PUBLIC SECTOR SYMPOSIUM

BRUSSELS | MARCH 28, 2023

BTT201

Managing your Cloud Spend: without re-architecting

Kevin Long (he/him)
Senior Financial Architect and Cloud Economist
Amazon Web Services : EMEA Public Sector

Agenda : Managing your Cloud Spend

Principles of Cloud Economics

Reality of Cloud Cost Management

How to:

- Understand your costs
- Assess your maturity in Cloud Financial Management
- Develop an action plan

Do you hear these questions?

Why is this month's AWS bill so high?

Why has our Cloud bill gone up so much?

Wouldn't it be cheaper to build / run this in our own data centre ?

Why is Cloud costing so much money?

Are we getting good value from AWS?

Kevin Long: Senior Financial Architect & Cloud Economist

EY

ICAEW CHARTERED ACCOUNTANTS

Deloitte.

hp

teradata.

aws

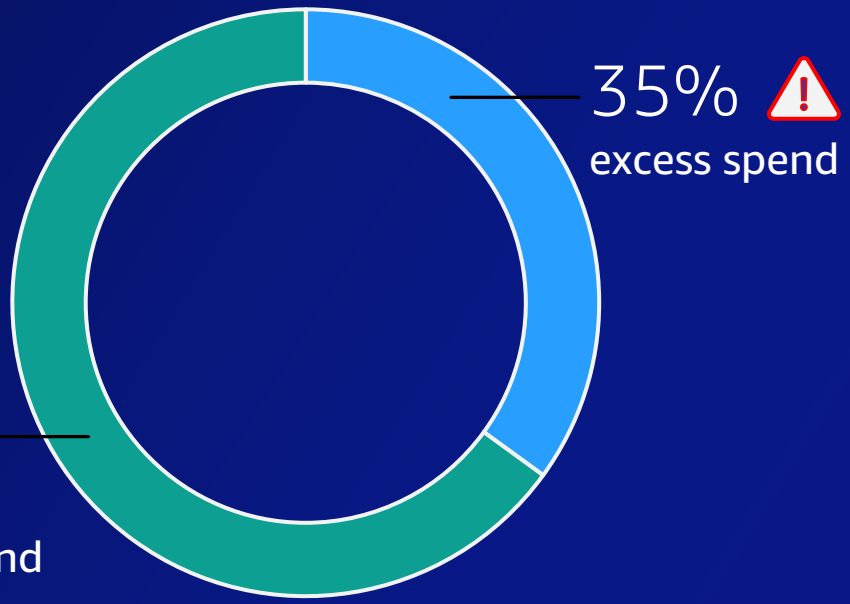
aws certified Solutions Architect ASSOCIATE

FinOps CERTIFIED Professional

Cloud is the new Data Center

… but it can't be used like a traditional data center

Traditional financial management processes cause up to $10B+ in excess annual cloud spend[1]



Poor cloud cost management impacts the business[2]

80% of respondents acknowledge that **poor financial management** related to cloud costs has had a **negative impact on their business**

Slows/halts cloud adoption (53%)

Cripples innovation (25%)

Lowers quality of service (38%)

Leads to sprawl/underutilization of resources (40%)

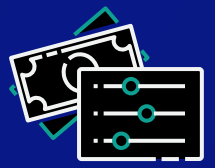
Increases cost (22%)

Sources:
1. RightScale 2020 State of the Cloud Report from Flexera;
2. (451 Research Report) Cost Management in the Cloud Age Enterprise readiness threatens innovation. (451 Research study commissioned by Cloudability)

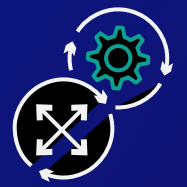
Cloud is the new Data Center

… BUT IT CAN'T BE USED LIKE A TRADITIONAL DATA CENTER

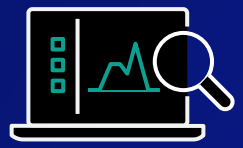
Managing access to on-demand resources



Understanding cloud pricing options



Selecting optimal services and resource types/sizes

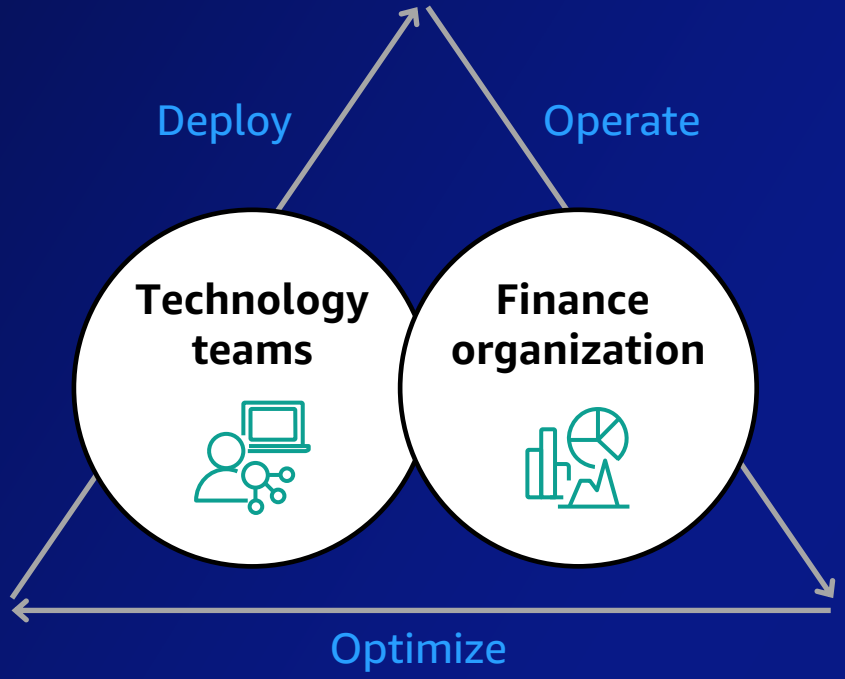


Predicting the cost associated with variable usage

Awareness of resource costs

Cost governance in a continuous manner

The FinOps Model



FinOps Model

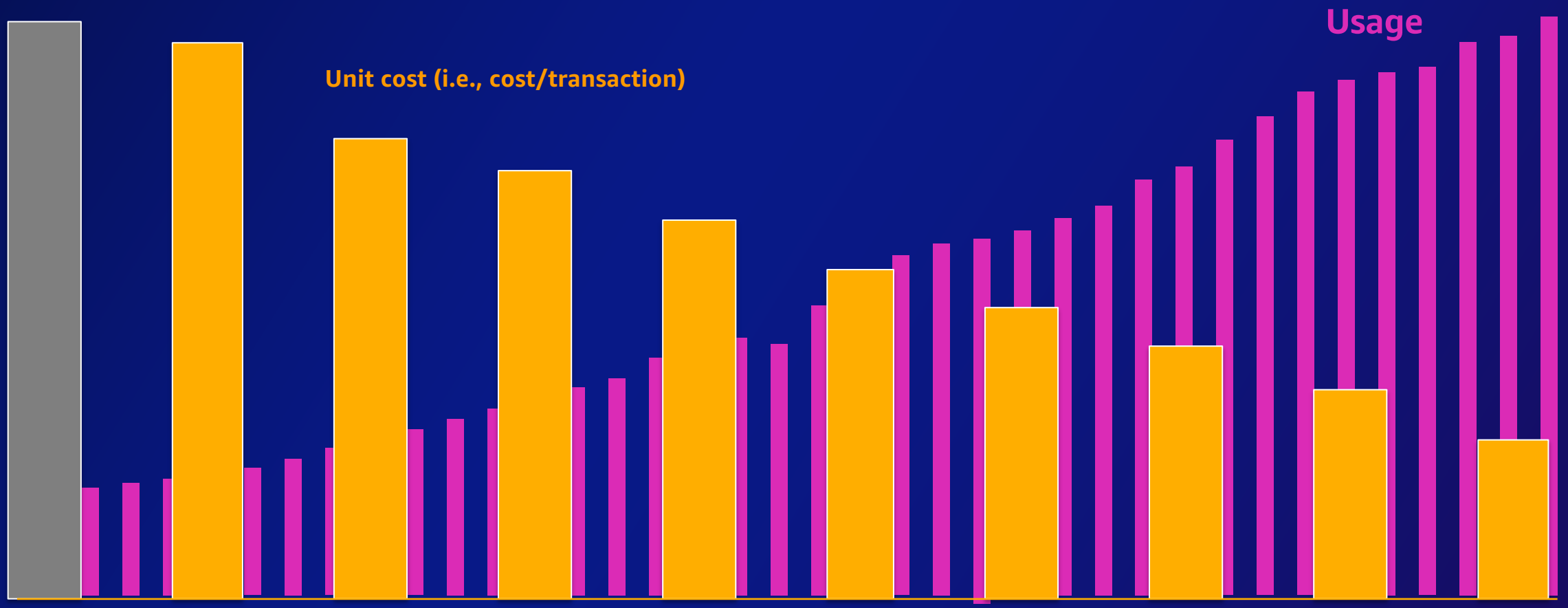
Engineers and Finance acting as one

Match capacity with demand

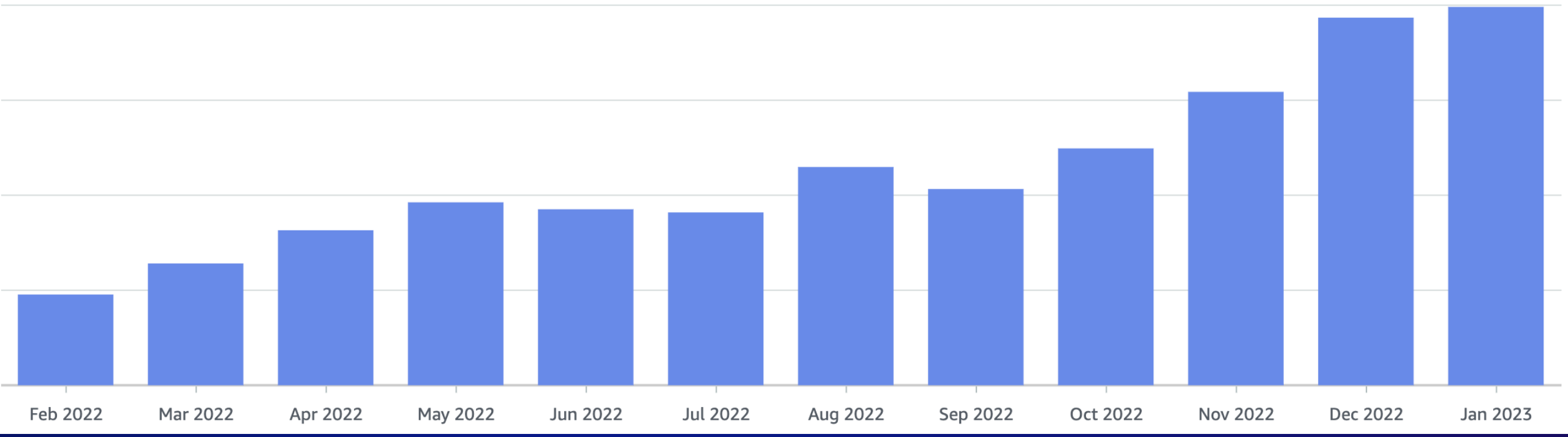
Procurement is instant

Low cost of failure

Cloud Economics



Are your costs what you expect?



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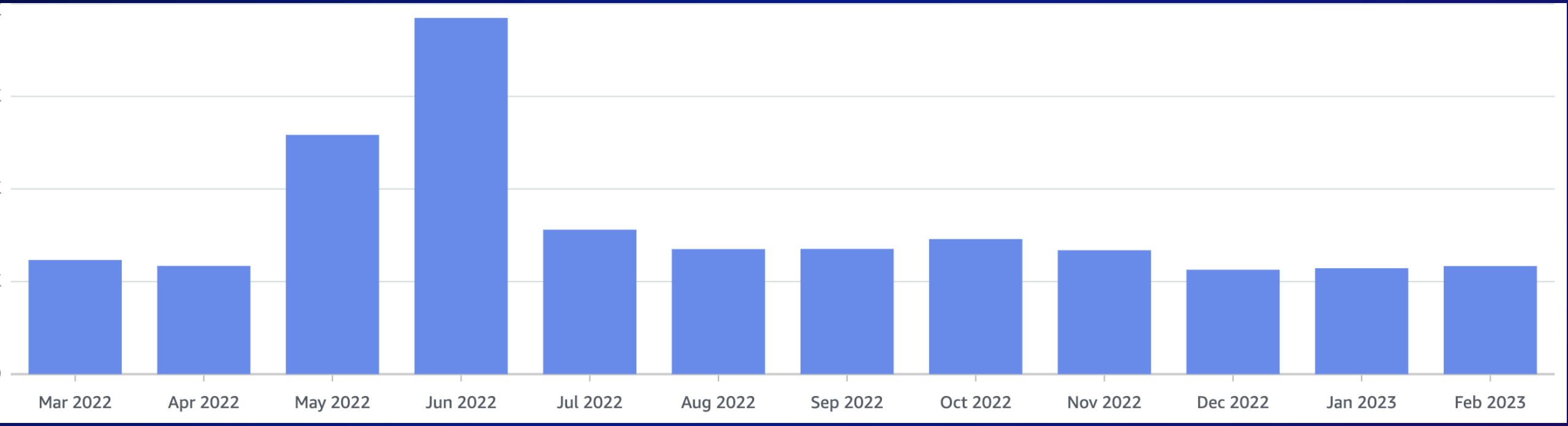
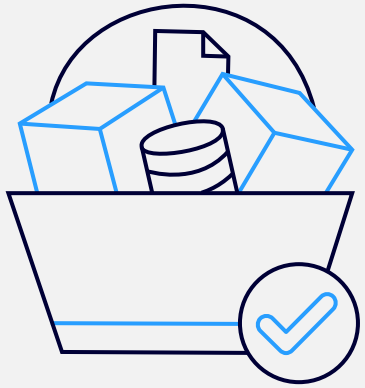


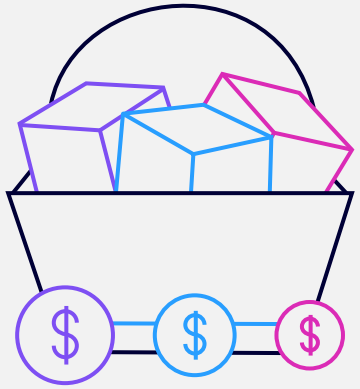
Economics of Cloud

1



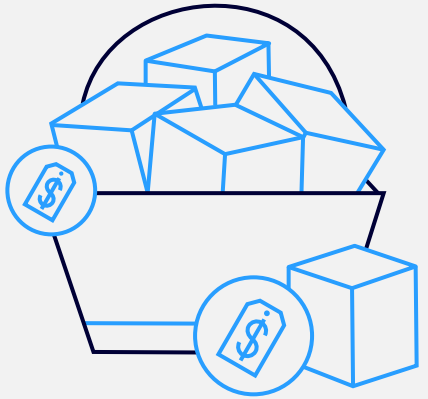
Pay for
what you use

2



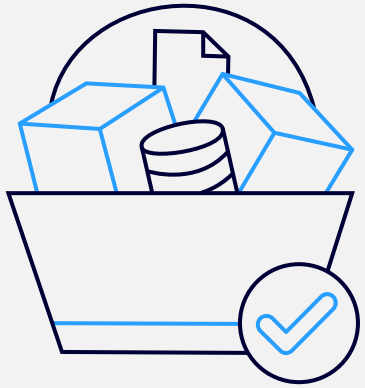
Pay less
when you reserve

3



Pay less
by using more

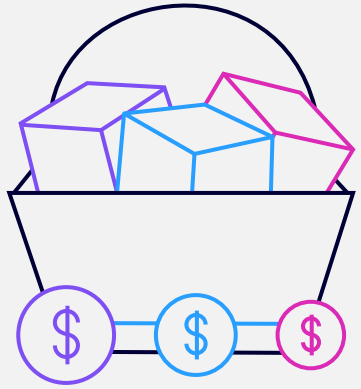
Economics of Cloud



Pay for
what you use

- Right tool for the right job
- Turning off when not in use
- Removing excess capacity
- Right sizing when demand changes
- Modernizing : architecture and latest generation
- Adopting an optimization culture

Economics of Cloud



Pay less
when you reserve

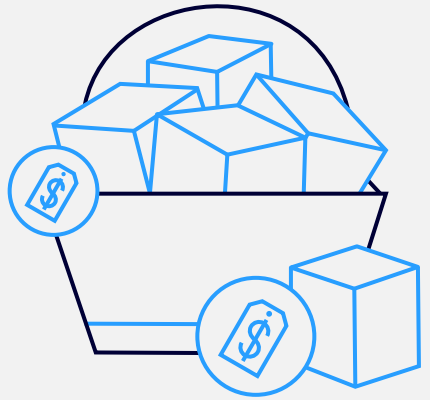
Savings Plans vs Reserved Instances
EC2, Fargate, Lambda
RDS, ElastiCache, OpenSearch…….
Sagemaker

Savings up to 72% of on-demand rates

Spot: Savings up to 90% of on-demand rates
spare EC2 capacity

Economics of Cloud

Volume Pricing Models
Private Pricing Agreement (PPA)
Enterprise Discount Program (EDP)
Optimisation Culture
FinOps and Cloud Financial Management



Pay less
by using more

cost = amount used * rate paid

AWS Cloud Value Framework

Cost savings (TCO)

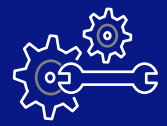
What is it?
Infrastructure cost savings/ avoidance from moving to the cloud

20% reduction in IT infrastructure costs as a percentage of revenue

Staff productivity

What is it?
Efficiency improvement by function on a task-by-task basis

66% increase in VMs managed per server admin



Operational resilience

What is it?
Benefit of improving SLAs and reducing unplanned outage

69% reduction in unplanned downtime

Business agility

What is it?
Deploying new features/ applications faster and reducing errors

43% reduction in time-to-market for new application features

Sustainability

What is it?
Minimizing environmental impact of operations

88% reduction in workload carbon footprint

Tactical impact

Strategic impact

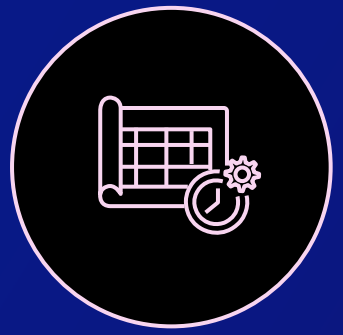
Getting Started on Financial Management

See

Measurement and accountability

Save

Cost optimization



Plan

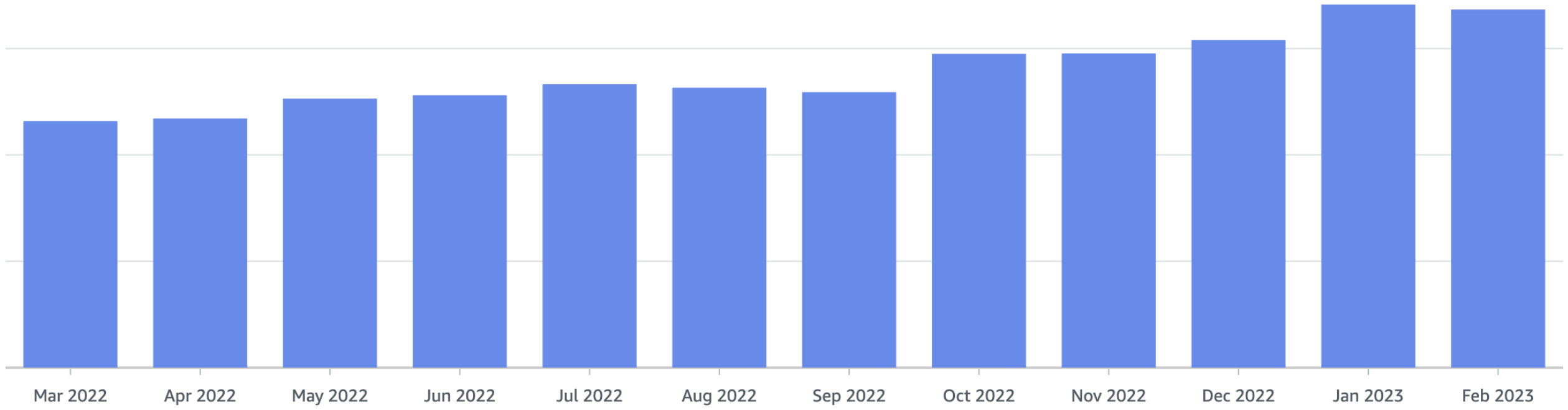
Planning and forecasting

Run

Cloud financial operations

Getting Started on Financial Management

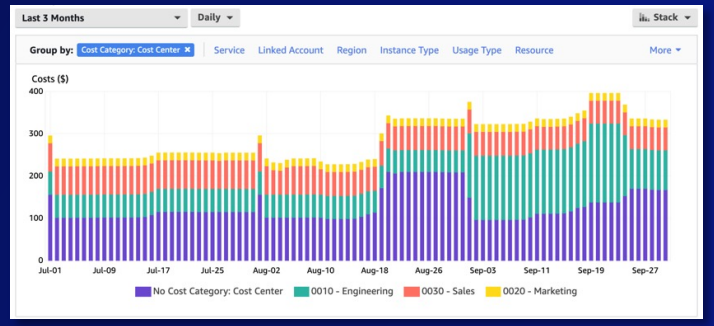
1. Understand your Costs
2. Optimize your Costs
3. Assess your CFM Practices
4. Develop an Action Plan



Understanding your Costs

SELECT THE COST VISIBILITY TOOL THAT WORKS FOR YOU AND YOUR STAKEHOLDERS

AWS Cost Explorer

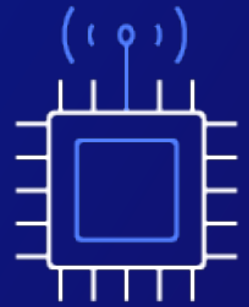


- ✓ Free console-based data visualization tool
- ✓ Graphs of your AWS cost and usage
- ✓ Consistent with cost and usage reports

Build your own

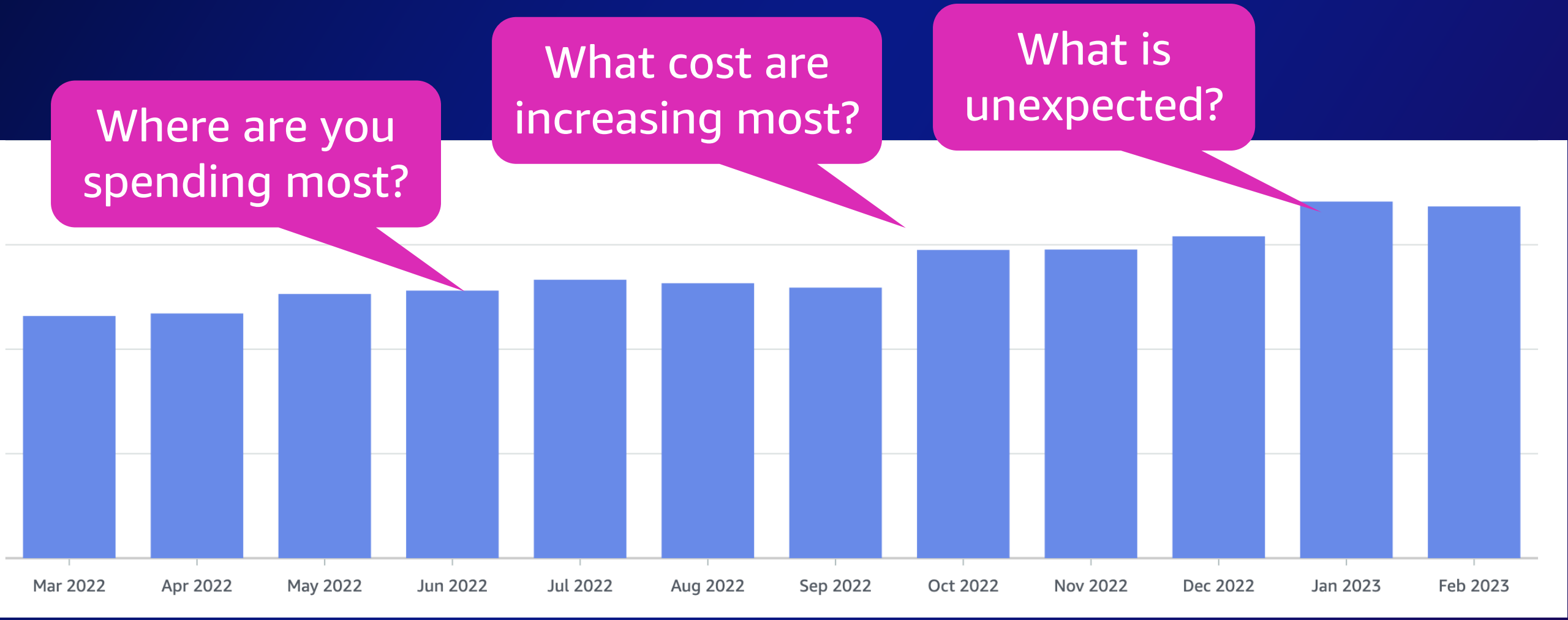
- ✓ Custom filtered views
- ✓ Multi-graph dashboards
- ✓ Optimization dashboards
- ✓ Customized KPIs
- ✓ Ongoing customization and maintenance

AWS Partner Network



- ✓ AWS Cloud Management Tools Competency Partners
- ✓ Preconfigured tools to support cloud financial management needs

Getting Started on Financial Management

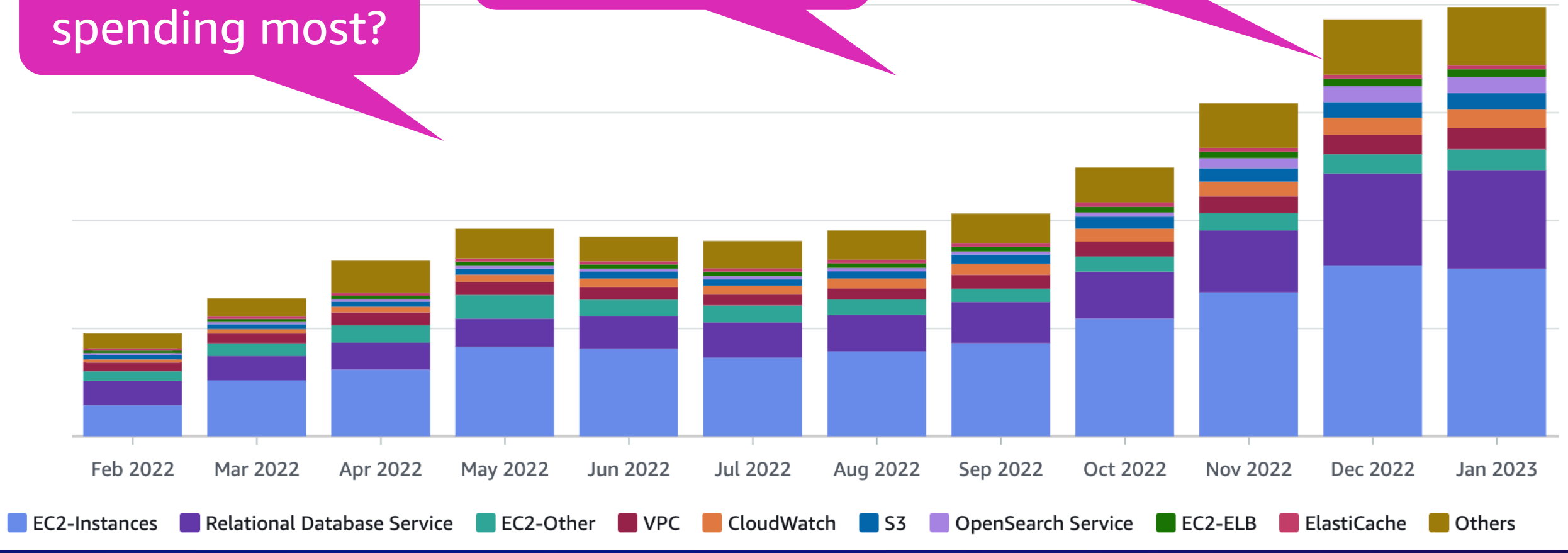


Understanding your Costs

Where are you spending most?

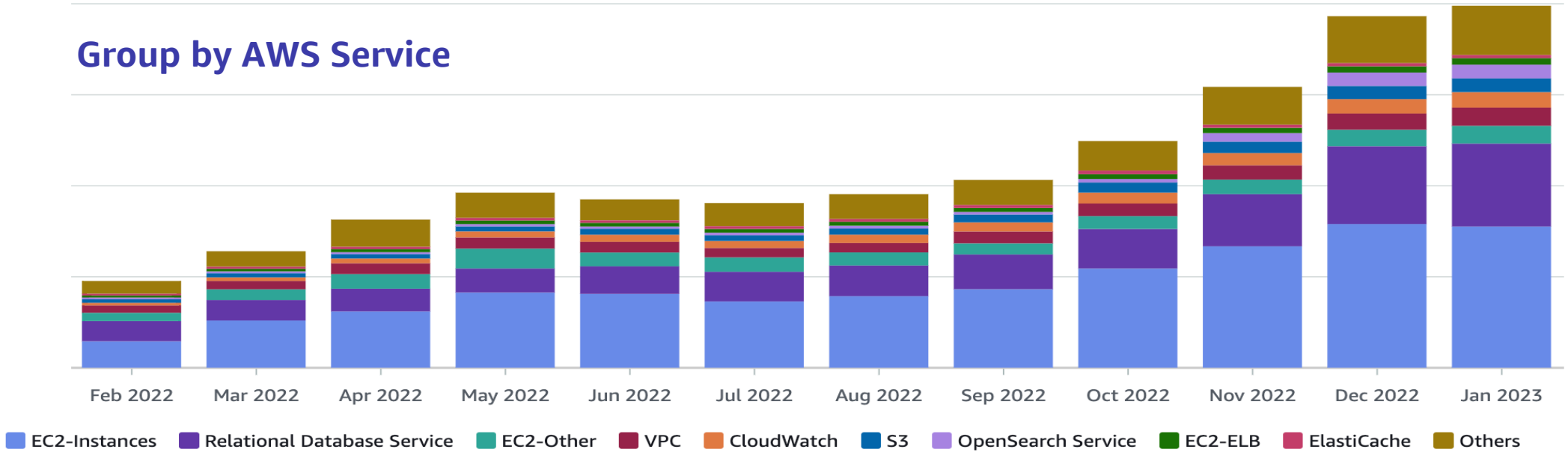
What cost are increasing most?

What is unexpected?

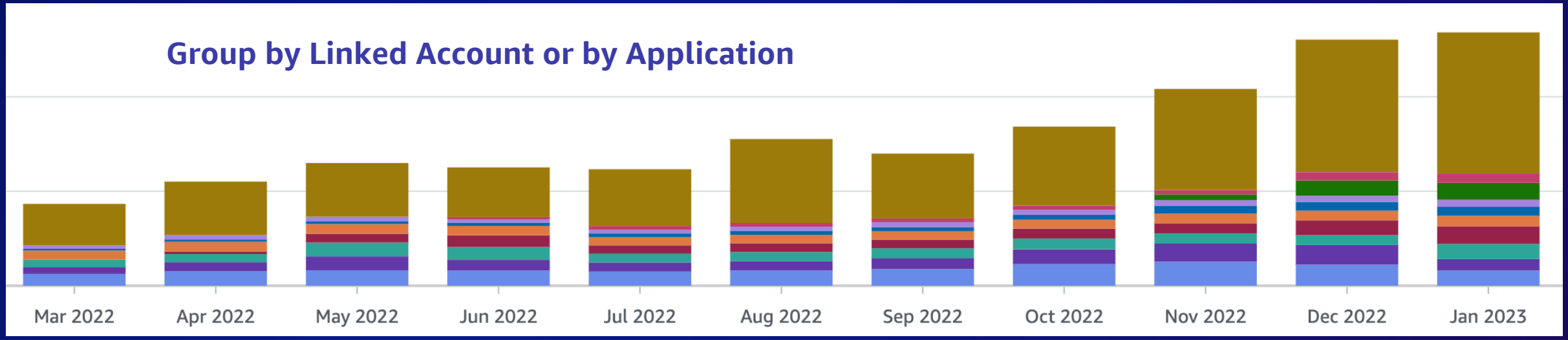


Understanding your Costs

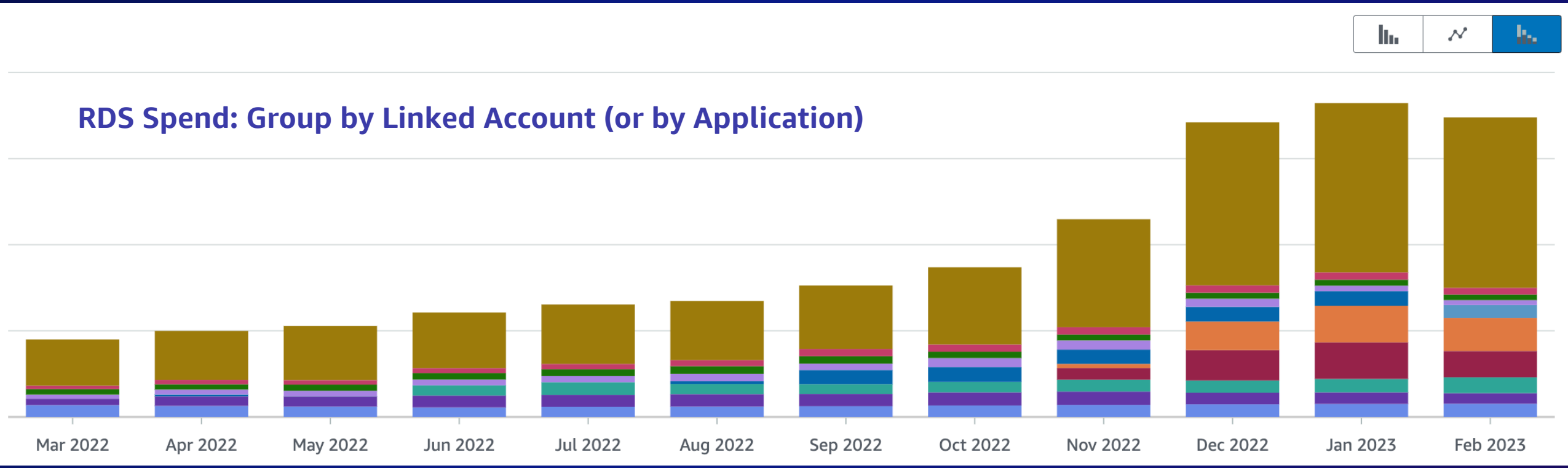
Group by AWS Service



Group by Linked Account or by Application



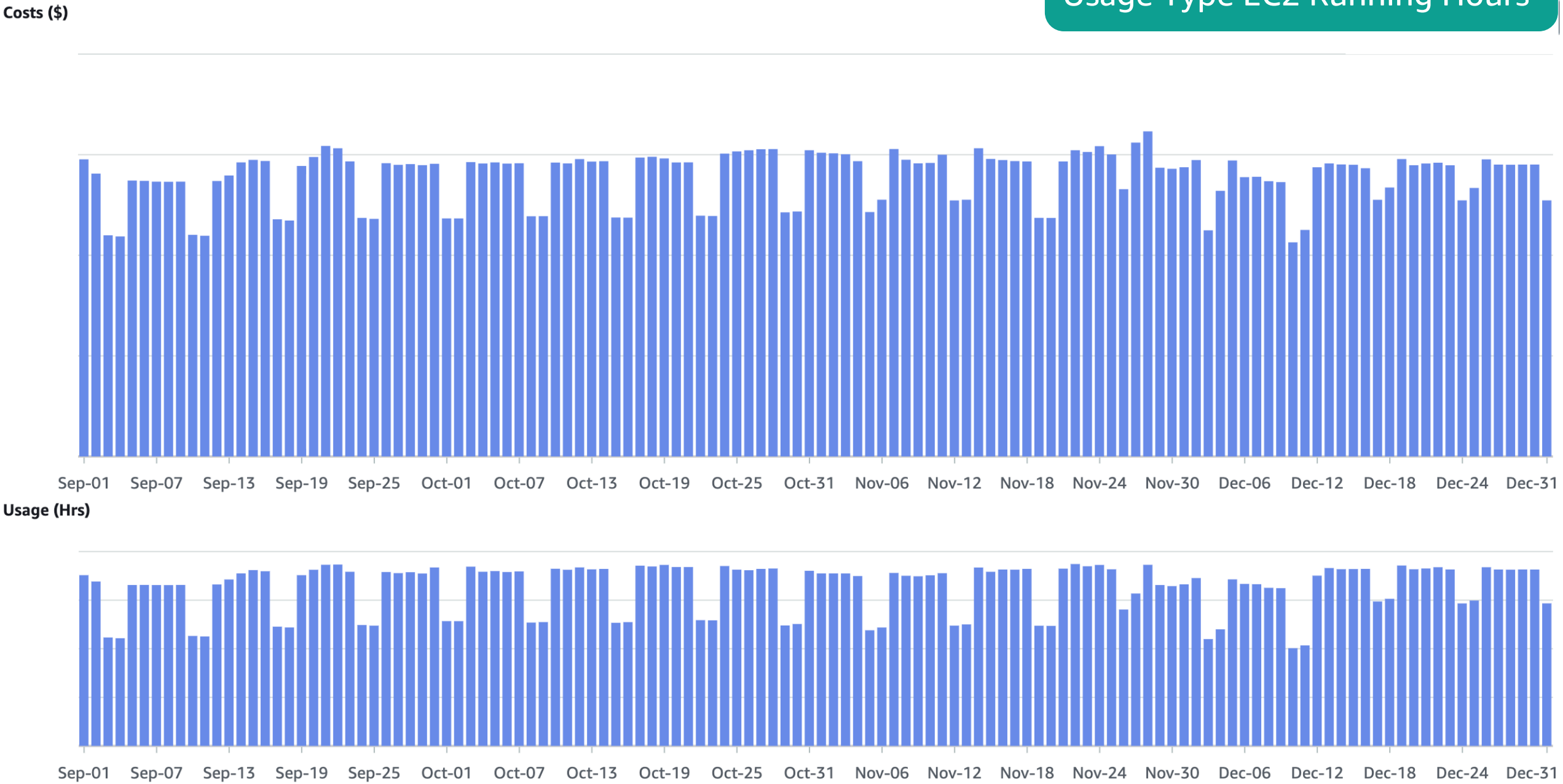
Understanding your Costs



cost = amount used * rate paid

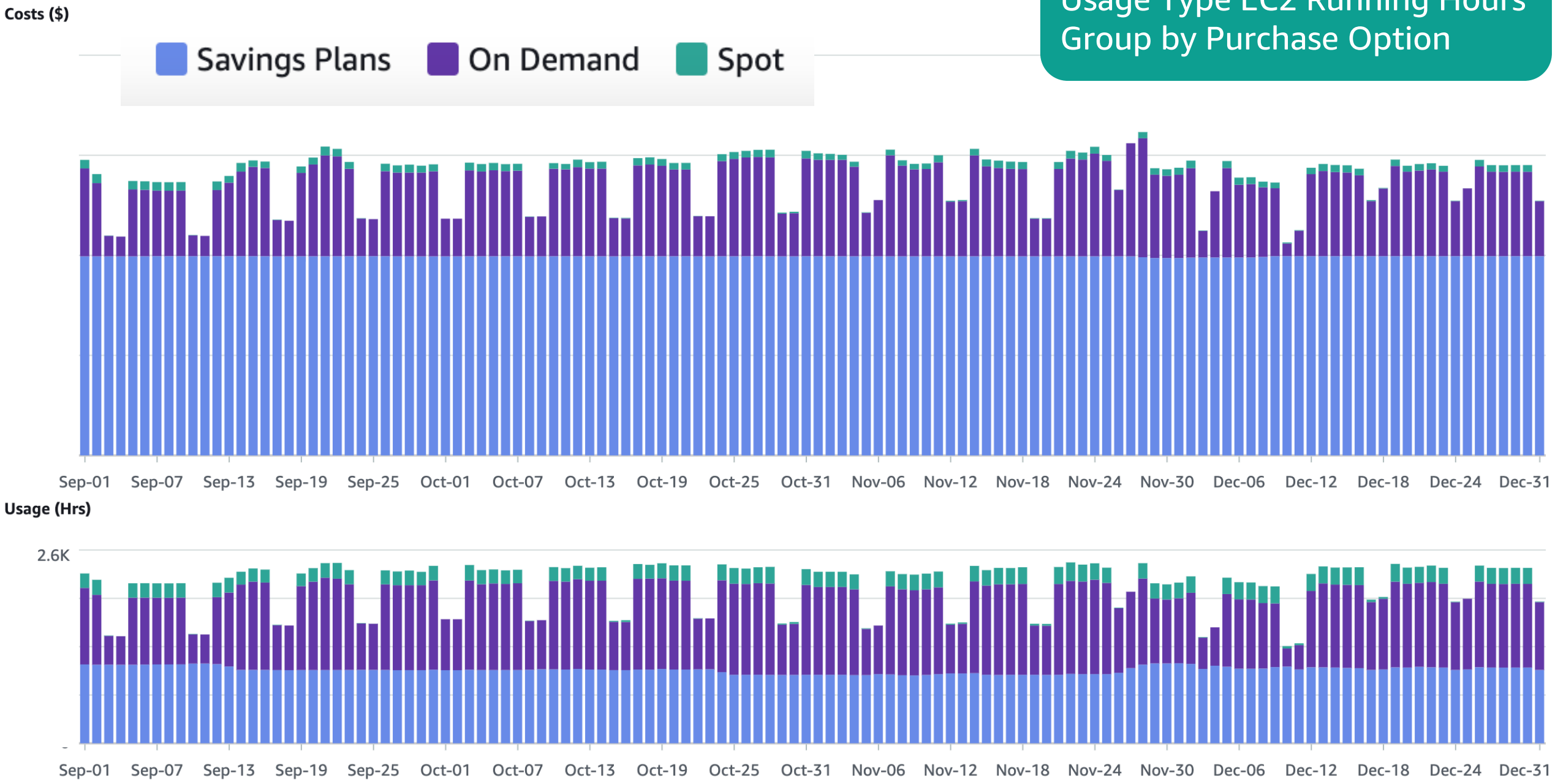
Understand Your Costs

Daily Granularity
Usage Type EC2 Running Hours



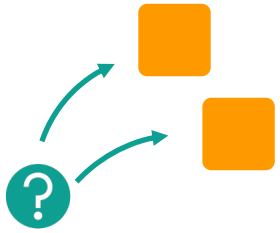
Understand Your Costs

Daily Granularity
Usage Type EC2 Running Hours
Group by Purchase Option



Amazon EC2 Purchase Options

ON-DEMAND INSTANCES



Pay for compute capacity by **the second** with no long-term commitments

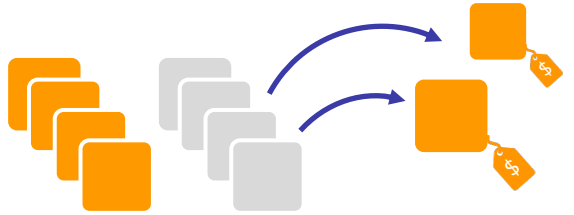
Spiky ***stateful*** workloads, to define needs

SAVINGS PLANS

Make a 1 or 3 year commitment and receive a **significant discount** off On-Demand prices

Flexible across Compute

SPOT INSTANCES

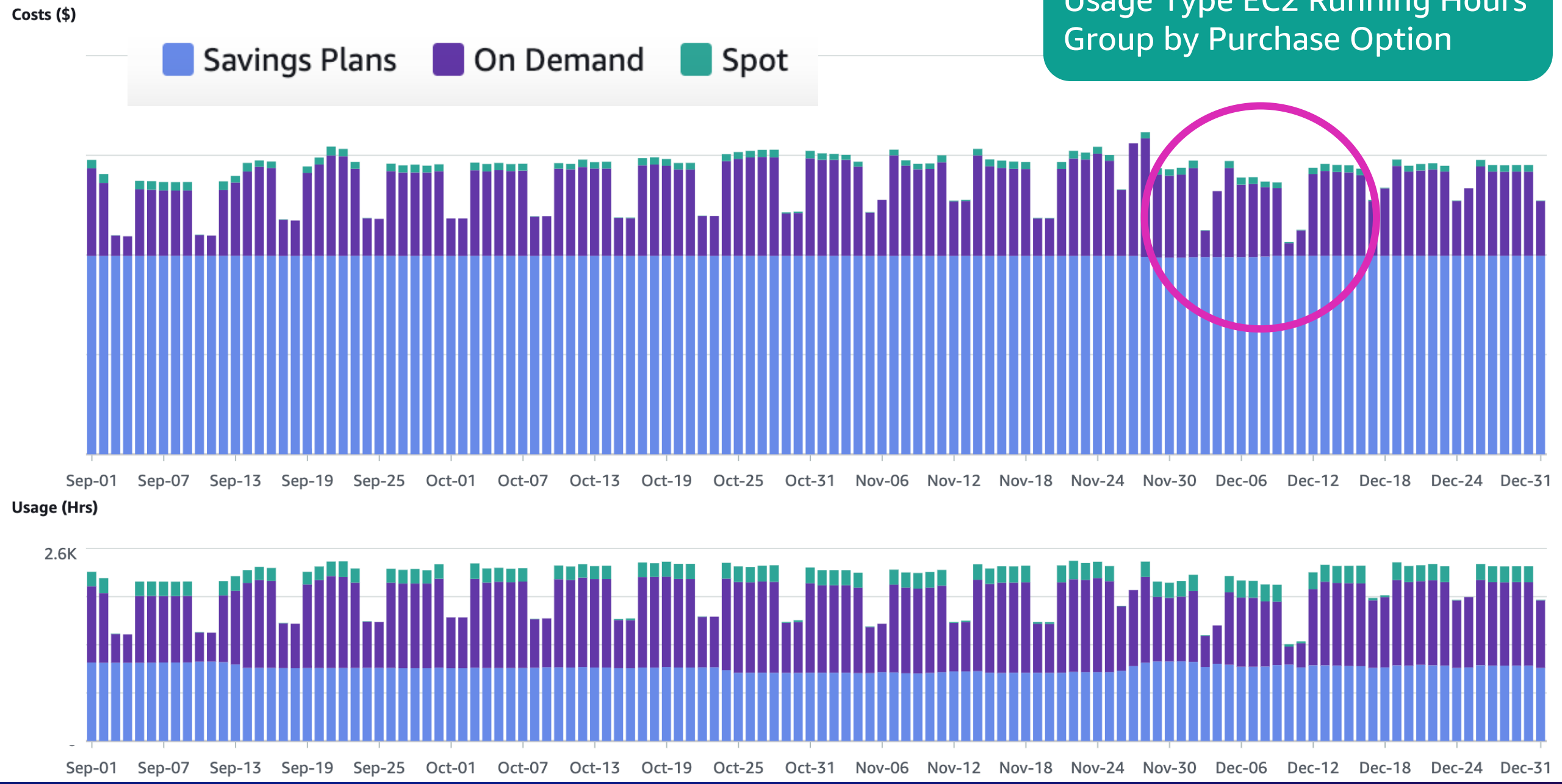


Spare Amazon EC2 capacity at **savings of up to 90%** off On-Demand prices

Fault-tolerant, flexible, ***stateless*** workloads

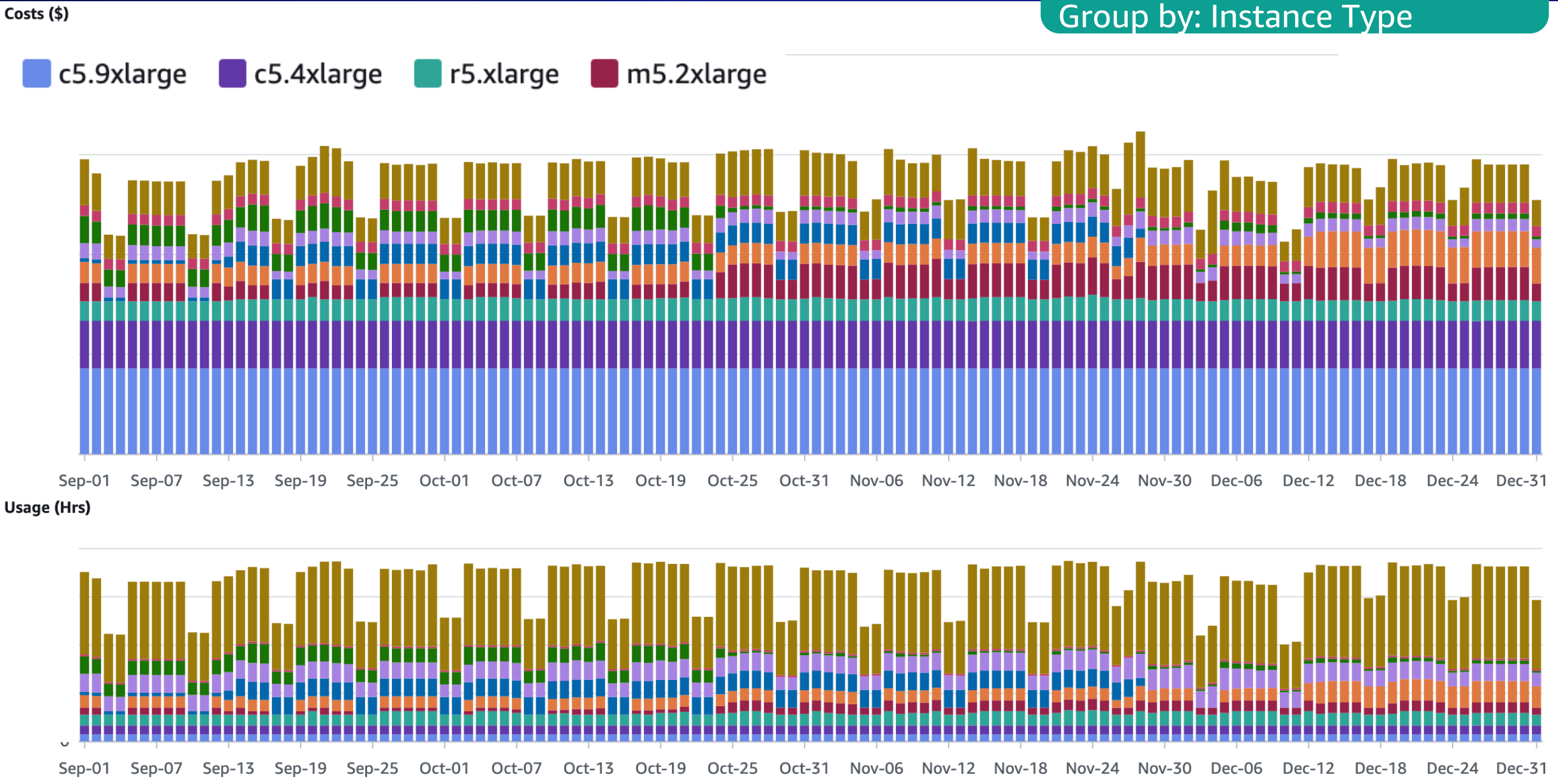
Understand Your Costs

Daily Granularity
Usage Type EC2 Running Hours
Group by Purchase Option



Understand Your Costs

Daily Granularity
Usage Type EC2 Running Hours
Group by: Instance Type



Understand Your Costs

c5.9xlarge

Compute Optimized

Compute Optimized instances are ideal for compute bound applications that benefit from high performance processors. Instances belonging to this family are well suited for batch processing workloads, media transcoding, high performance web servers, high performance computing (HPC), scientific modeling, dedicated gaming servers and ad server engines, machine learning inference and other compute intensive applications.

C7g C7gn C6i C6in C6a C6g C6gn C5 C5n C5a C4

Amazon EC2 C6i instances are powered by 3rd generation Intel Xeon Scalable processors and are an ideal fit for compute-intensive workloads.

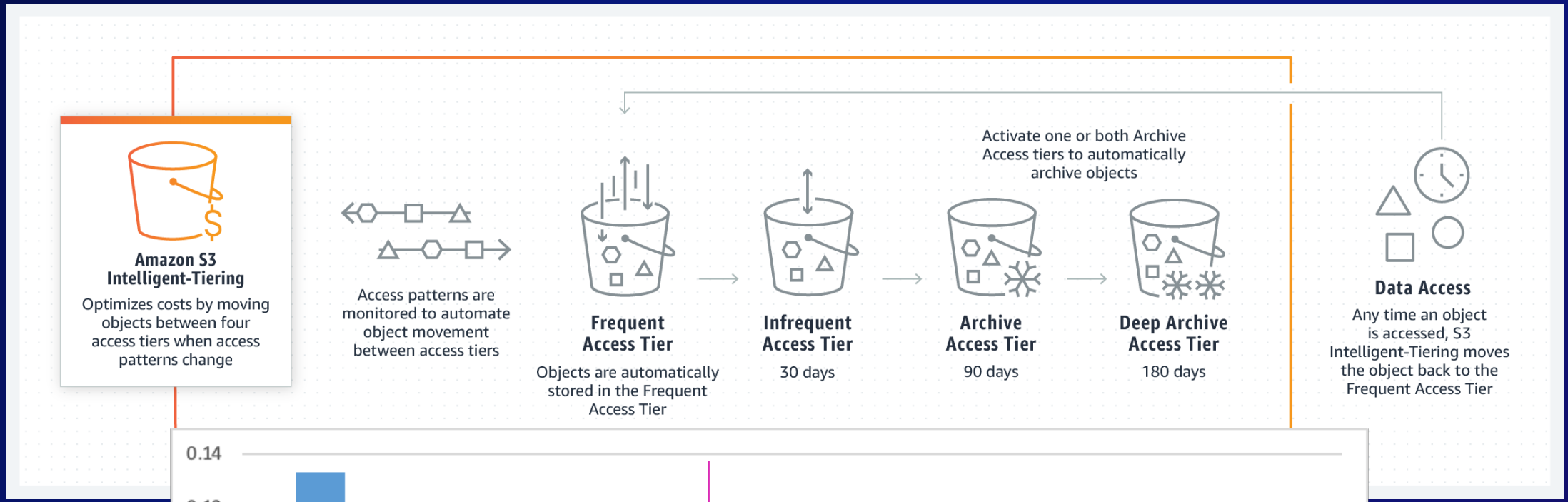
Features:

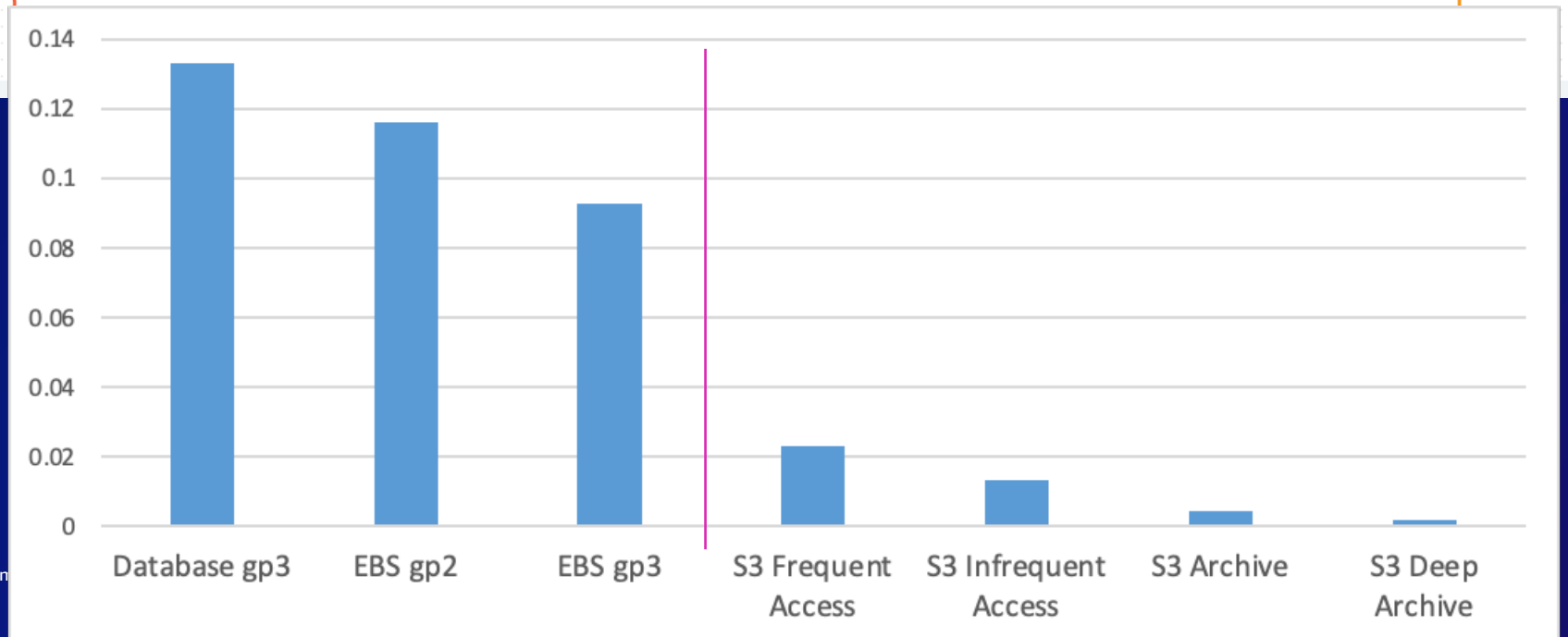
Model	vCPU	Memory (GiB)	Instance Storage (GB)	Network Bandwidth (Gbps)***	EBS Bandwidth (Mbps)
c5.9xlarge	36	72	EBS-Only	10	9,500

- Up to 50 Gbps of networking speed
- Up to 40 Gbps of bandwidth to the Amazon Elastic Block Store

cost = amount used * rate paid

Understanding Your Costs: Storage





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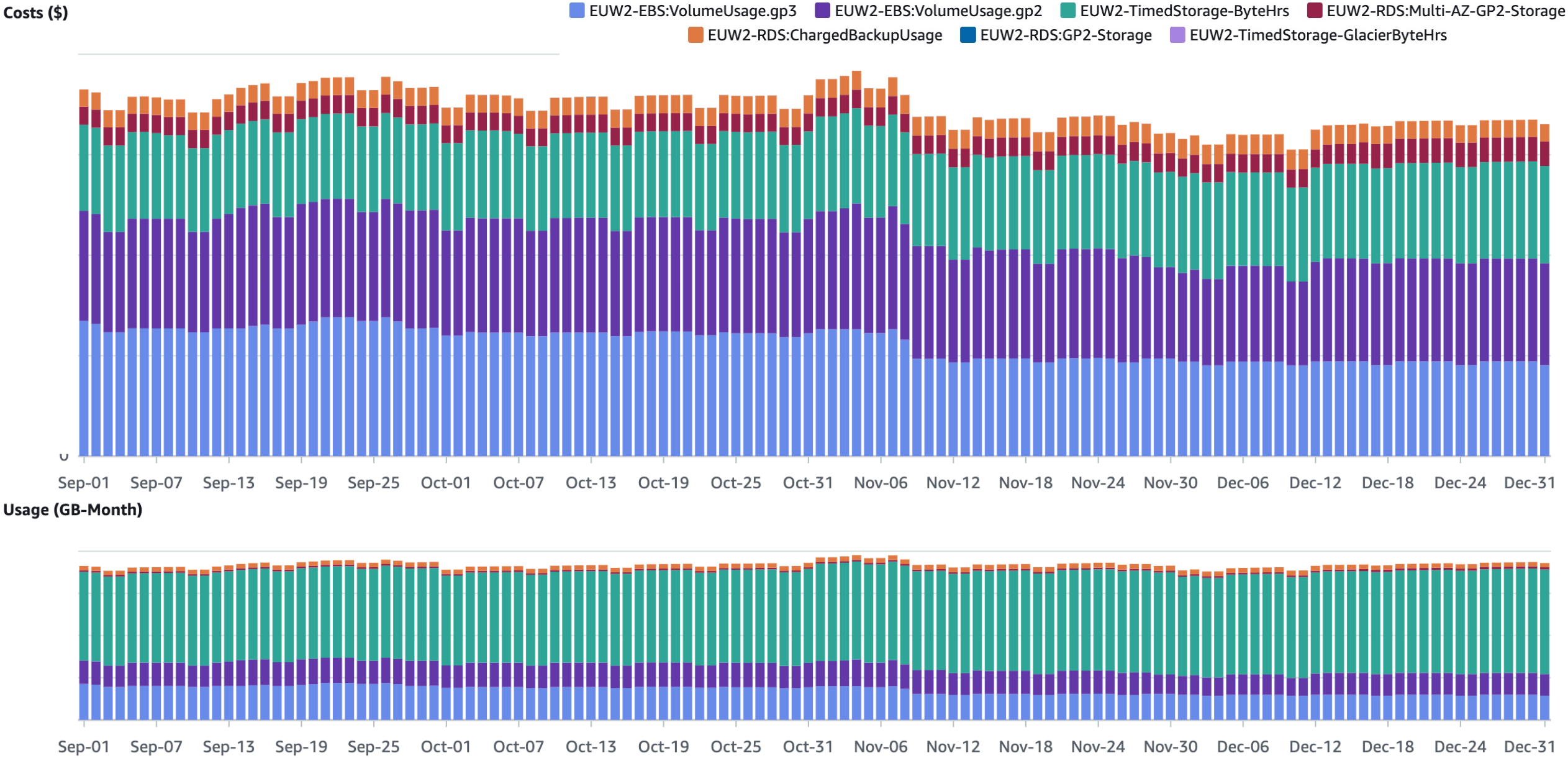
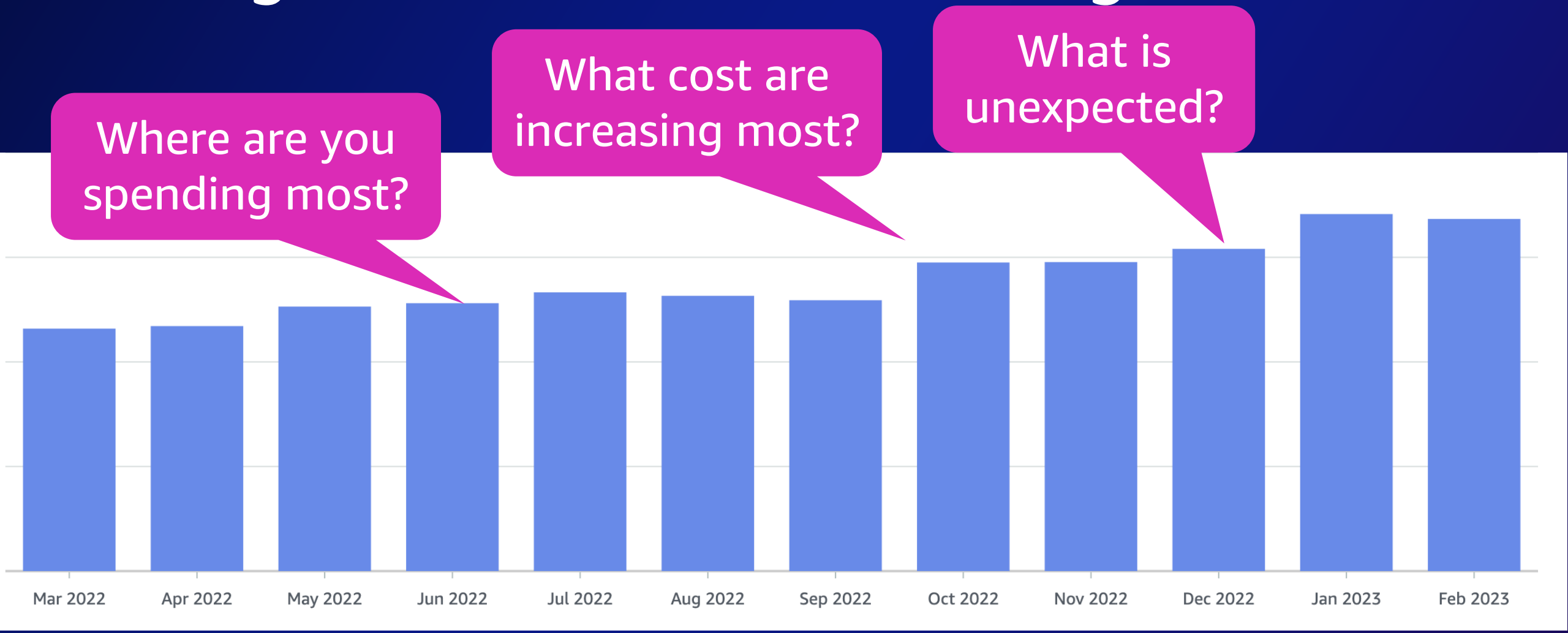


Getting Started on Financial Management



Cloud Financial Management

Manage, optimize, and plan AWS cost and usage

See

Measurement and accountability

Save

Cost optimization

Plan

Planning and forecasting

Run

Cloud financial operations

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Cloud financial operations

- Account and tagging strategy
- Cost reporting and monitoring processes
- Cost show/ chargeback
- Efficiency/value KPIs

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Cloud financial operations

Cost aware architecture, design and service selection

Match capacity with demand

Choose the right purchasing model

Identify resource waste

aws

Cloud Financial Management

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Budgeting and forecasting variable cloud usage

POC based cost estimation

Business case/ value articulation

Strategic fit

Run

Cloud financial operations

Cloud Financial Management

Manage, optimize, and plan AWS cost and usage

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Cloud financial operations

Secure executive sponsorship

Partnership between finance and technology organizations

Invest in people, governance, and tools

Celebrate accomplishments

AWS services and features to support your Cloud Financial Management needs

Measurement and accountability

Amazon Athena
Amazon CloudWatch
Amazon QuickSight
AWS Application Cost Profiler
AWS Billing Console
AWS Budgets, AWS Budgets Reports
AWS CloudFormation
AWS CloudTrail
AWS Config, AWS Config Rules
AWS Control Tower
AWS Cost Anomaly Detection
AWS Cost Categories
AWS Cost and Usage Report
AWS Cost Explorer
AWS Organizations
AWS Resource Groups
AWS Service Catalog
AWS Tag Policies
Cloud Intelligence Dashboards
Consolidated billing feature
Cost allocation tags

Cost optimization

Amazon CloudWatch
Amazon CloudFront Security Savings Bundle
Amazon CodeGuru
Amazon EC2 Spot Instances
Amazon Elastic Container Service
Amazon Elastic File System Intelligent-Tiering
Amazon Elastic Kubernetes Service
Amazon Redshift (elastic resize)
Amazon Redshift (pause and resume)
Amazon S3 Intelligent-Tiering storage class
Amazon Workspaces Cost Optimizer
AWS Auto Scaling
AWS Compute Optimizer
AWS Cost Explorer Reserved Instance, Savings Plans and Rightisizing Recommendations
AWS Fargate
AWS Graviton
AWS License Manager
AWS Managed Services
AWS PrivateLink
AWS Trusted Advisor
AWS Well-Architected Tool
Free Services, Free Tiers, Free Trials
Instance Scheduler
Per-second billing
Reserved Instances
Savings Plans
Volume Discounts

Planning and forecasting

Amazon QuickSight
AWS Budgets, AWS Budgets Reports
AWS Cost Explorer
AWS License Manager
AWS Migration Evaluator
AWS Price List API
AWS Pricing Calculator
AWS pricing pages

Cloud financial operations

Amazon CloudWatch
AWS Billing Console
AWS Budgets. AWS Budgets Reports, AWS Budgets Actions
AWS CloudFormation
AWS Config, AWS Config Rules
AWS Cost Explorer
AWS Identify and Access Management
AWS License Manager
AWS OpsWorks
AWS Organizations
AWS Purchase Order Management
AWS Service Catalog
AWS Systems Manager
AWS Technical Essentials training
AWS Cloud Essentials for Business Leaders training
AWS Cloud Financial Management for Builders training
AWS Cloud for Finance Professionals training
Consolidated billing
Cost allocation tags
Private Marketplace

AWS Cost Anomaly Detection

What is it?

A new monitoring feature that leverages advanced Machine Learning technologies to identify anomalous spend and root causes. With three steps, create a contextualized cost monitor and receive alerts when any anomalous spend is detected.

- *And its free!*

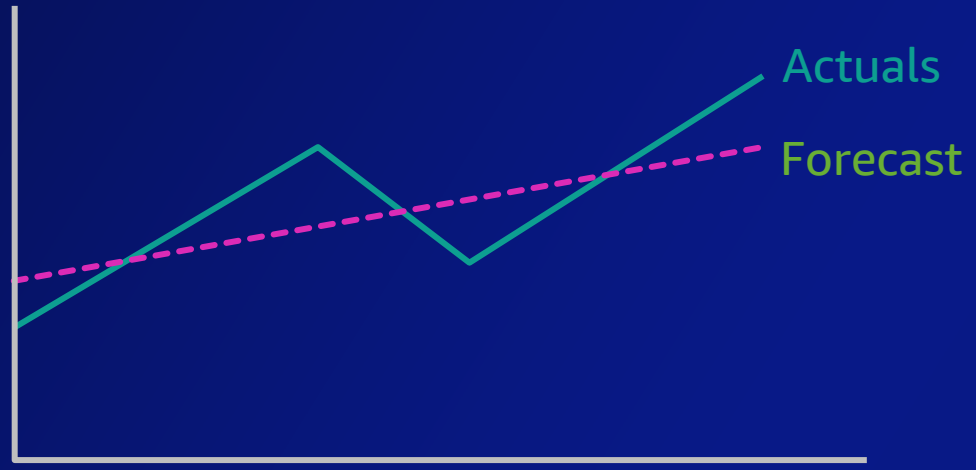
How does it work?

Based on selected spend segments, Cost Anomaly Detection automatically determines patterns each day by adjusting for organic growth and seasonal trends. It triggers an alert when spend seems abnormal. Providing feedback on the cost monitor notifications will increase accuracy over time.

Forecasting AWS spend

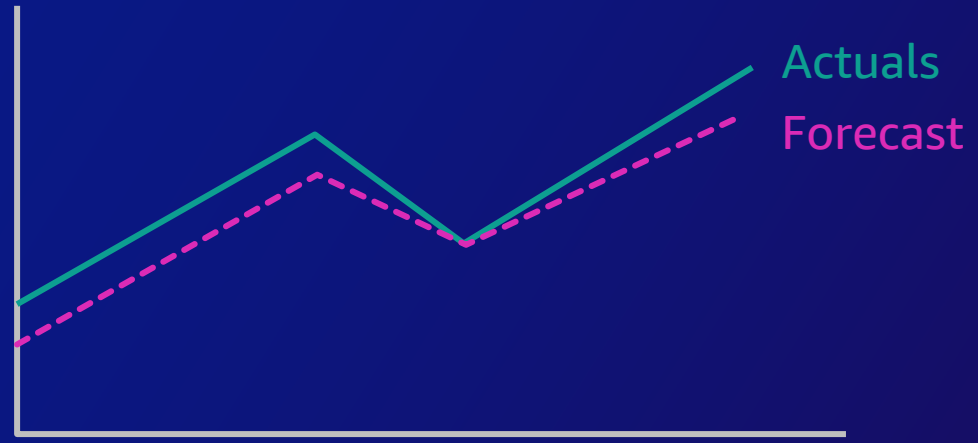
THE SELECTION OF A FORECASTING METHODOLOGY IS A BALANCE OF COMPLEXITY AND ACCURACY

Trend-based



- Forward-looking extrapolation of historic time-series data
- Good for forecasting organic growth of existing usage/cost

Driver-based



- Accounts for internal and external business demand drivers
- Ideal for dynamic and variable environments
- Improved long-term accuracy

Variables driving your forecast

Organic growth

- Existing workloads growth
- Compute, storage, networking growth
- Existing users consumption

Internal drivers

- Migrations
- Product development
- New environments
- New services
- Changes to existing workloads
- M&A

External drivers

- New users
- Sales events
- Promotions/Free trials
- Demos/POCs
- Seasonality

Optimization drivers

- Optimal service selection
- Technical and financial optimization
- Commercial terms
- Choose the right purchasing model

Cloud Financial Management

Outcomes

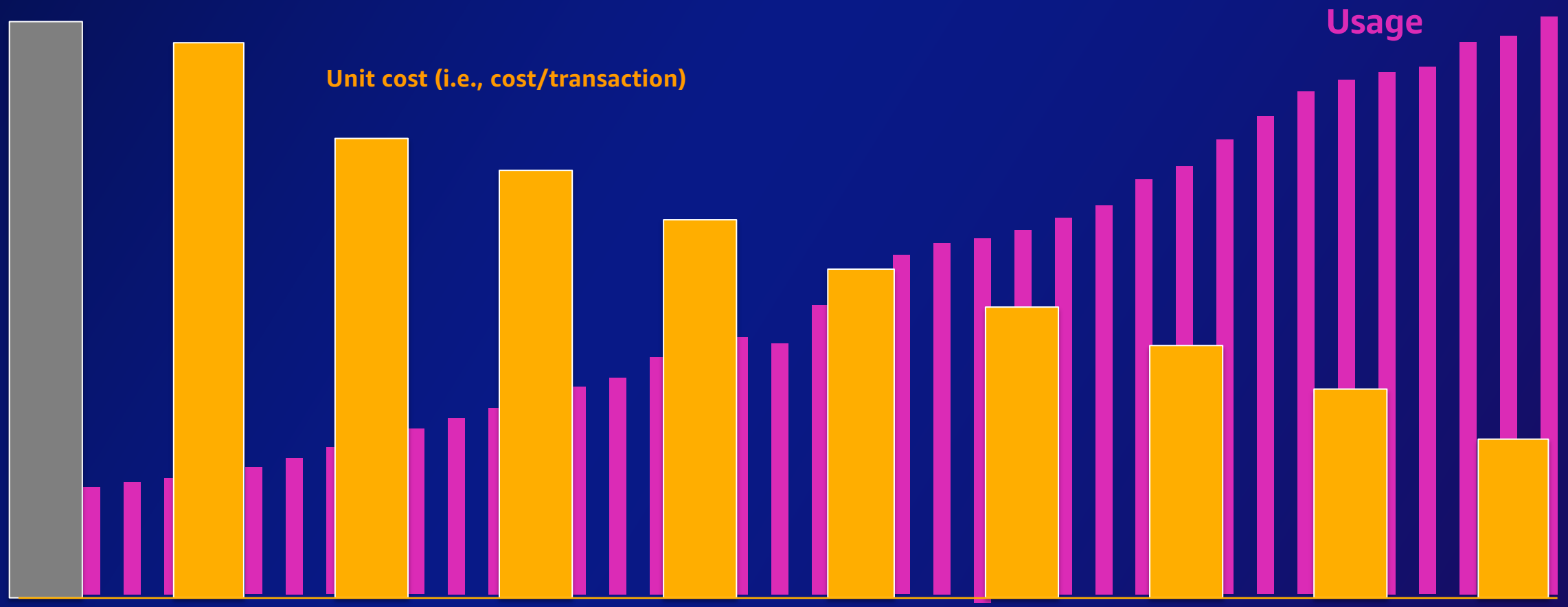
Reduce unit costs as you scale

Reinvest wasteful spend whilst increasing business agility

Improve financial predictability

Establish cost-aware behaviors and culture

Cloud Economics

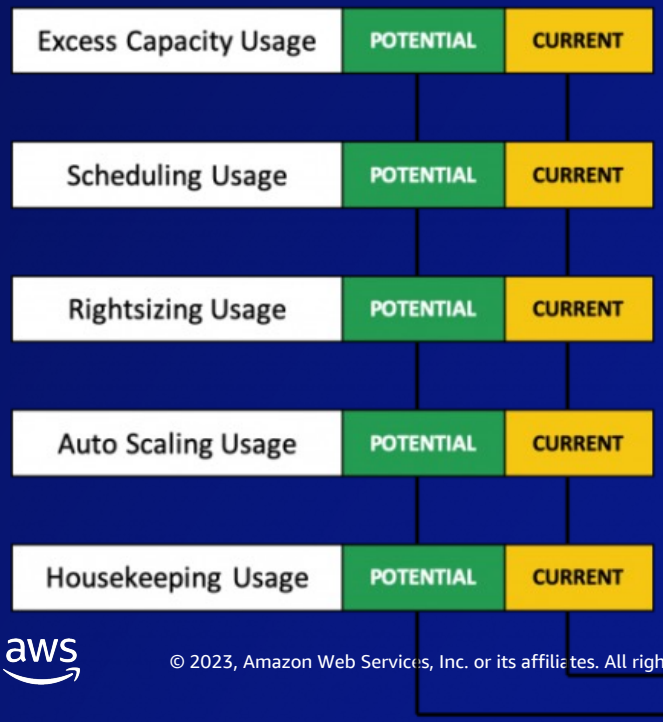


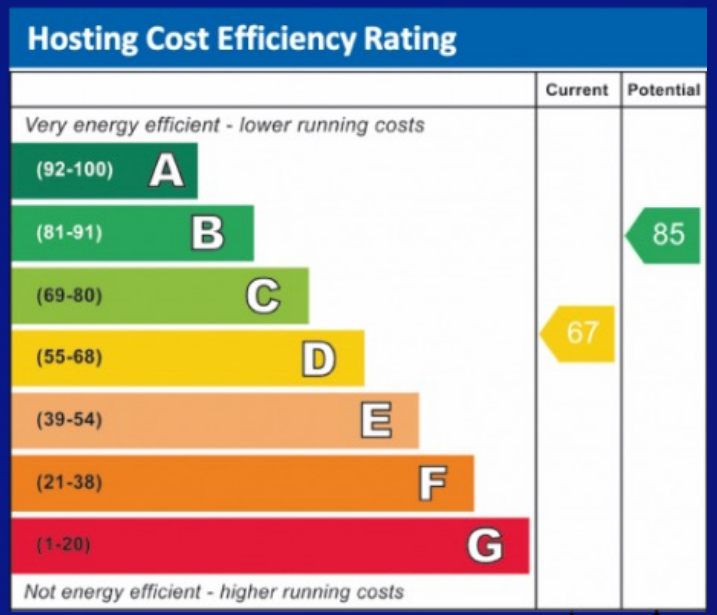
Customer Examples

GOV.UK

Case study

How the Home Office's Immigration Technology department reduced its cloud costs by 40%





Seven tips to use cloud resources more efficiently:

1. Using excess capacity in the cloud
2. Scheduling services
3. Using autoscaling
4. 'Rightsizing' components
5. Re-architecting the service
6. Performing housekeeping tasks
7. Up-front usage commitments§

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Thank you!

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Kevin Long
longke@amazon.co.uk