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# DAP Design and Implementation (Giridhar K S)

## Step 15: Data Protection

AWS S3 replication allows you to automatically replicate objects across different S3 buckets, either within the same region or across regions. IAM plays a crucial role in granting the necessary permissions.

A screenshot of a computer

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*Figure 1*: Replication configuration settings - Define the source, destination, and conditions under which data is replicated.

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*Figure 2:* IAM role is required to give Amazon S3 the necessary permissions to read from the source bucket and write to the destination bucket.

## Step 16: Data Governance

Data governance is to ensure that we add data quality. We have data privacy, data compliance, and data protection.

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*Figure 3:* The above picture displays the successful creation of Job status and the design of ETL structure for the Data Quality and Data Protection model.

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*Figure 4:* The above screenshot displays the successful creation of the schedule to run the designed ETL jobs at specified time to generate the required output.

Once the schedule is created successfully, the next step is the creation of workflow. Workflow is created to decide the next action, how and where the output will be stored after the scheduled job is run.

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*Figure 5:* The above screenshot clearly projects the S3 bucket design, and the path leading to applications folder for storing the output.

## Step 17: Data Monitoring

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Figure 6: The above screenshot displays the dashboard showcasing the final output of the monitoring status with detailed report of every service monitored against specific parameters

# DAP Architecture Analysis (Teamwork)

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***Figure 7:*** *Project* Part 1 DAP design of AWS services used for the creation of the AWS cloud platform for the City of Vancouver

A close-up of a computer screen

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***Figure 8:***ProjectPart 2 DAP design of AWS services used for the creation of the AWS cloud platform for the City of Vancouver

The assessment of the Digital Adoption Platform (DAP) developed in Part 1 and Part 2 of the project, focuses on six key areas mainly Operational Excellence, Security, Reliability, Performance Efficiency, Cost Optimization, and Sustainability.

1. Operational Excellence

In the design we used Amazon Glue for automating ETL processes and Amazon CloudWatch service for system monitoring and logging, which helped in streamlining data management. Amazon S3 and data pipelines, will allow the system to handle growing data volumes efficiently. The service helps to move information from the "Landing" stage to the "Curated/Trusted" stage seamlessly.

2. Security

The Security feature is discussed through AWS Key Management Service (KMS), ensuring data stored in S3 is encrypted and secure. Access control measures are reinforced by using AWS Identity and Access Management (IAM) policies, which restrict access to sensitive data.

3. Reliability

The AWS S3 service provides high reliability through built-in redundancy. It automatically replicating data across multiple Availability Zones reducing the risk of data loss. The use of AWS Glue for data processing also enhances reliability by creating a resilient data pipeline.

4. Performance Efficiency

This platform’s layered structure, separating raw, processed, and curated data, improves query efficiency and reduces processing times. AWS Glue dynamically allocates resources and the platform can be scaled to meet demand without overusing resources.

5. Cost Optimization

By utilizing AWS’s pay-per-use model, the platform minimizes unnecessary costs. S3 storage costs are managed by moving data between different storage classes, ensuring the platform only pays for what it needs at any given time.

6. Sustainability

The AWS cloud infrastructure service platform avoids the need for physical data centers reducing energy consumption. AWS’s commitment to using renewable energy further enhances the platform's sustainability profile, helping lower its carbon footprint.

References:

Home - city of vancouver open data portal. (n.d.). <https://opendata.vancouver.ca/pages/home/>