Oracle cloud infrastructure foundation – use case

Set Up a Virtual Cloud Network (VCN) with Subnets, Routing, and Load Balancers for an Enterprise-Level Application on OCI

Scenario: A global financial services company is migrating its core customer-facing application to Oracle Cloud Infrastructure (OCI). The application handles millions of financial transactions daily, requiring high security, low latency, and uninterrupted availability.

The company wants to build a secure and scalable network architecture to support its application, ensuring:

- Strict access controls for regulatory compliance (e.g., PCI DSS).
- High availability across multiple OCI availability domains.
- Efficient traffic distribution using OCI Load Balancers.

Your task is to design a Virtual Cloud Network (VCN) with subnets, routing, and load balancing to support this mission-critical application.

Use Case:

1. Business Requirements:

○ The financial application must be highly available and secure, ensuring low latency transactions.

○ The network should support multiple subnets for different application layers (Web, Application, and Database).

○ Load balancing should ensure even traffic distribution to prevent bottlenecks and system failures.

2. Core Components:

○ VCN: A logically isolated cloud network hosting all OCI resources.

○ Subnets:

■ Public Subnet: Hosts front-end web servers accessible to users.

■ Private Subnet: Houses application servers with no direct internet exposure.

■ Database Subnet: A secure, restricted subnet for database servers.

○ Routing: Route tables to manage network traffic, including external (internet) and internal communication.

○ Load Balancers: OCI Load Balancers distribute traffic across multiple instances to ensure high availability.

3. Security and Compliance:

○ Implement Network Security Groups (NSGs) and Security Lists for strict access control.

○ Use OCI Vault for encryption and OCI Web Application Firewall (WAF) to prevent cyber threats.

○ Ensure compliance with PCI DSS and other industry regulations.

4. High Availability and Disaster Recovery:

○ Deploy across multiple availability domains to ensure redundancy.

○ Set up a failover strategy for load balancers and route traffic efficiently.

○ Use cross-region replication for disaster recovery.

5. Monitoring and Optimization:

○ Utilize OCI Monitoring & Logging to track network health and security.

○ Optimize costs by choosing appropriate VCN size and Load Balancer configurations.

Your Task:

● Propose an architecture diagram illustrating the VCN, subnets, routing, and load balancers.

● Identify and justify OCI services for networking, security, and traffic management.

● Design a fault-tolerant networking solution ensuring seamless transactions.

● Define a disaster recovery plan, including RTO (Recovery Time Objective) and RPO (Recovery Point Objective) targets.

● Suggest cost optimization strategies while maintaining performance and security.

Submit your proposed architecture, justifications, and strategy documents, highlighting how your solution ensures scalability, security, and efficiency for the financial services company.