



Building an Advanced Disaster Recovery on AWS



Executive Summary



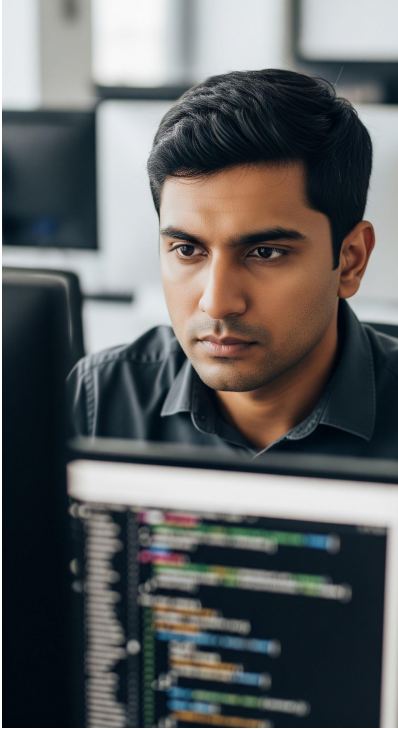
- Mallouppas Group, a prominent retail and distribution leader, faced significant challenges in ensuring business continuity and data integrity against unforeseen disruptions.
- This case study outlines the implementation of a robust Disaster Recovery (DR) solution on AWS, leveraging AWS Elastic Disaster Recovery Service (DRS), Site-to-Site VPN, and a highly resilient cloud architecture.
- The solution has significantly minimized potential downtime, ensured rapid data recovery, and bolstered the company's overall resilience, providing peace of mind and substantial operational efficiencies.

Who is Mallouppas Group?



- Mallouppas Group is a **leading enterprise in the retail and distribution sector**, operating across multiple customer sites with a substantial footprint in the market.
- The company manages a complex on-premises IT infrastructure critical for its daily operations, including Point-of-Sale (POS) systems, active directory services, and various application servers.
- Ensuring continuous operation and data availability is paramount for maintaining customer satisfaction and business integrity across its diverse operations.

Which were Mallouppas' Business Continuity Challenges?



Minimizing Downtime: Prolonged downtime of critical retail and distribution systems (e.g., POS, inventory, supply chain) directly led to lost sales and damaged customer trust across its many sites. Achieving extremely low Recovery Time Objectives (RTO) was a significant hurdle.

Reducing Data Loss: Ensuring near-zero data loss (Recovery Point Objective - RPO) for transactional data, including daily sales, customer loyalty, and inventory records, was difficult and costly with on-premises solutions, risking vital business information.

Rapid Recovery from Ransomware: The increasing threat of ransomware posed a severe risk to Mallouppas Group's extensive operational data. A solution for swift, reliable point-in-time recovery was needed to restore retail and distribution operations quickly and minimize financial and reputational damage.

Achieving Near-Zero Maintenance Interruptions: On-premises DR drills and infrastructure maintenance often caused significant downtime, impacting store opening hours, supply chain logistics, and overall productivity. Mallouppas Group required seamless DR testing without hindering continuous operations.

Complexity and Cost of Traditional DR: Managing and maintaining a duplicate physical DR site across multiple locations was complex, resource-intensive, and involved high capital expenditures for hardware, power, cooling, and IT personnel.

Scalability Limitations: As a growing retail and distribution company, Mallouppas Group needed an infrastructure that could flexibly scale for seasonal peaks or business expansion. Scaling on-premises DR was rigid and slow, hindering agility.

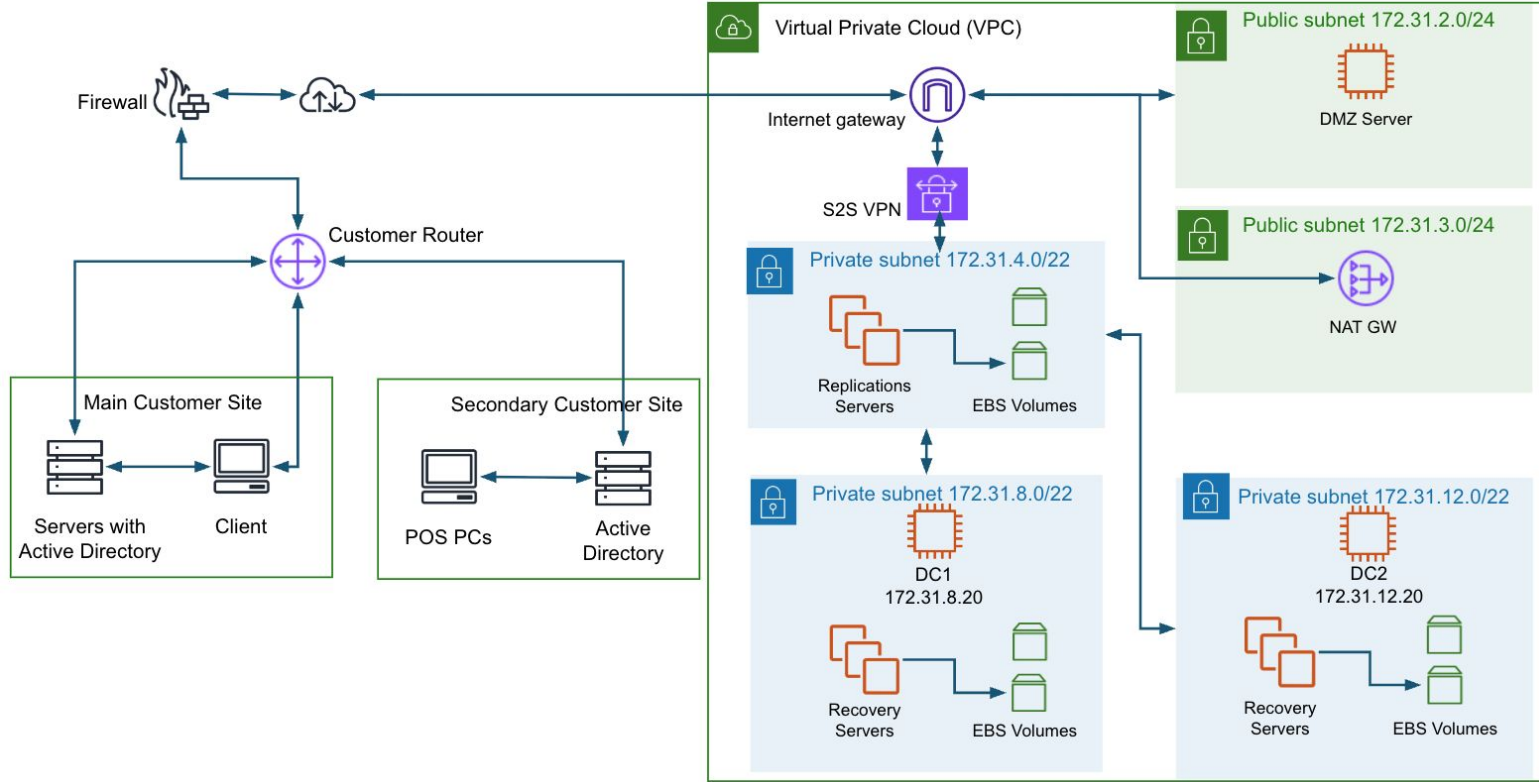
Which Solution have we designed and implemented?

To address these challenges LCM Go Cloud, designed and implemented a comprehensive Disaster Recovery solution on AWS. The strategy primarily leveraged a "pilot-light" approach for Mallouppas' workloads, optimizing recovery speed and cost efficiency by maintaining minimal resources in AWS that can be quickly scaled up in a disaster scenario:

- **AWS Elastic Disaster Recovery Service (DRS):** Utilized for continuous replication of on-premises Windows and Linux virtual machines to AWS, ensuring minimal data loss and rapid recovery.
- **Secure Network Connectivity:** Establishment of AWS Site-to-Site VPN connections between on-premises Main and Secondary Customer Sites and the AWS Cloud for secure data transfer.
- **Segmented VPC Architecture:** Creation of dedicated Virtual Private Clouds (VPCs) on AWS for enhanced security and isolated replication and recovery environments.
- **Active Directory Replication:** Continuous replication of on-premises Active Directory services to AWS for seamless user authentication during recovery.
- **Automated Recovery Workflows:** Implementation of automated processes for launching recovery instances, significantly reducing manual effort and recovery time.



Which is Mallouppas' AWS Architecture?



How did we make it work?

The AWS architecture is designed to:

- **Isolate Environments:** Public and private subnets within the VPC ensure a secure and segmented cloud environment.
- **Facilitate Secure Access:** The Internet Gateway provides necessary public access, while Site-to-Site VPNs ensure secure communication tunnels for replication and management traffic.
- **Maintain Point-in-Time Snapshots:** DRS retains snapshots for 7 days, providing robust recovery options, especially for ransomware events.
- **Enable Data Replication:** AWS DRS is configured to continuously replicate data from 11 source servers with a total of 20 disks and 4,797 GB of provisioned storage. The average daily change rate on these disks is 2%.
- **Utilize Efficient Replication:** The replication process uses 2 small replication EC2 instances for continuous, compressed, and encrypted data transfer.
- **Support Recovery Operations:** In the event of a disaster, Recovery Servers and replicated Active Directory instances on AWS can be quickly brought online, leveraging the replicated data.
- **Manage DMZ Functionality:** A DMZ Server in a public subnet provides a secure entry point for external facing services if needed during a failover.
- **Ensure Network Infrastructure:** The solution utilizes 1 Site-to-Site VPN connection and 1 NAT gateway for network connectivity.

What is the Outcome?



- **Recovery Time Objective (RTO):** Up to 20 minutes for "pilot-light" workloads, ensuring rapid restoration of critical business functions.
- **Recovery Point Objective (RPO):** A few seconds up to less than 10 minutes, ensuring minimal data loss for sales, inventory, and customer data.
- **Maintenance Downtime:** Zero downtime during DR maintenance and testing, allowing retail stores and distribution centers to operate continuously.
- **Ransomware Recovery:** Robust point-in-time snapshots for up to 7 days, providing effective recovery from cyber threats to critical business systems.
- **High Level of DR Confidence:** The business is now 100% confident in its business continuity, ensuring the resilience of its diverse operations.
- **Enhanced Data Protection:** Critical business data and applications, including POS and inventory systems, are continuously replicated and protected in the cloud.
- **Increased Agility:** Scalable AWS allows for easy expansion or contraction of DR resources based on evolving business needs, supporting business growth and seasonal demands.

Which was the result of the TCO/OLA Assessment for the Mallouppas?

The TCO (Total Cost of Ownership) analysis performed for the concrete DRS solution implemented at Mallouppas Group has already measured cost savings of over 50% related to any effort to create on-premises or colocation DR.

The TCO assessment considered factors such as device refresh cycles, cost of capital, potential downtime costs, asset disposal fees, annual failure rates, and reserve pool size, all contributing to a compelling financial case for cloud-based DR.



- **Reduced Capital Expenditure (CAPEX):** Elimination of expensive duplicate hardware for a secondary DR site.
- **Lower Operational Expenditure (OPEX):** Significant reduction in ongoing costs for power, cooling, physical security, and IT staff.
- **Pay-as-You-Go Model:** AWS's consumption-based pricing means Mallouppas Group only pays for resources used, leading to greater cost efficiency.
- **Optimized Resource Utilization:** Leveraging AWS DRS and cloud storage allowed for efficient resource use, avoiding common over-provisioning.

Which were the lessons learnt in the project?

- **Transactional Consistency in Databases:** Integrating AWS DRS with transaction log transfer and point-in-time backups was crucial for ensuring databases could be recovered without inconsistencies.
- **Accurate Workload Assessment:** Thoroughly assessing on-premises workloads for optimizing EBS Storage IOPS and bandwidth was essential to prevent virtual machine replication lags.
- **Mapping VM Interdependencies:** Meticulous planning to map interdependencies among on-premises VMs was critical for reliable replication and streamlined recovery, preventing application failures during failover.
- **Comprehensive Testing is Key:** Regular and thorough testing of the DR plan is indispensable to ensure RTO/RPO objectives are met and identify potential issues.
- **Continuous Monitoring and Optimization:** Establishing alarms, logs, and dashboards for monitoring the entire DR environment on AWS is crucial for maintaining environment health and proactively identifying issues.



Who is LCM Go Cloud?

We are a leading
Advanced AWS Partner

We add value through a comprehensive suite of cloud services.

Our expertise ranges from identifying cloud benefits and designing your adoption roadmap, to migration, continuous optimization, and implementing quick wins.

Our multiple AWS accreditations and certifications validate our deep understanding of the AWS services, best practices, and programs to effectively address your business and technical needs

Thank you!

Any Questions?

Costas Kappos
Managing Partner
LCM Go Cloud
T: +306974899318
costas@lcmgocloud.com

Leonidas Tosidis
Managing Partner
LCM Go Cloud
T: +306978890922
leonidas@lcmgocloud.com

Yiannis Nikolarakis
Director Solutions Architect
LCM Go Cloud
T: +306932400019
yiannis@lcmgocloud.com