**AWS Solutions Architect - Associate**

* **Cloud Computing Overview**:
  + Definition and benefits of cloud computing.
  + Different cloud computing models.
  + Historical context and evolution of cloud computing.
  + Overview of the AWS platform.
* **AWS Cloud Services**:
  + Detailed breakdown of various AWS services.
  + Security and compliance considerations.
  + Understanding AWS regions and availability zones.

This should give you a good foundation as you prepare for the AWS Certified Solutions Architect – Associate exam. For more detailed information, I recommend watching the specific videos in the course.

**Cloud Computing Overview**

**Cloud computing defined**

* **Definition of Cloud Computing**:
  + Cloud computing involves using internet-based solutions, essentially utilizing someone else's servers connected to the internet.
  + Examples of Cloud: Dropbox, Google, Microsoft Azure, Amazon Web Services.
* **Benefits of Cloud Computing**:
  + Flexibility and scalability of resources.
  + Reduced need for physical infrastructure on-premises.
* **Cloud Computing Models**:
  + Various implementation models, including full cloud, hybrid (cloud and on-premises), and on-premises.
* **History of AWS**:
  + Understanding the evolution of AWS helps grasp its current structure and offerings.
* **AWS Platform**:
  + Overview of the organizational structure of AWS cloud.
* **Security and Compliance**:
  + Importance of maintaining security requirements when moving to the cloud.
* **Regions and Availability**:
  + Concept of AWS regions and availability zones to ensure optimal performance and compliance.

This video provides a foundational understanding of cloud computing and its relevance to AWS, which is essential for your preparation for the AWS Certified Solutions Architect – Associate exam.

**Benefits of cloud computing**

* **Reduced Costs**:
  + **Hardware Costs**: No need to purchase and maintain physical servers; pay as you use.
  + **Operational Costs**: Less time and fewer resources needed to manage infrastructure.
  + **Deployment Times**: Faster deployment compared to traditional on-premises setups.
* **Increased Efficiency**:
  + **Resiliency**: Automatic health monitoring and recovery of instances.
  + **Performance**: Ability to scale resources automatically based on demand.
  + **Capacity**: Flexible storage and processing capacity to meet current and future needs.

These benefits highlight how cloud computing can optimize both costs and performance for businesses.Top of Form

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**Cloud computing models**

* **Full Cloud Deployment (All-in Cloud Deployment)**: All components, including databases, compute processing, storage, and application code logic, are deployed in the cloud. Nothing is on-premises.
* **Hybrid Deployment**: Some resources are internal (on-premises) and others are in the cloud. This model allows for flexibility, such as keeping intensive processing or frequently accessed data on-premises while using the cloud for other tasks.
* **Infrastructure as a Service (IaaS)**: Your entire infrastructure, including servers, storage, and network segments, is in the cloud. You manage the infrastructure, while the cloud provider (e.g., AWS) runs it.
* **Platform as a Service (PaaS)**: You manage the applications deployed on the platform, but not the underlying infrastructure. This is similar to traditional web hosting.
* **Software as a Service (SaaS)**: The software is developed and managed by someone else, and you simply use it from the cloud. Examples include email services like Gmail or Yahoo Mail.

These models provide different levels of control and management, allowing organizations to choose the best fit for their needs.

**History**

* **Initial Development**:
  + AWS started internally at Amazon to serve its own needs.
  + Launched the first service, Simple Queue Service (SQS), in 2004.
* **2006 Relaunch**:
  + Introduced Simple Storage Service (S3) and Elastic Compute Cloud (EC2).
  + Marked the beginning of AWS as we know it today.
* **Subsequent Developments**:
  + 2007: SimpleDB for database access.
  + 2008: Elastic IP for static IP addresses.
  + 2009: Management Console and Virtual Private Cloud (VPC).
  + 2010: Route 53 (DNS), IAM, and SNS.
  + 2011: ElastiCache and CloudFormation.
  + 2012: SWF and DynamoDB, with 160 new features.
  + 2013: OpsWorks, Kinesis, CloudHSM, AWS certification program, and 280 new features.
  + 2014: Redshift and 516 new features.
  + 2015: CloudTrail, Data Pipeline, Web Application Firewall, QuickSight, and 722 new features.
  + 2017: Direct Connect, AWS Organizations, and EC2 Spot Advisor.
* **Continuous Expansion**:
  + AWS continues to grow with thousands of features and services.

This video provides a comprehensive overview of the evolution and growth of AWS, highlighting key milestones and services introduced over the years.

**Platform**

* **Core Components of AWS Platform**:
  + **Compute**: AWS provides processors, memory, and storage to perform compute operations in the cloud.
  + **Storage**: Various storage options, including object storage, block storage, and integration with other cloud providers.
  + **Databases**: AWS offers both custom and typical databases (e.g., MySQL) as a service.
  + **Networking**: Virtual Private Cloud (VPC) allows creating a virtual network of devices in the cloud.
* **Security**:
  + Security is a crucial aspect that wraps around all core components (compute, storage, databases, networking).

This video provides a foundational understanding of the key elements that make up the AWS platform, which is essential for designing efficient and secure cloud solutions.

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**AWS Cloud Services**

**Services**

* **Compute Services**:
  + **EC2**: Primary focus for launching virtual machines.
  + **Elastic Beanstalk**: Simplifies application deployment.
  + **Lambda**: Important for the exam, discussed later in the course.
  + **ECS and EKS**: Relevant for web applications and containers.
* **Storage Services**:
  + **S3**: Object-based storage, essential for the exam.
  + **EFS**: Elastic File System, used with EC2 instances.
  + **Glacier**: Archival storage for infrequently accessed data.
  + **Storage Gateway**: Seamless access to cloud storage.
* **Database Services**:
  + **RDS**: Relational Database Service.
  + **DynamoDB**: NoSQL database solution.
  + **ElastiCache**: In-memory caching for faster data retrieval.
  + **Redshift**: Data warehousing, lightly covered in the exam.
* **Migration Services**:
  + **Migration Hub**: For migrating VMware/Hyper-V VMs to AWS.
  + **Snowball**: Physical device for transferring large amounts of data to AWS.
* **Network and Content Delivery**:
  + **VPC**: Virtual Private Cloud for networking.
  + **CloudFront**: Content delivery network.
  + **Route 53**: DNS service.
  + **Direct Connect**: VPN connection between data center and AWS.

These points highlight the key AWS services you need to focus on for the certification exam.

* **Media Services**: Includes streaming and transcoding media, and AWS Recognition for text and object recognition in videos.
* **Machine Learning**: AWS Recognition is part of this, focusing on high-end analytics and pattern recognition.
* **Analytics**: Kinesis is highlighted for business decision support, though in-depth knowledge isn't required for the exam.
* **Security, Identity, and Compliance**:
  + **IAM (Identity and Access Management)**: Key for the exam.
  + Other important services: Cognito, Inspector, AWS Organizations, CloudHSM, Directory Service, WAF, and Shield.
* **Cost Management**: Understanding cost-effective solutions is crucial. For example, Glacier storage is cheaper than S3 for archival data.
* **Mobile Services**: Includes mobile device management, but not a major exam focus.
* **Application Integration**:
  + **Simple Notification Service (SNS)** and **Simple Queue Service (SQS)**: Important for the exam.
* **Other Services**:
  + **Customer Engagement** and **Business Productivity**: Not major exam focuses.
  + **Desktop and App Streaming**: Includes Workspaces and AppStream, not heavily covered in the exam.
  + **IoT (Internet of Things)**: Not a major exam focus but good to know.
  + **Game Development**: Not a major focus unless you're in that field.

These points cover the key AWS services discussed in the video and their relevance to the certification exam.

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**Compute:**

* **Lambda functions**
* **Batch**
* **Serverless application repository**
* **AWS Outposts**
* **EC2 Image Builder**
* **AWS App Runner**

**Storage:**

* **FSX**
* **AWS Backup**
* **AWS Elastic Disaster Recovery**

**Databases:**

* **Neptune**
* **Amazon QLDB**
* **DocumentDB**
* **Keyspaces**
* **Timestream**
* **MemoryDB for Redis**

**Migration and Transfer:**

* **AWS Transfer Family**
* **Data sync**
* **AWS mainframe modernization**

**Networking and Content Delivery:**

* **AWS App Mesh**
* **AWS Cloud Map**
* **Global Accelerator**
* **AWS Private 5G**

**Developer Tools:**

* **CodeArtifact**
* **CloudShell**
* **AWS FIS (fault injection simulator)**

**Management and Governance:**

* **AWS AppConfig**
* **Control Tower**
* **AWS License Manager**
* **AWS Well Architected tool**
* **AWS Health Dashboard**
* **AWS Chatbot**
* **Launch Wizard**
* **AWS Compute Optimizer**
* **Resource Group and Tag Editor**
* **Amazon Grafana and Prometheus**
* **AWS Proton**
* **AWS Resilience Hub**
* **Incident Manager**

**Media Services:**

* **MediaConnect**
* **Elemental Appliances and Software**
* **Amazon Interactive Video Service**
* **Nimble Studio**

**Analytics:**

* **AWS Data Exchange**
* **AWS Lake Formation**

**Security, Identity, and Compliance:**

* **Resource Access Manager**
* **IAM Identity Center**
* **Key Management Service**
* **Security Hub**
* **Detective**
* **AWS Signer**
* **AWS Network Firewall**
* **AWS Audit Manager Top of Form**

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**Security and compliance**

* **Shared Responsibility Model**: AWS and the customer share security responsibilities. AWS manages the security **of** the cloud (physical servers, managed services), while the customer manages security **in** the cloud (data, instances, applications).
* **AWS Responsibilities**: AWS ensures the security of physical infrastructure and managed services without disclosing exact physical locations.
* **Customer Responsibilities**: Customers are responsible for securing their data and instances, including updating, patching, and configuring operating systems and applications.
* **Compliance**: Customers must ensure compliance with regulations (e.g., PCIDSS, HIPAA) by managing their cloud resources according to their security policies.
* **Security Policies**: Existing security policies for passwords, data encryption, and authentication must be implemented in the cloud environment.

This summary should help you grasp the essential points covered in the video.

**Regions and availability**

* **Regions**: Geographic areas with AWS data centers. Each region contains multiple data centers.
* **Availability Zones**: One to six data centers within a region, designed for redundancy and high availability.
* **Data Centers**: Physical locations within Availability Zones, not disclosed for security reasons.
* **Global Infrastructure**: AWS has 55 Availability Zones within 18 regions, with plans to expand.
* **Edge Areas**: Servers near customers used by CloudFront to cache webpages close to users for better performance.

These points highlight how AWS structures its global infrastructure to ensure data is close to users and highly available.

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