



# Passing the AWS Cloud Practitioner exam

Study Group #2: Getting Started With AWS (IAM, Billing & Cost)

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**Presented By:**  
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Linux Academy

# Pop Quiz

Which of the following is AWS's responsibility under the AWS shared responsibility model?

- A) Configuring third-party applications
- B) Maintaining physical hardware
- C) Securing application access and data
- D) Managing custom Amazon Machine Images (AMIs)

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Which component of AWS global infrastructure does Amazon CloudFront use to ensure low-latency delivery?

- A) AWS Regions**
- B) AWS edge locations**
- C) AWS Availability Zones**
- D) Amazon Virtual Private Cloud (Amazon VPC)**

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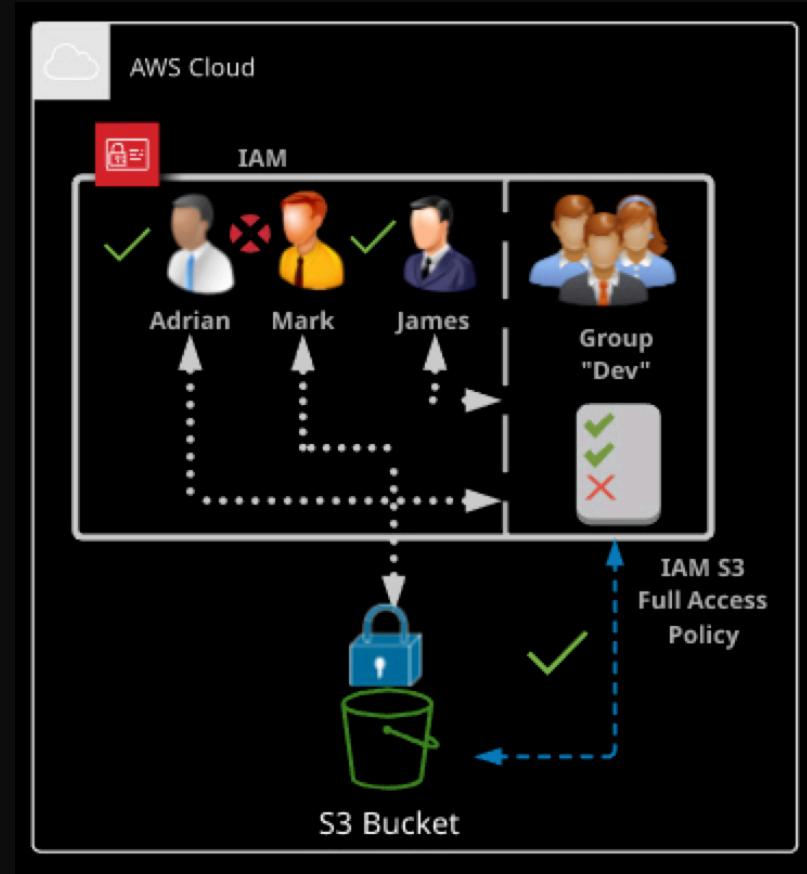
# AWS Core Services

- **Permissions Management:** Identity and Access Management (IAM)
- **Networking:** Virtual Private Cloud (VPC)
- **Compute:** Elastic Cloud Compute (EC2)
- **Storage:** Simple Storage Service (S3)
- **Database:** RDS, Aurora
- **Monitoring:** CloudWatch, CloudTrail



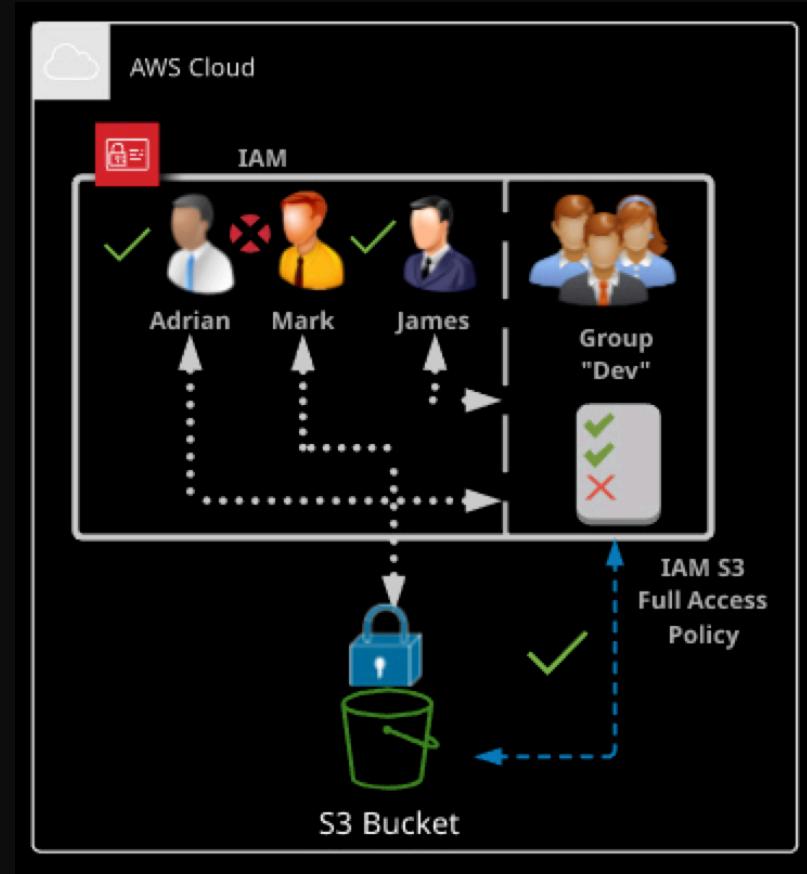
# Identity and Access Management (IAM)

- IAM Users
- IAM Groups
- IAM Policies
- IAM Roles
- Access Keys



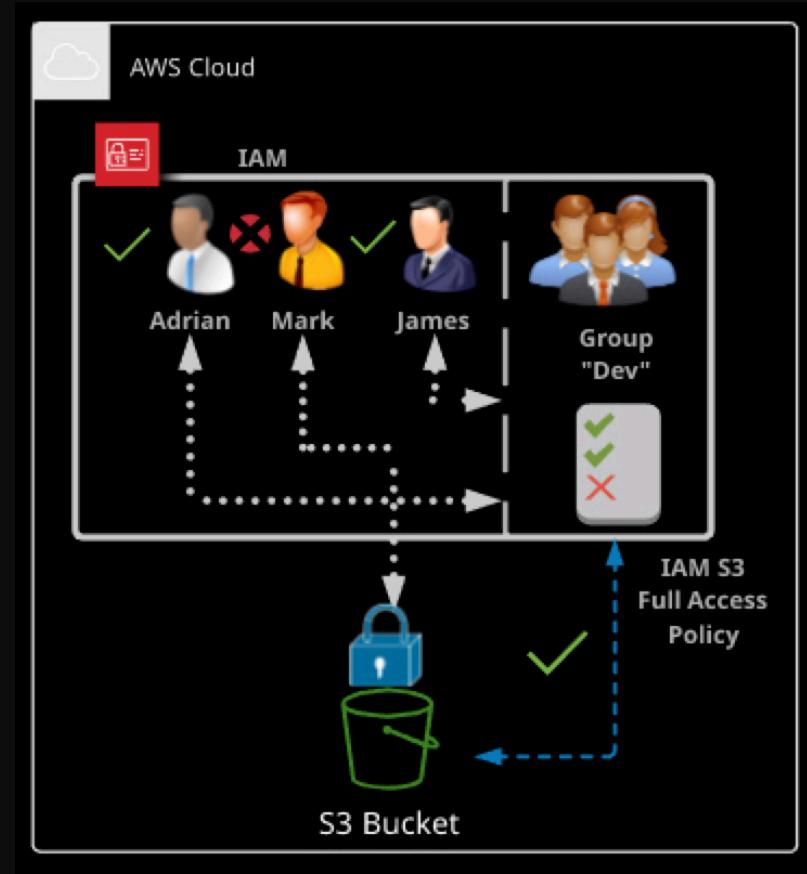
# Identity and Access Management (IAM)

- IAM Users
  - Can be made up for username, email, password, and access keys
  - Can have policies directly attached to them, or applied through a group
- IAM Groups
- IAM Policies
- IAM Roles
- Access Keys



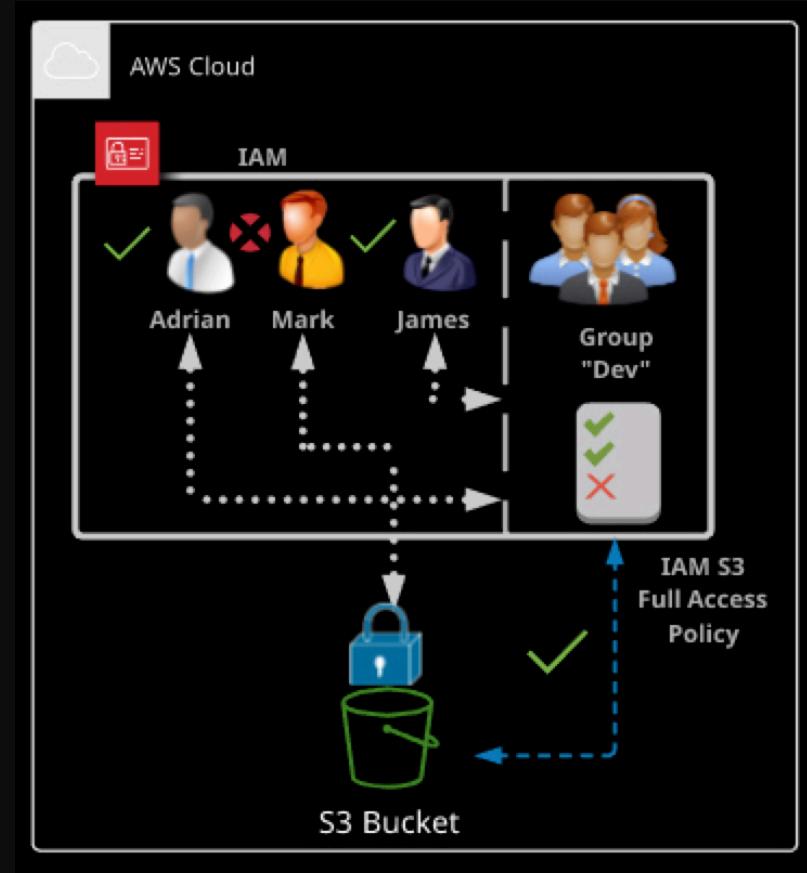
# Identity and Access Management (IAM)

- IAM Users
- IAM Groups
  - Collection of users
  - Can assign policies to groups
- IAM Policies
- IAM Roles
- Access Keys



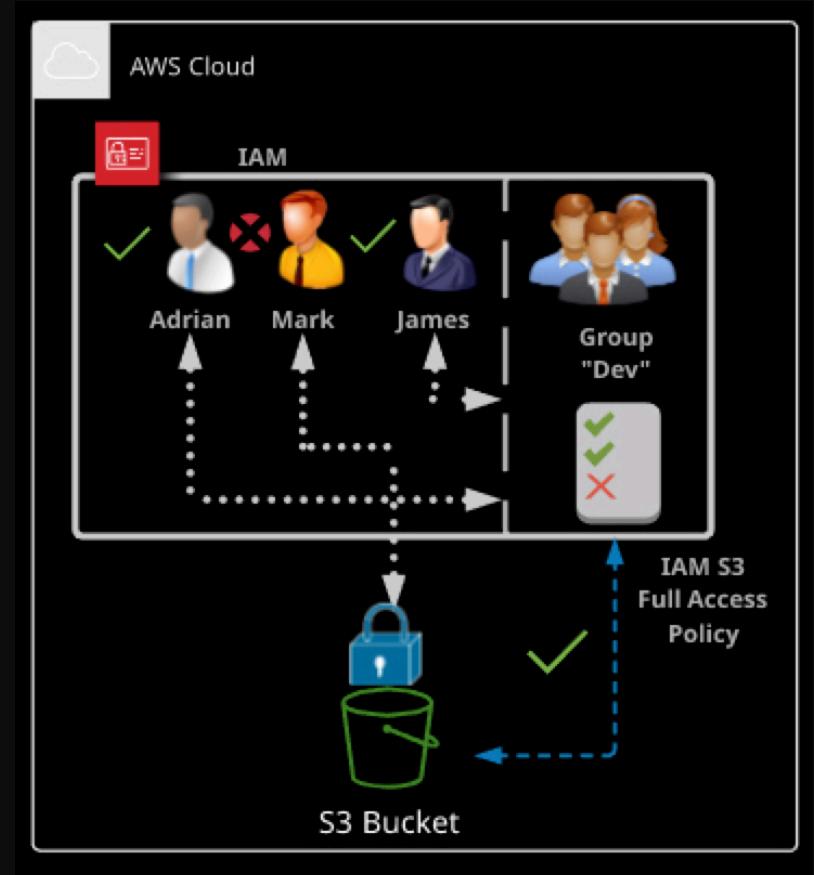
# Identity and Access Management (IAM)

- IAM Users
- IAM Groups
- IAM Policies
  - Dictate permissions (allow/deny)
  - Can be assigned to groups, users, and roles
- IAM Roles
- Access Keys



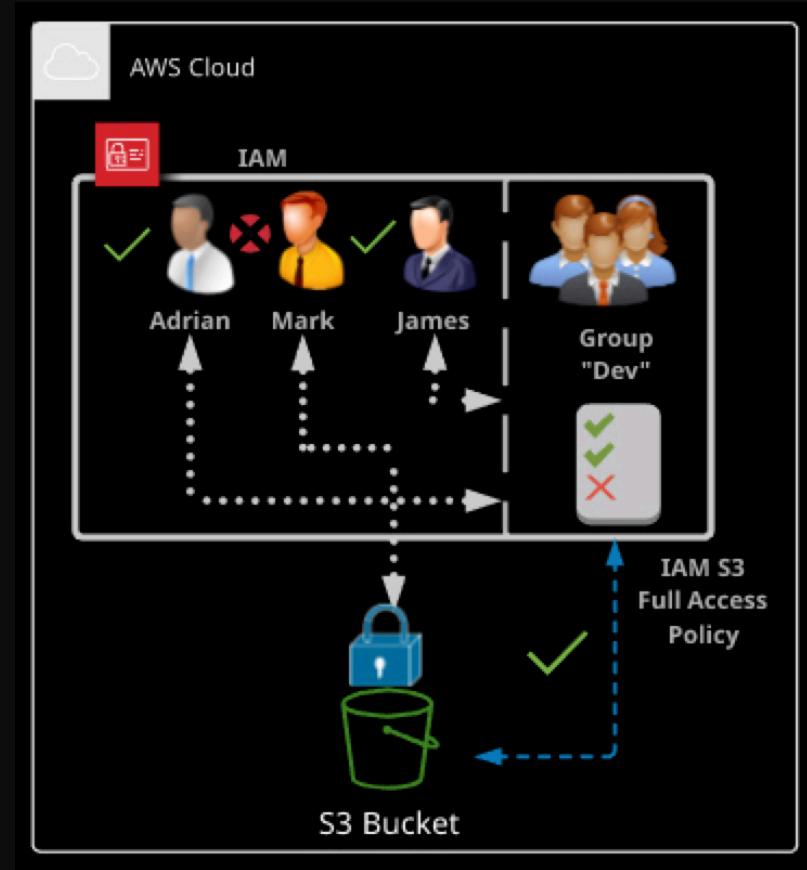
# Identity and Access Management (IAM)

- IAM Users
- IAM Groups
- IAM Policies
- IAM Roles
  - Preferred over access keys for security reasons
  - Provides short-term credentials
  - Used to grant users, apps, or services access
  - Example: Grant EC2 instances access to S3 buckets (look up other use cases)
- Access Keys



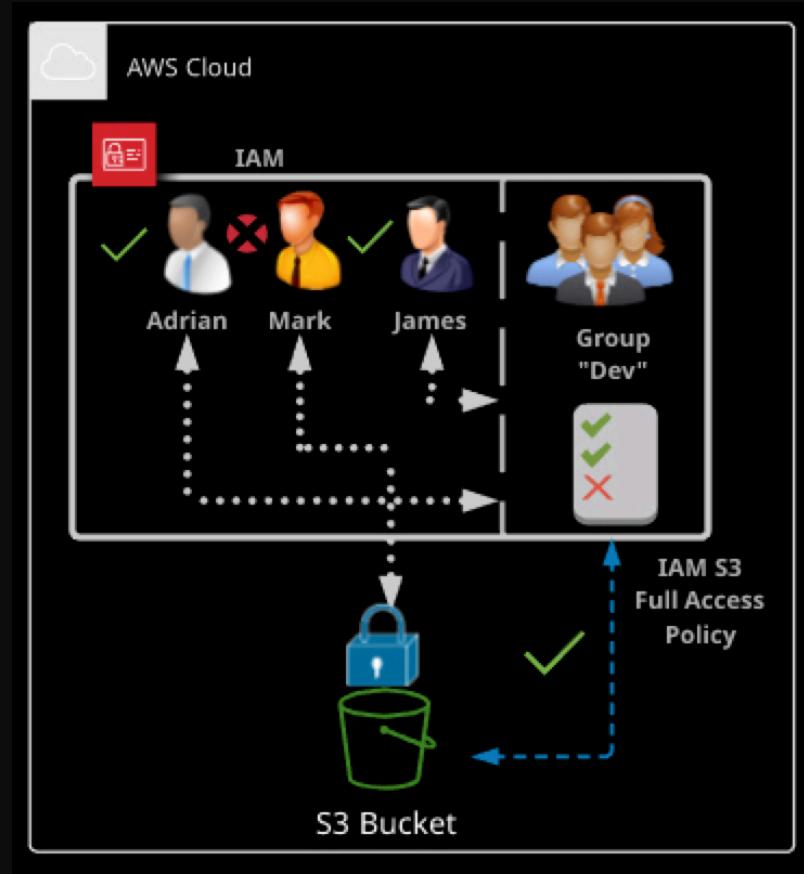
# Identity and Access Management (IAM)

- IAM Users
- IAM Groups
- IAM Policies
- IAM Roles
- Access Keys
  - Sometimes has to be used instead of IAM roles for things that live outside of AWS
  - Longer-term credentials (acts as a username/password combo)
  - Grants API, CLI, SDK access
  - Key pair made up of an *access key ID* and *secret access key*



# Identity and Access Management (IAM) – Key Concepts

- Always follow the *principle of least privilege* — least amount of access possible
- Enable Multi-factor authentication (MFA)
- Use password policies
- Use roles over access keys when possible



# Pop Quiz

You are getting ready to develop an application locally with the Ruby SDK which will require access to AWS services in order to function. Which of these do you need to authenticate application calls against AWS resources?

- A) An IAM User with API keys**
- B) An IAM User with username, email, and password**
- C) An IAM User with Access keys**
- D) An identity provider configured in IAM**

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# Pop Quiz

You are configuring an EC2 instance that requires access to an S3 bucket in order to access files. Which of these should you use to grant the instance access to S3?

- A) Launch the instance with an IAM role
- B) Launch the instance with an IAM policy
- C) Launch the instance with an IAM group
- D) Launch the instance with an Access Key

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# Pop Quiz

One of your developers needs access to certain AWS services in your org's account. Which of these principles should you follow when granting access?

- A) Enable MFA on the root account**
- B) Create an IAM user and apply an AWS-managed policy**
- C) Provide the least privileges possible**
- D) Enable password policies**

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# AWS Trusted Advisor

Trusted Advisor scans your infrastructure and compares it to best practices across 5 categories:

1. Cost Optimization
2. Performance
3. Security
4. Fault Tolerance
5. Service Limits

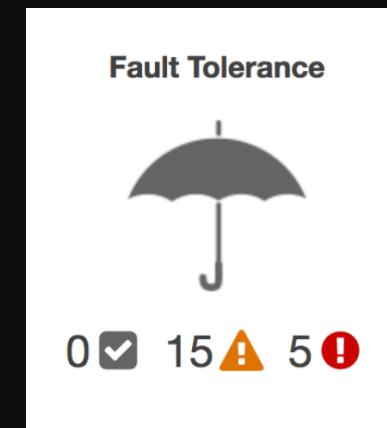
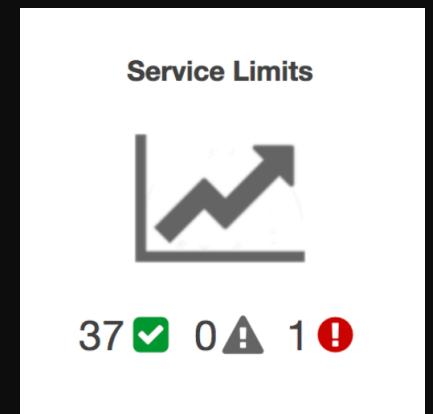
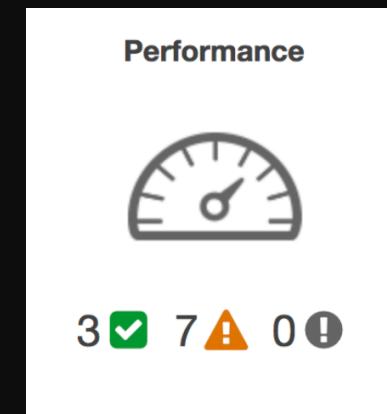
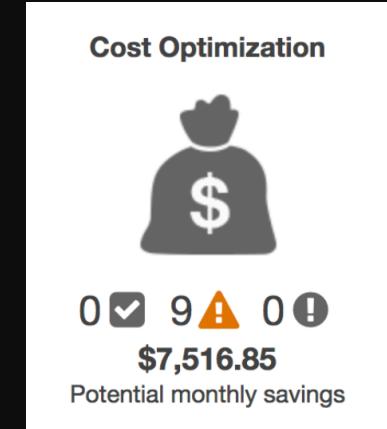


Image credit: AWS

# AWS Billing & Cost Tools

1. Budgets & Budgets Reports
2. Cost Explorer
3. Cost & Usage Reports
4. Cost Allocation Tags
5. AWS Total Cost of Ownership Calculator (TCO)
6. AWS Pricing Calculator

# AWS Budgets

Budget lets you customize thresholds that automatically notify when you:

- Exceed your AWS costs or usage based on your set budget
- Are forecasted to exceed costs or usage

It also lets you use filters to refine your budget

# AWS Budgets

AWS Budgets							
All budgets (7)				Cost budgets (5)			
Budget name	Budget type	Current	Budgeted	Forecasted	Current vs. budgeted	Forecasted vs. budgeted	
Project Nemo Cost Budget	Cost	\$43.90	\$45.00	\$56.33	<div style="width: 97.55%; background-color: #0072bc; height: 10px;"></div> 97.55%	<div style="width: 125.17%; background-color: #e74c3c; height: 10px;"></div> 125.17%	...
Eastern US Regional Budget	Cost	\$85.21	\$100.00	\$125.28	<div style="width: 85.21%; background-color: #0072bc; height: 10px;"></div> 85.21%	<div style="width: 125.28%; background-color: #e74c3c; height: 10px;"></div> 125.28%	...
Total Monthly Cost Budget	Cost	\$141.50	\$175.00	\$187.00	<div style="width: 80.86%; background-color: #0072bc; height: 10px;"></div> 80.86%	<div style="width: 106.86%; background-color: #e74c3c; height: 10px;"></div> 106.86%	...
Total EC2 Cost Budget	Cost	\$136.90	\$200.00	\$195.21	<div style="width: 68.45%; background-color: #0072bc; height: 10px;"></div> 68.45%	<div style="width: 97.61%; background-color: #0072bc; height: 10px;"></div> 97.61%	...
S3 Usage Budget	Usage	3,601 Requests	5,500 Requests	4,675.75 Requests	<div style="width: 65.47%; background-color: #0072bc; height: 10px;"></div> 65.47%	<div style="width: 85.01%; background-color: #0072bc; height: 10px;"></div> 85.01%	...
Monthly DataTransfer Usage Budget	Usage	2.28 GB	4 GB	3.07 GB	<div style="width: 57.05%; background-color: #0072bc; height: 10px;"></div> 57.05%	<div style="width: 76.63%; background-color: #0072bc; height: 10px;"></div> 76.63%	...
Quarterly Budget	Cost	\$133.10	\$550.00	\$516.10	<div style="width: 24.2%; background-color: #0072bc; height: 10px;"></div> 24.2%	<div style="width: 93.84%; background-color: #0072bc; height: 10px;"></div> 93.84%	...

Image credits: <https://aws.amazon.com/aws-cost-management/aws-budgets/>

# Budget Reports

Send reports daily, weekly, or monthly

# AWS Cost & Usage Reports

AWS Cost and Usage reports provide access to detailed data, so that you can better analyze and understand your AWS costs and service usage.

CSV reports are delivered to Amazon S3 where you can retrieve & analyze them.

# Cost Explorer

Cost Explorer is a tool that allows you to visualize (with graphs) and analyze your costs and usage. Very helpful in identifying cost and usage patterns, such as *Reserved Instances* usage.

You can customize views, and these are provided by default:

- Monthly spend by service (over last 3 months)
- Monthly spend by *linked account* (over last 3 months)
- Daily spend (over last 60 days)

# Cost Explorer

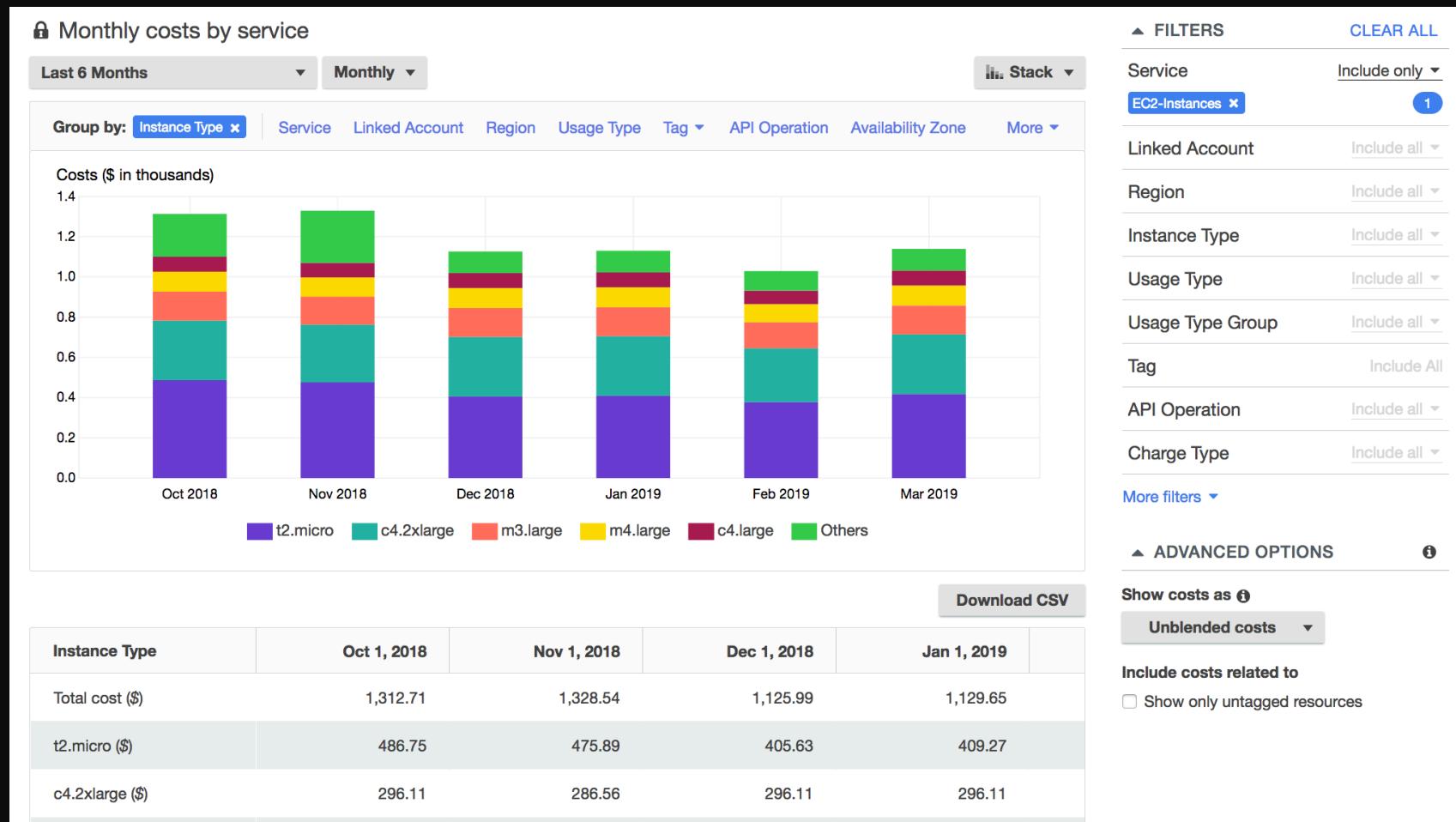


Image credits: <https://aws.amazon.com/aws-cost-management/aws-cost-explorer/>

# Cost Allocation Tags

Enabling cost allocation tags will tag resources launched with data that can help you identify where costs are being allocated

Helps:

- Track costs at a detailed level
- Organize resources and costs

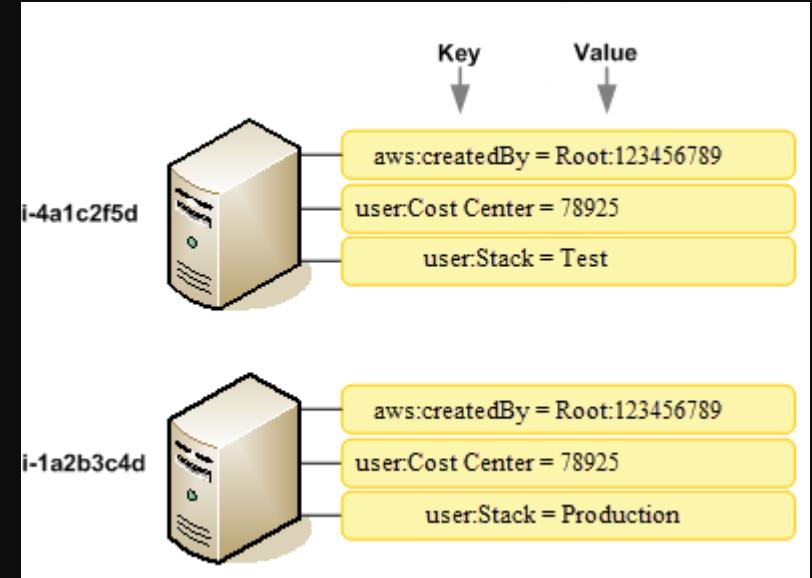


Image credit:

<https://docs.aws.amazon.com/awsaccountbilling/latest/aboutv2/cost-alloc-tags.html>

# AWS Total Cost of Ownership (TCO)

Free tool that lets you estimate the cost savings you would receive by using AWS instead of your on-prem data center (or colocation).

- Helpful for communicating cost savings to executive team
- Helps create transition strategy from a cost & budget perspective

# AWS Pricing Calculator (replacing Simple Monthly Calculator)

Helps estimate costs based on specific scenarios. So before deploying or building an application, you can run cost estimates based on your expected AWS usage.

<https://calculator.aws/>

# Pop Quiz

Which AWS service best solves this scenario:  
Your finance department is worried about  
AWS costs and has asked you to keep an eye  
on expenses. To do this, you need to set a  
notification that contacts you when you reach  
a certain cost threshold.

- A) AWS Cost Explorer**
- B) Budgets Reports**
- C) AWS Cost & Usage Notifications**
- D) AWS Budgets**

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Your organization is considering moving part or all of its resources from on-prem to AWS. Before making the final decisions, your executive team has asked for a detailed cost analysis report. What AWS tool can help you with this?

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Your organization is getting ready to launch a new application on AWS. This application will require advanced infrastructure to be deployed, and your finance team has asked for a cost estimate before approving the budget. Which AWS tools can you use to help?

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# Homework

Review key terms & additional information

- ✓ **Download presentation slides and review**
- ✓ **Download sample AWS exam questions and answer:**
  - ✓ #7
- ✓ **Use Linux Academy's Hands-On Labs and/or create your own AWS account to review AWS IAM and Budget/Cost tools**

Read up on the following:

- ✓ **EC2** - <https://aws.amazon.com/ec2/>
- ✓ **Reserved Instances** -  
<https://aws.amazon.com/ec2/pricing/reserved-instances/>
- ✓ **VPC** - <https://aws.amazon.com/vpc/>
- ✓ **AWS Marketplace** - <https://aws.amazon.com/marketplace>



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# Additional Info

Next meeting - August 28th:  
EC2 + VPC

Links / Resources / Info  
[https://github.com/Ellopunk/Cloud\\_Practitioner](https://github.com/Ellopunk/Cloud_Practitioner)

Linux Academy Community  
<https://linuxacademy.com/join/community>

Linux Academy Slack Channel  
<https://linuxacademy-community-slack.herokuapp.com/>

Thank you  
If you found this helpful, please invite your colleagues!