# Railway Deployment Guide for Judge0 API

This guide explains how to deploy the Judge0 API application on Railway.

## Prerequisites

1. Railway account (https://railway.app)
2. GitHub account (for code repository)
3. This Judge0 application code

## Deployment Steps

### 1. Prepare Your Repository

1. Push this code to a GitHub repository
2. Ensure all the Railway-specific files are included:
   * Procfile
   * railway.toml
   * nixpacks.toml
   * .env.railway

### 2. Create Railway Project

1. Go to Railway (https://railway.app)
2. Click “Start a New Project”
3. Choose “Deploy from GitHub repo”
4. Select your repository with the Judge0 code

### 3. Add Required Services

Your Judge0 API requires these services:

#### PostgreSQL Database

1. In Railway dashboard, click “New Service”
2. Choose “Database” → “PostgreSQL”
3. This will automatically create a PostgreSQL database and provide DATABASE\_URL

#### Redis Database

1. In Railway dashboard, click “New Service”
2. Choose “Database” → “Redis”
3. This will automatically create a Redis instance and provide REDIS\_URL

### 4. Configure Environment Variables

In your Railway project settings, add these environment variables:

#### Required Variables:

RAILS\_ENV=production  
RAILS\_LOG\_TO\_STDOUT=true  
RAILS\_SERVE\_STATIC\_FILES=true  
RAILS\_MAX\_THREADS=5  
SECRET\_KEY\_BASE=<generate-a-long-random-string>

#### Optional Variables (configure as needed):

ALLOW\_ORIGIN=https://yourdomain.com  
ENABLE\_WAIT\_RESULT=true  
ENABLE\_COMPILER\_OPTIONS=true  
ALLOWED\_LANGUAGES\_FOR\_COMPILER\_OPTIONS=44,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84

### 5. Generate SECRET\_KEY\_BASE

You can generate a secure secret key using Ruby:

ruby -e "require 'securerandom'; puts SecureRandom.hex(64)"

### 6. Deploy

1. Railway will automatically deploy when you push to your connected GitHub repository
2. Monitor the build logs in Railway dashboard
3. Once deployed, you’ll get a URL like https://your-app.railway.app

### 7. Run Database Migrations

After successful deployment, you may need to run database migrations:

1. Go to Railway dashboard
2. Open your service
3. Go to “Settings” → “Variables”
4. Add a one-time deployment command or use Railway CLI:

railway run bundle exec rails db:migrate

## Important Notes

### Worker Processes

* The Procfile defines both web and worker processes
* Railway will run the web process automatically
* For background job processing (Resque workers), you may need to scale worker processes in Railway dashboard

### Database Connections

* Railway automatically provides DATABASE\_URL and REDIS\_URL
* The application is configured to use these URLs automatically
* No need to manually configure database connection details

### Scaling

* You can scale your application in Railway dashboard
* For Judge0, you may want to scale worker processes for handling code execution queues

### Monitoring

* Use Railway’s built-in logging and monitoring
* Monitor both web and worker processes
* Check database connection and Redis connectivity

## Troubleshooting

### Common Issues:

1. **Build Failures**
   * Check Ruby version compatibility (should be 3.2.0)
   * Ensure all dependencies are in Gemfile
   * Review build logs in Railway dashboard
2. **Database Connection Issues**
   * Verify DATABASE\_URL is automatically provided
   * Check database service is running
   * Run migrations if needed
3. **Redis Connection Issues**
   * Verify REDIS\_URL is automatically provided
   * Check Redis service is running
   * Monitor worker processes
4. **Port Issues**
   * Railway automatically provides PORT environment variable
   * Application is configured to use Railway’s assigned port

## File Changes Made for Railway Compatibility

1. **Procfile** - Defines web and worker processes
2. **railway.toml** - Railway-specific configuration
3. **nixpacks.toml** - Build configuration for Nixpacks
4. **config/database.yml** - Updated to use DATABASE\_URL
5. **config/puma.rb** - Improved configuration for Railway
6. **Gemfile** - Added Ruby version and production optimizations
7. **.env.railway** - Example environment variables for Railway

## Testing Your Deployment

Once deployed, test your API:

# Basic health check  
curl https://your-app.railway.app/  
  
# API endpoints (adjust based on your Judge0 routes)  
curl https://your-app.railway.app/languages  
curl https://your-app.railway.app/statuses

## Support

* Railway Documentation: https://docs.railway.app/
* Judge0 Documentation: https://judge0.com/
* Ruby on Rails Guides: https://guides.rubyonrails.org/