**Business Requirement 1: Customer Relationship Management (CRM)**

Design a comprehensive database schema that supports an advanced **Customer Relationship Management (CRM)** system. The CRM system should be capable of tracking and managing customer interactions across multiple channels, including in-person visits, online portals, mobile apps, and call centers.

The system must:

• Handle customer demographics, contact information, service subscriptions, billing cycles, and payment histories.

• Support a hierarchical customer structure where corporate customers can have multiple child accounts representing individual departments or locations, each with its own set of subscriptions and usage records.

• Facilitate tracking of customer complaints, service requests, and resolution timelines, integrating with multiple service departments for real-time updates and automated escalation procedures.

• Maintain a history of customer interactions over time, including the ability to analyze trends in service requests, churn rates, and customer satisfaction scores, allowing for predictive modeling and personalized marketing campaigns.

**Business Requirement 2: Network Usage and Service Analytics**

Develop a database schema that supports detailed **Network Usage and Service Analytics** for a telecommunications provider. The system should be designed to process and store massive volumes of usage data generated by network devices, customer devices, and service gateways in real-time.

The system must:

• Capture and store detailed records of network traffic, including data, voice, and messaging services, categorized by customer, device type, location, and time of day.

• Track service quality metrics such as latency, jitter, packet loss, and throughput across different network segments, allowing for root-cause analysis and proactive network management.

• Support multi-dimensional analysis of service usage patterns, enabling the identification of high-usage customers, peak usage periods, and potential service bottlenecks.

• Facilitate the aggregation of usage data at various levels of granularity (e.g., hourly, daily, monthly) for billing, forecasting, and capacity planning purposes.

• Integrate with external systems for real-time alerts on network performance issues and automated triggers for service provisioning adjustments based on predefined thresholds.