AWS Module 2 - Cloud Economics and Billing

By lemasyma

Posted Feb 8, 2021 • Updated Oct 3, 2021 • 4 min read • 1 views

Lien de la note Hackmd

Section 1: Fundamentals of pricing

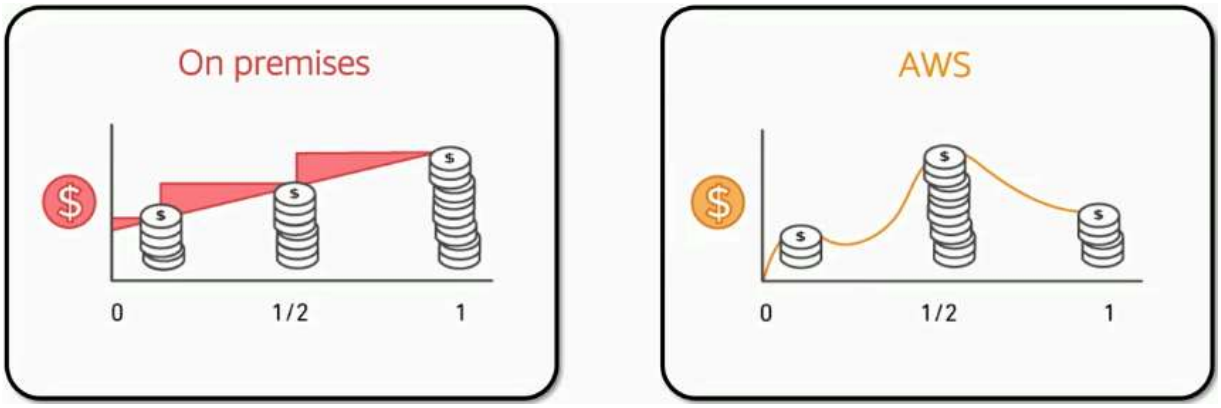
AWS pricing model

Three fundamental drivers of cost with AWS:

1. Compute
    - Charged per hour/second
    - Varies by instance type
2. Storage
    - Charged typically per GB
3. Data transfer
    - Outbound is aggregated and charged
    - Inbound has no charge (with some exceptions)
    - Charged typically per GB

How do you pay for AWS ?

Pay only for the servuces that you consume, with no large upfront expenses



Pay less by using more

Realize volume-based discounts:

- **Savings** as usage increases
- **Tiered pricing** for services like Amazon Simple Storage Service (Amazon S3), Amazon Elastic Book Store (Amazon EBS) or Amazon Elastic File System (Amazon EFS) → the more you use, the less you pay per GB
- Multiple storage service deliver **lower** storage costs based on needs

Pay even less as AWS Grows

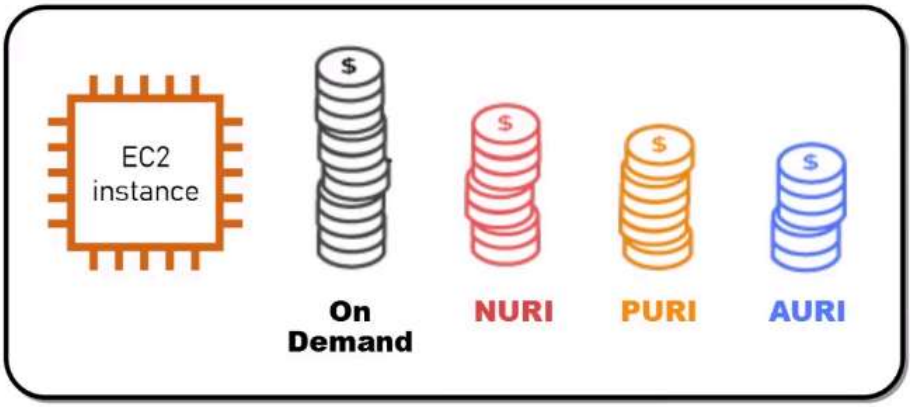
- AWS focuses on lowering cost of doing business
- This pratice results in AWS passing savings from economies of scale to you
- Since 2006, AWS has **lowered pricing 75** times (as of Septembre 2019)
- Future higher-performing resources replace current resources for no extra charge

Custom pricing

- Meet varying needs through custom pricing
- Available for high-colume projects with unique requirements

Invest in Reserved Instances (RIs):

- Save up to 75 percent
- Options:
  - All Upfront Reserved Instance **(AURI)** → **largest discount**
  - Partial Upfront Reserved Instance **(PURI)** → **lower discounts**
  - No Upfront Payments Reserved Instance **(NURI)** → **smaller discount**

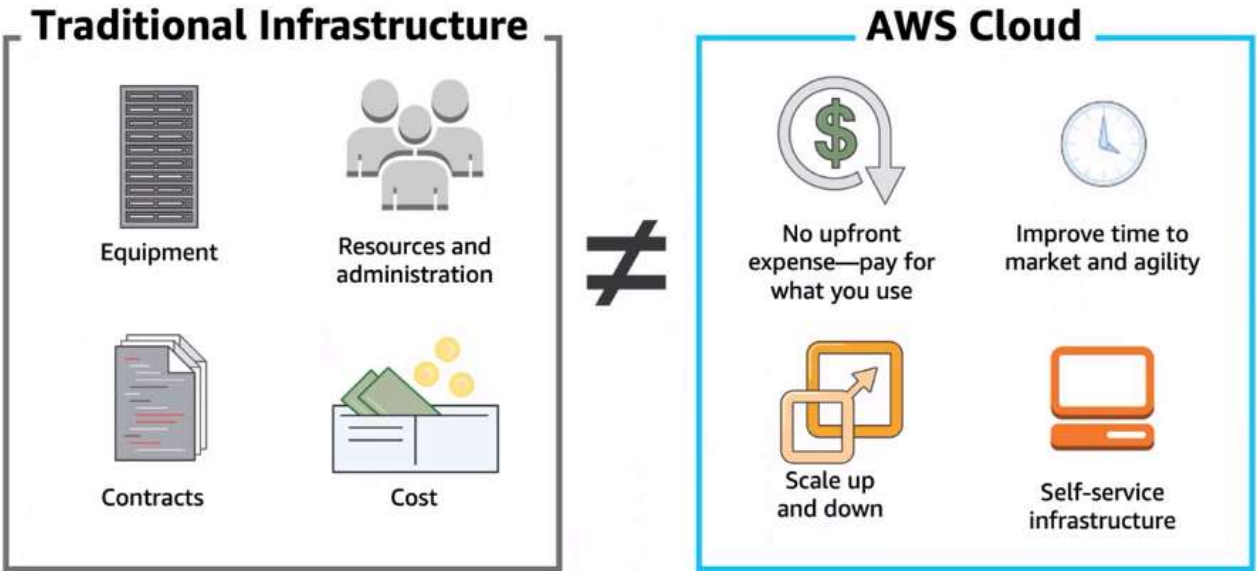


Enables you to gain free hands-on experience with the AWS platform, products and services. Free for 1 year for new customers

Services with no charge

Module 2: Total cost of Ownership

On-premises versus cloud

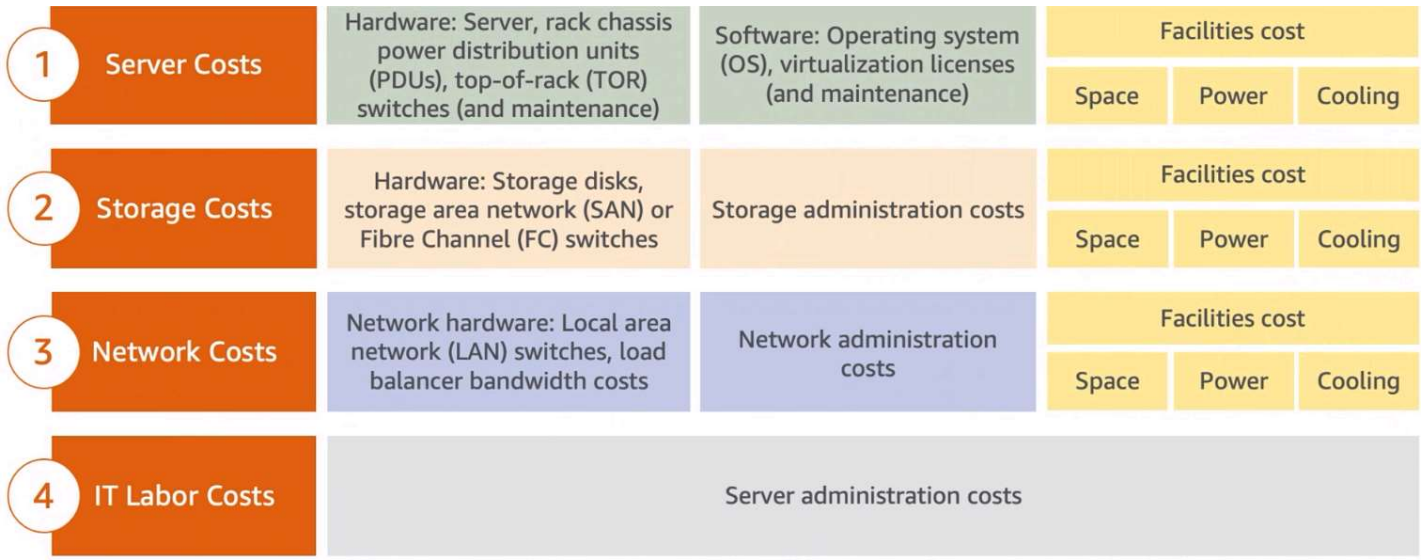


What is Total Cost of Ownership (TCO) ?

Total Cost of Ownership (TCO) is the financial estimate to help identify direct and indirect costs of a system.

Why use TCO ?

- To compare the costs of running an **entire infrastructure environmnet of specific workload** on-premises versus on AWS
- To budget and **build the business case** for moving to the cloud

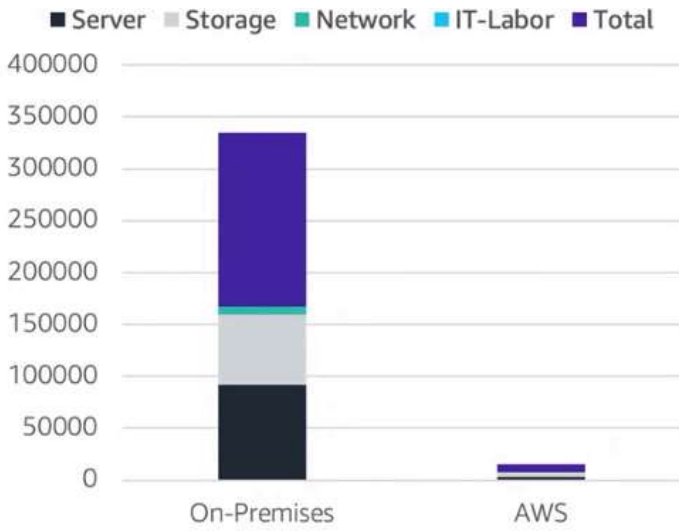


On-premises versus all-in-cloud

You cloud cave up to **96 percent** a year by moving your infratstructure to AWS. Your 3-year total savings would be **$159,913**

3-Year Total Cost of Ownership		
	On-Premises	AWS
Server	$91,922	$2,547
Storage	$67,840	$4,963
Network	$7,660	$-------
IT – Labor	$ -------- --	$-------
Total	$167, 422	$7,509

AWS cost includes business-level support and a 3-year PURI EC2 instance



AWS Pricing Calculator

Use the **AWS Pricing Calculator** to:

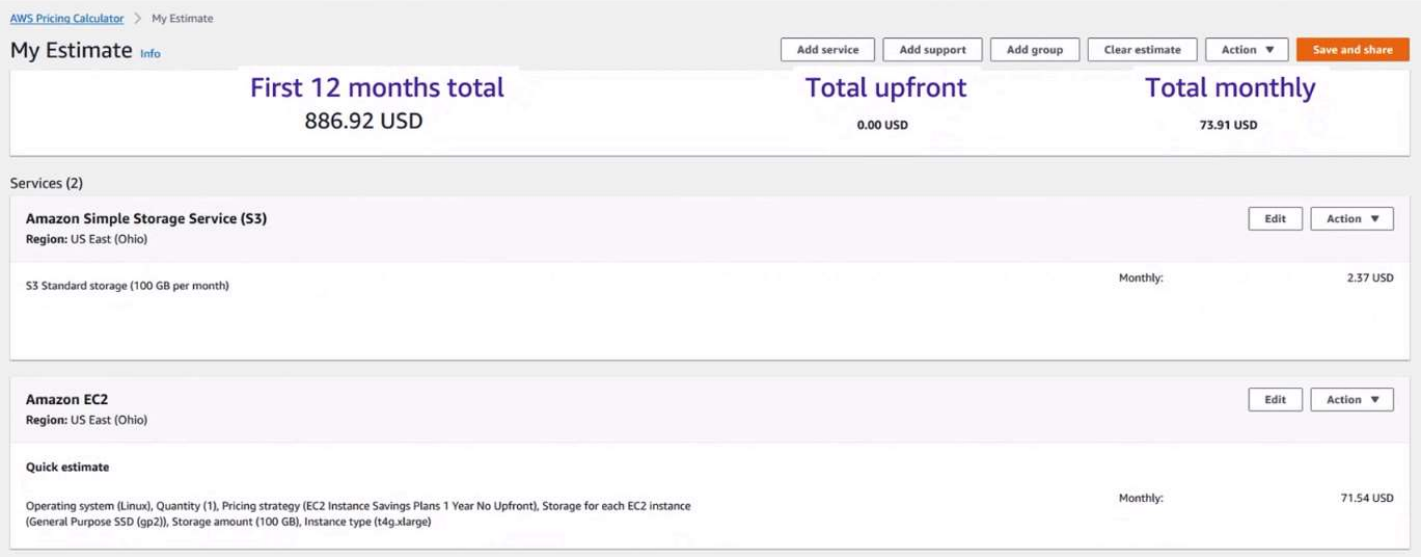
- Estimate monthly costs
- Identify opportunities to reducse monthly costs
- Model your solutions before building them
- Explore price points and calculations behind your estimate
- Find the available instance types and contract terms that meet your needs
- Name your estimate and create name **groups** of services

Reading an estimate

Your estimate is broken into:

- first 12 months total

- total monthly



Additional benefit considerations

- Cloud Total Cost of Ownership: what will be spent to run the solution
- Return on Investement analysis (ROI): determine the value generated while considering savings → *soft* and *hard* benefits

Hard benefits	**Soft benefits**
Reduced spending on compute, storage, networking, security	Reuses of service and applications that enabl you to define (and redefine solut
Reductions in hardware and softare purchases (capex)	Increased developer productivity
Reductions in operational costs, backup, and disaster recovery	Improved customer satisfaction
Reduction in operations personnel	Agile business processes that can quickly respond to new and emerging oppor
	Increase in global reach

Case study: Delaware North

Background:

- Growing global company with over 200 locations
- 500 million customers: $3 billion USD annual revenue

Challenge:

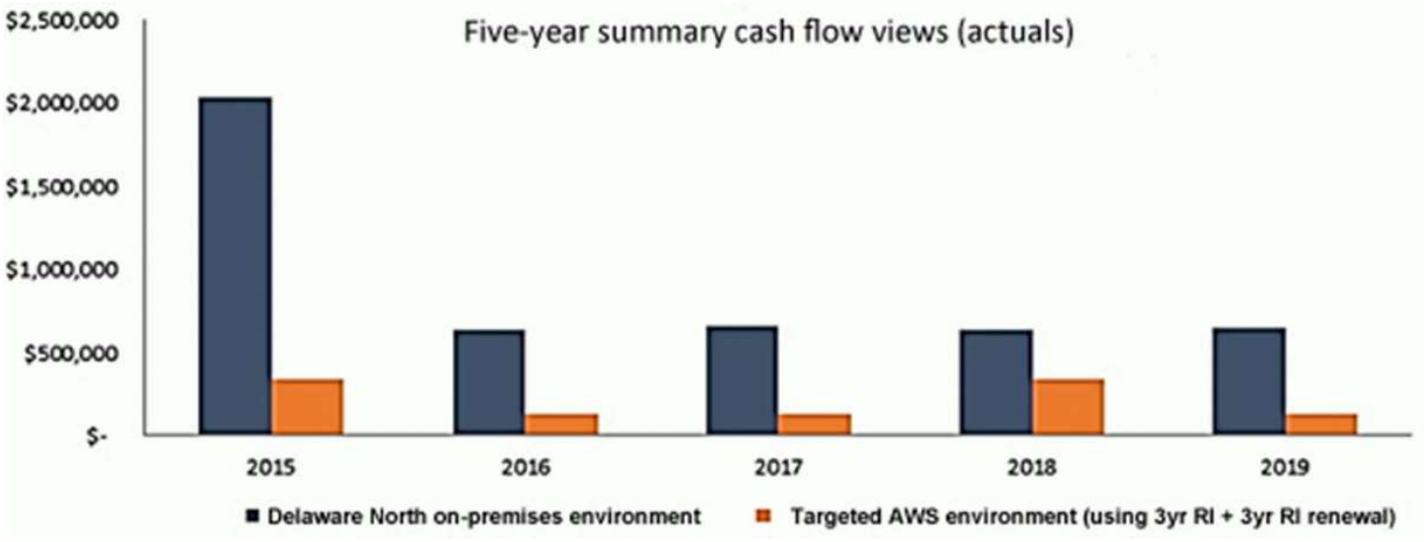
- Meet demand to rapidly deploy new solutions
- Constantly upgrade aging equipment

Criteria:

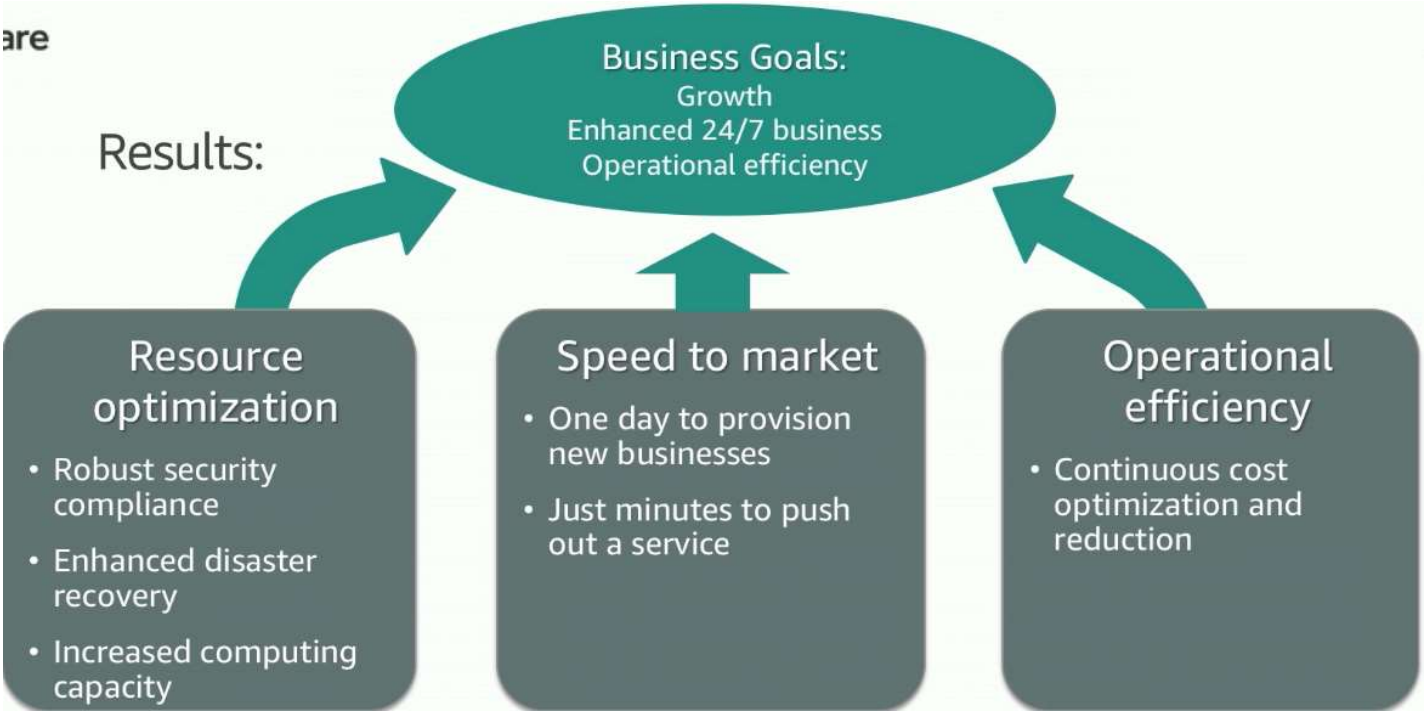
- Have a broad solution to handle all workloads
- Be able to modify processes to improve efficiency and lower costs
- Eliminate busy work (such as patching software)
- Achieve a positive return on investment (ROI)

- Move their on-premises data center to AWS
  - Eliminated 205 servers (90%)
  - Moved nearly all aplications to AWS
- Used 3-year Amazon ECE2 Reserved Instances

Cost comparison

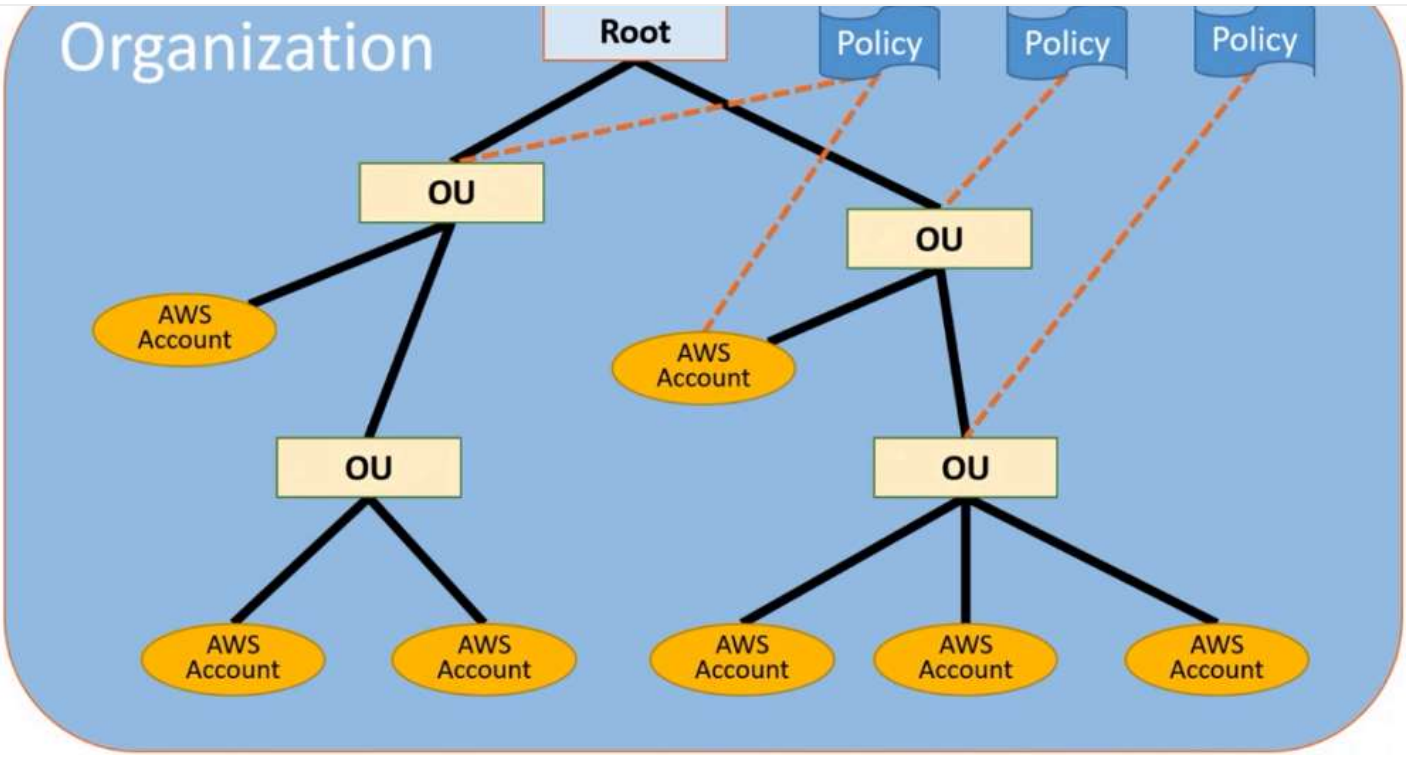


Results



Section 3: Billing

AWS Organizations: account management service to consolidate multiple AWS accounts



- a branch can have only one parent

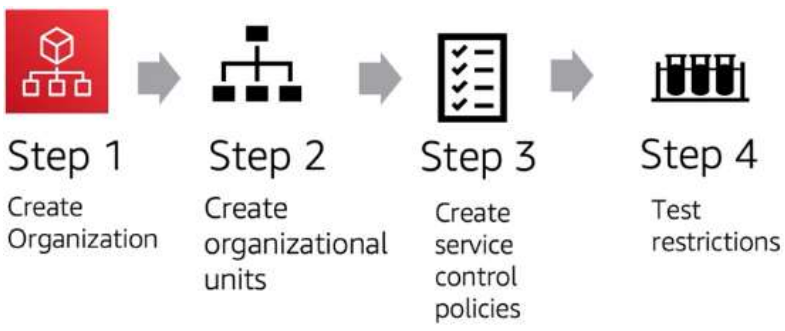
Key features and benefits

- Policy-base account management
- Group based account management
- APIs that automate account management
- Consolidate billing

Security with AWS Organizations

- Control access with AWS Identity and Access Management (IAM)
- IAM policies enable you to allow or deny access to AWS services for users, groups and roles
- Service control policies (SCPs) enable you to allow or deny access to AWS services for individuals or group accounts in an organizational unit (OU)

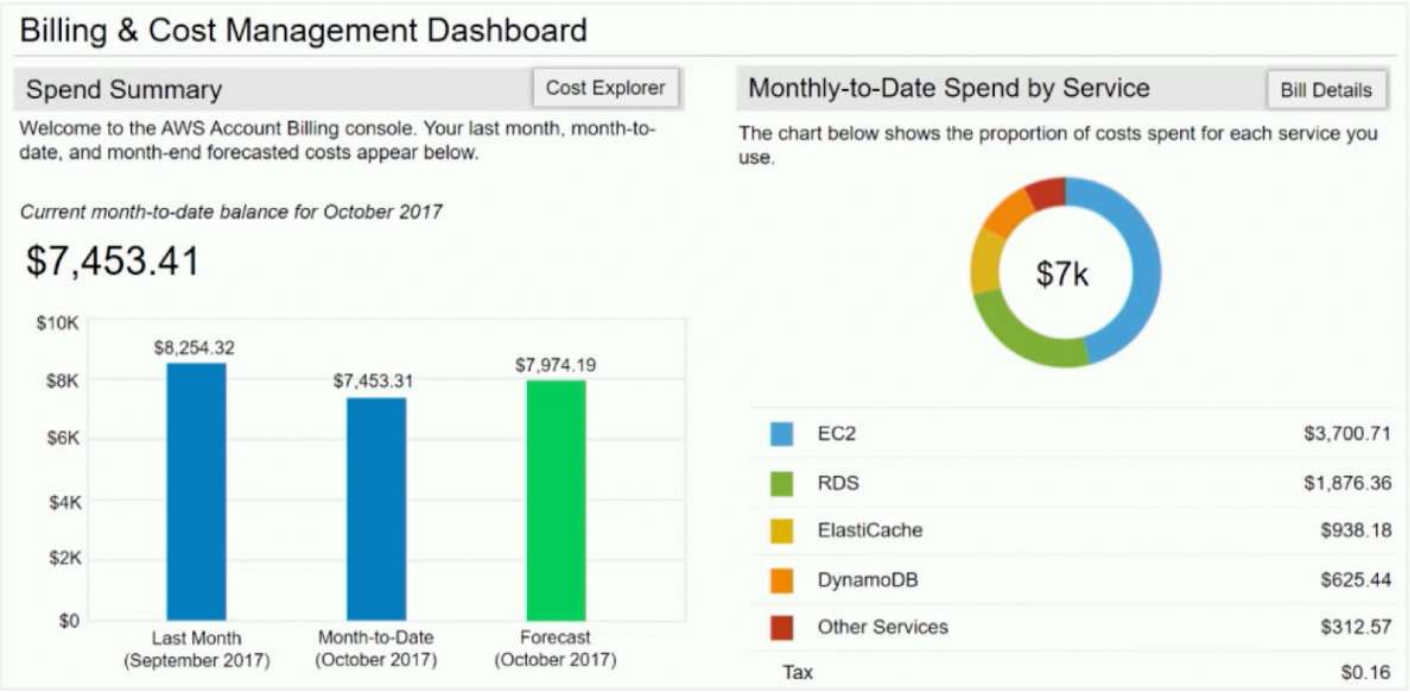
Organization setup



- AWS Management Console
- AWS Command Line Interface (AWS CLI) tools
- Software development kits (SDKs)
- HTTPS Query application programming interfaces (API)

Section 4: AWS Billing and Cost Management

AWS Billing Dashboard



Spend summary: how much you spent last month Month-to-Date spend by service: services most used

Tools

- AWS Budgets
- AWS Cost and Usage Report
- AWS Cost Explorer

BILLS | COST EXPLORER | BUDGETS | REPORTS

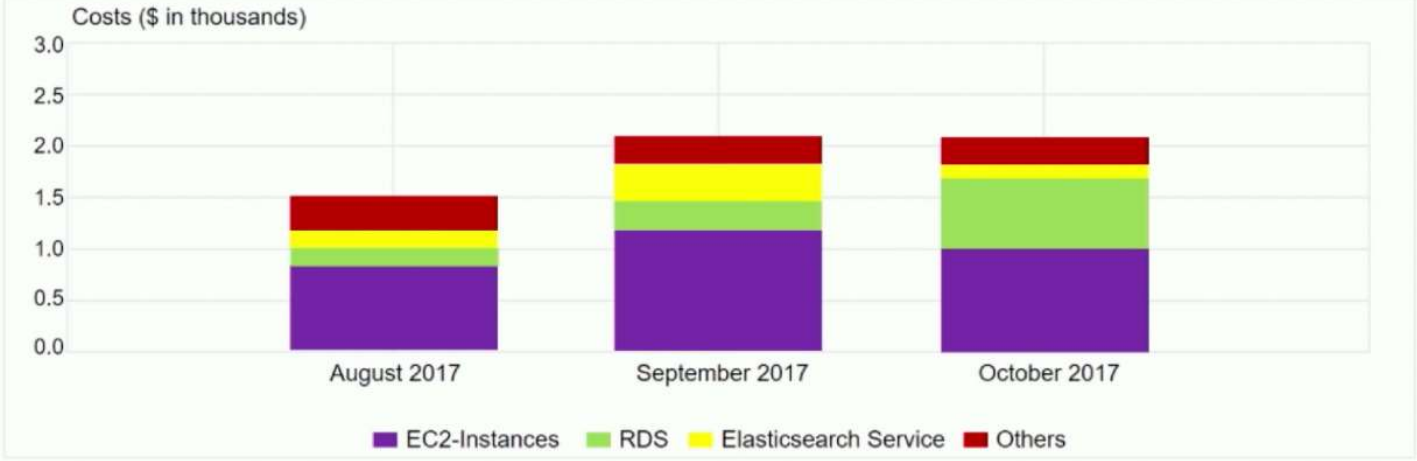
Total		**$7,453.41 USD**
AWS Marketplace Charges		**$15.00**
▼ Usage Charges and Recurring Fees		$15.00
Invoice 32342548 – AWS Service Charges: Usage charge for this statement period	2017-10-10	$15.00
AWS Service Charges		**$7,438.41**
▼ Usage Charges and Recurring Fees		$7,414.41
Invoice 32342513 – AWS Service Charges: Usage charge for this statement period	2017-10-10	$7,414.41
▼ Usage Charges and Recurring Fees		$24.00
Invoice 32342507 – AWS Service Charges: Subscription charge	2017-10-10	$24.00

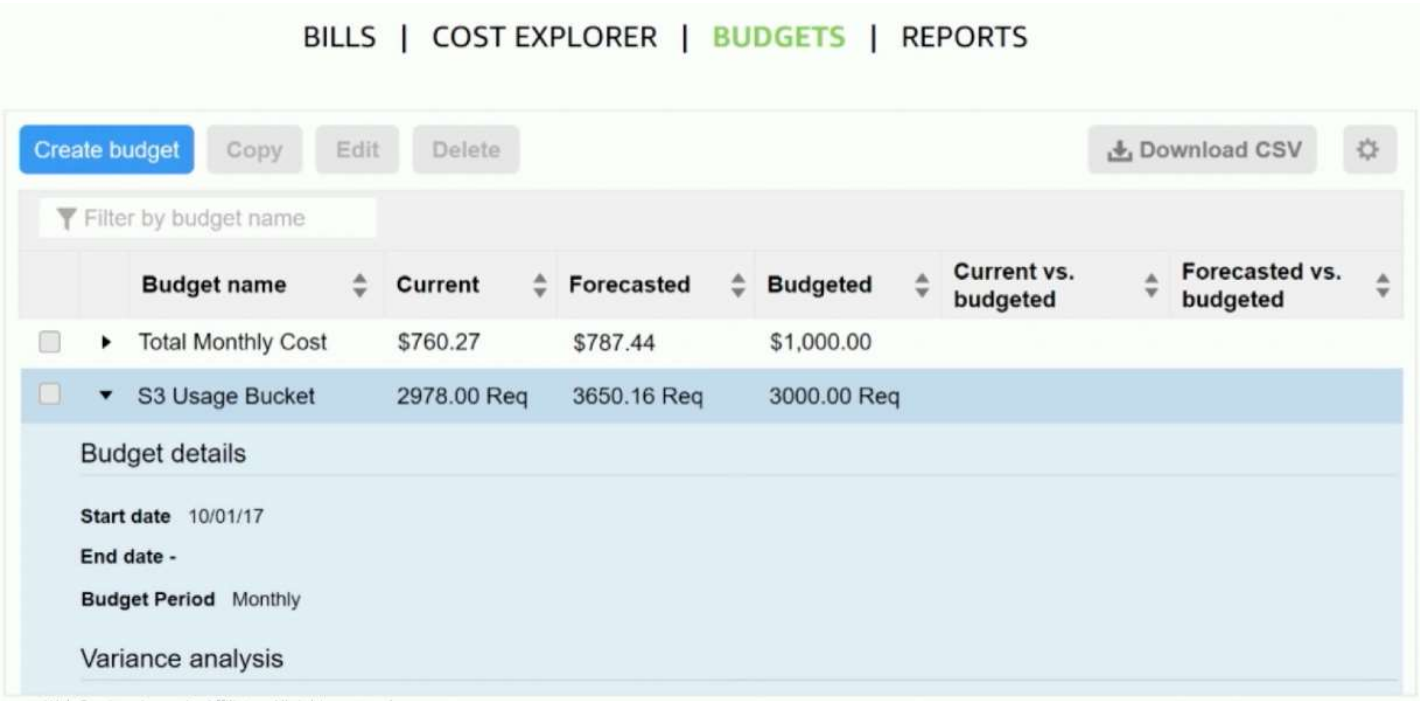
Cost Explorer

BILLS | COST EXPLORER | BUDGETS | REPORTS

Monthly costs by service

Last 3 Months ▼ Monthly ▼ Group by service ▼ Stack ▼





Cost and usage reporting

Product Code	Usage Type	Operation	Availability Zone	Usage Amount	Currency Code	Line Item Description
Amazon S3	Requests – Tier 1	ListAllMyBuckets		2	USD	$0.00 per request – PUT, COPY, POST, LIST under the global free tier
Amazon EC2	USW2-Boxusage:t2.micro	Runinstnaces:0002	us-west-2a	1	USD	$0.00 per Windows t2.micro instance-hour under monthly free tier
Amazon S3	Requests – Tier 1	ListAllMyBuckets		2	USD	$0.00 per request – PUT, COPY, POST, LIST under the global free tier
Amazon EC2	USW2-Boxusage:t2.micro	Runinstnaces:0002	us-west-2a	1	USD	$0.00 per Windows t2.micro instance-hour under monthly free tier
Amazon S3	Requests – Tier 1	ListAllMyBuckets		2	USD	$0.00 per request – PUT, COPY, POST, LIST under the global free tier
Amazon S3	Requests – Tier 1	ListAllMyBuckets		2	USD	$0.00 per request – PUT, COPY, POST, LIST under the global free tier

Section 5: Technical Support Models

AWS Support

- Provide unique combination of tools and expertise:
  - AWS Support
  - AWS Support Plans
- Support is provided for:
  - Experimenting with AWS
  - Production use of AWS
  - Business-critical use of AWS

- Technical Account Manager (TAM)

- Best practices:
  - AWS Trusted Advisor
- Account assistance
  - AWS Support Concierge

Support plans

AWS Support offers four support plans:

- **Basic Support**: Resource Center access, Service Health Dashboard, product FAQs, discussion forums, and support for health checks
- **Developper Support**: Support for early development on AWS
- **Business Support**: Customers that run production workloads
- **Entreprise Support**: Customers that run business and mission-critical workloads

Case Severity and response times

	Critical	Urgent	High	Normal	Low
Basic			No Case Support		
Developer Plan (Business hours)				12 hours or less	24 hours or less
Business Plan (24/7)		1 hour or less	4 hours or less	12 hours or less	24 hours or less
Enterprise Plan (24/7)	15 minutes or less	1 hour or less	4 hours or less	12 hours or less	24 hours or less

Wrap-up

Sample exam question

Which AWS service provides infrastructure security optimization recommendations ?

1. AWS Price List Application Programmin Interface (API)
2. Reserved Instances
3. AWS Trusted Advisor
4. Amazon Elastic Comput Cloud (Amazon EC2) Spot Fleet

▶ Answer

tronc commun AWS S8

Share:

Further Reading

Feb 8, 2021

AWS Module 1 - Cloud Concepts Overview

Lien de la note Hackmd Introduction Intro to cloud computing Advantages of cloud…

Feb 9, 2021

AWS Module 3 - AWS Global Infrastructure Overview

Lien de la note Hackmd Section 1: AWS Global Infrastructure The AWS Global…

Feb 9, 2021

AWS Module 4 - AWS Cloud Security

Lien de la note Hackmd Section 1: AWS shared responsibility model AWS: Security …

OLDER
AWS Module 1 - Cloud Concepts Overview

NEWER
GPRO - Refresh from ing1 classes