

# Speeding up Jackson

3x speedup

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September 6th, 2022

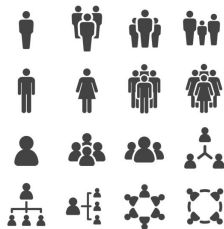
# Background - Norwegian Population Registry

## Norwegian Population Registry

- 11 million people (JSONS)
- $\approx 6\text{m}$  active people
- $> 60\,000$  JSONs pr hour

## TietoEvry

- Distributor for  $\approx 1\,000$  customers
- $\approx 100$  full copies
- GDPR - separate customer data
- $> 6\,000\,000$  JSONs pr hour.



## OpenAPI-generator

OpenAPI generates Kotlin classes.

## Jackson

Jackson uses reflection to create objects from JSON.  
Reflection is slow.

## Generate deserializer

OpenAPI Specification contains the info needed to generate deserializers.  
Therefore we can generate the deserializer.

# Jackson: 3 levels of parsing

## JsonTokenizer

- Reads JSON as a stream, and divides into tokens
- FIELD, VALUE, START\_OBJECT, ...

## JsonNode

- Generic tree structure
- Primitives, List<JsonNode>, Map<String, JsonNode>

## Custom Objects (Value)

- Primitives, MyObj, List<MyObj>, Map<String, MyObj>
- Uses reflection to map to Kotlin objects
- Reflection is slow

# How OpenAPI generate classes

- Include Deserializer `data_class.mustache`
- Deserializer `jackson_deserializer.mustache`
- Value deserializer `deserialize_value.mustache`

# Generate Code

```
1  # Delete old code
2  rm -rf ./src/main/kotlin/im/kny/jacksonspeedup/offentligmedhjemmel
3
4  # Generate code
5  java -jar openapi-generator-cli.jar generate \
6      -g kotlin \
7      --global-property models,modelDocs=false \
8      -c openapi-generator-config.yaml \
9      --template-dir ./openapi-templates \
10     -i src/main/resources/openapi/freg-api-offentlig-med-hjemmel.json \
11     --package-name im.kny.jacksonspeedup.offentligmedhjemmel
12
13 # Compile the project
14 mvn clean
15 mvn test
```

## Requirement

Reflection and generated deserializers should produce the same mapping.



## Speedup

$$2.7 \leq \text{speedup} \leq 3.2$$

## Startup time

- Reflection 800 – 1400 ms
- Deserializers 250 – 350 ms



# Thank you for your attention

Example-code:

[github.com/kny78/jackson-speedup/](https://github.com/kny78/jackson-speedup/)

OpenAPI-generator PR:

[github.com/OpenAPITools/openapi-generator/pull/13267](https://github.com/OpenAPITools/openapi-generator/pull/13267)