

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, 5
```

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/>