**American Airlines**

**Introduction:**

American Airlines, one of the leaders in the aviation sector, is adamant about improving the customer experience with the use of digital technologies. Trying to bypass the legacy constraints, it aspires to translate its customer-facing application to the cloud. This study begins with the identification of the workload, then compares the various cloud service providers, assesses the relocation techniques alongside tools, and lastly, recommends a cloud service provider that meets stringent criteria.

**1. Workloads to be Migrated and Their Descriptions**

American Airlines (AA) aims to migrate several crucial workloads to a new cloud provider, including:

1. **aa.com**: Offering immediate and easy-to-access interactions with the American Airlines website is critical for customers, flight bookings and all relevant information dissemination. Implementing a site that can manage the dynamics of web hosting, and content delivery and can scale according to the varying traffic volumes is necessary
2. **Customer-Facing Mobile App**: Customers will no longer need to carry handwritten boarding passes or struggle to locate essential travel information. Rather, the app will serve as an indispensable tool for bookings, check-ins, and notifications. It is necessary to ensure reliable connection of this workload to application hosts, backend services, and other systems as a whole.
3. **Global Network of Check-in Kiosks**: These provide the passengers with self-check-in options including baggage check at various airports and they play a big role when it comes to providing a fast and more enjoyable trip. The workload includes the tasks of administering a network with distributed devices, synchronizing the data across several devices, as well as observing security issues
4. **Cargo Customer Website**: Utilization of tools and services used in the company’s cargo department might also carry such functionalities as tracking, booking, and managing shipments. These operations use considerable website hosting, data storage, and reliable access on protected servers for partners and clients.

**2. Selection of Cloud Services and Comparison**

Based on the identified workloads, the appropriate services from AWS, Azure, and Google Cloud can be compared as follows:

* **aa.com**: AWS has Amazon EC2 for massive and adaptive computing production, Azure offers Azure Virtual Machines that can be conveniently hosted from the cloud, and Google Cloud lastly has Compute Engine for personalized virtual servers. The selection largely will rely on the performance requirements and pricing models, integration, and implementation procedures.
* **Customer-Facing Mobile App**: The mobile app development and management services offered by AWS are Amazon Mobile Hub, the Azure web apps development and hosting feature called Azure App Service, and the Google Cloud app development and hosting functionality by the name Firebase. This decision is guided by criteria like app development frameworks, backend services, the ability to go over analytics features, and so on.
* **Global Network of Check-in Kiosks**: AWS provides Amazon API Gateway for building, deploying, and maintaining APIs, Azure provides Azure API Management for building and publishing APIs while Google Cloud provides Apigee API Platform for API management and analytics. The decision-making process will focus on API management features needed, security features proposed, and the applicable integration options.
* **Cargo Customer Website**: AWS customers get their storage for scalable objects from S3, Azure customers have object storage from Azure Blob Storage and Google Cloud provides object storage from Cloud Storage. The choice will vary, depending on the main status of data retrieval, lifetime, and access control.

Subscription fees, service-level agreements, and specific features of these services will be compared based on the workload requirements and the desired performance, scalability, and cost-effectiveness.

**3. Appropriate Migration Strategies and Tools**

The most appropriate migration strategies for these workloads may include:

* **Rehosting (Lift and Shift)**: This strategy integrates the current workloads to the new cloud provider with a small shift or configuration for aa.com. A cost-effective solution is to keep the customer-facing mobile app unchanged. Because this method permits a swift migration with very few changes needed to be applied it may not all together utilize the platform's cloud platform potential.
* **Replatforming (Lift, Tinker, and Shift)**: This strategy involves adjusting some optimizations that are suitable for the network of check-in kiosks and the cargo customer website which are located at worldwide airports. It provides a prototyping option that modernizes old legacy systems and perhaps uses cloud-native features and services.

The Migration tools of these providers, AWS, Azure, and Google Cloud can be chosen according to the procedures picked during the migration process. For instance, AWS comes with AWS Server Migration Service for re-hosting and AWS Database Migration Service for migrating databases, Azure offers Azure Migrate for re-hosting, and Azure Database Migration Service for migrating databases, while Google Cloud has Migrate for Compute Engine for re-hosting and Database Migration Service for migrating databases. The criteria for the selection of migration tools will include factors such as the components circulation among existing workloads, the were of data migration complexity, and tolerable downtime period.

**4. Comparison of Cloud Security and Governance Tools**

The comparison of cloud security and governance tools provided by AWS, Azure, and Google Cloud can be based on factors such as:

* **Identity and Access Management**: AWS brings IAM, Azure gives Azure Active Directory, and Google Cloud develops Cloud Identity and Access Management for safe data access control. The decision would depend on SSO abilities, RBAC, and on integrating the authentication system with present identity systems.
* **Network Security**: AWS offers Amazon VPC, Azure makes use of Azure Virtual Network, and Google Cloud puts up a Virtual Private Cloud for secure networking. The choice shall mainly be based on network isolation capabilities, network traffic filtering features, and VPN connectivity aspects.
* **Compliance and Governance**: AWS provides Config for inventory resources and configuration management, while Azure provides Policy for enforcement of initiative.

**5. CSP Selection Criteria and Recommendation**

The CSP selection criteria for American Airlines should consider several factors to ensure the best choice for the organization:

* **Service Offerings**: The wide array of cloud offerings by different service providers, comprising computing, storage, database, and networking. A suitable CSP should match up the distinct expectations of every task, while at the same time offering the required elasticity and throughput.
* **Performance and Reliability**: We’ll also evaluate the performance and reliability of the cloud ecosystem — such as its uptime, latency, and service level agreements. Reliable and robust infrastructure should be selected through the CSP (cloud service providers) that will support AA's business workloads and the applications that face clients.
* **Security and Compliance**: The encoded security features, compliance certifications, and the ability of the cloud providers to protect data. Ensuring the protection of customer data and payment details as these are often a target for cybercriminals, the selected CSP must be ready to showcase their commitment to security and compliance standards.
* **Cost and Pricing**: The whole investment structure, pricing policies, and platforms that were developed by the cloud providers. AA should analyze the TCO, which is not only the subscription fee but also the cost of data transfer, storage, and support utilities.

**Recommendation:** Depending on the expectations stipulated, a thorough assessment would then be conducted which would entail; the goals, priorities, and long-term strategy of the organization. Every cloud provider has its peculiarities, and the final decision has to be made only after a detailed survey is performed to see whether any of them will handle our business-specific needs and technical requirements competently.

**Conclusion:**

In Conclusion, the migration of the enterprise’s workloads to a new cloud provider is a massive decision for American Airlines, and that should be the correct consideration of the involved workloads, appropriate cloud services, migration strategies, security and governance tools, and selection criteria for the CMP.

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