
AWS
re:Invent
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ARC209

Put your cloud cost on track

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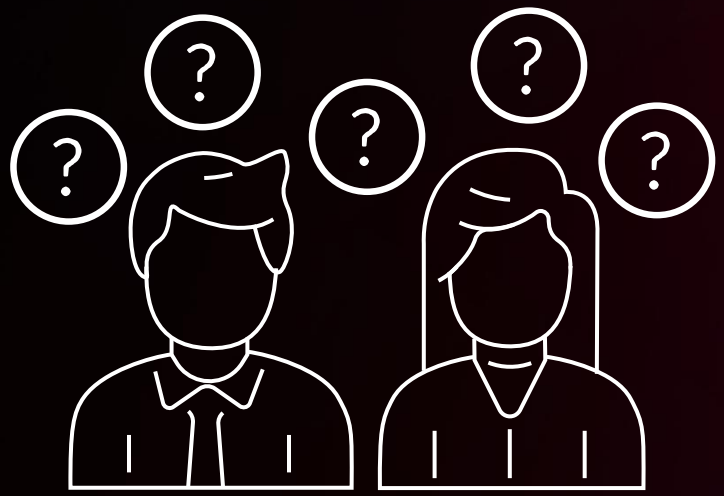
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Customers' questions

WHAT ARE YOUR CHALLENGES?

How to be agile and cost-efficient

Where to start



How to avoid bill shock

How can I track cost?

How to right-size without compromising performance

What are the low hanging fruits?

How to reduce my bill

How to charge back to business units

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Agenda

- Cost optimization design principles & best practices
- Tools
- Demo
- Takeaways

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AWS Well-Architected Framework



- Operational Excellence
- Security
- Reliability
- Cost Optimization
- Performance Efficiency
- Sustainability



Design principles



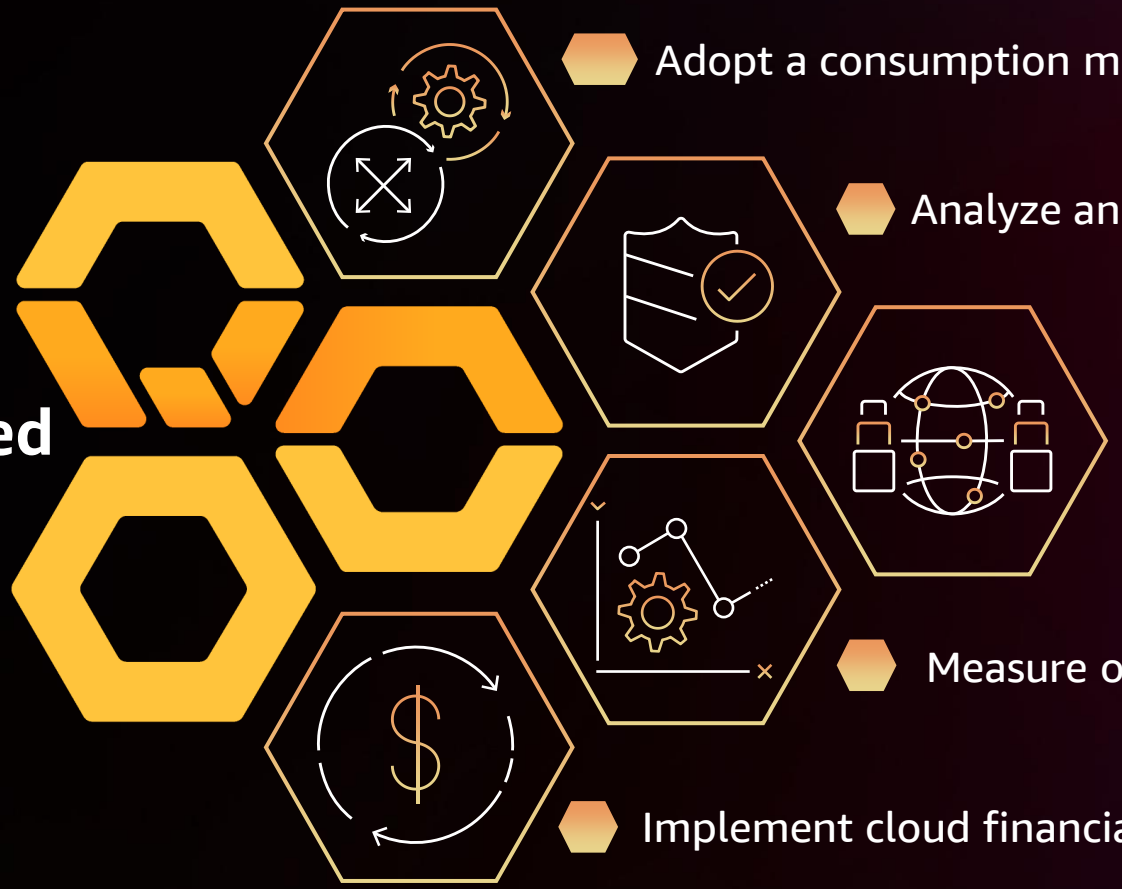
Best Practices

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Cost Optimization Design Principles

AWS Well-Architected



- Adopt a consumption model
- Analyze and attribute expenditure
- Stop spending money on undifferentiated heavy lifting
- Measure overall efficiency
- Implement cloud financial management

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Cost Optimization Focus Areas

Expenditure and Usage Awareness

Manage Demand and Supply Resources



Optimize Over Time

Cost-Effective Resources

Implement Cloud Financial Management

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Expenditure and Usage Awareness

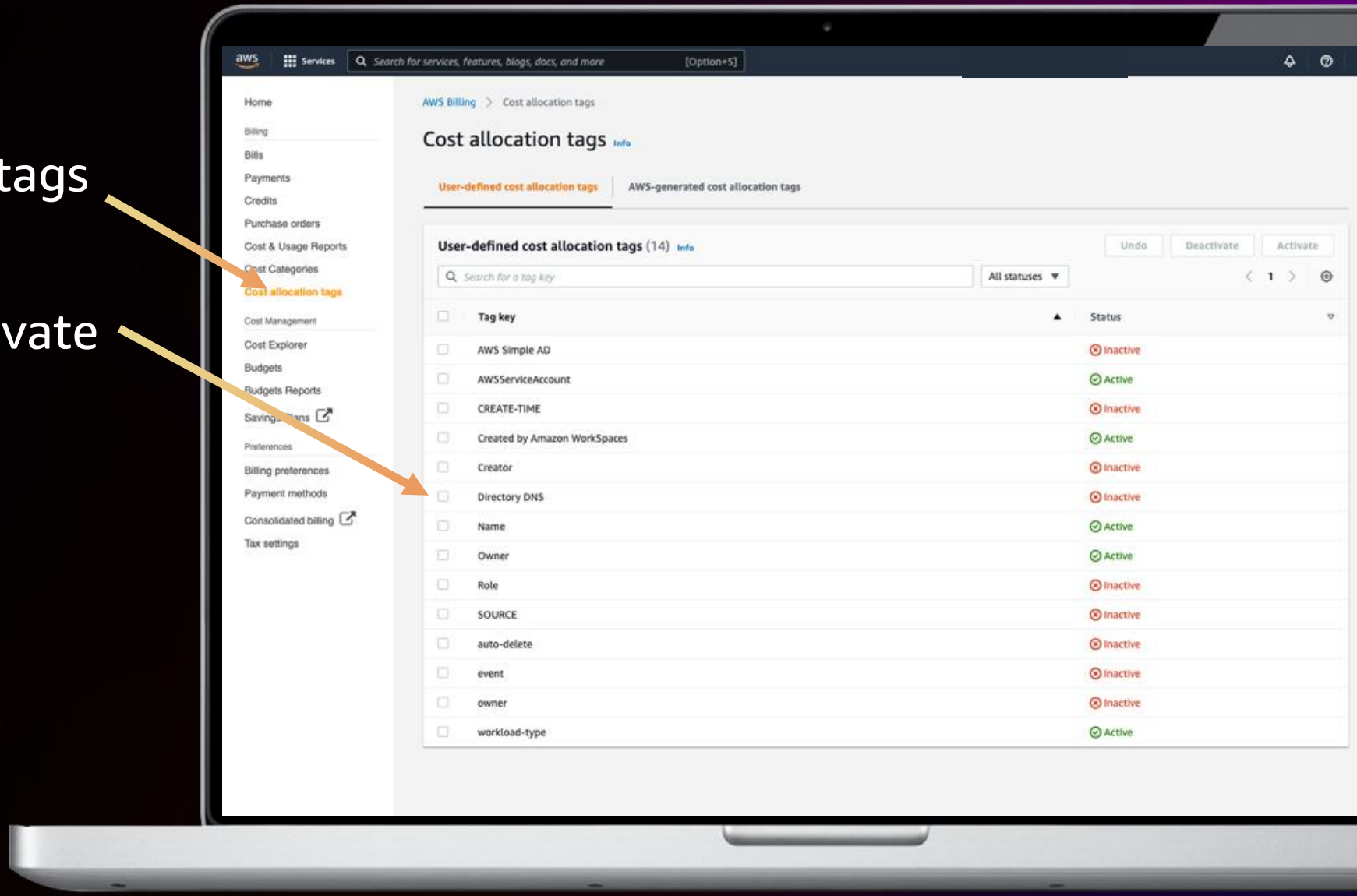
- Monitor Cost and Usage
- Decommission Resources
- Governance



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Tagging: Enabling cost allocation tagging

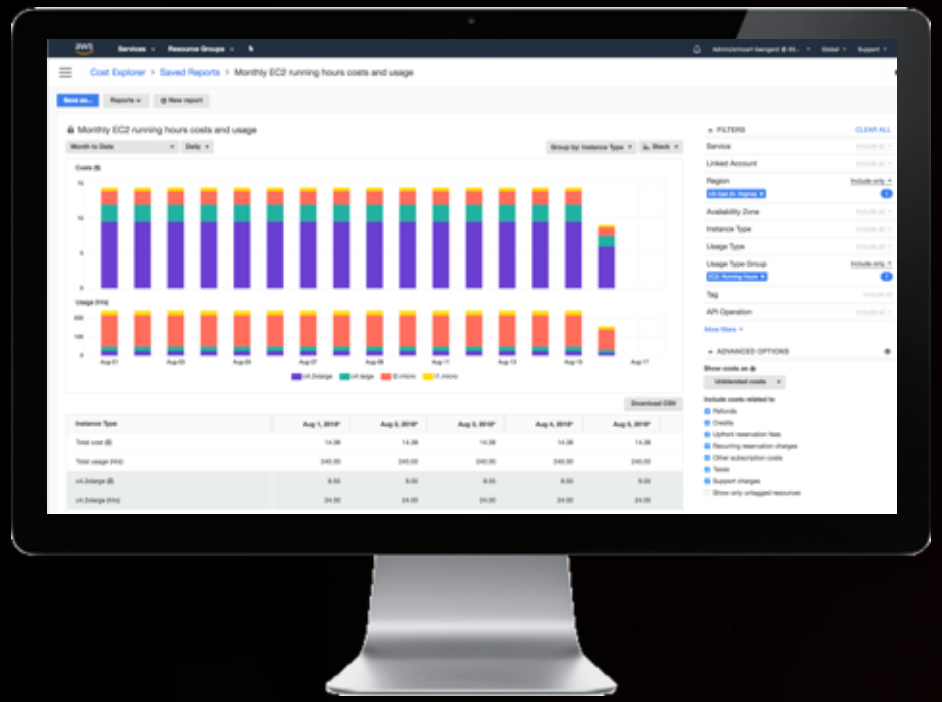
- Enable cost allocation tags
- Choose the tags to activate



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AWS Cost Explorer

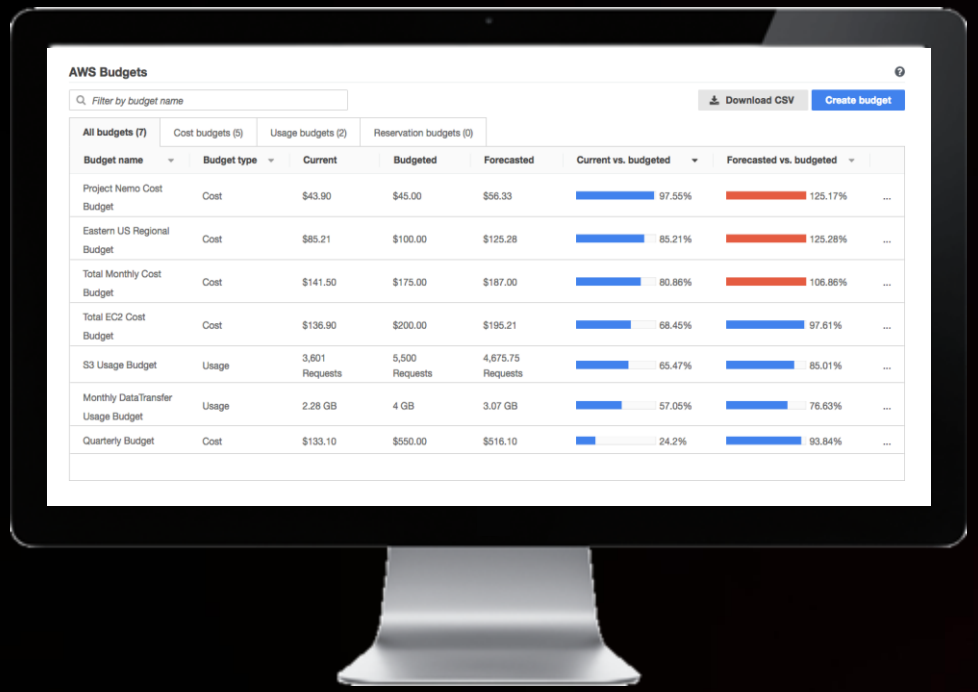
VIEW COST TRENDS, GROUP AND FILTER DATA FOR A UNIFORM VIEW OF COST AND USAGE



- Comprehensive dashboards
- Automated trend analysis
- Friendly user experience and programmatic access
- Plan for future spending

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AWS Budgets



- Customizable budgets
- Ongoing monitoring and alerting
- Flexible automation

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AWS Cost Anomaly Detection

SAVE TIME MONITORING SPEND AND FOCUS ON DRIVING INNOVATION



Easy start

Simple setup to evaluate spend anomalies for all AWS services individually, member accounts, cost allocation tags, or AWS Cost Categories



Automated root cause

Receive automated root cause analysis, pinpointing potential cost drivers, such as usage type, specific AWS service, Region, and member account(s)



Minimize surprise bills

Stay informed with automated detection alerts, via email or Amazon SNS topic at the frequency of your choice (individual alerts or daily or weekly summary)

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Expenditure and Usage Awareness Summary



Cost Optimization

Design principles

Expenditure and Usage Awareness

Understanding your organization's costs & drivers is critical for managing your cost & usage effectively

Best Practices

- Establish governance & cost monitoring
- Set up goals and targets
- Get a granular understanding of cost and usage
- Track resources over their lifetime & implement a decommissioning process
- Identify cost-reduction opportunities

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Cost-Effective Resources

- Evaluate Cost When Selecting Services
- Select the Best Pricing Model
- Plan for Data Transfer
- Select the Correct Resource Type, Size, and Number



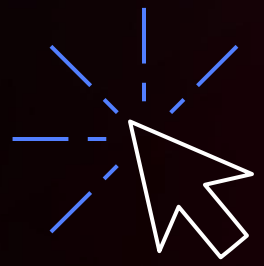
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Rightsizing with AWS Compute Optimizer

1 Make the right choice

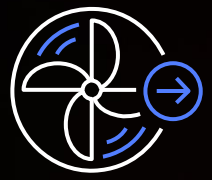


Applies insights from millions of workloads to make recommendations



Saves time comparing and selecting optimal resources for your workload

2 Ensure you are **consistently** making the right choice



Continuously scan your resource usage and match your workload to optimal resources

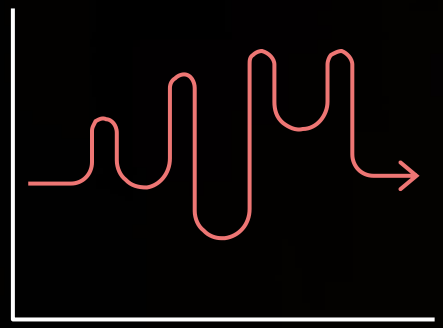
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Amazon EC2 purchase options

On-Demand Instances

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



Spiky workloads, to define needs

Reserved Instances

Make a 1-year or 3-year commitment, receive a **significant discount** on On-Demand prices



Committed and **steady-state** usage

Savings plan

Same great discounts as Amazon EC2 RIs, **more flexibility**



Flexible access to compute

Spot Instances

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



Fault-tolerant, flexible, stateless workloads

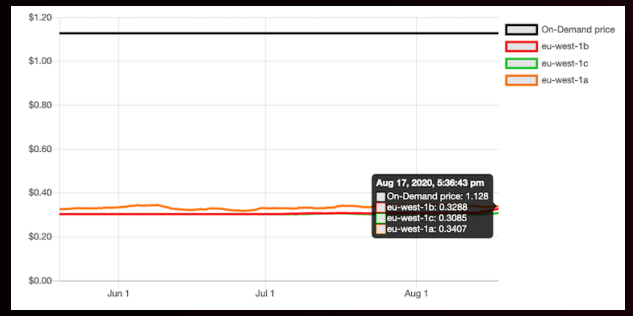
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EC2 Spot Instances

LEVERAGE SPARE CAPACITY ON-DEMAND WITH STEEP DISCOUNTS, PAY BY THE SECOND







Spare Amazon EC2 capacity

Same infrastructure as On-Demand

Save up to 90% compared to On-Demand pricing

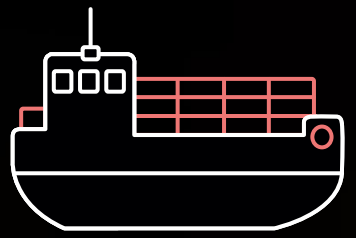
Spot price is based on long-term supply and demand trends of EC2 instances **(no bidding)**

Interruptible

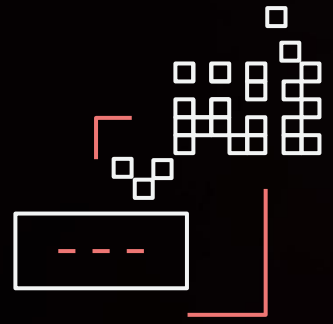
Spot instances can be interrupted by a 2-minute warning if Amazon EC2 needs the capacity back

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Spot Instances are great for fault-tolerant workloads



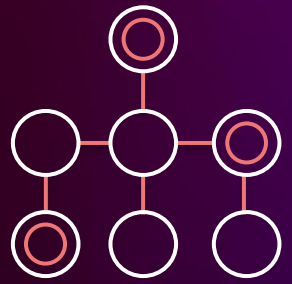
Containers



Big data



CI/CD



Batch



Web services



Machine learning



HPC

Lean on Spot for these workloads

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Self-Managed vs. Managed Services


Amazon EC2


AWS Elastic Beanstalk


Amazon ECS


Amazon ECS for Kubernetes


AWS Fargate


AWS Lambda


Amazon RDS


Amazon DocumentDB


Amazon Aurora Serverless


Amazon DynamoDB


Amazon MQ


Amazon Redshift


Amazon SQS


Amazon Athena

Unmanaged

Highly managed



Pay for Infrastructure

Pay per Transaction

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Cost-Effective Resources Summary



Cost Optimization

Design principles

Cost-Effective Resources

Using the appropriate services, resources & configurations for your workloads is key to cost savings

Best Practices

- Leverage Managed services remove the operational and administrative burden
- Evaluate software licensing costs
- Leverage AWS Compute Optimizer to model running workloads cost
- Leverage AWS pricing models: On-Demand, Spot, Commitment discounts (Savings Plans) & Commitment discounts (Reserved Instances/Capacity)

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Manage Demand and Supply Resources

- Manage Demand
- Dynamic Supply



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AWS Instance Scheduler

FIT YOUR SUPPLY TO DEMAND BY SCALING THE NUMBER OF RESOURCES THAT ARE PROVISIONED

Scenario

- EC2 instances running out-of-office hours
- You are paying for those idle instances

Steps to get started

- Install the **AWS Instance Scheduler**
- Create schedule based on requirements
- Tag non-prod EC2 instances to be scheduled

Additional information

- **Complexity:** Low
- **Implementation time:** Minutes to hours
- **Savings potential:** Reduce On-Demand costs by up to 35%*
- **Time to realize savings:** Minutes
- **Commitment required:** None

* Assumption - instance scheduling starts on Friday at 6pm, ends Monday at 6am

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Clean up underutilized resources

PAY FOR WHAT YOU USE BY ELIMINATING OVER-PROVISIONED RESOURCES, AND RUN YOUR CLOUD INFRASTRUCTURE WITH MAXIMUM EFFICIENCY

Scenario

- You have underutilized EC2 resources
- You are paying for those resources as if they are still being fully used

Steps to get started

- Log into **AWS Trusted Advisor**
- Refresh all of your Cost Optimization checks
- Review recommended actions (and savings)
- Prioritize actions based on greatest savings

Additional information

- **Complexity:** Medium
- **Implementation time:** Days
- **Savings potential:** $1000s
- **Time to realize savings:** Hours to days
- **Commitment required:** None



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Amazon S3 Intelligent-Tiering

MATCH CAPACITY WITH DEMAND



Automatically moves infrequently accessed object storage to lower cost

Steps to get started:

- PUT data into S3 Intelligent-Tiering by specifying INTELLIGENT_TIERING in the x-amz-storage-class header
- Configure S3 Lifecycle policies to transition objects from S3 Standard or Standard-Infrequent Access to S3 Intelligent-Tiering

Additional information

- **Complexity:** Low
- **Implementation time:** Minutes to hours
- **Savings potential:** Reduce S3 storage costs based on access patterns
- **Time to realize savings:** Minutes to hours
- **Commitment required:** None

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Manage Demand & Supply Resources Summary



Cost Optimization

Design principles

Manage Demand and Supply Resources

Pay only for what you need. You can supply resources to match the workload demand at the time they're needed

Best Practices

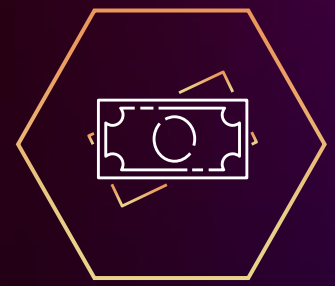
- Know the requirements of the workload
- Modify the demand using a throttle, buffer, or queue to smooth the demand and serve it with less resources
- Create metrics and automation that will ensure that management of your environment is minimal

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Practice Cloud Financial Management

- Establish a Cost Optimization Function
- Establish a Partnership Between Finance & Technology
- Establish Budgets, Forecasts, & Cost-Aware Process & Culture
- Follow New Service Releases, Report and Notify Cost & Usage
- Quantify Business Value from Cost Optimization



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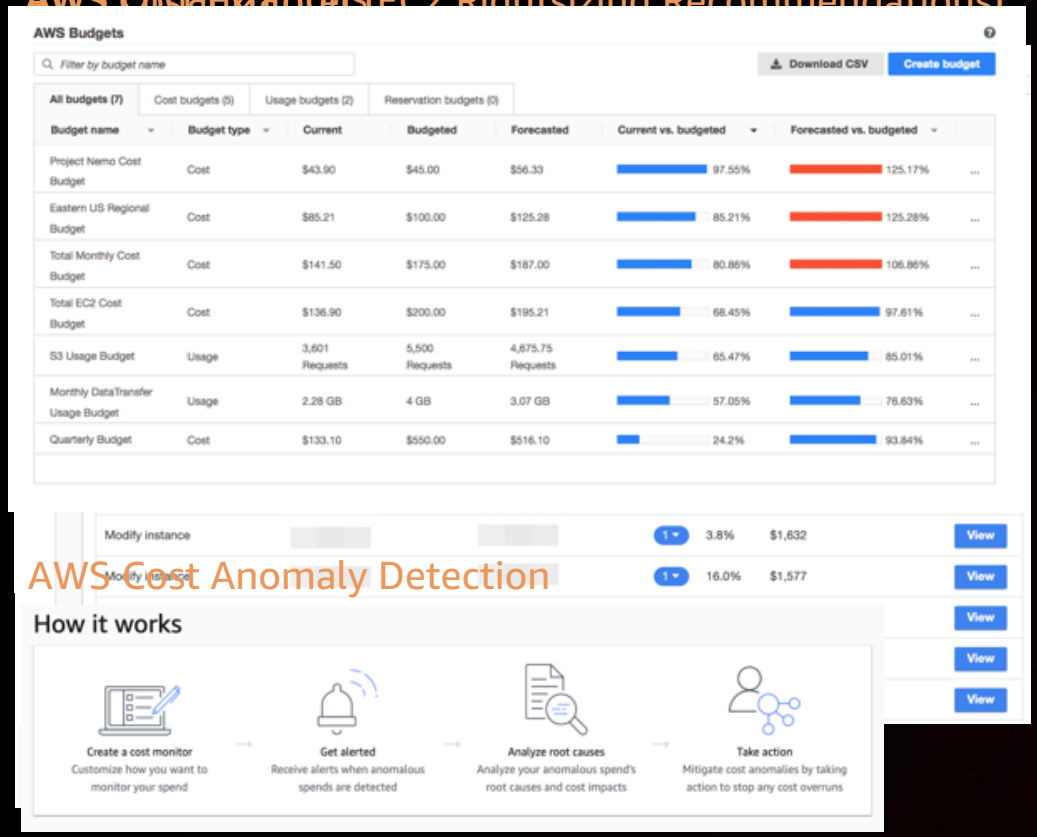
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Start your Cloud Financial Management Journey

AWS Budgets

AWS Cost Explorer

AWS Compute Optimizer (EC2 Rightsizing Recommendations)



AWS Cost Anomaly Detection

1. CFM ownership
2. Organizational partnership
3. Enable cost allocation
4. Cost visibility
5. Cost optimization
6. Cost forecasting and monitoring

Continuous education

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Cloud Financial Management Summary



Cost Optimization

Design principles

Cloud Financial Management

Adopt a consumption model, measure overall efficiency and build cost-aware culture

Best Practices

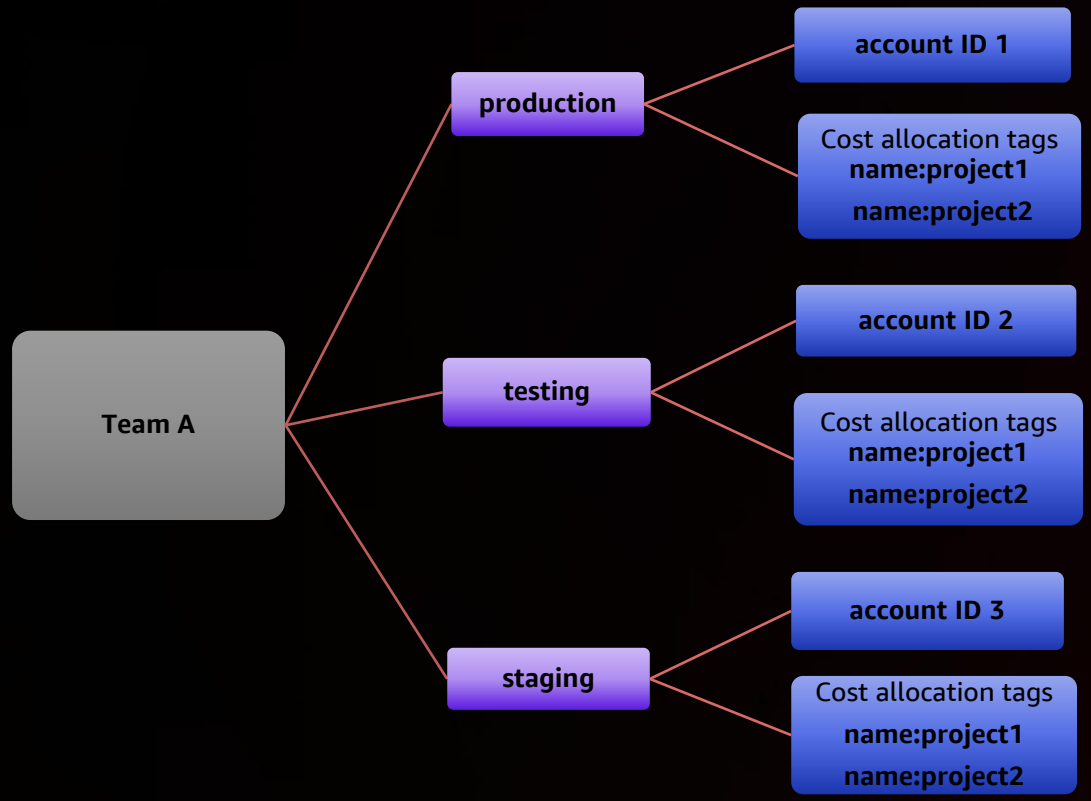
- Establish a Cost Optimization Function
- Establish a Partnership between Finance & Technology
- Establish Budgets, Forecasts, & Cost-Aware Process & Culture
- Quantify Business Value from Cost Optimization

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AWS Cost Categories

GROUP YOUR COST AND USAGE INFORMATION INTO MEANINGFUL CATEGORIES BASED ON YOUR BUSINESS NEEDS



- Automatically categorize your cost information
- Define split charge rules for shared costs
- Can be used in AWS Cost Explorer, AWS Budgets, AWS Cost and Usage Reports (AWS CUR), and AWS Cost Anomaly Detection
- This service is provided free of charge

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Home

Billing

Bills
Payments
Credits
Purchase orders
Cost & Usage Reports
Cost Categories
Cost allocation tags
Free Tier
Billing Conductor

Cost Management

Cost Explorer
Budgets
Budgets Reports
Savings Plans

Preferences

Billing preferences
Payment methods
Consolidated billing
Tax settings

AWS Billing Dashboard Info

Page refresh time: Tuesday, 1 November 2022 at 7:55:54 pm AEDT

AWS summary Info

Current month's total forecast

USD 2,817.16

Current MTD balance

No data to display

Prior month

No data to di

Total number of active services

No data to display

Total number of active AWS accounts

No data to display

Total numbe

No data to di

Highest cost Info

Viewing highest service spend.

No data

There is no data to display.

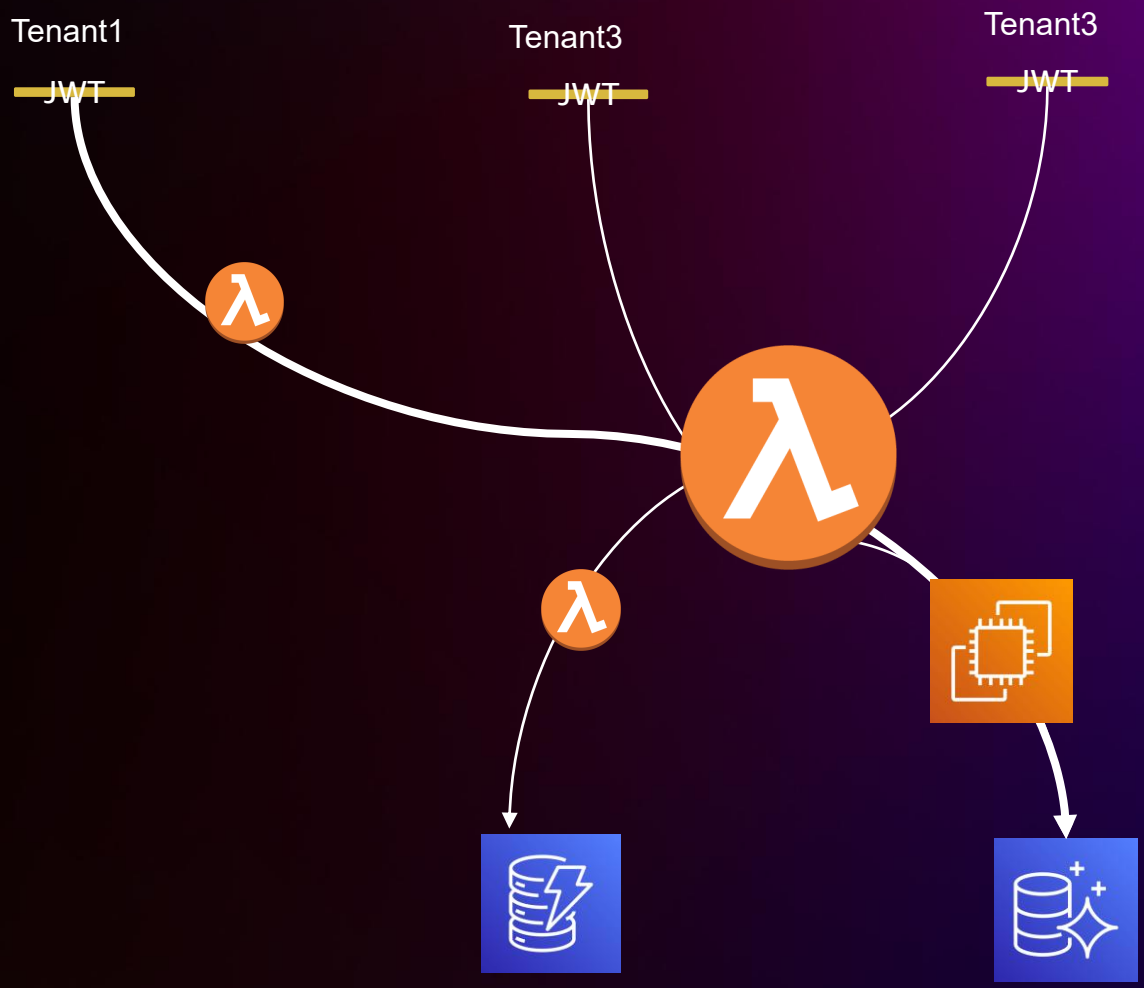
View your bill

Cost trend by top five services Info

AWS Application Cost Profiler

TENANT-BASED COST REPORTS OF SHARED AWS RESOURCES CONSUMPTION, CALCULATED BASED ON TENANT USAGE DATA AND AWS BILLING, AND PROVIDING COST AND CONSUMPTION INSIGHTS ACROSS MULTIPLE DIMENSIONS FOR A TENANT

- How many calls?
- Provisioned Capacity?
- Sizing?
- Resource consumption visibility by tenant
- Chargeback/Showback
- Business and technical decisions



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Amazon S3

Buckets
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
Access analyzer for S3

Block Public Access settings for this account

Storage Lens
Dashboards
AWS Organizations settings

Feature spotlight 3

AWS Marketplace for S3

Replicate data within and between AWS Regions using Amazon S3 Replication.

Amazon S3 > Buckets > acp-us-east-1-34 3

acp-us-east-1-3 3 Info

Objects | Properties | Permissions | Metrics | Management | Access Points

Objects (2)

Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly gra

Copy S3 URI | Copy URL | Download | Open | Delete | Actions | Create folder | Upload

Find objects by prefix

Name	Type	Last modified	Size
import/	Folder	-	
reports/	Folder	-	

Takeaway

- Follow AWS Well-Architected guidelines on Cost Optimization

- Leverage AWS Tools & Services

  - Amazon S3 Intelligent-Tiering
  - EC2 Spot Instances
  - AWS Instance Scheduler
  - AWS Compute Optimizer
  - AWS Application Cost Profiler
  - AWS Cost Anomaly detection

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Thank you!

Rovan Omar

Ben Mergen



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