Telecommunication Management System

Purpose

A centralised database designed to handle these situations will facilitate effortless access to diverse data provided to customers by various carriers and sources. This will streamline the management of customer information, including personal details and billing, leading to significant time savings compared to handling these tasks without such a database.

Database design

SI No.	Entity	Definition	Relationship
1	Customer	A Strong Entity that holds customer Information. Primary Key : Customer ID	● Customer - Service Contract (Mandatory one : Mandatory many) ● Customer - Plan(Mandatory many : mandatory many) ● Customer - Location(Mandatory many : Mandatory one)
2	Employee	A Strong Entity that holds employee information Primary Key: Employee ID Foreign Key: Department ID	● Employee - Department(Mandatory many : Mandatory many) ● Employee - Customer Query(Mandatory one : Mandatory many) ● Employee - Location(Mandatory many : Mandatory one)
3	Service Provider	A Strong Entity that holds details of different service providers Primary Key: Provider ID	● Service Provider - Service Contract(Optional many : Mandatory one) ● Service Provider - Plan(Mandatory one : mandatory many) ● Service Provider - Device(Mandatory one : Mandatory many) ● Service Provider - Call Record(Mandatory one : mandatory many)
4	Service	A Strong Entity that holds details of different services offered by service providers Primary Key: Service ID	● Service - Service Subscription(Mandatory one : Mandatory many)

5	Customer Query	A Strong Entity that records customer issues or queries Primary Key: Customer Query ID Foreign Key: Employee ID,	• Customer Query - Employee (Mandatory many : Mandatory one)
6	Billing	An Associative Entity that captures the relation between Customer and Plan for determining monthly cost. Primary Key: (Customer ID, Plan ID)	• Billing - Plan (Mandatory many : Mandatory one) • Billing - Customer (Mandatory many : Mandatory one)
7	Call Record	A Strong Entity that holds call history of a customer Primary Key: Call Record ID Foreign Key: Service Provider ID	• Call Record - Service Provider (Mandatory many: Mandatory one)
8	Department	A Strong Entity that holds departmental information of an employee Primary Key: Department ID	• Department - Employee (Mandatory many: Mandatory many)
9	Location	A Strong Entity that holds Location details of an employee or customer. Primary Key: Location ID	• Location - Customer (Mandatory one: Mandatory many) • Location - Employee (Mandatory one: Mandatory many)
10	Plan	A Strong Entity that holds information about plans offered by different providers. Primary Key: Plan ID Foreign Key: Service Provider ID	• Plan - Service Subscription(Mandatory one : Mandatory many) • Plan - Service Provider (Mandatory one: Mandatory many) • Plan - Customer (Mandatory many : Mandatory many)
11	Devices	A Strong Entity that holds information about devices offered by different providers. Primary Key:Device ID	• Device - Service Provider (Mandatory many : Mandatory one)

		Foreign Key: Service Provider ID	
12	Service Subscription	An Associative Entity that captures the relation between Service and Plan for determining the Subscription terms and period between the Plan and the Services. Primary Key:SubscriptionID Foreign Key: Service ID, Plan ID	• Service Subscription - Service (Mandatory many : Mandatory one) • Service Subscription - Plan (Mandatory many - Mandatory one)
13	Service Contract	An Associative Entity that captures the relation between Customer and Service Provider for determining the contract between the customer and the Service Provider. Primary Key: Contract ID Foreign Key: Service Provider ID, Consumer ID	• Service Contract - Customer (Mandatory many : Mandatory one) • Service Contract - Service Provider (Mandatory many - Mandatory one)

Business Rules

- A Customer can have multiple Service Providers and a Service Provider serves Multiple Customers with the help of Service Contract.
- A Customer is billed for multiple Plans and a Plan has multiple customers.
- A Customer belongs to a single Location but a Location can have multiple Customers.
- An Employee belongs to only one work Location but a work Location can have multiple Employees.
- An Employee belongs to multiple Departments and a Department can have multiple Employees.
- An Employee can resolve multiple Customer Queries but a Customer Query can be assisted by a single Employee.
- A Service Provider provides multiple Plans but a Plan can be a part of a single Service Provider.
- A Service Provider provides multiple devices but a Device can be a part of a single Service Provider.
- A Service Provider can retrieve multiple Call Records but a Call Record belongs to a single Service Provider.
- A Plan includes multiple services or one but service can be a part of many plans with the help of Service Subscription.

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