

CMPE 281**Cloud Technologies****Homework #2****Student Name : Sirisha Polisetty****#1: AUTODESK : Cloud Migration Industry Example****Background**

- Autodesk is an American global software firm established in 1982 with headquarters in San Francisco, California. It creates software that helps develop designs in various industries like education, architecture, media, entertainment, construction, and manufacturing. It has more than 100 million customers worldwide using its products and innovating quickly.
- AutoCAD is their most popular product and one of the first software products that Autodesk has developed. It has been widely used and respected in the design community and is vastly used to create digital designs for innovative and development purposes in manufacturing, construction, entertainment, education, and research.
- In AutoCAD, CAD means computer-aided design. AutoCAD software aids in the digital creation of detailed drawings by architects, engineers, and construction specialists.

Pre-Cloud Infrastructure/Hosting

- Autodesk used to ship its product to its customers using DVDs and provided licenses in perpetuity before migration.
- Autodesk Had its data centers and used them to develop and automate its software and other purposes like ERP, CRM, etc.
- It takes customers a long time to get their product once they place an order before cloud migration.

Business Drivers

- AutoDesk decided to get out of managing the data centers business and wanted to be agile, and there is also a cost angle for this. By sunsetting their data centers, they also use those resources for growing their core business.
- Moving to the cloud helps them focus on its core business by quickly developing and delivering more products, frameworks, and features to its customers.
- AutoDesk used to have perpetual licenses for their products for customers to use their products. They decide to move to a subscription model, which helps them drastically improve their time to market and provide value for their customer on the fly by pushing upgrades to their products. In turn, this strategy also helps them increase their revenue.

- Always available and secure is the leading business driver of autodesk, which instigates them to think about where they want their applications to be. They have decided and embarked on the journey to move all our applications to the cloud.

Technology Drivers

- AutoDesk's move to the cloud is driven by the tenets of improving its software application performance, productivity, and also its efficiency.
- Autodesk wanted to focus on its core business through its cloud-first initiative, which aims to improve application performance and reliability by migrating workloads in its physical data centers to AWS.
- Autodesk wanted to improve their users' productivity by migrating to the cloud, which helps them to quickly scale in collecting user insights by 10x and analyze and build new features using the data collected and not worry about the infrastructure required to store and analyze that data.
- Autodesk's move to the cloud is also driven by its goals of being efficient, resilient, robust, and automated in providing customer support by migrating its workload of ERP & CRM.
- Autodesk focused on reducing its storage costs by 75 percent by having projects dealing with backup and recovery.
- One more important driver of their cloud migration strategy is the goal to decrease their data processing costs by 90 percent.

Cloud Migration Strategy

- Autodesk followed different strategies for its cloud migration. They have migrated data centers to the cloud without any downtime for their customers and not having interruption to their business.
- AutoDesk has redesigned its software distribution channel by migrating it using cloud services like Amazon S3.
- Autodesk has created tiger teams to help them migrate their application to the cloud, consisting of seasoned cloud professionals and newbies who get trained on the job and help them re-skill for the new challenges.
- They have 400+ applications retired or migrated as part of their cloud migration strategy and instituted a hybrid cloud model for their migration journey.
- They have moved all their oracle-based legacy databases to cloud-based Amazon RDS, Amazon DynamoDB, and others.
- For analyzing and collecting the user data and insights, they have moved from legacy systems to the Amazon SageMaker, which helped them collect 10x more insights for their research to design user productivity-improving features.

Organizational Changes

- AutoDesk created teams of 10 people focused on migrating each application to the cloud. They called these teams Tiger Teams.
- They Repurposed their existing workforce by training them on cloud technologies and giving them new roles within the company.
- Organizationally they have dismantled many existing teams and created new ones focused on cloud migration and management.
- They allocated more resources to solving their core business problems and holdback/ avoided resources for managing any data center grunt work.
- Autodesk has focused its cloud migration on being cloud-agnostic (AWS, azure, google) by allowing its customers to use all the different cloud vendors for customers' business competitive reasons.

Cultural Changes

- AutoDesk took an interesting approach in their cloud migration strategy by making their employees stakeholders in their journey by providing training opportunities and created a cloud center of excellence in the company.
- They have incentivized employees that are part of this journey by giving them new titles within the company that fueled their cloud migration journey and helped them to be four months early in their migration plan.
- They have instilled a cloud-first mindset top down in the company by propelling everyone to use their products through the cloud, and every employee had training goals as part of their job duties.
- AutoDesk has leveraged its workforce for cloud migration rather than depending on the partners working for them.

Migration Journey

- Autodesk moved away from perpetual licenses to subscription-based software distribution to become a subscription model company.
- They have done a mass migration program in which they have migrated over 400 applications.
- Autodesk is four months ahead of its cloud migration schedule. They migrated over 239 application environments and retired 209 applications which helped them improve their security profile.
- Ninety percent of their cloud-trained staff participated in cloud migration efforts. By migrating to the cloud, they drastically improved their disaster recovery by 80%.
- By migrating to the cloud, they achieved 97% cost efficiency for all their migrated applications.

- More importantly, they have achieved an 86% reduction in customer incidents, improving the user experience for its customers.

Current State: Cloud Migration Journey

- Autodesk currently achieved most of their cloud goals, and They are not managing any data centers now. They are innovating and developing at a faster pace. They are currently in the optimization phase in their journey.
- During the COVID-19 pandemic, they have continued their business with fewer hiccups due to their cloud-enabled workforce.
- They rapidly iterate their software and push frequent updates to their customers due to their cloud-first strategy.
- Moving their subscription management to the cloud helped them generate higher revenue and provide value to their 140 million users worldwide.
- AutoDesk improved its disaster recovery, customer relations, and workforce management by migrating to the cloud.
- AutoDesk used to ship DVDs to their customers, and now they give access to their products in the cloud. It helped them ensure systems were highly reliable and secure for their customers.

Lessons learned

- Clearly defining the curriculum and expectations for their employees well in advance helped them incredibly.
- Working with application managers and owners well in advance and creating roadmaps helped Autodesk to tread smoothly and achieve goals before the planned time.
- Change is a scary thing for anyone. To help its customers migrate, Autodesk launched a free extended access program for many of their flagship cloud collaboration products which helped their migration to the cloud be blissful to customers.
- Partnering closely with Security early in the journey helped them define and draw the expectations to become a robust and secure software provider in its niche.
- Begin with pilot migration and slowly gain confidence on the migration journey and instill the same for both the customers and stakeholders and get buy-in for the cloud journey.

Outcomes achieved

- AutoDesk achieved a 58 percent reduction in its footprint(closing all of its data centers) by migrating to the cloud.
- Using Amazon Sagemaker and Amazon EMR, AutoDesk has enhanced its ability to collect user data and insights by 10x.

- They have created a data-centric security platform by leveraging AWS Lambda and Amazon S3. They also decreased their storage costs by 75% using Amazon S3 for disaster recovery cases.
- AutoDesk achieved seamless integration for their applications, and no additional set up required for the user to use their applications.
- AutoDesk achieved the best customer experience by migrating to the cloud, improving customer satisfaction, and reducing user incidents by 80%.
- AutoDesk When specified to run on the cloud, the solver is faster than the average engineer's computer and allows the ability to solve multiple simulations concurrently without tying up resources.
- Another one is cloud premium, Which allows concurrent solving of multiple simulations and enables subscribers to use the power of the cloud to solve simulations faster than the standard cloud solvers.

My Recommendations for cloud migration journey.

- Autodesk still distributes software that can run on user machines and different operating systems configurations. If I embarked on this cloud migration journey, First I would eliminate that capability for the customers and enforce usage all through the cloud environments. By being able to move to SaaS business, I would be able to build core business at a better pace so i don't have to worry about supporting, building and testing my applications on different platform configurations.
- I would have followed a refactoring strategy where the code needed to be re-written for cloud and decoupling of applications is required. This approach improves the performance and overall efficiency later down the line and helps companies to avoid edge cases.
- As part of building the cloud center of excellence, I would also focus on security compliance to the higher standards and providing training and certifications at the start of the migration journey to make sure not to find any security vulnerabilities down the line.
- To avoid system outages during the new releases and subscription renewal peak times, I would make sure to have my distribution and subscription systems available with proper disaster recovery, multi-zone availability, and auto-scaling capabilities.
- To avoid the long migration of in-house oracle databases to cloud ones like Amazon RDS and DynamoDB, I would focus on evaluating AWS services like AWS snowball.
- As AutoDesk is a legacy software company with almost 40 years in business, all its applications would not fit in a single approach of migration strategy. Based on the application's importance and criticality, I would have followed different approaches. I would be flexible and identify and diversify roadmaps by collaborating with the application owners.
- Applications that need massive resources for refactoring and taking up more resources would have less business value. For these kinds of applications, I would have chosen the Lift & shift strategy of Rehosting.

#2: Design and implement a web scale cloud content storage and delivery infrastructure on AWS which meets following requirements: (15 Points)

- For a global organization whose customers are across the globe and have a need to upload and download large files. The files needs to be globally available once uploaded to the system. Design the AWS solution such that it maximizes the system's **availability** and **reduces latency**.
- The solution needs to reduce the unnecessary traffic back to S3 origin to help improve latency as well as **reduce load on the origin**.
- The most content uploaded by customers globally is used frequently in first 75 days but then it is rarely used. When content is needed post 75 days, it is still needed instantly by the customers. The content needs to be available online only for one year after creation after which it needs to be archived for one additional year for legal/compliance reasons before it can be deleted from the system. Design the solution that optimizes the total cost of ownership without compromising the availability and latency.
- No single AWS region experiencing an outage should impact your system's up-time. You need to have **DR** implemented for your solution.
- Apply appropriate security policy so that only **authorized application users** can upload and download the files from AWS.
- Due to assumed US government economic sanctions, users from **country 'Cuba'** needs to be **blocked** so they can not access the solution.
- Provide following as a **deliverables in a word doc or a pdf**:
 - **Architecture diagram** of solution showing various AWS components, AZs etc. (You can use following AWS ppt for icons https://media.amazonwebservices.com/AWS-Design/Arch-Center/17.1.19_Update/AWS_Simple_Icons_PPT_v17.1.19.zip)
 - The **screenshots of various AWS resources** created as part of solution.
 - The **screenshots of any other configurations** applied such as security policy, lifecycle policy etc.
 - Only the AWS backend resource creation is in scope for this homework

Requirement #1: Solving Availability and Reduced Latency for the storage solution of a global organization.

- Firstly, I Created three buckets in different geographic regions to achieve availability.
 - [cmpe281storagebucket1](#)-US East (N. Virginia) us-east-1
 - [cmpe281storagebucket2](#)-Asia Pacific (Singapore) ap-southeast-1
 - [cmpe281storagebucket3](#) -US West (N. California) us-west-1

The screenshot shows the AWS S3 console with a green success message at the top: "Successfully created bucket 'cmpe281storagebucket3'. To upload files and folders, or to configure additional bucket settings choose View details." The left sidebar includes links for Buckets, Access Points, Object Lambda Access Points, Multi-Region Access Points, Batch Operations, and Access analyzer for S3. The main content area displays an "Account snapshot" and a "Buckets (3)" table. The table has columns for Name, AWS Region, Access, and Creation date. The data is as follows:

| Name | AWS Region | Access | Creation date |
|-----------------------|-----------------------------------------|-------------------------------|------------------------------------------|
| cmpe281storagebucket1 | US East (N. Virginia) us-east-1 | Bucket and objects not public | September 15, 2022, 13:41:43 (UTC-07:00) |
| cmpe281storagebucket2 | Asia Pacific (Singapore) ap-southeast-1 | Bucket and objects not public | September 15, 2022, 13:42:14 (UTC-07:00) |
| cmpe281storagebucket3 | US West (N. California) us-west-1 | Bucket and objects not public | September 15, 2022, 13:42:54 (UTC-07:00) |

- For low latency, I have used a content delivery network on top of the S3 buckets. For this i have created a distribution using amazon cloudfront.

The screenshot shows the AWS CloudFront console with a table titled "Distributions". The table has columns for ID, Description, Domain name, Alternate domain, Origins, Status, and Last modified. The data is as follows:

| ID | Description | Domain name | Alternate domain | Origins | Status | Last modified |
|----------------|-------------|----------------------|------------------|------------------------|---------|----------------------|
| E1XOPPGJZZDW58 | - | d190svah9f6e5x.cl... | - | cmpe281storagebucket1. | Enabled | September 15, 202... |

- Following are the properties of my CloudFront distribution:
 - Using all edge locations (best performance)
 - Using HTTP/2 version protocol
 - Using IPv6 address to cover multiple users in the cloud infrastructure.

Price class **Info**
Choose the price class associated with the maximum price that you want to pay.
 Use all edge locations (best performance)
 Use only North America and Europe
 Use North America, Europe, Asia, Middle East, and Africa

AWS WAF web ACL - *optional*
Choose the web ACL in AWS WAF to associate with this distribution.

Alternate domain name (CNAME) - *optional*
Add the custom domain names that you use in URLs for the files served by this distribution.

(i) To add a list of alternative domain names, use the [bulk editor](#).

Custom SSL certificate - *optional*
Associate a certificate from AWS Certificate Manager. The certificate must be in the US East (N. Virginia) Region (us-east-1).

Supported HTTP versions
Add support for additional HTTP versions. HTTP/1.0 and HTTP/1.1 are supported by default.
 HTTP/2
 HTTP/3

Default root object - *optional*
The object (file name) to return when a viewer requests the root URL (/) instead of a specific object.

Standard logging
Get logs of viewer requests delivered to an Amazon S3 bucket.
 Off

Feedback Looking for language selection? Find it in the new [Unified Settings](#)

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Requirement #2: Reduce Traffic and Load to the origin S3.

- We can solve this problem using multiple approaches. Firstly we can have an EC2 instance that can have a cron job that syncs with the S3 bucket frequently to get the updated items from the S3 buckets. But EC2 costs add up quickly, maintaining the EC2 is a tedious task, and scaling based on traffic is achieved using an auto-scaling group. Alternatively, we can have a multi-region access point to solve this problem. Multi-region access points help improve availability and frequently avoid traffic to S3 origin, this also helps us with disaster recovery.

Amazon S3 > [Multi-Region Access Points](#) > Create Multi-Region Access Point

Create Multi-Region Access Point [Info](#)
Multi-Region Access Points offer a global S3 hostname that provides access to multiple S3 buckets across AWS Regions with automatic routing and failover between buckets. [Learn more](#)

Multi-Region Access Point name
Multi-Region Access Point name
This setting can't be edited after the Multi-Region Access Point is created.

Multi-Region Access Point names must be unique within an account, and comply with the [rules for Multi-Region Access Point naming](#)

Buckets
Add the buckets you want to use with this Multi-Region Access Point. [Learn more](#)

(i) You can't add or remove buckets to this Multi-Region Access Point after it's created.

There are no buckets used with this Multi-Region Access Point.

- For the US-East-1 bucket, a multi-region access point was created. As a result, traffic will be diverted to the AWS region with the lowest latency issues or the closest AWS region, minimizing needless traffic back to the S3 origin to aid with latency and decreasing strain on the origin.

The screenshot shows the AWS S3 Multi-Region Access Points page. On the left, there's a sidebar with options like Buckets, Access Points, Object Lambda Access Points, Multi-Region Access Points (which is selected and highlighted in orange), Batch Operations, and Access analyzer for S3. The main content area has a heading 'Multi-Region Access Points (1) Info' with a link to 'Learn more'. Below it is a table with one row. The table columns are Name, AWS Regions, Total buckets, Creation date, Status, and Alias. The row shows 'cmpe281storagebucket1' as the name, 'US East (N. Virginia) us-east-1, Asia Pacific (Singapore) ap-southeast-1, US West (N. California) us-west-1' as the AWS Regions, '3' as the Total buckets, 'September 15, 2022, 14:15:50 (UTC-07:00)' as the Creation date, 'Ready' as the Status, and 'm4y8awfttbyk.mra' as the Alias.

Requirement #3: Lifecycle rules for the objects uploaded to the storage solution.

- To Setup a Lifecycle rule navigate to the management for the given s3 bucket and click create lifecycle rule.

The screenshot shows the AWS S3 Bucket Management console for the bucket 'cmpe281storagebucket3'. The left sidebar includes Buckets, Access Points, Object Lambda Access Points, Multi-Region Access Points, Batch Operations, and Access analyzer for S3. The main area has tabs for Objects, Properties, Permissions, Metrics, Management (which is selected and highlighted in orange), and Access Points. Under the Management tab, there's a section for 'Lifecycle rules (0)'. It includes a link to 'Learn more' and a table with columns: Lifecycle rule name, Status, Scope, Current version actions, Noncurrent versions actions, Expired object delete markers, and Incomplete multipart uploads. A message below the table states 'No lifecycle rules' and 'There are no lifecycle rules for this bucket.' A 'Create lifecycle rule' button is located at the bottom of this section.

- Under Transition current version of objects between storage classes.
 - Checked move object between storage classes in Lifecycle rule actions.
 - Chosen Standard-IA for 75 days after object creation.
 - Chosen Glacier Deep archive for 365 days of infrequent access in IA storage.

Lifecycle rule actions

Choose the actions you want this rule to perform. Per-request fees apply. [Learn more](#) or see [Amazon S3 pricing](#)

Move current versions of objects between storage classes

Move noncurrent versions of objects between storage classes

Expire current versions of objects

Permanently delete noncurrent versions of objects

Delete expired object delete markers or incomplete multipart uploads

These actions are not supported when filtering by object tags or object size.

Transition current versions of objects between storage classes

Choose transitions to move current versions of objects between storage classes based on your use case scenario and performance access requirements. These transitions start from when the objects are created and are consecutively applied. [Learn more](#)

| | |
|----------------------------------|----------------------------|
| Choose storage class transitions | Days after object creation |
| Standard-IA | 75 |
| Glacier Deep Archive | 365 |

[Add transition](#)

⚠️ Transitioning small objects to Glacier Flexible Retrieval (formerly Glacier) or Glacier Deep Archive will incur a per object cost

You will be charged for each object you transition to S3 Glacier Flexible Retrieval (formerly Glacier) or S3 Glacier Deep Archive. A fixed amount of storage is also added to each object to accommodate metadata for managing the object which increases storage costs. You can reduce these costs by limiting the number of objects to transition (by prefix, tag, or version), or by aggregating objects before transitioning them. Learn more about [Glacier Flexible Retrieval \(formerly Glacier\) cost considerations](#) or review the table on Requests and data retrievals tab on the [Amazon S3 pricing page](#).

- For Expire current version of object i have entered 730 days which is 2 years from creation

⚠️ Transitioning small objects to Glacier Flexible Retrieval (formerly Glacier) or Glacier Deep Archive will incur a per object cost

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I acknowledge that this lifecycle rule will incur a one-time lifecycle request cost per object if it transitions small objects.

Expire current versions of objects

For version-enabled buckets, Amazon S3 adds a delete marker and the current version of an object is retained as a noncurrent version. For non-versioned buckets, Amazon S3 permanently removes the object. [Learn more](#)

Days after object creation

730

- Here is the summary of rules we selected per the given requirements about object lifecycle. I have repeated this for all the three buckets I have created for requirement #1

| Current version actions | Noncurrent versions actions |
|---------------------------------------------------|------------------------------|
| Day 0 • Objects uploaded | Day 0 No actions defined. |
| ↓ | |
| Day 75 • Objects move to Standard-IA | |
| ↓ | |
| Day 365 • Objects move to Glacier Deep Archive | |
| ↓ | |
| Day 730 • Objects expire | |

Requirement #4 : Disaster Recovery Setup

- The S3 buckets that are created in Requirement #1 after adding it to the multi-region configuration will have replication rules applied to them for all the three buckets we have created.

Create replication rules Info

Enable automatic and asynchronous copying of objects across the buckets used with this Multi-Region Access Point by creating replication rules. [Learn more](#)

Choose a template for creating replication rules

Choose template

Replicate objects from one or more source buckets to one or more destination buckets

Replicate objects among all specified buckets

Warning: Creating replication rules using this template will overwrite existing replication rules for the specified buckets. If you prefer to not overwrite existing replication rules, use the other template for creating replication rules and specify one source bucket and one destination bucket.

Buckets

Choose the buckets you want to replicate objects amongst. All buckets chosen for replication must have Bucket Versioning enabled. [Learn more](#)

- List of Replication rules created to ensure replication among three buckets created in the Requirement#1. The replication rules ensure copy of all objects to/from all buckets.

Screenshot of the AWS S3 console showing the successful creation of 6 replication rules for a Multi-Region Access Point.

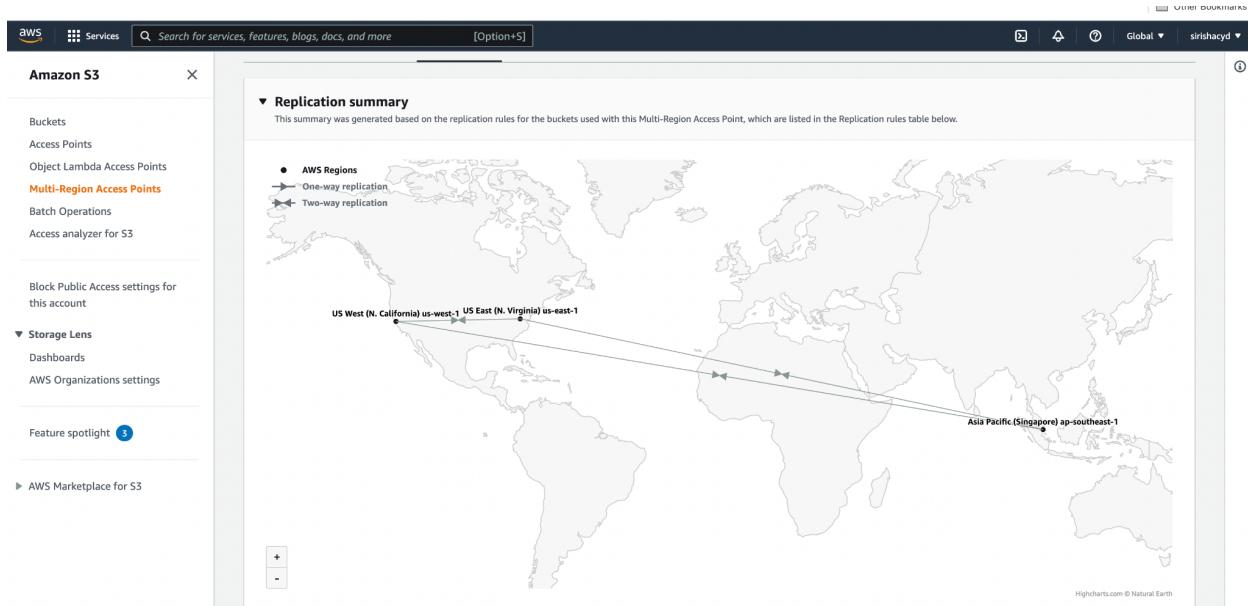
Summary

| Multi-Region Access Point | Successfully created | Failed to create |
|---------------------------|----------------------|---------------------|
| cmpe281storagebucket1 | 6 replication rules | 0 replication rules |

Replication rules

| Name | Source bucket | Destination bucket | Status | Error |
|---------------------------------------------------|-----------------------|-----------------------|-----------|-------|
| Multi-Region Access Point : cmpe281storagebucket2 | cmpe281storagebucket1 | cmpe281storagebucket2 | Succeeded | - |
| Multi-Region Access Point : cmpe281storagebucket3 | cmpe281storagebucket1 | cmpe281storagebucket3 | Succeeded | - |
| Multi-Region Access Point : cmpe281storagebucket1 | cmpe281storagebucket2 | cmpe281storagebucket1 | Succeeded | - |
| Multi-Region Access Point : cmpe281storagebucket3 | cmpe281storagebucket2 | cmpe281storagebucket3 | Succeeded | - |
| Multi-Region Access Point : cmpe281storagebucket2 | cmpe281storagebucket3 | cmpe281storagebucket2 | Succeeded | - |
| Multi-Region Access Point : cmpe281storagebucket1 | cmpe281storagebucket3 | cmpe281storagebucket1 | Succeeded | - |

- Replication summary generated as below after the creation of multi-region access points.



Requirement #5: Providing and Testing Access to only authorized users

- Using AWS IAM I have created two users that have access to aws console
 - user1 (with read/write permission) to the buckets we have created.
 - user2 (with no permission to either read or write) to the buckets we have created.

The screenshot shows the AWS IAM service in the AWS Management Console. The left sidebar has 'Identity and Access Management (IAM)' selected under 'Access management'. The main area shows a table titled 'Users (2) Info' with two entries: 'user1' and 'user2'. Both users have 'None' listed for 'Groups', 'Last activity', 'MFA', 'Password age', and 'Active key age'. The 'user2' row has a green checkmark next to it. A blue banner at the top says 'Introducing the new Users list experience'.

- Granting permission to user1 to the aws s3 on our account, we can also restrict the user to the only bucket that we wanted to give access to.

The screenshot shows the 'Add permissions to user1' dialog in the AWS IAM service. It includes sections for 'Grant permissions' and 'Attach existing policies directly'. Below is a table of policies:

| Policy name | Type | Used as |
|-----------------------------------------|-------------|---------|
| AmazonS3FullAccess | AWS managed | None |
| AmazonS3ObjectLambdaExecutionRolePolicy | AWS managed | None |
| AmazonS3OutpostsFullAccess | AWS managed | None |
| AmazonS3OutpostsReadOnlyAccess | AWS managed | None |
| AmazonS3ReadOnlyAccess | AWS managed | None |

- Here is the screenshot of user1 being able to access one of the buckets we have created.

The screenshot shows the AWS S3 'Upload: status' page. At the top, a green header bar indicates 'Upload succeeded'. Below it, the main title is 'Upload: status'. A message box states: 'The information below will no longer be available after you navigate away from this page.' Under the 'Summary' section, it shows the destination 's3://cmpe281storagebucket1' with 'Succeeded' (1 file, 122.2 KB (100.00%)) and 'Failed' (0 files, 0 B (0%)). The 'Files and folders' tab is selected, displaying a table with one item: 'istockphoto-1337381696-170667a.jpg' (image/jpeg, 122.2 KB, Status: Succeeded).

- Here is the screenshot of user1 being able to download one of the buckets we have uploaded.

The screenshot shows the AWS S3 object details page for 'istockphoto-1337381696-170667a.jpg'. The top navigation bar shows the path: Amazon S3 > Buckets > cmpe281storagebucket1 > istockphoto-1337381696-170667a.jpg. The object name is 'istockphoto-1337381696-170667a.jpg' with an 'Info' link. Action buttons include 'Copy S3 URI', 'Download', 'Open', and 'Object actions'. The 'Properties' tab is selected, showing the 'Object overview' table:

| | |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Owner | S3 URI |
| sirishacyd | s3://cmpe281storagebucket1/istockphoto-1337381696-170667a.jpg |
| AWS Region | Amazon Resource Name (ARN) |
| US East (N. Virginia) us-east-1 | arn:aws:s3:::cmpe281storagebucket1/istockphoto-1337381696-170667a.jpg |
| Last modified | Entity tag (ETag) |
| September 15, 2022, 15:08:25 (UTC-07:00) | 8e19e2acbb24c61e9eccad5d3155a794 |
| Size | Object URL |
| 122.2 KB | https://cmpe281storagebucket1.s3.amazonaws.com/istockphoto-1337381696-170667a.jpg |
| Type | |
| jpg | |
| Key | |
| | istockphoto-1337381696-170667a.jpg |

- Here is the screenshot, where user2 is unable to access any of the buckets in the account as we did not give the user required permissions.

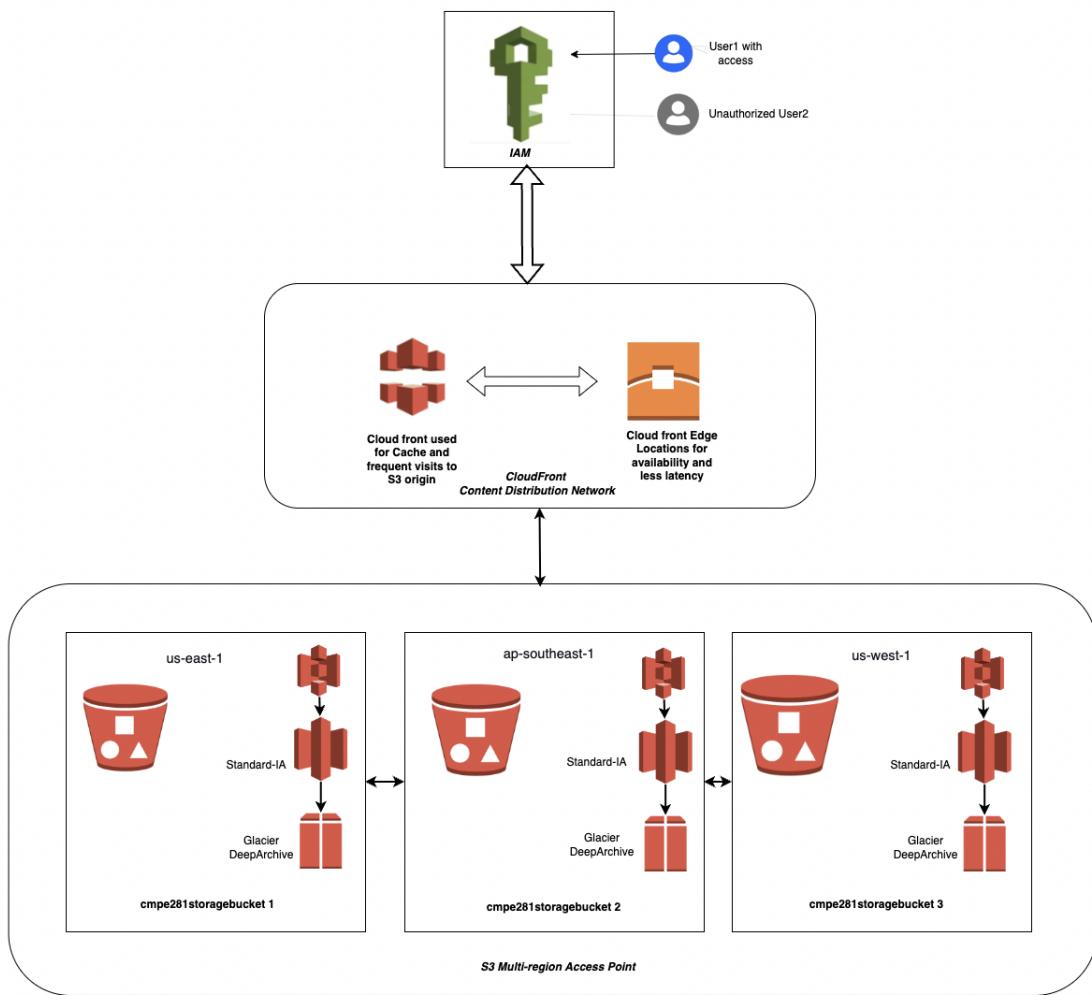
The screenshot shows the AWS Amazon S3 Buckets page. The left sidebar includes links for Buckets, Access Points, Object Lambda Access Points, Multi-Region Access Points, Batch Operations, and Access analyzer for S3. Under Storage Lens, there are links for Dashboards and AWS Organizations settings. A Feature spotlight section is also present. The main content area displays an 'Account snapshot' with a message about storage usage and activity trends. Below it is a table titled 'Buckets' with columns for Name, AWS Region, Access, and Creation date. The table shows 'No buckets' and includes a 'Create bucket' button.

Requirement #6: Blocking Cuba to access the storage solution.

- I have navigated to the CloudFront distribution and I have edited settings to block access to a geo region. The CloudFront Distribution has inbuilt capabilities to help us facilitate this.
- I have added Cuba to the block list which saved the settings. Cloudfront now takes care of this. As our bucket can be accessed through the distribution by the below rule we have blocked all the access from Cuba.

The screenshot shows the AWS CloudFront Edit geographic restrictions page. The left sidebar lists CloudFront, Distributions, and the specific distribution E1XOPPGJZZDWS8. The main content area is titled 'Edit geographic restrictions' and contains a 'Settings info' section. Under 'Restriction type', the 'Block list' option is selected. A 'Countries' dropdown menu shows 'Select countries', and 'Cuba' is listed as a selected item. At the bottom are 'Cancel' and 'Save changes' buttons.

Architecture Diagram



Following are the Components which takes care of all the requirements given for this assignments

- S3 Multi-Region Access Point for Disaster Recovery and Data Replication
- CloudFront Distribution for high availability , low latency and access restriction.
- IAM to block unauthorized user access.
- S3 Object lifecycle management for saving up storage costs and also being efficient.

References:

1. "Solutions." Amazon, National Council on Vocational Education, 1991,
<https://aws.amazon.com/solutions/case-studies/autodesk-migration-modernization-infographic/>.