Pub/Sub – Plan efficient System Design

Setting up and Best Practices

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“Async systems are good.
But shortcuts are not.”

System design is an art

Agenda

01

What's Pub/Sub?

Firstly, let's deep dive on what's Pub/Sub and why is it used by small to large businesses.

02

Setting up Pub/Sub

Did you know that it takes less than 10 minutes to make your legacy processes faster?

03

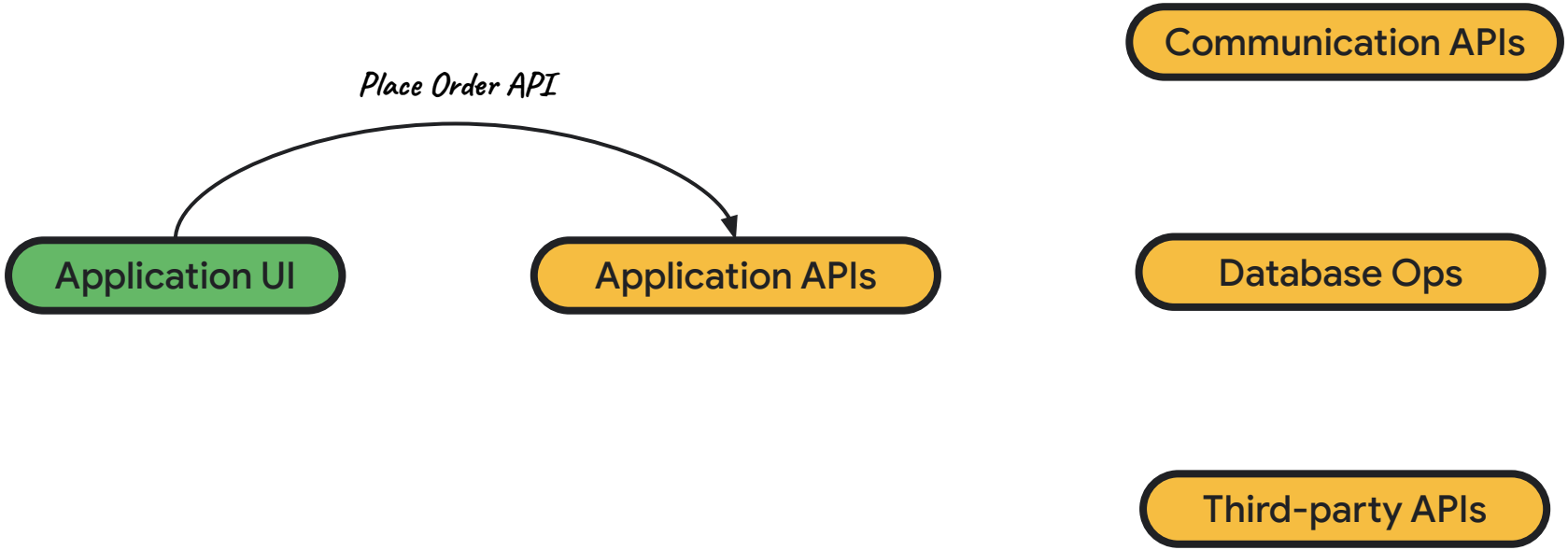
Tl;dr Best Practices

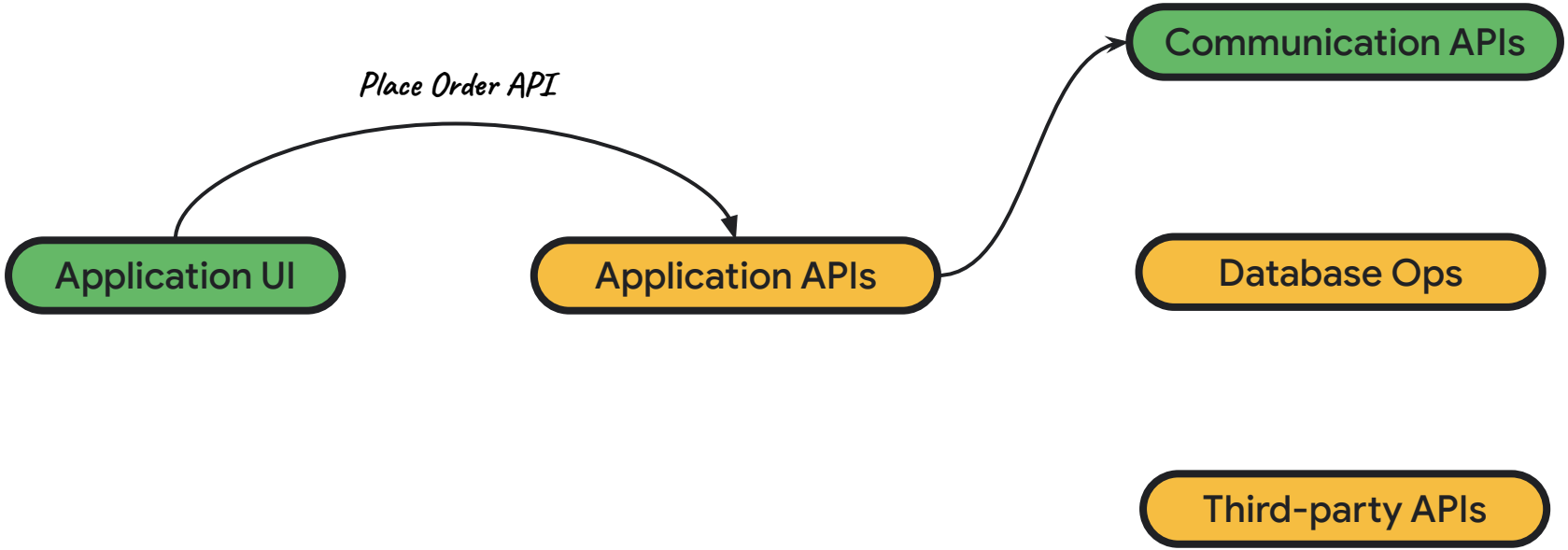
It's not the end, you need to keep your systems off from intruders & keep costs in check.

Part 01

What’s Pub/Sub?

Firstly, let’s deep dive on what’s Pub/Sub and why is it used by small to large businesses.


Place Order API
Application UI
Application APIs
Communication APIs
Database Ops
Third-party APIs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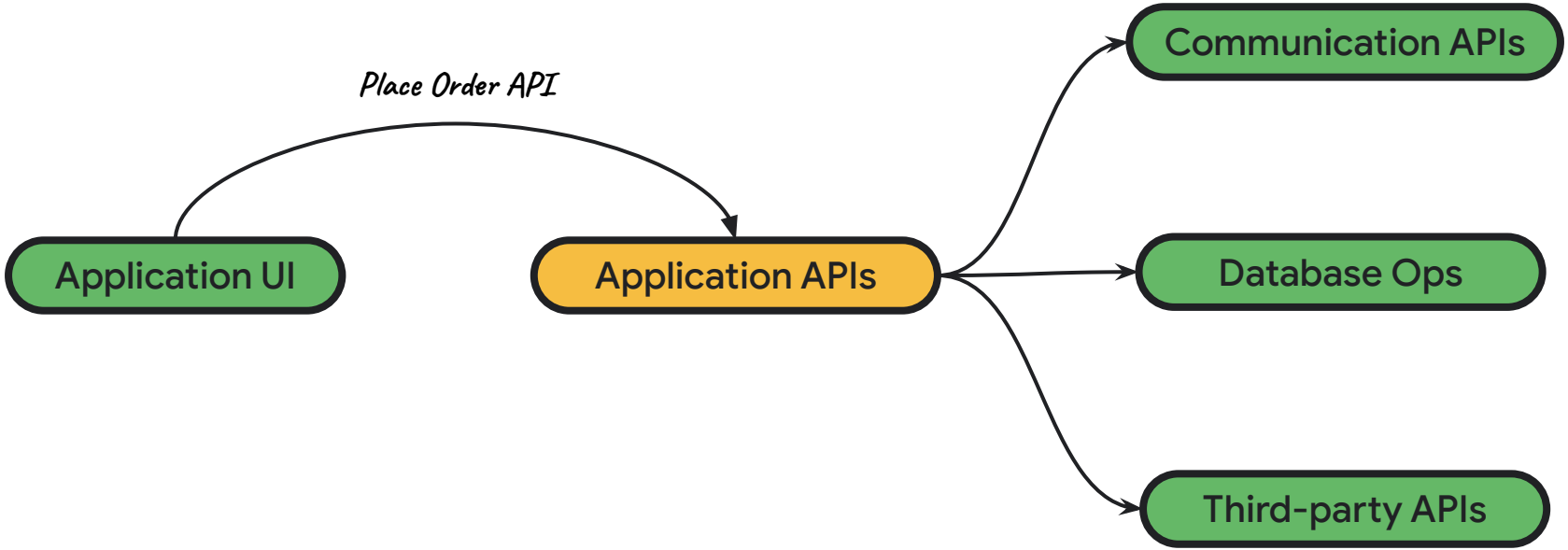
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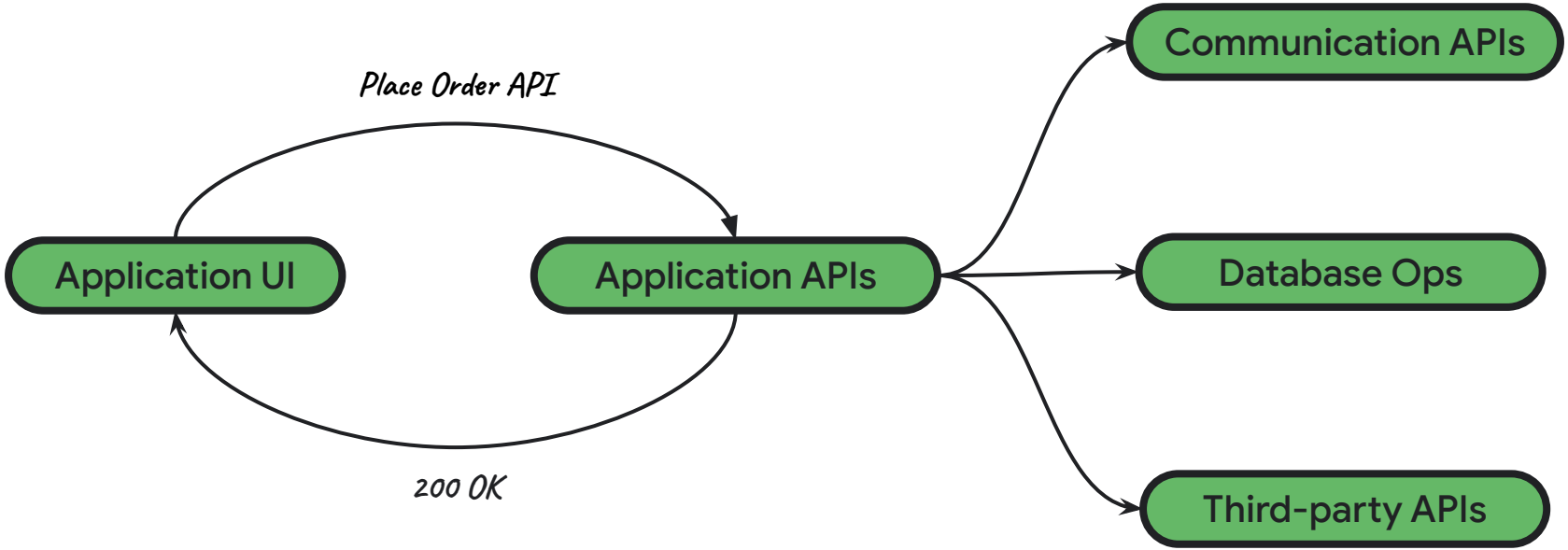
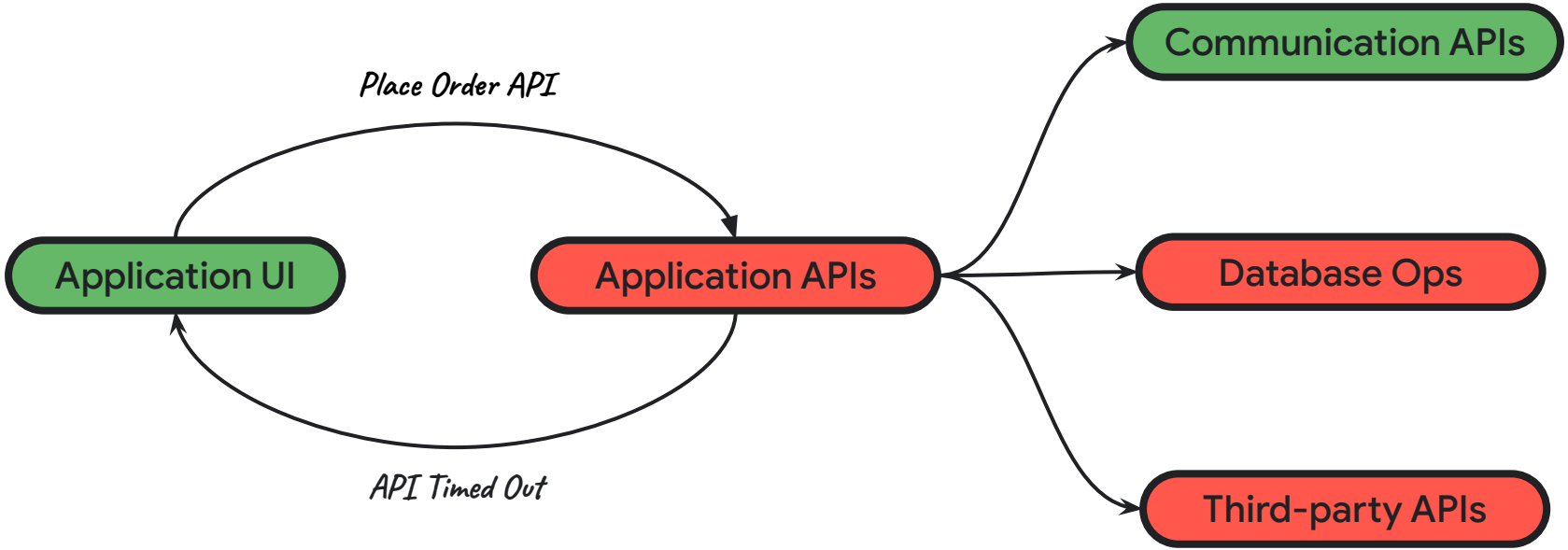
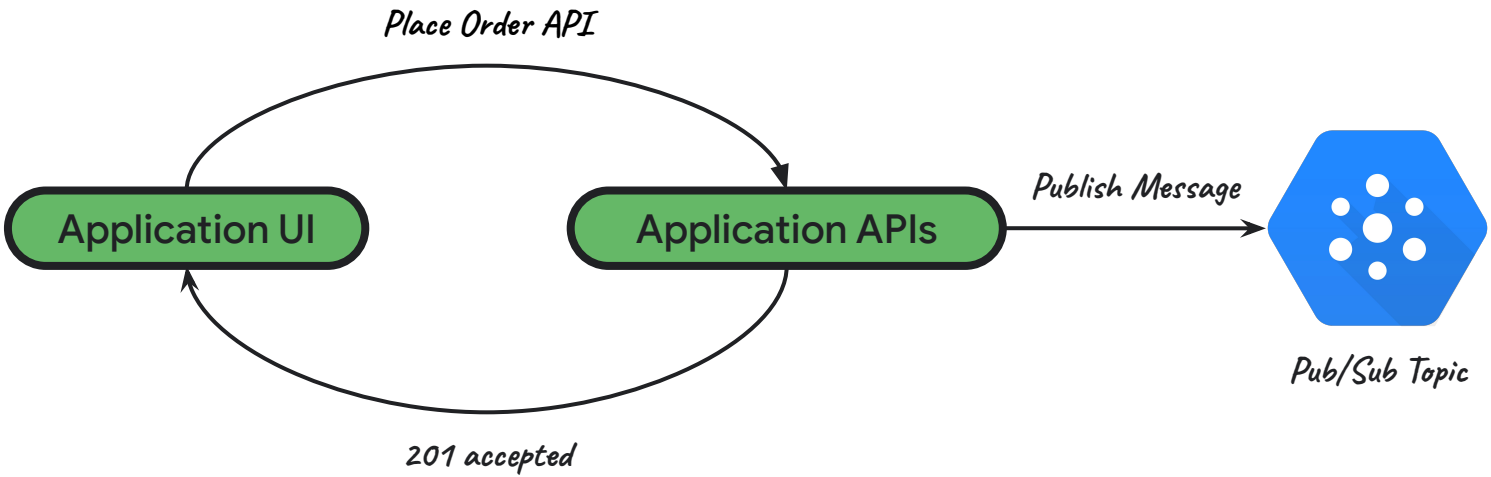
Application APIs
Communication APIs
Database Ops
Third-party APIs

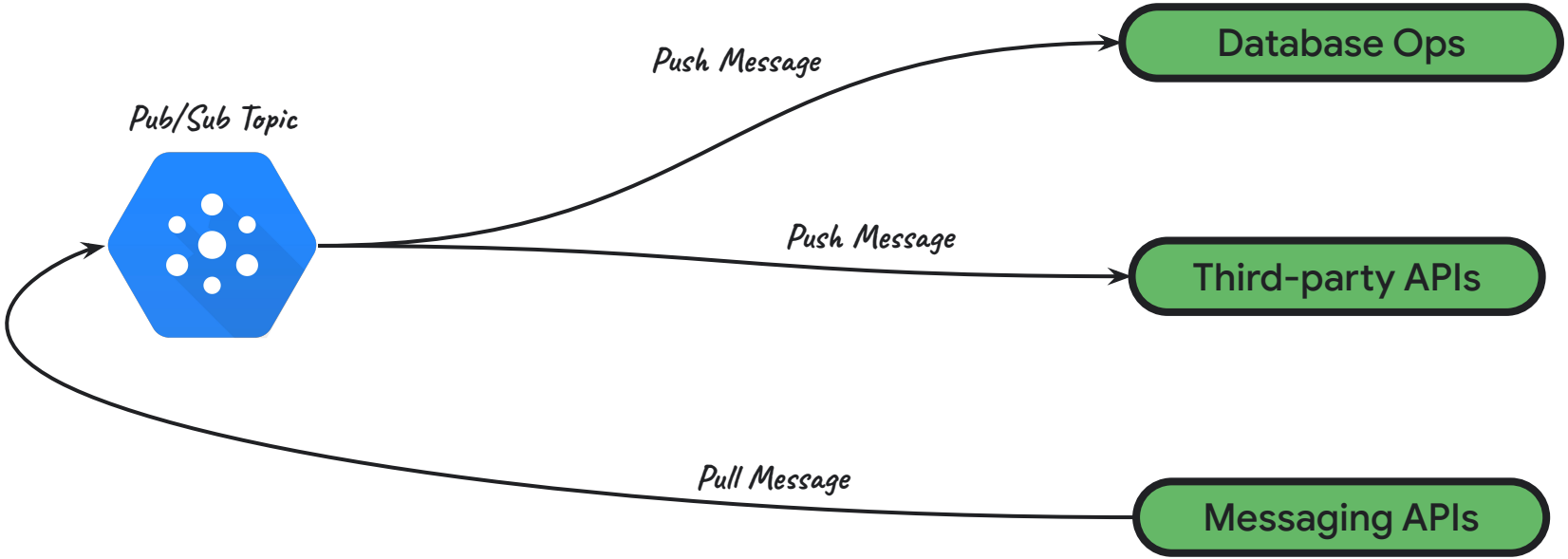

Place Order API
Application UI
Application APIs
Communication APIs
Database Ops
Third-party APIs
200 OK

What’s wrong with this approach?


Place Order API
Application UI
Application APIs
Communication APIs
Database Ops
Third-party APIs
API Timed Out

How do you fix this problem then?

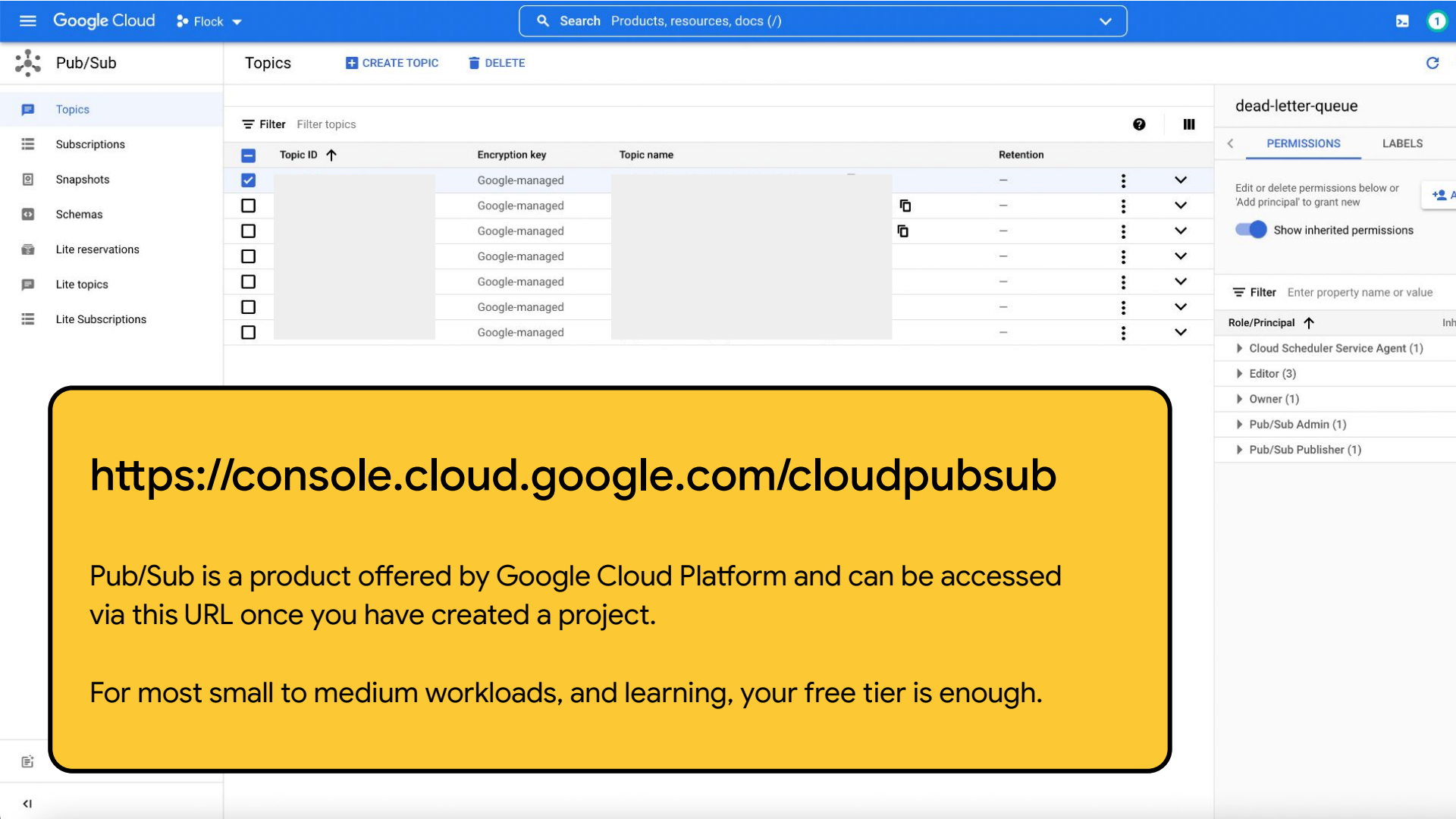

Place Order API
Application UI
Application APIs
Publish Message
Pub/Sub Topic
201 accepted


Pub/Sub Topic
Push Message
Database Ops
Push Message
Third-party APIs
Pull Message
Messaging APIs

Part 02

Setting up Pub/Sub?

Did you know that it takes less than 10 minutes to make your legacy processes faster?



https://console.cloud.google.com/cloudpubsub

Pub/Sub is a product offered by Google Cloud Platform and can be accessed via this URL once you have created a project.

For most small to medium workloads, and learning, your free tier is enough.

```
import { PubSub } from "@google-cloud/pubsub";

const pubsub = new PubSub({
    projectId: JSON.parse(process.env.SERVICE_ACCOUNT).project_id,
    credentials: {
        client_email: JSON.parse(process.env.SERVICE_ACCOUNT).client_email,
        private_key: JSON.parse(process.env.SERVICE_ACCOUNT).private_key,
    },
});

await pubsub.topic('topic').publishMessage({
    attributes: {
        "whereAmI": "Chennai"
    },
    data: Buffer.from('Hello from Cloud Community Days', 'utf8'),
});
```

Part 03

Tl;dr Best Practices

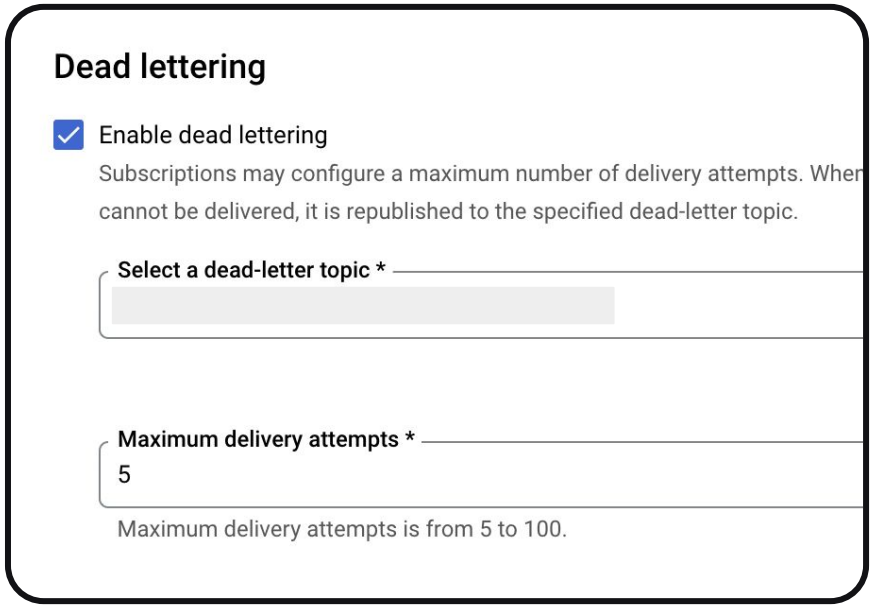
It’s not the end, you need to keep your systems off from intruders & keep costs in check.

Learn about your endpoint

In case your APIs are not responding fast or you think it takes too long to respond, this can be the place to set the timeout.

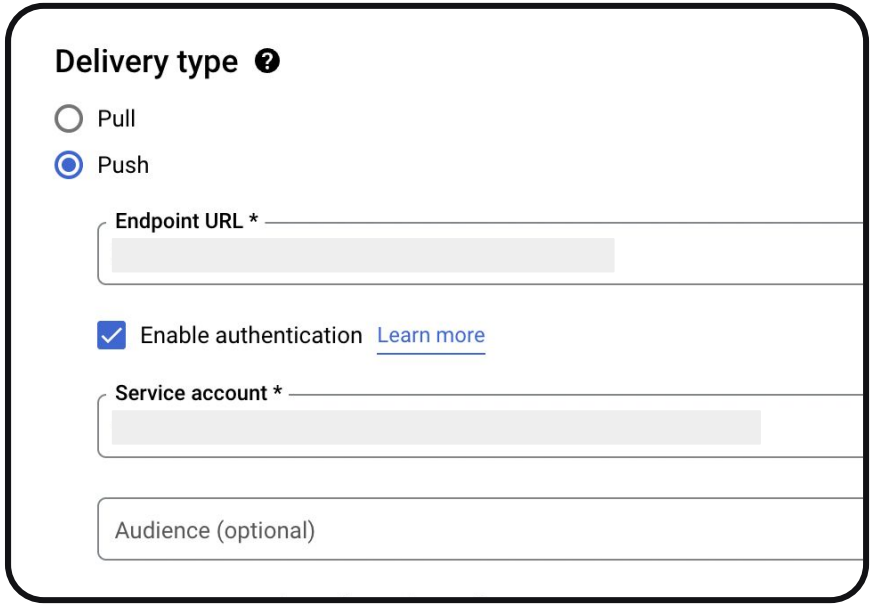
Enable Dead Lettering

This ensures that you are not pushing in infinite loop in case things go wrong.



Enable Authentication

JWT Authentication
with Google Service Account



```
const jwtToken = req.headers.get("authorization")?.substring(7);

const claim = jose.decodeJwt(jwtToken);

if (
    !claim.email_verified ||
    claim.aud !== `https://example.com` ||
    claim.email !== JSON.parse(process.env.SERVICE_ACCOUNT).client_email ||
    claim.azp !== JSON.parse(process.env.SERVICE_ACCOUNT).client_id
) {
    // The request is not authenticated by Google
}

// aud = Audience Intended
// azp = Authorised Recipient
// email = Service Account Email
```

Thank you!

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