GlobalTech Solutions Cloud Migration Strategy

Assigned Cloud Provider: Azure

Group: 16

Section: 13

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1. Company Overview

GlobalTech Solutions operates across 10 countries, with a combination of modern and legacy systems. Their current infrastructure includes:

1. 150 Virtual Machines (VMs) running Windows Server and Linux.
2. A monolithic ERP system for financial and inventory management.
3. An in-house SQL database cluster storing sensitive data.
4. A legacy mainframe system for payroll and reporting.
5. Public-facing e-commerce applications with 24/7 uptime requirements.

The company faces several challenges, including:

1. Outdated ERP and mainframe systems.
2. Increasing operational costs.
3. A need for scalability, disaster recovery, and compliance with GDPR and HIPAA.
4. Downtime for critical systems must remain under 4 hours.

2. Azure Migration Strategy

Migration Phases:

1. **Assessment**:
    a. Use **Azure Migrate** to assess current infrastructure and dependencies, identifying the right workloads for migration.
2. **Planning**:
    a. Migrate VMs to **Azure Virtual Machines** (VMs).
    b. Refactor the ERP system using **Azure Kubernetes Service (AKS)** or **Azure App Service**.
    c. Modernize the SQL database with **Azure SQL Managed Instance**.

    d. Plan downtime mitigation strategies with **Azure Site Recovery**.
3. **Execution**:
    a. Rehost VMs using **Azure Site Recovery**.
    b. Refactor the ERP system into containers with **AKS**.
    c. Migrate the SQL database using **Azure Database Migration Service**.
4. **Validation**:
    a. Test for performance, security, compliance, and disaster recovery.

3. Modernization Approach

- **ERP System**:

Refactor into microservices using **Azure Kubernetes Service (AKS)** to scale the system efficiently or use **Azure App Service** for simpler hosting.

- **Legacy Mainframe**:

Replace legacy workloads with **Azure Functions** (serverless) or containerize them using **AKS** to optimize infrastructure costs.

4. Compliance and Security Strategy

- **Compliance Measures**:
    1. Leverage **Azure Policy** to ensure GDPR and HIPAA compliance.
    2. **Azure Security Center** for continuous monitoring and threat management.
    3. Use **Azure Key Vault** to securely store encryption keys and sensitive data.
- **Security Enhancements**:
    1. Implement **role-based access control (RBAC)** to manage user permissions.
    2. Use **Azure Active Directory (AAD)** for secure authentication and Single Sign-On (SSO).
    3. Encrypt data in transit and at rest using **TLS/SSL** and **Azure Disk Encryption**.
    4. Enable **Azure Defender** to detect vulnerabilities and secure the environment.

5. Scalability and Disaster Recovery

- **Scalability**:
    1. Use **Azure Autoscale** to dynamically adjust VM capacity for e-commerce applications.
    2. Distribute traffic globally using **Azure Front Door** for low latency and high availability.

3. Implement **Azure Cache for Redis** to improve performance by reducing database load.

- **Disaster Recovery**:
    1. Configure **Azure Site Recovery (ASR)** for automated failover and failback in case of a disaster.
    2. Ensure that downtime for critical systems stays under 4 hours by testing regular disaster recovery scenarios.
    3. Use **Geo-Redundant Storage (GRS)** to ensure critical data is replicated across multiple Azure regions.

6. Cost Estimation

To ensure proper budgeting for the migration to Azure, a detailed cost estimation is required. This estimation will cover the following areas:

1. **Virtual Machines (VMs)**:
    a. **VM Type and Size**: The company will migrate 150 VMs with varying requirements (e.g., Windows Server, Linux).
    b. Estimated monthly cost per VM: $100 - $500 depending on size and workload.
    c. **Total estimated cost**: $15,000 - $75,000 per month.
2. **Azure Storage**:
    a. The migration will require substantial storage for data, backups, and redundancy.
    b. Estimated cost for **Azure Blob Storage**: $0.0184 per GB/month.
    c. Estimated total storage cost (for 50TB of data): **$920 per month**.
3. **Database Services**:
    a. Migrating the SQL database to **Azure SQL Managed Instance** will include costs for compute and storage.
    b. Estimated cost per managed instance: $2,000 - $5,000 per month depending on size and performance requirements.
    c. **Total estimated cost for 2 instances**: $4,000 - $10,000 per month.
4. **Azure Kubernetes Service (AKS)**:
    a. Migrating the ERP system to **AKS** will require container management services.
    b. Estimated cost for AKS: $0.10 per cluster per hour (without compute costs).
    c. **Total estimated monthly cost** (for 2 clusters): $150 per month.
5. **Disaster Recovery (Azure Site Recovery)**:
    a. Using **Azure Site Recovery** to ensure disaster recovery readiness.
    b. Estimated cost: $25 per protected instance per month.
    c. **Total estimated cost for 150 VMs**: $3,750 per month.
6. **Compliance and Security**:
    a. Costs for **Azure Security Center**, **Key Vault**, and compliance monitoring tools.
    b. Estimated monthly cost: $500 - $2,000 depending on resource usage and configurations.
7. **Other Costs**:
    a. **Azure Networking** (traffic, bandwidth, VPN): Estimated at $2,000 per month.

b. **Licensing Fees**: For Azure-based software and enterprise applications.

7. Total Estimated Monthly Costs:

$26,370 - $95,870 per month (depending on actual workloads, configuration, and resources used).

Note: These estimates are based on average Azure pricing and actual costs may vary depending on specific configurations, Azure discounts, and reserved instances.

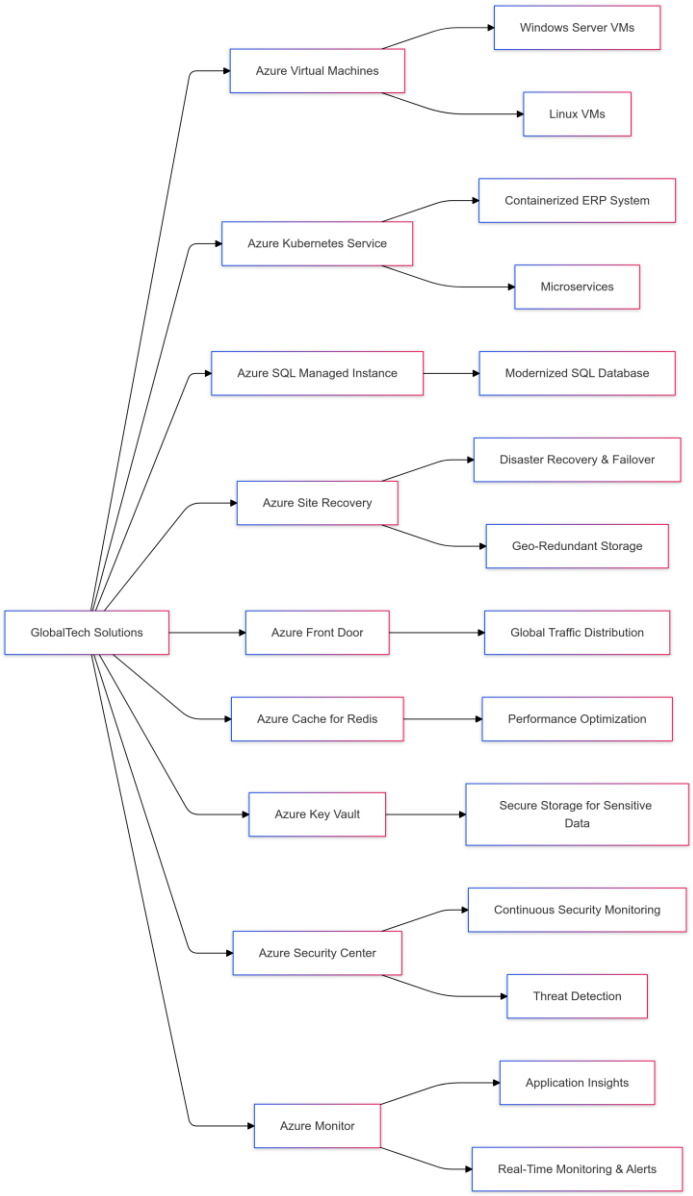
8. Cost Optimization

- **Cost Management Strategies**:
    1. Use **Azure Cost Management and Billing** to track and optimize spending.
    2. Automate VM shutdown during off-peak hours using **Azure Automation**.
    3. Implement **reserved instances** for long-term workloads to reduce costs.
    4. Optimize database usage with **Azure SQL Serverless** for intermittent workloads.
- **Cost Efficiency Recommendations**:
    1. Decommission unused or redundant resources identified during the **assessment phase**.
    2. Transition legacy systems to **serverless solutions** like **Azure Functions**, which offer lower infrastructure costs.

9. Post-Migration Monitoring and Support

- **Monitoring Tools**:
    1. Use **Azure Monitor** and **Application Insights** for real-time monitoring of application health and performance.
    2. Set up **Azure Monitor Alerts** to notify administrators of any issues.
- **Support Framework**:
    1. Establish an **Azure Support Plan** to quickly resolve issues.
    2. Conduct regular reviews with **Azure Advisor** to identify opportunities for optimization.
    3. Perform monthly audits to ensure compliance, security, and cost-effectiveness.

10. Architecture Diagram



11. Conclusion

Migrating GlobalTech Solutions to **Azure** will modernize outdated systems, enhance scalability, reduce operational costs, and ensure compliance with **GDPR** and **HIPAA** regulations. With a well-structured migration approach, the company will achieve 24/7 availability for critical applications while ensuring disaster preparedness and robust security. Azure's flexibility and advanced features provide the ideal platform to support GlobalTech's future growth.