Summary: Introduction to Pricing and Support

This lesson serves as an introduction to the final module, which focuses on two critical aspects of operating in the cloud: understanding costs and knowing what support is available.

The Core Questions

As businesses use AWS, two fundamental questions arise:

1. **"What does it cost?"** - Understanding how AWS charges for its services and how to manage those expenses.
2. **"What support is available?"** - Knowing where to turn for help with technical issues, guidance, and strategic advice.

Key Topics Covered in this Module

This module is structured around three main pillars that address the core questions:

1. **AWS Pricing:**
    - This section will dive into the key concepts of how AWS pricing works.
    - It will introduce essential tools for managing your cloud finances, including the **AWS Billing Dashboard**, **AWS Budgets**, and **AWS Cost Explorer**, which help you track spending, set limits, and forecast future costs.
2. **AWS Support:**
    - Just as a business needs support for its physical equipment, cloud users need support for their virtual resources.
    - This section will explore the different **AWS Support plans** available, allowing you to choose the right level of assistance for your business needs.
    - It will also cover other valuable resources like the **AWS Marketplace** and the **AWS Partner Network**.
3. **Cost Optimization:**
    - A major benefit of the cloud is the ability to optimize costs.
    - The final part of the module will apply the concepts learned to real-world scenarios, illustrating practical strategies for managing and reducing your AWS expenses efficiently.

By the end of this module, you will have a foundational understanding of how to manage the financial and operational aspects of your AWS environment effectively.

Summary: AWS Pricing Concepts

This lesson explains the fundamental principles of AWS pricing and the main factors that determine the cost of using AWS services.

The Three Fundamental Concepts of AWS Pricing

AWS pricing is designed to be flexible and is built on three core concepts that allow you to

manage costs effectively.

1. **Pay-as-you-go:**
    - **What it is:** You pay only for the individual services you consume, for as long as you use them. There are no upfront costs, long-term contracts, or complex licensing agreements.
    - **Benefit:** This model allows you to adapt to changing business needs without over-provisioning resources, making it ideal for variable or unpredictable workloads.
2. **Save when you commit:**
    - **What it is:** For workloads with predictable usage, you can receive significant discounts by committing to a certain level of usage over a 1- or 3-year term.
    - **Benefit:** Services like AWS Savings Plans and Reserved Instances reward long-term commitment with lower hourly rates compared to on-demand pricing.
3. **Pay less by using more:**
    - **What it is:** AWS offers volume-based discounts and tiered pricing for many services. As your usage of a service increases, the per-unit cost decreases.
    - **Benefit:** You benefit from economies of scale, meaning the more you use AWS, the cheaper it becomes on a per-unit basis for services like storage and data transfer.

The Three Primary Drivers of Cost

While each AWS service has its own unique pricing model, costs are generally driven by three main factors across the platform:

1. **Compute:**
    - **What it is:** The processing power used by services like Amazon EC2, AWS Lambda, and Amazon ECS.
    - **How it's billed:** Typically charged per hour or per second, from the time you launch a resource until you terminate it. The cost varies based on the instance type, size (CPU/memory), and other configurations.
2. **Storage:**
    - **What it is:** The data you store using services like Amazon S3, Amazon EBS, and Amazon EFS.
    - **How it's billed:** Typically charged per gigabyte (GB). The cost depends on the amount of data stored and the duration of storage. Some services, like S3, have different storage classes with different pricing based on access frequency.
3. **Outbound Data Transfer:**
    - **What it is:** Data moved *from* an AWS Region *out* to the internet.
    - **How it's billed:** Charged per gigabyte (GB). In most cases, inbound data transfer (from the internet into AWS) and data transfer between AWS services

within the same Region are free.

Key Takeaway: Understanding these three concepts and three cost drivers is essential for managing your AWS spending. However, always consult the specific pricing page for each AWS service to understand its detailed billing nuances.

Summary: AWS Pricing and Billing Services

This lesson details the specific AWS services and tools that help you organize, track, manage, and forecast your cloud spending, ensuring financial governance and cost optimization.

Centralized Management: AWS Organizations & Consolidated Billing

For businesses with multiple AWS accounts (e.g., for different departments or environments like development and production), AWS offers a way to simplify billing.

- **AWS Organizations:** This is an account management service that allows you to group multiple AWS accounts into a single organization.
- **Consolidated Billing:** A key feature of AWS Organizations. Instead of receiving separate bills for each account, all charges are rolled up into a single bill for the primary (management) account.
    - **Benefits:**
        - **Centralized View:** Provides a clear overview of the entire organization's AWS spending.
        - **Volume Discounts:** The combined usage of all accounts is aggregated, which can help you qualify for volume-based discounts sooner.

Tools for Tracking, Managing, and Forecasting Costs

AWS provides several purpose-built tools to give you visibility and control over your cloud expenses.

1. AWS Billing and Cost Management Dashboard:

- **What it is:** Your starting point for understanding your expenses. It provides a high-level overview of your AWS spending.
- **Key Features:**
    - Displays your current month-to-date spending.
    - Shows a forecast of your likely month-end charges.
    - Provides a breakdown of costs by your most-used services.

2. AWS Budgets:

- **What it is:** A service that allows you to set custom budgets to track your costs and

usage against predefined limits.
- **Key Features:**
    - Create budgets based on cost, usage, or even Savings Plans/Reserved Instance utilization.
    - Set up **alerts** that notify you via email or SNS when you are approaching or have exceeded your budgeted amount.
    - Can be configured for specific services, linked accounts, or resource tags.

3. AWS Cost Explorer:

- **What it is:** A powerful tool for deep-diving into your cost and usage data over time.
- **Key Features:**
    - Provides interactive graphs and reports to visualize spending patterns.
    - Allows you to filter and group costs by various dimensions, including AWS service, Region, linked account, and **tags**.
    - Offers forecasting capabilities to predict future costs based on historical trends.
    - **Tag-based cost allocation** is a key feature, allowing you to assign costs to specific projects, departments, or environments.

Planning for Future Costs: AWS Pricing Calculator

- **What it is:** A web-based planning tool used to **estimate the cost of your AWS workloads *before* you deploy them.**
- **How it Works:** You configure the services you plan to use (e.g., EC2 instance types, storage amounts, data transfer volumes), and the calculator provides a detailed estimate of your monthly bill.
- **Use Cases:**
    - Creating budget estimates for new projects.
    - Comparing the cost of different architectural solutions.
    - Justifying cloud spending to stakeholders.

Summary: AWS Support Plans

This lesson outlines the different support options AWS provides to help customers, from those just starting to large enterprises running mission-critical workloads. The plans are tiered, with each level building upon the services offered in the previous one.

The Four Main AWS Support Plans

AWS offers a range of support plans designed to fit specific needs and budgets.

1. **Basic Support:**
    - **Cost:** Free (included with all AWS accounts).

    - **Audience:** All AWS customers.
    - **Features:**
        - 24/7 access to customer service for billing and account issues.
        - Access to documentation, whitepapers, and the AWS re:Post community forums.
        - Access to the **AWS Personal Health Dashboard**.
        - Access to the core checks in **AWS Trusted Advisor**.
2. **Developer Support:**
    - **Cost:** Monthly fee.
    - **Audience:** Businesses experimenting or testing in AWS.
    - **Features:** Includes everything in Basic Support, plus:
        - Business-hours email access to Cloud Support Associates.
        - **Guaranteed Response Times:**
            - General guidance: < 24 hours.
            - System impaired: < 12 hours.
3. **Business Support:**
    - **Cost:** Monthly fee (higher than Developer).
    - **Audience:** Businesses running production workloads in AWS.
    - **Features:** Includes everything in Developer Support, plus:
        - 24/7 phone, email, and chat access to Cloud Support Engineers.
        - **Full set of AWS Trusted Advisor checks**.
        - Access to Infrastructure Event Management for an additional fee to help plan for large-scale events.
        - **Faster Response Times:**
            - Production system impaired: < 4 hours.
            - Production system down: < 1 hour.
4. **Enterprise Support (On-Ramp and Enterprise):**
    - **Cost:** Highest monthly fee.
    - **Audience:** Businesses running business-critical and mission-critical workloads.
    - **Features:** Includes everything in Business Support, plus:
        - A designated **Technical Account Manager (TAM)** who serves as a primary point of contact and provides proactive architectural and operational guidance.
        - **Fastest Response Times:**
            - Business-critical system down: < 30 minutes (On-Ramp).
            - Mission-critical system down: < 15 minutes (Enterprise).

Additional Support Resources

Beyond the formal support plans, AWS provides several other avenues for assistance:

- **AWS re:Post & Knowledge Center:** A community-driven Q&A platform combined with a library of articles and videos answering frequently asked questions.

- **AWS Trust and Safety Center:** A dedicated resource for reporting abusive or illicit activity on AWS.
- **AWS Solutions Architects (SAs):** For customers on Business and Enterprise plans, SAs offer expert architectural guidance and best practice recommendations.
- **AWS Professional Services:** A paid, project-based consulting service that assists with complex migrations, security audits, and performance tuning.
- **Self-Support Resources:** Extensive **AWS Documentation**, including user guides, whitepapers, and blogs, is available for free to all users.

Summary: AWS Marketplace and AWS Partner Network

This lesson introduces two key components of the AWS ecosystem that extend beyond native AWS services: the AWS Marketplace for acquiring third-party software, and the AWS Partner Network (APN) for leveraging expert services and solutions.

AWS Marketplace: A Digital Catalog for the Cloud

What it is: The **AWS Marketplace** is a curated digital catalog where customers can easily find, test, buy, and deploy third-party software, data, and services that run on AWS.

- **Analogy:** It functions like an app store for your AWS environment.

Key Benefits & Features:

- **Accelerated Innovation:** Prevents you from having to "reinvent the wheel" by providing ready-to-use solutions.
- **Simplified Procurement:** Streamlines the purchasing process with flexible pricing models (pay-as-you-go, subscriptions) and consolidated billing through your existing AWS bill.
- **Wide Range of Categories:** Offers thousands of listings from independent software vendors (ISVs) across areas like:
    - Security
    - Networking & Storage
    - Machine Learning & AI (e.g., pre-built models)
    - Data & Analytics (e.g., business intelligence platforms)
    - Software as a Service (SaaS) (e.g., project management tools)

AWS Partner Network (APN): A Global Community of Experts

What it is: The **AWS Partner Network (APN)** is a global community of technology and consulting businesses that use AWS to build specialized solutions and services for customers.

How to Engage with the APN:

1. **Work with an AWS Partner:** You can hire an AWS Partner to provide specialized expertise for your projects. For example, a retail company might hire a partner specializing in data analytics to build a personalization engine for their website.
2. **Become an AWS Partner:** Your own company can join the APN to build and sell your solutions on AWS, gaining access to a wide range of resources and support.

Key Benefits of Becoming an AWS Partner:

- **Funding Benefits:** Access to various funding programs to help build, market, and sell your offerings with AWS.
- **Partner Events:** Opportunities to network, learn about new services, and collaborate with AWS experts through webinars and workshops.
- **Partner Training and Certification:** Access to unique, partner-focused training and certification paths to upskill your team on AWS.

Summary: Cloud in Real Life - Cost Optimization

This lesson applies various pricing and service concepts to a real-world architecture to demonstrate several techniques for optimizing costs across the AWS environment. The scenario involves a common application setup: running on Amazon EC2 instances, using an Amazon RDS database, and storing assets in Amazon S3.

The Architecture: A Common Web Application Setup

The discussion centers around an application with three main components, each offering opportunities for cost savings:

1. **Compute:** Amazon EC2 instances running the application logic.
2. **Database:** An Amazon RDS instance for transactional data.
3. **Storage:** An Amazon S3 bucket for static assets and other objects.

Cost Optimization Techniques by Service

1. Amazon EC2 (Compute)

- **Rightsizing:** Analyze your actual resource usage to ensure you are not using an instance that is larger (and more expensive) than your workload requires. **AWS Compute Optimizer** is a service that can automatically identify overprovisioned instances and recommend more cost-effective options.
- **Use Spot Instances:** For workloads that can be interrupted (like batch processing or development/test environments), Spot Instances offer access to spare EC2 capacity at discounts of up to 90% compared to On-Demand prices.
- **Leverage Auto Scaling:** Instead of manually managing a fixed fleet of instances, use **EC2 Auto Scaling** to automatically add instances during peak demand and remove

them during quiet periods. This ensures you only pay for the compute capacity you actually need.
- **Clean Up Unused Resources:** Regularly identify and delete unused resources like detached Amazon EBS volumes or old EBS snapshots that are no longer needed, as these continue to incur storage costs.

2. Amazon RDS (Database)

- **Rightsizing:** Similar to EC2, ensure your RDS database instance is appropriately sized for its workload. Don't pay for more database power than you need.
- **Offload Read Traffic:** For high-read workloads, instead of scaling up your primary database to a larger, more expensive instance, you can:
    - Use **Read Replicas** to scale read capacity horizontally.
    - Implement a caching layer with **Amazon ElastiCache** to store and serve frequently requested data, reducing the load on the primary database.

3. Amazon S3 (Storage)

- **Use the Right Storage Class:** Move data to more cost-effective storage tiers based on access patterns. **S3 Intelligent-Tiering** can automate this process by monitoring your data and moving it between frequent and infrequent access tiers.
- **Compress Data:** Compressing data before uploading it to S3 can significantly reduce storage costs, especially for text-heavy files.
- **Use S3 Lifecycle Policies:** Automate the management of your data by creating rules to:
    - Transition older data to cheaper archival tiers like S3 Glacier.
    - Automatically delete old object versions or expired data that is no longer needed for compliance or business reasons.

4. Data Transfer

- **Minimize Data Transfer:** Be mindful that data transfer out of an AWS Region to the internet, or even between Availability Zones, can incur costs. Architect your application to reduce unnecessary data movement.
- **Use VPC Endpoints:** For communication between your VPC and supported AWS services like Amazon S3, use **VPC Endpoints**. This keeps traffic within the AWS private network, avoiding data transfer charges that would be incurred if the traffic went over the public internet.

Key Takeaway

Cost optimization on AWS is not about a single solution but about applying a combination of small, intelligent changes across multiple services. By rightsizing, using the appropriate pricing models, automating scaling, and cleaning up unused resources, you can achieve

significant savings while often improving the performance and reliability of your architecture.