Unlocking Efficiency: A Case Study on Amazon EC2's Implementation for Microsoft Windows Server Workloads

Problem Statement

> Our Manufacturing and supply customer is embarking on a journey of cloud transformation to enhance the security, reliability, and scalability of its applications, data, and infrastructure. This involves migrating existing workloads to the cloud and optimizing their performance.

> Presently, the organization hosts workloads on AWS and on-premises data centers, with a significant portion relying on AWS EC2 Microsoft Servers. However, there's a lack of disaster recovery (DR) setup for critical applications, both in the cloud and on-premises, posing a risk to business continuity.

> To address this, the customer has partnered with Intuitive.Cloud to develop a robust DR solution on Amazon Web Services, specifically in the us-east-2 region. This collaborative effort aims to build a fully functional, scalable, and efficient DR infrastructure aligned with the customer's broader cloud migration goals.

Proposed Solution and Architecture

- Leveraged AWS Elastic Disaster Recovery (CloudEndure Disaster Recovery) to mitigate downtime and data loss by swiftly and dependably restoring physical, virtual, and cloud-based servers into AWS during IT disruptions. Given the predominant workload on EC2 instances, mostly on the Windows OS, DRS was employed due to its comprehensive support for EC2 servers

- Scalable AWS Design & solution preventing blast radius

- Palo Alto firewall management for Trust and Untrust Interface for respective communication

- AWS DR Infrastructure provisioning using Terraform (IaC)

- Monitoring and Alerting capabilities built-in

AWS Services

- AWS EC2

- AWS Direct Connect

- AWS Transit Gateway

- Amazon Virtual Private Cloud (VPC)

- Amazon Elastic Compute Cloud (EC2)

- Amazon Simple Storage Service (S3)

- AWS Lambda

- Amazon Route 53

- AWS Key Management Service (KMS)

- AWS Simple Notification Service (SNS)

- Amazon CloudWatch

- AWS CloudTrail

- AWS EBS

Outcomes of Project & Success Metrics

> Set up a recovery site in the cloud for 900 virtual machines.

> Optimized spending on its disaster recovery process.

> Automated the CloudEndure DR solution using CloudEndure APIs.

> Expanded DR solution to include all production applications in other data centers as well.

> A working BCP plan now exists for production application with RPO near zero hour and RTO of few mins.

> Eliminated the manual DR process to another data center.

> Enhanced data resiliency and compliance for DC hosted production apps.

TCO Analysis

> Comparing the cost estimates for AWS and on-premises infrastructure provided valuable insights into the overall Total Cost of Ownership (TCO) for the customer's cloud transformation initiative.

> **AWS Cost Estimate:**

  • **Peak Utilization:** With a monthly spend of $22k and an annual spend of $270k, the projected 5-year spend on AWS infrastructure amounted to $1.3 million.

> **On-Premises Cost Estimate:**

  • **Standard Utilization:** The monthly spend for on-premises infrastructure is estimated at $40k, resulting in an annual spend of $480k. Over a 5-year period, the projected total spend on on-premises infrastructure was $2.3 million.

  This analysis resulted in total savings of 42%.

Lessons Learned

❯ **Prioritize Disaster Recovery Planning:** This project emphasized the critical need for a robust disaster recovery (DR) plan across both cloud and on-premises environments to mitigate risks to business continuity.

❯ **Choose Appropriate Technologies:** Selecting the right tools, like AWS Elastic Disaster Recovery (CloudEndure DR), tailored to Amazon EC2 requirements is crucial for effective DR solutions.

❯ **Scalability and Efficiency:** Designing scalable architectures ensures the ability to accommodate growing workloads without sacrificing performance or reliability.

❯ **Automation and Infrastructure as Code (IaC):** Automating deployment tasks using Terraform and embracing Infrastructure as Code principles streamline processes and reduce manual errors.

❯ **Proactive Monitoring and Continuous Improvement:** Incorporating robust monitoring and alerting mechanisms enables prompt issue detection and resolution, fostering continuous improvement.

❯ **Collaboration and Partnership:** Collaborating with external experts facilitates knowledge sharing and accelerates problem-solving, ensuring alignment with best practices.

❯ **Alignment with Business Goals and Compliance:** Ensure technical solutions align with broader business objectives and regulatory standards to deliver tangible value and maintain compliance.

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