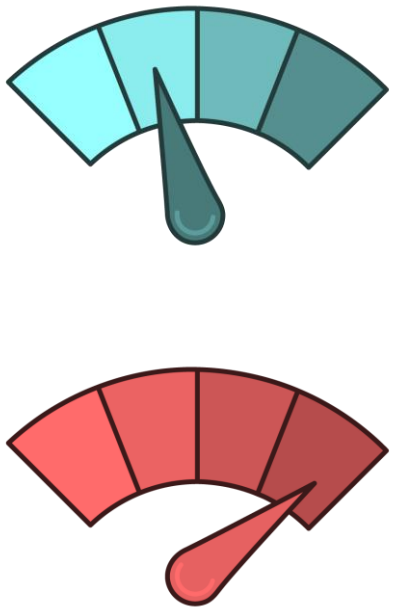
Monitor AWS resources

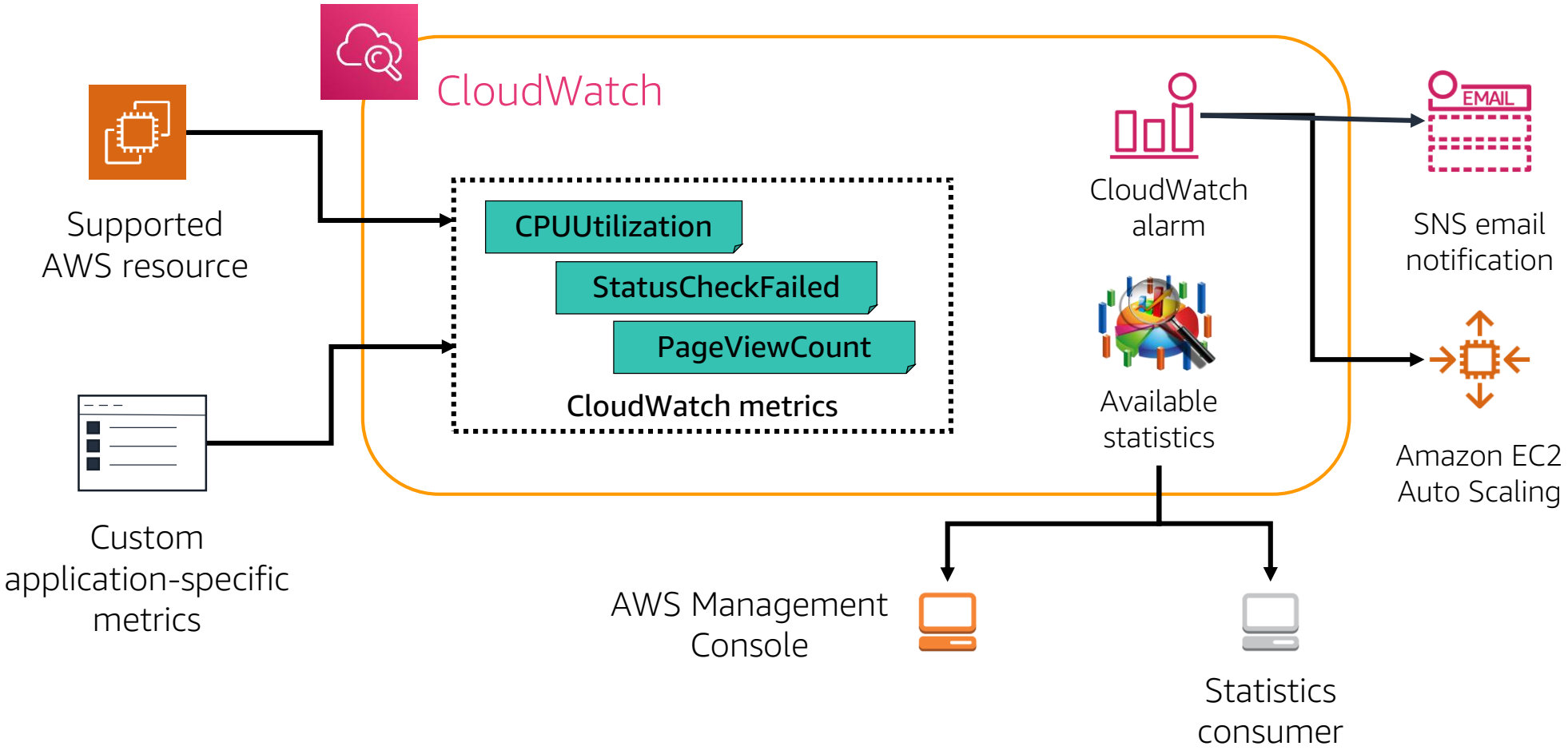
HYDROSAT

What is Amazon CloudWatch?



- Monitors:
  - AWS resources
  - Applications running on AWS
- Collects and tracks:
  - Standard metrics
  - Custom metrics
- Alarms:
  - Send notifications
  - Automatically make changes based on rules you define

How CloudWatch works

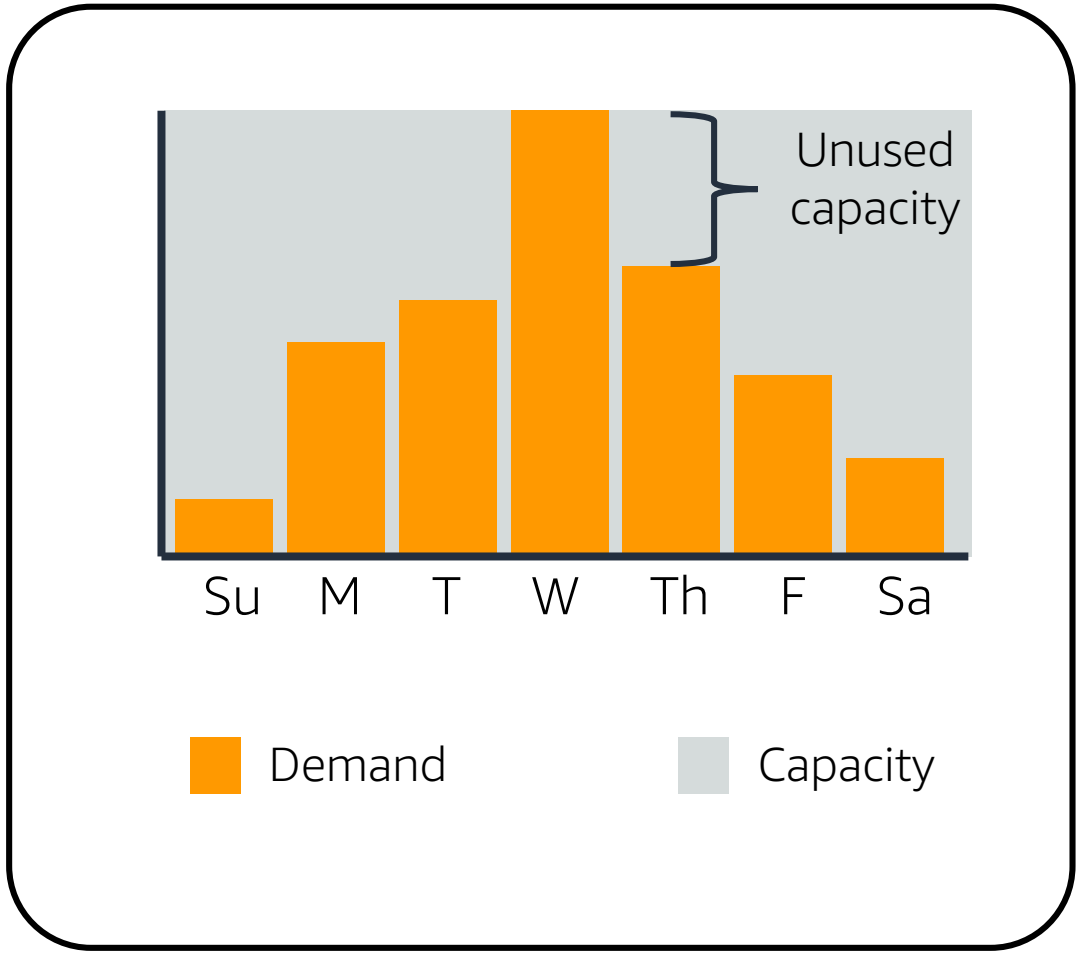


Manage demand efficiently

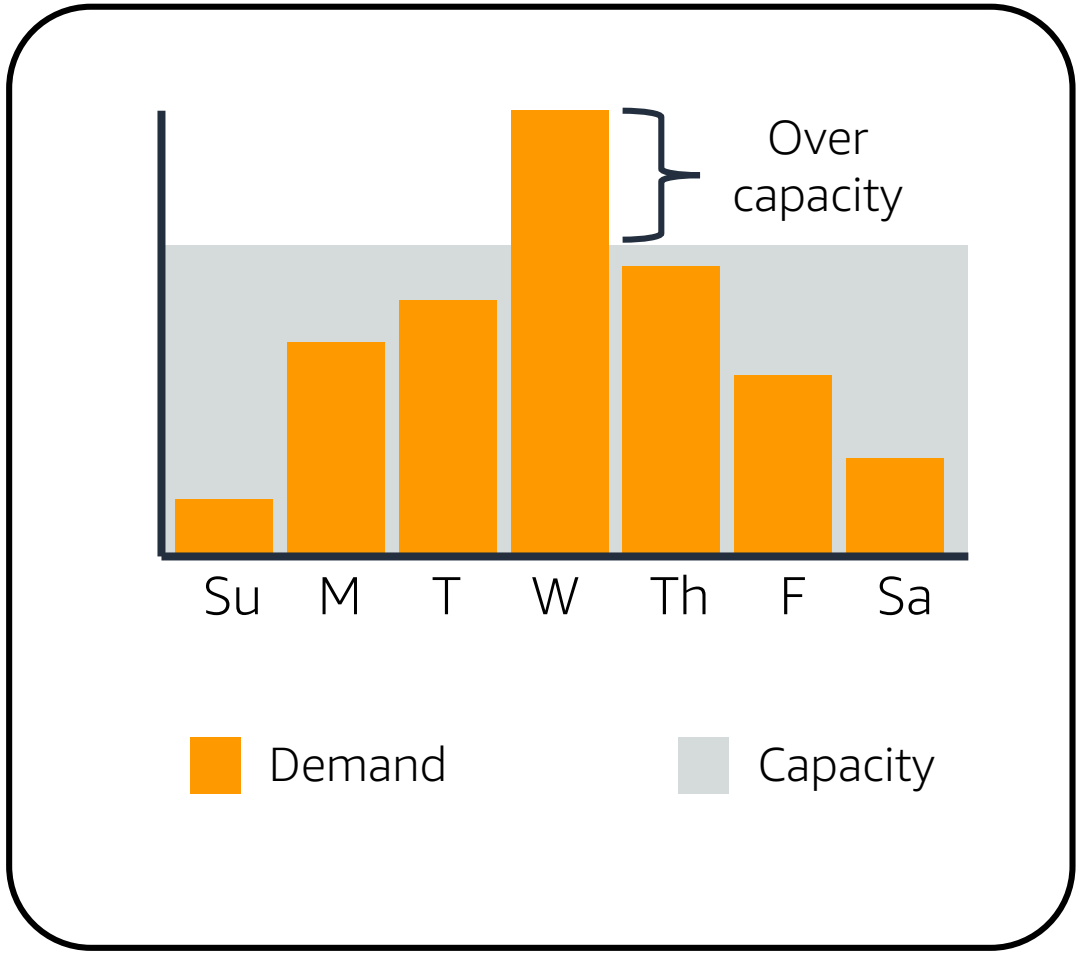
HYDROSAT

Why scaling matters

Why scaling matters



Why scaling matters



Why scaling matters

Amazon EC2 Auto Scaling adjusts capacity as needed

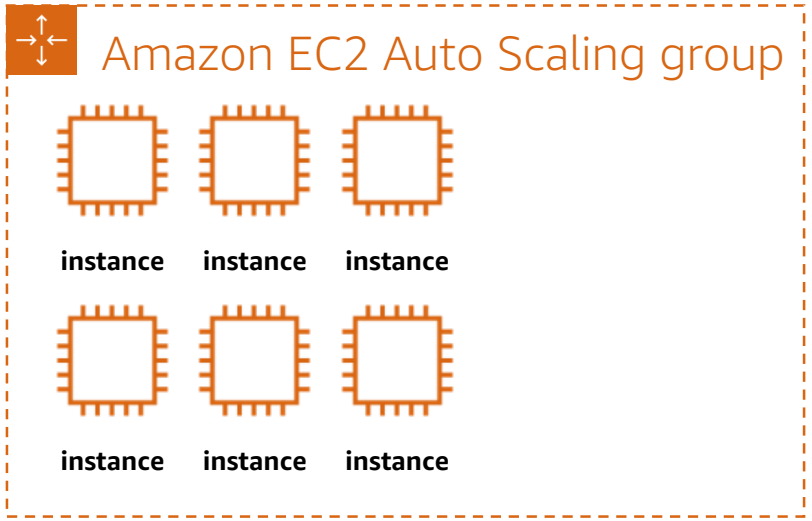
- Scale out for spikes
- Scale in during off-peak
- Replace unhealthy instances
- Pay only for what you use

Dynamic scaling with Amazon EC2 Auto Scaling

Follow the demand curve for your applications

- Select a load metric for your application
- Set as conditional and/or scheduled
- Use with CloudWatch, optionally

Max	10
Min	2
Desired	6



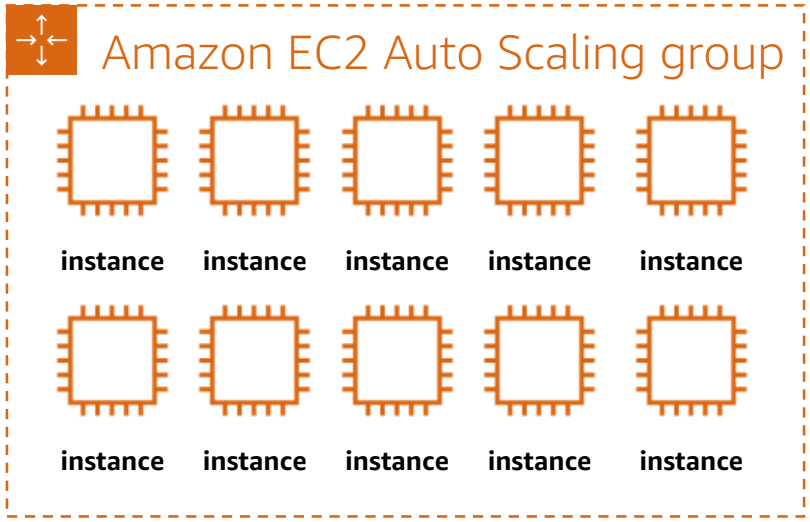
Average Demand

Dynamic scaling with Amazon EC2 Auto Scaling

Follow the demand curve for your applications

- Select a load metric for your application
- Set as conditional and/or scheduled
- Use with CloudWatch, optionally

Max	10
Min	2
Desired	10



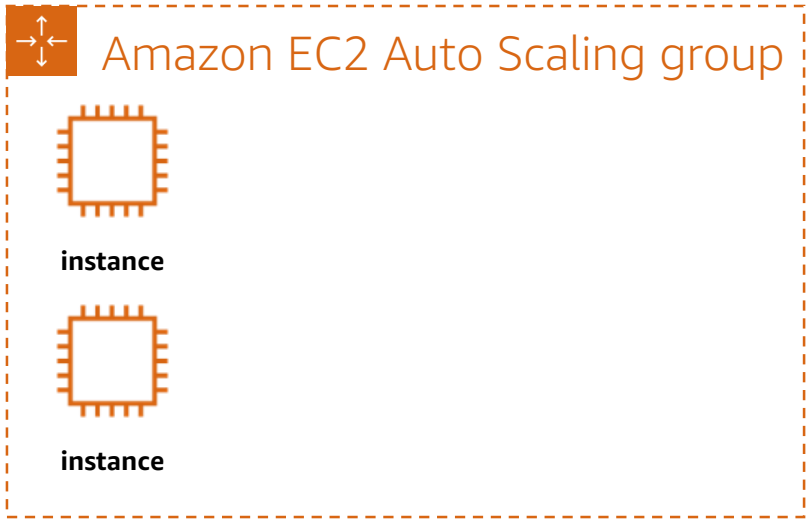
High demand

Dynamic scaling with Amazon EC2 Auto Scaling

Follow the demand curve for your applications

- Select a load metric for your application
- Set as conditional and/or scheduled
- Use with CloudWatch, optionally

Max	10
Min	2
Desired	2



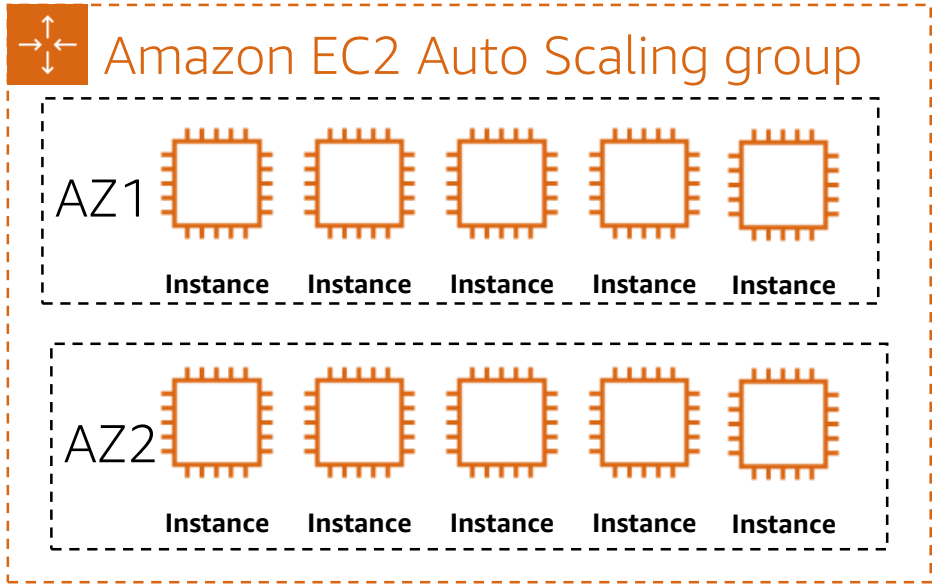
Low demand

Fleet management with Amazon EC2 Auto Scaling

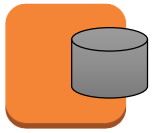
Replace impaired Amazon EC2 instances without intervention

- Monitor the health of running instances
- Replace impaired instances automatically
- Balance capacity across Availability Zones

Max	10
Min	2
Desired	10



DIY vs. AWS database services



Databases on Amazon EC2

- Operating system access
- Need features of specific application

AWS Database Services

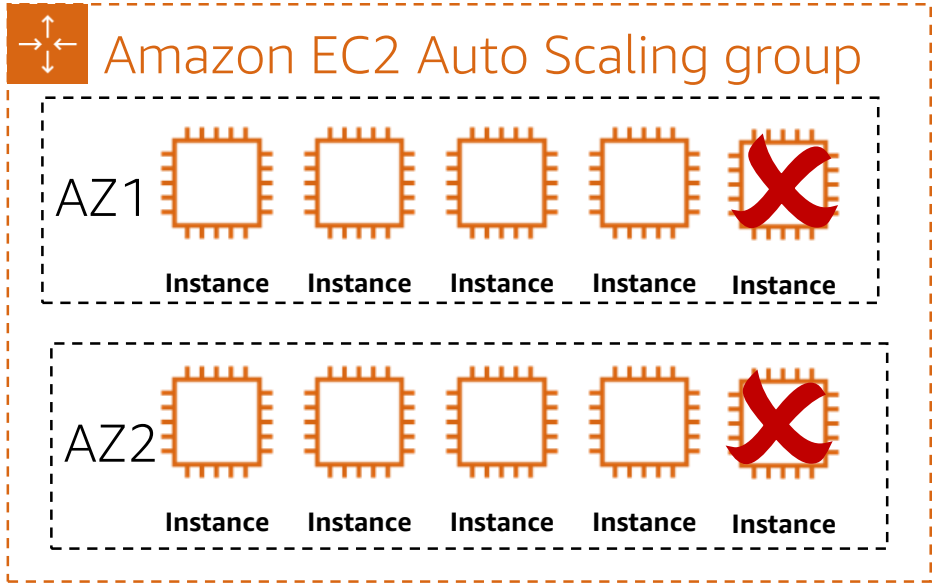
- Easy to set up, manage, maintain
- Push-button high availability
- Focus on performance
- Managed infrastructure

Fleet management with Amazon EC2 Auto Scaling

Replace impaired Amazon EC2 instances without intervention

- Monitor the health of running instances
- Replace impaired instances automatically
- Balance capacity across Availability Zones

Max	10
Min	2
Desired	10

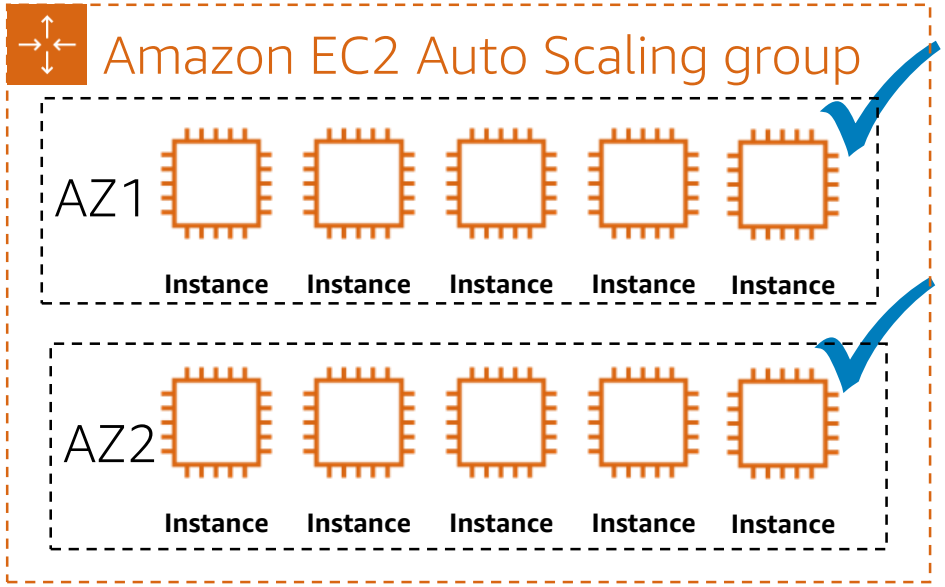


Fleet management with Amazon EC2 Auto Scaling

Replace impaired Amazon EC2 instances without intervention

- Monitor the health of running instances
- Replace impaired instances automatically
- Balance capacity across Availability Zones

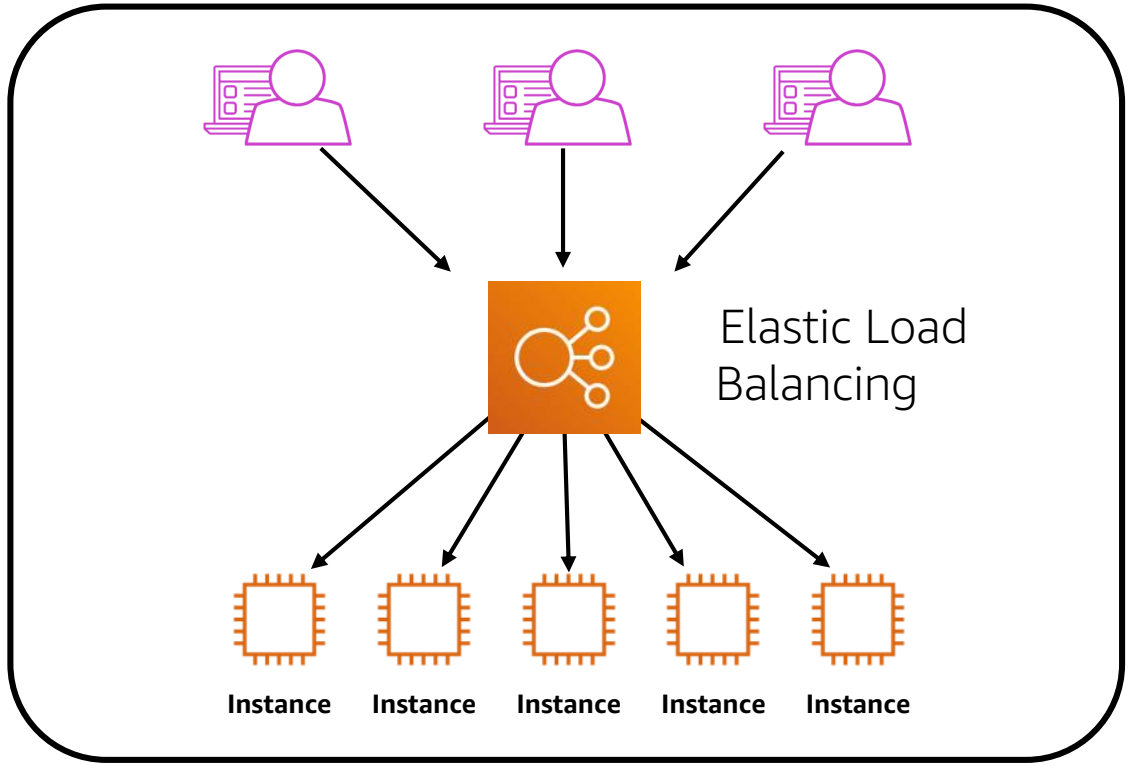
Max	10
Min	2
Desired	10



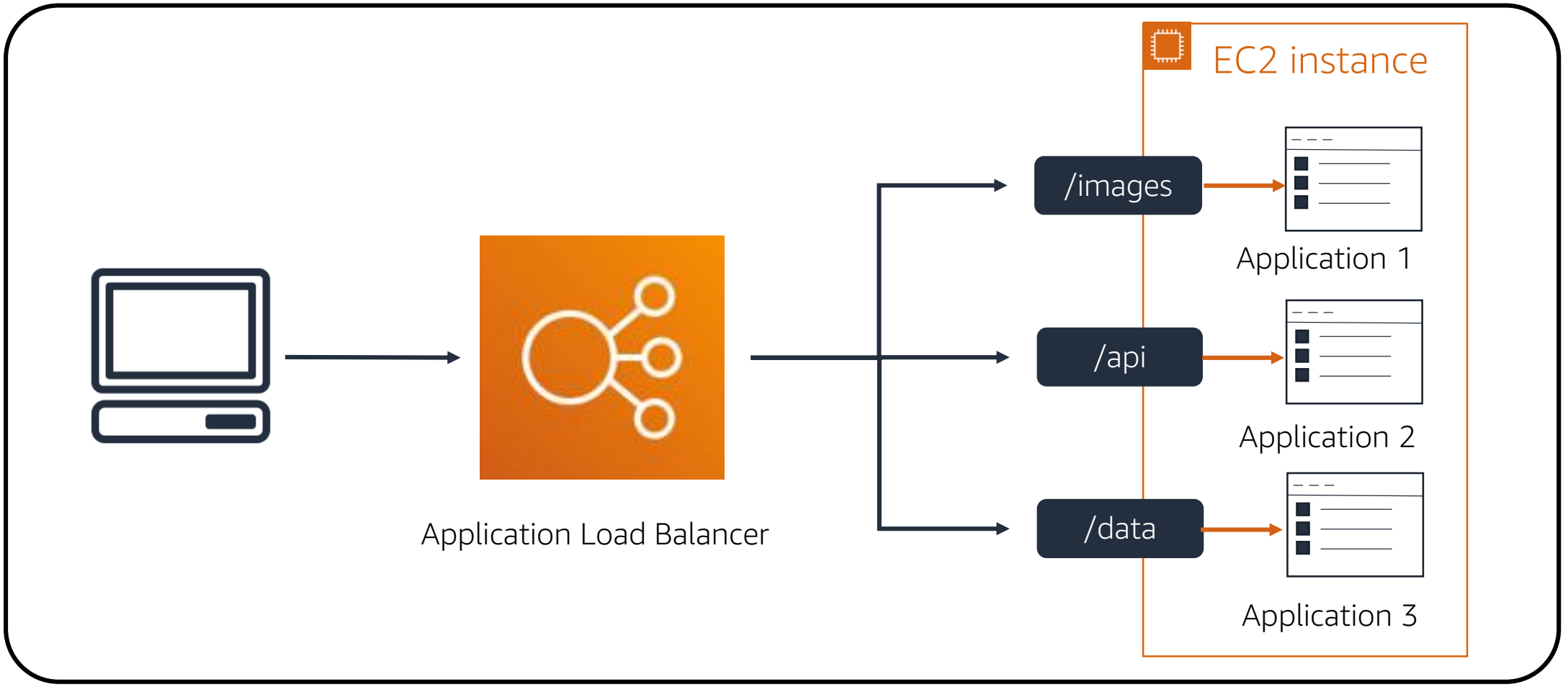
Elastic Load Balancing

Automatically distribute traffic across multiple targets

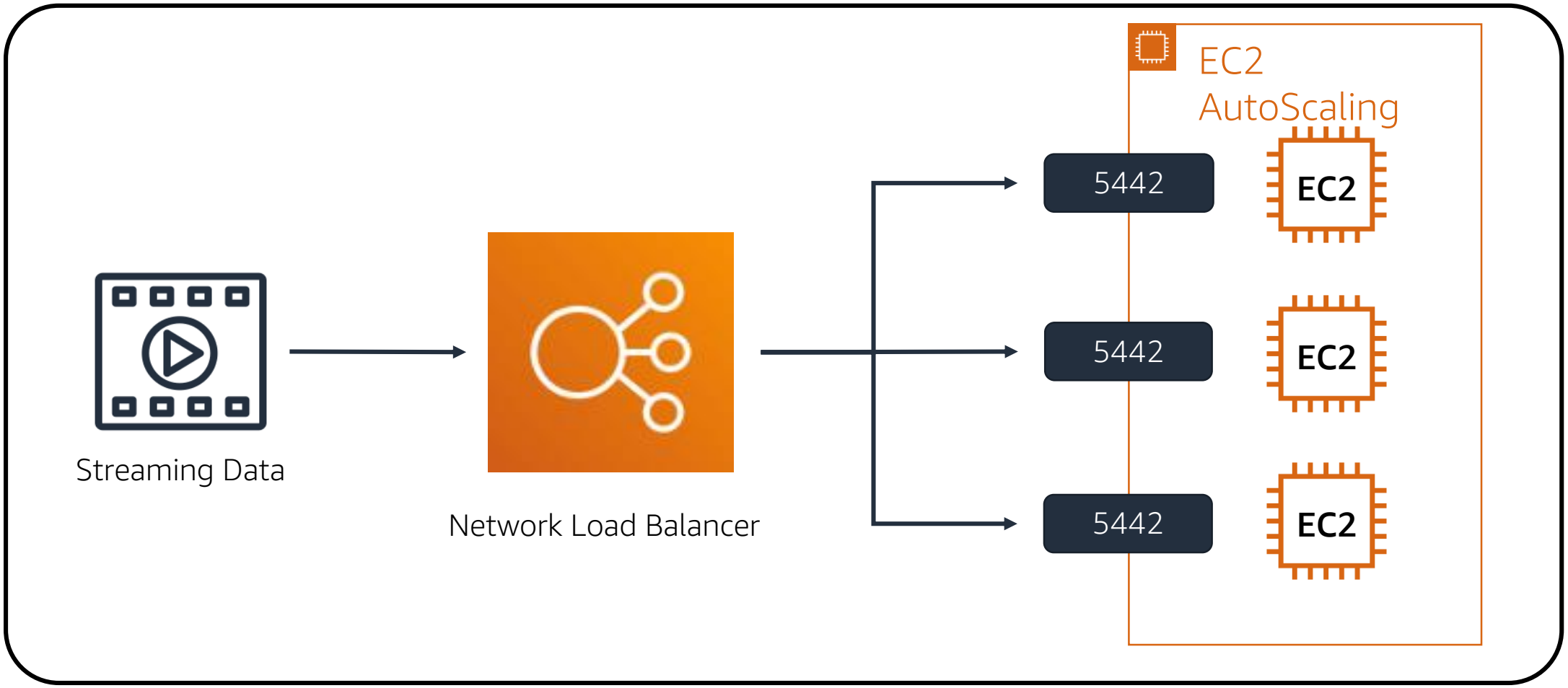
- High availability
- Health checks
- SSL/TLS termination
- Operational monitoring



Application Load Balancer example



Network Load Balancer example



Automate deployment

HYDROSAT

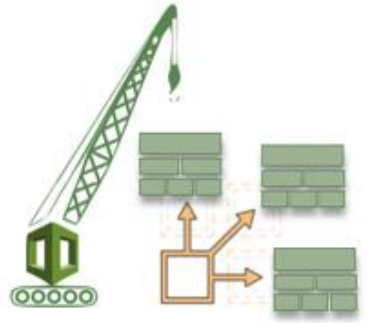
What is AWS CloudFormation?

Model and provision all your cloud infrastructure resources

Code your infrastructure template in either YAML or JSON format

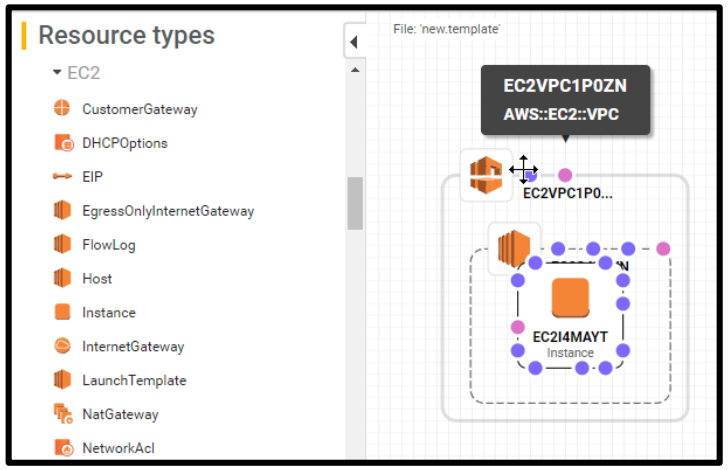
Check out your template code locally or upload to an S3 bucket.

Create a stack based on your template code



AWS CloudFormation provisions the resources

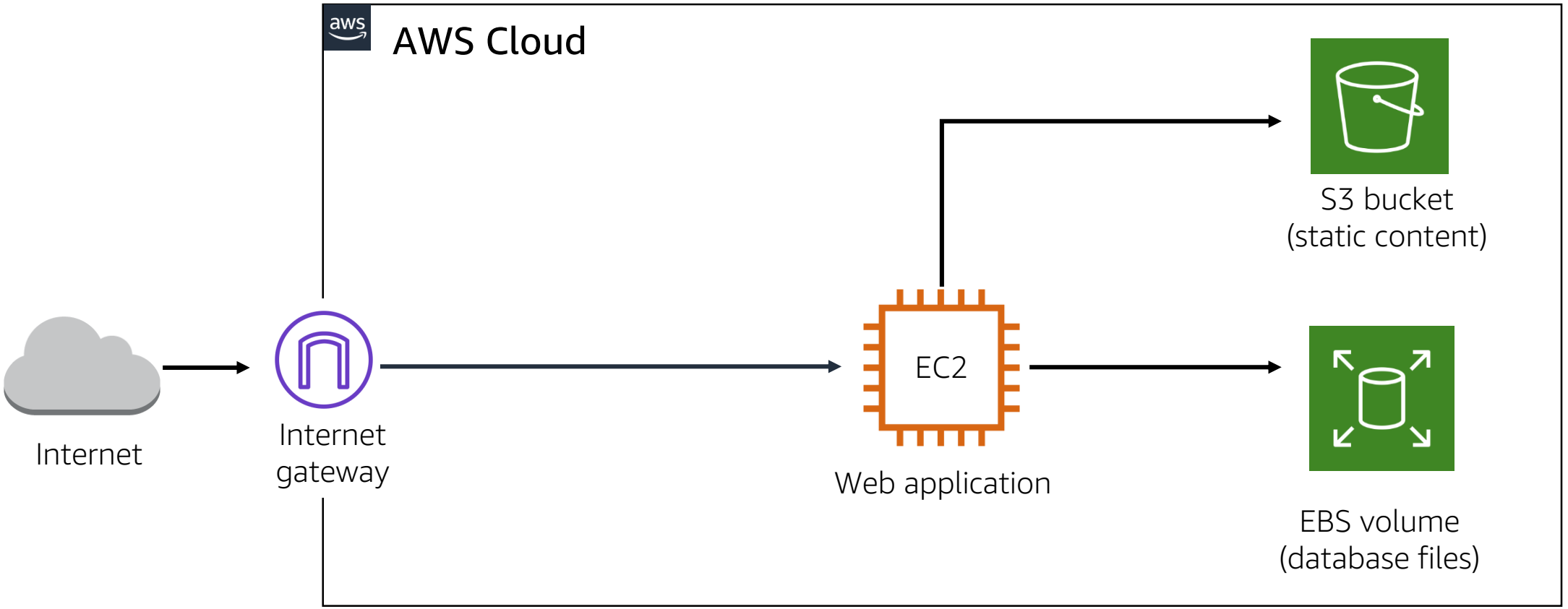
AWS CloudFormation example



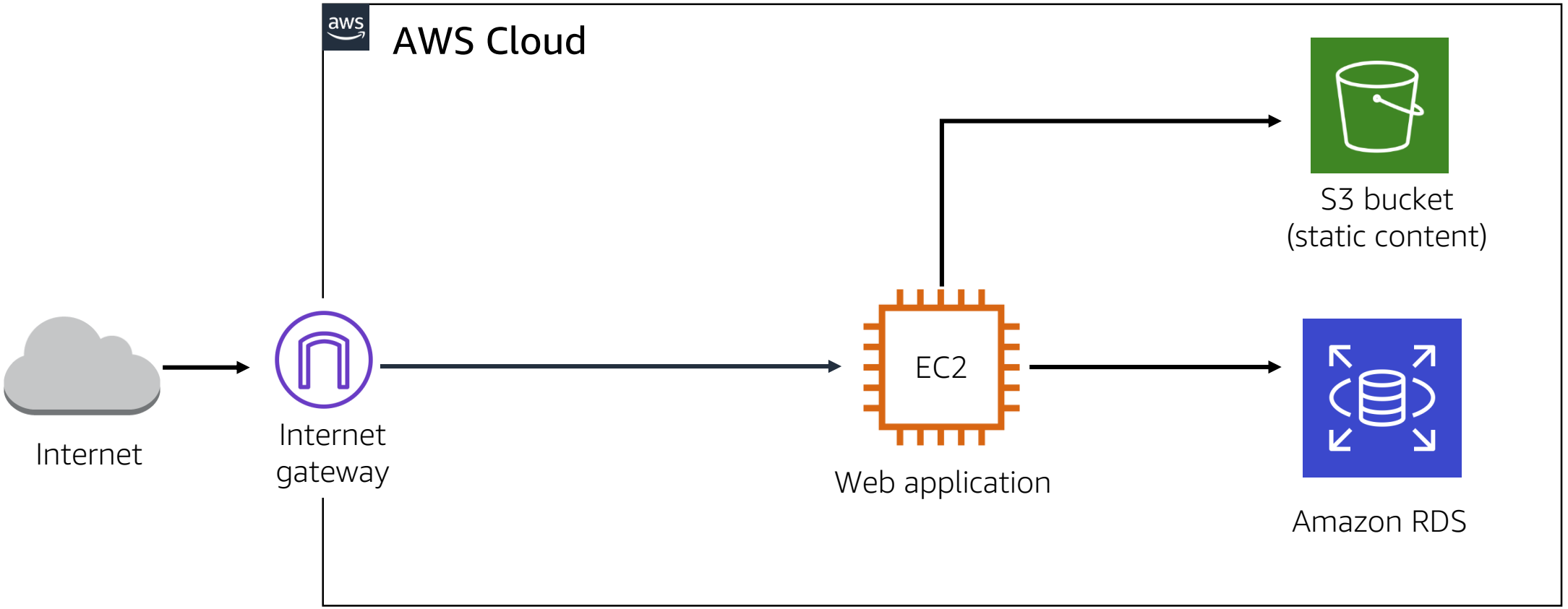
CloudFormation Designer

Template-file
(YAML/JSON)
----- -- -- --- -- -----
-- -- --- --
----- -- -- --- --
----- -- -- --- --

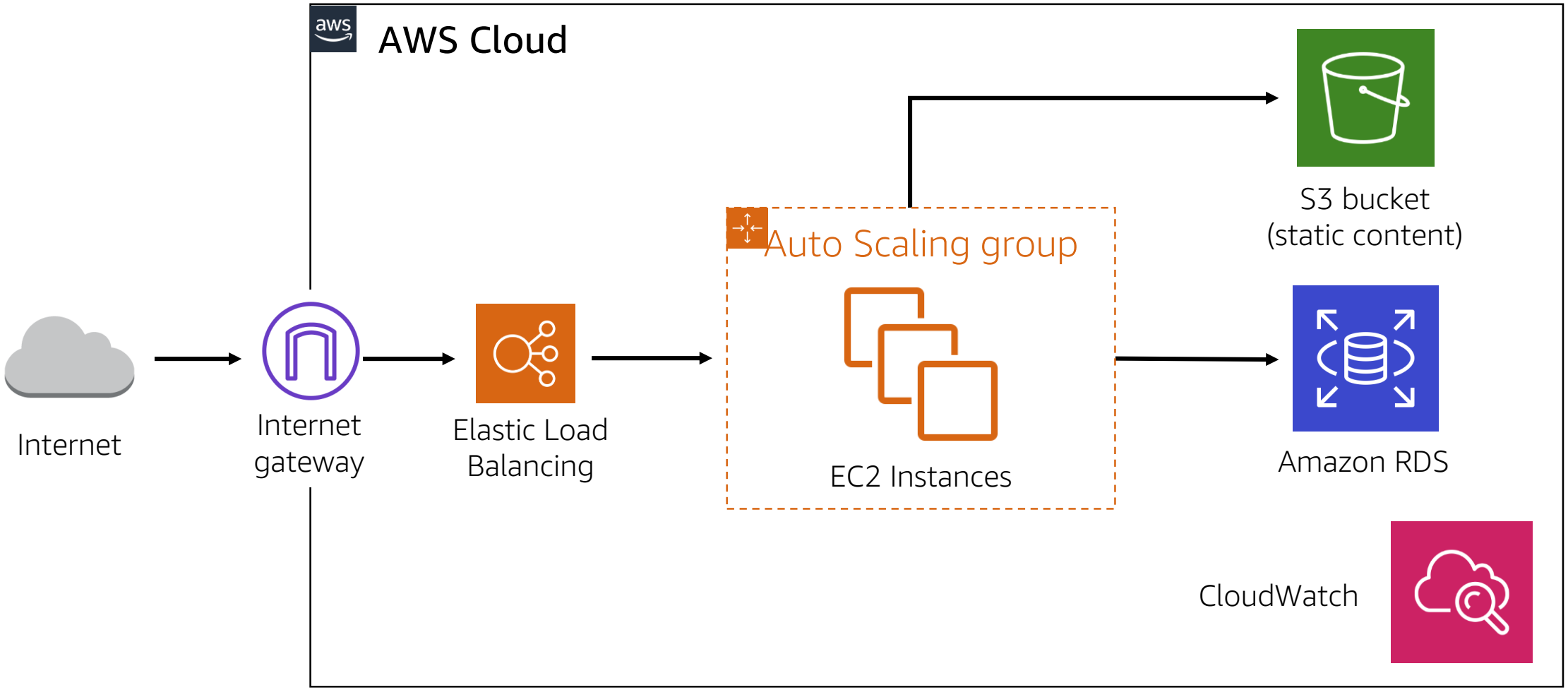
Putting it all together (1 of 4)



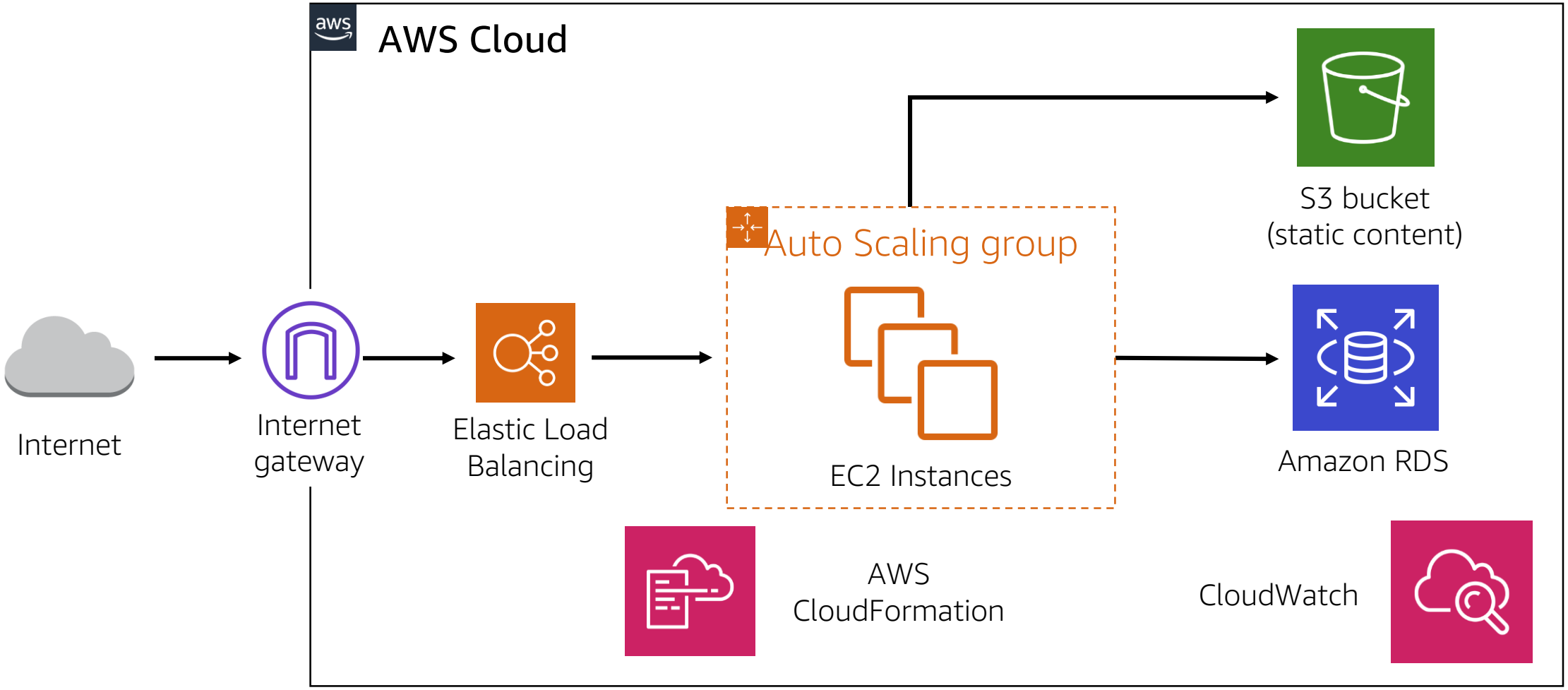
Putting it all together (2 of 4)



Putting it all together (3 of 4)



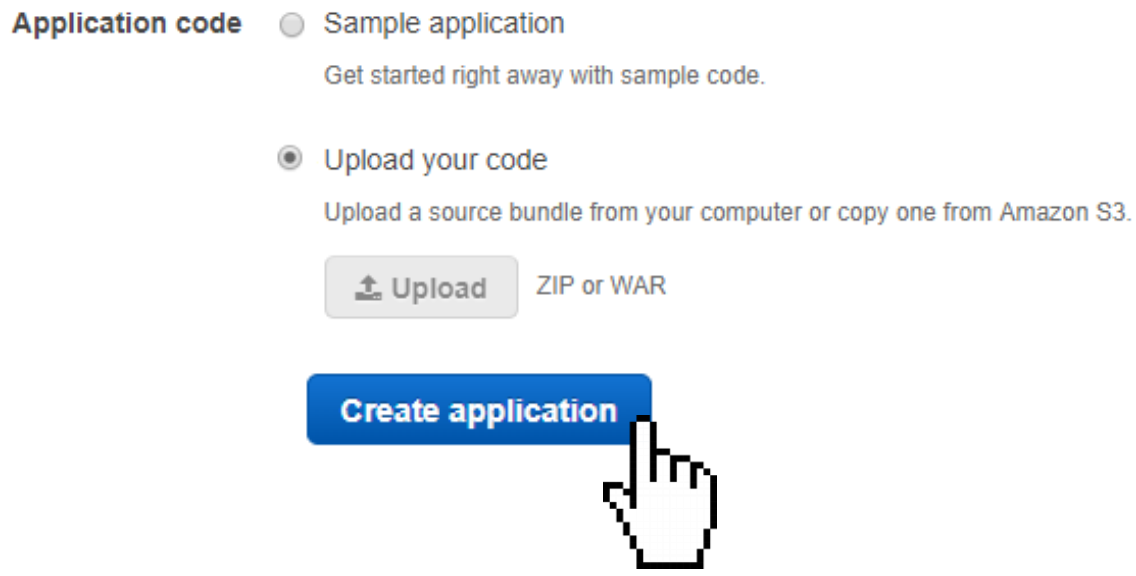
Putting it all together (4 of 4)



How can I deploy without managing infrastructure?

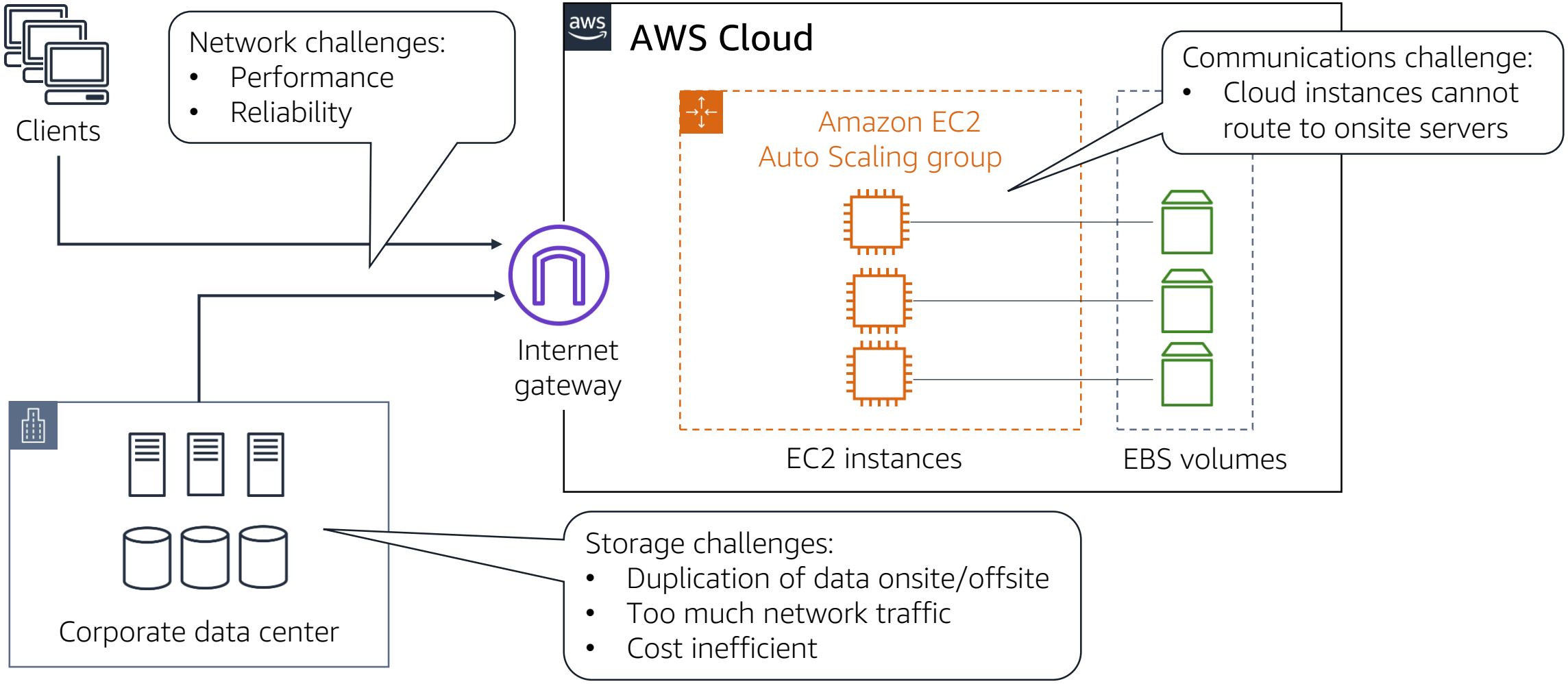
Quickly deploy and manage applications with AWS Elastic Beanstalk

- Upload your application code
- The service handles:
  - ✓Resource provisioning
  - ✓Load balancing
  - ✓Automatic scaling
  - ✓Monitoring
- Support applications that scale to serve millions of users



Connect and share data

Challenge: hybrid cloud



What is AWS Direct Connect?

A dedicated network connection from your premises to AWS

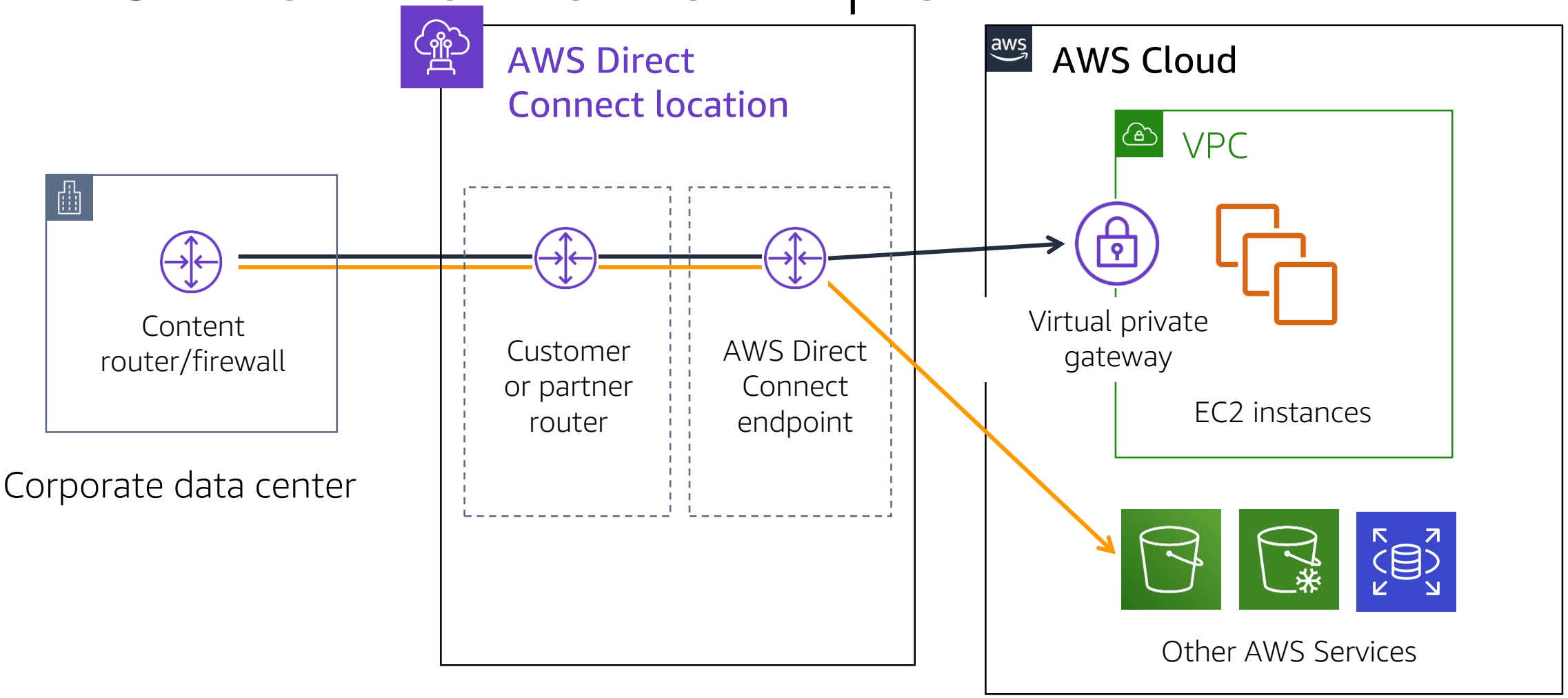
Reduces network costs

Creates consistent network performance

Provides private connectivity to your Amazon VPC

Scales easily

AWS Direct Connect example



What is Amazon Route 53?

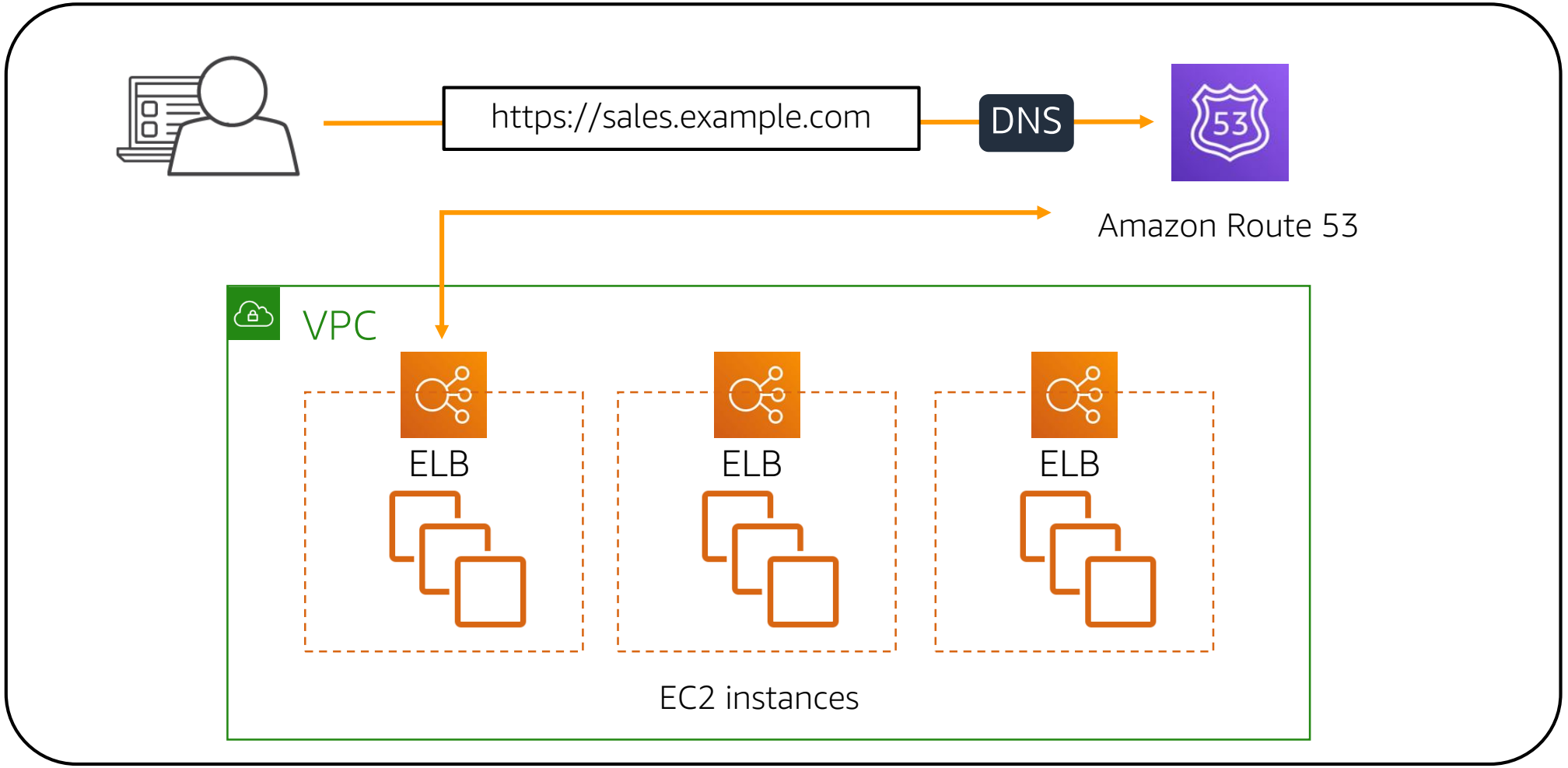
A highly available and scalable Domain Name System (DNS) web service

Register domain names

Route internet traffic to the resources for your domain

Check the health of your resources

Routing traffic



What is Amazon Elastic File System (Amazon EFS)?

A scalable, elastic, cloud-native file system for Linux

Dynamic elasticity

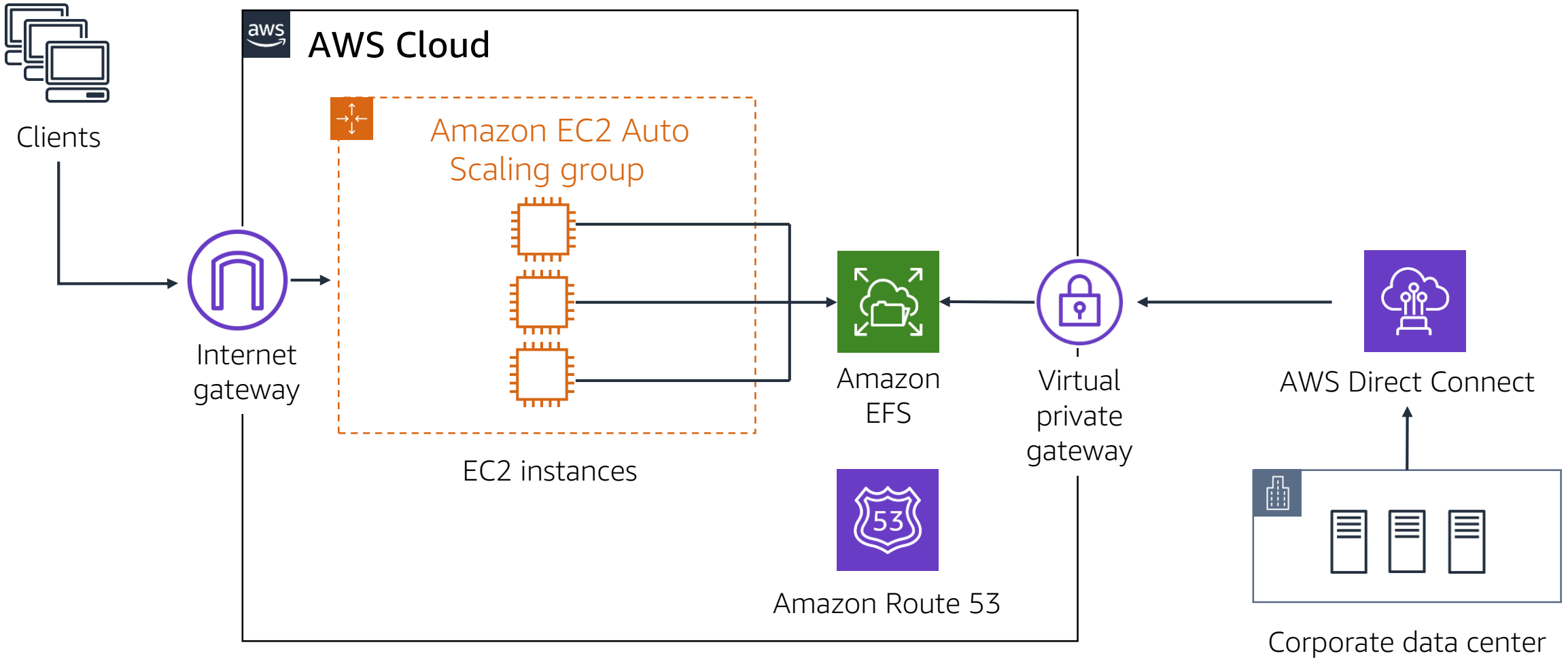
Scalable performance

Shared file storage

Fully managed

Cost-effective

Putting it all together

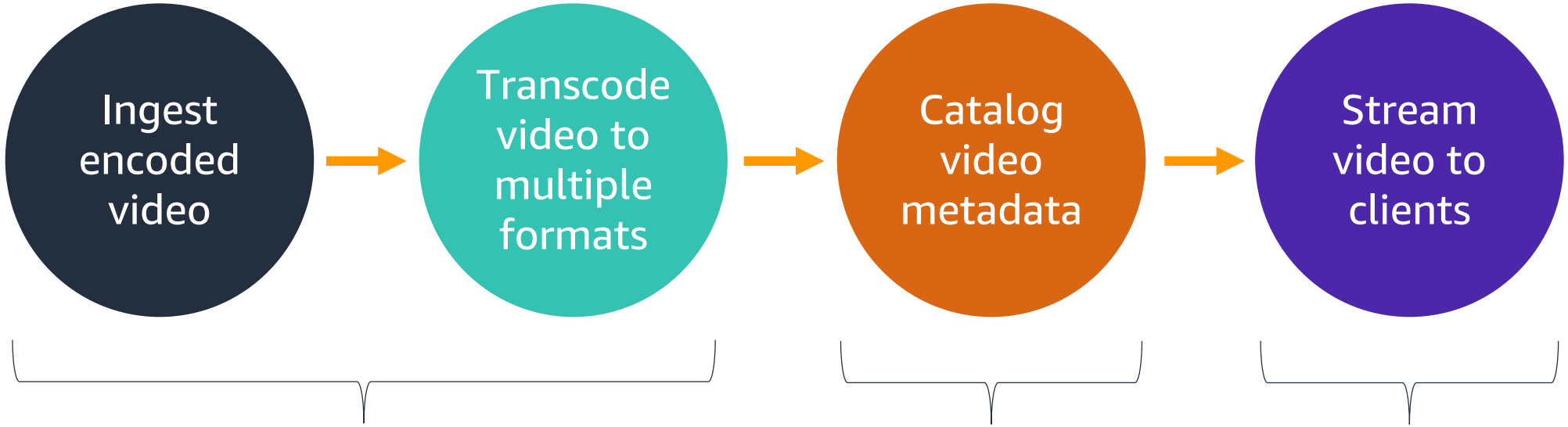


Deliver content faster

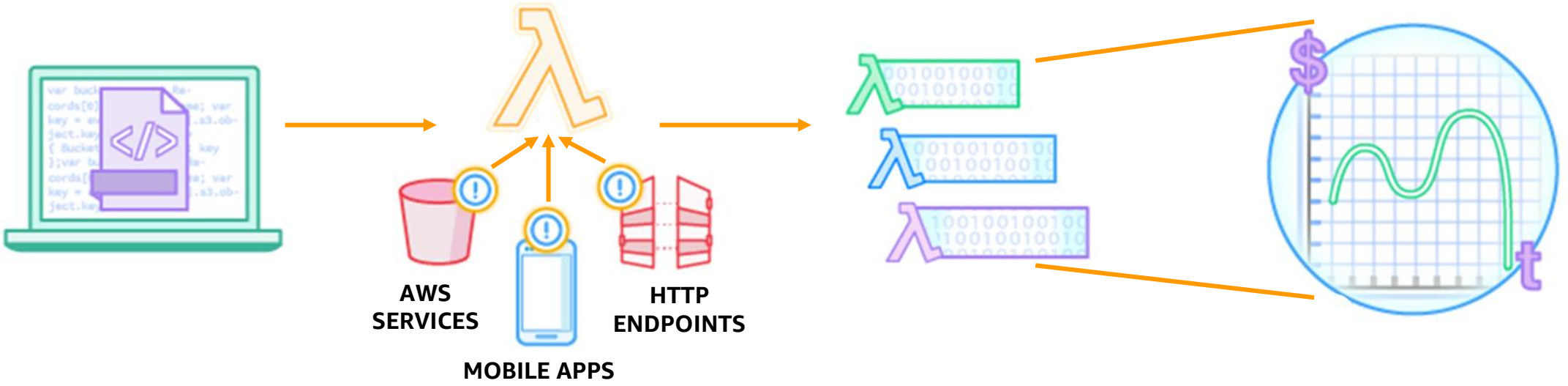
HYDROSAT

Challenge: media streaming service

The architecture must meet the following requirements:



AWS Lambda: run code without servers



Upload your code to AWS Lambda

Set your code to trigger from an event source

Lambda runs your code only when triggered

Pay only for the compute time you use

Benefits of Lambda

Supports multiple programming languages

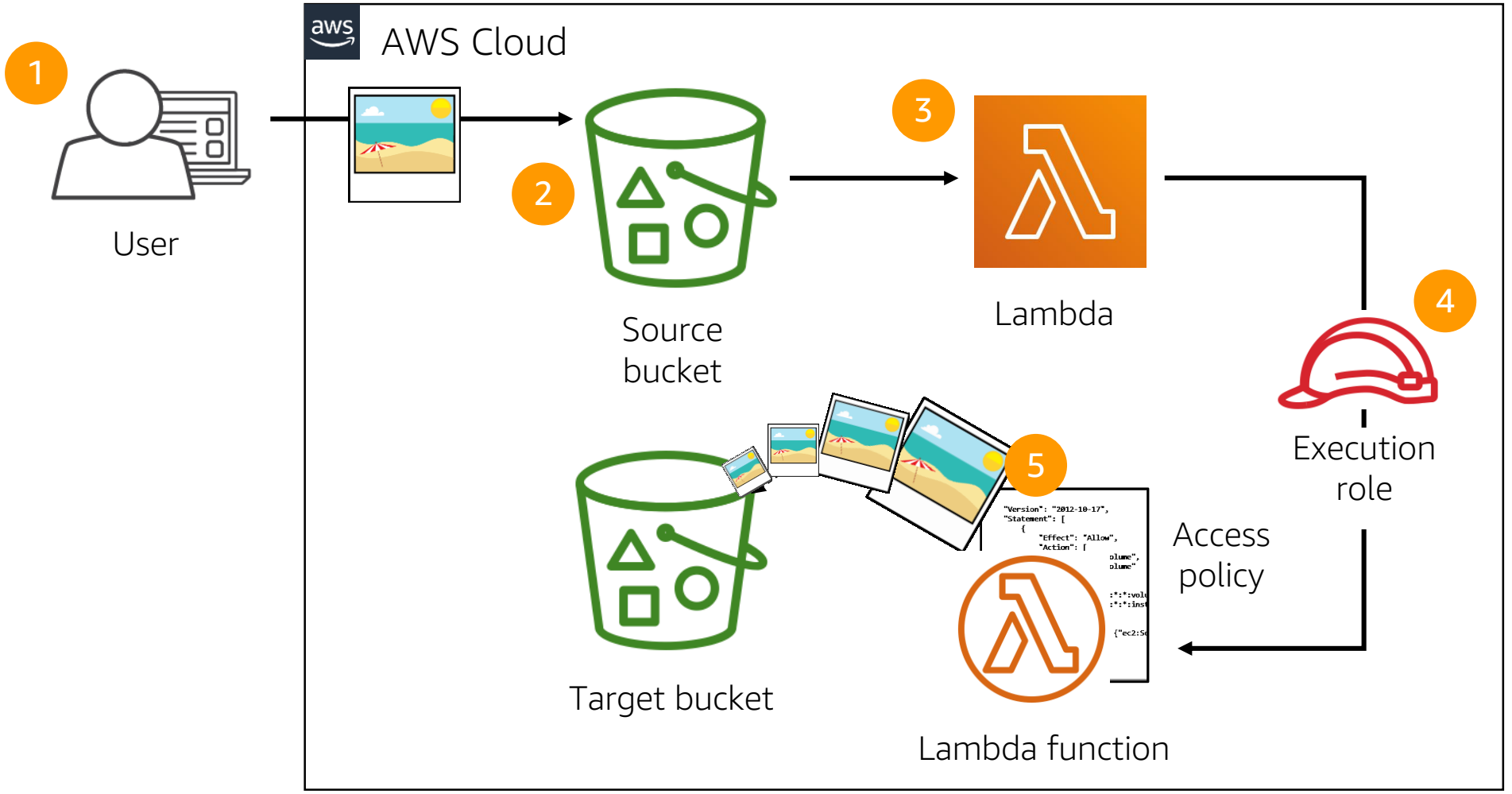
Completely automated administration

Built-in fault tolerance

Supports orchestration of multiple functions

Pay per use pricing

Lambda example: create thumbnails



What is Amazon Simple Notification Service (Amazon SNS)?

Fully managed pub/sub messaging for distributed or serverless applications

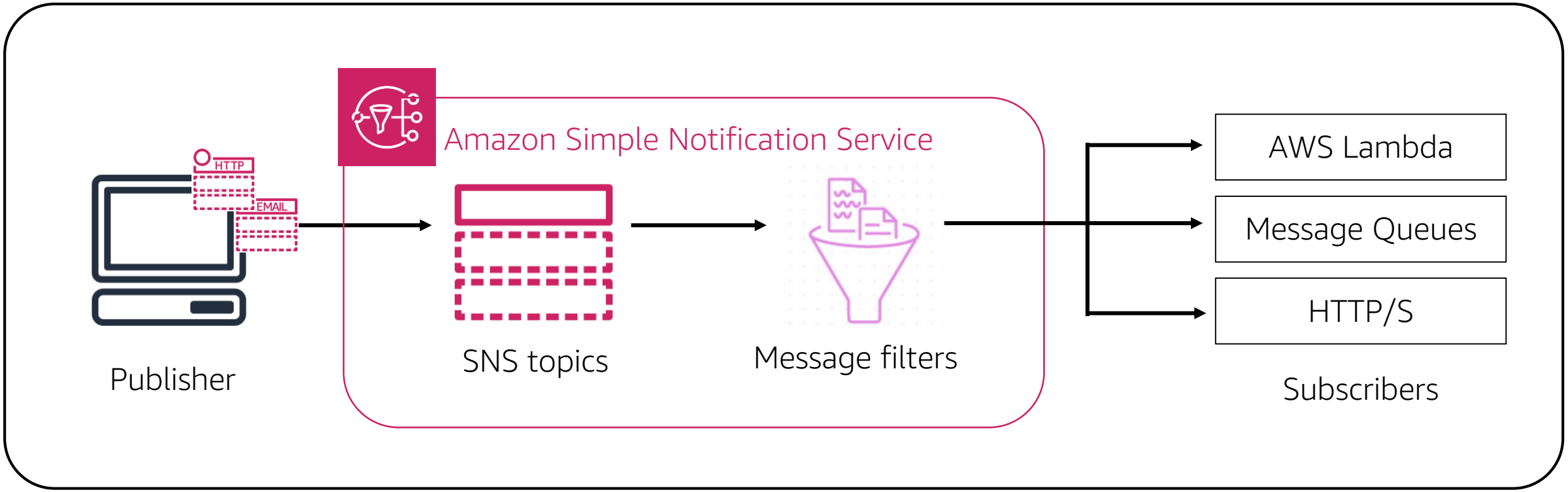
Reliably deliver messages with durability

Automatically scale your workload

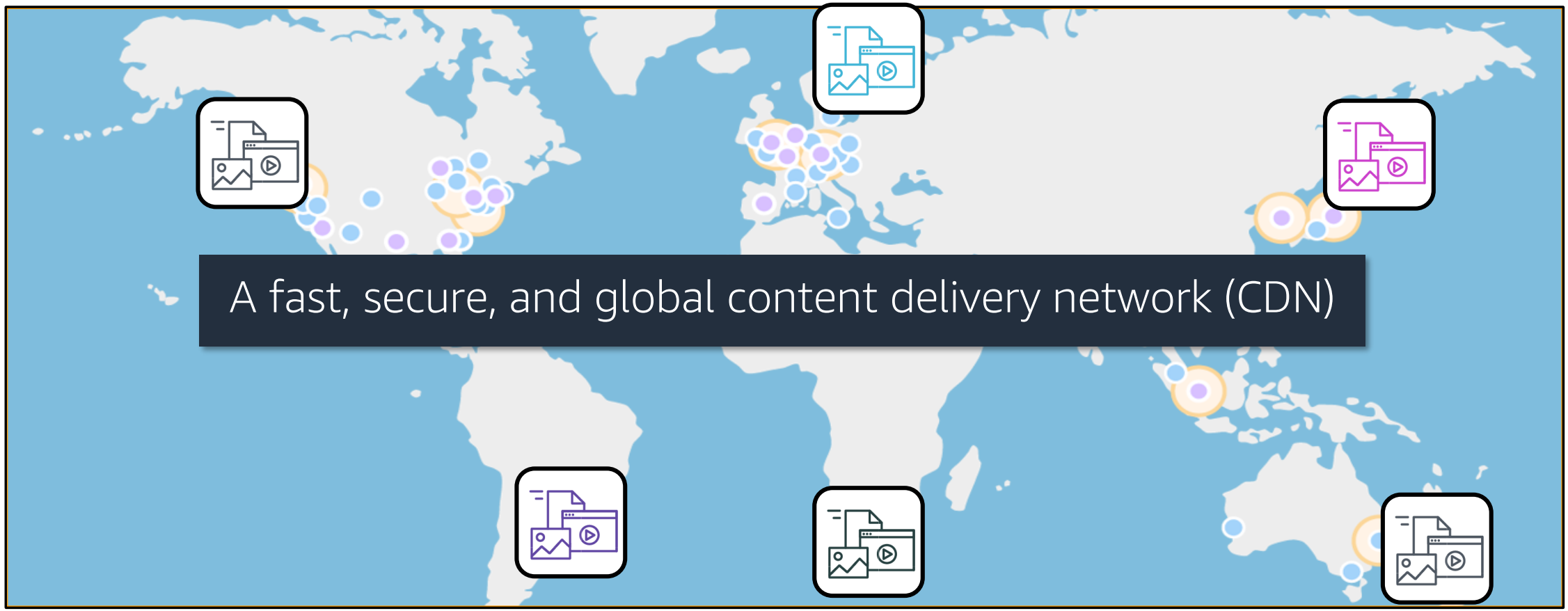
Simplify your architecture

Keep messages private and secure

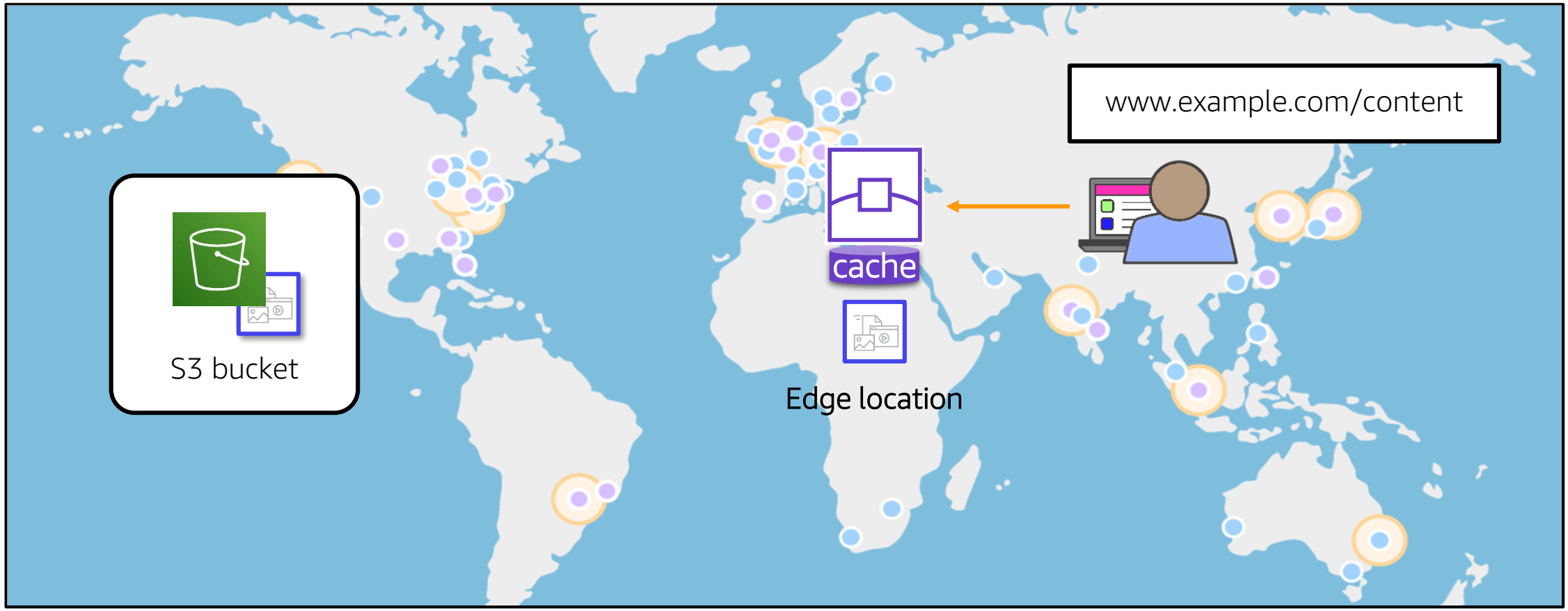
Amazon SNS overview



What is Amazon CloudFront?

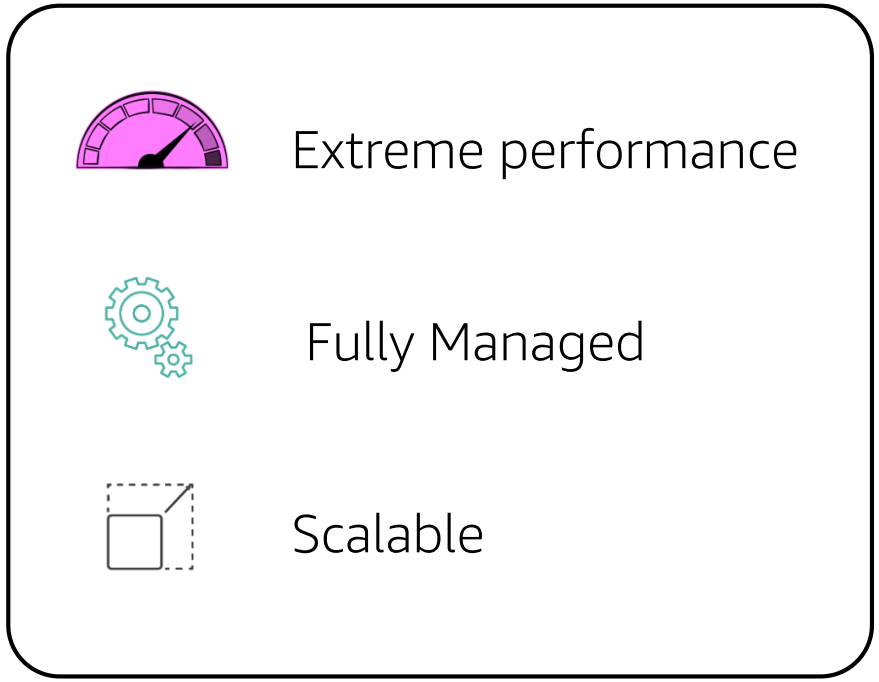


How CloudFront delivers content to users



What is Amazon ElastiCache?

Fully managed Redis or Memcached-compatible in-memory data store



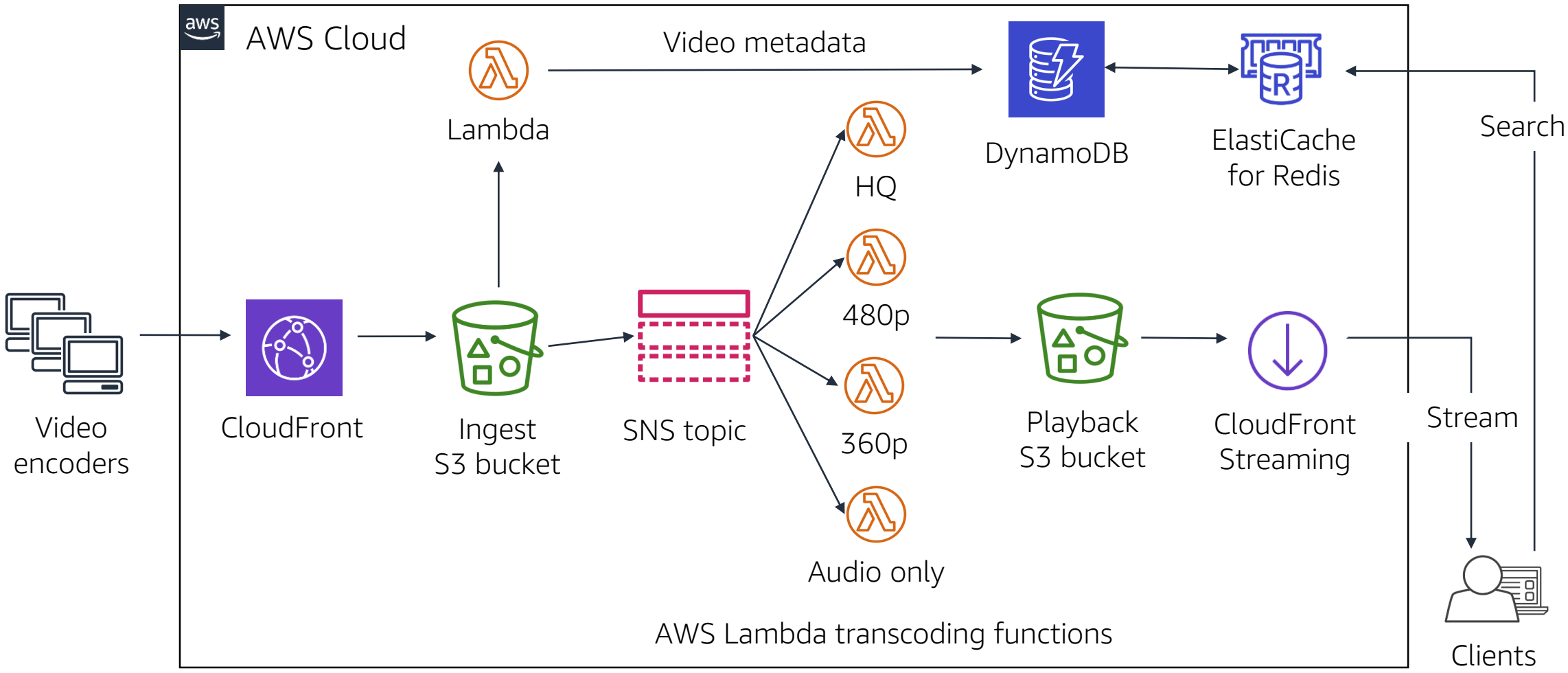
Amazon ElastiCache for Redis

Versatile in-memory data store

Amazon ElastiCache for Memcached

Scalable caching tier
for data-intensive apps

Challenge: Media streaming service



Key Takeaways

Amazon CloudWatch	Have complete visibility of your cloud resources and applications
Elastic Load Balancing Application Auto Scaling	Deploy highly available applications that scale with demand
AWS Database Services	Run SQL or NoSQL databases without the management overhead
AWS CloudFormation	Programmatically deploy repeatable infrastructure
AWS Elastic Beanstalk	Deploy your application in the simplest way possible
AWS Direct Connect	Provision a dedicated network connection from your premises to AWS
Amazon Route 53	Run a highly available and scalable Domain Name System (DNS) web service
AWS Lambda	Run code without managing servers
Amazon CloudFront	Deliver your content across a massively scaled and globally available network

End of Module 3

Test Your Knowledge

HYDROSAT