AWS Pricing Models

AWS SECURITY AND COST MANAGEMENT CONCEPTS

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Pricing models

Feature	Pay-as-you-go	Save when you commit	Pay less by using more
Flexibility	Very high	Low	Medium
Cost Savings	No upfront savings	High savings	Volume-based savings
Budget Predictability	Low	High	Medium

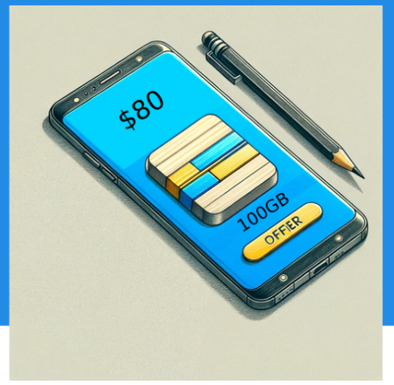
Postpaid

$0.25/GB

6 month - 10GB

$0.10/GB

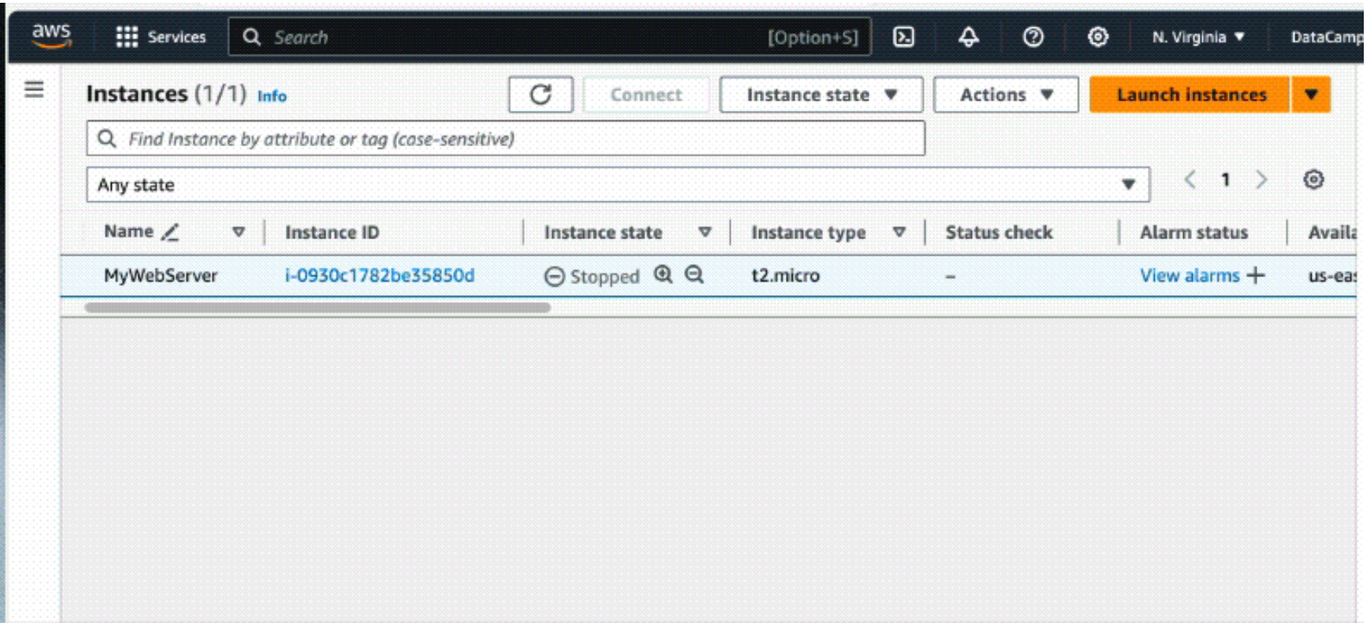
Unlimited-1 month



$0.01/GB

Pay-as-you-go

- Pay-as-you-go approach for the vast majority of our cloud services
- You pay only for the individual services you need, for as long as you use them



Save when you commit

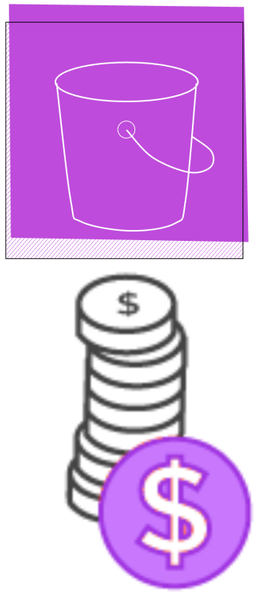
- Savings for a 1-year or 3-year commitment
- Increased savings with higher commitment
- Additional savings for upfront payment vs. monthly payments

EC2 Commitment	Monthly cost	Discount
None (pay-as-you-go)	$734.67	0%
1-year commitment	$487.07	33.07%
3-year commitment	$332.15	54.78%

Pay less by using more

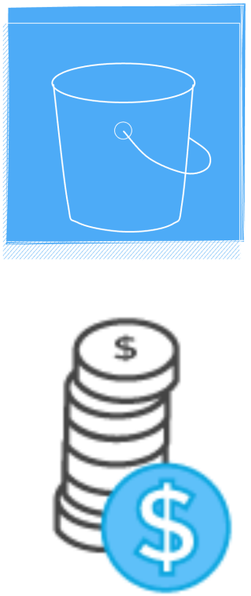
- Volume discounts decrease cost per GB with more use
- Economies of scale apply
- Similar to wholesale vs retail pricing

UP to 50TB Storage



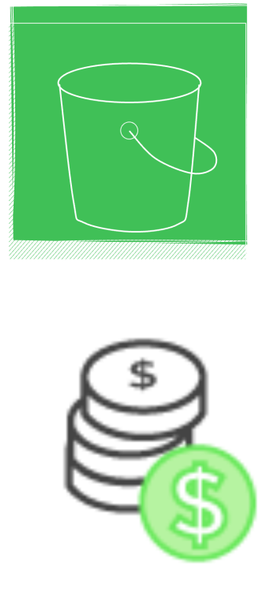
0.023 GB/month

51-100TB Storage



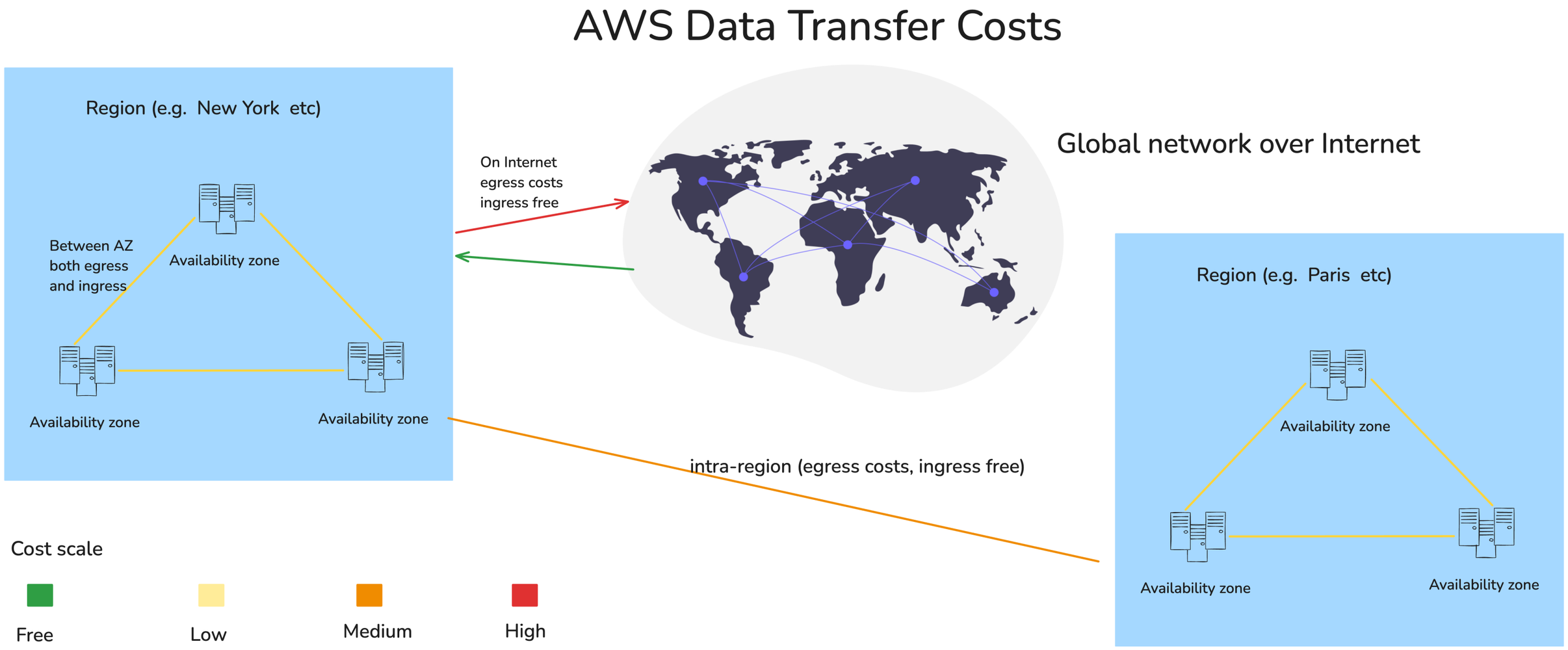
0.022 GB/month

500TB+ Storage

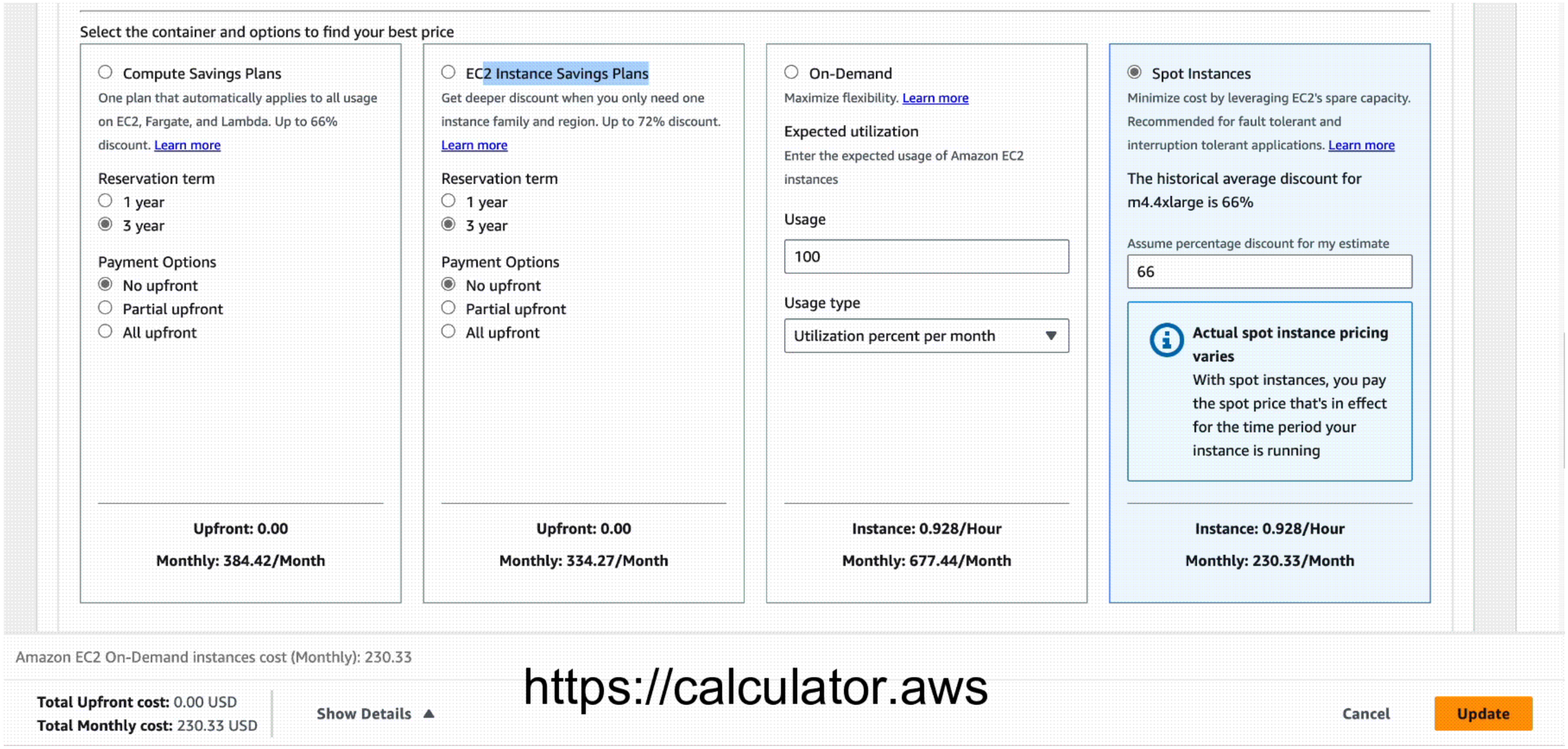


0.021 GB/month

Bandwidth costs



Pricing calculator



Let's practice!

AWS SECURITY AND COST MANAGEMENT CONCEPTS

Manage AWS Budgets and Costs

AWS SECURITY AND COST MANAGEMENT CONCEPTS

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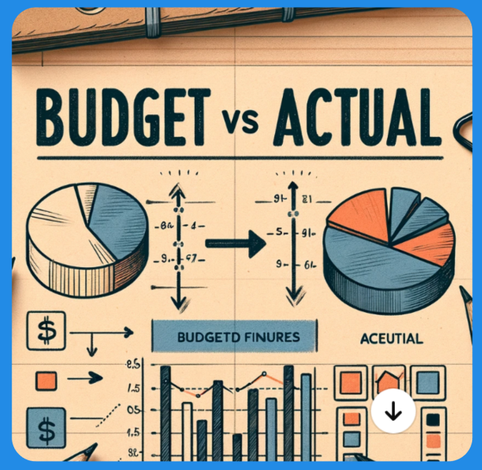
How to manage AWS costs

1

Analyze costs

2



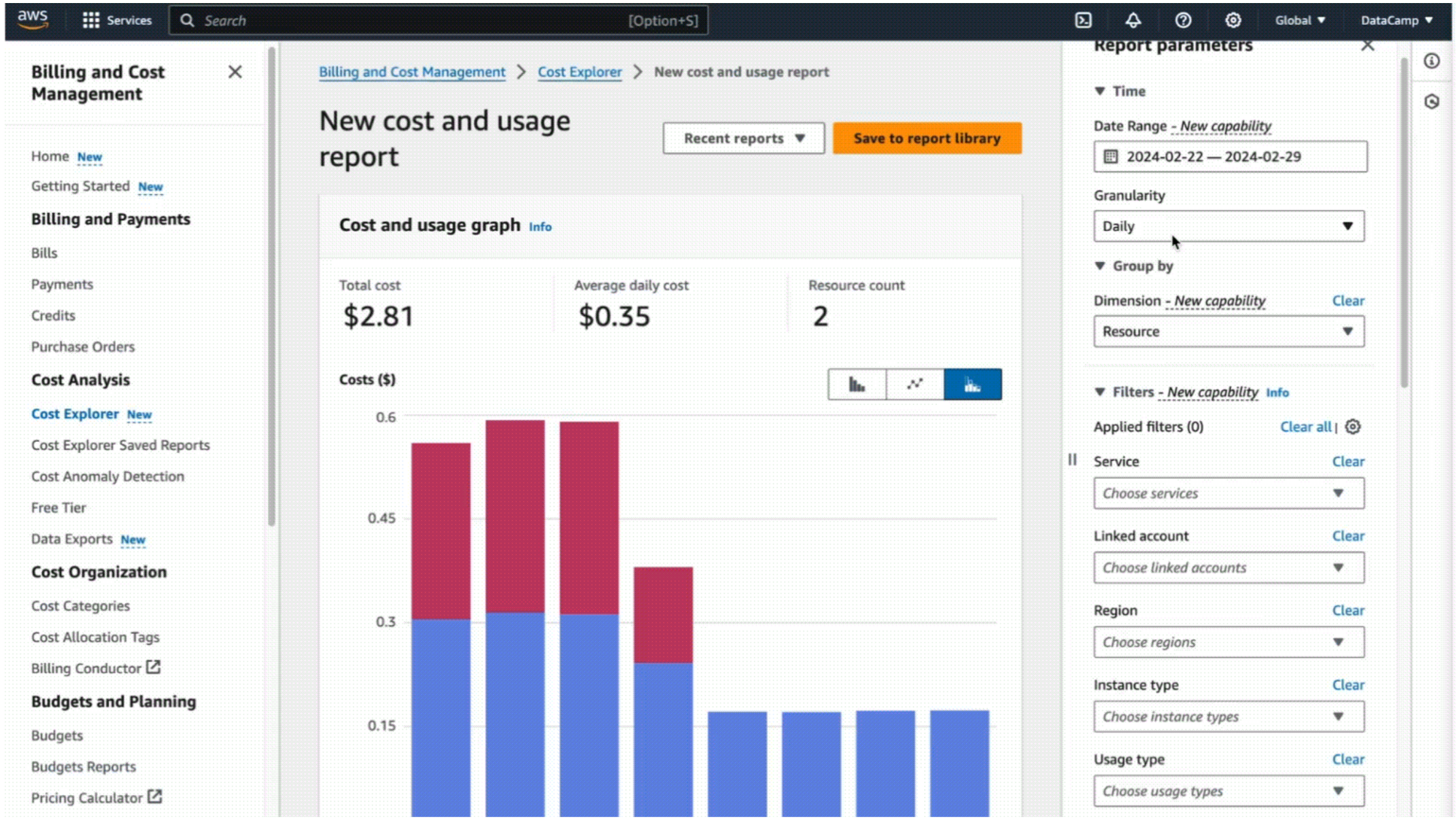
Set budgets

3

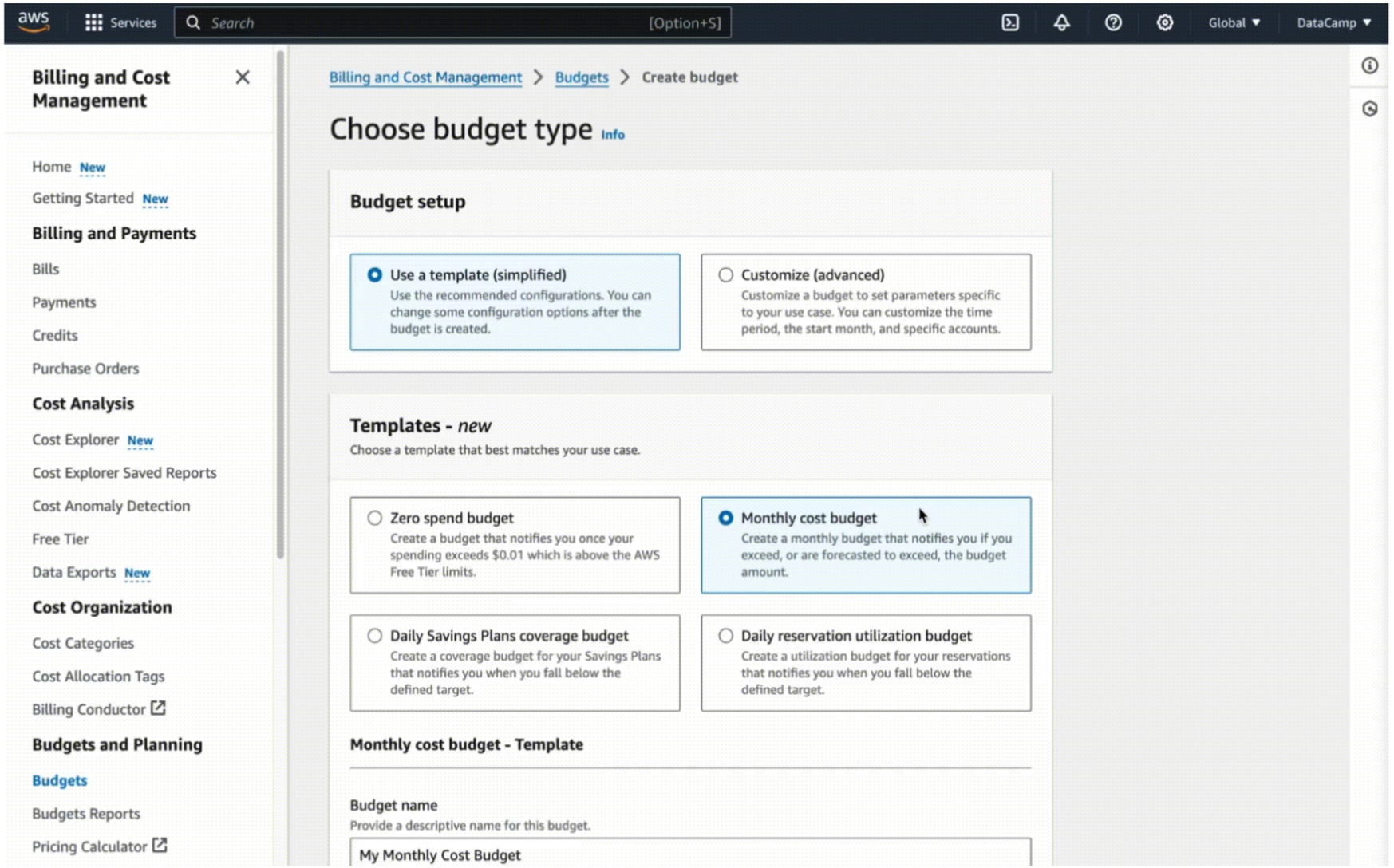
Respond with actions

1. Analyze costs
2. Set budgets
3. Respond with actions

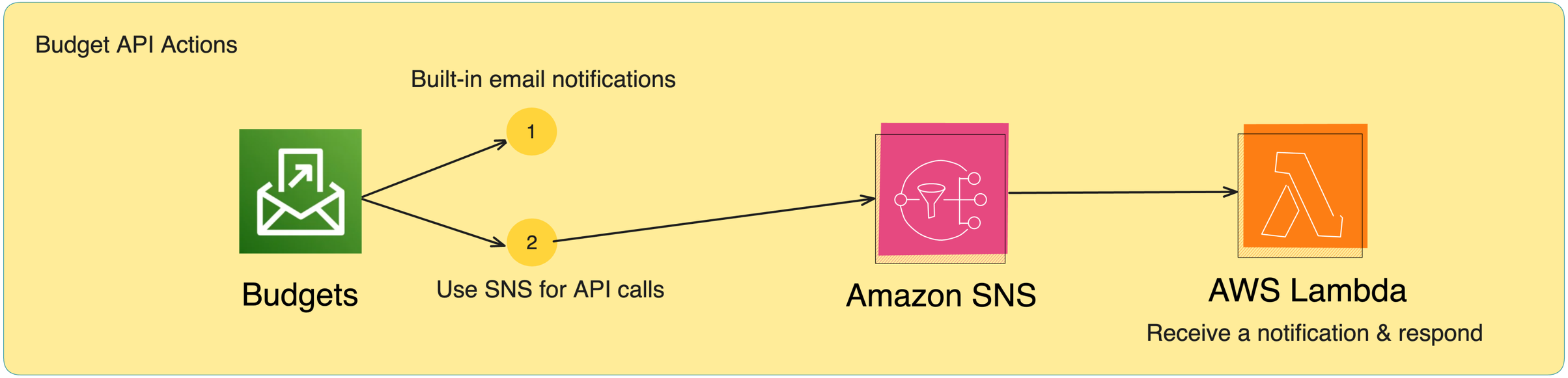
Cost explorer



Budgets in action



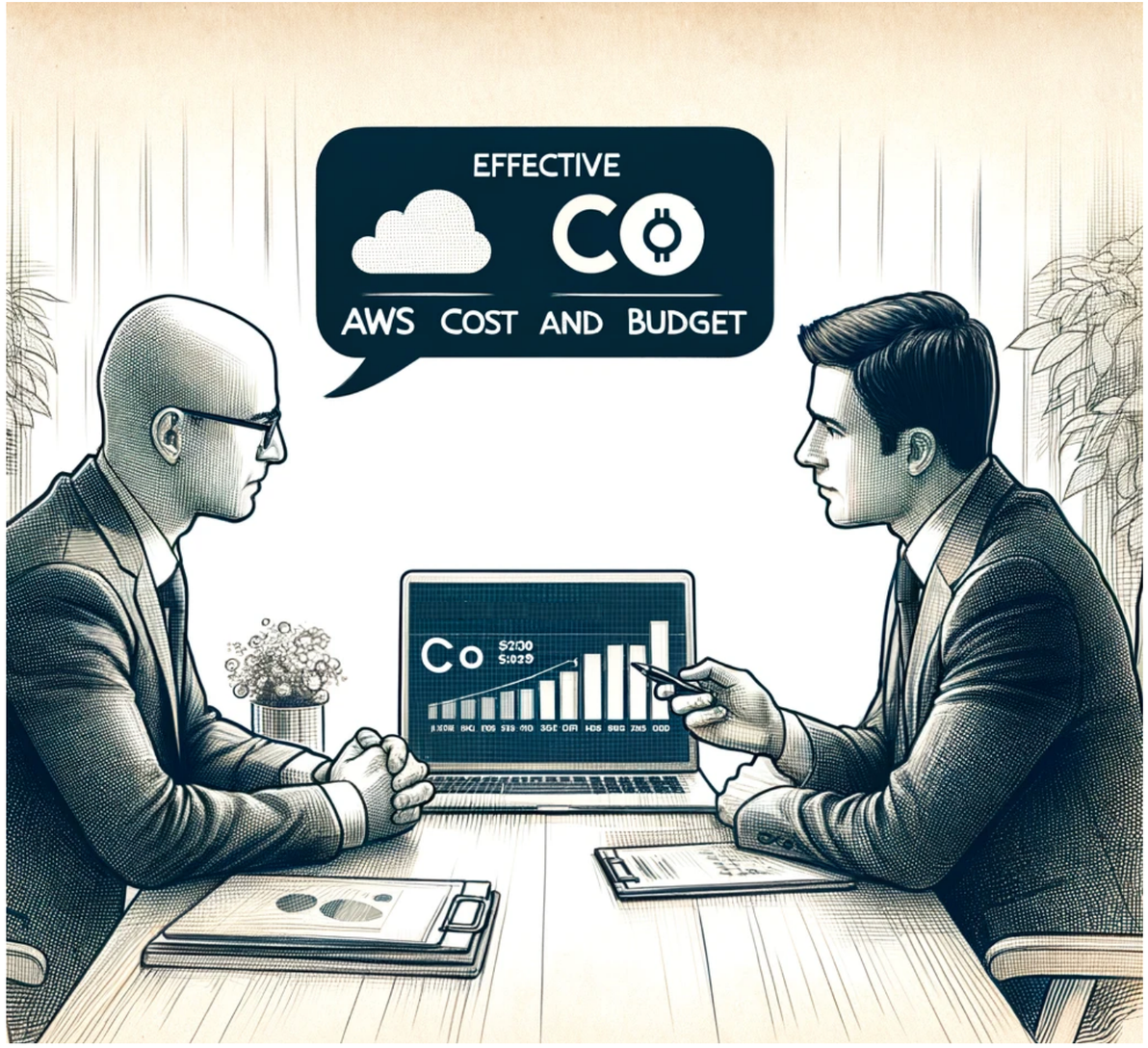
Respond with actions



- AWS Budgets has built-in email notifications
- Integrates with SNS for API notifications
- AWS Lambda reacts to SNS budget alerts
- Using Lambda, you can prevent creation of new resources when a budget threshold is reached

Guidelines for budgets

- Budgets doesn't guarantee financial control
- Budgets must be based on accurate, specific business needs
- Effective budgets consider all costs, are goal-oriented



Billing Conductor

- Organize cloud costs by project
- Track spending for different teams or users
- Create custom billing reports
- Improve budgeting and cost visibility

AWS Billing Conductor

Reserved instance flexibility

- Save money with Reserved Instances
- Flexibly adjust instance size
- Discounts apply within instance family
- Purchased capacity is calculated using normalization table

Instance Size	Normalization Factor
nano	0.25
micro	0.5
small	1
medium	2
large	4
xlarge	8
2xlarge	16
4xlarge	32
8xlarge	64
10xlarge	80
16xlarge	128
32xlarge	256

Let's practice!

AWS SECURITY AND COST MANAGEMENT CONCEPTS

Cost Allocation, Billing, and Support

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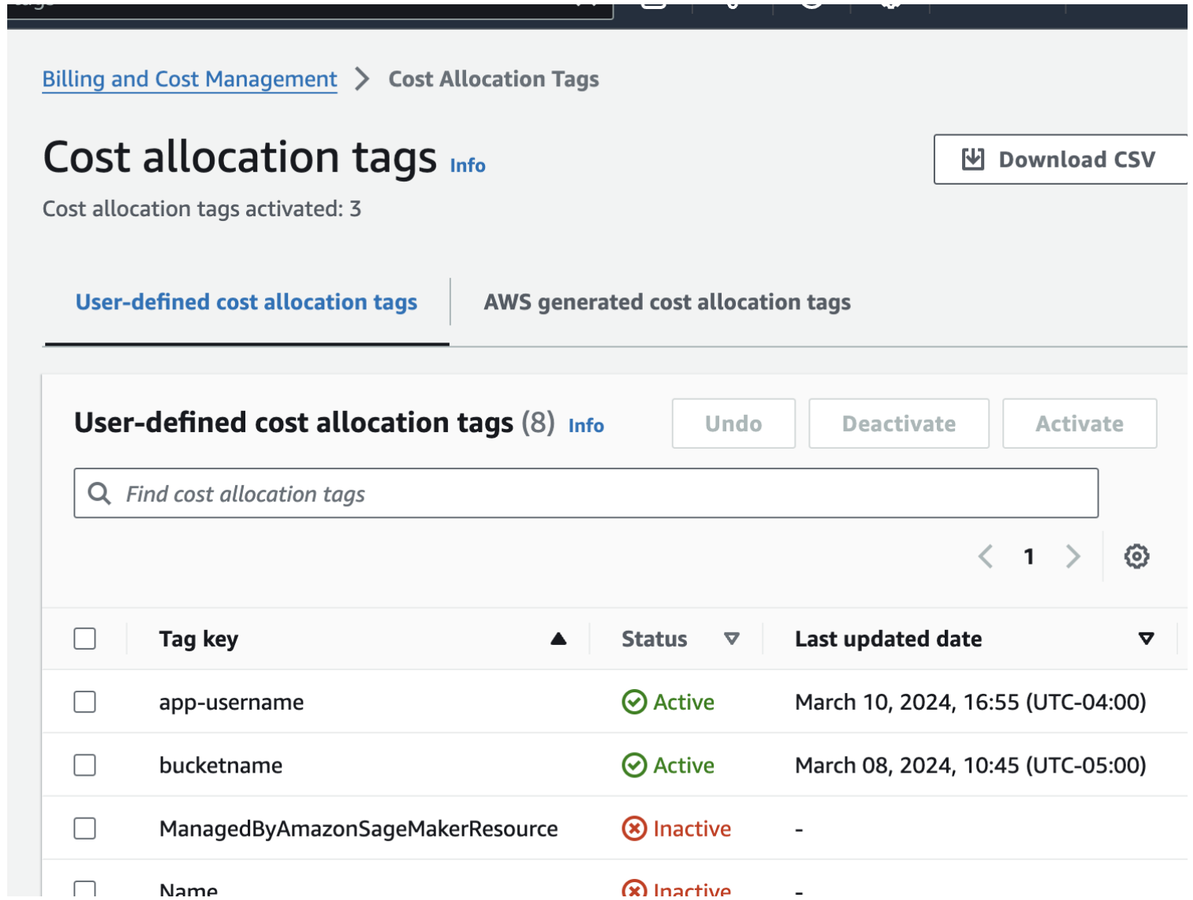
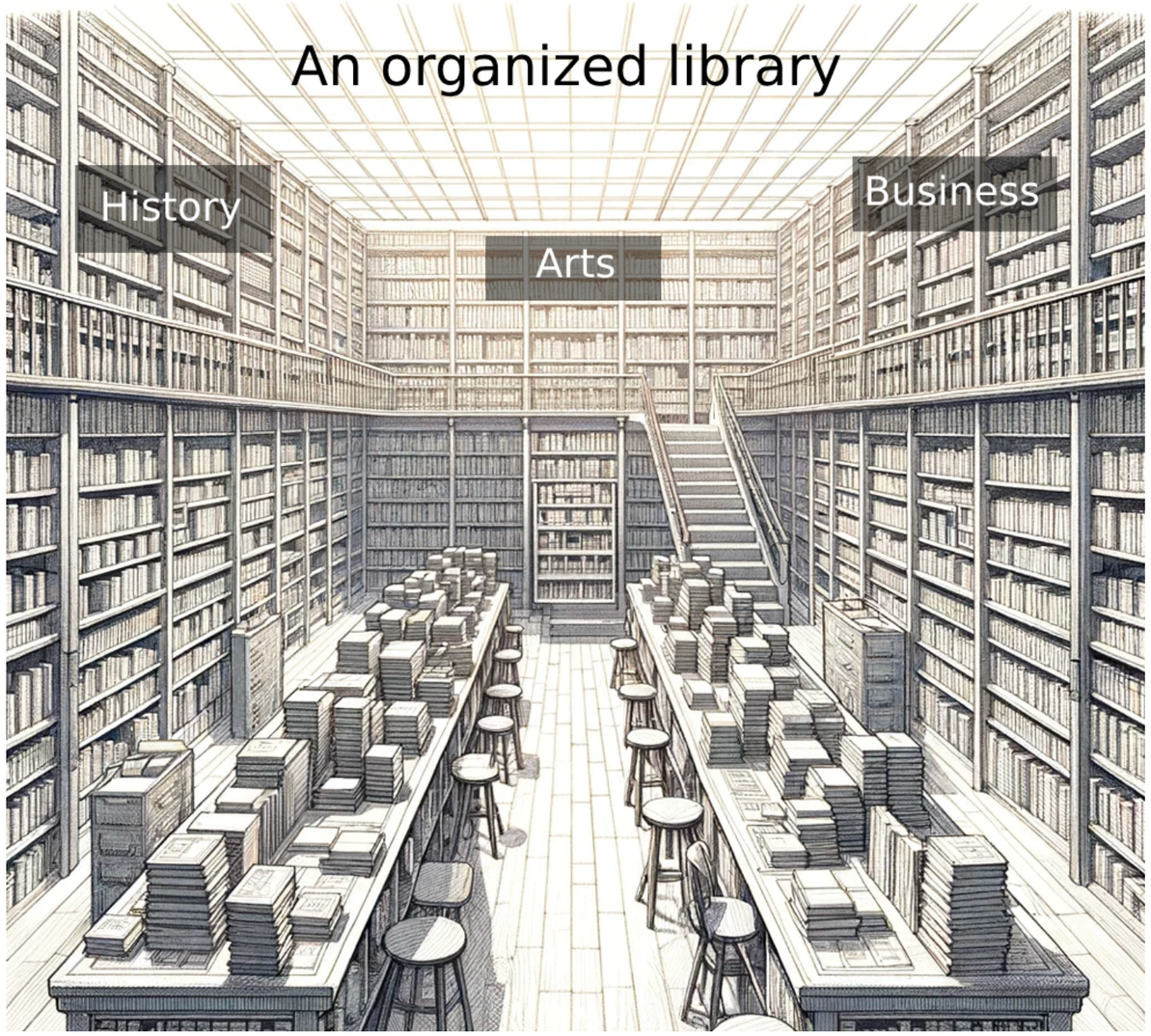
How AWS billing works?

- AWS billing breakdown by services

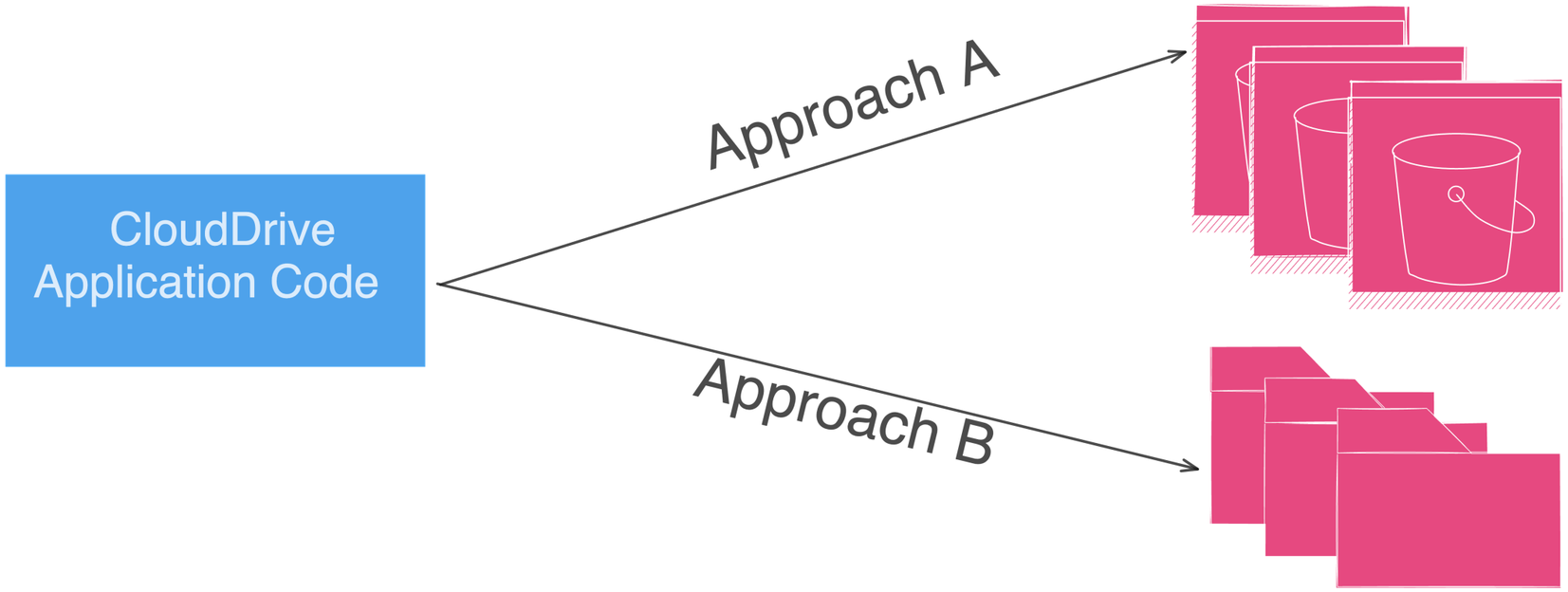
Service	Cost
S3 Storage	$2,000
S3 Data Transfer	$13
AWS Cognito	$400
Web Servers	$5,533
Load Balancer	$400
Database	$2,417
Total	$10,763

What are cost allocation tags?





Adding tags to files



Create one bucket per user
Add tags to bucket

Keep files in one bucket
Add tags to each file

Tag values appear on object property

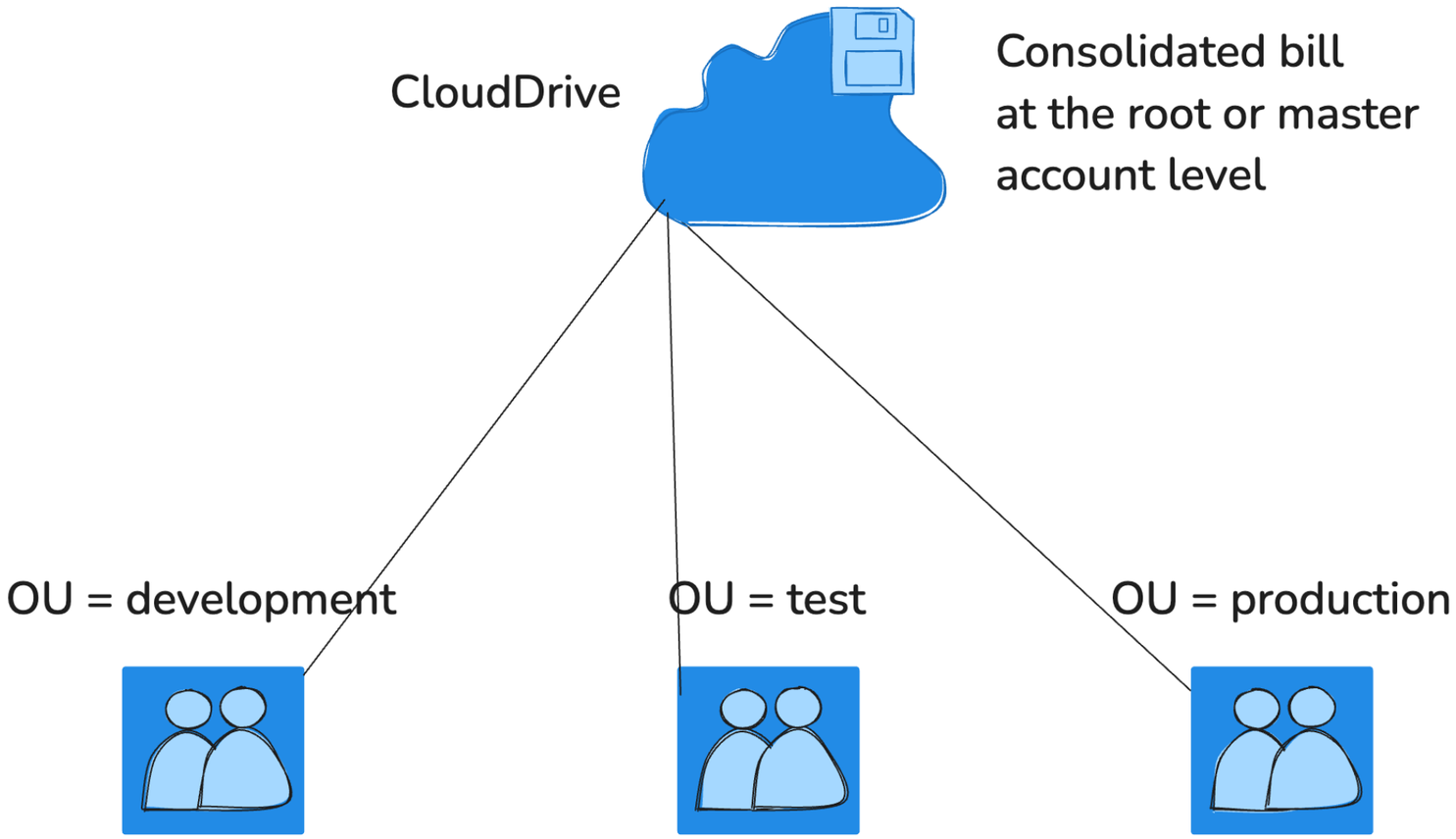
Tags (1)

Track storage cost of other criteria by tagging your objects. Learn more

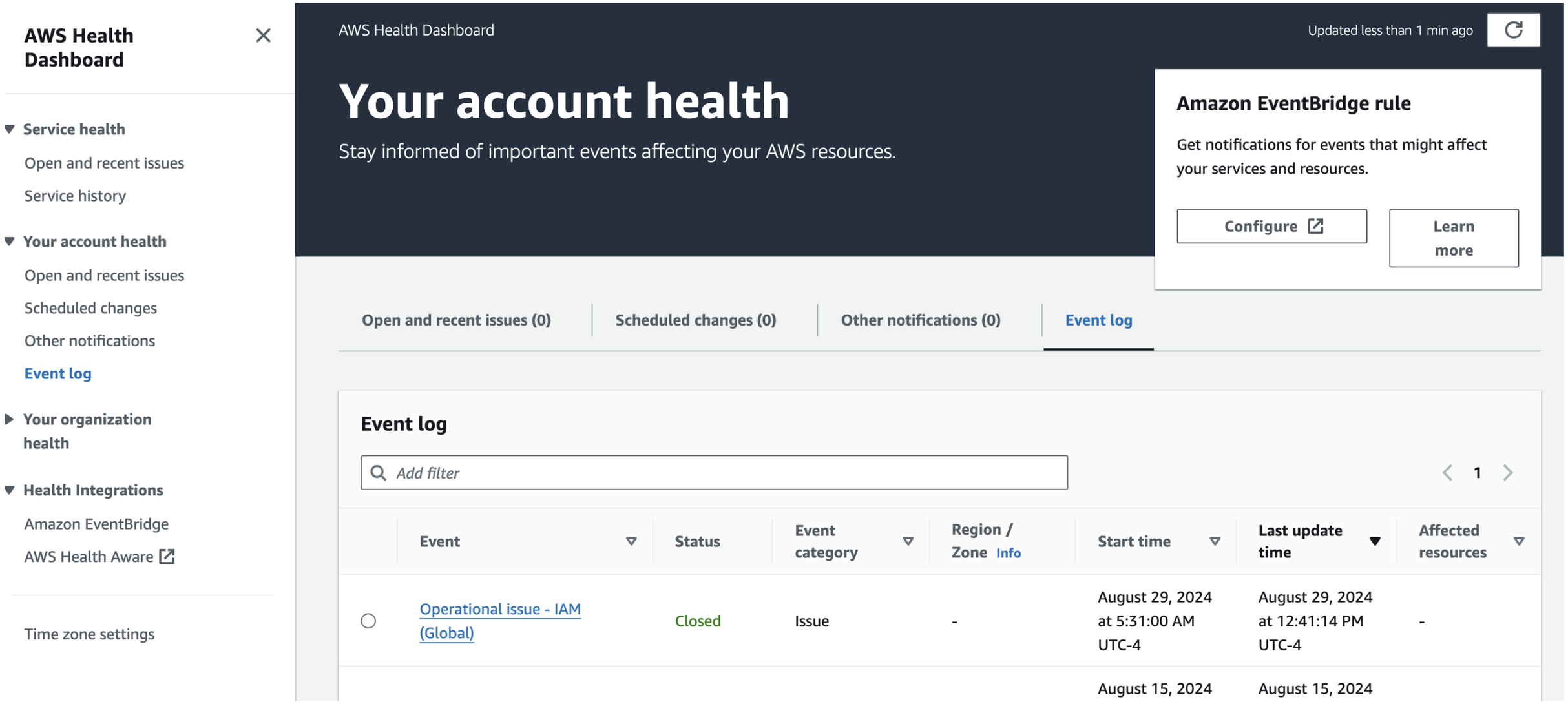
Edit

Key	Value
app-username	awesome-datacamp-user

AWS Organization



AWS Health


AWS Health Dashboard
AWS Health Dashboard
Service health
Open and recent issues
Service history
Your account health
Open and recent issues
Scheduled changes
Other notifications
Event log
Your organization health
Health Integrations
Amazon EventBridge
AWS Health Aware
Time zone settings
AWS Health Dashboard
Updated less than 1 min ago
Your account health
Stay informed of important events affecting your AWS resources.
Amazon EventBridge rule
Get notifications for events that might affect your services and resources.
Configure
Learn more
Open and recent issues (0)
Scheduled changes (0)
Other notifications (0)
Event log
Event log
Add filter
1
Event
Status
Event category
Region / Zone Info
Start time
Last update time
Affected resources
Operational issue - IAM (Global)
Closed
Issue
-
August 29, 2024 at 5:31:00 AM UTC-4
August 29, 2024 at 12:41:14 PM UTC-4
-
August 15, 2024
August 15, 2024

AWS support options

Feature	Basic	Developer	Business	Enterprise
Pricing	Free	Pay-per-use	Monthly fee	Monthly fee
Direct Access to Support Engineers	-	Yes (business hours)	Yes (24/7)	Yes (24/7)
24/7 Support	-	-	Yes	Yes
API Access	-	-	Yes	Yes
Support Channels	Forums	Email	Email, Chat, Phone	Email, Chat, Phone
Response Times	-	< 24 hours	< 1 hour	< 15 minutes
Training & Programs	Basic guides	-	Yes	Yes
Technical Account Manager (TAM)	-	-	-	Yes

Let's practice!

AWS SECURITY AND COST MANAGEMENT CONCEPTS

Cost Optimization Strategies

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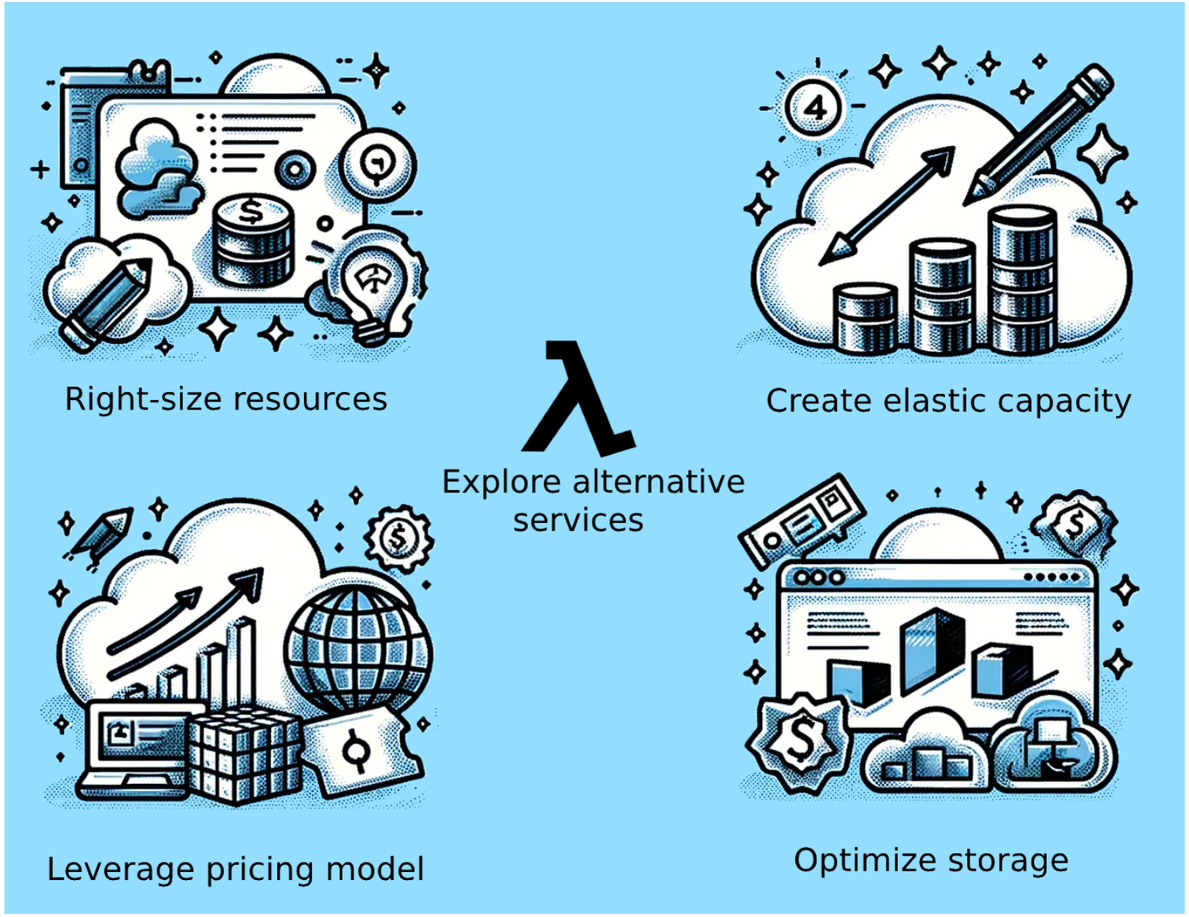
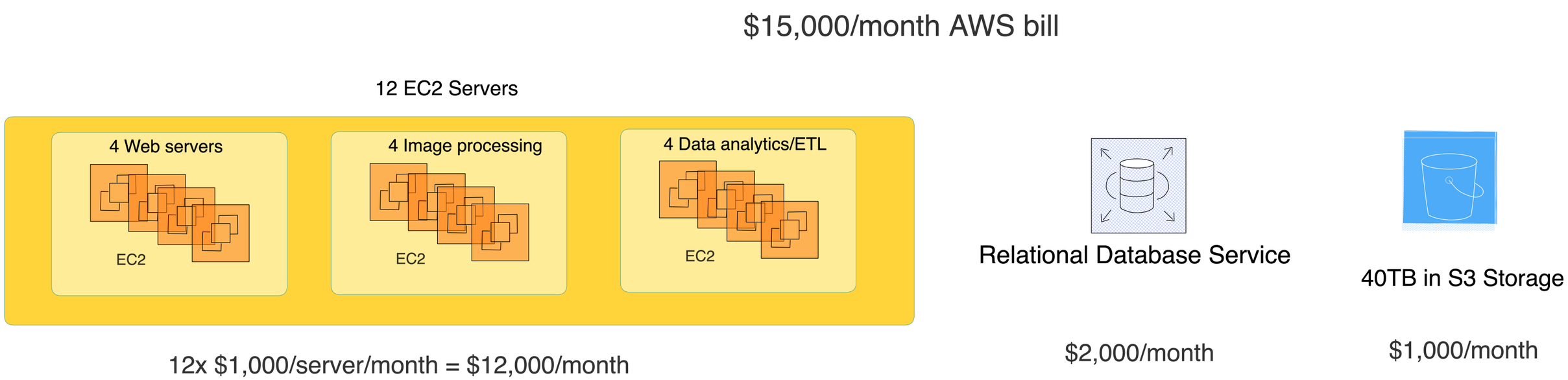
Cost optimization framework

1. Right-size resources
2. Create elastic capacity
3. Leverage pricing model
4. Explore alternative services
5. Optimize storage



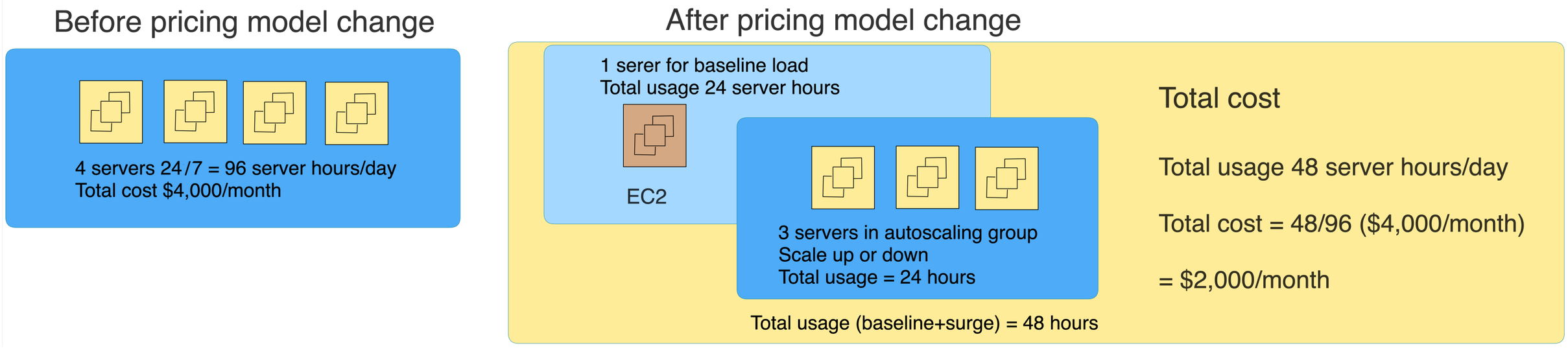
Optimization example

> The company's pays AWS $15,000/month total. $12,000 for 12 EC2 servers and $2,000 for a database service and $1,000 for S3 storage. On-demand rate paid is $1.36/server-hour.



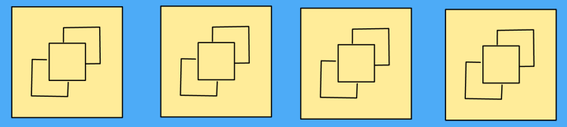
Optimize size and capacity

- Servers are adequately sized in terms of CPU/memory
- Instead of running four servers 24/7 we can optimize usage
- We can dynamically scale-up and scale-down servers based on traffic surges using auto-scaling group and save at least **50% total server costs**



Leverage pricing model

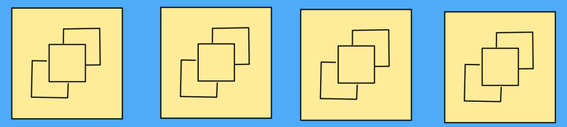
Before pricing model change



4 servers 24/7 = 96 server hours

4 servers x $1,000/month = $4,000

After pricing model change



4 spot-instance servers
for 4 hours every night
= 16 server hours

Total cost
16/96 (usage factor)
* 4 server
* $1000/month/server
* 0.334 66% avg spot discount

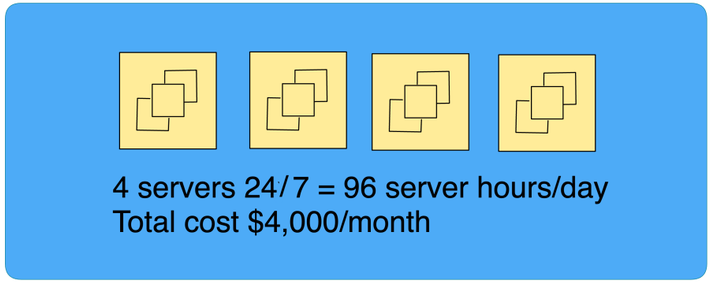
= $222.66/month

- Spot instances offer average savings of 66%
- Analytics workload needs to run for only four out of 24 hours
- Opportunity to **save 94%** of the analytics server costs

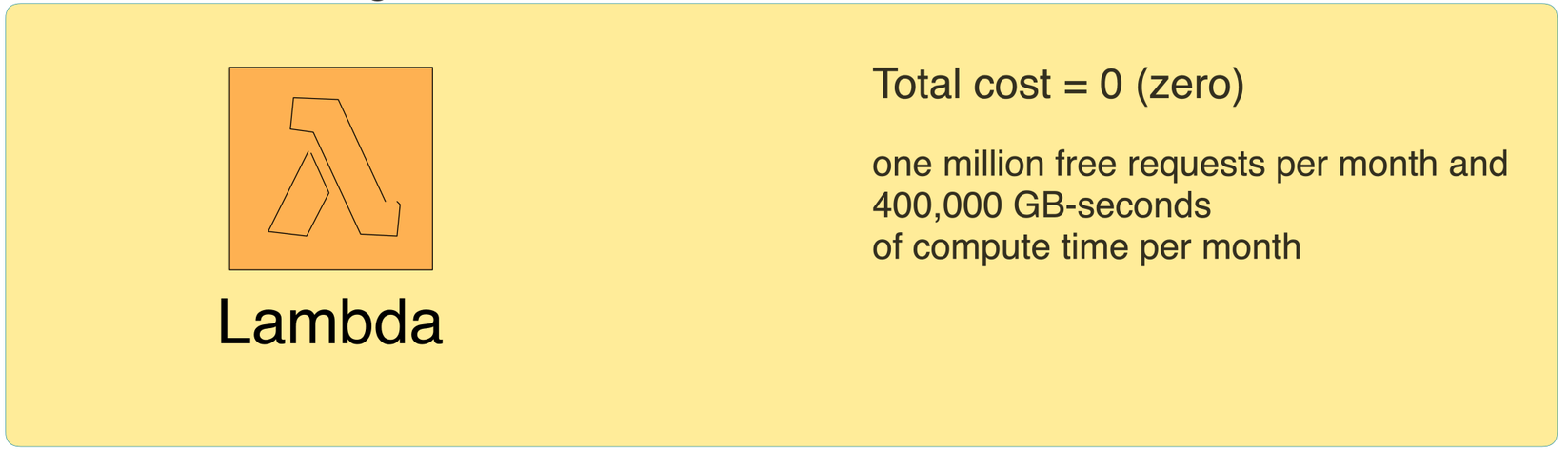
Explore alternatives

- Lambda is a serverless compute service for running code without having to manage servers
- Lambda is ideal for short-term tasks such as image uploads and processing
- One million free requests per month and 400,000 GB-seconds of compute time per month
- Replacing four EC2 serers with Lambda will result in savings of $4,000/month or **100%** of the image processing server costs

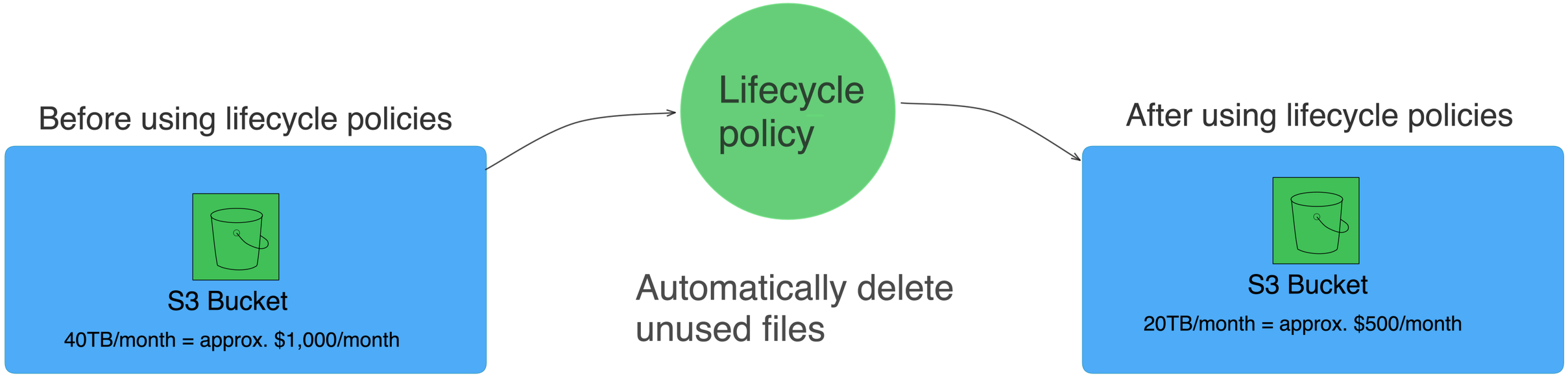
Before using lambda serverless



After using Lambda



Optimize storage



- S3 can grow in size and add to storage costs
- Lifecyle policies can create rules which automatically purge files
- This will save $500/month or **50%** of the storage costs

Savings summary

- We've **saved a whopping 68.52%** from the original AWS costs
- Elastic-sizing EC2 servers and using alternative compute such as Lambda
- Actual savings will depend on workload characteristics and the business need

Use cases	Cost/month before optimization	Cost/month After optimization
Web server	$4,000	$2,000
Analytics servers	$4,000	$222
Image processing servers	$4,000	0
S3 storage costs	$1,000	$500
RDS database	$2,000	$2,000
Total	**$15,000**	**$4,722**

Let's practice!

AWS SECURITY AND COST MANAGEMENT CONCEPTS

Wrap-up

AWS SECURITY AND COST MANAGEMENT CONCEPTS

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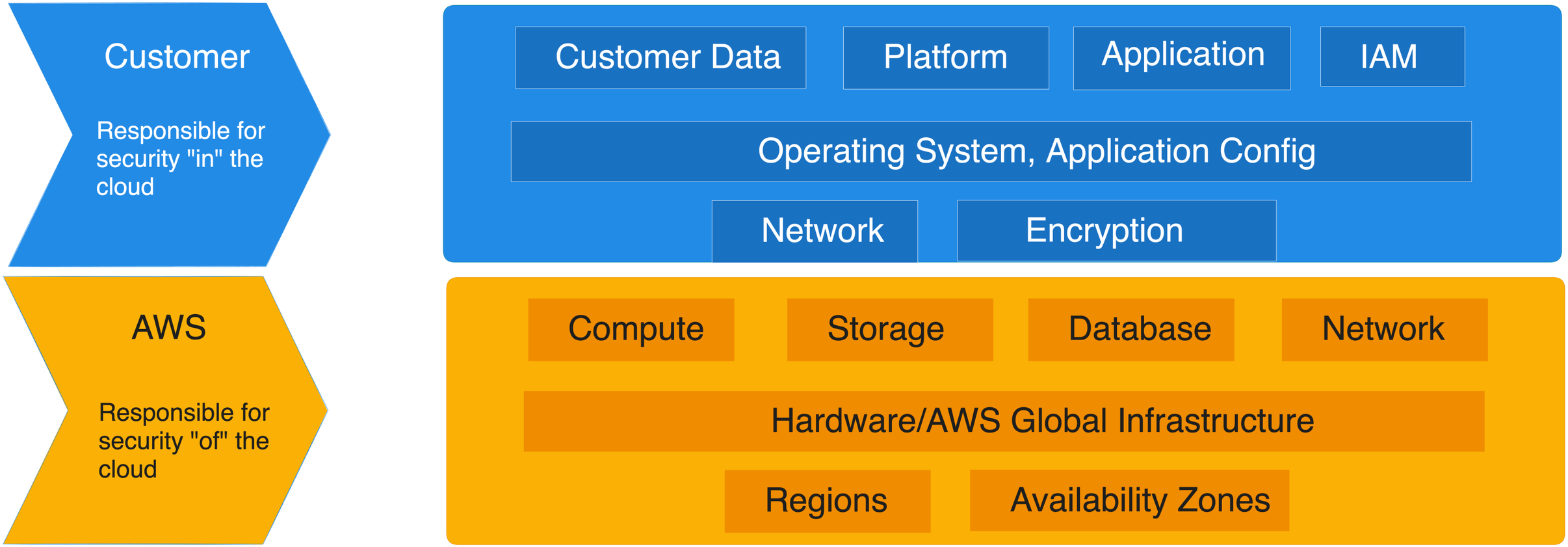
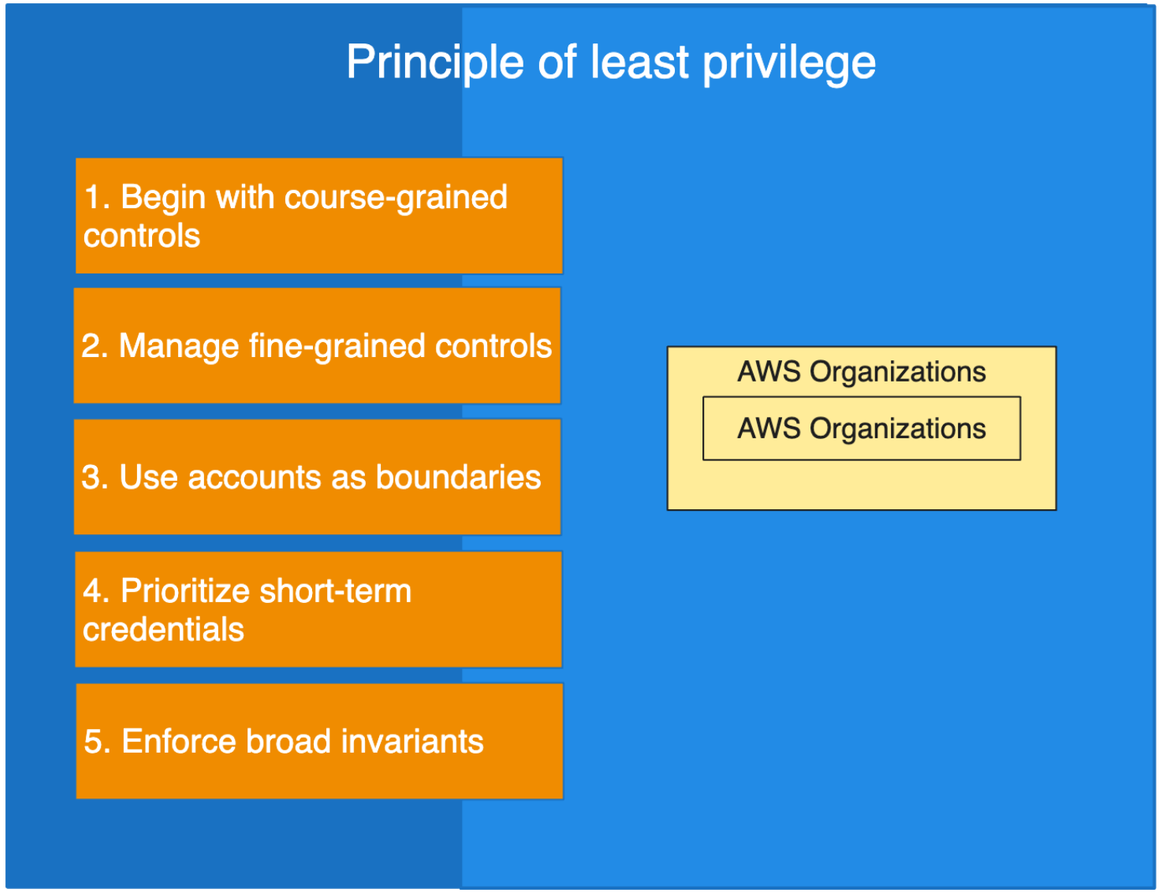
Introduction to AWS Security



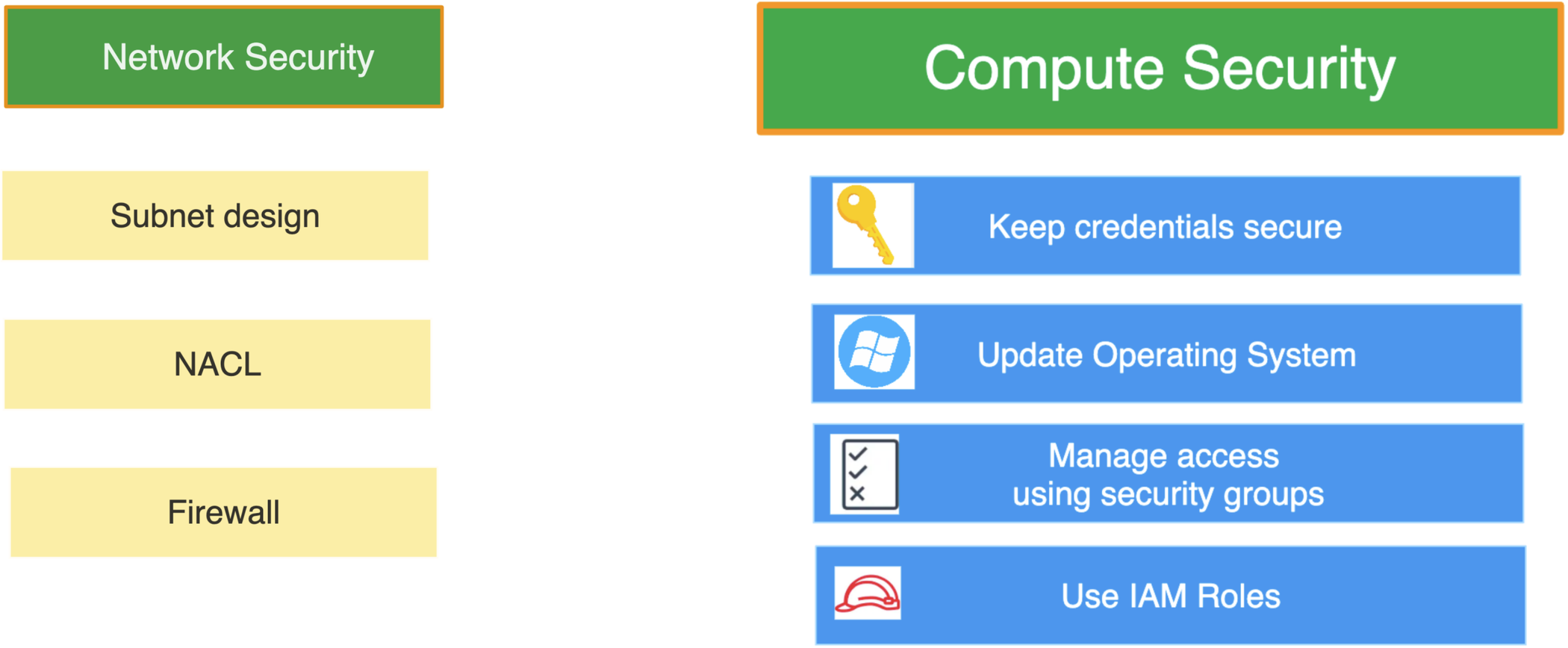
- Security concepts and shared responsibilities
- Why end-to-end security is important

Deep dives into Compliance, Governance, and IAM

- Principle of least privilege
- Identity and Access Management (IAM)



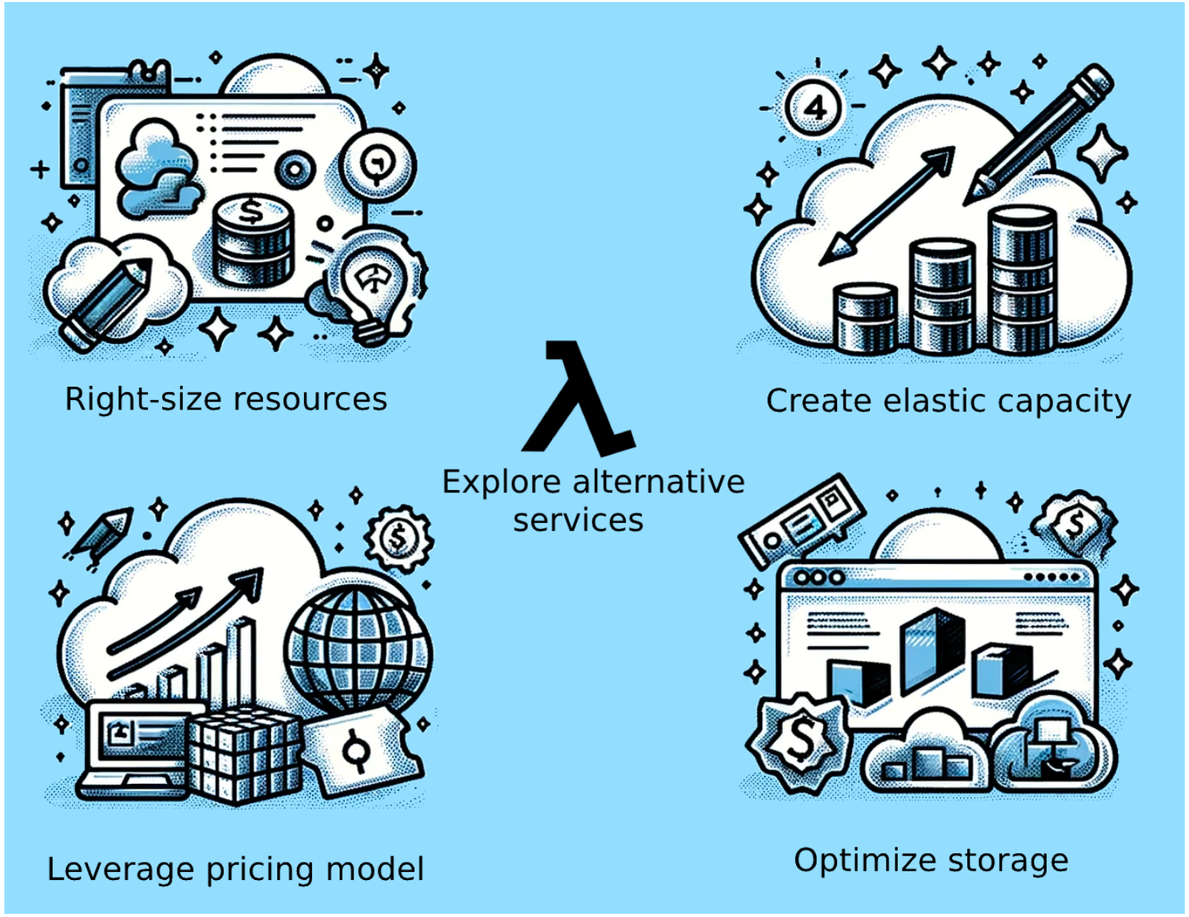
Network and Compute Security



- Network security
- Compute security

Mastering AWS Cost Management

- Pricing calculator
- Cost allocation tags
- Cost optimization framework



What's Next?


aws certified
Cloud Practitioner
FOUNDATIONAL
aws certified
Solutions Architect
ASSOCIATE

Congratulations!

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