**PROSIT – 2**

**KEYWORDS A**

* Database management systems (DBMS) - It is a software system that is designed to manage and organize data in a structured manner. It allows users to create, modify, and query a database, as well as manage the security and access controls for that database.
* IT Infrastructures – It refers to the combined components needed for the operation and management of enterprise IT services and IT environments.
* Slow response times – It refers to the delay experienced between sending a request and receiving a response, often caused by high latency, low bandwidth, or congestion.
* Data loss - Data loss is the intentional or unintentional destruction of information.
* Cloud computing - the practice of using a network of remote servers hosted on the internet to store, manage, and process data, rather than a local server or a personal computer.
* SaaS – Software as a Service (SaaS) is a cloud-based service where, instead of downloading software that your desktop PC or business network can run and update, you access an application through an internet browser.
* PaaS – Platform as a Service (PaaS) is a type of cloud computing offering in which a service provider provides a platform to its customers, allowing them to develop, run, and manage business applications without having to build and maintain the infrastructure that such software development processes typically require.
* IaaS - Logging as a Service (LaaS) provides a cloud-based, centralized solution for managing log data from applications, servers, and devices, helping IT teams streamline analysis, improve security, and reduce infrastructure costs.
* Migrating data management systems to the cloud - It involves transferring data storage, processing, and management operations from on-premises infrastructure to cloud-based platforms, enabling scalability, flexibility, and remote access.
* Data security – it involves transferring data storage, processing, and management operations from on-premises infrastructure to cloud-based platforms, enabling scalability, flexibility, and remote access.
* Current Operations - refer to the active processes and tasks involved in maintaining, managing, and monitoring network performance, security, and connectivity to ensure reliable data transmission and communication.
* Change management - refers to the structured approach for planning, implementing, and monitoring modifications to a network's infrastructure, configurations, or policies, ensuring minimal disruption, security, and alignment with organizational goals.
* System performance – it refers to the efficiency and effectiveness of a network in handling data transmission, including metrics like speed, latency, throughput, reliability, and resource utilization.

**CONTEXT A**

TechNova faces data management challenges due to outdated systems, affecting scalability and performance. Maya, a data expert, proposes migrating to cloud computing to enhance flexibility and growth.

**PROBLEM STATEMENT A**

How can TechNova successfully transition to a cloud-based data management system that ensures scalability, performance, and security while minimizing operational disruptions and maintaining customer trust?

**CONSTRAINTS A**

* Scalable
* Secure
* Flexible
* Does not disrupt current operations

**DELIVERABLES A**

* Compare different cloud computing models
* Detailed cloud migrations plan

**SOLUTION APPROACH A**

* Use IaaS, SaaS, PaaS or combination
* Have hybrid cloud
* Data encryption (general)
* Access control
* Server maintenance (avoid current operations)
* Operation scheduling
* Compliance audit
* Cloud providers

**ACTION PLAN A**

* Study & compare cloud models (scalability + flexibility)
* Explore different ways to ensure date security in cloud
* Study about public, private & hybrid clouds
* Compare cloud providers & choose the one which abides all constraints
* Study change management, cloud migration plan
* Build a report & migration plan (which includes KPI’s, tests, customers satisfaction)

**KEY A**

* Aryan
* Manav
* Tisha
* Amine
* Meriem and Joyline

**COMPARING CLOUD PROVIDERS A**

* A cloud service provider rents out the combination of technology, infrastructure, and expertise to other companies and individuals for the purpose of cloud computing, including online storage, compute, and networking over the Internet.
* Cloud service providers own and operate multiple data centers worldwide that house the physical infrastructure required for cloud computing. These include servers, hard drives, and cooling systems.
* Anyone, anywhere, and at any time can access this cloud infrastructure by connecting to these data centers and purchasing as much capacity as they require on a pay-as-you-go basis (usage-based pricing).

Benefits of using CSPs (Cloud Service Providers):

* Low capital outlay – Customers do not incur large capital expenditures (CAPEX) on infrastructure, but instead pay a low, ongoing fee for their usage.
* Faster time-to-market – By not purchasing, installing, testing, and optimizing cloud infrastructure, businesses can produce their products and services much more quickly
* Agility – CSPs enable cloud-based brands to pivot faster since they do not need to sell existing infrastructure and purchase updated ones every time they want to explore new markets or lines of business.
* Cloud computing services – CSPs deliver Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), Software-as-a-Service (SaaS), and Serverless Computing
* Optimal cloud delivery models – Businesses can choose between public, private, hybrid, and multi-cloud cloud services from cloud service providers.
* Pay-as-you-go pricing – You pay only for the capacity of cloud resources you use. No provisioning, upfront payments, or long-term contracts are required either.
* Managed services – A CSP grants various degrees of control over the infrastructure they rent out. This infrastructure can be fully managed by your CSP or largely configured by your engineers.
* Disaster recovery – A CSP can backup your data in multiple regions across the world, which you can retrieve in case of a data center failure in one region or your on-premises system.

Challenges of CSPs:

* Data confidentiality - The public cloud depends on a network of third-party owned, shared, and remote servers to process, store, and manage data.
* Data security - hackers can infiltrate their systems and compromise customer data, resulting in reputational damage, losing customers, and lawsuits.
* Infrastructure control limitations - To optimize the performance of their cloud services, some companies prefer more control over the backend.
* Vendor lock-in - Over-reliance on a single cloud service provider can be problematic.

Comparing the CSPs:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Criteria | AWS | Microsoft Azure | Google Cloud Platform | Alibaba | IBM Cloud | DigitalOcean Cloud | Salesforce Cloud | OCI (Oracle Clous) | Cisco Cloud Solutions |
| Scalability | High (Auto-scaling, global reach) | High (integrates with Microsoft ecosystem) | High (BigQuery, scaling flexibility) | Moderate (growing global presence) | Moderate (suited for enterprise) | Moderate (simple setups) | Low (focused on CRM apps) | Moderate (database focus) | Low (specific networking tools) |
| Security | Strong (advanced encryption, IAM) | Strong (Azure Security Center) | Strong (custom security tools) | Moderate (localized policies) | Strong (compliance-focused) | Moderate (basic encryption) | Strong (data-centric) | Strong (certifications like ISO) | Moderate (network-focused) |
| Flexibility | High (IaaS, PaaS, SaaS options) | High (hybrid cloud solutions) | High (open-source friendly) | Moderate (specific integrations) | Moderate (enterprise use) | Moderate (developer-friendly) | Low (CRM-focused tools) | Moderate (ERP-centric) | Low (tailored for networks) |
| Pricing | Variable (pay-as-you-go) | Variable (competitive pricing) | Competitive (flexible pricing) | Low-cost options | Expensive (enterprise-level) | Low-cost | High (premium solutions) | Moderate | Expensive |
| Operational Continuity | Excellent (global uptime SLAs) | Excellent (SLAs and hybrid cloud support) | Excellent (redundancy features) | Moderate (localized support) | Strong (enterprise-grade support) | Moderate | High (dedicated service) | Strong | Moderate |
| Performance | Excellent (low latency, global CDN) | Excellent (Azure global network) | Excellent (latency, ML optimizations) | Moderate (regional focus) | Moderate (suited for enterprises) | Moderate | Moderate (CRM performance) | Strong (optimized for databases) | Moderate |
| Support and Documentation | Excellent (wide support options) | Excellent (dedicated resources) | Excellent (thorough guides) | Moderate (localized focus) | Strong (consulting services) | Moderate | Strong | Moderate | Low |
| Compliance | Excellent (broad certifications) | Excellent (broad certifications) | Excellent (industry standards) | Moderate (localized focus) | Excellent (specific compliance needs) | Moderate (basic) | Strong (focused on customer | Strong | Moderate |
| Ease of Use | Moderate (can be complex) | Moderate (steep learning curve) | High (user-friendly tools) | Moderate (basic setup) | Moderate (geared to enterprises) | High (developer simplicity) | Moderate (CRM users) | Moderate | Low (requires expertise) |