**CASE STUDY**

**PRIMARY STORAGE FOR an E-Commerce Company**

## About E-Commerce Company:

E-Commerce Company is a retail chain in India that sells consumer electronics and durables. It was founded in 1967 by their founder as a small TV showroom in Mumbai. Today, it has many showrooms across India. E-Commerce Company is your most preferable destination for consumer electronics. Offering guests, the best in quality and service has been the primary principle at E-Commerce Company since its inception as a partnership firm by their founder, a visionary with astute business acumen and foresight. FOUNDED IN 1967 A marvellous journey that began with a small Electronics Showroom at Mahim in 1967, E-Commerce Company has since evolved and has become one of India's biggest retail chains. 107 STORES IN INDIA Today, you can shop for the best in Electronics from 103 aesthetically-designed and conveniently located showrooms in cities like Mumbai, New Mumbai, Thane, Palghar, Pune, Ahmedabad, Vadodara, Surat, Delhi, Gurgaon, Faridabad, Indirapuram, Noida, Hyderabad, Warangal, Kakinada, Rajahmundry, Visakhapatnam, Tirupati, Vijayawada & Guntur. 3500+ PRODUCTS You can shop for 3500+ products across 11+ primary categories in a world-class ambiance. LEADERSHIP of Chairman, Founder, Managing partner, and Managing partner MISSION E-Commerce Company would give its customers the best value, best products, and the best available service in the industry. Honesty towards our customers, principals and our associates would be the pillar on which E-Commerce Company would stand and grow.

## About Wysetek:

Wysetek is a technology and software development company that specializes in providing innovative IT solutions and services to businesses worldwide. They offer a range of services, including custom software development, cloud computing, IT consulting, and enterprise solutions. Wysetek focuses on helping businesses streamline their processes, enhance operational efficiency, and adopt the latest technologies. The company also caters to industries like healthcare, finance, and retail, leveraging cutting-edge tools to drive digital transformation. With a client-centric approach, Wysetek ensures high-quality, scalable solutions tailored to specific business needs.

## Challenges:

Use Case: PRIMARY STORAGE

Switching a project from on-premises infrastructure to AWS offers several advantages, especially when dealing with complex, data-intensive, and dynamic environments for related projects. However, there are also challenges associated with on-premises infrastructure that drive the decision to migrate to the cloud.

1. Limited Scalability: On-premises systems typically have fixed hardware and capacity limits. Scaling these systems requires purchasing and installing additional physical hardware, which is time-consuming, costly, and often requires physical space and power resources.

As project needs grow (e.g., more data, more users, or increased complexity), expanding on-prem infrastructure can be slow and expensive.

2. High Capital Expenditure: On-premises infrastructure often involves significant upfront costs for hardware, software, data centers and maintenance. These investments can tie up capital and create budget constraints, which are alleviated with AWS's pay-as-you-go model.
3. Maintenance and Management Overhead: Managing on-premises infrastructure requires a dedicated IT team to handle server maintenance, updates, patching, and security. This adds operational complexity and overhead, especially as the infrastructure grows. Regular hardware failures, performance issues, and security vulnerabilities can also require additional management effort, which could distract from core business activities.
4. Security Risks: While on-prem systems offer control over security, they also require constant management to protect against evolving threats. Security patches must be applied manually, and maintaining a robust security posture without the resources available in the cloud can be a significant challenge. On-prem systems may also be more vulnerable to breaches due to outdated software or insufficient security resources.
5. Complexity of Remote Access and Collaboration: On-premises systems may struggle with providing seamless remote access and collaboration tools, especially as teams become more distributed. With cloud infrastructure, users can access data and applications from anywhere, improving productivity and collaboration across teams, whether they are in different locations or working from home.
6. Complexity in Data Management
    - Manual Intervention: Managing and organizing large volumes of data requires constant manual oversight in on-prem environments, from setting up backup schedules to ensuring data integrity. Mistakes or human error can lead to data loss.
    - Data Fragmentation: Storing data on multiple devices, drives, or servers without centralized management can lead to fragmentation, making it difficult to track and retrieve data efficiently.
7. Monitoring and Performance Tracking: On-prem systems often lack comprehensive monitoring tools, making it difficult to track CPU and memory utilization, disk space, and overall system health in real time. Without proper monitoring, performance bottlenecks and system failures can go unnoticed until they cause significant downtime.

## Solution:

Wysetek had proposed and implemented AWS Elastic Block Store [EBS] to address this requirement.

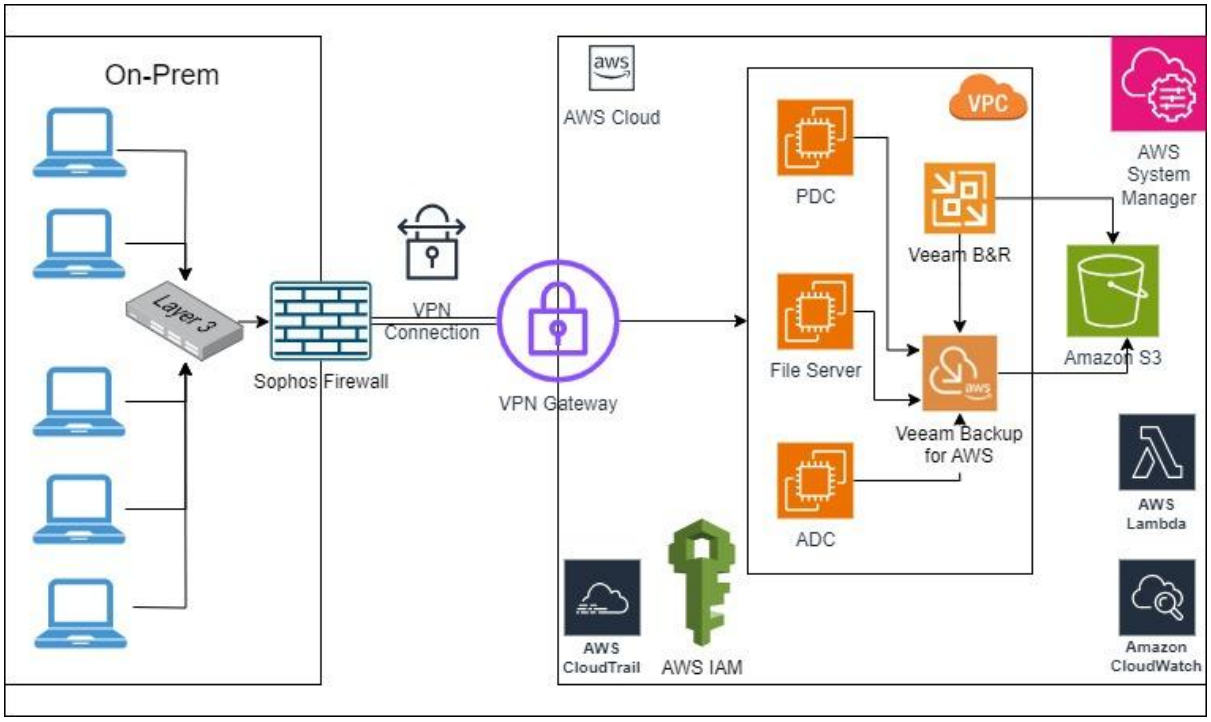
- **Elastic Block Store** [EBS]: It is a scalable block storage service provided by Amazon Web Services (AWS) that allows users to create and manage persistent storage volumes that can be attached to Amazon EC2 instances. EBS provides high-performance, durable storage for a wide variety of workloads, including databases, applications, and file systems.

- **Used Services:**
    1. Site to Site VPN: AWS Site-to-Site VPN provides a secure and reliable way to connect your on-premises network to AWS, ensuring encrypted communication and simplifying the management of hybrid cloud environments. It's ideal for businesses that need a secure and cost-effective method for extending their network into the cloud.
    2. Active Directory: We discussed about their current usage pattern with On-prem Active Directory. It is widely used in corporate networks for managing and organizing resources, security, and user authentication. It is a centralized system that helps IT administrators manage users, groups, devices, and other network resources in a structured way.
    3. EC2 Instance: We have created ADC, File, Veeam B&R and AWS-Appliance servers.
    4. Monitoring the activity: We used CloudWatch to monitor the resources for overall project activity. In that we have created two custom dashboards for CPU and Memory utilization for ec2 instances.
    5. AWS CloudTrail: It is a service that allows you to monitor and log activity across your AWS account, providing visibility into actions taken on your resources
    6. Elastic Block Store [EBS] Volume: AS per the customer requirement created 2TB gp3 EBS volume and it is attached to File Server.
    7. Selection of right throughput and IOPS (EBS Volume): As the single file size was large, we suggested to use higher throughput until the desire result is achieved. And for gp3 storage currently used 125 mbps throughputs and 3000 IOPS depending upon the team size, works smoothly for the customer.
    8. Amazon Simple Storage Service (Amazon S3): It is a scalable, high-performance object storage for to store Veeam Backup.
    9. Veeam Backup: Installed Veeam Backup & Replication on AWS enables you to easily back up, protect, and restore your cloud resources, improving data availability and reducing downtime.
    10. Sophos Firewall: Sophos Firewall provides strong protection, easy management, and secure access, making it essential for maintaining a secure and efficient network.
    11. AWS IAM: AWS IAM helps you manage user access, secure resources, and control who can do what within your AWS environment, ensuring a secure and scalable cloud infrastructure.
    12. AWS Lambda: Using AWS Lambda functions to start and stop EC2 instances is an efficient way to automate instance management, saving on costs when instances are not in use and ensuring they are started when needed. By combining Lambda with CloudWatch Events, you can fully automate your EC2 lifecycle based on a schedule or other event triggers.
    13. AWS EventBridge: AWS EventBridge is used to automate the process of starting and stopping instances according to a predefined schedule. It triggers AWS Lambda functions at specified times, ensuring that instances are started or stopped as needed, optimizing resource usage and cost. This setup ensures efficient management of resources by automatically adjusting the availability of instances based on time-based rules.
    14. AWS SNS: AWS SNS (Simple Notification Service) is used to send email notifications to the customer whenever the Lambda function triggers to start or stop the server instances. This ensures that the customer is informed in real

time about the status of the instances, providing clear visibility into the automated process.

15. AWS Systems Manager: AWS Systems Manager simplifies the management and automation of your AWS resources, helping you maintain security, compliance, and operational efficiency across your environment.

## Solution Diagram:




## Outcome:

The solution offered allowed the customer to share files more efficiently, securely, and with greater reliability between team members, all authenticated through Active Directory. By leveraging **Active Directory's native features** on Amazon EC2 for authentication and permission management, the customer gained confidence in the solution and reassurance regarding the security of critical data.

Additionally, since the customer understands that EBS storage is scalable and reliable, he can adjust both storage capacity and throughput as needed whenever the requirement changes.

1. Thanks to its **scalable throughput**, customers can now easily connect with multiple users and collaborate simultaneously.
2. **Appropriate security permissions** are assigned based on user groups, managed via Active Directory. With the use of a VPN, access to data stored on EBS volume is restricted to users within the network.
3. AWS EBS Volume offers **flexible performance**, capable of supporting both demanding and high-performance workloads. The service is designed to provide fast, scalable, consistent, and predictable performance.
4. To meet the **daily backup** requirement, the requirement of daily backup is achieved using AWS Veeam Backup.
5. So overall solution helped the customer in reduction is on-going cost by 45%.