

Task 2: Quality Requirements for CloudTables-Operation Subsystem

Security

- FR-SO-1: Activate/Deactivate Restaurant's Account
Authorised Users: System Operators and Restaurant Managers
 - System Operators: Create, Read, Update, Deactivate any account
 - Restaurant Managers: Update and deactivate their own accountRole-Based Access Control (RBAC) and Multi-Factor Authentication (MFA) must be implemented
TLS must encrypt all data in transit
System must log operator ID and timestamps, and logs must be reviewed regularly
Security testing must confirm access restrictions and encryption are effective
- FR-SO-2: Statistical Analysis of Data
Authorised Users: System Operators and Restaurant Managers
 - Permissions: Read-only access to analytics
- TLS encryption secure all transmissions
User activity be logged
Security testing confirm data handling is secure and audit trails are reliable
- FR-SO-3: Organise Cross-Restaurant Promotional Events
Authorised Users: System Operators only
 - Permissions: Full Create, Read, Update, Delete access to promotional eventsAccess controlled using RBAC and enforced by MFA
Testing must validate that only System Operators can access this functionality
- FR-SO-4: Social Networking
Authorised Users: Restaurant Managers and System Operators
 - Permissions: Create, Read, Update community interactionsTLS must secure data, strong password policies enforced, and sessions must timeout after inactivity
Test session timeout, password enforcement, and ensure no unauthorised access
- FR-SO-5: Customer Data Management
Authorised Users:
 - System Operators: access to all customer data
 - Restaurant Managers: Read and Update access to their own customer dataRBAC must restrict access; TLS must protect transmission; logs must be kept
Testing must verify data access isolation between restaurants

Performance

- FR-SO-1: Activate/Deactivate Restaurant's Account
complete within 20 seconds
Use caching for frequently accessed data
Performance tests under varying loads required
- FR-SO-2: Statistical Analysis of Data
provide insights without delay even during peak traffic
Use load balancing and query optimisation to ensure speed

- FR-SO-3: Organise Cross-Restaurant Promotional Events
Event creation be responsive under high usage
Verify with full end-to-end performance testing
- FR-SO-4: Social Networking
User actions like posting and commenting must complete in less than 2 seconds during high activity
Stress test with peak user loads
- FR-SO-5: Customer Data Management
Efficient handling of large data volumes; responses under 5 seconds
Improve queries and validate via performance tests

Reliability

- FR-SO-1: Activate/Deactivate Restaurant's Account
Target less than 5 failures and less than 100 hours of total downtime
Implement incident response and perform MTTR testing
- FR-SO-2: Statistical Analysis of Data
System allow access to analytics
Use failover systems and backups, with tested MTTR
- FR-SO-3: Organise Cross-Restaurant Promotional Events
remain operational and consistent
Use routine monitoring and backups to prevent failure
- FR-SO-4: Social Networking
Always-on availability ensured with live monitoring and failover setup
Minimal disruption allowed for social features
- FR-SO-5: Customer Data Management
Redundant, secure infrastructure for customer data
Backups and tested recovery ensure minimum data loss

Scalability

- FR-SO-1: Activate/Deactivate Restaurant's Account
Must handle 5,000+ activation/deactivation requests per hour
Cloud-based infrastructure and stress testing required
- FR-SO-2: Statistical Analysis of Data
System must scale to support over 1 million users and large data volumes
Implement scalable cloud storage and computing resources
- FR-SO-3: Organise Cross-Restaurant Promotional Events
Support promotional campaigns across restaurants
Infrastructure must meet demand
- FR-SO-4: Social Networking
Support daily social interactions seamlessly
Stress testing and load balancing required
- FR-SO-5: Customer Data Management
Scale to millions of records; use auto-scaling cloud databases
Large dataset performance must be verified through testing