cogent infotech

Case Study

Vermont Department of Public Safety State of Vermont

The Business Problem

The Vermont Department of Public Safety currently uses a Computer Aided Dispatch Records Management System (CAD RMS) system that is currently running in a MySQL instance that will be used in the first phase of the Data Lake build. The supplemental data ranges from SQL server instances and flat file sources that are currently housed internally either in SharePoint or internal file stores. DPS in collaboration with the Vermont Agency of Digital (ADS) Services, is seeking to procure Amazon Web Service (AWS) professional services to work with the ADS Technical Lead to build out the Public Services Lakehouse environment.

Solution

AWS Lake Formation helps you centrally govern, secure, and globally share data for analytics and machine learning. With Lake Formation, you can manage fine-grained access control for your data lake data on Amazon Simple Storage Service (Amazon S3) and its metadata in AWS Glue Data Catalog.

The Lake Formation hybrid access mode for AWS Glue Data Catalog lets you secure and access the cataloged data using both Lake Formation permissions and IAM permissions policies for Amazon S3 and AWS Glue actions. With hybrid access mode, data administrators can onboard Lake Formation permissions selectively and incrementally, focusing on one data lake use case at a time.

About Cogent Infotech

Founded in 2003, Cogent Infotech is a trusted, award-winning firm with **21+ years** of experience**, 150+** government contracts, **10,000+** projects, and a 96% employee retention rate. Recognized as an SBA Small Business and MBE-certified, we deliver excellence through diverse talent, AI-driven recruitment, and cooperative contracts like NASPO Value Point and TIPS-USA.

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Features

Lake Formation helps break down data silos by centralizing structured and unstructured data. First, identify existing data in Amazon S3 or databases and move it to your data lake. Then crawl, catalog, and prepare it for analytics. Finally, enable secure self-service access through various analytics services.

- Data ingestion and management
- Import data from databases already in AWS
- After specifying your databases and access credentials, Lake Formation reads the data and schema to understand its contents.
- Import data from other external sources
- You can use Lake Formation to move data from on-premises databases by connecting with Java Database Connectivity (JDBC).
- Catalog and label your data
- AWS Glue crawlers extract schema from S3 data and store it in the AWS Glue Data Catalog.

Best Practices

- ✓ Data Organization and Partitioning
- ✓ Data Cataloging and Metadata Management
- ✓ Data Ingestion and ETL
- ✓ Data Storage and Optimization
- ✓ Security and Compliance
- ✓ Scalability and Performance
- ✓ Cost Management
- ✓ Data Quality and Governance
- ✓ Disaster Recovery and Backup
- ✓ Continuous Improvement and Automation
- ✓ CI/CD Pipelines
- ✓ Regular Audits

Risk Analysis

Risk analysis is the conversion of risk assessment data into risk decision-making information.

Risks are composed of two factors:

(1) risk probability and

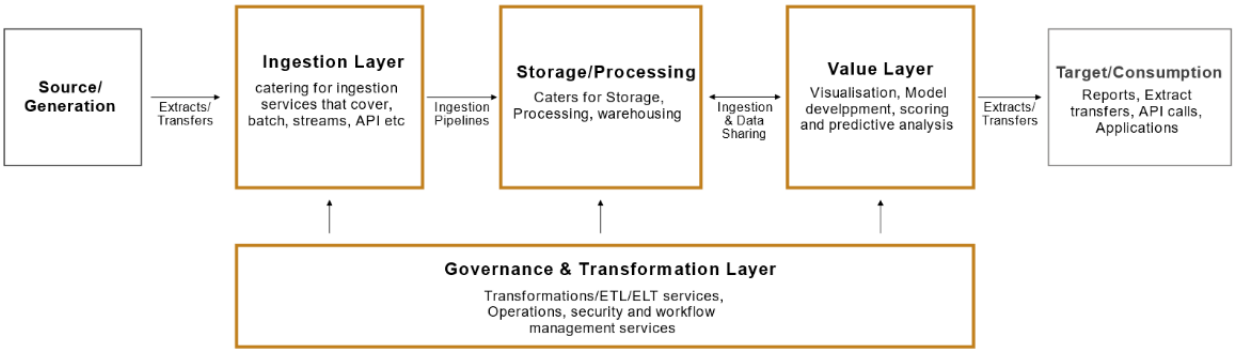
(2) risk impact — the impact to the schedule of the DWH/BI project can also measure the loss by a risk.

End to End Data Quality Auditing and Reporting Process

TECHNOLOGIES

- Storage
- Amazon S3 (Simple Storage Service):
- Primary storage service for data lakes.
- Data Ingestion
- AWS Glue, Amazon Kinesis
- Real-time data streaming service, AWS Data Pipeline, AWS Transfer Family
- Data Processing and Analytics
- Amazon EMR (Elastic MapReduce), AWS Lambda, Amazon Redshift, Amazon Athena, AWS Glue Data Brew
- Machine Learning and AI
- Amazon Sage Maker, AWS AI Services
- Security and Governance
- AWS IAM (Identity and Access Management),AWS KMS (Key Management Service),AWS Lake Formation, Amazon Macie, AWS CloudTrail and AWS Config
- Monitoring and Logging
- Amazon Cloud Watch, AWS CloudTrail
- Data Catalog and Metadata Management
- AWS Glue Data Catalog
- Data Integration and Transformation
- AWS Step Functions:

Solution Design



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