

Kandypack Supply Chain Distribution System API Documentation

This API documentation describes the endpoints for the Kandypack Supply Chain Distribution System, a FastAPI-based backend managing supply chain operations in Sri Lanka. The API supports CRUD operations for entities (25 cities, 145 railway stations, 25 stores, 20 trains, etc.) and integrates with Grok for AI-driven features like route optimization and demand forecasting. All endpoints are prefixed with `/api/v1` and use standard HTTP methods (GET, POST, PUT, DELETE).

Base URL

- **Base URL:** `http://localhost:8000/api/v1` (adjust for production environment)

Authentication

- Most endpoints require JWT-based authentication, with user roles (e.g., StoreManager, Driver, Management) determining access.
- Include a Bearer token in the Authorization header for protected endpoints.
- Public endpoints (e.g., `/`) are accessible without authentication.

Endpoints

Root Endpoint

- **Endpoint:** `/`
- **Method:** GET
- **Description:** Returns a welcome message to confirm the API is running.
- **Response:** JSON with a message (e.g., `{"message": "Kandypack Supply Chain API"}`).

Cities

- **Endpoint:** `/cities`
 - **Method:** GET
 - **Description:** Retrieves a list of all cities (25 cities in Sri Lanka).
 - **Response:** Array of city objects (e.g., `city_id`, `city_name`, `province`).
- **Endpoint:** `/cities/{city_id}`
 - **Method:** GET

- **Description:** Retrieves details of a specific city by city_id.
 - **Response:** Single city object or 404 if not found.
- **Endpoint:** /cities
 - **Method:** POST
 - **Description:** Creates a new city (requires StoreManager or Management role).
 - **Request Body:** JSON with city_name, province.
 - **Response:** Created city object.
- **Endpoint:** /cities/{city_id}
 - **Method:** PUT
 - **Description:** Updates a city's details (requires Management role).
 - **Request Body:** JSON with updated city_name, province.
 - **Response:** Updated city object or 404 if not found.
- **Endpoint:** /cities/{city_id}
 - **Method:** DELETE
 - **Description:** Deletes a city (requires Management role).
 - **Response:** Success message or 404 if not found.

Railway Stations

- **Endpoint:** /railway_stations
 - **Method:** GET
 - **Description:** Retrieves a list of all railway stations (145 stations).
 - **Response:** Array of railway station objects (e.g., station_id, name, city_id).
- **Endpoint:** /railway_stations/{station_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific railway station.
 - **Response:** Single railway station object or 404 if not found.

- **Endpoint:** /railway_stations
 - **Method:** POST
 - **Description:** Creates a new railway station (requires Management role).
 - **Request Body:** JSON with name, city_id.
 - **Response:** Created railway station object.
- **Endpoint:** /railway_stations/{station_id}
 - **Method:** PUT
 - **Description:** Updates a railway station's details (requires Management role).
 - **Request Body:** JSON with updated name, city_id.
 - **Response:** Updated railway station object or 404 if not found.
- **Endpoint:** /railway_stations/{station_id}
 - **Method:** DELETE
 - **Description:** Deletes a railway station (requires Management role).
 - **Response:** Success message or 404 if not found.

Stores

- **Endpoint:** /stores
 - **Method:** GET
 - **Description:** Retrieves a list of all stores (25 stores).
 - **Response:** Array of store objects (e.g., store_id, name, telephone_number, address, contact_person, station_id).
- **Endpoint:** /stores/{store_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific store.
 - **Response:** Single store object or 404 if not found.
- **Endpoint:** /stores
 - **Method:** POST

- **Description:** Creates a new store (requires Management role).
- **Request Body:** JSON with name, telephone_number (matching ^\+?[0-9-]+\$), address, contact_person, station_id.
- **Response:** Created store object.
- **Endpoint:** /stores/{store_id}
 - **Method:** PUT
 - **Description:** Updates a store's details (requires Management role).
 - **Request Body:** JSON with updated fields.
 - **Response:** Updated store object or 404 if not found.
- **Endpoint:** /stores/{store_id}
 - **Method:** DELETE
 - **Description:** Deletes a store (requires Management role).
 - **Response:** Success message or 404 if not found.

Trains

- **Endpoint:** /trains
 - **Method:** GET
 - **Description:** Retrieves a list of all trains (20 trains).
 - **Response:** Array of train objects (e.g., train_id, train_name, capacity).
- **Endpoint:** /trains/{train_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific train.
 - **Response:** Single train object or 404 if not found.
- **Endpoint:** /trains
 - **Method:** POST
 - **Description:** Creates a new train (requires Management role).
 - **Request Body:** JSON with train_name, capacity.

- **Response:** Created train object.
- **Endpoint:** /trains/{train_id}
 - **Method:** PUT
 - **Description:** Updates a train's details (requires Management role).
 - **Request Body:** JSON with updated train_name, capacity.
 - **Response:** Updated train object or 404 if not found.
- **Endpoint:** /trains/{train_id}
 - **Method:** DELETE
 - **Description:** Deletes a train (requires Management role).
 - **Response:** Success message or 404 if not found.

Customers

- **Endpoint:** /customers
 - **Method:** GET
 - **Description:** Retrieves a list of all customers.
 - **Response:** Array of customer objects (e.g., customer_id, customer_name, phone_number, address).
- **Endpoint:** /customers/{customer_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific customer.
 - **Response:** Single customer object or 404 if not found.
- **Endpoint:** /customers
 - **Method:** POST
 - **Description:** Creates a new customer (requires StoreManager or Management role).
 - **Request Body:** JSON with customer_name, phone_number (matching ^\+?[0-9-]+\$), address.
 - **Response:** Created customer object.

- **Endpoint:** /customers/{customer_id}
 - **Method:** PUT
 - **Description:** Updates a customer's details (requires Management role).
 - **Request Body:** JSON with updated fields.
 - **Response:** Updated customer object or 404 if not found.
- **Endpoint:** /customers/{customer_id}
 - **Method:** DELETE
 - **Description:** Deletes a customer (requires Management role).
 - **Response:** Success message or 404 if not found.

Orders

- **Endpoint:** /orders
 - **Method:** GET
 - **Description:** Retrieves a list of all orders (filtered by user role, e.g., StoreManager sees store-specific orders).
 - **Response:** Array of order objects (e.g., order_id, customer_id, order_date, deliver_address, status, deliver_city_id, full_price).
- **Endpoint:** /orders/{order_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific order.
 - **Response:** Single order object or 404 if not found.
- **Endpoint:** /orders
 - **Method:** POST
 - **Description:** Creates a new order (requires StoreManager or Customer role; order_date must be 7+ days from current date: Oct 16, 2025, 16:40 +05:30).
 - **Request Body:** JSON with customer_id, order_date, deliver_address, status, deliver_city_id, full_price.
 - **Response:** Created order object.

- **Endpoint:** /orders/{order_id}
 - **Method:** PUT
 - **Description:** Updates an order's details (requires StoreManager or Management role).
 - **Request Body:** JSON with updated fields.
 - **Response:** Updated order object or 404 if not found.
- **Endpoint:** /orders/{order_id}
 - **Method:** DELETE
 - **Description:** Deletes an order (requires Management role).
 - **Response:** Success message or 404 if not found.

Routes

- **Endpoint:** /routes
 - **Method:** GET
 - **Description:** Retrieves a list of all routes between cities/stations.
 - **Response:** Array of route objects (e.g., route_id, start_station_id, end_station_id, distance).
- **Endpoint:** /routes/{route_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific route.
 - **Response:** Single route object or 404 if not found.
- **Endpoint:** /routes
 - **Method:** POST
 - **Description:** Creates a new route (requires Management role).
 - **Request Body:** JSON with start_station_id, end_station_id, distance.
 - **Response:** Created route object.
- **Endpoint:** /routes/{route_id}
 - **Method:** PUT

- **Description:** Updates a route's details (requires Management role).
- **Request Body:** JSON with updated fields.
- **Response:** Updated route object or 404 if not found.
- **Endpoint:** /routes/{route_id}
 - **Method:** DELETE
 - **Description:** Deletes a route (requires Management role).
 - **Response:** Success message or 404 if not found.

Train Schedules

- **Endpoint:** /train_schedules
 - **Method:** GET
 - **Description:** Retrieves a list of all train schedules.
 - **Response:** Array of train schedule objects (e.g., schedule_id, train_id, route_id, departure_time, arrival_time).
- **Endpoint:** /train_schedules/{schedule_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific train schedule.
 - **Response:** Single train schedule object or 404 if not found.
- **Endpoint:** /train_schedules
 - **Method:** POST
 - **Description:** Creates a new train schedule (requires Management role; departure_time must be 7+ days from Oct 16, 2025).
 - **Request Body:** JSON with train_id, route_id, departure_time, arrival_time.
 - **Response:** Created train schedule object.
- **Endpoint:** /train_schedules/{schedule_id}
 - **Method:** PUT
 - **Description:** Updates a train schedule (requires Management role).
 - **Request Body:** JSON with updated fields.

- **Response:** Updated train schedule object or 404 if not found.
- **Endpoint:** /train_schedules/{schedule_id}
 - **Method:** DELETE
 - **Description:** Deletes a train schedule (requires Management role).
 - **Response:** Success message or 404 if not found.

Truck Schedules

- **Endpoint:** /truck_schedules
 - **Method:** GET
 - **Description:** Retrieves a list of all truck schedules.
 - **Response:** Array of truck schedule objects (e.g., schedule_id, truck_id, route_id, departure_time, arrival_time).
- **Endpoint:** /truck_schedules/{schedule_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific truck schedule.
 - **Response:** Single truck schedule object or 404 if not found.
- **Endpoint:** /truck_schedules
 - **Method:** POST
 - **Description:** Creates a new truck schedule (requires Management role; departure_time must be 7+ days from Oct 16, 2025).
 - **Request Body:** JSON with truck_id, route_id, departure_time, arrival_time.
 - **Response:** Created truck schedule object.
- **Endpoint:** /truck_schedules/{schedule_id}
 - **Method:** PUT
 - **Description:** Updates a truck schedule (requires Management role).
 - **Request Body:** JSON with updated fields.
 - **Response:** Updated truck schedule object or 404 if not found.
- **Endpoint:** /truck_schedules/{schedule_id}

- **Method:** DELETE
- **Description:** Deletes a truck schedule (requires Management role).
- **Response:** Success message or 404 if not found.

Allocations

- **Endpoint:** /allocations
 - **Method:** GET
 - **Description:** Retrieves a list of all rail/truck allocations for orders.
 - **Response:** Array of allocation objects (e.g., allocation_id, order_id, schedule_id, allocation_type).
- **Endpoint:** /allocations/{allocation_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific allocation.
 - **Response:** Single allocation object or 404 if not found.
- **Endpoint:** /allocations
 - **Method:** POST
 - **Description:** Creates a new allocation (requires StoreManager or Management role).
 - **Request Body:** JSON with order_id, schedule_id, allocation_type (e.g., Rail, Truck).
 - **Response:** Created allocation object.
- **Endpoint:** /allocations/{allocation_id}
 - **Method:** PUT
 - **Description:** Updates an allocation (requires Management role).
 - **Request Body:** JSON with updated fields.
 - **Response:** Updated allocation object or 404 if not found.
- **Endpoint:** /allocations/{allocation_id}
 - **Method:** DELETE

- **Description:** Deletes an allocation (requires Management role).
- **Response:** Success message or 404 if not found.

Users

- **Endpoint:** /users
 - **Method:** GET
 - **Description:** Retrieves a list of all users (requires Management role).
 - **Response:** Array of user objects (e.g., user_id, username, role, created_at).
- **Endpoint:** /users/{user_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific user (requires Management or self).
 - **Response:** Single user object or 404 if not found.
- **Endpoint:** /users
 - **Method:** POST
 - **Description:** Creates a new user (requires Management role).
 - **Request Body:** JSON with username, password, role.
 - **Response:** Created user object (password hashed).
- **Endpoint:** /users/{user_id}
 - **Method:** PUT
 - **Description:** Updates a user's details (requires Management or self).
 - **Request Body:** JSON with updated username, role, or password.
 - **Response:** Updated user object or 404 if not found.
- **Endpoint:** /users/{user_id}
 - **Method:** DELETE
 - **Description:** Deletes a user (requires Management role).
 - **Response:** Success message or 404 if not found.

- **Endpoint:** /users/login
 - **Method:** POST
 - **Description:** Authenticates a user and returns a JWT token.
 - **Request Body:** JSON with username, password.
 - **Response:** JSON with access_token.

Drivers

- **Endpoint:** /drivers
 - **Method:** GET
 - **Description:** Retrieves a list of all drivers (requires Management role).
 - **Response:** Array of driver objects (linked to users with Driver role).
- **Endpoint:** /drivers/{driver_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific driver.
 - **Response:** Single driver object or 404 if not found.
- **Endpoint:** /drivers
 - **Method:** POST
 - **Description:** Creates a new driver (requires Management role).
 - **Request Body:** JSON with driver details (e.g., user_id, license_info).
 - **Response:** Created driver object.
- **Endpoint:** /drivers/{driver_id}
 - **Method:** PUT
 - **Description:** Updates a driver's details (requires Management role).
 - **Request Body:** JSON with updated fields.
 - **Response:** Updated driver object or 404 if not found.
- **Endpoint:** /drivers/{driver_id}
 - **Method:** DELETE

- **Description:** Deletes a driver (requires Management role).
- **Response:** Success message or 404 if not found.

Assistants

- **Endpoint:** /assistants
 - **Method:** GET
 - **Description:** Retrieves a list of all assistants (requires Management role).
 - **Response:** Array of assistant objects (linked to users with Assistant role).
- **Endpoint:** /assistants/{assistant_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific assistant.
 - **Response:** Single assistant object or 404 if not found.
- **Endpoint:** /assistants
 - **Method:** POST
 - **Description:** Creates a new assistant (requires Management role).
 - **Request Body:** JSON with assistant details (e.g., user_id).
 - **Response:** Created assistant object.
- **Endpoint:** /assistants/{assistant_id}
 - **Method:** PUT
 - **Description:** Updates an assistant's details (requires Management role).
 - **Request Body:** JSON with updated fields.
 - **Response:** Updated assistant object or 404 if not found.
- **Endpoint:** /assistants/{assistant_id}
 - **Method:** DELETE
 - **Description:** Deletes an assistant (requires Management role).
 - **Response:** Success message or 404 if not found.

Products

- **Endpoint:** /products
 - **Method:** GET
 - **Description:** Retrieves a list of all products.
 - **Response:** Array of product objects (e.g., product_id, name, price).
- **Endpoint:** /products/{product_id}
 - **Method:** GET
 - **Description:** Retrieves details of a specific product.
 - **Response:** Single product object or 404 if not found.
- **Endpoint:** /products
 - **Method:** POST
 - **Description:** Creates a new product (requires StoreManager or Management role).
 - **Request Body:** JSON with name, price.
 - **Response:** Created product object.
- **Endpoint:** /products/{product_id}
 - **Method:** PUT
 - **Description:** Updates a product's details (requires Management role).
 - **Request Body:** JSON with updated fields.
 - **Response:** Updated product object or 404 if not found.
- **Endpoint:** /products/{product_id}
 - **Method:** DELETE
 - **Description:** Deletes a product (requires Management role).
 - **Response:** Success message or 404 if not found.

Notes

- **Response Format:** All endpoints return JSON responses with standard HTTP status codes (200 for success, 404 for not found, 401 for unauthorized, etc.).
- **Validation:** Request bodies are validated using Pydantic schemas (e.g., phone_number must match `^\+?[0-9-]+\+$`).
- **Time Constraints:** Order and schedule dates (e.g., order_date, departure_time) must be at least 7 days from the current date (Oct 16, 2025, 16:40 +05:30).
- **Grok Integration:** Requires an xAI API key (see <https://x.ai/api>). Free usage has quotas; SuperGrok offers higher limits (details at <https://x.ai/grok>).
- **Error Handling:** Addresses previous issues (e.g., username column, datetime format, Valid_phone_number constraint).
- **Access Control:** Role-based access (e.g., StoreManager for store operations, Driver for truck schedules, Management for administrative tasks).
- **Testing:** Use Swagger UI at <http://localhost:8000/docs> to test endpoints.