

WHMCS CRM Database Design Plan

Complete Database Schema for Web Hosting Management System

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Executive Summary

This document provides a comprehensive database design for a WHMCS-style CRM system for web hosting and domain registration services. The design covers all functional areas identified from the sidebar menu structure, including client management, order processing, billing, support systems, and service management.

Menu Structure Analysis

Based on the sidebar analysis, the system includes these major functional areas:

Module	Key Features	Priority
Clients Management	Customer profiles, services, domains, affiliates	High
Orders Processing	Order lifecycle, fraud detection, status tracking	High
Billing & Invoicing	Invoices, transactions, quotes, billable items	High
Support System	Tickets, network issues, predefined replies	High
Products/Services	Hosting plans, domains, addons, servers	High
Reporting	Analytics, exports, performance metrics	Medium
Utilities	Calendar, logs, tracking tools	Medium
System Settings	Configuration, staff management, payment setup	Medium
Addons	Extensions, theme settings, marketplace	Low

Database Schema Design

1. Core User & Authentication Tables

Note: These tables manage all user authentication and permissions.

Table Name	Purpose	Key Columns
users	Base user table for all system users	user_id, user_type, email, password_hash, status
staff	Administrative staff details	staff_id, user_id, department, permissions_level
staff_permissions	Role-based access control	permission_id, staff_id, module_name, can_view, can_edit

SQL Structure:

```
-- USERS TABLE
CREATE TABLE users (
    user_id INT PRIMARY KEY AUTO_INCREMENT,
    user_type ENUM('admin', 'staff', 'client') NOT NULL,
    username VARCHAR(100) UNIQUE NOT NULL,
    email VARCHAR(255) UNIQUE NOT NULL,
    password_hash VARCHAR(255) NOT NULL,
    first_name VARCHAR(100),
    last_name VARCHAR(100),
    status ENUM('active', 'inactive', 'suspended') DEFAULT 'active',
    two_factor_auth BOOLEAN DEFAULT FALSE,
    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    last_login DATETIME,
    INDEX idx_email (email),
    INDEX idx_status (status)
);

-- STAFF TABLE
CREATE TABLE staff (
    staff_id INT PRIMARY KEY AUTO_INCREMENT,
    user_id INT UNIQUE NOT NULL,
    department VARCHAR(100),
    permissions_level ENUM('full', 'limited', 'readonly') DEFAULT 'limited',
    signature TEXT,
    assigned_tickets_count INT DEFAULT 0,
    performance_metrics JSON,
    FOREIGN KEY (user_id) REFERENCES users(user_id) ON DELETE CASCADE
);
```

2. Clients & Companies Management

Table Name	Purpose	Key Columns
clients	Client company information	client_id, user_id, company_name, credit_balance
client_contacts	Multiple contacts per client	contact_id, client_id, contact_type, email, phone
client_groups	Client categorization and discounts	group_id, group_name, discount_percentage

3. Products & Services Catalog

Table Name	Purpose	Key Columns
product_categories	Product/service categorization	category_id, category_name, parent_category_id
products	Main products/services catalog	product_id, product_name, category_id, pricing_model
domain_products	Domain-specific pricing	domain_product_id, product_id, tld, registration_price
service_addons	Additional service features	addon_id, addon_name, price, billing_cycle

4. Orders Management

Table Name	Purpose	Key Columns
orders	Main order tracking	order_id, order_number, client_id, status, total_amount
order_items	Individual order line items	item_id, order_id, product_id, quantity, unit_price
order_status_history	Order status audit trail	history_id, order_id, old_status, new_status, timestamp

5. Billing & Financial System

Table Name	Purpose	Key Columns
invoices	Customer invoices	invoice_id, invoice_number, client_id, status, total_amount
invoice_items	Invoice line items	item_id, invoice_id, description, quantity, unit_price
transactions	Payment transactions	transaction_id, invoice_id, gateway, amount, status
billable_items	Recurring/repeat billing items	billable_item_id, client_id, description, recurring_frequency
quotes	Sales quotes/proposals	quote_id, quote_number, client_id, status, total_amount

6. Service Management

Table Name	Purpose	Key Columns
services	Active hosting accounts	service_id, client_id, product_id, domain, status
domains	Domain registrations	domain_id, client_id, domain_name, expiry_date, status
servers	Infrastructure servers	server_id, server_name, server_type, ip_address, status

7. Support System

Table Name	Purpose	Key Columns
support_tickets	Customer support tickets	ticket_id, ticket_number, client_id, priority, status
ticket_replies	Ticket conversations	reply_id, ticket_id, user_id, message, timestamp
ticket_departments	Support departments	department_id, department_name, email
predefined_replies	Quick response templates	reply_id, title, category, message, used_count
network_issues	System announcements	issue_id, title, type, status, affected_services_json

8. Marketing & Promotions

Table Name	Purpose	Key Columns
affiliates	Referral program management	affiliate_id, client_id, referral_code, commission_rate
affiliate_referrals	Individual referral tracking	referral_id, affiliate_id, referred_client_id, commission_amount
promotions	Discount codes and coupons	promotion_id, code, type, value, valid_until, usage_limit

9. System & Configuration

Table Name	Purpose	Key Columns
system_settings	Global system configuration	setting_id, setting_key, setting_value, setting_group
currencies	Multi-currency support	currency_id, code, prefix, rate, default
payment_gateways	Payment method configuration	gateway_id, gateway_name, settings_json, enabled
tax_rates	Tax configuration	tax_id, country, state, tax_rate, compound

10. Reporting & Analytics

Table Name	Purpose	Key Columns
activity_logs	System activity audit trail	log_id, user_id, activity, details, timestamp
whois_logs	Domain lookup history	log_id, domain, user_id, result, timestamp
gateway_logs	Payment gateway transactions	log_id, gateway, transaction_id, request_data, response_data

11. Additional Tables

Table Name	Purpose	Key Columns
cancellation_requests	Service cancellation tracking	request_id, service_id, client_id, reason, type, status
custom_fields	Dynamic form fields	field_id, field_name, field_type, options_json, required
client_custom_field_values	Custom field data storage	value_id, client_id, field_id, field_value
todo_list	Staff task management	todo_id, assigned_to, title, priority, due_date, status
calendar_events	Scheduling and reminders	event_id, title, description, start_date, end_date, color

Database Relationships

Key Relationships:

Relationship	Type	Description
Users ↔ Clients	One-to-One	Each client has one user account
Clients ↔ Orders	One-to-Many	Client can have multiple orders
Orders ↔ Services	One-to-Many	Order can contain multiple services
Clients ↔ Invoices	One-to-Many	Client can have multiple invoices
Products ↔ Services	One-to-Many	Product template to active services
Staff ↔ Support Tickets	One-to-Many	Staff can handle multiple tickets
Affiliates ↔ Clients	One-to-One	Client can also be an affiliate

Indexing Strategy

Create indexes on the following columns for optimal performance:

Table	Index Columns	Purpose
All tables	All foreign key columns	Join performance
users	email, username, status	Login and search
clients	company_name, status, group_id	Client search and filtering
orders	order_number, client_id, status, order_date	Order tracking and reporting
invoices	invoice_number, client_id, status, due_date	Billing operations
services	domain, client_id, status, next_due_date	Service management
domains	domain_name, expiry_date, status	Domain management
support_tickets	ticket_number, client_id, status, priority	Support operations

Implementation Phases

Phase 1: Core System (Month 1-2)

- Users, clients, staff tables
- Basic order processing
- Simple invoicing system
- Product catalog
- Basic authentication

Phase 2: Service Management (Month 3-4)

- Services and domains tables
- Support ticket system
- Server management
- Basic reporting
- Email notifications

Phase 3: Advanced Features (Month 5-6)

- Affiliate system
- Advanced reporting
- Custom fields
- Automation rules
- API development

Phase 4: Integration & Optimization (Month 7-8)

- Payment gateway integrations
- Performance optimization
- Security enhancements
- Backup systems
- Mobile optimization

Security Considerations

Critical Security Measures:

Area	Measures	Implementation
Data Encryption	Sensitive data protection	<ul style="list-style-type: none">• Passwords (bcrypt/Argon2)• API keys (AES-256)• Payment information• Server credentials
Access Control	Role-based permissions	<ul style="list-style-type: none">• Staff permission levels• Client area restrictions• API access tokens• IP whitelisting
Audit Logging	Compliance and tracking	<ul style="list-style-type: none">• All financial transactions• Admin actions• Login attempts• Data changes
Data Protection	Privacy compliance	<ul style="list-style-type: none">• GDPR compliance• Data retention policies• Right to erasure• Data portability
Backup Strategy	Disaster recovery	<ul style="list-style-type: none">• Daily database backups• Off-site storage• Recovery testing• Version control

Technical Specifications

Component	Specification	Notes
Database Engine	MySQL 8.0+ or PostgreSQL 12+	Recommend MySQL for compatibility
Character Set	UTF-8 / UTF8MB4	Support for international characters
Storage Engine	InnoDB	For ACID compliance and transactions
Backup Frequency	Daily full + hourly incremental	7-day retention minimum
Connection Pooling	Required	For high concurrent connections
Cache Layer	Redis/Memcached	For frequently accessed data