# Karbon CRM — Complete Enterprise Installation, Server Setup & User Operations Manual

**Karbon CRM** is an all-in-one business operations platform unifying Sales Pipeline, Double-Entry Accounting, Human Resource Management (HRM), Project Management, Point of Sale (POS), and an Autonomous AI Copilot with Model Context Protocol (MCP) tooling.

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# Part I: Installation, Server Setup & Deployment

## 1. Architecture & Hardware Requirements

Karbon CRM is built on a high-concurrency hybrid stack: - **Backend**: Laravel 11.x (PHP 8.2+ FPM) with OPcache optimization. - **Frontend**: React 18 + Inertia.js + Tailwind CSS with Vite bundle hashing. - **Process Supervisor**: Supervisord managing PHP-FPM, Nginx, asynchronous queue workers, and the 60-second scheduler. - **Database Support**: TiDB Cloud Serverless (AWS `us-west-2`), MySQL 8.0+, MariaDB 10.6+, or SQLite (zero-config local).

### Minimum Server Specifications

| Tier | vCPU | RAM | Storage | Suitable For |
|---|---|---|---|---|
| **Starter / Cloud Container** | 1 vCPU | 512 MB – 1 GB | 10 GB SSD | Up to 15 concurrent users, Render/Railway free-to-starter tiers. |
| **Production Standard** | 2 vCPU | 2 GB – 4 GB | 25 GB SSD | 50–200 employees, POS retail branches, active Copilot queries. |
| **Enterprise High-Availability** | 4+ vCPU | 8 GB+ | 60 GB+ NVMe | 500+ employees, high-volume double-entry journal transactions. |

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## 2. Option A: 1-Click Cloud Deployment (Render + TiDB Cloud + Cloudflare)

This is the recommended serverless cloud deployment:

```
[Visitor / Browser] ---> [Cloudflare CDN + SSL] ---> [Render Docker Web Service]
---> [TiDB Cloud MySQL]
                                                    (Nginx + PHP 8.2)
```

### Step 1: Connect TiDB Cloud Database

1. Create a free account at TiDB Cloud.
2. Create a **Serverless Cluster** in AWS region `us-west-2 (Oregon)`.
3. Note your connection details: - **Host**: `gateway01.us-west-2.prod.aws.tidbcloud.com` - **Port**: `4000` - **Database**: `karbon_crm` - **Username**: `3MsQzJych7Cyva2.root` - **Password**: `<Your-TiDB-Password>` - **SSL CA**: `/etc/ssl/certs/ca-certificates.crt`

### Step 2: Deploy to Render.com

1. Fork or push this repository to GitHub: `https://github.com/<your-org>/karbon-crm.git`.
2. On Render Dashboard, click **New +** > **Web Service**.

3. Select your repository and configure: - **Environment / Runtime**: `Docker` - **Region**: `Oregon (US West)` (co-located with TiDB cluster for minimal latency). - **Dockerfile Path**: `./Dockerfile` - **Docker Context**: `.`
4. In **Environment Variables**, configure: `ini APP_NAME="Karbon CRM" APP_ENV=production APP_DEBUG=false APP_KEY=base64:l/0a7fA6FBBACDOShPl7G1CjfZOQli7qF1g0B2mPcIc= APP_URL=https://crm.yourdomain.com DB_CONNECTION=mysql DB_HOST=gateway01.us-west-2.prod.aws.tidbcloud.com DB_PORT=4000 DB_DATABASE=karbon_crm DB_USERNAME=3MsQzJych7Cyva2.root DB_PASSWORD=<Your-TiDB-Password> MYSQL_ATTR_SSL_CA=/etc/ssl/certs/ca-certificates.crt SESSION_SECURE_COOKIE=true QUEUE_CONNECTION=database`
5. Click **Create Web Service**. Render builds the image in ~3 minutes.

### Step 3: Cloudflare DNS & SSL Proxy

1. In Render under **Settings > Custom Domains**, add `crm.yourdomain.com`.
2. In your **Cloudflare Dashboard**: - Go to **DNS > Records** and add a `CNAME` record:
    - **Name**: `crm`
    - **Target**: `<your-render-subdomain>.onrender.com`
    - **Proxy status**: **Proxied (Orange Cloud ☁️)**
    - In **SSL/TLS**, set mode to **Full** or **Full (Strict)**.
    - Under **Edge Certificates**, turn on **Always Use HTTPS**.

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## 3. Option B: Docker Compose VPS Deployment (Recommended for Custom Servers)

For private cloud VPS providers (DigitalOcean, Hetzner, AWS EC2, Linode, Vultr):

### Step 1: Install Docker on Ubuntu 22.04 / 24.04

```
sudo apt update && sudo apt upgrade -y
curl -fsSL https://get.docker.com | sh
sudo usermod -aG docker $USER
newgrp docker
```

### Step 2: Clone Codebase & Setup Configuration

```
git clone https://github.com/Dork-Industry/karbon-crm.git /var/www/karbon-crm
cd /var/www/karbon-crm

# Copy production environment template
cp .env.example .env
```

Edit `.env` with your domain and database credentials:

```
APP_NAME="Karbon CRM"
APP_ENV=production
APP_DEBUG=false
APP_KEY=base64:l/0a7fA6FBBACDOShPl7G1CjfZOQli7qF1g0B2mPcIc=
APP_URL=https://crm.yourdomain.com

DB_CONNECTION=mysql
DB_HOST=127.0.0.1
DB_PORT=3306
DB_DATABASE=karbon_crm
DB_USERNAME=karbon_user
DB_PASSWORD=YourStrongPasswordHere
```

### Step 3: Build & Launch Container Stack

```
docker compose up -d --build
```

Karbon CRM is now running locally on port `8080` with Supervisord handling Nginx, PHP-FPM, scheduler cron jobs, and queue listeners.

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## 4. Option C: Native Bare-Metal VPS Stack (Ubuntu / Debian / Nginx / PHP 8.2)

If deploying directly without Docker:

### Step 1: Install PHP 8.2 and Required Extensions

```
sudo apt update && sudo apt install -y curl git nginx supervisor unzip software-properties-common
sudo add-apt-repository ppa:ondrej/php -y
sudo apt update
sudo apt install -y php8.2-fpm php8.2-cli php8.2-common php8.2-mysql php8.2-sqlite3 \
    php8.2-mbstring php8.2-xml php8.2-curl php8.2-bcmath php8.2-zip php8.2-gd \
    php8.2-intl php8.2-soap php8.2-opcache
```

### Step 2: Install Composer 2 & Node.js 20

```
# Composer
curl -sS https://getcomposer.org/installer | php
sudo mv composer.phar /usr/local/bin/composer
```

```
# Node.js 20
curl -fsSL https://deb.nodesource.com/setup_20.x | sudo -E bash -
sudo apt install -y nodejs
```

### Step 3: Setup Codebase & Permissions

```
cd /var/www/karbon-crm
composer install --no-dev --optimize-autoloader
npm ci && npm run build

sudo chown -R www-data:www-data storage bootstrap/cache database
sudo chmod -R 775 storage bootstrap/cache database
php artisan storage:link --force
```

---

## 5. Database Migrations & Initial Module Seeding

Karbon CRM includes 54 enterprise modules and 899 granular RBAC permissions. Run the migration and package seeder commands:

```
# 1. Run core and module schema migrations
php artisan migrate --force

# 2. Seed all 54 packages, active tenant plans, and RBAC permissions
php artisan db:seed --class="Database\\Seeders\\PackageSeeder" --force

# 3. Ensure default branding is set to official Karbon Blue (#0078D4)
php artisan db:seed --class="Database\\Seeders\\DefultSetting" --force
```

### Default Credentials After Seeding

- **Company Tenant Account**: `company@example.com` / `1234`
- **Superadmin Account**: `superadmin@example.com` / `1234` *(Change these passwords immediately in Profile Settings upon initial login!)*

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## 6. Nginx Performance Tuning & 1-Year Immutable Caching

In `/etc/nginx/sites-available/karbon.conf` (or inside `docker/nginx.conf`), ensure Vite hashed bundles use immutable 1-year client caching:

```
server {
    listen 80;
    server_name crm.yourdomain.com;
    root /var/www/karbon-crm/public;

    index index.php index.html;
    charset utf-8;
    client_max_body_size 128M;

    # Immutable 1-Year Caching for Vite Hashed JS and CSS Assets
    location ^~ /build/assets/ {
        expires 1y;
        add_header Cache-Control "public, max-age=31536000, immutable" always;
        access_log off;
    }

    # Standard Static Assets (images, fonts, favicons)
    location ~* \.(jpg|jpeg|gif|png|css|js|ico|webp|svg|woff|woff2|ttf|eot)$ {
        expires 7d;
        add_header Cache-Control "public, max-age=604800, must-revalidate" always;
        access_log off;
    }

    location / {
        try_files $uri $uri/ /index.php?$query_string;
    }

    location ~ \.php$ {
        fastcgi_pass unix:/var/run/php/php8.2-fpm.sock; # or 127.0.0.1:9000 for
Docker
        fastcgi_param SCRIPT_FILENAME $realpath_root$fastcgi_script_name;
        include fastcgi_params;
        fastcgi_read_timeout 300;
        fastcgi_buffers 16 16k;
        fastcgi_buffer_size 32k;
    }

    location ~ /\.(?!well-known).* {
        deny all;
    }
}
```

---

## 7. Supervisor Daemon (Queues, Crons, and Copilot Listener)

Create `/etc/supervisor/conf.d/karbon.conf`:

```
[program:laravel-scheduler]
command=sh -c "while true; do php /var/www/karbon-crm/artisan schedule:run --
verbose --no-interaction & sleep 60; done"
autostart=true
autorestart=true
user=www-data
stdout_logfile=/var/log/supervisor/scheduler.log
stderr_logfile=/var/log/supervisor/scheduler_err.log

[program:laravel-queue-worker]
process_name=%(program_name)s_%(process_num)02d
command=php /var/www/karbon-crm/artisan queue:work --sleep=3 --tries=3 --max-
time=3600
autostart=true
autorestart=true
user=www-data
numprocs=2
stdout_logfile=/var/log/supervisor/queue.log
stderr_logfile=/var/log/supervisor/queue_err.log
```

Update Supervisor:

```
sudo supervisorctl reread
sudo supervisorctl update
sudo supervisorctl start all
```

---

## 8. Production Security Hardening & SSL

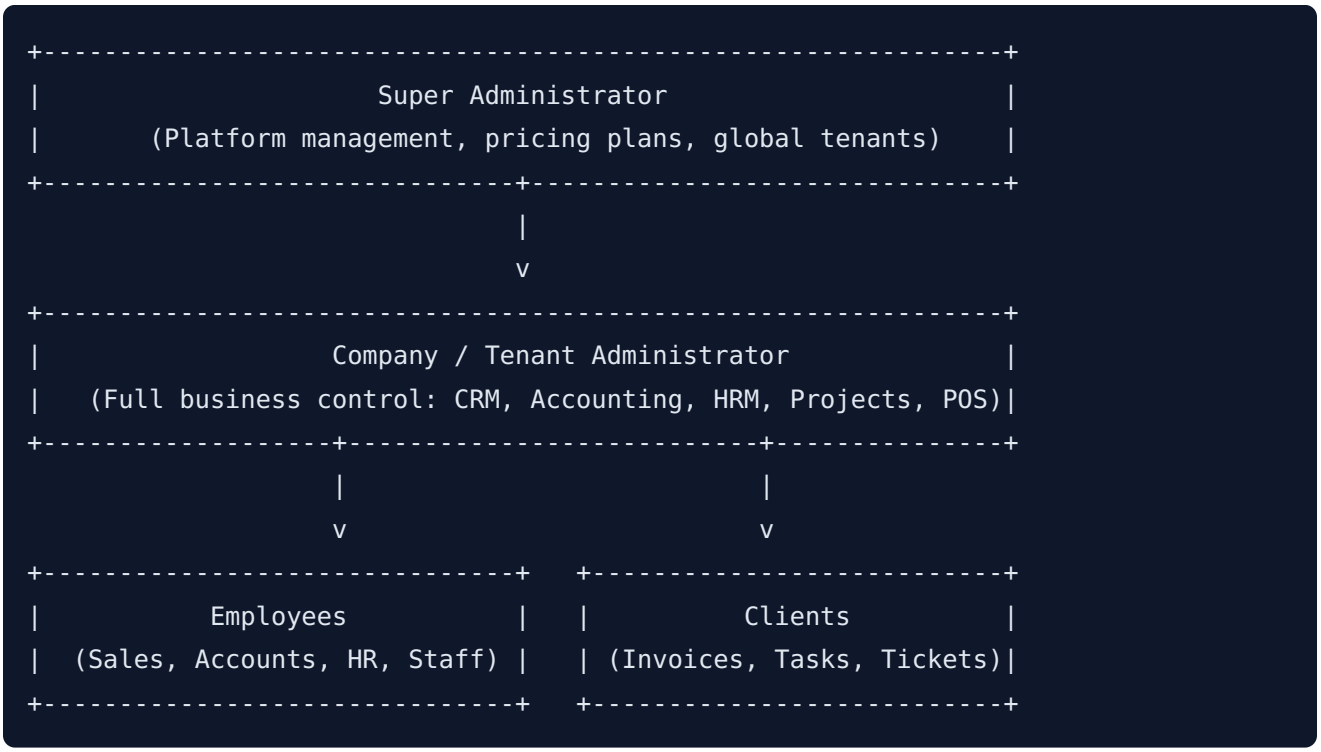
1. **Free Automated Let's Encrypt SSL (Certbot)**: `bash sudo apt install -y certbot python3-certbot-nginx sudo certbot --nginx -d crm.yourdomain.com`
2. **PHP OPcache Tuning** (`/etc/php/8.2/fpm/conf.d/10-opcache.ini`): `ini opcache.enable=1 opcache.memory_consumption=64 opcache.interned_strings_buffer=8 opcache.max_accelerated_files=10000 opcache.validate_timestamps=0 opcache.save_comments=1 opcache.fast_shutdown=1`
3. **Environment Security**: Ensure `APP_DEBUG=false` in `.env`. Leaving debug mode on in production exposes database credentials and session tokens on errors.

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# Part II: End-User & Department Operations Manual

## 9. Platform Roles & Access Control (RBAC)

Karbon CRM divides organizational responsibilities into four distinct roles:




### Role Capabilities

- **Superadmin**: Controls tenant subscriptions, white-label packages, and system-wide storage backends.
- **Company Admin**: Business owner or enterprise administrator with full authority over all 54 modules, accounts, staff, and settings.
- **Employee**: Department-restricted interface (Sales reps see Leads/Deals; Accountants see Invoices/Ledgers; Developers see Tasks).
- **Client**: Secure self-service portal to approve estimates, pay invoices online, track project milestones, and submit helpdesk tickets.

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## 10. Authentication, Password Reset & Profile Settings

### Login Screen

- Navigate to `/login`.
- Input your registered business email and password.

- Check **Remember me** to persist sessions across browser launches.

### Password Recovery

- On the login screen, click **Forgot password?** (or navigate to `/forgot-password`).
- Submit your registered email address.
- Click the secure link sent to your inbox to reset your password.
- Both the Forgot Password and Reset Password screens are rendered in official **Karbon Blue (`#0078D4`)**.

### User Profile Management

- Click your profile badge in the top navigation bar and select **Profile**.
- **Personal Information**: Update your legal name, telephone number, and display photo.
- **Language Selection**: Toggle between 16 international languages. Karbon CRM dynamically changes text alignment (LTR/RTL) based on language choice.

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## 11. Centralised Dashboard & Navigation Hub

The **Centralised Dashboard** provides high-level business intelligence across all departments.

```
+-------------------------------------------------------------------------------
------+
| [=] Karbon CRM   [Search menu / Alt+Q]   [Copilot AI]  [Quick Actions]  [User
Profile]|
+-------------------------------------------------------------------------------
------+
|  Overview  |  CRM  |  Accounting  |  Projects  |  HRM  |  Recruitment  |  POS  |
Help |
+-------------------------------------------------------------------------------
------+
|  [ AI Telemetry: Karbon Copilot Active Actions
Banner ]                              |
+------------------+------------------+-------------------
+--------------------------+
|   NET BALANCE     |   CRM PIPELINE    |   TASK VELOCITY   |   SUPPORT SLA
HEALTH      |
|     ₹0.00         |      ₹0.00        |     0 Tasks       |   0 Open
Tickets          |
+------------------+------------------+-------------------
+--------------------------+
```

### Telemetry Cards

1. **Net Balance**: Aggregated real-time cash position calculated from all active bank accounts and settled receivables.
2. **CRM Pipeline Volume**: Total monetary value of active sales opportunities currently in progress.
3. **Task Velocity**: Number of active and in-progress project milestones due within the current sprint.
4. **Support SLA Health**: Volume of open, pending, and urgent priority helpdesk tickets.

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## 12. CRM & Sales Pipeline Management

Automate customer acquisition, qualification, pipeline tracking, and quotations.

### 12.1 Leads Management

- Navigate to **CRM > Leads**.
- Click **Create Lead (+)**:
- Enter Subject, Contact Name, Email, Phone, and Expected Value.
- Choose Lead Source (e.g. *Website, LinkedIn, Referral, Inbound Call*).
- Click any lead to record call notes, attach contracts, or set follow-up tasks.
- **1-Click Conversion**: Click **Convert to Deal** when a lead qualifies. The system instantly creates a Customer profile and places the deal into the sales pipeline.

### 12.2 Deal Pipeline (Kanban Board)

- Navigate to **CRM > Deals**.
- Drag and drop deals across customizable stages (*Initial Discovery, Proposal Sent, Negotiation, Won, Lost*).
- Open any deal card to attach product SKUs, review contact history, and track won/loss analytics.

### 12.3 Sales Proposals (Quotations)

- Navigate to **CRM > Proposal > Create Proposal**.
- Add products, service line items, quantity, tax brackets, and discounts.
- Export as branded PDF or send directly to the customer's email.
- Once accepted by the customer, click **Convert to Invoice** to transfer billing into Accounting.

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## 13. Double-Entry Accounting & Financials

A full-fledged double-entry general ledger complying with standard accounting practices.

### 13.1 Chart of Accounts

- Navigate to **Accounting > Chart of Accounts**.
- Manage accounts across Assets, Liabilities, Equity, Revenues, and Expenses.
- Add sub-accounts (e.g., *Operating Checking, Petty Cash, Accounts Receivable*).

### 13.2 Bank Accounts & Fund Transfers

- Register bank accounts, credit card accounts, or digital payment processor accounts.
- Use **Internal Transfer** to record fund movement between bank accounts without distorting income/expense figures.

### 13.3 Invoicing & Payments

- Navigate to **Accounting > Invoices**.
- Generate invoices with payment due dates and customized tax breakdowns.
- Clients can settle invoices online via integrated gateways (Stripe, PayPal, Razorpay).
- Offline payments (Cash, Cheque, Bank Wire) can be logged via **Add Payment**.

### 13.4 Vendor Bills & Aging

- Track accounts payable to suppliers in **Accounting > Bills**.
- Monitor the Bill Aging report (*0-30, 31-60, 61-90, 90+ days*) to ensure timely supplier settlement.

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## 14. Human Resource Management (HRM) & Payroll

### 14.1 Employee Records

- Navigate to **HRM > Employees > Create Employee**.
- Record personal information, branch/department assignment, job designation, joining date, and emergency contacts.
- Check **Create User Account** to grant portal access to the employee.

### 14.2 Daily Attendance & Timesheets

- Employees click **Clock In** and **Clock Out** in the navigation header.
- The system logs timestamps, IP address, and total working hours.
- Department managers can review attendance registers and approve overtime.

### 14.3 Leave Requests

- Employees submit leave requests selecting Leave Type (Annual, Casual, Sick) and date range.
- Managers review, approve, or reject requests with comments. Quotas auto-deduct upon approval.

### 14.4 Monthly Payroll & Payslips

- Navigate to **HRM > Setsalary / Payslip**.
- Configure basic salaries, allowances, loans, and statutory deductions per employee.
- Click **Generate Payslip** at the end of each billing cycle to create digital payslips with 1-click PDF download.

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## 15. Project Management & Task Velocity Kanban

### 15.1 Project Creation

- Navigate to **Projects > Projects > Create Project**.
- Define project scope: Title, Start/End Dates, Budget, Project Manager, and assigned team members.

### 15.2 Task Velocity Kanban

- Open any project and select the **Task Board** tab.
- Create tasks with priority tags (*Low, Medium, High, Critical*), estimated hours, and assignees.
- Move tasks across *To-Do*, *In Progress*, *Testing*, and *Done*.
- Progress bars and sprint velocity dynamically update on the project overview.

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## 16. Point of Sale (POS) & Inventory System

### 16.1 Products & Services Catalog

- Navigate to **POS > Products**.
- Assign SKUs, generate barcodes, and configure purchase costs and selling prices.
- Set minimum stock reorder alerts.

### 16.2 Touchscreen POS Register

- Navigate to **POS > POS System**.
- Tap product items or scan barcodes to instantly add them to the sale order.
- Select the customer, apply discounts, and click **Pay Now** (Cash, Card, or Split Tender).
- System prints thermal receipts and immediately deducts sold units from warehouse inventory.

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## 17. Support Ticket & Helpdesk System

- Navigate to **Helpdesk > Tickets**.
- Tickets categorize issues by department and priority (*Low, Medium, High, Urgent*).

- Support agents can communicate with clients in a threaded reply history, upload diagnostic attachments, and resolve tickets.

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## 18. Karbon Copilot AI & Omnichannel Assistants

Karbon Copilot is an autonomous AI assistant embedded inside the CRM: - **Web App Chat**: Click the **Copilot** badge in the header to ask business questions (*"What is our revenue this month?", "List overdue invoices"*). - **Omnichannel Bots**: Integrate with Telegram, Slack, or WhatsApp via **Settings > Telegram / Slack Settings**. - **Model Context Protocol (MCP)**: Authorized AI agents can execute safe database actions, run scheduled tasks, and extract analytics.

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## 19. System Settings & White-Label Customization

- **Brand Styling**: Default brand color is Karbon Blue ( `#0078D4` ). Customize branding via **Settings > Brand Settings**.
- **Logos & Favicons**: Upload light and dark logos for web headers and invoice PDF generation.
- **Payment Gateways**: Configure Stripe, PayPal, Razorpay, Flutterwave, Paystack, or Bank Transfer.
- **Email Server (SMTP)**: Enter your SMTP server host, port ( `587` or `465` ), username, and password, then click **Send Test Mail** to verify.

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## 20. Frequently Asked Questions (FAQ) & Troubleshooting

**Q: How do I invite a new employee or team member?**

> **Answer**: Navigate to **HRM > Employees > Create Employee**. Check the box **Create User Account** and provide their work email. An invitation with login credentials will be emailed to them.

**Q: Why is a team member unable to see certain modules in the sidebar?**

> **Answer**: Karbon CRM uses strict permission enforcement. Navigate to **User Management > Roles**, select their assigned role (or create a custom role), and check the specific module permissions (e.g., *Manage Invoices, View Projects*). Click **Save**.

**Q: How do I change the default currency from INR (₹) to USD ($)?**

> **Answer**: Navigate to **Settings > System Settings > Currency**. Set USD as the default currency. Existing financial records will preserve their historic numeric values.

**Q: What should I do if an invoice email is not reaching the customer?**

> **Answer**: Check **Settings > Email Settings** and click **Send Test Mail**. Ensure your SMTP server port (usually `587` with TLS or `465` with SSL) is not blocked by your hosting provider.

**Q: How does browser caching work on the web app?**

> **Answer**: All compiled user interface assets ( `/build/assets/` ) are cached immutably for 1 year in your browser. This ensures that after your first visit, pages transition instantaneously from local cache. If you ever need to force a complete asset refresh, press `Ctrl + F5` (Windows) or `Cmd + Shift + R` (Mac).

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*Documentation Version 2.1.0 — Karbon CRM Unified Enterprise Edition.*