

# Automaspec API Documentation

## Table of Contents

- Overview
- Interactive Documentation
- Authentication & Security
- API Reference
  - Test Folders
  - Test Specs
  - Test Requirements
  - Tests
  - Account Management
  - AI Assistant
  - Analytics
- Data Models
- Error Handling
- Architecture Overview
- Getting Started Guide
- Integration Tutorial
- Advanced Topics
- Documentation Strategy
- Compliance Checklist

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## Overview

**Automaspec API** provides programmatic access to manage test specifications, requirements, and test cases organized in a hierarchical folder structure. The API supports multi-tenant organizations with role-based access control.

## Key Features

- **Test Management:** Organize tests in folders, specs, and requirements
- **Report Synchronization:** Sync Vitest test results with stored specifications
- **AI Assistant:** Intelligent copilot for test management tasks
- **Analytics:** Track test metrics, growth trends, and stale tests
- **Account Management:** GDPR-compliant data export and account deletion

## Technology Stack

Component	Technology	Description
<b>RPC Framework</b>	oRPC v1.12.2	Type-safe RPC with OpenAPI generation
<b>Validation</b>	Zod v4.1.13	Schema validation and TypeScript inference
<b>Authentication</b>	Better Auth v1.4.4	Session-based auth with organization support
<b>Database</b>	Drizzle ORM + Turso	SQLite-compatible serverless database
<b>Documentation</b>	Scalar (OpenAPI)	Interactive API reference UI

## Base URL

http://localhost:3000/rpc

---

## Interactive Documentation

[!TIP] **Live API Documentation** is available at `/rpc/docs` powered by Scalar UI.

## Access Points

Resource	URL	Description
<b>Scalar UI</b>	<code>/rpc/docs</code>	Interactive API explorer
<b>OpenAPI Spec</b>	<code>/rpc/spec</code>	JSON specification file

The Scalar documentation provides: - Interactive endpoint testing - Request/response schema visualization - Authentication configuration - Code examples in multiple languages

## Authentication & Security

### Authentication Flow

All API endpoints require authentication via session cookies managed by Better Auth.

```
sequenceDiagram
    participant Client
    participant API as Automaspec API
    participant Auth as Better Auth
    participant DB as Database

    Client->>Auth: POST /api/auth/sign-in (email, password)
    Auth->>DB: Validate credentials
    DB-->>Auth: User record
    Auth-->>Client: Set session cookie

    Client->>API: GET /rpc/tests (with cookie)
    API->>Auth: Validate session
    Auth-->>API: Session + User data
    API->>DB: Query with organizationId
    DB-->>API: Test data
    API-->>Client: 200 OK + JSON response
```

### Session-Based Authentication

Cookie: `better-auth.session_token=<session_token>`

The session token is automatically set upon successful login at `/api/auth/sign-in`.

### Authorization Middleware

All endpoints pass through two middleware layers:

1. **Auth Middleware:** Validates session existence
  - Returns error if no valid session
2. **Organization Middleware:** Ensures active organization context
  - Returns error if user has no active organization
  - Scopes all data queries to the organization

### Role-Based Access Control

Role	Permissions
<b>Owner</b>	Full access, manage organization
<b>Admin</b>	Manage members, all CRUD operations
<b>Member</b>	Read/write tests and specs

### Security Features

- **Password Hashing:** bcrypt (industry standard)
- **Session Management:** Secure HTTP-only cookies
- **Input Validation:** All inputs validated via Zod schemas
- **SQL Injection Protection:** Drizzle ORM parameterized queries

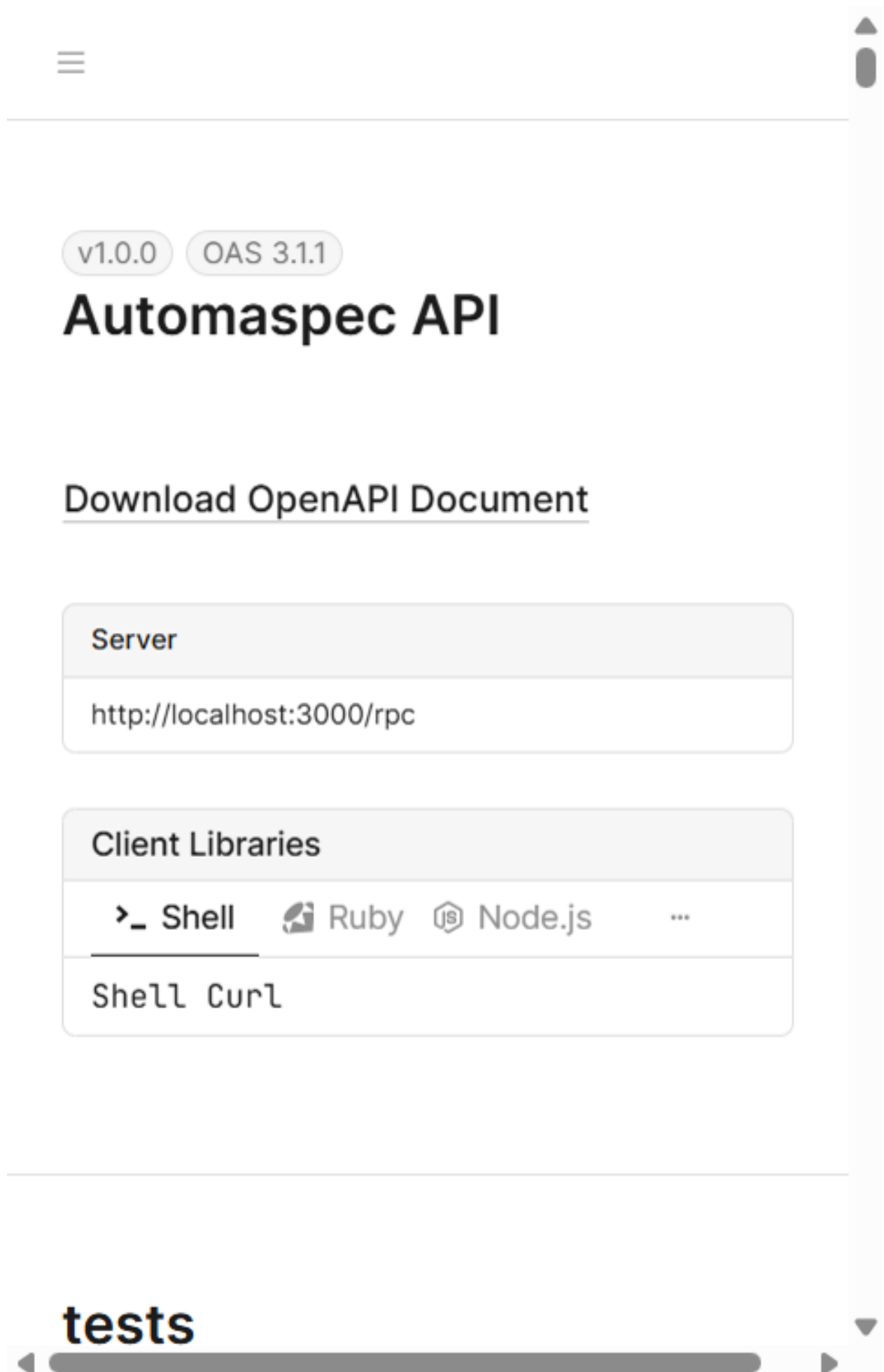


Figure 1: API Documentation Overview

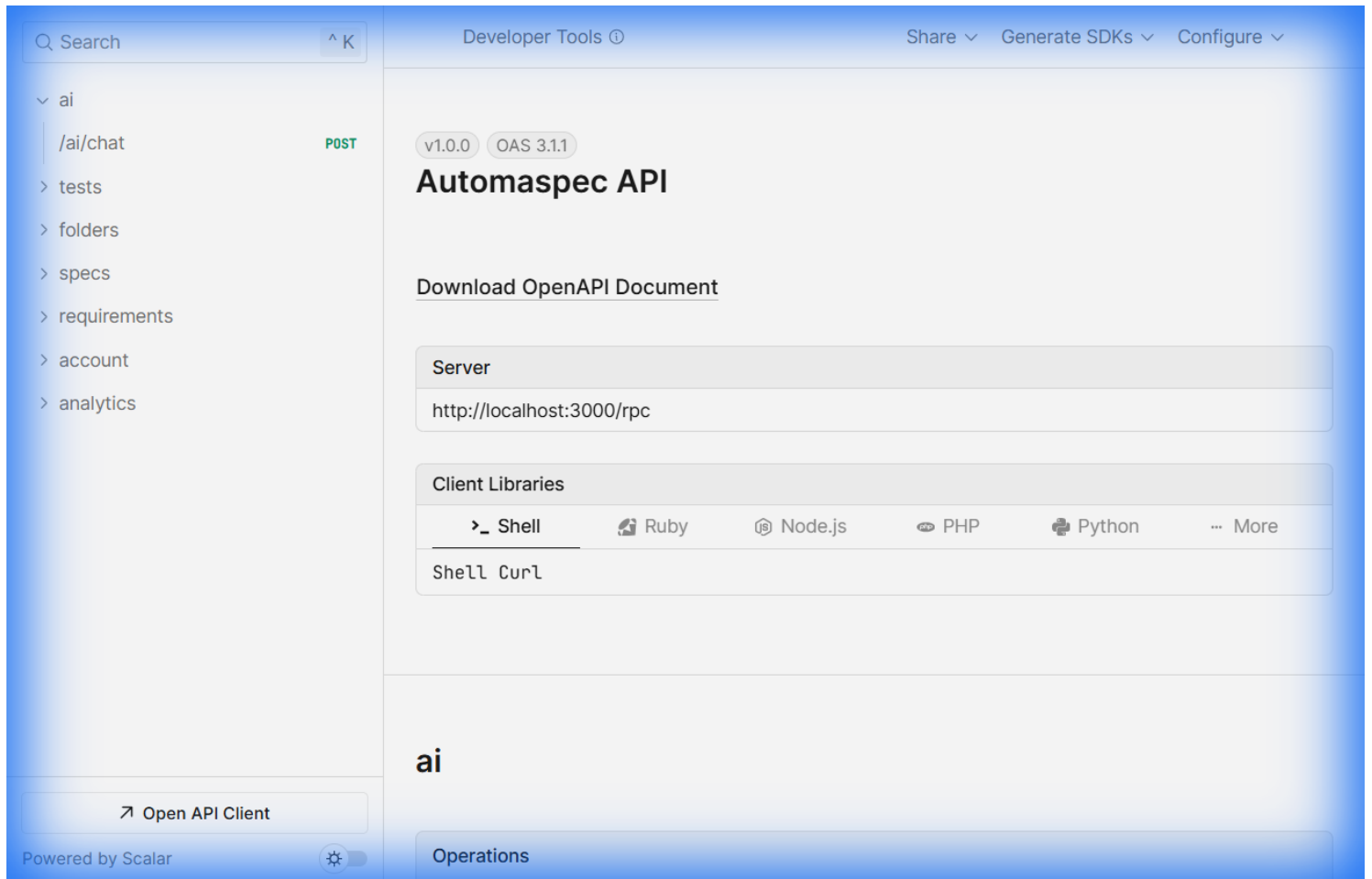


Figure 2: Scalar API Overview

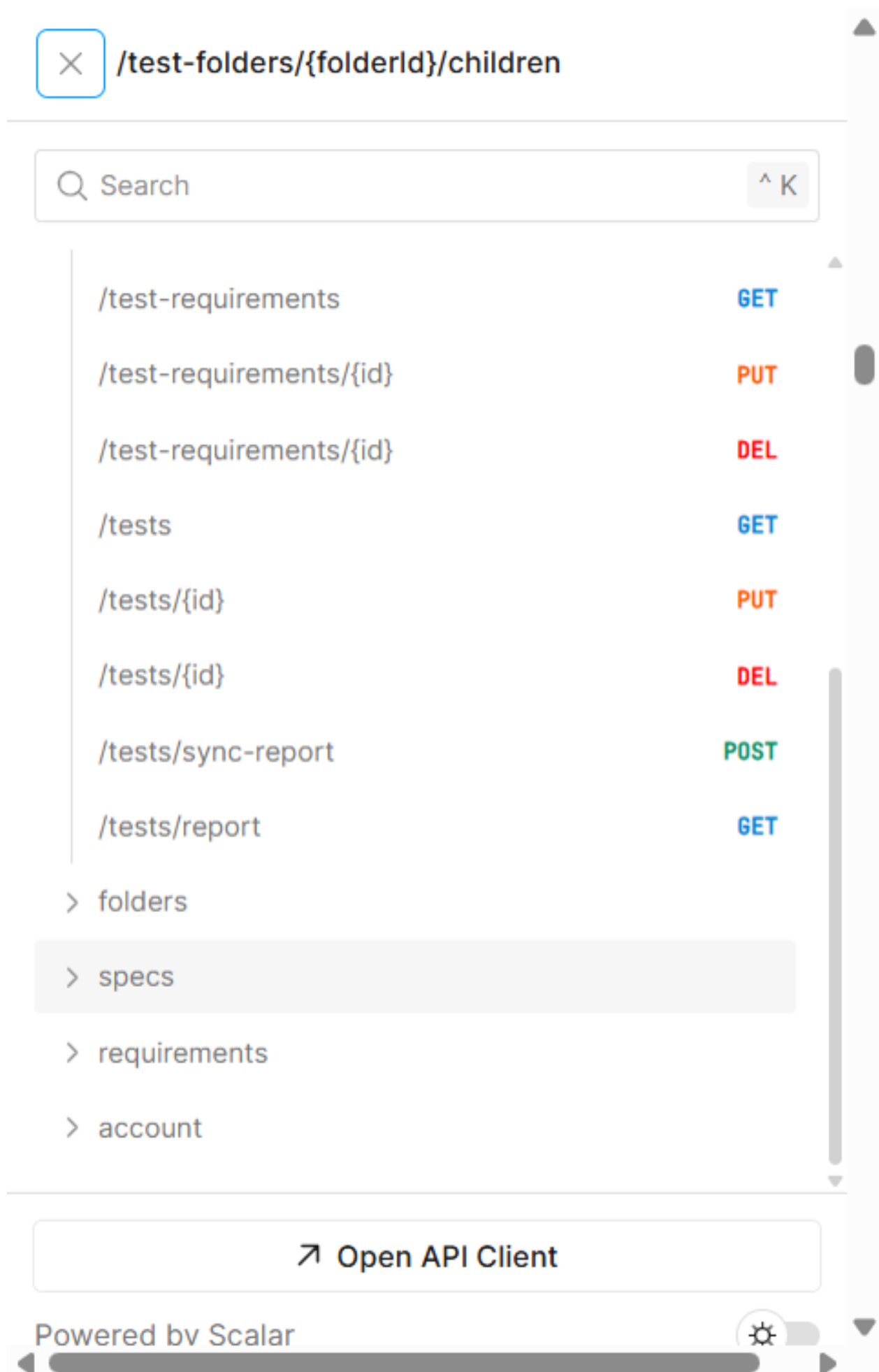


Figure 3: API Endpoints Sidebar

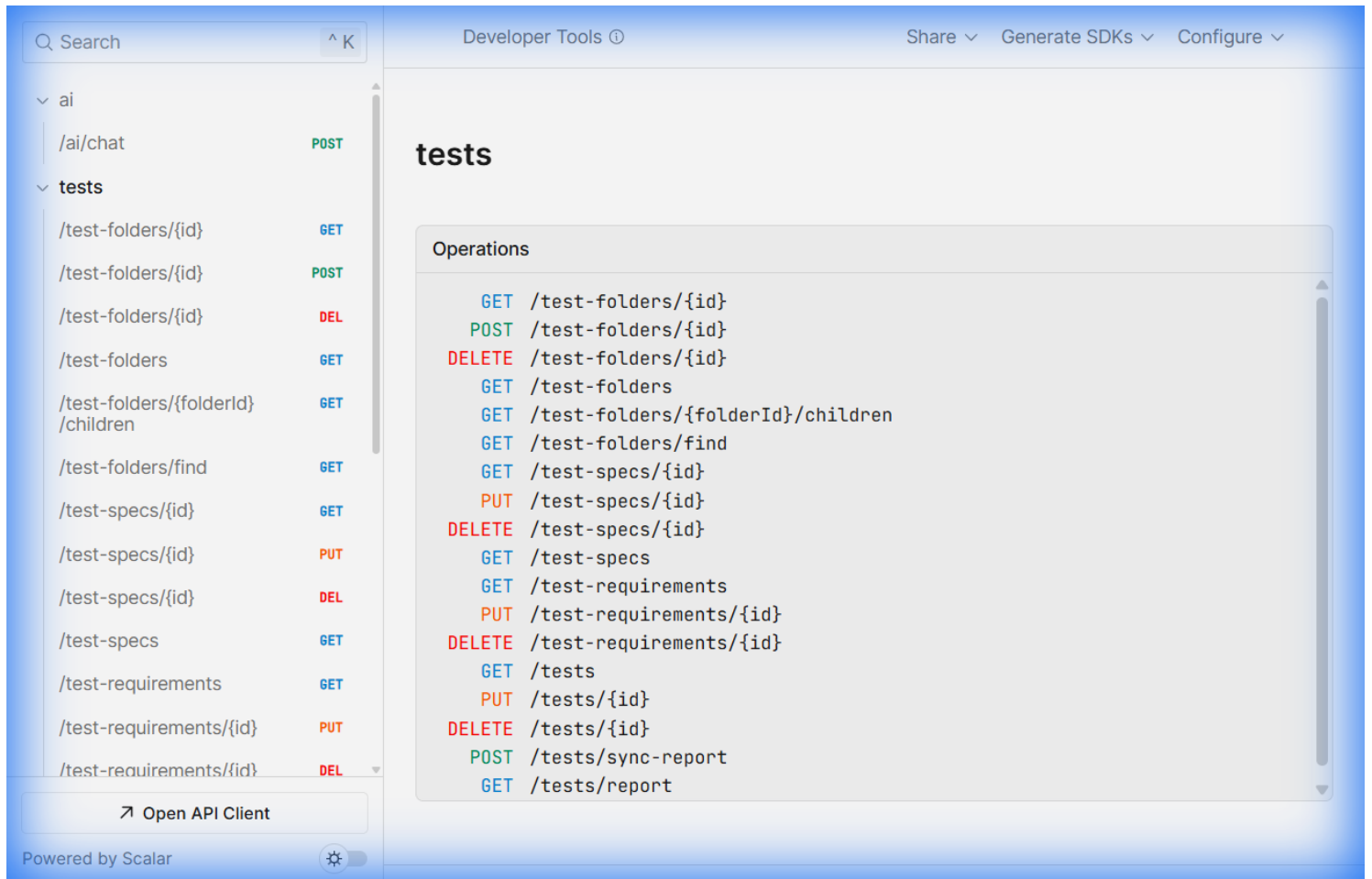


Figure 4: Scalar Endpoints Menu



```
[
  {
    "id": "string",
    "name": "string",
    "description": "string",
    "parentFolderId": "string",
    "organizationId": "string",
    "order": -9007199254740991,
    "createdAt": "2025-12-07T16:40:51.857Z",
    "updatedAt": "2025-12-07T16:40:51.857Z"
  }
]
```

OK

## /test-folders/{folderId}/children

Get the children of a test folder

### Path Parameters

folderId string **required**

Q Search^K

▼ ai

/ai/chatPOST

> tests

> folders

> specs

▼ requirements

/test-requirementsGET

/test-requirements/{id}PUT

/test-requirements/{id}DEL

> account

> analytics

↗ Open API Client

Powered by Scalar⚙️

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## requirements

Operations

GET

/test-requirements

PUT

/test-requirements/{id}

DELETE

/test-requirements/{id}

### /test-requirements

List test requirements

Query Parameters

specIdstring

Responses

> 200 OK

Figure 6: Scalar Endpoint Details



- **Organization Isolation:** All test data scoped by `organizationId`

---

## API Reference

### HTTP Status Codes

Code	Meaning
200	Success
400	Bad Request - Invalid input
401	Unauthorized - No valid session
403	Forbidden - No active organization
404	Not Found - Resource doesn't exist
500	Server Error - Internal error

---

### Test Folders

Organize test specifications in a hierarchical folder structure.

**GET** `/test-folders/{id}` Retrieves a single test folder by ID.

**Parameters:**

Name	Type	Location	Required	Description
<code>id</code>	string	path	Yes	Folder UUID

**Response (200):**

```
{
  "id": "550e8400-e29b-41d4-a716-446655440000",
  "name": "Authentication Tests",
  "description": "Tests for auth flows",
  "parentFolderId": null,
  "organizationId": "org-123",
  "order": 0,
  "createdAt": "2024-12-01T10:00:00.000Z",
  "updatedAt": "2024-12-10T15:30:00.000Z"
}
```

**Errors:**

Code	Message
401	Session not found
403	User has no active organization
404	Folder not found

---

**GET** `/test-folders` Lists all test folders in the organization.

**Query Parameters:**

Name	Type	Required	Description
<code>parentFolderId</code>	string   null	No	Filter by parent folder (null for root)

**Response (200):**

```
[
  {
    "id": "550e8400-e29b-41d4-a716-446655440000",
    "name": "Authentication Tests",
    "description": "Tests for auth flows",
    "parentFolderId": null,
    "organizationId": "org-123",
    "order": 0,
    "createdAt": "2024-12-01T10:00:00.000Z",
    "updatedAt": "2024-12-10T15:30:00.000Z"
  }
]
```

---

**GET /test-folders/{folderId}/children** Retrieves folder children with optional recursive depth.

**Parameters:**

Name	Type	Location	Required	Description
folderId	string	path	Yes	Folder ID or “root”
depth	number	query	No	Recursion depth (0-5, default: 0)

**Response (200):**

```
[
  {
    "id": "folder-1",
    "name": "Unit Tests",
    "type": "folder",
    "children": [
      {
        "id": "spec-1",
        "name": "Login Spec",
        "type": "spec"
      }
    ]
  },
  {
    "id": "spec-2",
    "name": "Registration Spec",
    "type": "spec"
  }
]
```

---

**GET /test-folders/find** Find a folder by exact name match.

**Query Parameters:**

Name	Type	Required	Description
name	string	Yes	Folder name (min 1 char)

**Response (200):** Returns folder object or null if not found.

---

**POST /test-folders/{id}** Creates or updates a test folder (upsert).

**Request Body:**

```
{
  "id": "550e8400-e29b-41d4-a716-446655440000",
  "name": "Authentication Tests",
  "description": "Tests for authentication flows",
  "parentFolderId": null
}
```

Field	Type	Required	Description
id	string	No	UUID (auto-generated if omitted)
name	string	Yes	Folder name
description	string	No	Folder description
parentFolderId	string   null	No	Parent folder for nesting

**Response (200):** Returns the created/updated folder object.

**DELETE /test-folders/{id}** Deletes a test folder (cascades to child specs).

**Parameters:**

Name	Type	Location	Required
id	string	path	Yes

**Response (200):**

```
{
  "success": true
}
```

**Test Specs**

Test specifications contain requirements and aggregate test statuses.

**GET /test-specs/{id}** Retrieves a test specification by ID.

**Response (200):**

```
{
  "id": "spec-uuid",
  "name": "User Authentication",
  "fileName": "auth.spec.ts",
  "description": "Authentication test cases",
  "statuses": {
    "passed": 5,
    "failed": 1,
    "pending": 2,
    "skipped": 0,
    "todo": 0,
    "disabled": 0,
    "missing": 0
  },
  "numberOfTests": 8,
  "folderId": "folder-uuid",
  "organizationId": "org-123",
  "createdAt": "2024-12-01T10:00:00.000Z",
}
```

```
"updatedAt": "2024-12-10T15:30:00.000Z"
}
```

---

**GET /test-specs** Lists test specifications.

**Query Parameters:**

Name	Type	Required	Description
folderId	string   null	No	Filter by folder

---

**PUT /test-specs/{id}** Creates or updates a test specification.

**Request Body:**

```
{
  "name": "Login Flow Tests",
  "description": "End-to-end login testing",
  "fileName": "login.spec.ts",
  "folderId": "folder-uuid"
}
```

---

**DELETE /test-specs/{id}** Deletes a test specification.

**Response (200):**

```
{
  "success": true
}
```

---

## Test Requirements

Individual requirements within test specifications.

**GET /test-requirements** Lists requirements, optionally filtered by spec.

**Query Parameters:**

Name	Type	Required	Description
specId	string	No	Filter by spec ID

---

**Response (200):**

```
[
  {
    "id": "req-uuid",
    "name": "should validate email format",
    "description": "Validates email contains @ symbol",
    "order": 0,
    "specId": "spec-uuid",
    "createdAt": "2024-12-01T10:00:00.000Z",
    "updatedAt": "2024-12-01T10:00:00.000Z"
  }
]
```

---

**PUT /test-requirements/{id}** Creates or updates a test requirement.

**Request Body:**

```
{
  "name": "should reject invalid password",
  "description": "Password must be at least 8 characters",
  "order": 1,
  "specId": "spec-uuid"
}
```

**DELETE /test-requirements/{id}** Deletes a test requirement.

**Tests**

Individual test cases linked to requirements.

**GET /tests** Lists tests, optionally filtered by requirement.

**Query Parameters:**

Name	Type	Required	Description
requirementId	string	No	Filter by requirement ID

**Response (200):**

```
[
  {
    "id": "test-uuid",
    "status": "passed",
    "framework": "vitest",
    "code": "it('should...', () => { ... })",
    "requirementId": "req-uuid",
    "createdAt": "2024-12-01T10:00:00.000Z",
    "updatedAt": "2024-12-10T15:00:00.000Z"
  }
]
```

**Test Status Values:**

Status	Description
passed	Test passed successfully
failed	Test failed
pending	Test is pending execution
skipped	Test was skipped
todo	Test marked as todo
disabled	Test is disabled
missing	Test missing from report

**PUT /tests/{id}** Creates or updates a test case.

**Request Body:**

```
{
  "status": "pending",
  "framework": "vitest",
  "code": "it('validates input', () => { expect(true).toBe(true) })",
}
```

```
  "requirementId": "req-uuid"
}
```

---

**DELETE /tests/{id}** Deletes a test case.

---

**GET /tests/report** Retrieves the current Vitest test report.

**Response (200):**

```
{
  "testResults": [
    {
      "assertionResults": [
        {
          "title": "should validate email",
          "status": "passed"
        }
      ]
    }
  ]
}
```

---

**POST /tests/sync-report** Synchronizes Vitest report with stored tests.

**Request Body (optional):**

```
{
  "testResults": [
    {
      "assertionResults": [
        { "title": "should validate email", "status": "passed" }
      ]
    }
  ]
}
```

If no body is provided, reads from `test-results.json`.

**Response (200):**

```
{
  "updated": 5,
  "missing": 2
}
```

---

## Account Management

GDPR-compliant account operations.

**GET /account/{userId}** Exports all user account data.

**Response (200):**

```
{
  "user": {
    "id": "user-uuid",
    "name": "John Doe",
    "email": "john@example.com",
    "image": "https://...",
  }
}
```

```
    "createdAt": "2024-01-01T00:00:00.000Z"
  },
  "memberships": [
    {
      "organizationId": "org-uuid",
      "organizationName": "Acme Corp",
      "role": "owner"
    }
  ]
}
```

---

**DELETE /account/{userId}** Permanently deletes user account and associated data.

**Response (200):**

```
{
  "success": true
}
```

---

### AI Assistant

Intelligent copilot for test management.

**POST /ai/chat** Sends a message to the AI assistant.

**Request Body:**

```
{
  "messages": [
    {
      "role": "user",
      "content": "Create a test folder called 'Authentication'"
    }
  ],
  "provider": "google",
  "model": "gemini-2.5-flash"
}
```

Field	Type	Required	Description
messages	array	Yes	Conversation history
provider	string	No	“openrouter” or “google”
model	string	No	Model identifier

### AI Providers:

Provider	Default Model
openrouter	kwaipilot/kat-coder-pro:free
google	gemini-2.5-flash

**Response (200):**

```
{
  "text": "Created folder \"Authentication\".",
  "toolMessages": ["Created folder \"Authentication\"."],
  "refreshItemIds": ["root"]
}
```

**AI Capabilities:**

- Create folders and specs
  - Find folders by name
  - Add requirements to specs
  - Answer test management questions
- 

## Analytics

Organization metrics and insights.

**GET /analytics/metrics** Retrieves analytics metrics for the organization.

**Query Parameters:**

Name	Type	Required	Description
period	string	Yes	“7d”, “30d”, or “90d”

**Response (200):**

```
{
  "totalTests": 150,
  "totalRequirements": 45,
  "totalSpecs": 12,
  "activeMembers": 5,
  "testsByStatus": {
    "passed": 120,
    "failed": 10,
    "pending": 15,
    "skipped": 3,
    "todo": 2,
    "disabled": 0,
    "missing": 0
  },
  "testsGrowth": [
    { "date": "2024-12-01", "count": 5 },
    { "date": "2024-12-02", "count": 8 }
  ],
  "staleTests": [
    {
      "id": "spec-uuid",
      "name": "Old Spec",
      "updatedAt": "2024-10-01T00:00:00.000Z"
    }
  ]
}
```

---

## Data Models

**TestFolder**

```
interface TestFolder {
  id: string           // UUID primary key
  name: string          // Folder name
  description?: string  // Optional description
  parentFolderId?: string // Parent folder for nesting
  organizationId: string // Owner organization
  order: number         // Display order
  createdAt: Date        // Creation timestamp
  updatedAt: Date        // Last update timestamp
}
```



## TestSpec

```
interface TestSpec {
  id: string
  name: string
  fileName?: string    // Associated test file
  description?: string
  statuses: Record<TestStatus, number> // Aggregated test counts
  numberOfTests: number
  folderId?: string    // Parent folder
  organizationId: string
  createdAt: Date
  updatedAt: Date
}
```

## TestRequirement

```
interface TestRequirement {
  id: string
  name: string          // Requirement description
  description?: string
  order: number         // Display order
  specId: string        // Parent spec
  createdAt: Date
  updatedAt: Date
}
```

## Test

```
interface Test {
  id: string
  status: TestStatus // Current test status
  framework: 'vitest' // Test framework
  code?: string      // Test code
  requirementId: string // Parent requirement
  createdAt: Date
  updatedAt: Date
}

type TestStatus = 'passed' | 'failed' | 'pending' | 'skipped' |
  'todo' | 'disabled' | 'missing'
```

---

## Error Handling

### Error Response Format

All errors follow a consistent structure:

```
{
  "error": {
    "message": "Descriptive error message",
    "code": "ERROR_CODE"
  }
}
```

### Error Taxonomy

Error Code	HTTP Status	Description	Recovery
SESSION_NOT_FOUND	401	No valid session	Re-authenticate at /api/auth/sign-in

Error Code	HTTP Status	Description	Recovery
NO_ACTIVE_ORGANIZATION	403	User has no active org	Switch organization or create one
FOLDER_NOT_FOUND	404	Folder doesn't exist	Verify folder ID
SPEC_NOT_FOUND	404	Spec doesn't exist	Verify spec ID
RATE_LIMIT_EXCEEDED	429	Too many AI requests	Wait and retry
VALIDATION_ERROR	400	Invalid input data	Check request body
INTERNAL_ERROR	500	Server error	Contact support

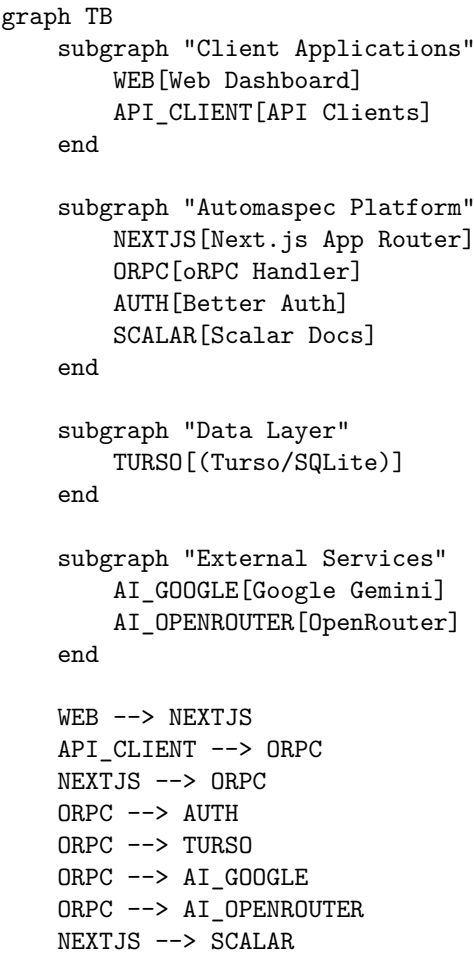
Validation Errors

Validation errors include detailed issue descriptions:

```
{
  "error": {
    "message": "Validation failed",
    "issues": [
      {
        "path": ["name"],
        "message": "Required"
      }
    ]
  }
}
```

Architecture Overview

System Context



## Request Flow

sequenceDiagram

```
participant C as Client
participant H as OpenAPIHandler
participant M as Middleware
participant R as Route Handler
participant D as Database
```

```
C->>H: HTTP Request
H->>H: CORS Plugin
H->>H: Smart Coercion Plugin
H->>H: Logging Plugin
H->>M: Auth Middleware
M-->>M: Validate Session
M->>M: Organization Middleware
M-->>M: Get organizationId
M->>R: Route Handler
R->>D: Database Query
D-->>R: Result
R-->>C: JSON Response
```

## Layered Architecture

Presentation Layer

```
app/(backend)/rpc/[...all]/route.ts
- OpenAPIHandler with plugins
- Request/Response handling
```

Contract Layer

```
orpc/contracts/*.ts
- API contracts with Zod schemas
- HTTP method and path definitions
```

Business Logic Layer

```
orpc/routes/*.ts
- Route handlers
- Business logic implementation
```

Data Access Layer

```
db/schema/*.ts + Drizzle ORM
- Schema definitions
- Query builders
```

Database Layer

```
Turso (SQLite)
- Cloud-native SQLite
- Edge replication
```

# Getting Started Guide

## Prerequisites

- Node.js (active LTS)
- Valid Automaspec account
- Active organization membership

## Step 1: Authentication

First, authenticate to obtain a session:

```
curl -X POST http://localhost:3000/api/auth/sign-in/email \
-H "Content-Type: application/json" \
-d '{
  "email": "user@example.com",
  "password": "your-password"
}'
```

The response sets a session cookie that must be included in subsequent requests.

## Step 2: Verify Session

Confirm your session is valid:

```
curl http://localhost:3000/api/auth/get-session \
-H "Cookie: better-auth.session_token=<token>"
```

## Step 3: Make Your First API Call

List your test folders:

```
curl http://localhost:3000/rpc/test-folders \
-H "Cookie: better-auth.session_token=<token>"
```

## Step 4: Explore Interactive Docs

Visit `/rpc/docs` in your browser to explore all endpoints interactively with Scalar UI.

---

# Integration Tutorial

This tutorial walks through creating a complete test structure.

## Workflow: Create Test Hierarchy

```
graph LR
  A[Create Folder] --> B[Create Spec]
  B --> C[Add Requirements]
  C --> D[Create Tests]
  D --> E[Sync Report]
```

## Step 1: Create a Test Folder

```
curl -X POST http://localhost:3000/rpc/test-folders/folder-001 \
-H "Content-Type: application/json" \
-H "Cookie: <session>" \
-d '{
  "id": "folder-001",
  "name": "Authentication",
  "description": "All authentication-related tests"
}'
```

## Step 2: Create a Test Spec

```
curl -X PUT http://localhost:3000/rpc/test-specs/spec-001 \
-H "Content-Type: application/json" \
-H "Cookie: <session>" \
-d '{
  "id": "spec-001",
  "name": "Login Flow",
  "fileName": "login.spec.ts",
  "description": "Tests for user login functionality",
  "folderId": "folder-001"
}'
```

## Step 3: Add Requirements

```
curl -X PUT http://localhost:3000/rpc/test-requirements/req-001 \
-H "Content-Type: application/json" \
-H "Cookie: <session>" \
-d '{
  "id": "req-001",
  "name": "should accept valid credentials",
  "description": "Validates login with correct email/password",
  "specId": "spec-001",
  "order": 0
}'
```

## Step 4: Create a Test

```
curl -X PUT http://localhost:3000/rpc/tests/test-001 \
-H "Content-Type: application/json" \
-H "Cookie: <session>" \
-d '{
  "id": "test-001",
  "status": "pending",
  "framework": "vitest",
  "requirementId": "req-001",
  "code": "it(\"should accept valid credentials\", async () => { ... })"
}'
```

## Step 5: Sync Test Report

After running Vitest, sync the results:

```
curl -X POST http://localhost:3000/rpc/tests/sync-report \
-H "Content-Type: application/json" \
-H "Cookie: <session>" \
-d '@test-results.json'
```

---

## Advanced Topics

### Rate Limiting

The AI endpoint (/ai/chat) implements rate limiting:

Limit	Value
Window	60 seconds
Max Requests	30 per organization

When exceeded, returns 429 Rate Limit Exceeded.

## Input Validation Guards

AI prompts are validated against blocklists:

- `ignore previous instructions`
- `drop database`
- `disable safety`
- Maximum prompt length: 2000 characters

## Versioning Strategy

- **Current Version:** 1.0.0
- **Specification:** OpenAPI 3.0
- **Breaking changes:** New major version
- **New features:** Minor version increment

The OpenAPI spec is versioned in the handler configuration:

```
specGenerateOptions: {  
  info: {  
    title: 'Automaspec API',  
    version: '1.0.0'  
  }  
}
```

## Multi-Tenancy

All data is isolated by organization:

- Each query includes `organizationId` filter
- Organization context set by middleware
- Users can belong to multiple organizations
- Active organization stored in session

---

## Documentation Strategy

### Standards Followed

Standard	Implementation
<b>OpenAPI 3.0</b>	Auto-generated via <code>@orpc/openapi</code>
<b>REST conventions</b>	Resource-based URLs, proper HTTP methods
<b>Zod schemas</b>	Type-safe validation with JSON Schema output

### Tools Used

Tool	Purpose
<b>oRPC</b>	Type-safe RPC framework with OpenAPI
<b>Scalar</b>	Interactive API documentation UI
<b>ZodToJsonSchemaConverter</b>	Schema conversion for OpenAPI
<b>Pino</b>	Structured request logging

## Naming Conventions

- **Endpoints:** kebab-case (`/test-folders`)
- **Fields:** camelCase (`parentFolderId`)
- **Constants:** SCREAMING\_SNAKE\_CASE (`TEST_STATUSES`)

### Folder Structure

```
orpc/  
  contracts/          # API contracts (schemas)  
    account.ts  
    ai.ts  
    analytics.ts  
    index.ts  
    tests.ts  
  routes/            # Route handlers (logic)  
    account.ts  
    ai.ts  
    analytics.ts  
    index.ts  
    tests.ts  
  middleware.ts      # Auth middleware
```

### Known Limitations

- 1. **No pagination:** List endpoints return all records
  - 2. **No filtering:** Limited query parameter support
  - 3. **No webhooks:** No event-based notifications yet
  - 4. **Single framework:** Only Vitest supported currently
- 

### Compliance Checklist

#### Minimum Requirements

#	Requirement	Status	Implementation
1	Structured API documentation		This document with endpoint reference
2	OpenAPI/Swagger specification		Auto-generated at <code>/rpc/spec</code>
3	Sample requests/responses		JSON examples for all endpoints
4	HTTP status codes		Documented in API Reference
5	Error messages		Error Taxonomy section
6	Data model descriptions		Data Models section
7	Getting Started guide		Dedicated section
8	Integration tutorial		Step-by-step workflow
9	Architecture overview		Mermaid diagrams
10	Developer-accessible format		Markdown + Scalar UI
11	Documentation strategy		Tools and conventions
12	Consistent formatting		Standardized structure

#### Maximum Requirements

#	Requirement	Status	Implementation
1	Comprehensive documentation		Full reference + guides
2	Advanced topics		Rate limits, auth deep-dive
3	Detailed diagrams		Sequence + component diagrams
4	Schema validation		Zod + oRPC

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### Appendix

#### API Endpoint Summary

Category	Endpoints	Methods
Test Folders	6	GET, POST, DELETE
Test Specs	4	GET, PUT, DELETE
Test Requirements	3	GET, PUT, DELETE
Tests	5	GET, PUT, DELETE, POST
Account	2	GET, DELETE
AI	1	POST
Analytics	1	GET
<b>Total</b>	<b>22</b>	

## Environment Variables

Variable	Description
NEXT_PUBLIC_DATABASE_URL	Turso database URL
DATABASE_AUTH_TOKEN	Turso auth token
OPENROUTER_API_KEY	OpenRouter API key
GEMINI_API_KEY	Google Gemini API key

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