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**School of Computing**

**BSc (Hons) Ethical Hacking and Network Security**

**Higher National Diploma in Network Engineering (HNDNE)**

**COHNDNE24.1F-GROUP 06**

**Cloud Computing – Coursework 01**

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3. The data and findings presented in this work are genuine and have not been manipulated or fabricated. Any assistance received in the collection and analysis of data is acknowledged appropriately.
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**AWS CLOUD ADOPTION FOR AN SUPPLY CHAIN MANAGEMENT COMPANY**

**(HAYLEYS ADVANTIS 3PL PLUS)**

# **1. INTRODUCTION**

Advantis 3PL Plus is the leading Supply Chain Management Company in Sri Lanka, a subsidiary of Hayleys Advantis, the Transportation and Logistics arm of the heavy legacy, Sri Lanka's largest and most diversified conglomerate- Hayleys PLC. Being leaders in the industry, the efficiency and reliability of physical networks are imperative. Unfortunately, our physical network recently has caused unavoidable challenges ranging from system failures, network downtimes, inventory management errors, and user management issues. Not only do such issues threaten operational efficiency, but they may also undermine the quality of service that is relied upon by our clients.

The AWS cloud is our strategic play in reaction to such challenges. Moving us to the AWS cloud is expected to address the limitations of our current infrastructure setting into use the advanced and scalable AWS offerings in this regard. We would have averted failures in a series of physical networks, therefore able to continue operating and managing logistics systems unabatedly.

This cloud adoption will be very essential in enabling us to be ahead of the competition. We want to further improve the reliability, performance, and security of our operations. Leveraging the strong capacity that AWS has put in place, we are committed to delivering excellent service and meeting the needs of our clients increasingly complex and dynamic in logistics.

# **2. WHAT IS CLOUD FRAMEWORK**

The AWS Cloud Adoption Framework is a series of best practices and guidelines that Amazon Web Services provides to aid any organization in its effective transition to the cloud. It will help businesses align strategies for business and technology with the journey of cloud adoption. These are organized according to six key perspectives, each of which focuses on different areas of cloud adoption:

1. **Business Perspective:** Deals with the alignment of investments in the cloud with business results. It includes the development of a business case, value realization, and organizational alignment.
2. **People Perspective:** Concerns the people and organizational change management, including skill and competency development, organizational change management, and cloud roles and responsibilities.
3. **Governance Perspective:** It is concerned with the planning and optimization of cloud investments. This also includes program and project management, benefits management, risk management, and cloud financial management.
4. **Platform Perspective:** This covers the design, delivery, and management of the cloud infrastructure. These include cloud infrastructure design, cloud operations, and cloud services management.
5. **Security Perspective:** This perspective will ensure the security and compliance of the cloud environment. Capabilities will include Identity and Access Management, threat detection, and data protection.
6. **Operation Perspective:** It would deal with the maintenance and optimization of cloud services, including capabilities such as monitoring, incident management, and automation.

Each of these perspectives contains best practices, tools, and resources to guide organizations in the achievement of their special cloud adoption goals and handling concerned challenges relevant to people, process, and technology. The AWS CAF is very useful in planning and execution for a successful cloud migration, since this gives an organization the capability to handle and govern its cloud environment effectively.

# **BUSINESS PERSPECTIVE**

**(H R PEIRIS - COHNDNE24.1F-021)**

Business perspective gives a hand and makes sure that the investment in cloud is providing a

standard assistance to the company and it directs the business in a proper manner to achieve the main goals of the business

## **Strategy Management**

By analyzing **ADVANTIS 3PL** we came across some solutions and strategies in order to

effectively conduct the business and to get the best out of the company and to expand the

business, currently we are using on frame servers and have decided to migrate to a cloud

platform which is AWS (Amazon Web Servers)

1. minimizing expenses
2. smoother user experience

**minimizing expenses:** currently we have our own servers to run the operations of the business,

which requires a lot of capital and to expand the business this doesn’t seems practical so by

using cloud platform, we just have to pay for the amount of workspace we need (pay as you go

method). This can immensely reduce the cost of having and managing our very own servers.

**Smoother user experience:** The main problem that we face in having on frame servers is the

“downtime” running our business in cloud can eliminate this issue, which will give the customer a smooth user experience when accessing our platform.

## **Portfolio Management**

**ADVANTIS 3PL** is a company which is located in several areas across the globe and by using

AWS we can merge all of our company work together and can make them function as a single

Unit, this can help to balance the load of operations we have to carry out, by making it work

as a single unit it is easy to scale our business in future and this can bring a massive revenue to

the company.

## **Innovation Management**

Innovation is crucial for any business which is trying to get into the market and to make a mark

in the industry, so after looking at the current infrastructure we have to be updated according

to the current trend. We came across some features which can be handy and useful for the

customers. One of them is briefed below Normally after a shipment is confirmed customer will be sent an e-mail to track the shipment and will be notified when it is about to get delivered. But with the help of **AWS mobile and web development platform** we can create a new infrastructure for our customers. They can pick a product to ship and till it gets delivered they can track(real-time). We are going to make it a user friendly and easily accessible environment.

## **Data Science**

Collecting a collection of data and converting it to a meaningful information for decision makingThat’s is the main target using data science so to keep improving, knowing what is happening inside our company is very important. With the help of data science, we can analyze our competitors’ strategies which can be useful for our company, operational cost can be reduced and improve customer satisfaction.

## **Reference**

* “An Overview of the AWS Cloud Adoption Framework - An Overview of the AWS Cloud Adoption Framework,” *docs.aws.amazon.com.*

<https://docs.aws.amazon.com/whitepapers/latest/overview-aws-cloud-adoption-framework/welcome.html>

* “Business perspective: strategy and outcomes - An Overview of the AWS Cloud Adoption Framework,” *docs.aws.amazon.com*. <https://docs.aws.amazon.com/whitepapers/latest/overview-aws-cloud-adoption-framework/business-perspective.html>

# **PEOPLE PERSPECTIVE**

**(P. A. U. Ishara - COHNDNE241F-008)**

## **The Impact of Cloud Adoption at Advantis 3PL (PVT) Ltd**

The adoption of cloud computing is a challenging and transformative process that affects all levels of an organization. In Advantis 3pl (PVT) Ltd, this change affects all the levels of hierarchy in the company, from executives to frontline employees. This report explores how the hierarchy of the company is shaped and is shaped by the cloud adoption process.

## **Leadership's Role in Steering Cloud Adoption**

The leadership of Advantis 3pl (PVT) Ltd needs to play a crucial role in the transforming process. Firstly, they need to see cloud adoption to enhance operational efficiency, scale operations more flexibly, and improve the company’s competitive edge. And they need to lead their employees in this transformation period efficiency because this is the migration of exiting systems to the cloud. The cloud gives the ability to deploy new services and solutions, which is crucial for the fast-paced logistic industry like Advantis 3pl (PVT) Ltd. The leadership will be interested how the cloud can enable new business models and services.

## **Challenges and Responsibilities of IT Managers and System Administrators**

IT managers and system administrators play a crucial role in the cloud adoption process because they are the one who responsible for migration of exiting systems to cloud. They need to minimize the disruption during the transition process and handle data migration and adapt to new cloud management tools. The transition to cloud computing requires them to develop new skills and understand the best practices for cloud infrastructure management. They need to make sure that the cloud infrastructure meets the company’s needs.

## **Financial Implications and Strategies for Cloud Adoption**

Finance team is focused on managing and predicting the costs about the cloud adoption. Firstly, they see cloud adoption as a good thing for the company. Because maintaining own servers needs a big budget than clouds. Therefore, they will approve the cloud adoption, but it also requires careful monitoring to avoid unexpected expenses. Finance professionals will need to understand the cloud billing structure. The pay-as-you-go model of cloud services can provide cost savings. They will work with IT and other departments to develop a financial strategy that supports the company’s goals.

## **The Impact of Cloud Adoption on End Users**

End users like warehouse staff and delivery drivers will experience the direct impact of cloud adoption through improved systems and applications. The cloud can lead to better performance and reliability of Advantis 3pl (PVT) Ltd software. It will enhance their ability to manage shipments, track deliveries and better communication with customers. But in the beginning, they will face temporary disruptions during the migration process. The company needs to train and support the end users during the migration process to minimize any negative impacts.

## **Addressing Organizational Perspectives on Cloud Adoption**

The people perspective on cloud adoption will affect different ways in the company’s hierarchy. And we can understand the ways of the hierarchy’s contribution to the cloud migration process. And there will be some temporary disruptions during the migration process. It can affect to everyone in the company because the cloud is a new thing to the Advantis 3pl (PVT) Ltd. It is essential to address these perspectives to ensure a successful transition. By effective handling of various viewpoints, the business may use cloud computing to improve operations and accomplish its goals.

## **Reference**

* “AWS Cloud Adoption Framework: People Perspective - AWS Cloud Adoption Framework: People Perspective,” *docs.aws.amazon.com*. <https://docs.aws.amazon.com/whitepapers/latest/aws-caf-people-perspective/aws-caf-people-perspective.html>
* ‌“An Overview of the AWS Cloud Adoption Framework - An Overview of the AWS Cloud Adoption Framework,” *docs.aws.amazon.com.*

<https://docs.aws.amazon.com/whitepapers/latest/overview-aws-cloud-adoption-framework/welcome.html>

# **GOVERNANCE PERSPECTIVE**

**(G W J K Bhashana - COHNDNE241F-047)**

Advantis 3PL is a market leader in logistics and the management of the supply chain. It has embarked on migrating to the cloud computing environment using the AWS Cloud Adoption Framework. Governance perspective, being a very crucial part of this framework, helps in the assured alignment of cloud adoption with strategic goals, regulatory requirements, and most importantly, available risk management. It explains key governance capabilities and spots light on inexpensive services available in AWS that can support Advantis 3PL along its cloud journey.

## **Governance Perspective Overview**

The Governance Perspective of AWS CAF introduces a set of control and management practices incorporated to guide adoption and usage of the cloud. For Advantis 3PL, proper governance will see cloud resources controlled with a focus towards compliance, security, mitigation of risks, and cost management.

## **Key Capabilities of Governance and Related Affordable AWS Services**

### **1. Program and Project Management**

* The projects of adopting the Cloud need to be managed effectively in alignment with the business objectives of the company. AWS CloudFormation makes it easy for you to automatically manage resources and applications with cost-effective and efficient automation of services in ways that ensure there is no complexity and inconsistency in the management of projects on a large scale. In addition, the AWS Service Catalog standardizes IT services for ensuring only approved and compliant resources are used in a project.

### **2. Risk Management**

* Risks that accompany the cloud adoption process must be dealt with in a manner that would secure sensitive data, ensure continuity of service, and provide resilience in the face of specific risks.  Affordable AWS services like AWS IAM and AWS Cloud Trail could be the best for Advantis 3PL. Users under the first are accorded secure access management-the second provides verbose logging and account activities monitoring that are vital in tracking down security risks to be mitigated. It also further strengthens risk management by ensuring compliance with internal policies and standards through AWS Config: hence, tracking configuration changes.

### **3. Cloud Financial Management**

* Advantis 3PL, in an effort to avoid overbuying and ensure that their cloud investments are aligned with business goals, can put in place AWS Cost Explorer and AWS Budgets. These are low-cost but powerful tools used in the management and control of spending on the cloud. It helps the company manage its budget efficiently and optimize its costs.

### **4. Customer service and sales management**

* Compliance with industry regulations is critical for Advantis 3PL, especially given the sensibility of supply chain data. Here, on-demand access to compliance reports, through AWS Artifact, and tracking the compliance of configurations using AWS Config, becomes solutions that are affordable, efficient, and effective to the management of the legal and regulatory requirements. Also, AWS CloudTrail helps in enabling compliance with AWS activity through comprehensive audit trails.

## **Data Governance: Data quality, data protection, and data availability**

AWS Glue and Amazon S3 are cost-effective in the provision for services meant for either data integration or repository, respectively, in either the governance or management of data. AWS Key Management Service provides encryption key management further to strengthen data security, while AWS Lake Formation eases the setup of a secure data lake, ensuring data is well governed and available.

### **Governance Challenges and Remediation**

* Common challenges of governance that would face Advantis 3PL include issues with visibility and control over cloud resources, management of compliance risks, and security threats and then ensuring cost control. These would be quite adequately handled by these very cheap AWS services, including:

**Visibility and control**

* AWS CloudTrail and AWS Config ensure enhanced monitoring and visibility, thus helping maintain control over the company's cloud environment.

### **Compliance and Security**

* IAM, AWS Artifact, and AWS CloudTrail ensure that Advantis 3PL remains compliant at all times and that security best practices are adhered to.

### **Cost Management**

* AWS Cost Explorer and AWS Budgets provide powerful tools for tracking and optimizing cloud expenditure to prevent overrun budgets.

By using AWS services that are cost-effective and suitable for this company, as described in this, the company will be assured of a secure, compliant, and cost-efficient environment while mapping the strategic objectives. These services will meet not only the financial constraints of Advantis 3PL, but also the necessary oversight and control to handle the inherent complexities of cloud governance in an effective manner.

## **Conclusion**

**The Governance Perspective of the AWS Cloud Adoption Framework acts as a crucial foundation to ensure that Advantis 3PL's migration into the cloud is secure, compliant, and aligned with strategic objectives. With the presence of affordable AWS services, including AWS CloudFormation, IAM, AWS CloudTrail, and others described in this report, Advantis 3PL will be able to handle risks, manage costs, and ensure compliance by following the set regulations of the industry. These services not only provide the required control but also ensure that the company's cloud investments maximize support to its business goals. With careful implementation of these governance practices, Advantis 3PL will be able to navigate the complexities of cloud adoption all the way to the achievement of a secure and cost-efficient cloud environment driving continued success in the logistics and supply chain business.**

## **Reference**

* “An Overview of the AWS Cloud Adoption Framework - An Overview of the AWS Cloud Adoption Framework,” *docs.aws.amazon.com.*

<https://docs.aws.amazon.com/whitepapers/latest/overview-aws-cloud-adoption-framework/welcome.html>

* “AWS Cloud Adoption Framework: Governance Perspective - AWS Cloud Adoption Framework: Governance Perspective,” *docs.aws.amazon.com*. <https://docs.aws.amazon.com/whitepapers/latest/aws-caf-governance-perspective/aws-caf-governance-perspective.html>

# **PLATFORM PERSPECTIVE**

**(G Balachandran - COHNDNE241F-046)**

## **Platform Perspective in Cloud Adoption for Advantis Logistic**

A key player in supply chain management and global logistics, Advantis Logistic is presently undergoing a strategic makeover to update its import and distribution processes using cloud computing. In a highly competitive logistics industry, Advantis Logistic aims to simplify business processes, improve scalability, and assure real-time responsiveness by utilizing the Platform Perspective of the AWS Cloud Adoption Framework (CAF).

## **The Role of the Platform Perspective in Distribution and Import Operations**

Advantis Logistic manages a complex system of fleets, imports from outside, and logistics centers that call for efficient communication and flawless operations. The Platform Perspective offers businesses a conceptual roadmap needed to develop, implement, and grow cloud-native solutions that solve these practical difficulties. Infrastructure as Code (IaC) and Continuous Integration and Deployment (CI/CD) are two essential elements of this concept. Both are now crucial to changing how Advantis Logistic operates its logistics network and responds to the ever-changing demands of the industry.

### **1. Infrastructure as Code (IaC): Automating and Scaling Distribution Operations**

Across several countries, Advantis Logistic's distribution network has different infrastructure requirements, ranging from fleet tracking to warehouse management systems (WMS). In the past, scaling existing systems or supplying new infrastructure was a lengthy and costly procedure. Advantis Logistic has automated all of its distribution network's provisioning processes by employing AWS CloudFormation to develop Infrastructure as Code (IaC).

Advantis Logistic faces peaks in order quantities at busy times, like Black Friday or the Christmas shopping season, which demands a rapid increase in its distribution team. Scaling infrastructure required manually configuring servers, databases, and network settings prior to the adoption of Infrastructure as a Service (IaC), which could cause delays and disturbances. The organization can now rapidly scale its infrastructure across several distribution centers thanks to Infrastructure as a Service (IaaS). Order processing, route optimization, inventory management, and other vital apps can handle the extra load without crashing thanks to this automation.

For example, the business just increased the scope of its activities into Southeast Asia. Advantis Logistic was able to quickly duplicate the whole cloud infrastructure configuration of its distribution centers in Singapore and Thailand by using IaC templates. This made it possible for the business to enter new markets swiftly and guarantee that the new facilities were immediately fully connected with its worldwide logistics network.

### **2. Continuous Integration and Continuous Deployment (CI/CD): Enhancing Import Operations**

The complex processes involved in Advantis Logistic's import operations include compliance with regulations, real-time tracking of shipments across international borders, and customs clearance. The company's software systems must be updated on a regular basis due to changes in import and trade regulations. Through the use of Continuous Integration and Continuous Deployment (CI/CD) pipelines, Advantis Logistic has been able to optimize the import management application development and deployment process.

## **Real-World Application**

In the past, updating software to keep up with new trade standards required a lot of employee work, which often led to shipments to be delayed and fines for non-compliance. Now that Advantis Logistic has implemented a CI/CD pipeline with tools like AWS Code Pipeline and Jenkins, the entire process can be automated.

Advantis Logistic was required to incorporate extra documentation and reporting functionalities into its import management system with the introduction of new import laws by the European Union concerning the tracking of carbon emissions. The company successfully integrated these regulatory changes, tested them in a staging environment, and deployed them across all relevant areas in less than 48 hours thanks to its CI/CD pipeline. This prompt action made sure that the import procedure ran smoothly and that every cargo continued to comply with the new rules.

Furthermore, by integrating machine learning models that optimize shipping routes, forecast possible delays at customs, and suggest alternate shipping routes, the company is able to constantly improve its import software through the CI/CD process. This proactive approach to import management boosts cross-border operations efficiency and dramatically lowers the chance of delays.

## **Conclusion**

Advantis Logistic's distribution and import operations are undergoing a major shift due to the Platform Perspective in the AWS Cloud Adoption Framework. The organization has automated the setup and scaling of its distribution infrastructure by adopting Infrastructure as Code (IaC), ensuring that it can handle peaks in demand without experiencing any outages. In the meantime, import operations have been streamlined by the application of Continuous Integration and Continuous Deployment (CI/CD), which has allowed the business to quickly adjust to new regulations and optimize cross-border logistics.

Through these cloud-native approaches, Advantis Logistic is positioning itself as a leader in the logistics industry, with the agility and resilience to navigate the complexities of global supply chains in the digital era.

## **Reference**

* “AWS Cloud Adoption Framework: Platform perspective - AWS Prescriptive Guidance,” *Amazon.com*, 2023.

<https://docs.aws.amazon.com/prescriptive-guidance/latest/aws-caf-platform-perspective/welcome.html>

* “An Overview of the AWS Cloud Adoption Framework - An Overview of the AWS Cloud Adoption Framework,” *docs.aws.amazon.com.*

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# **SECURITY PROSPECTIVE**

**(K A D Harshamal - COHNDNE241F-043)**

The assessment identified several critical areas for improvement, including weak access controls, inconsistent data protection practices, and gaps in regulatory compliance.

The key recommendations will include the implementation of strong data encryption, enforcement of Multi-Factor Authentication, enhancement of network segmentation, and an incident response plan those counters cloud-specific threats. Measures to help improve security on sensitive data, ensure industry standard compliance, and provide secure, successful cloud adoption for the company.

AWS provides one with an inclusive set of tools to enhance the security of Advantis 3PL. With AWS Systems Manager and Config, the company is going to easily track, monitor, and check all cloud resources. Access control will be much more secure with the use of AWS Identity and Access Management and Multi-Factor Authentication. It has VPCs and Security Groups for the segmentation and protection of network security, and AWS Shield and WAF against DDoS (Distributed Denial of Service) attacks. Data at rest and in transit is encrypted by default with services like Amazon S3 and RDS. Automated data protection can be performed using AWS Backup. On the incident response side, AWS CloudWatch and Lambda provide excellent monitoring capability and automation for quick responses to issues. Aside from this, AWS CloudTrail and Config keep the company compliant with industry regulations.

## **Data protection**

AWS's encryption on services like Amazon S3 and RDS protects data both at rest and in transit. This means you will not be hostages to anyone with unauthorized access to your sensitive information. With AWS Backup, it automates a backup of essential data; hence, in case something goes wrong, your data gets lost, or something else, you can recover fast and maintain business continuity.

## **Access Controls**

It means that at Advantis 3PL, IAM Roles are assigned to the team members with only the resources relevant to their job descriptions. Besides keeping things secure by giving access to the 'Need to Know' basis, this approach also avoids its unauthorized usage. The review of roles sometimes also ensures the permissions are current and reflect changes in job responsibilities.

Apart from this, turning on the Multi-Factor Authentication across all your AWS accounts maintains the safety of your account by asking users to log in using a mobile app like Google Authenticator to prove their identity in addition to their password. This helps maintain the safety of accounts from unauthorized access and enhances security in general.

## **Network Security**

Under Advantis 3PL, basic segmentation of the network includes AWS VPCs and Security Groups to help create zones within your network for system isolation. You can begin with the default settings and further tune them according to your security requirements.

Additional protection through AWS Shield Standard helps guard against the most common forms of distributed denial-of-service (DDoS) attacks, thus guaranteeing that applications facing these threats are available and resilient.

## **Incident Response**

An incident response plan at Advantis 3PL should be quite easy and clearly explain what to do and whom to call when something goes wrong. In this case, AWS CloudWatch helps by monitoring the systems and raising alerts in case of any issues. Further, using AWS Lambda allows tasks such as isolation of affected systems or sending out alerts in case of something suspicious to be automated, which makes handling problems easier and quicker.

You can trace all events in your AWS environment using AWS CloudTrail, to maintain compliance and governance at Advantis 3PL. In this way, you could review and audit what is taking place across your system. AWS Config supports by continuously monitoring and checking the setup of your resources for compliance with your standards, providing you a clear view of how your environment is configured.

## **Conclusion**

These steps will raise the security for Advantis 3PL while keeping associated expenses to the barest minimum. The company can meet up with such major security concerns through the leverage of AWS inbuilt features for encryption and backups, strong access controls, and basic network segmentation accompanied by DDoS protection. Thereafter, a plan to implement a simple incident response program and finally, with minimal cost tools performing logging and compliance, provide supplementary security. It lays a solid foundation for secure cloud operations, ensuring the protection of the company's assets as part of its migration to AWS cloud services.

## **Reference**

* AWS, "AWS Cloud Adoption Framework (CAF) Security Perspective," Accessed: Aug.17,2024. [Online]. Available:

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* AWS, "AWS Cloud Adoption Framework (CAF) Security Perspective," Accessed: Aug.17,2024.[Online].Available: <https://docs.aws.amazon.com/pdfs/whitepapers/latest/aws-caf-security-perspective/aws-caf-security-perspective.pdf>

# **Operational Perspective**

**(D T P Ladduwahetti - COHNDNE241F-022)**

In a firm in the logistics context, such as Advantis 3PL, operational failures in real life may further effuse direct impacts on company efficiency, customer satisfaction, and profitable returns. The following are representative common failures from an operational point of view within the framework of the AWS Cloud Adoption Framework (CAF), where solutions need to be explored.

### **1. System Downtime**

**Failure:** Unscheduled downtime or outage of key systems—WMS, TMS, or Order Platform for Order Execution—can cause severe business disruption.

**Solutions:**

**Amazon EC2 with Auto Scaling and Elastic Load Balancing (ELB):**

* Set up scaling for your EC2 instances through Auto Scaling. These, in turn, scale due to the dynamic demand coming from the application tier. This helps ensure very high availability.
* Utilize an ELB to load balance incoming traffic across multiple instances, which actually lowers the chances of downtime.

**Amazon RDS with Multi-AZ Deployment:**

* Use Amazon RDS with Multi-AZ Deployment, which provides redundancy across different Availability Zones for your database instances. This way, any hardware failure will have minimal chances of downtime.

### **2. IMS (Inventory Management System) Errors**

**Failure:** The errors in the IMS can lead to incorrect stock levels, delays in order completion process, and sales loss.

**Solutions:**

**AWS Lambda with Amazon DynamoDB:**

* Leverage AWS Lambda to perform real-time validation checks and corrections on the inventory data to identify discrepancies and rectify them in a timely manner.
* The inventory data shall be stored with Amazon DynamoDB, which is a NoSQL-based database service that provides fast and predictable performance for kind of scale, while at the same time being a fully managed and highly available, with built-in backup and restore capabilities.

**Amazon Kinesis Data Streams:**

* Use Kinesis Data Streams to process inventory data in real time to promptly detect and respond to anomalies.

### **3. User Management Failures**

**Failure:** Weak user management is the root cause for unauthorized access, data loss, and failure to meet compliance obligations.

**Solutions:**

**AWS Service: AWS Identity and Access Management (IAM):**

* You can use AWS IAM for safe management of access to AWS resources with fine-grained permission control about 'who can access a certain resource'.
* "Use IAM roles to provide temporary access to the user/system and reduce the exposure due to the risk of credential misuse.".

**AWS Organizations:**

* Use AWS Organizations for centrally managing multiple AWS accounts and governing them with the enforcement of policies for security while managing and paying for multiple accounts.

**AWS CloudTrail:**

* This allows CloudTrail to log, continually monitor, and retain account activity in your AWS infrastructure. This yields a detailed audit trail used for security and compliance.

### **4. Network Failures**

**Failure:** In cases of network failures, the effective communication between systems could be stalled or even stopped. These can result in a delay of the work process.

**Solutions:**

**Amazon Virtual Private Cloud (VPC) with AWS Direct Connect:**

* Deploy into an Amazon VPC to provision a logically isolated section of the AWS Cloud where you can launch AWS resources in a virtual network.

**AWS Transit Gateway:**

* This is the service that simplifies network architecture and extends the cloud into your on-premises data center to remote offices.

**Amazon CloudFront:**

* Use CloudFront, an effective content delivery service or a content delivery network service. It reduces latency by caching a copy of frequently accessed data closer to users. With this, it makes sure that the data is accessed by a user with the lowest possible delay and maximum availability.

### **5. Data Loss**

**Failure:** Loss of critical data due to hardware failure, human error, or cyber-attack can be much detrimental to logistics.

**Solutions:**

**Amazon S3 with Cross Region Replication:**

* Important and critical data files should be stored in Amazon S3, with versioning turned on. This helps as deleted or overwritten files can be restored through versioning.
* Configure Cross-Region Replication, where data is replicated automatically and in real-time to another AWS region, which creates higher protection against data loss.

**AWS Backup:**

* Use AWS Backup to automate and centralize backup of across AWS services ensuring regular and dependable backups of critical data.

## **Summary**

Leveraging all the above AWS services, Advantis 3PL can have operational failures mitigated and high availability, data integrity, and secure user management ensuring. The solutions provided are scalable, reliable, and cost-effective that lets the company focus on core business operations without being concerned about infrastructure issues.

The operational perspective in the AWS CAF is based on continuous monitoring, automation, and secure access management, which assures that logistics operations are robust. By implementing such solutions, Advantis 3PL could attain a resilient, high-performing, and secure operational environment.

## **Reference**

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# **CONCLUSION**

The use of the AWS CAF by Adventis 3PL really does approach the situation with deep strategy for modernizing and upgrading its operations. The company, with Amazon Web Services, is going to enjoy significant cost savings and improved operational efficiency. Key benefits will be streamlined business processes, enhanced securities, and effective governance. The flexible structure of the comprehensive approach meets the needs of the organization: business, people, governance, platform, security, and operational perspectives. It is what empowers Advantis 3PL for growth and resilience in the logistics and supply chain industry.