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Secure Multi-Party Computation in Cloud-Based Collaborative Applications

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ABSTRACT

This research considers the use of AWS technology with SAP applications and specific address business continuity and disaster recovery. A special emphasis is made on the advantages of the AWS solutions the elasticity, backup with automation and scaling up, the global redundancy, which makes traditional high availability and disaster recovery solutions obsolete. Issues such as integration issues and the cost aspect of integration are highlighted and followed by their solutions. This work shows how the AWS tools enhance the usability of SAP systems in terms of efficiency, extensibility, and fault tolerance in order to maintain business and operational sustainability. The identified information illustrates the numerous benefits obtained from the integration of AWS technologies in the modernization of SAP environments and improving SAP protection from vulnerabilities.

Keywords : AWS tools, SAP applications, high availability, disaster recovery, cloud integration, performance, scalability, best practices.

I. INTRODUCTION

SAP applications are an important part of enterprise resource planning, as they help an organization to cope with multifaceted business processes with the help of a set of integrated applications. They work in areas like finance, supply chain management and human resource and offer real-time data to aid in decision making.

Reliability of SAP systems plays significant role in running the operations of the firms and competitiveness. However, given their importance to processes, the high availability of the solution and problem solve disaster recovery system is necessary in order to prevent erosion of business continuity. It is crucial for SAP workloads to progress in today's dynamic business world and efficiently reduce the probability of failure in such applications by using AWS tools for these purposes.

HA guarantees that a system is, for the most part, available to the users and functioning when there are complications with the hardware or other hindrances. As it pertains to availability, it has features like use of backup hardware and course distribution to ensure full-service provision without interruption. Meanwhile, Disaster recovery (DR) is more inclined on

the restoration of the systems or data in cases of a large-scale system failure or occurrence of disaster for instance natural catastrophes and sometimes cyber threats. It encompasses the backup solutions and the recovery strategies that would reduce the impact of data loss and system down time. As discussed, both HA and DR are crucial in keeping the business up and running; this means critical applications are up and running and recover quickly from a disruption.

AWS provides cloud solutions that give the high availability and disaster recovery for SAP applications. AWS Auto Scaling – is an Amazon EC2 Auto Scaling service, Multi-AZ Deployment – Amazon RDS, AWS Elastic Load Balancing. AWS Backup and AWS Elastic Disaster Recovery in specifics provide a quite comprehensive solution for data safety and system restoration. Using these tools, organisations can design SAP that is highly unavailable, reduce the time and costs for recovery in case of a disaster (Chevalier, 2020). AWS tools for the most part have a high level of compatibility with SAP applications to support application scalability at enterprise level.

Figure 1 SAP Disaster Recovery Solution Using CloudEndure (AWS, 2021)

Working in Load Balancing, AWS Elastic Load Balancing distributes the traffic that will not overload a particular component of an ECS. The focal DNS hosting service by Amazon is Amazon Route 53 which can handle DNS failover. These tools address some of the major issues are seen in HA by simplifying complex architectures, making systems less prone to downtime, and improving on system reliability.

II. DISASTER RECOVERY IN SAP APPLICATIONS

Disaster recovery or DR plan for SAP systems therefore refers to contingency measures and plans that one puts in place for regaining system, data, and business functionality in the event of a disaster such as floods, terror attacks, virus attacks or system crashes among others. As for DR'S significance it is in the ability to reduce the potential of data loss, its capability to minimize downtime and make certain that the business is back on its feet.

DR plans allow organisations to restore essential SAP applications and sustain functionality in a short time span. This is important to safeguard data, security, and business continuity as well as to operate within the set legal requirements (Radeck, 2020). Organization's DR strategy establishes the procedures for pre-empting threats, managing, and avoiding hefty losses, and staying communicative organization-wide in the wake of disasters.

Common disaster recovery strategies for SAP applications

- Backup and Restore: Recovery capability as frequently as possible that allows for data and configuration backup in the event of a failure.
- Hot Standby: Keeping redundant systems, controlling ones as fully operational backup systems to the primary one that can be activated instantly if required.
- Cold Standby: Creating the second system that would start in turns and require a manual input for governing the whole network back to full power.
- Replication: By employing such solutions as data mirroring to ensure that there is the exact replica of data at other locations.
- Cloud-Based DR: Using of cloud services for effective and affordable DR plans with the help of automated backup and failover.

Figure 2 AWS Disaster Recovery Strategies & Steps for Security (Bacancy Technology, 2021)

III.CONCLUSION

While there are several complexities associated with AWS and coupling of AWS tools with SAP applications has potential for several complications, the overall benefits of AWS tools for high availability and DR that address many of the traditional solution complexities cannot be overlooked. AWS tools enable performance

optimization, scalability and cost optimization solutions that improve the reliability and.

AWS tools guarantee that SAP applications remain up and running while quickly bouncing back from downtime, by such features as auto-scaling, automated backups, and global redundancy. Amidst such risks like integration complexity and control of costs, it is possible to follow the best practices including pre-consultations, over-planning, and regular staff training. Maximizing the use of AWS tools for SAP applications not only leads to improved efficiency and less crash times but also embraces business recovery and operational readiness, thus preparing organizations to face expected or unexpected issues in their IT infrastructure systems. This study also provides that the AWS solutions are instrumental in the enhancement and the secure of the SAP infrastructure.

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