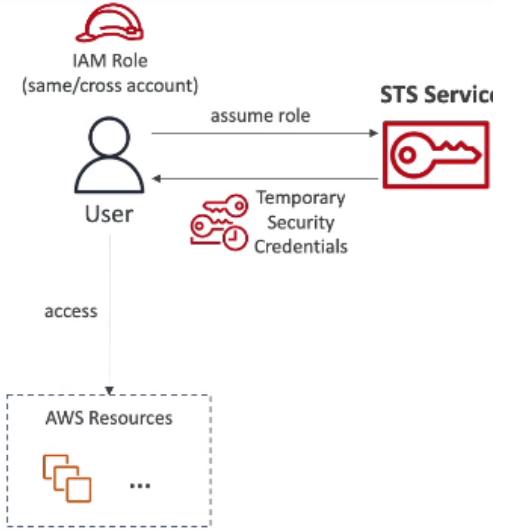


Security Token Service(STS)

AWS STS (Security Token Service)

- Enables you to create temporary, limited-privileges credentials to access your AWS resources
- Short-term credentials: you configure expiration period
- Use cases
 - Identity federation: manage user identities in external systems, and provide them with STS tokens to access AWS resources
 - IAM Roles for cross/same account access
 - IAM Roles for Amazon EC2: provide temporary credentials for EC2 instances to access AWS resources



1. [redacted]
2. Anytime from an example perspective that you see, you need to create temporary, limited privileges credentials think AWS STS

AWS Cognito

Sure. Amazon Cognito is an AWS service that provides user sign-up, sign-in, and authentication for your web and mobile apps. It also provides AWS credentials that your apps can use to access other AWS services.

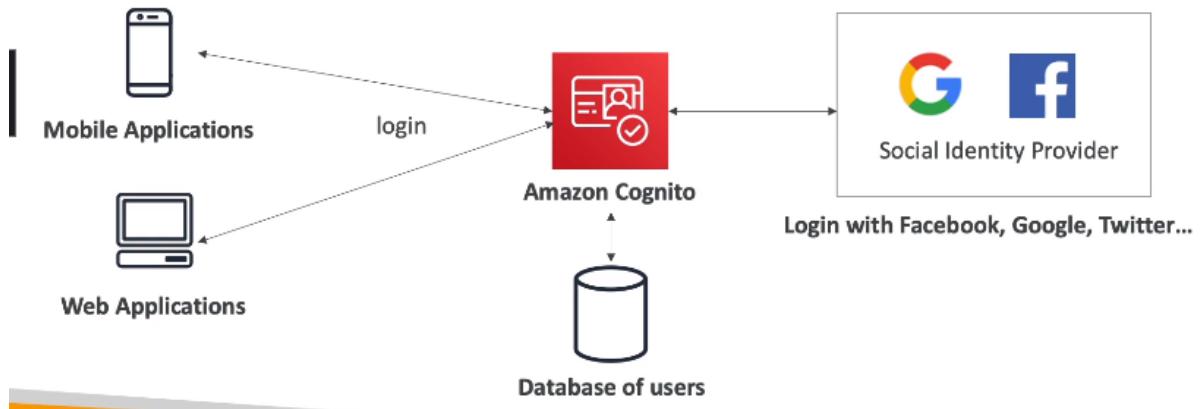
Here is a practical example of how Amazon Cognito can be used:

- You are building a mobile app that allows users to create and share shopping lists. You need to provide a way for users to sign up for the app and sign in to their accounts. You also need to provide a way for users to access their shopping lists from any device.
- You can use Amazon Cognito to handle all of these tasks. You can create a user pool in Amazon Cognito that will store user information such as their email address, password, and phone number. You can then use the Amazon Cognito SDK to integrate your app with the user pool. This will allow users to sign up for the app and sign in using their email address and password.
- Once a user is signed in, you can use the Amazon Cognito identity pool to generate AWS credentials for the user. These credentials can then be used by your app to access other AWS services, such as Amazon S3, to store the user's shopping lists.

1.

Amazon Cognito (simplified)

- Identity for your Web and Mobile applications users (potentially millions)
- Instead of creating them an IAM user, you create a user in Cognito



2.

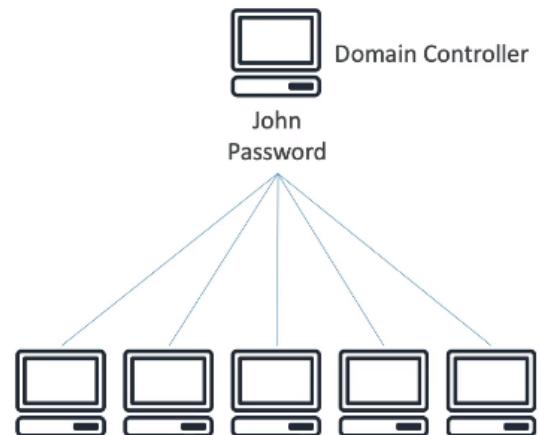
What is Microsoft Active Directory (AD)?

- Found on any Windows Server with AD Domain Services
 - Database of objects: User Accounts, Computers, Printers, File Shares, Security Groups
 - Centralized security management, create account, assign permissions
- 1.

Sure. Microsoft Active Directory (AD) is a directory service that helps organizations manage their IT infrastructure. It is a hierarchical database that stores information about users, computers, applications, and other network resources. AD uses this information to authenticate users and control access to resources.

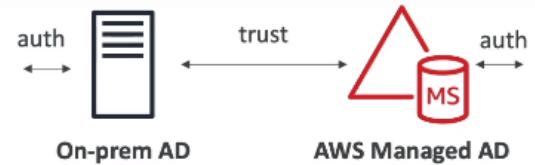
Here is a practical example of how Microsoft Active Directory can be used:

- You are the IT administrator for a company with 100 employees. You need to create a system that allows employees to sign in to their computers and access network resources. You also need to control who has access to different resources, such as sensitive files or applications.
 - You can use Microsoft Active Directory to handle all of these tasks. You can create user accounts for each employee and store their information in Active Directory. You can then assign permissions to each user account, so that they only have access to the resources that they need.
 - When an employee logs in to their computer, Active Directory will authenticate their username and password. If the authentication is successful, the employee will be granted access to their resources.
- 2.



AWS Directory Services

- AWS Managed Microsoft AD
 - Create your own AD in AWS, manage users locally, supports MFA
 - Establish “trust” connections with your on-premise AD
- AD Connector
 - Directory Gateway (proxy) to redirect to on-premise AD, supports MFA
 - Users are managed on the on-premise AD
- Simple AD
 - AD-compatible managed directory on AWS
 - Cannot be joined with on-premise AD



- 3.
4. at the Cloud Practitioner Exam, all you need to know is that Directory Services is used whenever you hear about Active Directory or Microsoft Active Directory.

AWS IAM Identity Center

AWS IAM Identity Center (successor to AWS Single Sign-On)

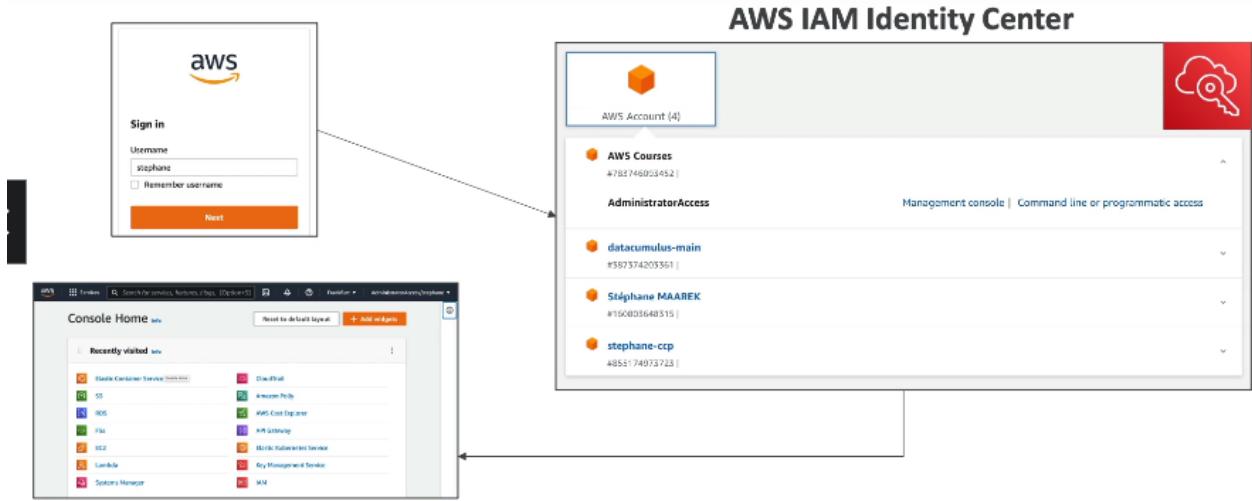


- One login (single sign-on) for all your
 - AWS accounts in AWS Organizations
 - Business cloud applications (e.g., Salesforce, Box, Microsoft 365, ...)
 - SAML2.0-enabled applications
 - EC2 Windows Instances
- Identity providers
 - Built-in identity store in IAM Identity Center
 - 3rd party: Active Directory (AD), OneLogin, Okta...



- 1.

AWS IAM Identity Center – Login Flow



- 2.
3. In this picture if we sign in..we have access to IAM Identity center
4. Here we have access to four accounts under my organization. And then, I can click on one of them and click on management console and I'm going to have direct access to the management console of a specific account.

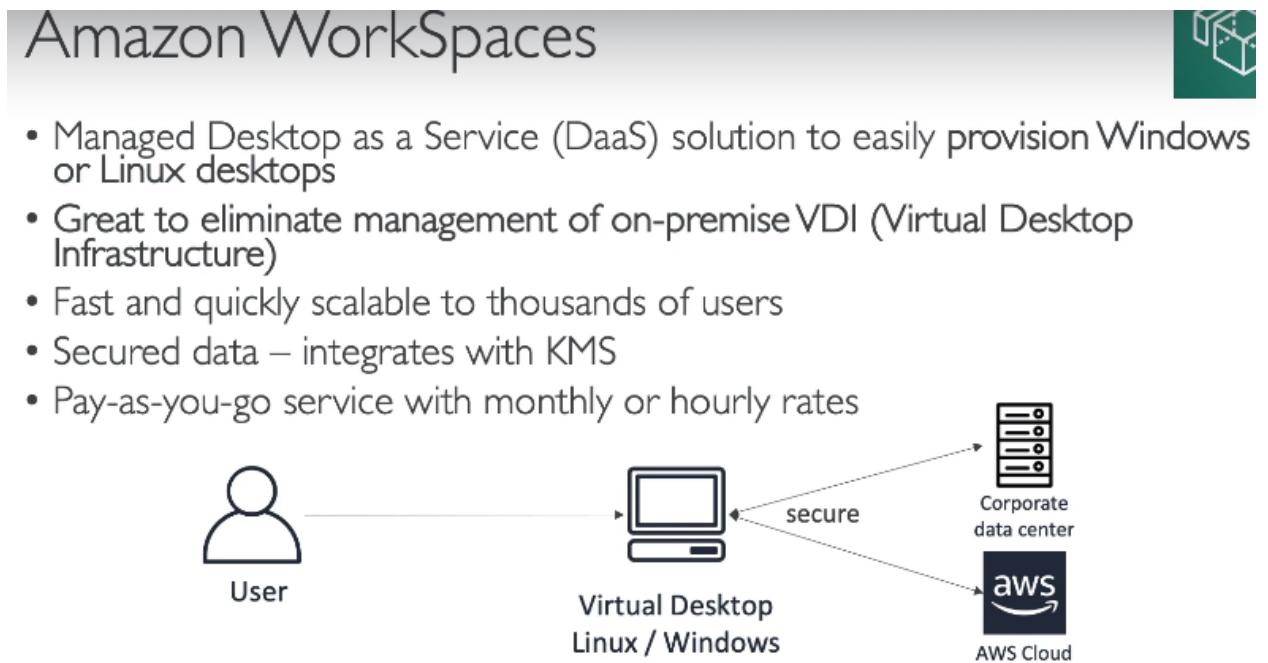
Advanced Identity - Summary

Advanced Identity - Summary

- IAM
 - Identity and Access Management inside your AWS account
 - For users that you trust and belong to your company
- Organizations – manage multiple AWS accounts
- Security Token Service (STS) – temporary, limited-privileges credentials to access AWS resources
- Cognito – create a database of users for your mobile & web applications
- Directory Services – integrate Microsoft Active Directory in AWS
- IAM Identity Center – one login for multiple AWS accounts & applications

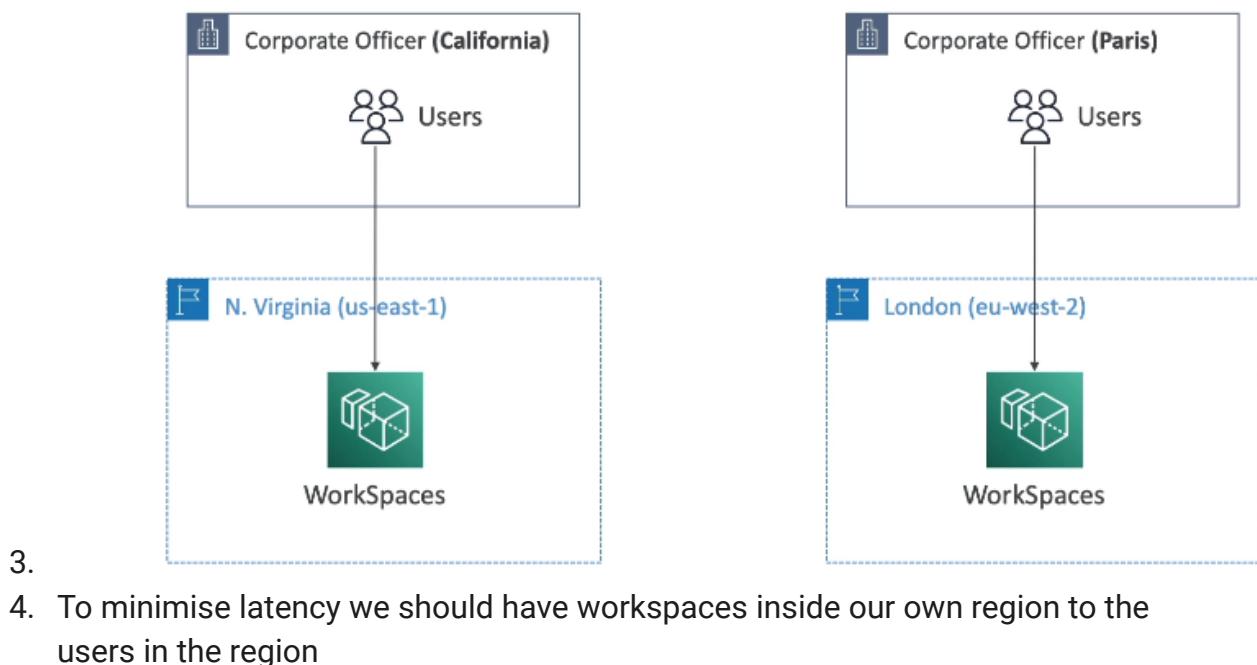
- 1.

Other Services - AWS WorkSpaces



- 1.
2. if you see anything related to virtual desktops or manage desktop as a service, think workspaces.

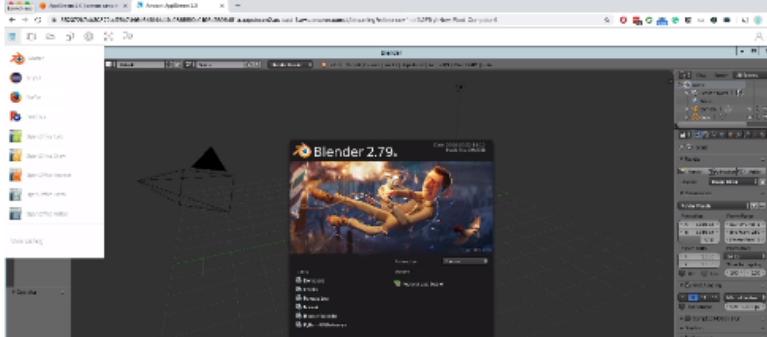
Amazon WorkSpaces – Multiple Regions



5. And overall, if you wanna minimize latency, always think about deploying close to users.

Amazon AppStream 2.0

Amazon AppStream 2.0



- Desktop Application Streaming Service
- Deliver to any computer; without acquiring, provisioning infrastructure
- The application is delivered from within a web browser

- 1.
2. Say you want to have the Blender application to create the 3D models directly from within a web browser, you can with Amazon AppStream. So it is application-focused, and they're delivered through your web browser.

Here is an example of how Amazon AppStream 2.0 and Amazon WorkSpaces can be used in different scenarios:

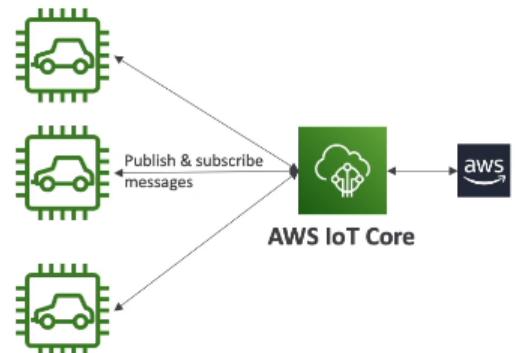
- A company that wants to provide its employees with access to a CAD program could use Amazon AppStream 2.0. The company could create an AppStream 2.0 fleet that is dedicated to the CAD program, and then assign users to the fleet. When a user logs in to the fleet, they will be able to access the CAD program without having to download or install it on their local device.
 - A school that wants to provide its students with a complete desktop environment could use Amazon WorkSpaces. The school could create a pool of WorkSpaces that are configured with the student's preferred operating system and applications. When a student logs in to a WorkSpace, they will have a complete desktop environment that is ready to use.
- 3.

AWS IoT Core

AWS IoT Core



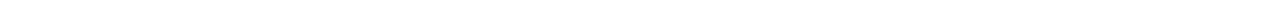
- IoT stands for “Internet of Things” – the network of internet-connected devices that are able to collect and transfer data
- AWS IoT Core allows you to easily connect IoT devices to the AWS Cloud
- Serverless, secure & scalable to billions of devices and trillions of messages
- Your applications can communicate with your devices even when they aren't connected
- Integrates with a lot of AWS services (Lambda, S3, SageMaker, etc.)
- Build IoT applications that gather, process, analyze, and act on data



1.

AWS Elastic Transcoder

Amazon Elastic Transcoder

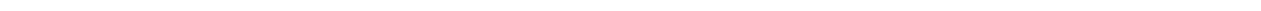


The diagram illustrates the workflow of Amazon Elastic Transcoder. It starts with an "S3 Input bucket" containing a video file, which is processed by a "Transcoding Pipeline". The pipeline then outputs the transcoded video to an "S3 Output bucket". Finally, the transcoded video is delivered to "Smartphones, Tablets, PCs..." for playback.

- Elastic Transcoder is used to convert media files stored in S3 into media files in the formats required by consumer playback devices (phones etc..)
- Benefits:
 - Easy to use
 - Highly scalable – can handle large volumes of media files and large file sizes
 - Cost effective – duration-based pricing model
 - Fully managed & secure, pay for what you use

AWS AppSync

AWS AppSync



The diagram illustrates the AWS AppSync architecture. It shows a central "AWS AppSync" service interacting with various components: a "GraphQL API" (represented by a red icon), a "DynamoDB" database, and a "Lambda" function. The "GraphQL API" is connected to both the "DynamoDB" and "Lambda" components, indicating a bidirectional relationship between them.

- Store and sync data across mobile and web apps in real-time
- Makes use of GraphQL (mobile technology from Facebook)
- Client Code can be generated automatically
- Integrations with DynamoDB / Lambda
- Real-time subscriptions
- Offline data synchronization (replaces Cognito Sync)
- Fine Grained Security
- AWS Amplify can leverage AWS AppSync in the background!

1.

AWS Amplify

The screenshot shows the AWS Amplify Studio interface. On the left, a sidebar lists 'Set up' options: Data (selected), Authentication, Storage (new), Functions, GraphQL API, REST API, and Analytics. The main area displays a 'Home' model configuration window with fields: id (ID), address (String), image_url (String), and price (Float). Below this is a 'Amplify Studio' footer. To the right, a dashed box encloses a grid of service icons: Amazon S3, Amazon Cognito, AWS AppSync, API Gateway, Amazon SageMaker, Amazon Lex, Lambda, and DynamoDB. A red square icon with a white triangle is in the top right corner.

• A set of tools and services that helps you develop and deploy scalable full stack web and mobile applications

• Authentication, Storage, API (REST, GraphQL), CI/CD, PubSub, Analytics, AI/ML Predictions, Monitoring, Source Code from AWS, GitHub, etc...

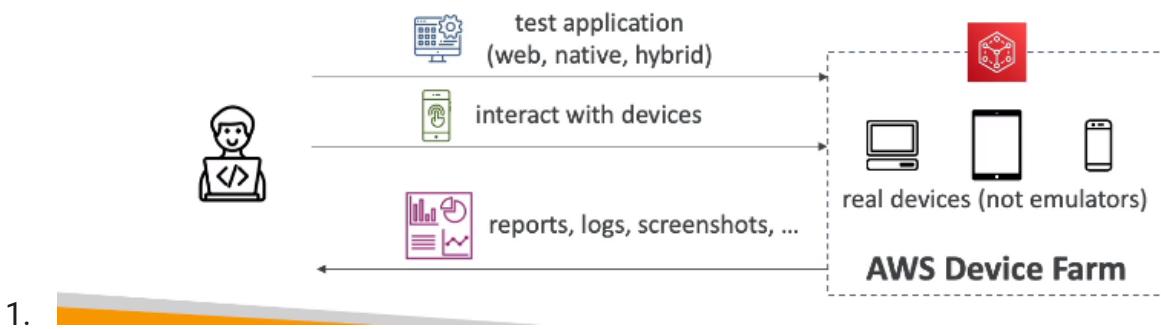
1. 

AWS Device Farm

AWS Device Farm



- Fully-managed service that tests your web and mobile apps against desktop browsers, real mobile devices, and tablets
- Run tests concurrently on multiple devices (speed up execution)
- Ability to configure device settings (GPS, language, Wi-Fi, Bluetooth, ...)



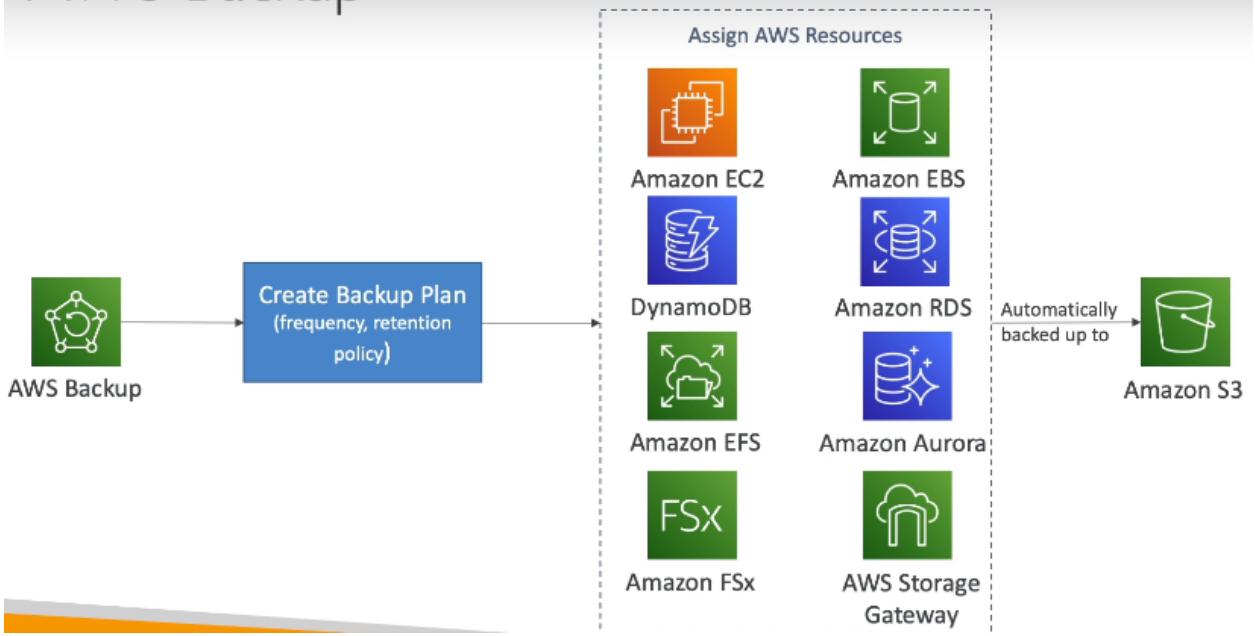
AWS BackUp



- Fully-managed service to centrally manage and automate backups across AWS services
- On-demand and scheduled backups
- Supports PITR (Point-in-time Recovery)
- Retention Periods, Lifecycle Management, Backup Policies, ...
- Cross-Region Backup
- Cross-Account Backup (using AWS Organizations)

1.

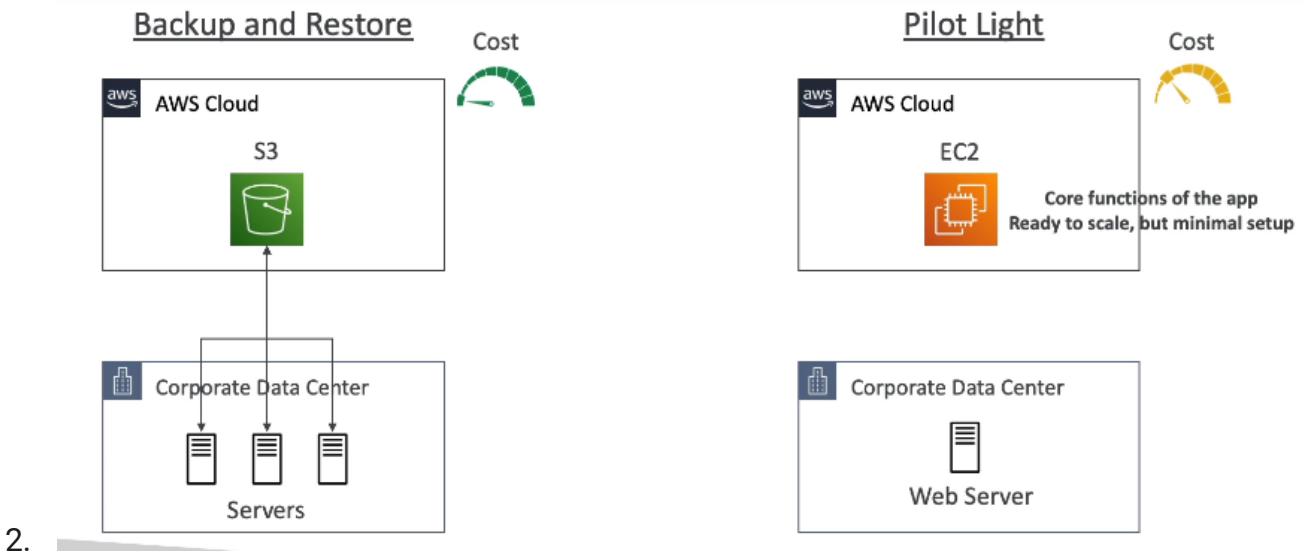
AWS Backup



Disaster Recovery Strategies

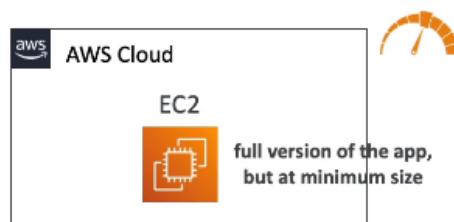
1. In the exam, we'll just ask you. Hey, which one is the cheapest. So the cheapest is backup and restore.

Disaster Recovery Strategies

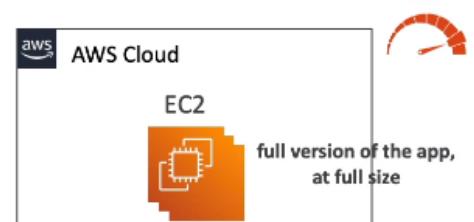


Disaster Recovery Strategies

Warm Standby

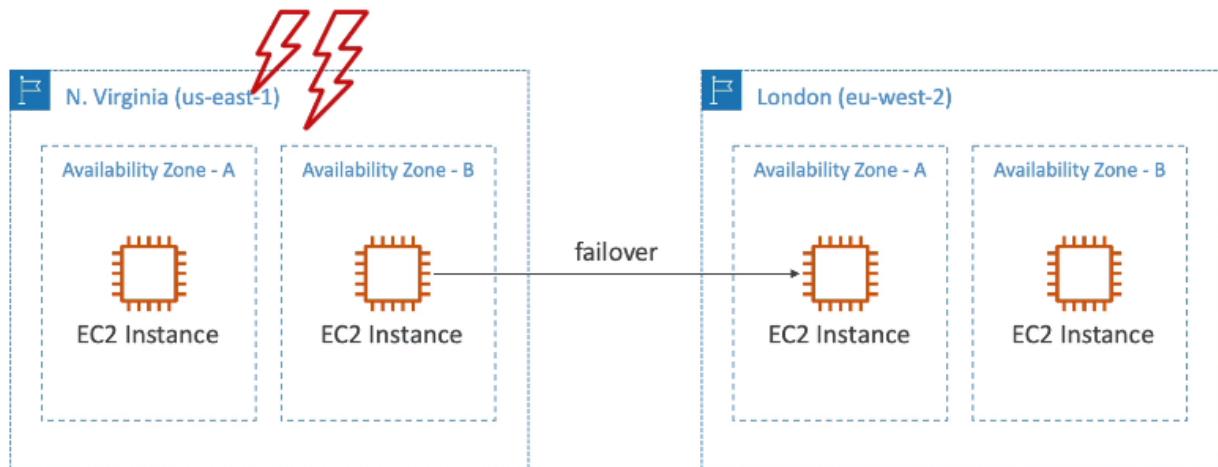


Multi-Site / Hot-Site



- 3.
4. Cheapest is backup and store...expensive is hot site

Typical DR Setup for Cloud Deployments



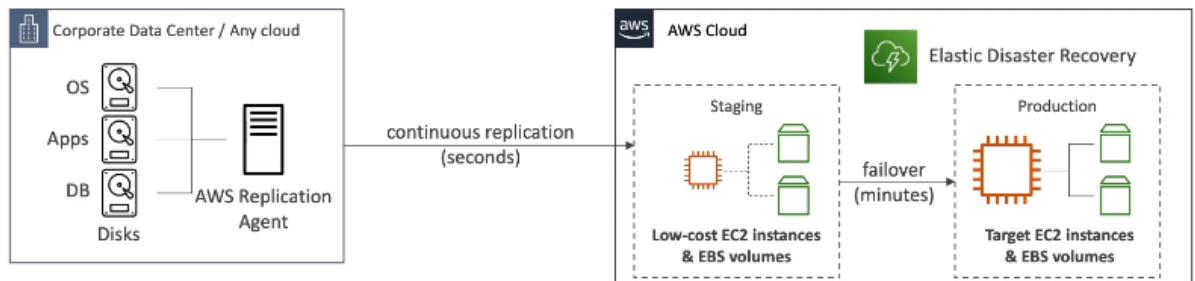
- 5.
6. So say we have our instance in us-east-one, and there's a disaster that strikes us-east-one. Then we can fail over all our traffic into another region. For example, eu-west-two using route 53.

AWS DRS

AWS Elastic Disaster Recovery (DRS)



- Used to be named “CloudEndure Disaster Recovery”
- Quickly and easily recover your physical, virtual, and cloud-based servers into AWS
- Example: protect your most critical databases (including Oracle, MySQL, and SQL Server), enterprise apps (SAP), protect your data from ransomware attacks, ...
- Continuous block-level replication for your servers



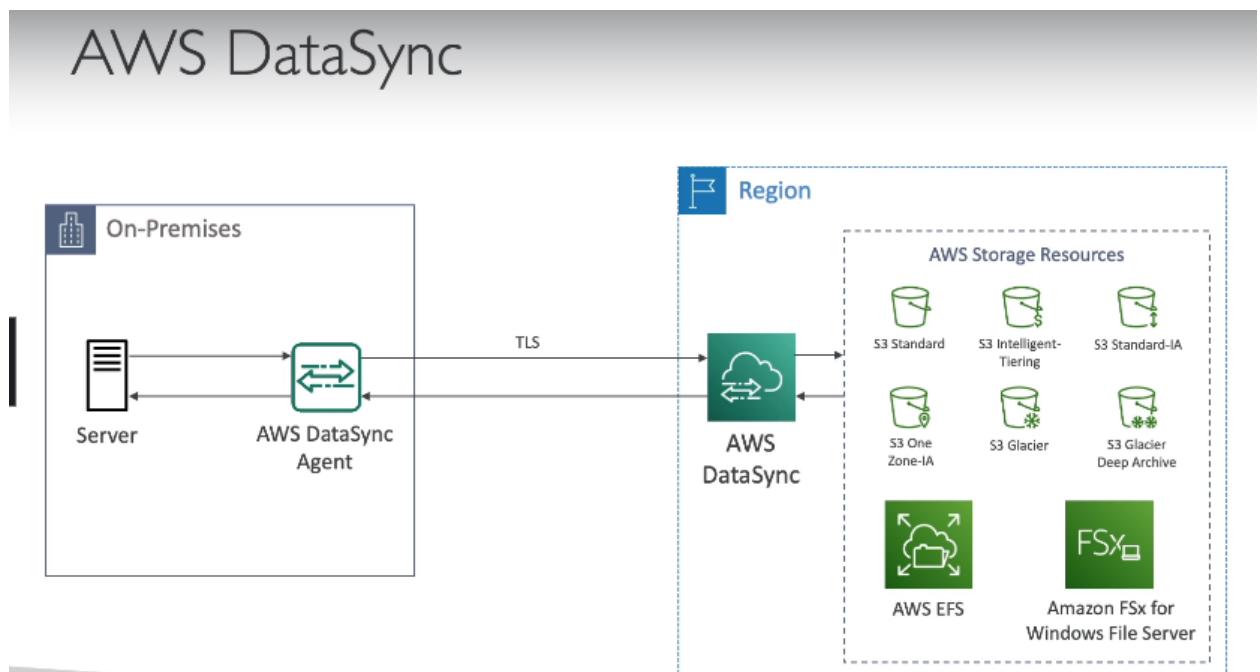
- 1.
2. In our corporate data center we have AWS replication agent..which is used to replicate our OS,apps and DB into AWS cloud staging area
3. If any disaster occurs in our center..We redirect our data from staging to production and use this for temporary need
4. If our data center comes back to normal ..we can perform failback
5. which is that the system falls back into your incorporated sensor and you're operating normally.

AWS Data Sync

AWS DataSync

- Move large amount of data from on-premises to AWS
- Can synchronize to: Amazon S3 (any storage classes – including Glacier), Amazon EFS, Amazon FSx for Windows
- Replication tasks can be scheduled hourly, daily, weekly
- The replication tasks are incremental after the first full load

1.



2.

AWS Application Discovery Service

AWS Application Discovery Service



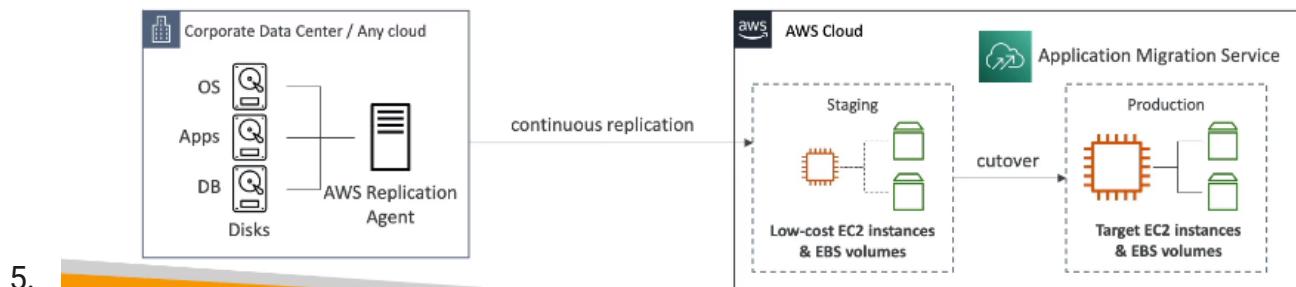
- Plan migration projects by gathering information about on-premises data centers
- Server utilization data and dependency mapping are important for migrations
- Agentless Discovery (AWS Agentless Discovery Connector)
 - VM inventory, configuration, and performance history such as CPU, memory, and disk usage
- Agent-based Discovery (AWS Application Discovery Agent)
 - System configuration, system performance, running processes, and details of the network connections between systems
- Resulting data can be viewed within AWS Migration Hub

- 1.
2. If we are planning to move our on premises data centers to cloud..we have 2 options
3. Agentless Discovery and Agent based Discovery
4. And the simplest way to move from on-premises to AWS is using the AWS Application Migration Service,

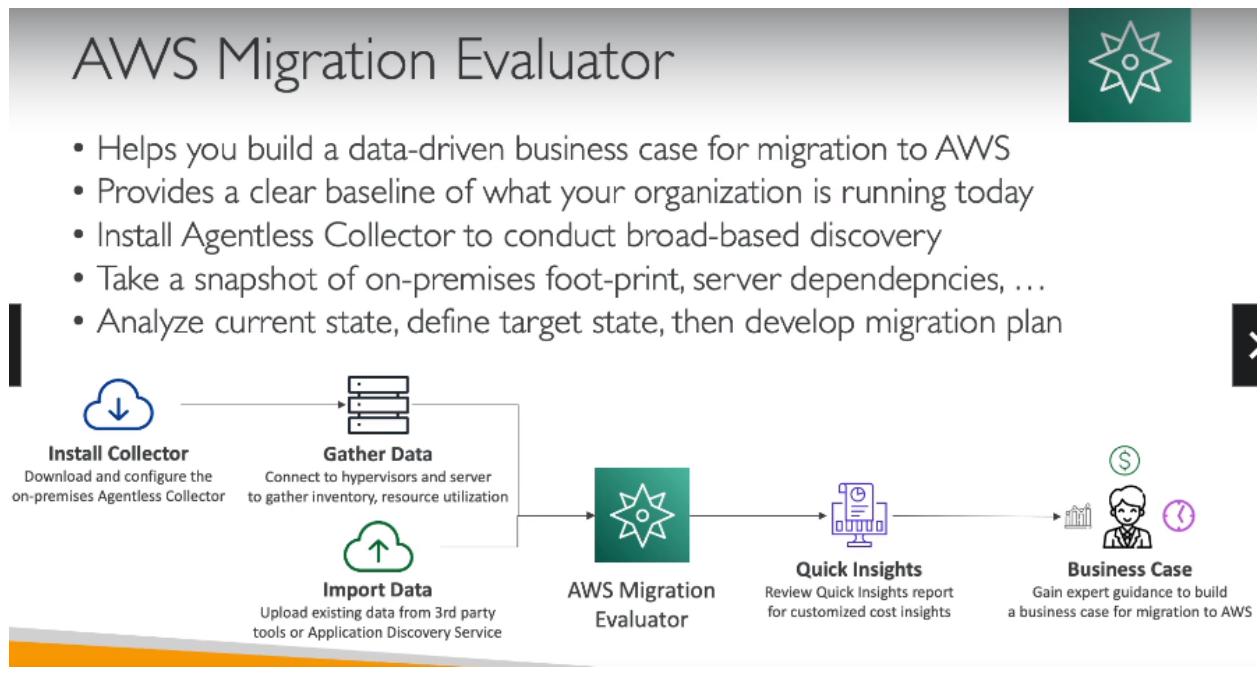
AWS Application Migration Service (MGN)



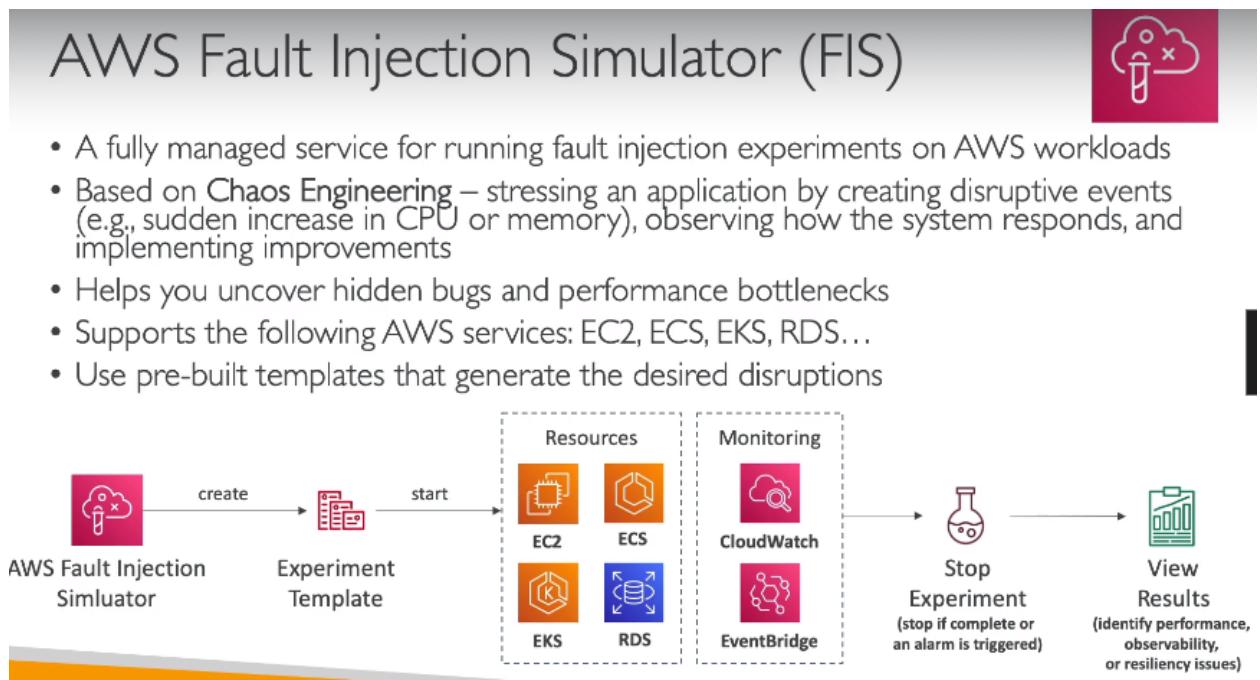
- The “AWS evolution” of CloudEndure Migration, replacing AWS Server Migration Service (SMS)
- Lift-and-shift (rehost) solution which simplify migrating applications to AWS
- Converts your physical, virtual, and cloud-based servers to run natively on AWS
- Supports wide range of platforms, Operating Systems, and databases
- Minimal downtime, reduced costs



AWS Migration Evaluator



AWS Fault Injection Simulator(FIS)



AWS Step Function

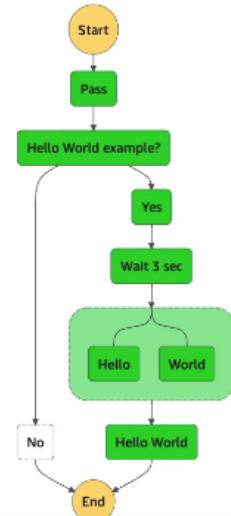
1.

AWS Step Functions



■ In Progress ■ Succeeded ■ Failed ■ Cancelled ■ Caught Error

- Build serverless visual workflow to orchestrate your Lambda functions
- Features: sequence, parallel, conditions, timeouts, error handling, ...
- Can integrate with EC2, ECS, On-premises servers, API Gateway, SQS queues, etc...
- Possibility of implementing human approval feature
- Use cases: order fulfillment, data processing, web applications, any workflow



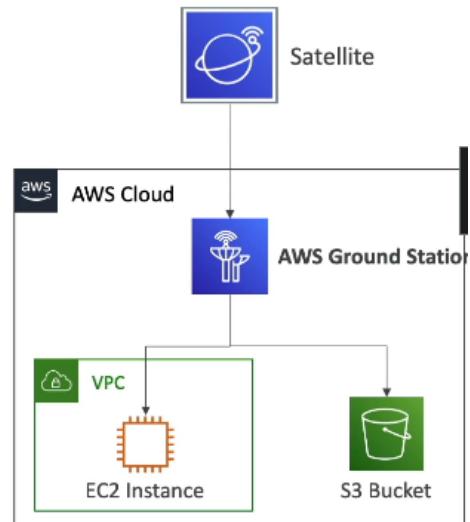
AWS Ground Station

AWS Ground Station



- Fully managed service that lets you control satellite communications, process data, and scale your satellite operations
- Provides a global network of satellite ground stations near AWS regions
- Allows you to download satellite data to your AWS VPC within seconds
- Send satellite data to S3 or EC2 instance
- Use cases: weather forecasting, surface imaging, communications, video broadcasts

1.



AWS PinPoint

Amazon Pinpoint



- Scalable 2-way (outbound/inbound) marketing communications service
- Supports email, SMS, push, voice, and in-app messaging
- Ability to segment and personalize messages with the right content to customers
- Possibility to receive replies
- Scales to billions of messages per day
- Use cases: run campaigns by sending marketing, bulk, transactional SMS messages
- Versus Amazon SNS or Amazon SES
 - In SNS & SES you managed each message's audience, content, and delivery schedule
 - In Amazon Pinpoint, you create message templates, delivery schedules, highly-targeted segments, and full campaigns

1.

2. So see Pinpoint as the next evolution of SNS and SES, in case you wanna do full-blown marketing communications service.

