

Fastify

MashUp Node팀 15기 세미나

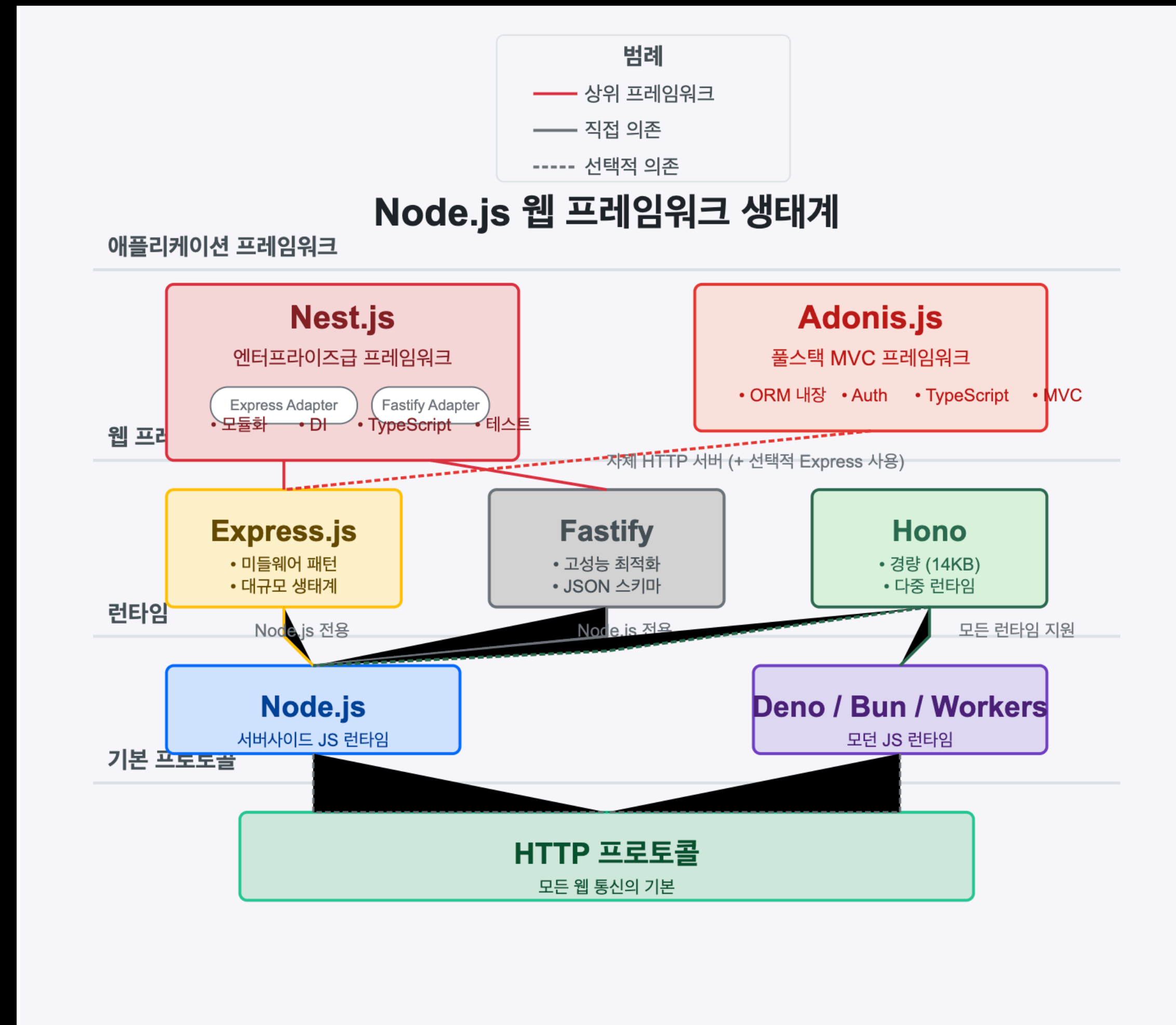
조혜온

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Fastify 란?

Overview of Node.js Server Framework Ecosystem



Express 철학

Fastify와 Express 철학

Web Applications

Express is a minimal and flexible Node.js web application framework that provides a robust set of features for web and mobile applications.

<https://expressjs.com/>

Fast, unopinionated, minimalist web framework for Node.js.

<https://github.com/expressjs/express>

Fastify 철학

Fastify와 Express 철학

Fastify's design philosophy is to minimize the performance overhead of the abstraction layer.

<https://dev.to/leapcell/fastify-in-depth-speed-performance-and-scalability-nodejs-web-framework-lfb>

Core features: Highly performant, Extensible

<https://github.com/expressjs/express>

Fastify 핵심 개념

Fastify와 Express 철학

Lifecycle Hooks

Plugin Architecture

Schemas and Validation, Fast Serialization, Route Shorthand Methods,,,

Encapsulation

Lifecycle & Hooks

NestJs & Express

Express

요청 → [미들웨어 → 미들웨어 → ... → 라우트 핸들러 → 미들웨어 → 미들웨어 → ...] → 응답

Fastify

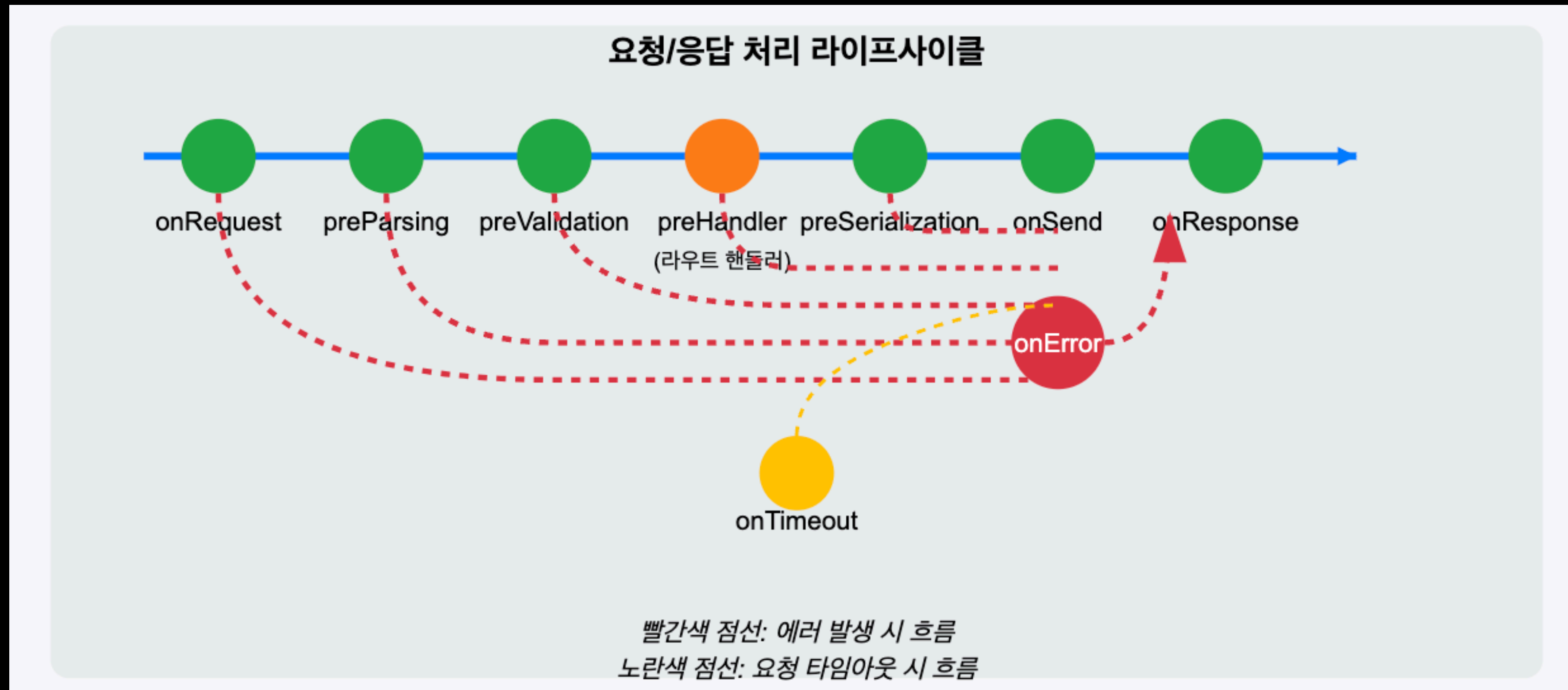
요청 → onRequest → preParsing → preValidation → preHandler → preSerialization → onSend → onResponse → 응답

NestJs

요청 → 미들웨어 → 가드 → 인터셉터(요청) → 파이프 → 컨트롤러 → 서비스 → 인터셉터(응답) → 응답

Lifecycle & Hooks

Fastify



Lifecycle & Hooks

Fastify

Hooks?

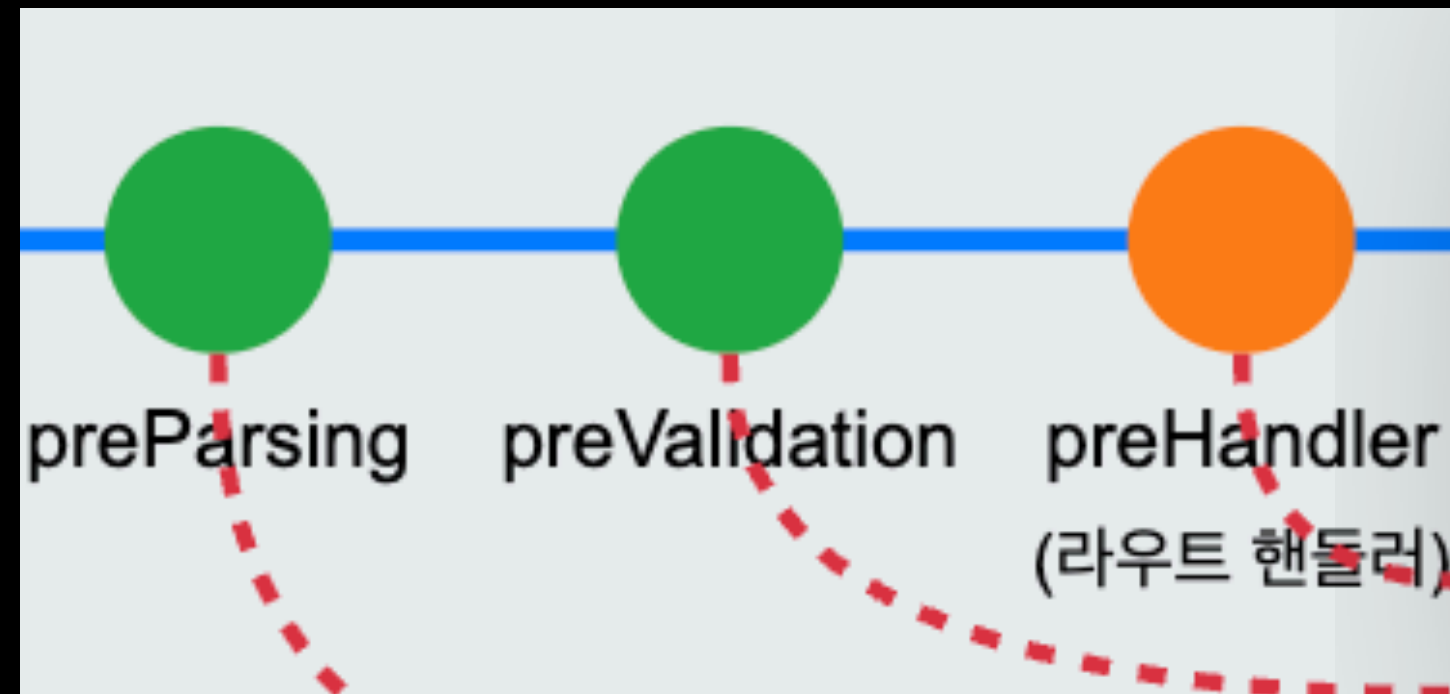
Hooks are registered with the **fastify.addHook** method and allow you to listen to specific events in the application or request/response lifecycle.

애플리케이션 또는 요청/응답 라이프사이클에서 특정 이벤트 감지

Lifecycle & Hooks

Fastify

애플리케이션 또는 요청/응답 라이프사이클에서 특정 이벤트 감지



```
fastify.addHook('preValidation', (request, reply, done) => {  
  request.body = { ...request.body, importantKey: 'randomString' }  
  done()  
})
```

Lifecycle & Hooks

Fastify

NestJs & Fastify

```

// Guard
const app = await NestFactory.create(AppModule);
app.useGlobalGuards(new RolesGuard());

// Interceptor
const app = await NestFactory.create(AppModule);
app.useGlobalInterceptors(new LoggingInterceptor());

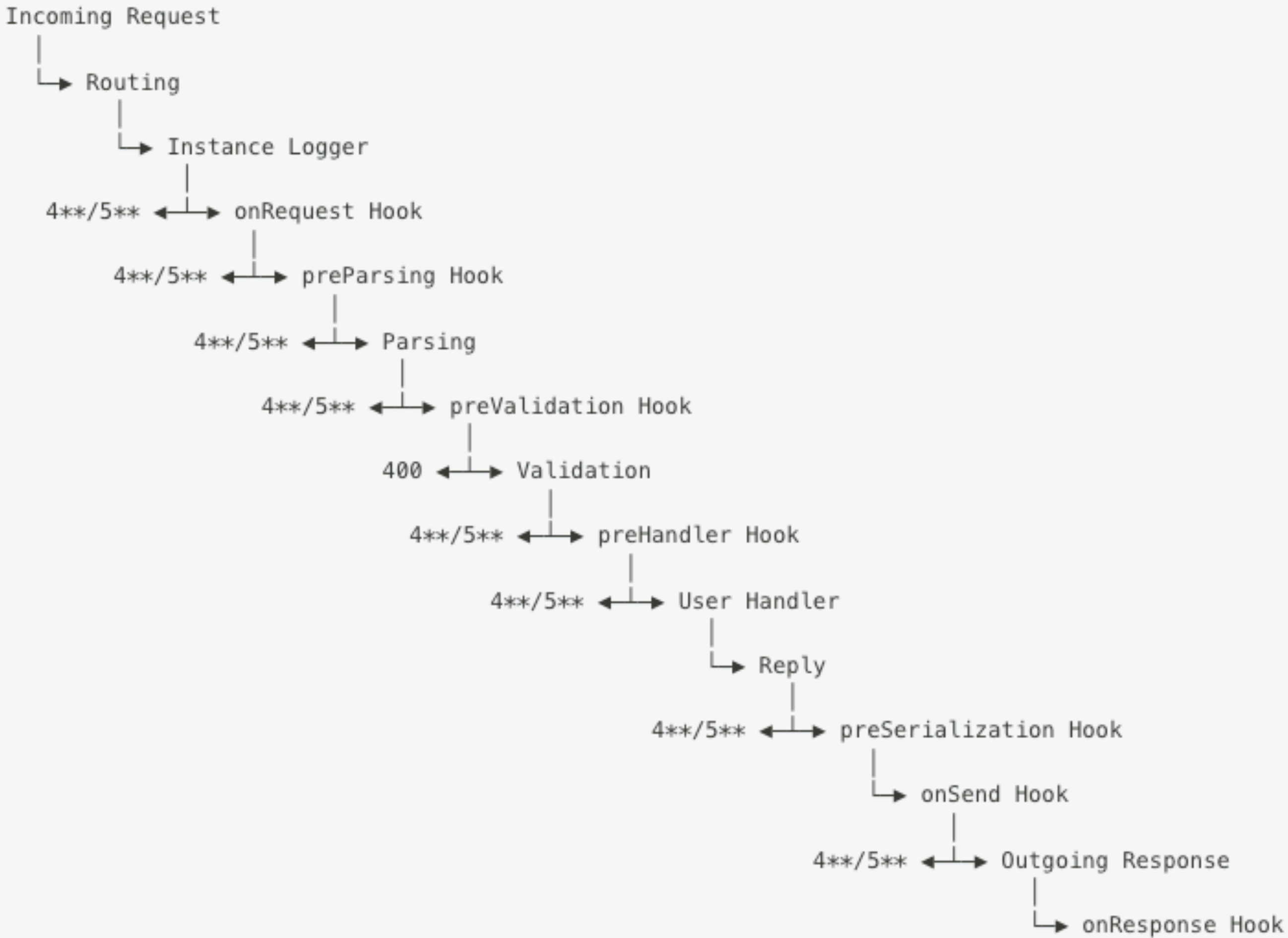
// ExceptionFilter
const app = await NestFactory.create(AppModule);
app.useGlobalFilters(new HttpExceptionFilter());
```



addHook으로 다 등록

```
fastify.addHook('preValidation', (request, reply, done) => {
  request.body = { ...request.body, importantKey: 'randomString' }
  done()
})
```

Fastify



접근 제어

데이터 검증

요청 로깅

Lifecycle & Hooks

Fastify



애플리케이션 후크는 요청/응답 라이프사이클 외부에서 실행

데이터베이스 및 기타 외부 리소스에 연결하거나 연결을 해제할 때
설정 파일이나 환경 설정을 불러오거나 해제할 때
서버 종료 전 데이터를 영구적으로 저장해야 할 때 등등

Plugins & Encapsulation

Fastify - Encapsulation

캡슐화 - 외부로부터 내부 구현을 숨기는 것

Plugins & Encapsulation

Fastify - Encapsulation

캡슐화 - 외부로부터 내부 구현을 숨기는 것

OOP -> 데이터, 불필요한 행동

Plugins & Encapsulation

Fastify - Encapsulation

캡슐화 - 외부로부터 내부 구현을 숨기는 것

OOP -> 데이터, 불필요한 행동

Fastify -> 컨텍스트와 스코프의 제한

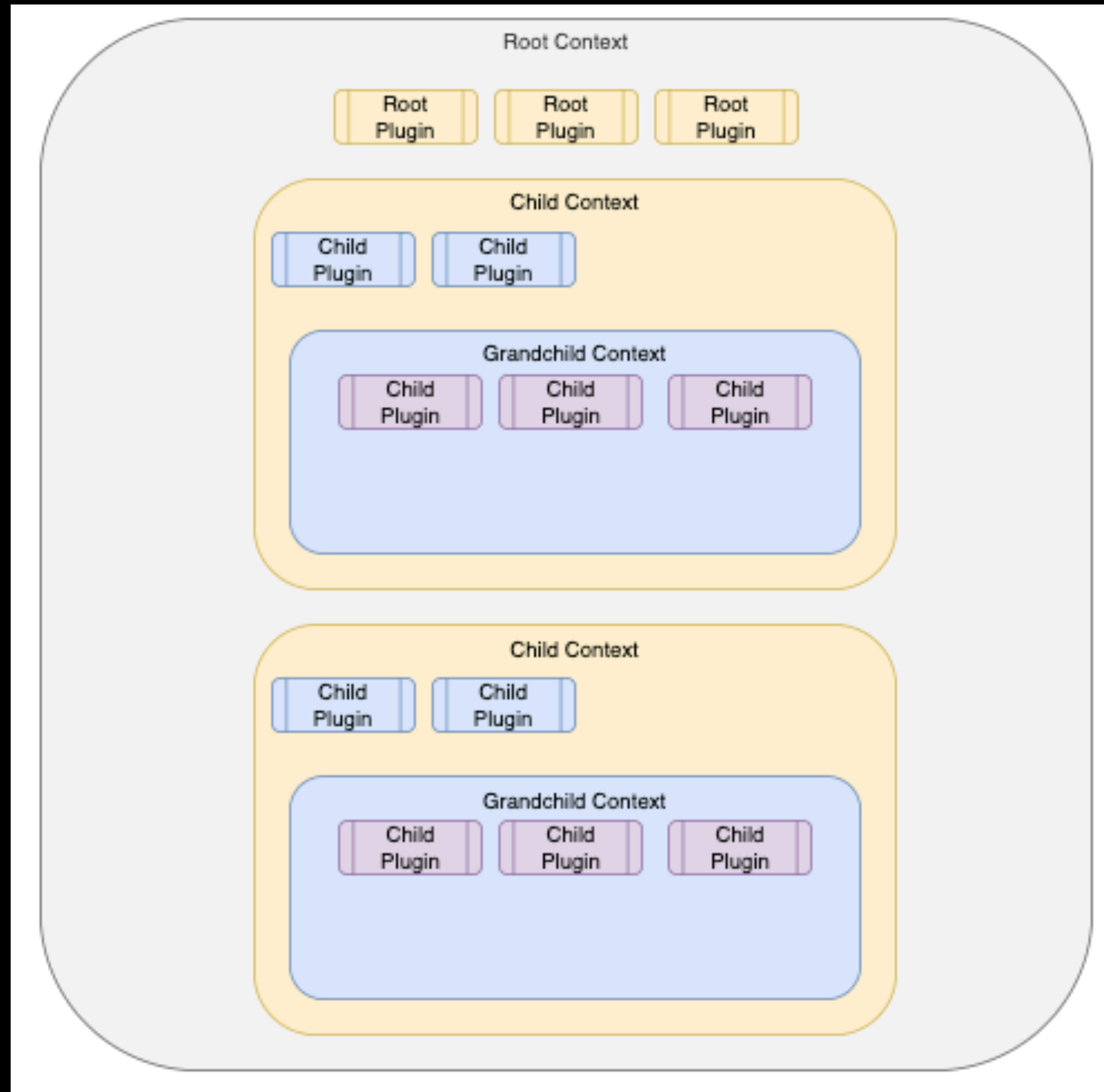
Plugins & Encapsulation

Fastify - Encapsulation

플러그인과 기능이 등록된 컨텍스트의 영향 범위를 제한

Plugins & Encapsulation

Fastify - Encapsulation



Root Context

- └─ 자기 플러그인 O
- └─ 자식 플러그인 X
- └─ 손자 플러그인 X

Child Context

- └─ 루트 플러그인 O
- └─ 자기 플러그인 O
- └─ 손자 플러그인 X

Grandchild Context

- └─ 루트 플러그인 O
- └─ 부모 플러그인 O
- └─ 자기 플러그인 O

JavaScript에서 모든 것이 객체, Fastify에서는 모든 것이 플러그인 (ex) routes, utilities)

Plugins & Encapsulation

Fastify - Encapsulation

```

'use strict'

const fastify = require('fastify')()

fastify.decorateRequest('answer', 42)

fastify.register(async function authenticatedContext (childServer) {
  childServer.register(require('@fastify/bearer-auth'), { keys: ['abc123'] })

  childServer.route({
    path: '/one',
    method: 'GET',
    handler (request, response) {
      response.send({
        answer: request.answer,
        // request.foo will be undefined as it is only defined in publicContext
        foo: request.foo,
        // request.bar will be undefined as it is only defined in grandchildContext
        bar: request.bar
      })
    }
  })
})

fastify.register(async function publicContext (childServer) {
  childServer.decorateRequest('foo', 'foo')

  childServer.route({
    path: '/two',
    method: 'GET',
    handler (request, response) {
      response.send({
        answer: request.answer,
        foo: request.foo,
        // request.bar will be undefined as it is only defined in grandchildContext
        bar: request.bar
      })
    }
  })
})

```

하위 컨텍스트에 접근

foo, bar 없음

bar 없음

```

childServer.register(async function grandchildContext (grandchildServer) {
  grandchildServer.decorateRequest('bar', 'bar')

  grandchildServer.route({
    path: '/three',
    method: 'GET',
    handler (request, response) {
      response.send({
        answer: request.answer,
        foo: request.foo,
        bar: request.bar
      })
    }
  })
})

fastify.listen({ port: 8000 })

```

```

# curl -H 'authorization: Bearer abc123' http://127.0.0.1:8000/one
{"answer":42}
# curl http://127.0.0.1:8000/two
{"answer":42,"foo":"foo"}
# curl http://127.0.0.1:8000/three
{"answer":42,"foo":"foo","bar":"bar"}

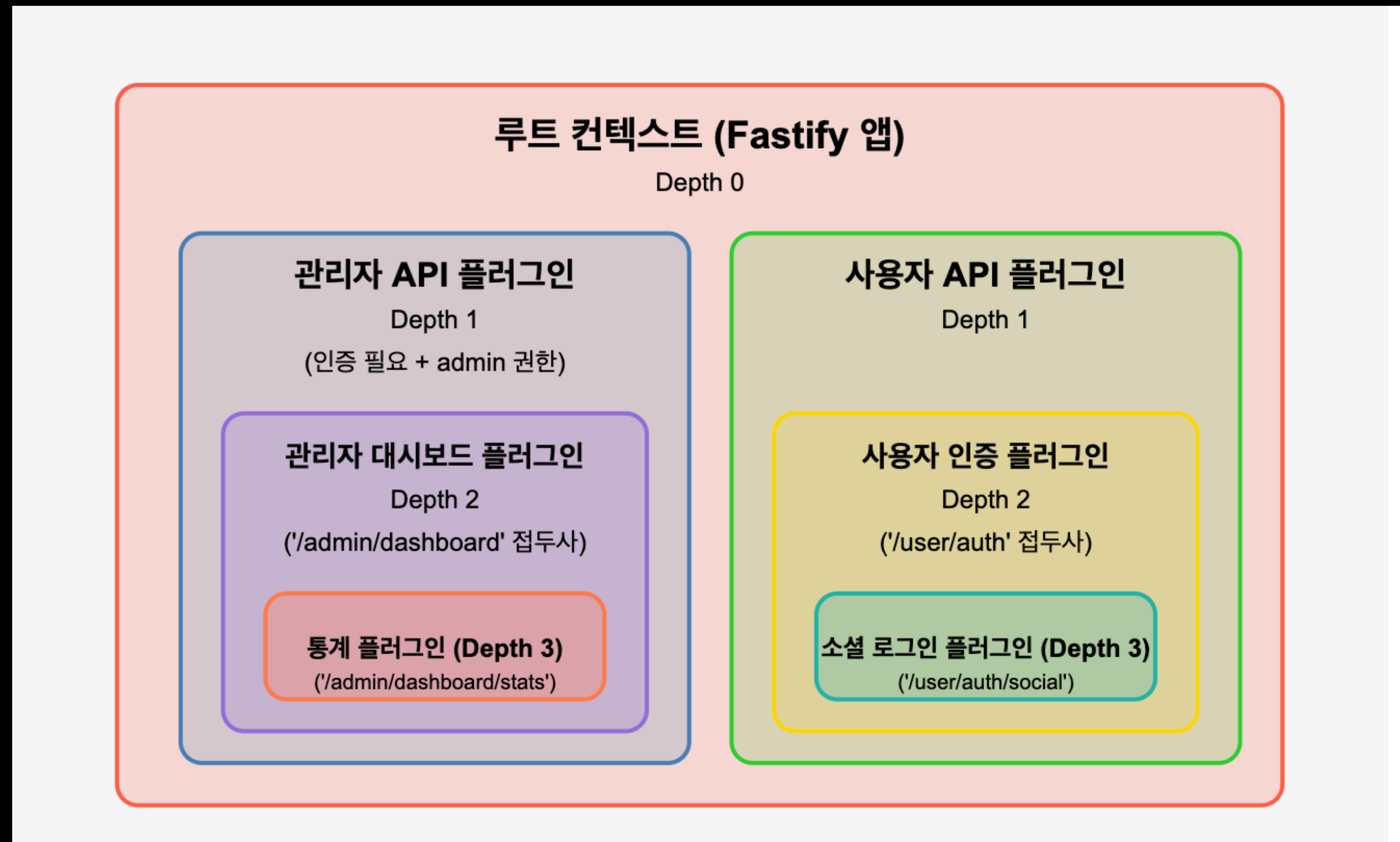
```

Plugins & Encapsulation

Fastify - Encapsulation

어떻게 사용하지?

상위 플러그인에서 등록된 미들웨어는 하위 플러그인에도 적용



Plugins & Encapsulation

Fastify - Plugins

Plugins

- There are **61** core plugins and **240** community plugins
- A core plugin is a plugin maintained by the Fastify team, and we do our best to maintain them according to the Fastify [Long Term Support](#) policy
- We guarantee that every community plugin respects Fastify best practices (tests, etc) at the time they have been added to the list. We offer no guarantee on their maintenance
- Can't find the plugin you're looking for? No problem, [you can learn how to do it!](#)

Core Plugins

Name	Description
<input type="text"/>	<input type="text"/>
@fastify/accepts	To have accepts in your request object.
@fastify/accepts-serializer	To serialize to output according to the <code>Accept</code> header.
@fastify/auth	Run multiple auth functions in Fastify.
@fastify/autoload	Require all plugins in a directory.
@fastify/awilix	Dependency injection support for Fastify, based on awilix .
@fastify/aws-lambda	Allows you to easily build serverless web applications/services and RESTful APIs using Fastify on top of AWS Lambda and Amazon API Gateway.
@fastify/basic-auth	Basic auth plugin for Fastify.
@fastify/bearer-auth	Bearer auth plugin for Fastify.

JWT plugin

```
const fastify = require('fastify')();
fastify.register(require('@fastify/jwt'), {
  secret: 'supersecret'
});

// JWT authentication hook
fastify.addHook('onRequest', async (request, reply) => {
  try {
    await request.jwtVerify();
  } catch (err) {
    reply.send(err);
  }
});

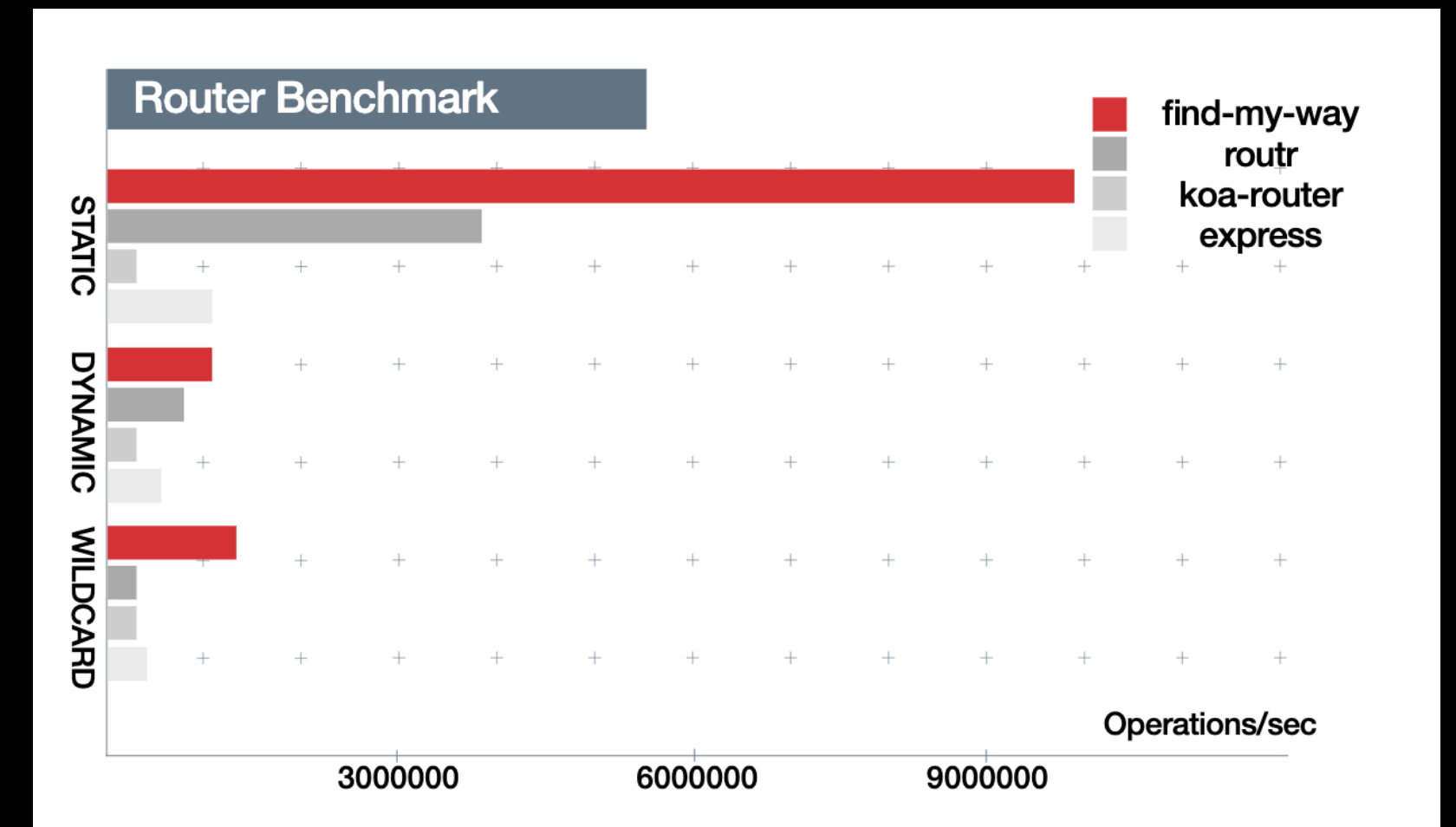
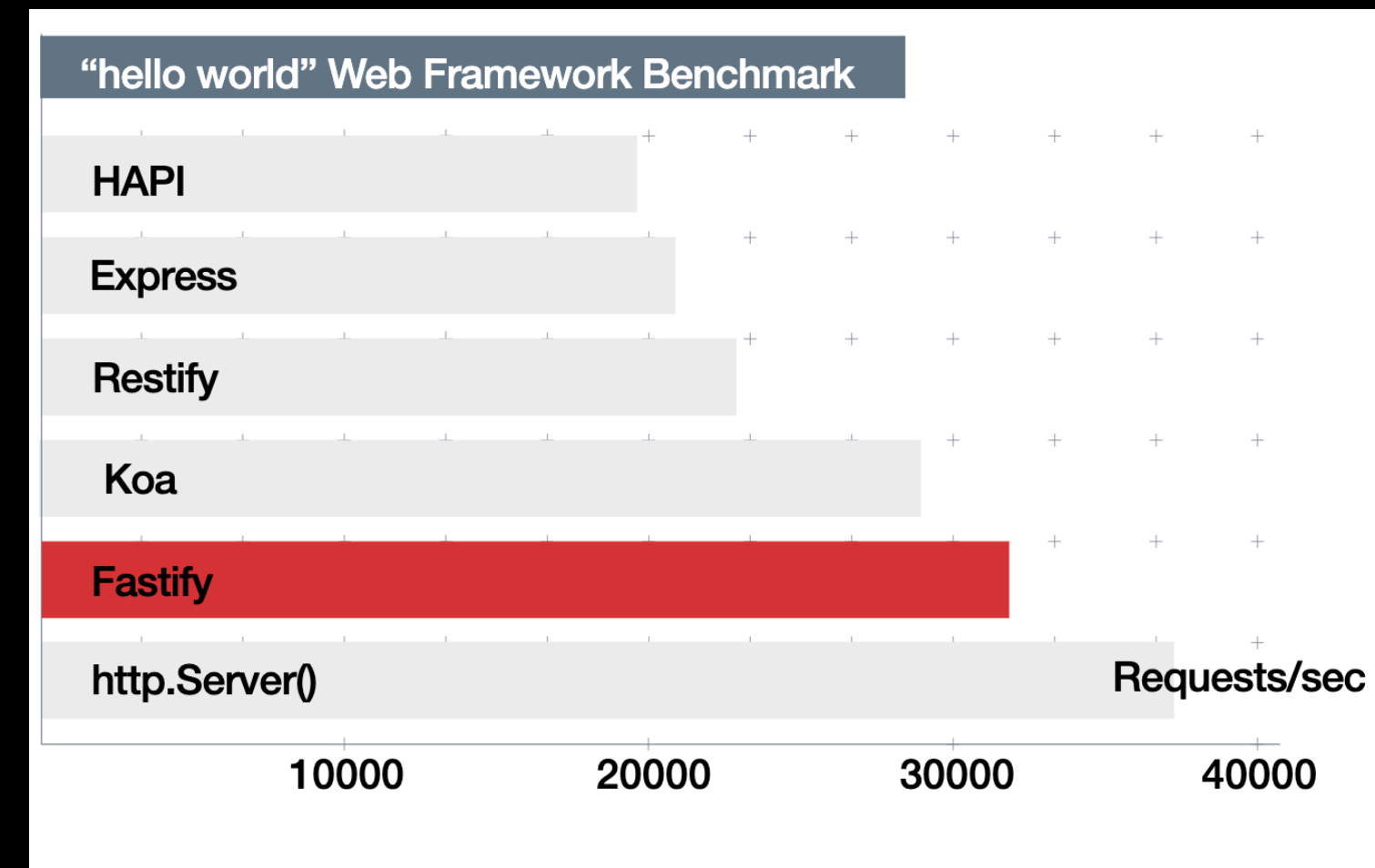
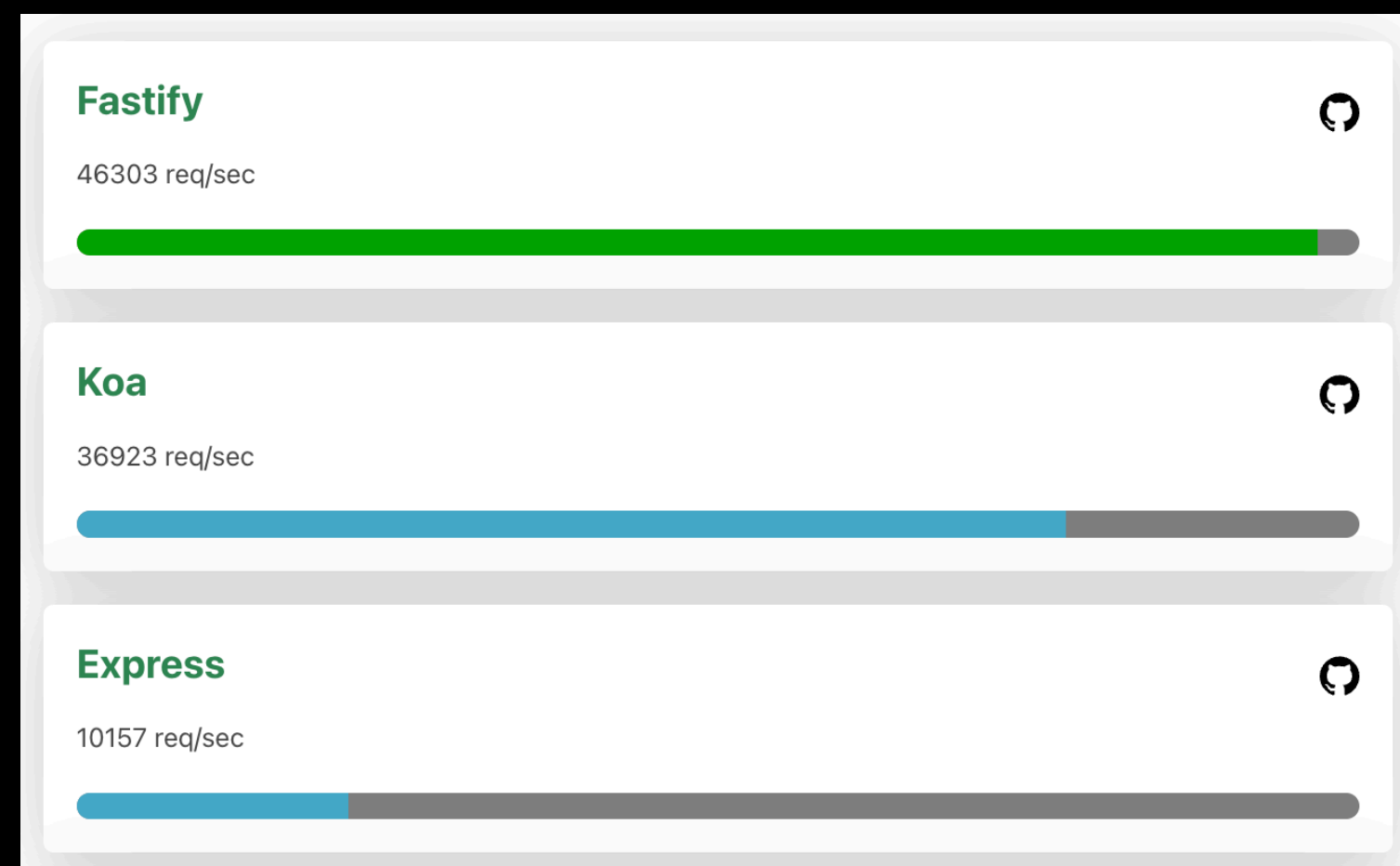
fastify.post('/login', async (request, reply) => {
  const token = fastify.jwt.sign({ user: 'example' });
  return { token };
});

fastify.listen({ port: 3000, host: '0.0.0.0' });
```

성능

Fastify는 Express에 비해 초당 더 높은 요청 수(2.7배)

Fastify는 요청을 처리할 때 훨씬 작은 호출 스택을 갖는다.
find-my-way라는 radix tree 기반 라우터 사용
등등,,



<https://jain-chetan.medium.com/express-vs-fastify-a-performace-comparison-1b0930869530>

<https://fastify.dev/benchmarks/>

<https://www.nearform.com/insights/reaching-ludicrous-speed-with-fastify/>

사용하는 회사

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- Proficiency with one or more object oriented programming language such as Java, C++ etc.
- Deep Knowledge of Node.js and framework such as Express, Fastify.

Company	Country	Industry	Employees	Revenue	Technologies
BrainFinance	Canada	Software Development	58		Fastify
AmeriSave	United States	Financial Services	2.1K	\$200M	Fastify
Hedra Consulting	United States	Staffing And Recruiting	4		Fastify
Reydix GmbH	Germany	Entertainment Providers	11		Fastify
Attestis	France	It Services And It Consulting	17		Fastify
Peter Park System GmbH	Germany	It Services And It Consulting	72		Fastify
Pipedrive	United States	Software Development	967	\$85M	Fastify
LRQA - sustainability	Germany	Business Consulting And Services	440	\$5.7M	Fastify
Grupo Boticário	Brazil	Personal Care Product Manufacturing	43K	\$1.4B	Fastify
MongoDB	United States	Software Development	7K	\$874M	Fastify

사용 기업

소셜/컨텐츠

부동산/인테리어

기타



천명앤컴퍼니



직방



미소