API Orchestration in the Cloud

It's just regular API Orchestration

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About Me

Hi, I'm Drew Olson

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Agenda

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- API Orchestration
- GraphQL
- AWS + API Orchestration

API Orchestration

API Orchestration

API Orchestration is about decoupling your API from your architectural decisions.

API Orchestration

We'd like to expose a simple, coherent API to our users regardless of how we choose to build the service(s) that power our application.

API Orchestration

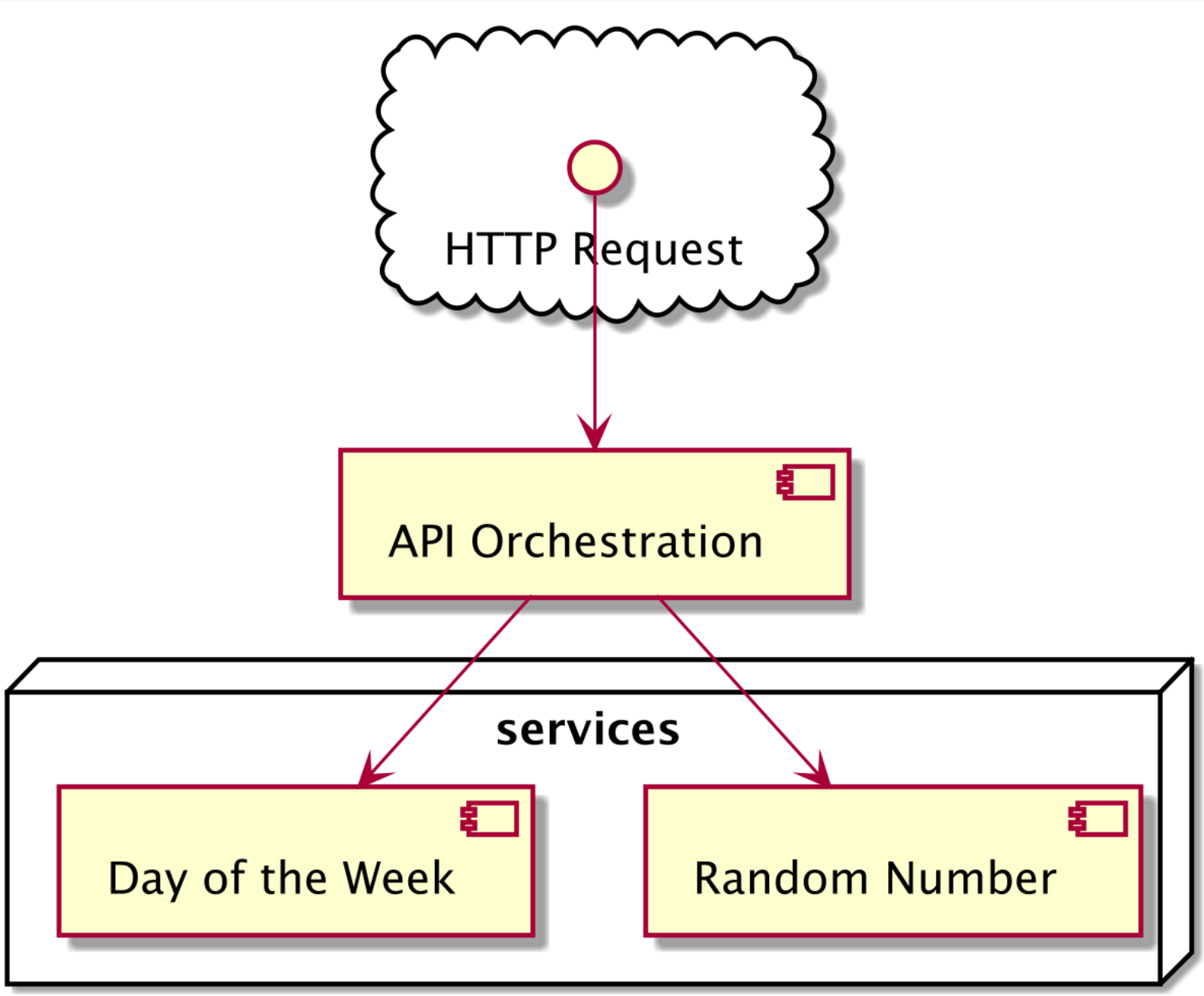
Suppose we have two simple services within our application:

1. Generate a random number between 0 and 9
2. Return the current day of the week

API Orchestration

We can build an API Orchestration layer that provides the capabilities of each of these services by delegating to them in order to generate an API response to our user.

API Orchestration



API Orchestration

Let's assume initially these "services" are just functions within our application (please never start with microservices). We can build this "orchestration layer" quite simply.

API Orchestration

Here's our `random_number` function:

```
def random_number():
    return randrange(0, 10)
```

API Orchestration

Here's our `day_of_the_week` function:

```
def day_of_the_week():
    response = requests.get(
        "http://worldclockapi.com/api/json/cst/now"
    )
    body = response.json()

    return body.get("dayOfTheWeek")
```

API Orchestration

Because this code exists locally, our API orchestration layer is very simple:

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```
app = FastAPI()

@app.get("/")
def index():
    return {
        "number": random_number(),
        "dayOfTheWeek": day_of_the_week(),
    }
```

API Orchestration

```
$ curl localhost:8000
{"number":9,"dayOfTheWeek":"Sunday"}%
```

API Orchestration

If we eventually chose to extract `random_number` and `day_of_the_week` to separate services, our orchestration layer gets more complicated.

API Orchestration

```
app = FastAPI()

@app.get("/")
def index():
    return {
        "number": requests
                    .get("http://random.service")
                    .json()
                    .get("number"),
        "dayOfTheWeek": requests
                    .get("http://day-of-the-week.service")
                    .json()
                    .get("number"),
    }
```

API Orchestration

Now we're making two HTTP requests to downstream services.

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If either service call is expensive, we pay this penalty for every API request.

API Orchestration

We can do better.

GraphQL

AWS + API Orchestration

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