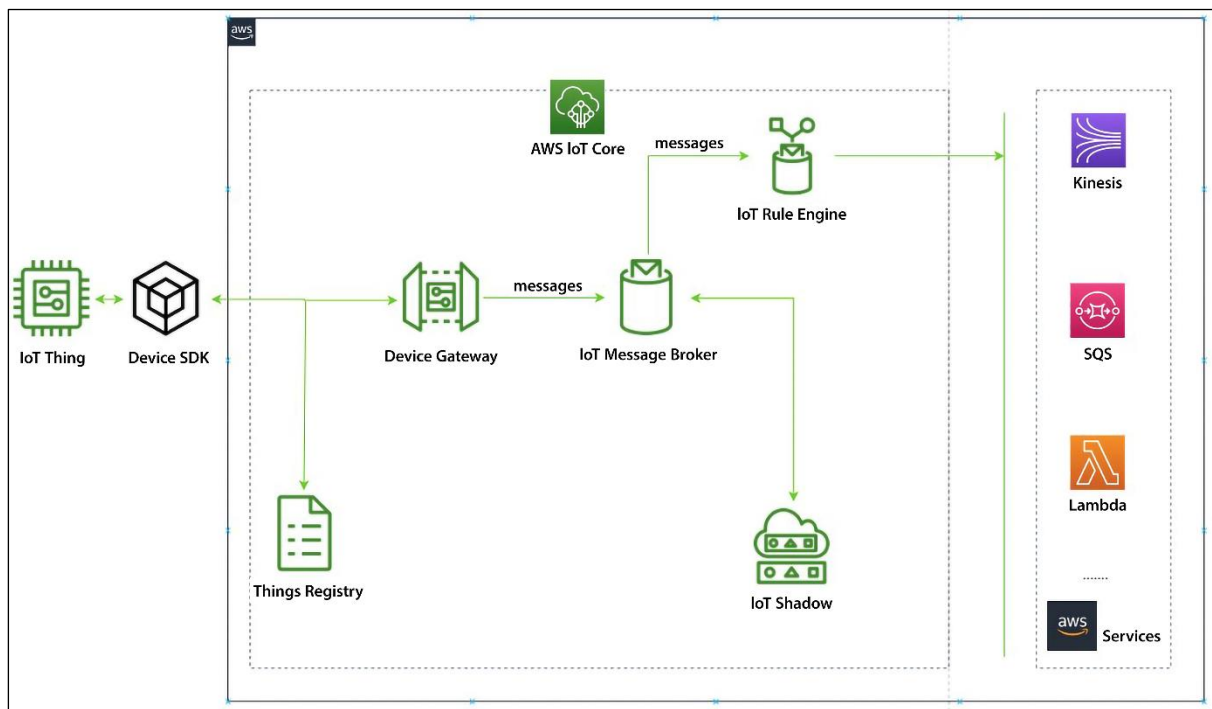
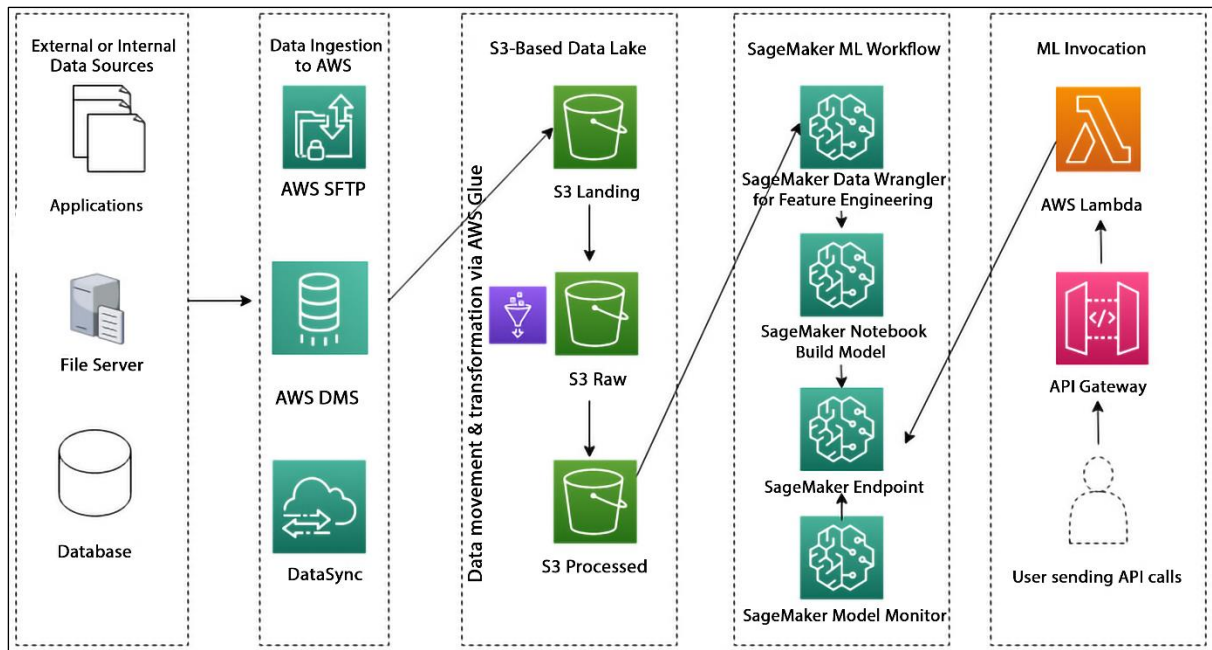




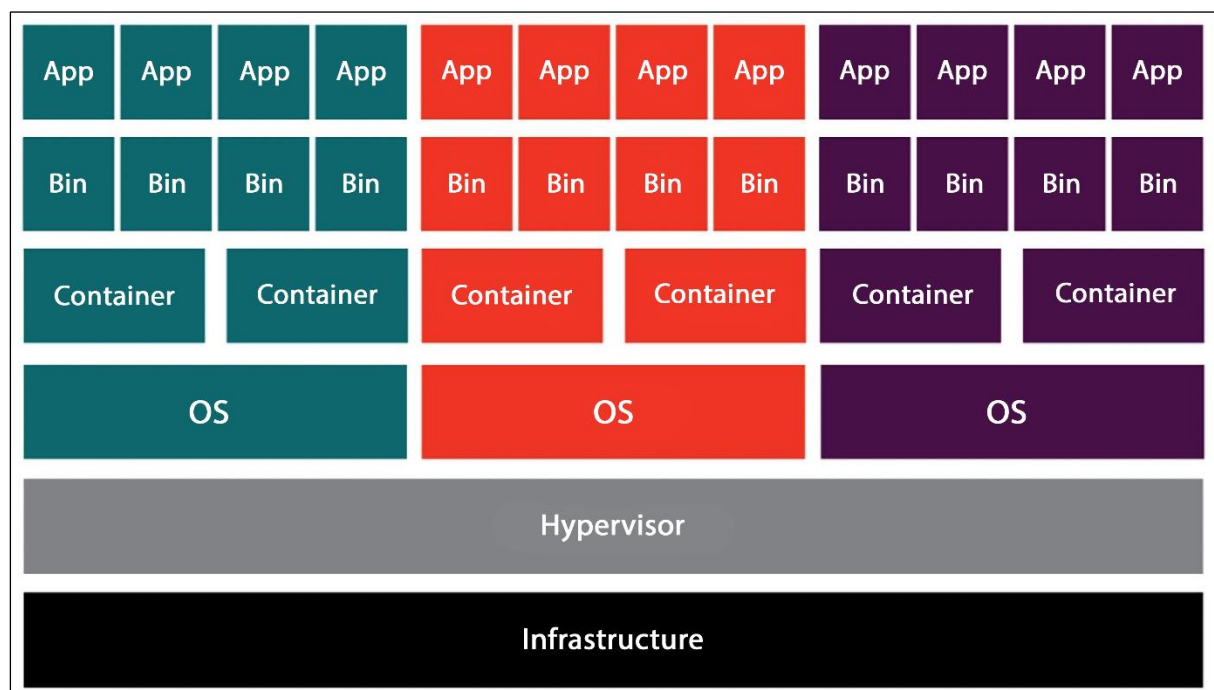
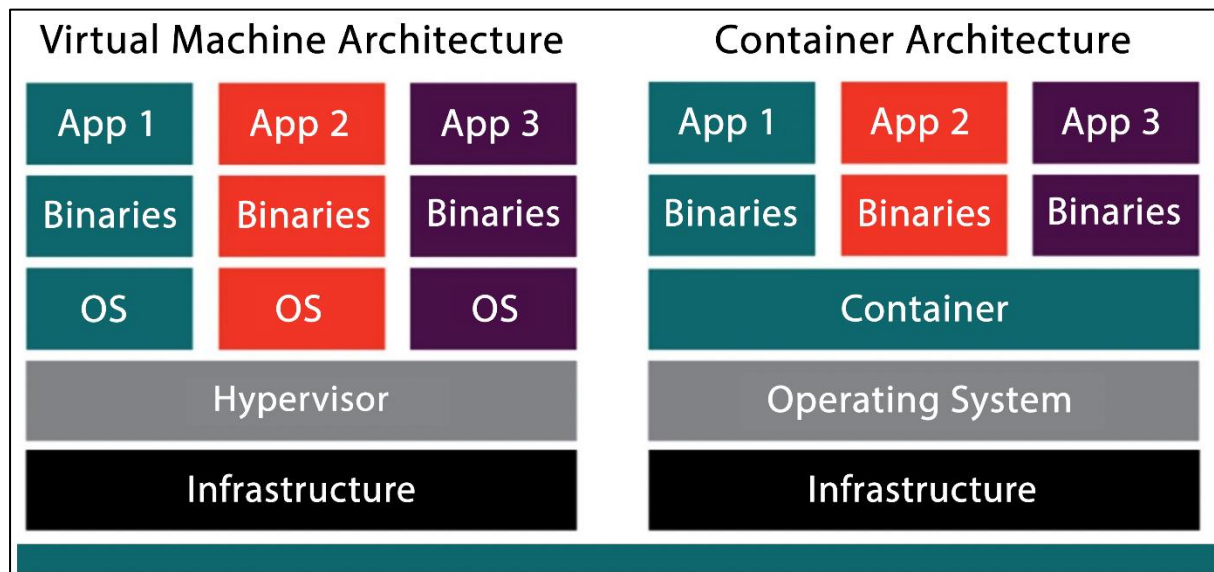
Chapter 12: Machine Learning, IoT, and Blockchain in AWS

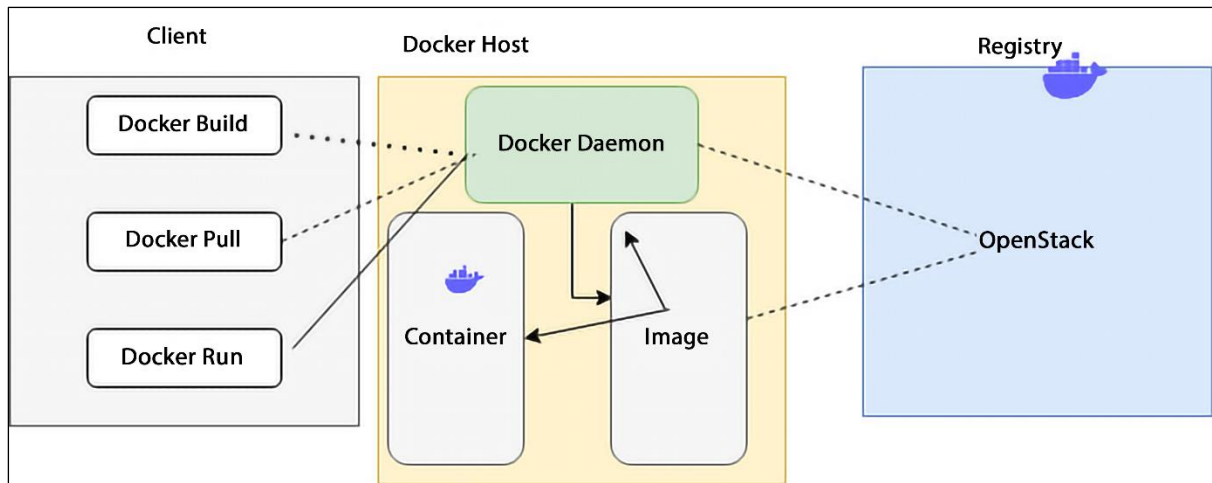






Chapter 13: Containers in AWS





Cluster - Logical grouping of services, tasks, and capacity providers in a region

Service - Check and replace unhealthy tasks

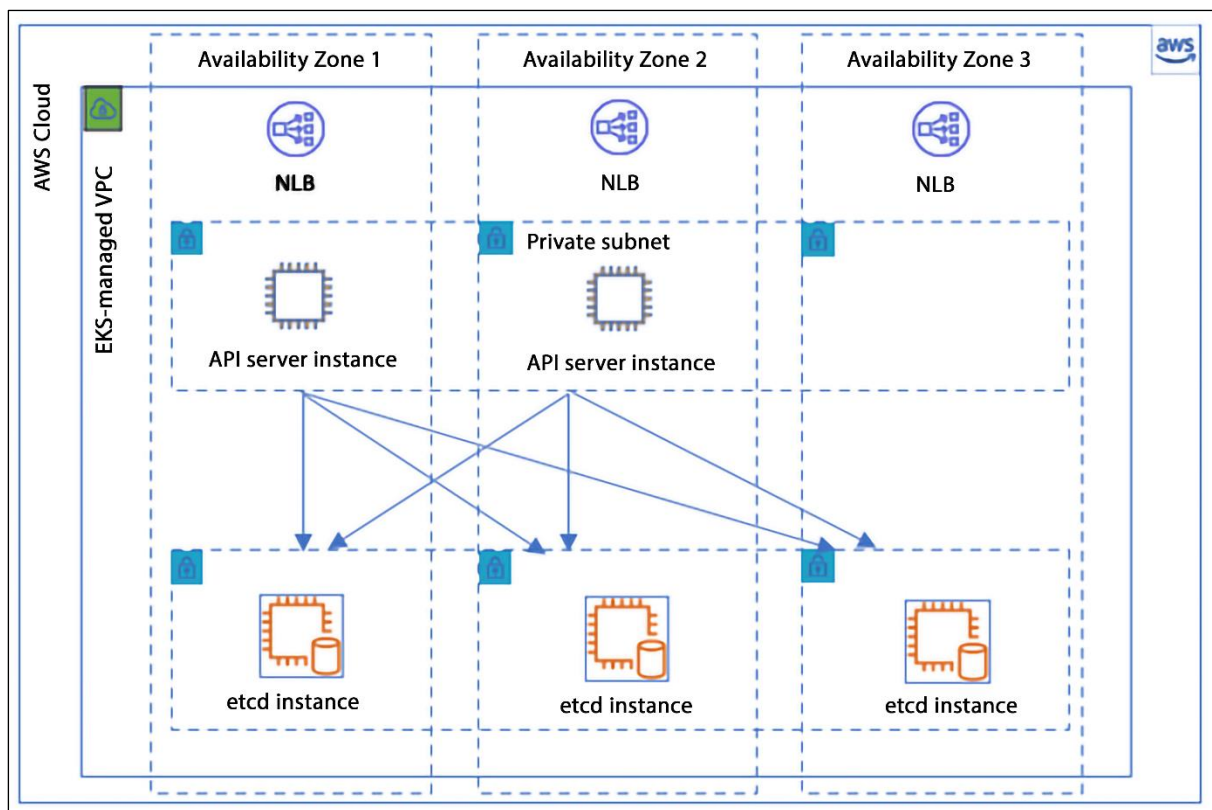
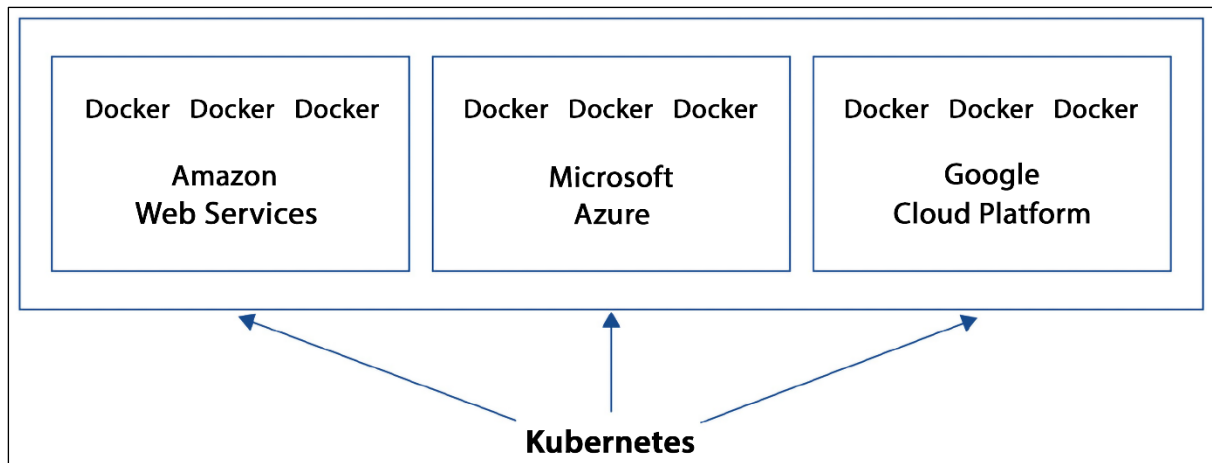
Task

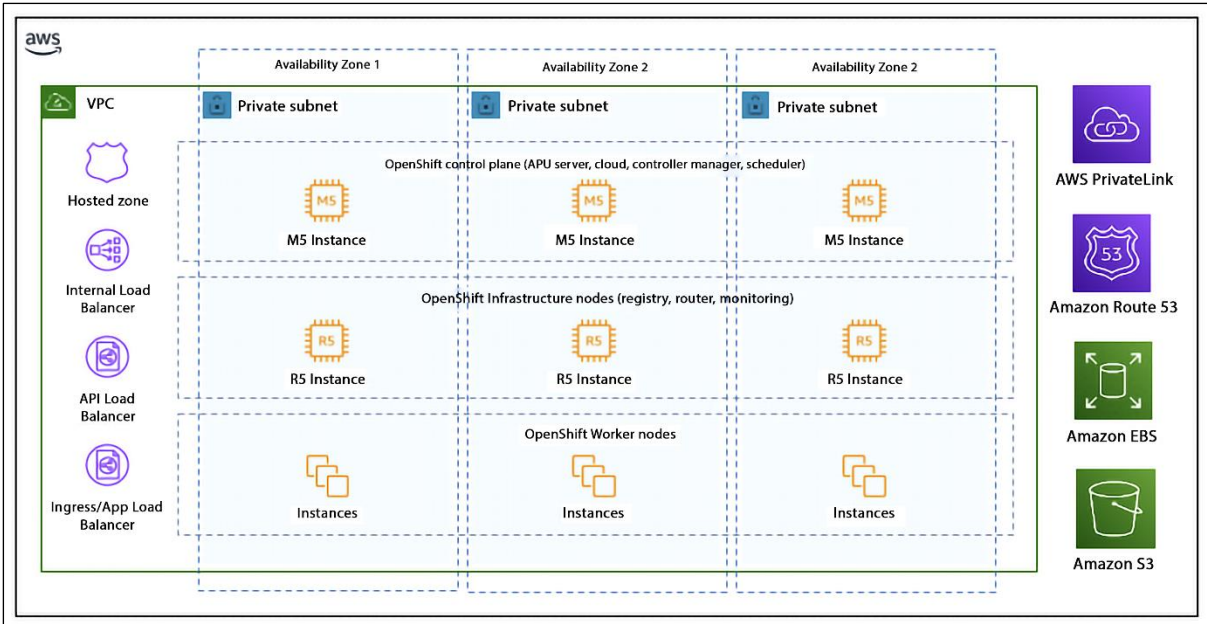
Task

Task

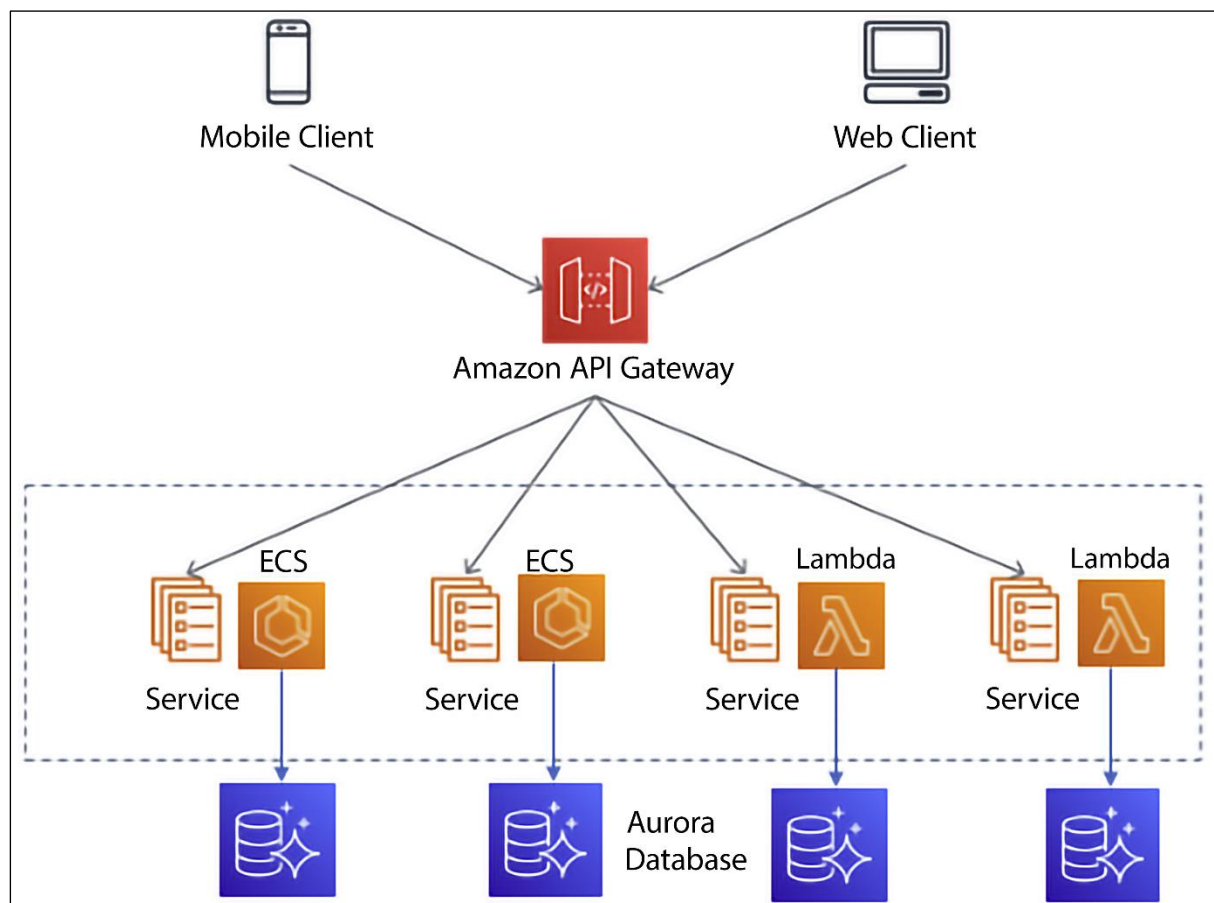
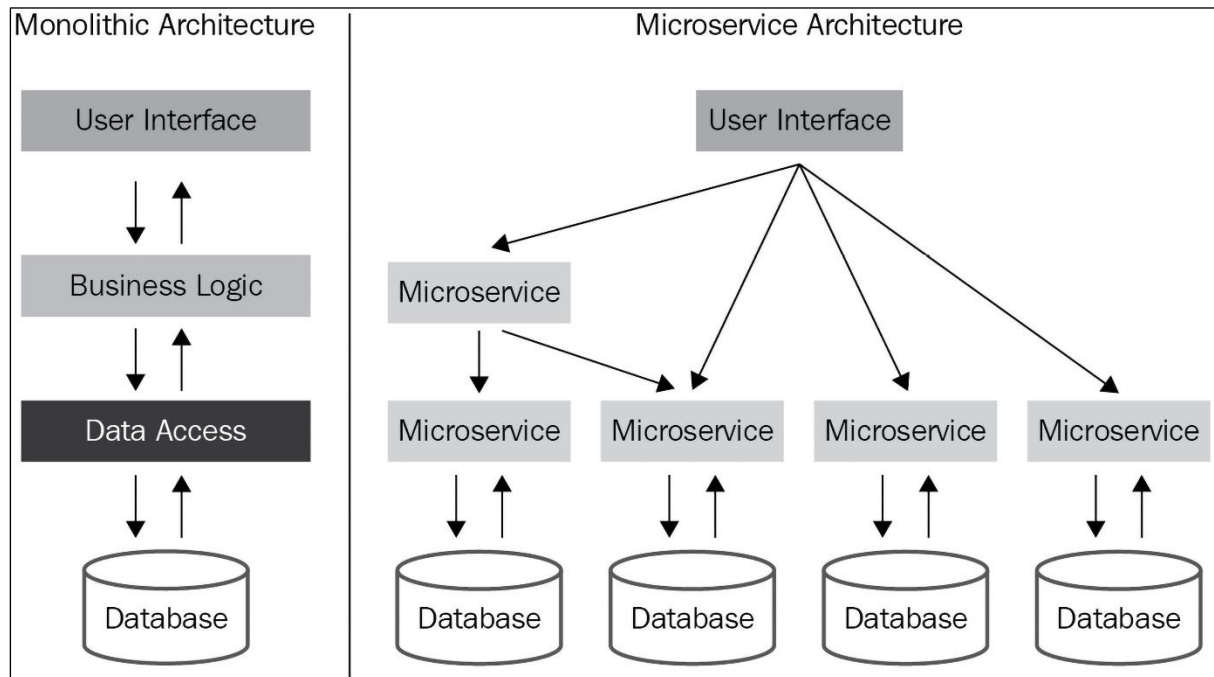
Container instances

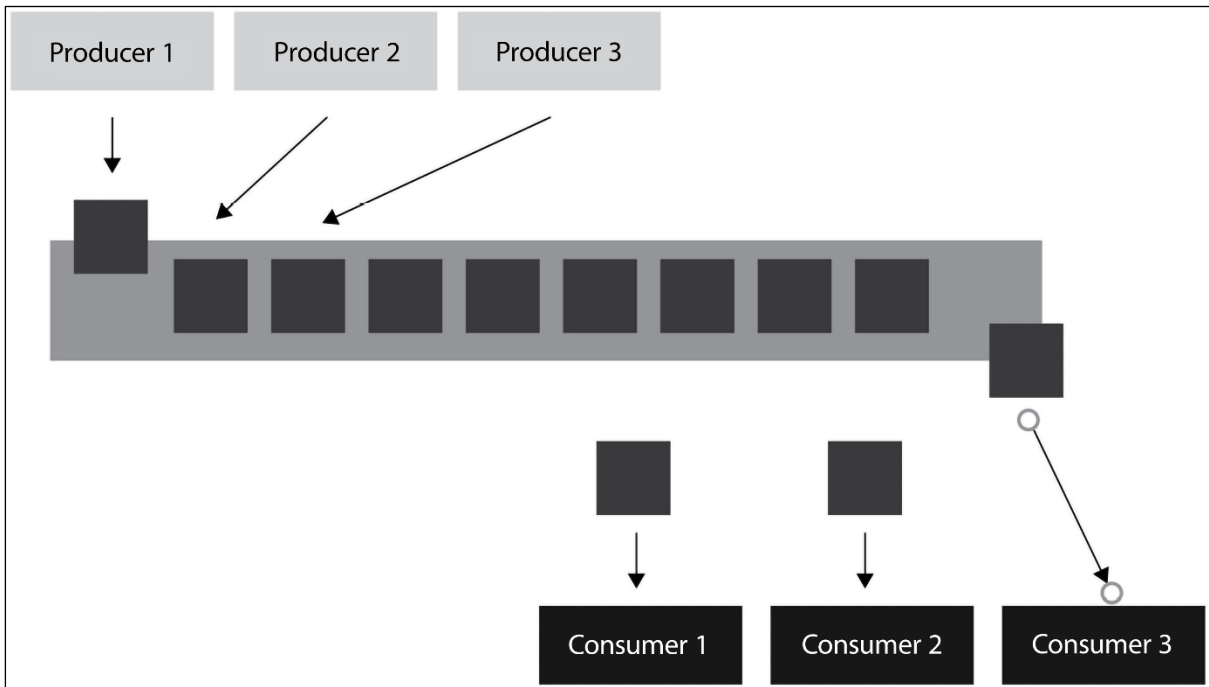
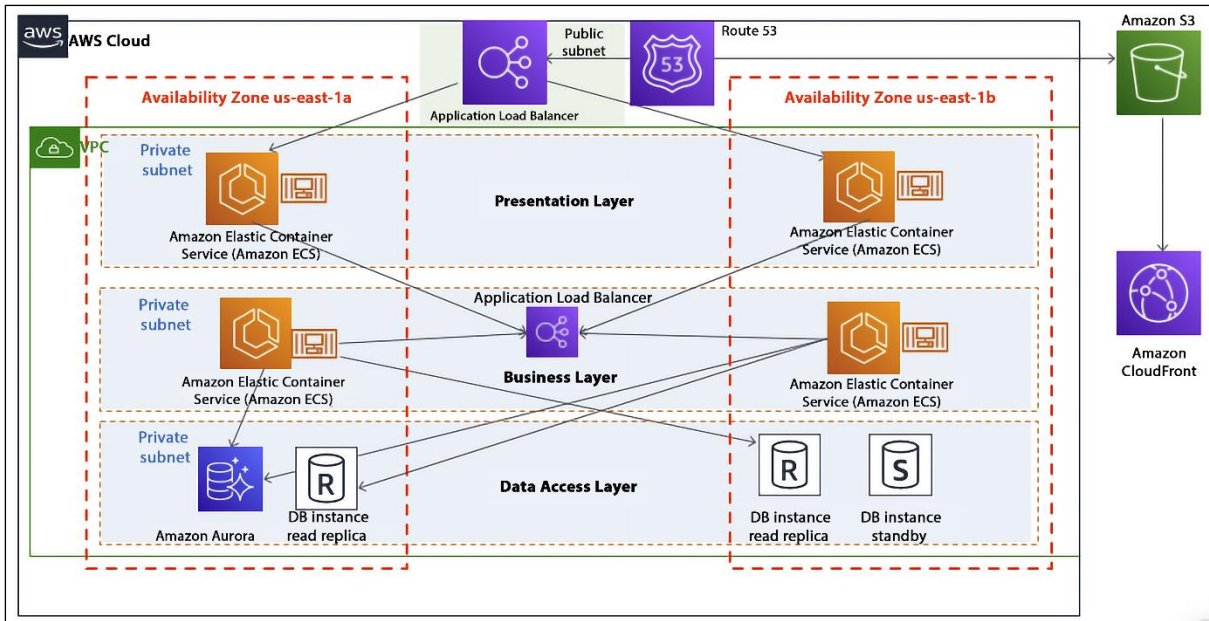


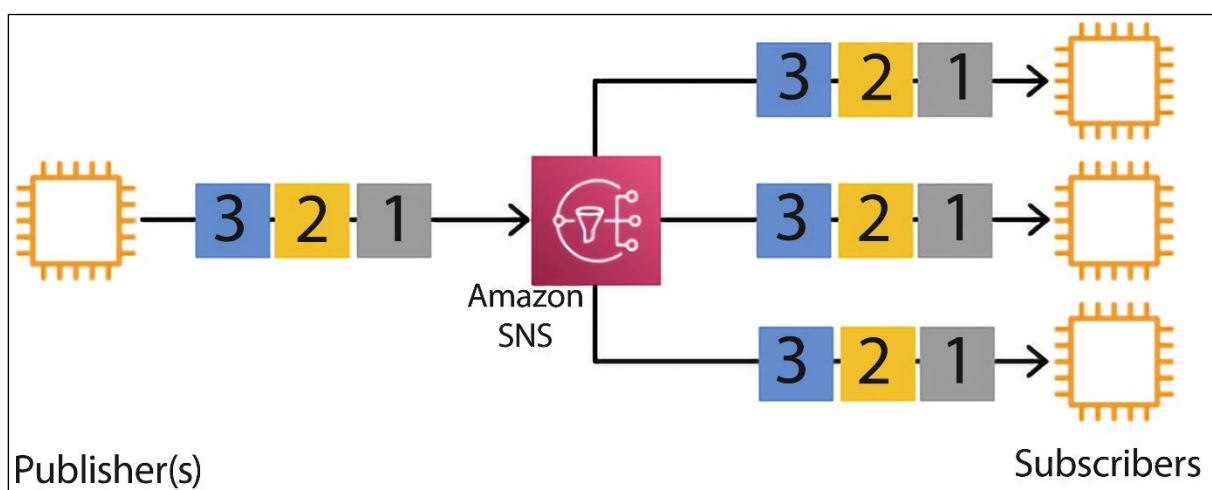
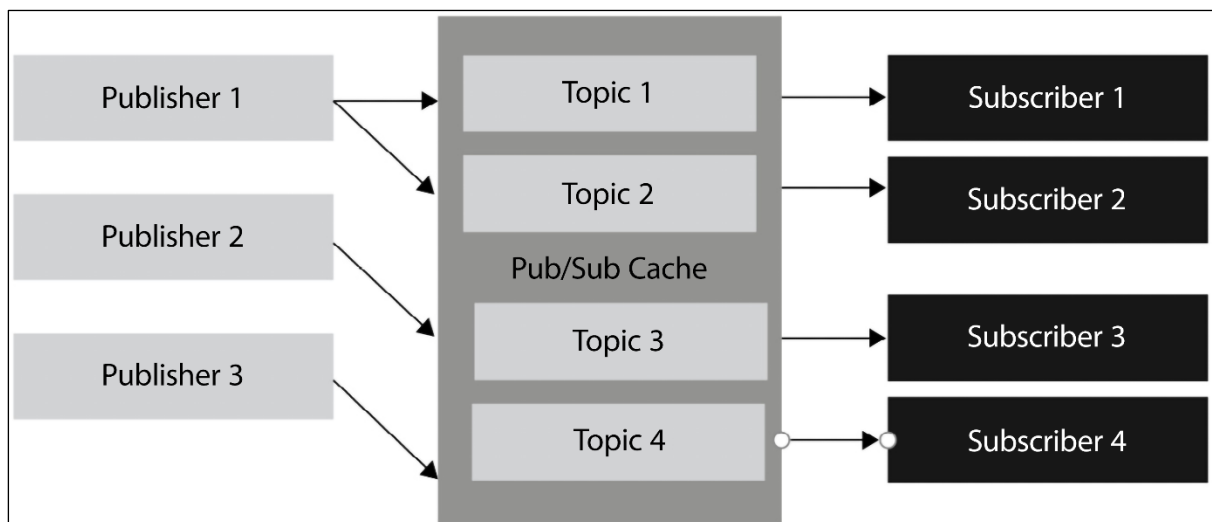
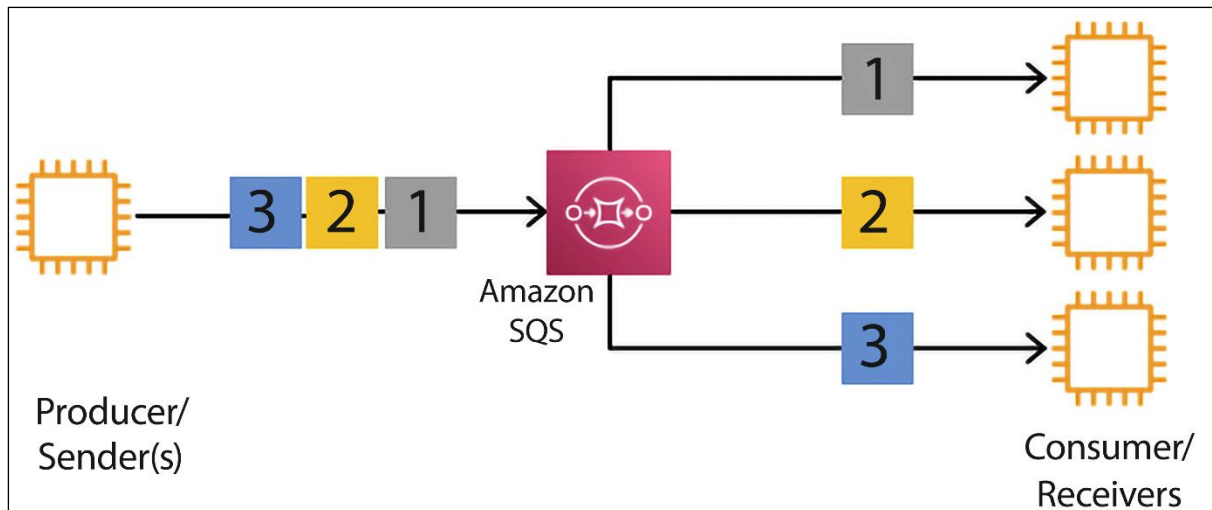




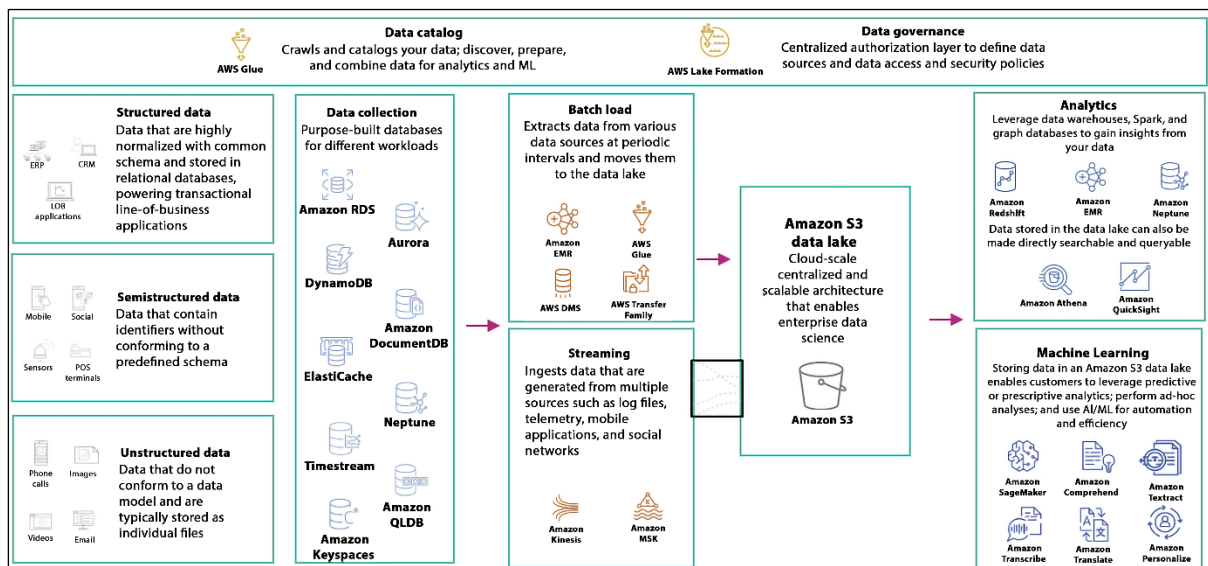
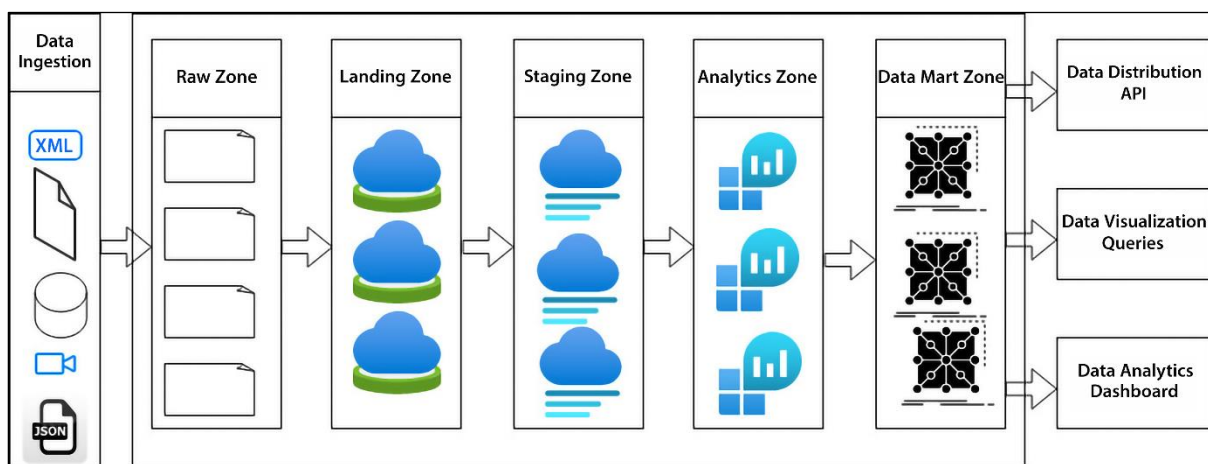
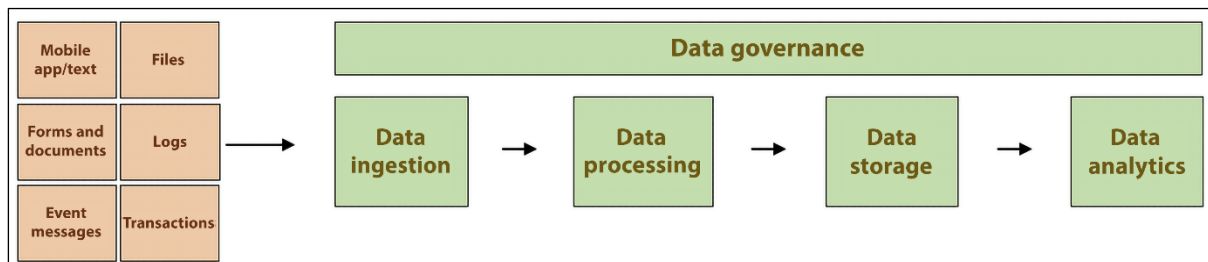
Chapter 14: Microservice Architectures in AWS

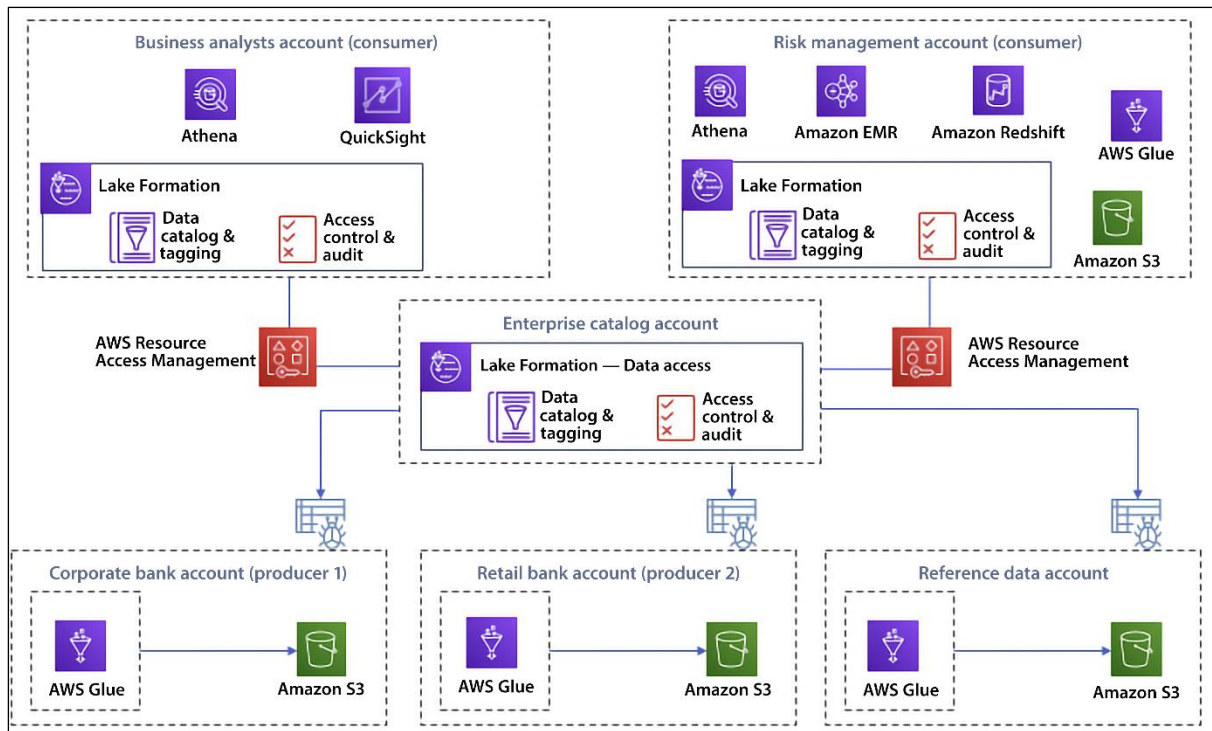




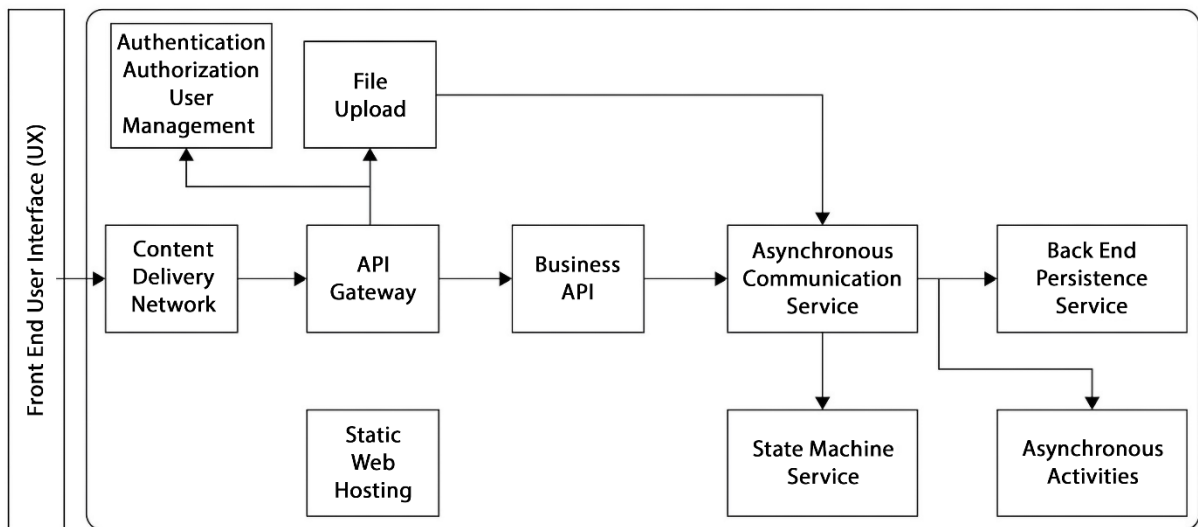
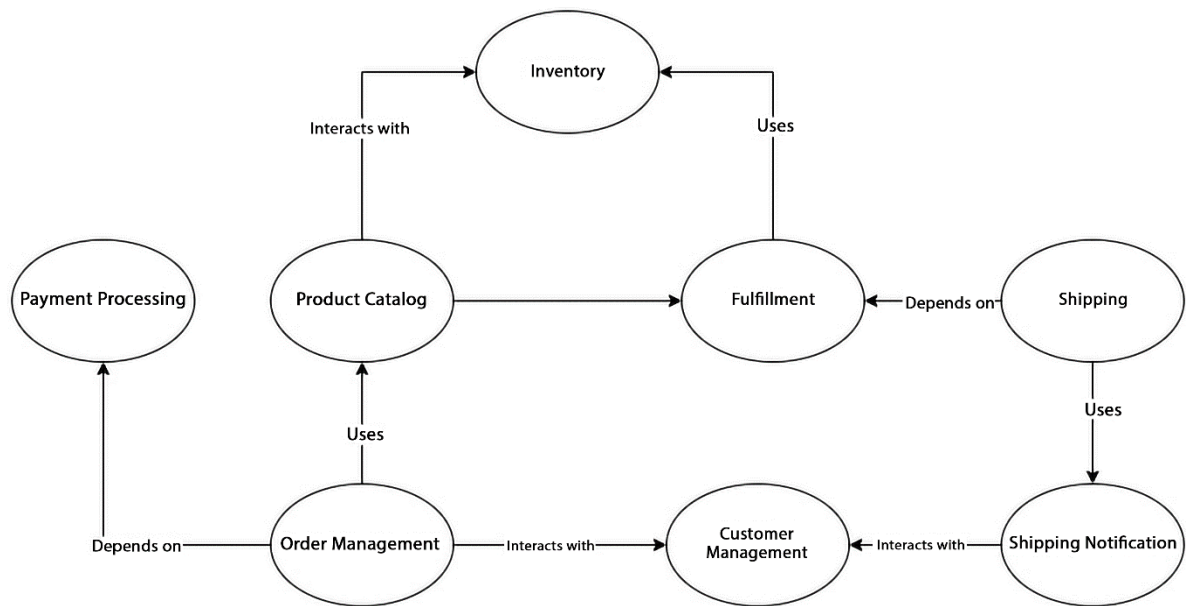


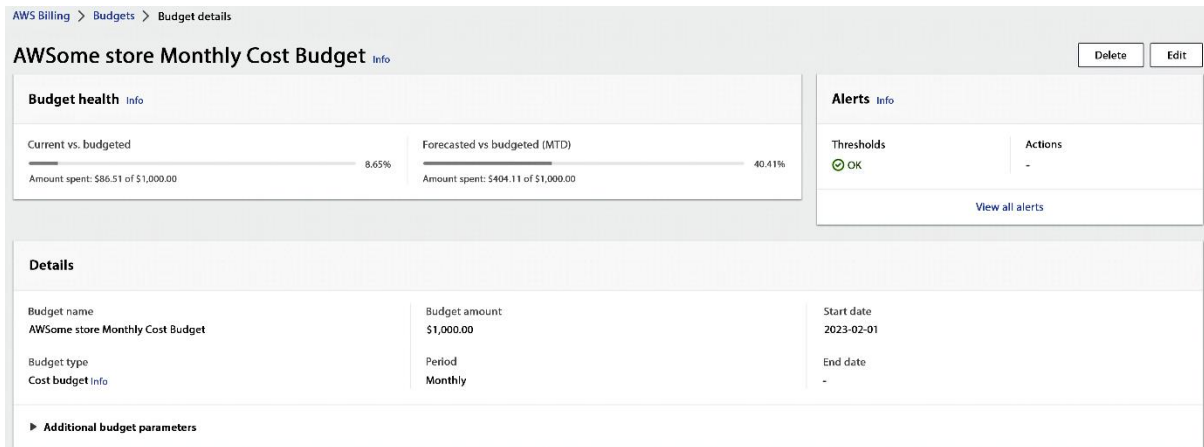
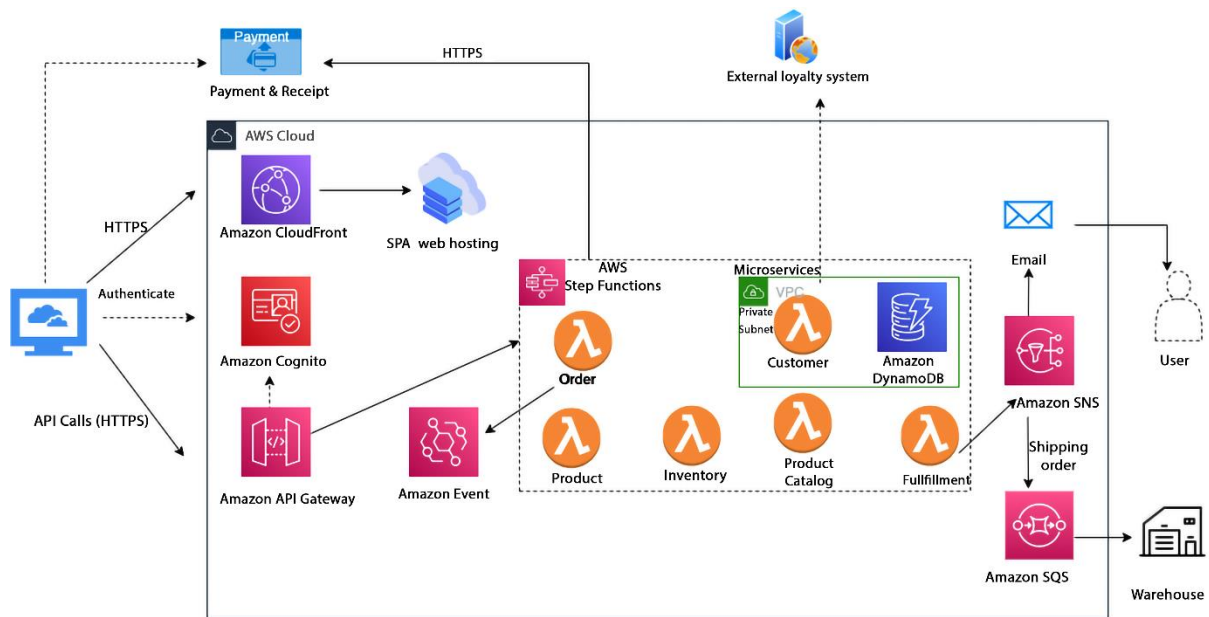
Chapter 15: Data Lake Patterns - Integrating Your Data across the Enterprise





Chapter 16: Hands-On Guide to Building an App in AWS





Set permissions

Add user to an existing group or create a new one. Using groups is a best-practice way to manage user's permissions by Job functions. [Learn more](#)

Permissions options

☐ **Add user to group**
Add user to an existing group, or create a new group. We recommend using groups to manage user permissions by job function.

☐ **Copy permissions**
Copy all group memberships, attached managed policies, and inline policies from an existing user.

☒ **Attach policies directly**
Attach a managed policy directly to a user. As a best practice, we recommend attaching policies to a group instead. Then, add the user to the appropriate group.

Permissions policies (1/1094)

Choose one or more policies to attach to your new user.

Filter distributions by text, property or value

Policy name	Type	Attached entities
<input type="checkbox"/> AccessAnalyzerServiceRolePolicy	AWS managed	1
<input checked="" type="checkbox"/> AdministratorAccess	AWS managed - Job function	11
<input type="checkbox"/> AdministratorAccess-Amplify	AWS managed	0

```
$ aws configure
AWS Access Key ID [None]: AKIAIOSFODNN7EXAMPLE
AWS Secret Access Key [None]: wialrXUtnFEMI/K7MDENG/bPxRfiCYEXAMPLEKEY
Default region name [None]: us-west-2
Default output format [None]: json
```

