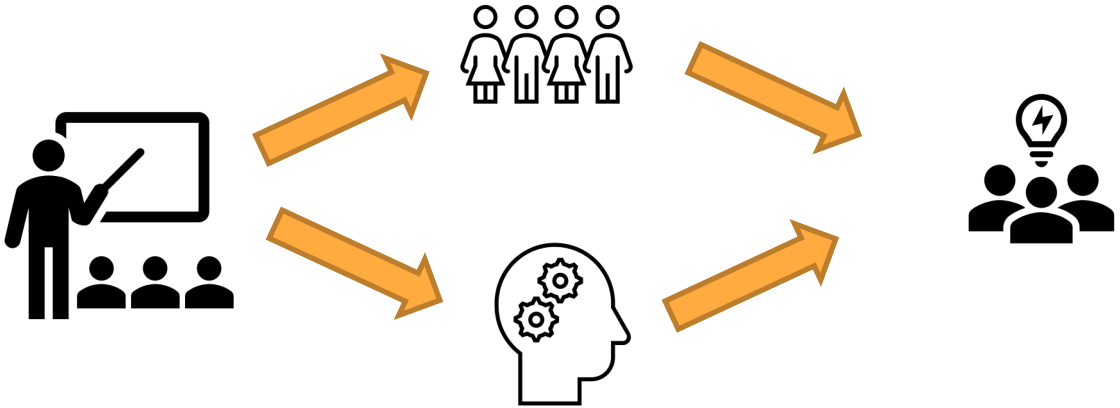
Arquitetando e testando aplicações serverless na AWS

Isabel Mendes
Paulo Siécola

Motivação

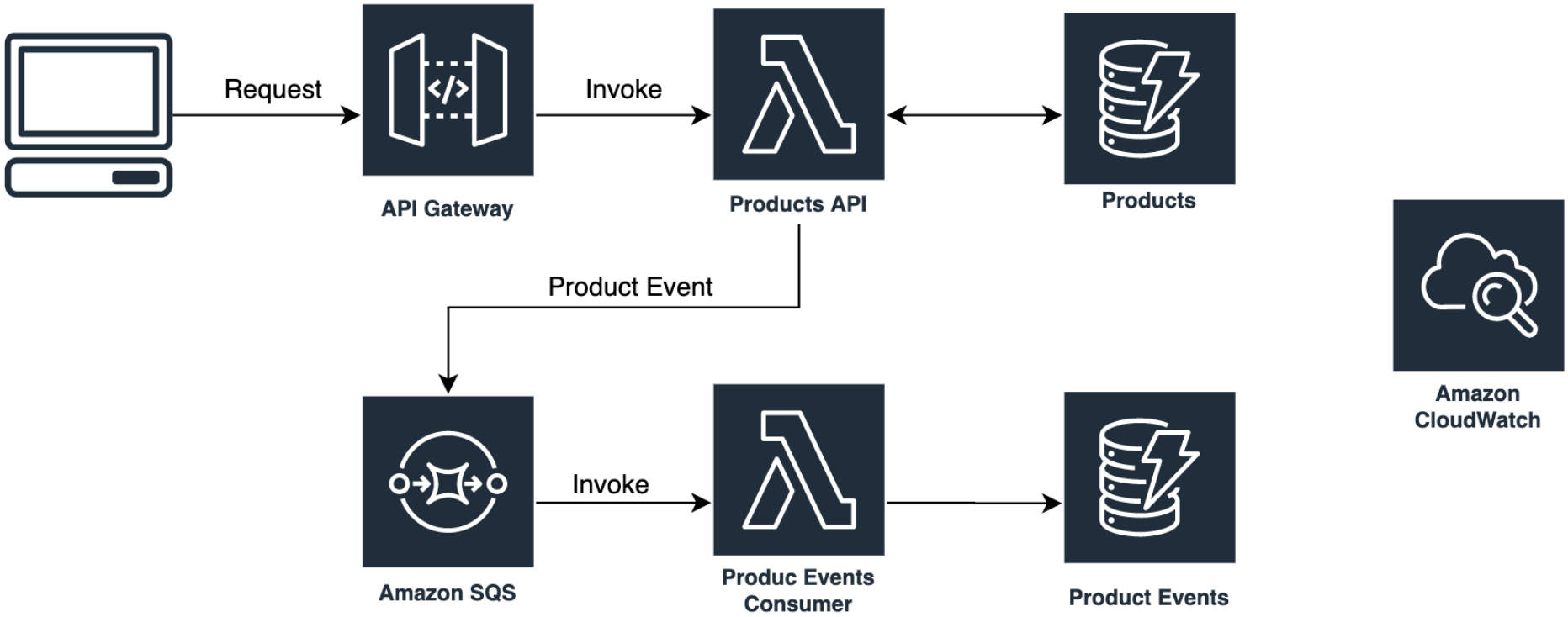


Story

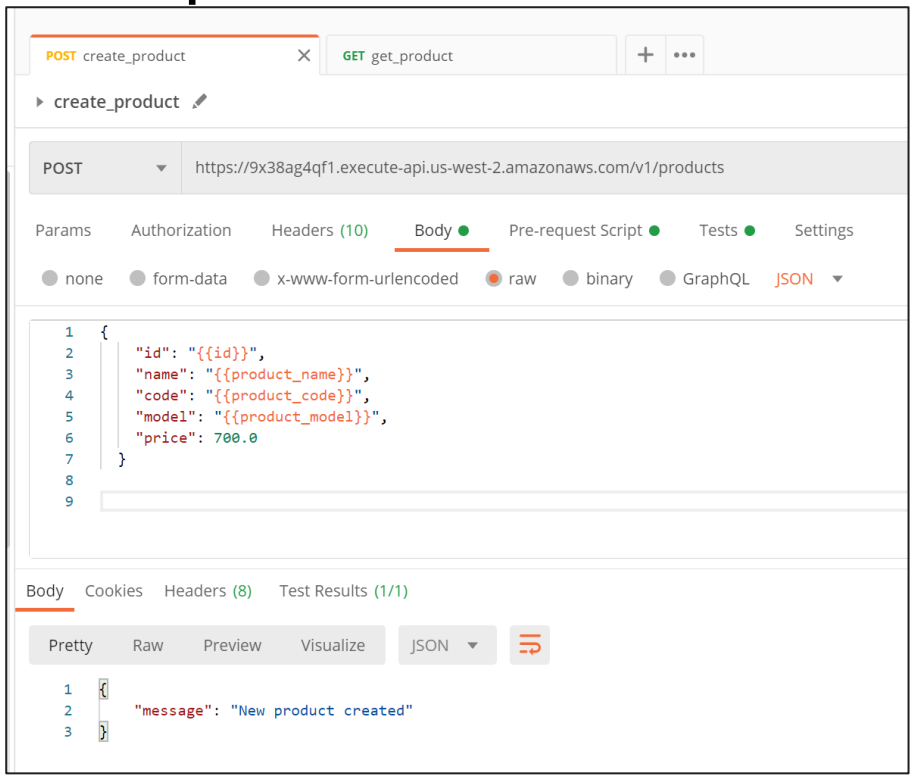
- Arquitetura
- Plano de Testes

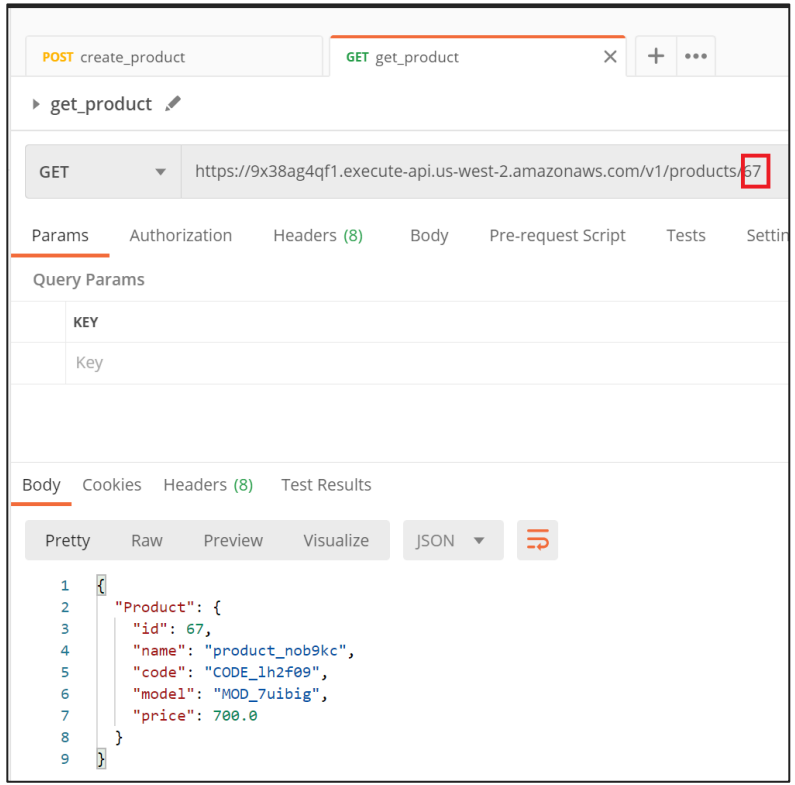
Casos de testes na AWS

Arquitetura do projeto

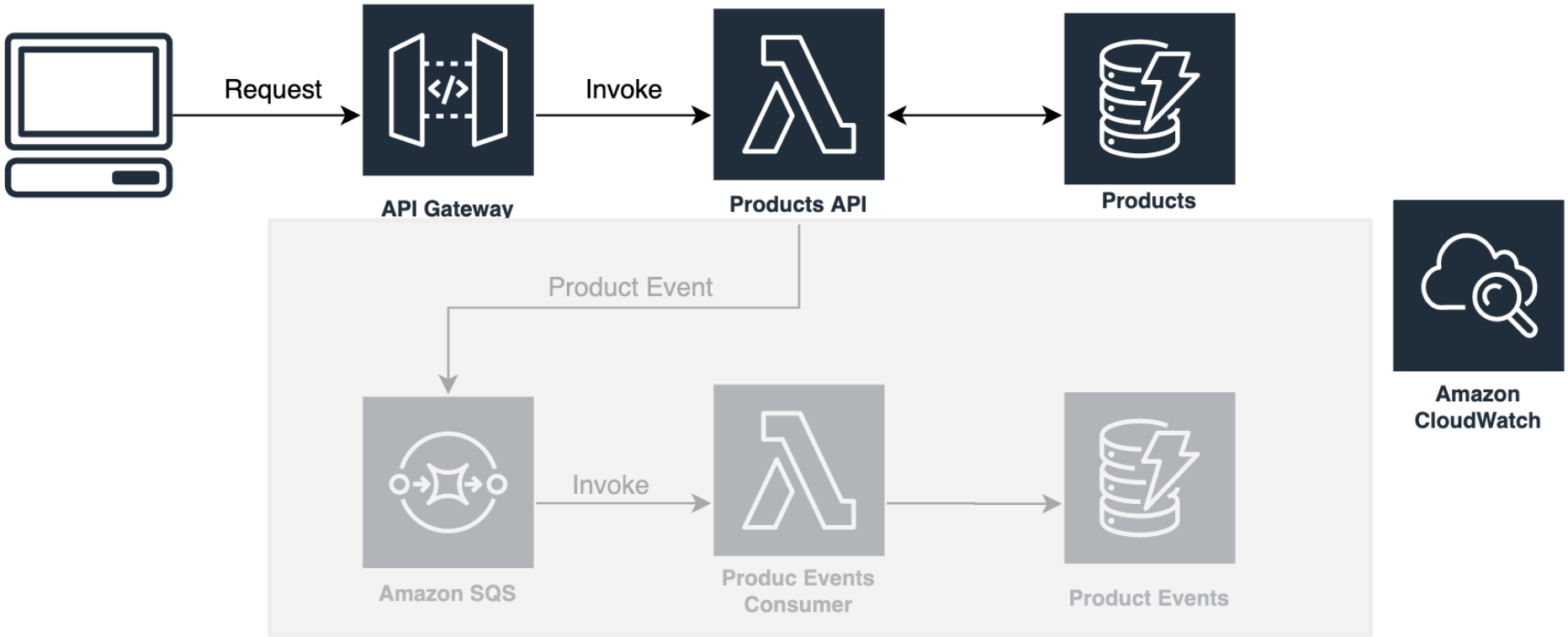


Requests

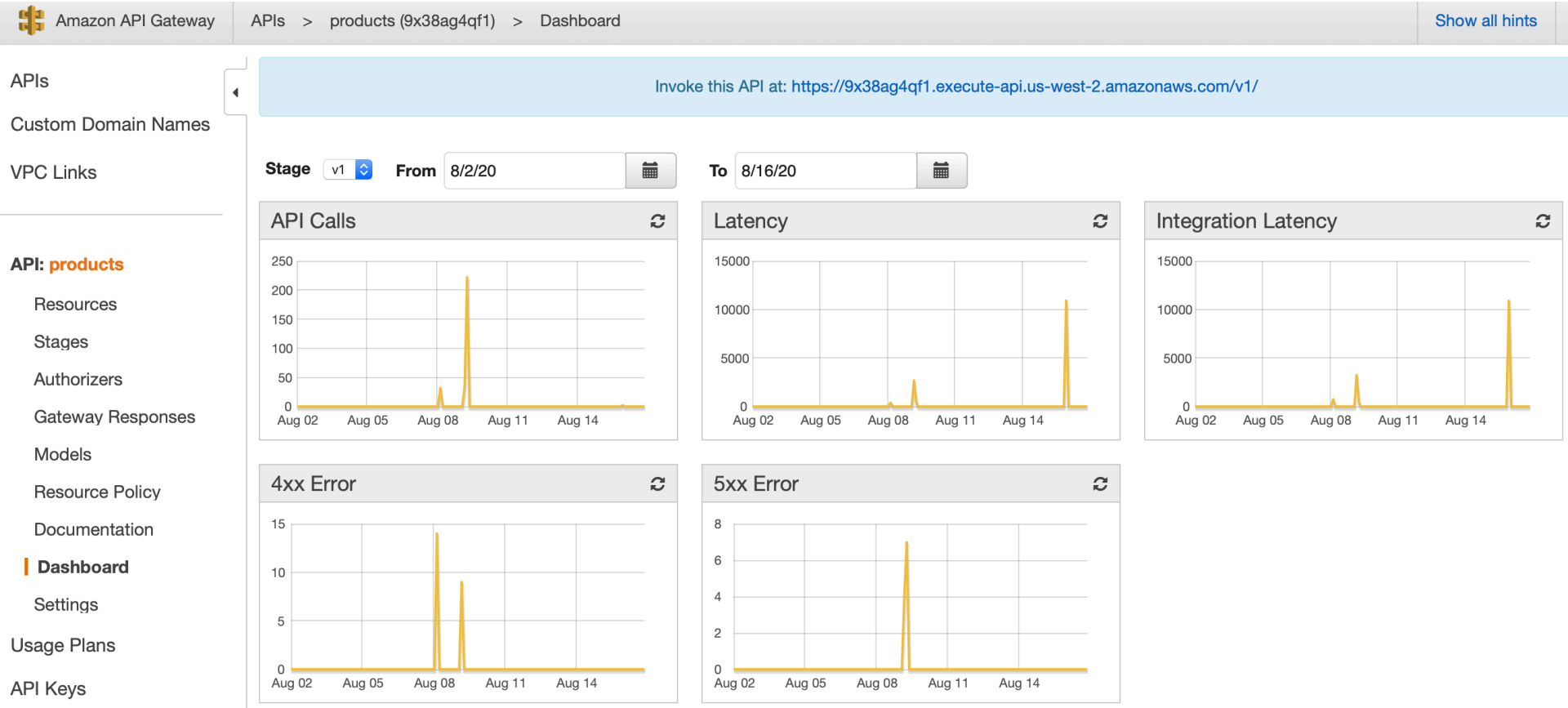

POST create_product
GET get_product
create_product
POST
https://9x38ag4qf1.execute-api.us-west-2.amazonaws.com/v1/products
Params Authorization Headers (10) Body Pre-request Script Tests Settings
none form-data x-www-form-urlencoded raw binary GraphQL JSON
{
"id": "{{id}}",
"name": "{{product_name}}",
"code": "{{product_code}}",
"model": "{{product_model}}",
"price": 700.0
}
Body Cookies Headers (8) Test Results (1/1)
Pretty Raw Preview Visualize JSON
{
"message": "New product created"
}


POST create_product
GET get_product
get_product
GET
https://9x38ag4qf1.execute-api.us-west-2.amazonaws.com/v1/products/67
Params Authorization Headers (8) Body Pre-request Script Tests Settin
Query Params
KEY
Key
Body Cookies Headers (8) Test Results
Pretty Raw Preview Visualize JSON
{
"Product": {
"id": 67,
"name": "product_nob9kc",
"code": "CODE_lh2f09",
"model": "MOD_7uibig",
"price": 700.0
}
}

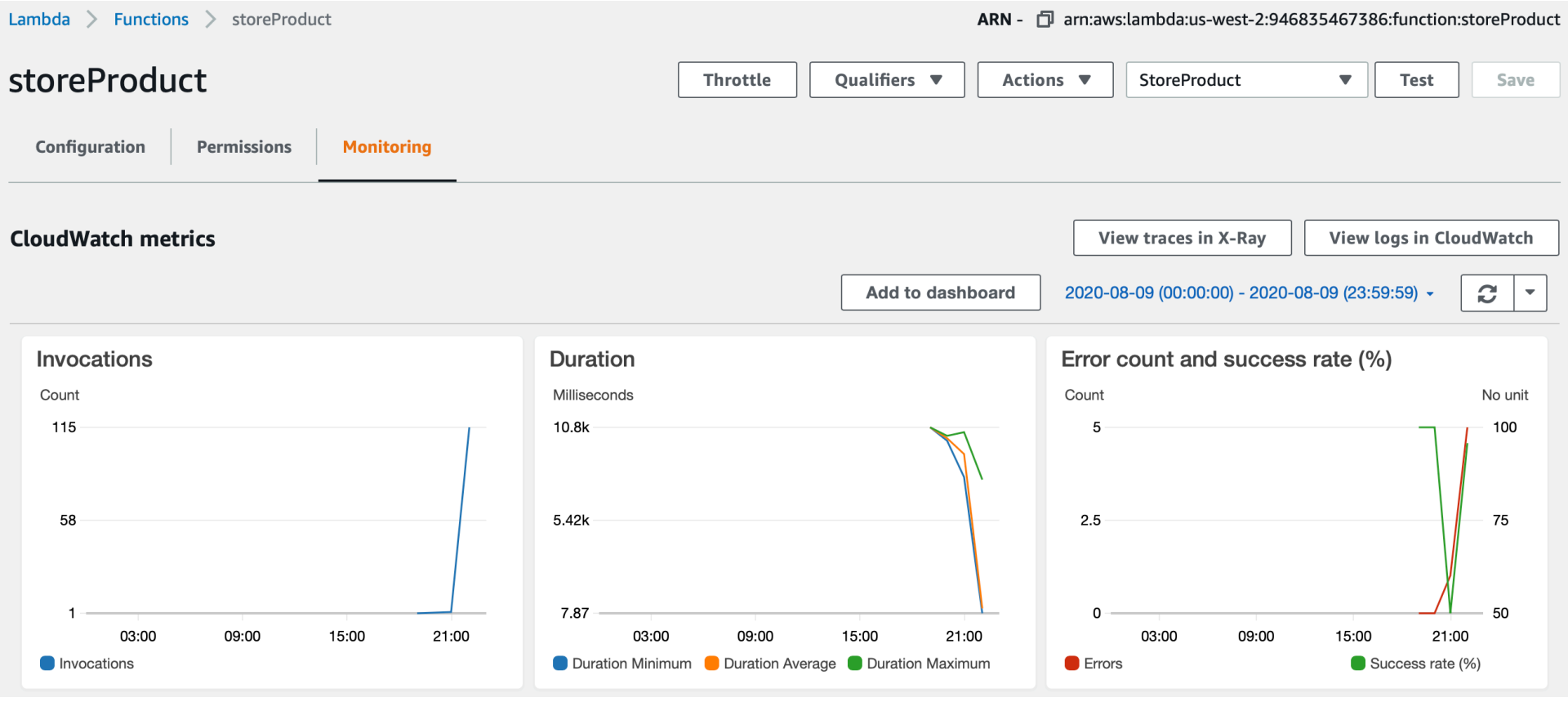
Criando e buscando um produto



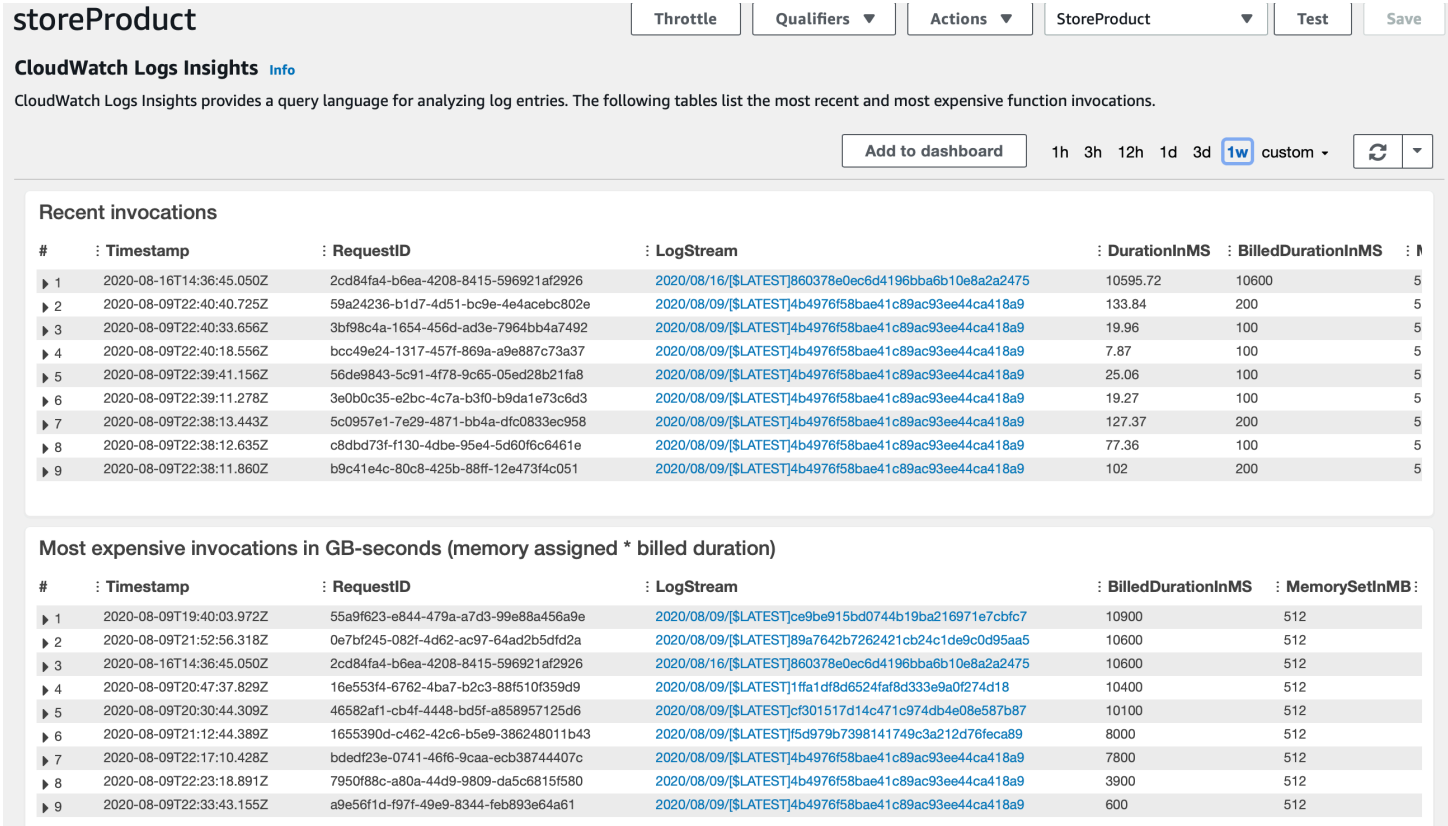
Testes e monitoramentos no API Gateway



Testes e monitoramento no Lambda Products API



Testes e monitoramento no Lambda Products API



storeProduct

Throttle | Qualifiers | Actions | StoreProduct | Test | Save

CloudWatch Logs Insights Info

CloudWatch Logs Insights provides a query language for analyzing log entries. The following tables list the most recent and most expensive function invocations.

Add to dashboard | 1h 3h 12h 1d 3d 1w custom

Recent invocations

#	Timestamp	RequestID	LogStream	DurationInMS	BilledDurationInMS	M
1	2020-08-16T14:36:45.050Z	2cd84fa4-b6ea-4208-8415-596921af2926	2020/08/16/[$LATEST]860378e0ec6d4196bba6b10e8a2a2475	10595.72	10600	5
2	2020-08-09T22:40:40.725Z	59a24236-b1d7-4d51-bc9e-4e4acebc802e	2020/08/09/[$LATEST]4b4976f58bae41c89ac93ee44ca418a9	133.84	200	5
3	2020-08-09T22:40:33.656Z	3bf98c4a-1654-456d-ad3e-7964bb4a7492	2020/08/09/[$LATEST]4b4976f58bae41c89ac93ee44ca418a9	19.96	100	5
4	2020-08-09T22:40:18.556Z	bcc49e24-1317-457f-869a-a9e887c73a37	2020/08/09/[$LATEST]4b4976f58bae41c89ac93ee44ca418a9	7.87	100	5
5	2020-08-09T22:39:41.156Z	56de9843-5c91-4f78-9c65-05ed28b21fa8	2020/08/09/[$LATEST]4b4976f58bae41c89ac93ee44ca418a9	25.06	100	5
6	2020-08-09T22:39:11.278Z	3e0b0c35-e2bc-4c7a-b3f0-b9da1e73c6d3	2020/08/09/[$LATEST]4b4976f58bae41c89ac93ee44ca418a9	19.27	100	5
7	2020-08-09T22:38:13.443Z	5c0957e1-7e29-4871-bb4a-dfc0833ec958	2020/08/09/[$LATEST]4b4976f58bae41c89ac93ee44ca418a9	127.37	200	5
8	2020-08-09T22:38:12.635Z	c8dbd73f-f130-4dbe-95e4-5d60f6c6461e	2020/08/09/[$LATEST]4b4976f58bae41c89ac93ee44ca418a9	77.36	100	5
9	2020-08-09T22:38:11.860Z	b9c41e4c-80c8-425b-88ff-12e473f4c051	2020/08/09/[$LATEST]4b4976f58bae41c89ac93ee44ca418a9	102	200	5

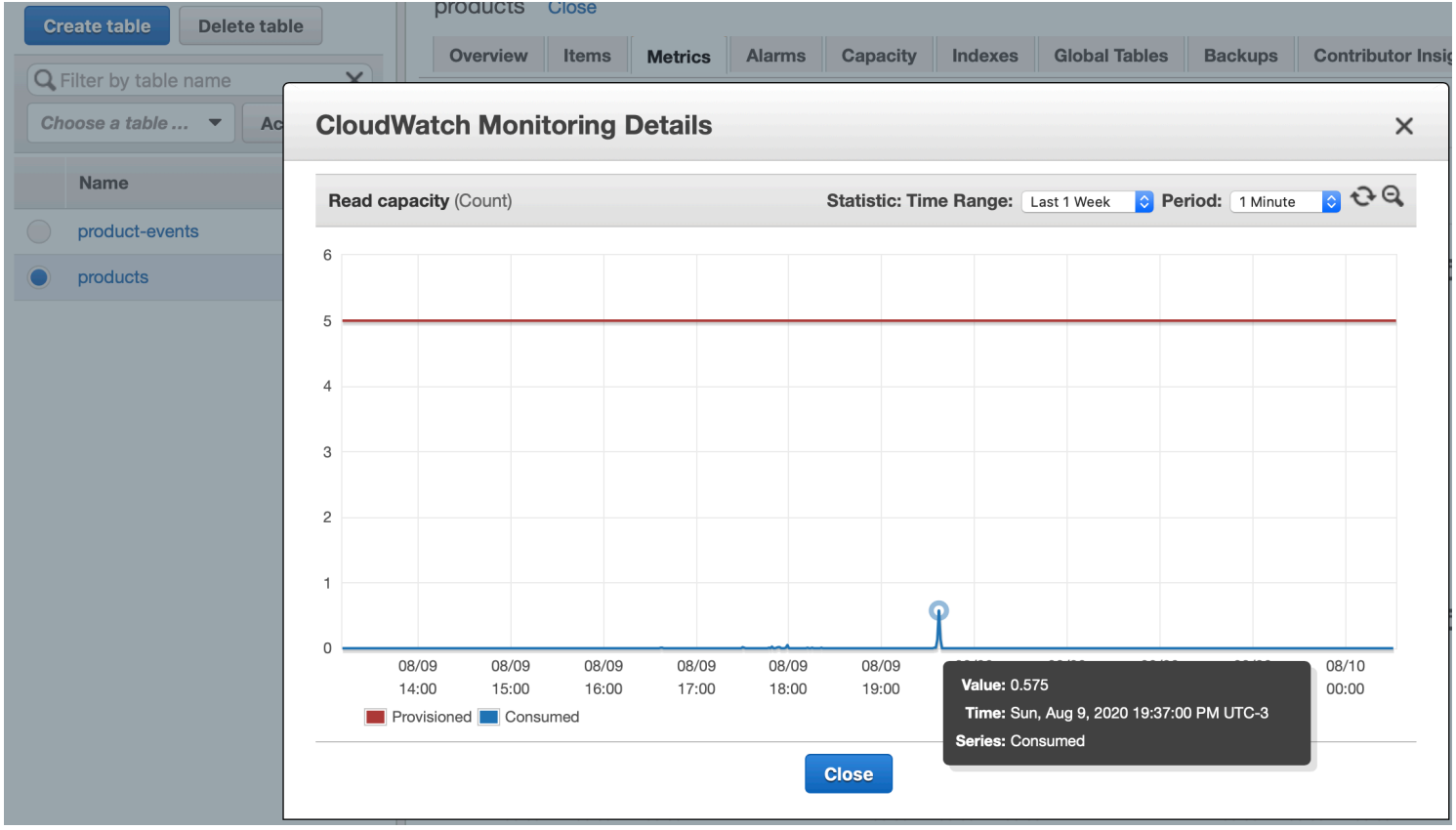
Most expensive invocations in GB-seconds (memory assigned * billed duration)

#	Timestamp	RequestID	LogStream	BilledDurationInMS	MemorySetInMB
1	2020-08-09T19:40:03.972Z	55a9f623-e844-479a-a7d3-99e88a456a9e	2020/08/09/[$LATEST]ce9be915bd0744b19ba216971e7cbfc7	10900	512
2	2020-08-09T21:52:56.318Z	0e7bf245-082f-4d62-ac97-64ad2b5dfd2a	2020/08/09/[$LATEST]89a7642b7262421cb24c1de9c0d95aa5	10600	512
3	2020-08-16T14:36:45.050Z	2cd84fa4-b6ea-4208-8415-596921af2926	2020/08/16/[$LATEST]860378e0ec6d4196bba6b10e8a2a2475	10600	512
4	2020-08-09T20:47:37.829Z	16e553f4-6762-4ba7-b2c3-88f510f359d9	2020/08/09/[$LATEST]1ffa1df8d6524faf8d333e9a0f274d18	10400	512
5	2020-08-09T20:30:44.309Z	46582af1-cb4f-4448-bd5f-a858957125d6	2020/08/09/[$LATEST]cf301517d14c471c974db4e08e587b87	10100	512
6	2020-08-09T21:12:44.389Z	1655390d-c462-42c6-b5e9-386248011b43	2020/08/09/[$LATEST]f5d979b7398141749c3a212d76feca89	8000	512
7	2020-08-09T22:17:10.428Z	bdedf23e-0741-46f6-9caa-ecb38744407c	2020/08/09/[$LATEST]4b4976f58bae41c89ac93ee44ca418a9	7800	512
8	2020-08-09T22:23:18.891Z	7950f88c-a80a-44d9-9809-da5c6815f580	2020/08/09/[$LATEST]4b4976f58bae41c89ac93ee44ca418a9	3900	512
9	2020-08-09T22:33:43.155Z	a9e56f1d-f97f-49e9-8344-feb893e64a61	2020/08/09/[$LATEST]4b4976f58bae41c89ac93ee44ca418a9	600	512

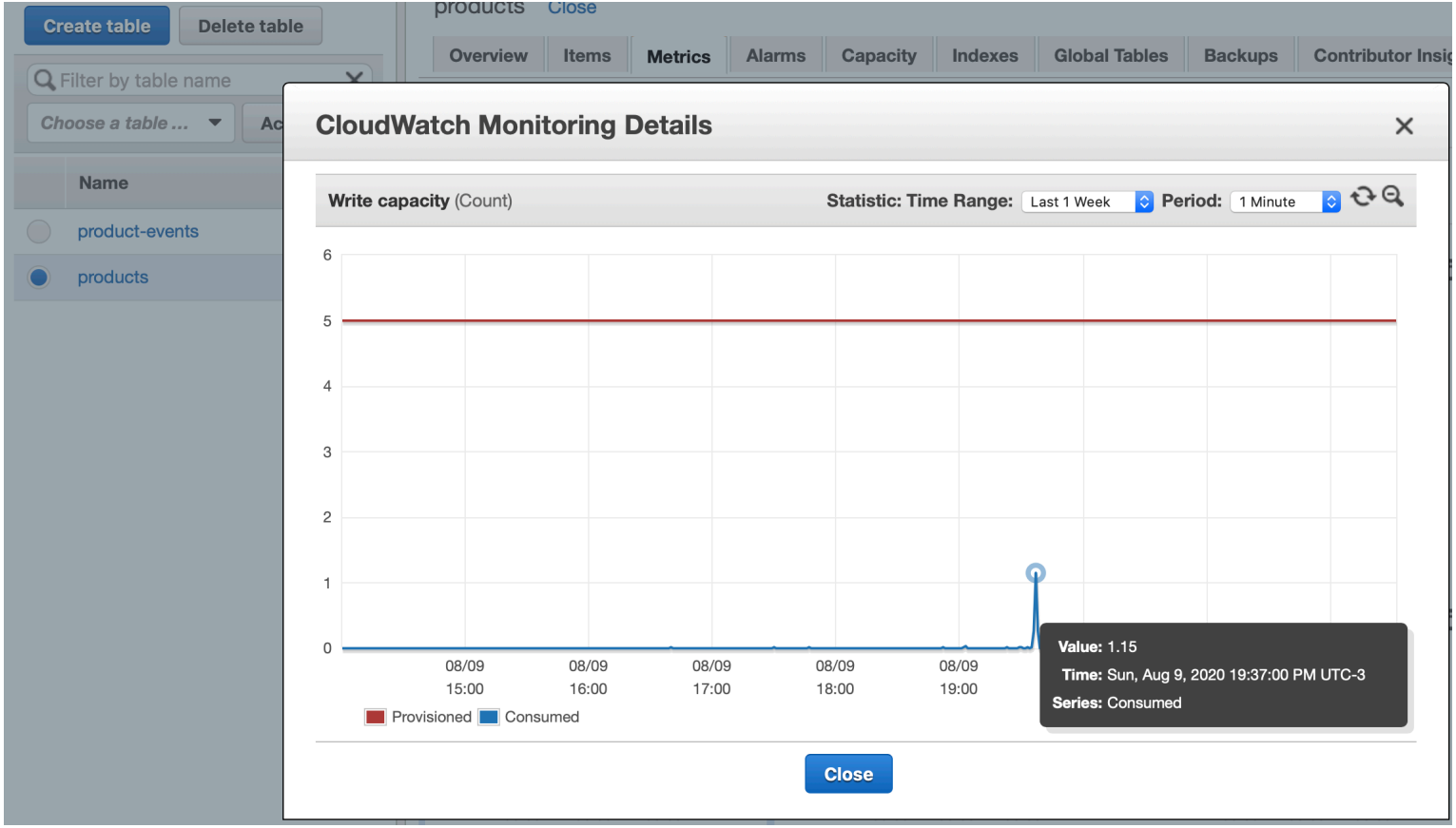
Testes e monitoramento no Lambda Product API

▶	2020-08-09T19:36:49.294-03:00	REPORT RequestId: 373afd4b-8c2b-4466-91a9-64778e74b8ad Duration: 337.00 ms Billed Duration: 400 ms Memory Size: 512 MB Max Memory Used: 152 MB
▶	2020-08-09T19:36:50.184-03:00	START RequestId: 8d24b9c3-cfd6-4433-9cd0-d718f2c34100 Version: $LATEST
▶	2020-08-09T19:36:50.295-03:00	Product created - productId: 76 - code: CODE_5fc31g
▶	2020-08-09T19:36:50.415-03:00	Product event published - messageId: 5a2a315c-b544-4354-8eef-b5f289d0d607
▶	2020-08-09T19:36:50.415-03:00	END RequestId: 8d24b9c3-cfd6-4433-9cd0-d718f2c34100
▶	2020-08-09T19:36:50.415-03:00	REPORT RequestId: 8d24b9c3-cfd6-4433-9cd0-d718f2c34100 Duration: 228.57 ms Billed Duration: 300 ms Memory Size: 512 MB Max Memory Used: 152 MB
▼	2020-08-09T19:36:51.367-03:00	START RequestId: 5e568749-d8c6-4022-957c-36a2956efc59 Version: $LATEST
▼	2020-08-09T19:36:51.451-03:00	Product created - productId: 40 - code: CODE_vmy3gc
▼	2020-08-09T19:36:51.583-03:00	Product event published - messageId: 70571cb5-1cd5-43ff-b929-ad6c6c9115f3
▼	2020-08-09T19:36:51.583-03:00	END RequestId: 5e568749-d8c6-4022-957c-36a2956efc59
▼	2020-08-09T19:36:51.583-03:00	REPORT RequestId: 5e568749-d8c6-4022-957c-36a2956efc59 Duration: 212.91 ms Billed Duration: 300 ms Memory Size: 512 MB Max Memory Used: 152 MB
▶	2020-08-09T19:36:52.574-03:00	START RequestId: 328570e8-600a-4d0d-abd1-d00690be9260 Version: $LATEST
▶	2020-08-09T19:36:52.694-03:00	Product created - productId: 51 - code: CODE_z2r6pm
▶	2020-08-09T19:36:52.915-03:00	Product event published - messageId: 5d5806dd-bda3-4b78-86da-479a046763d2

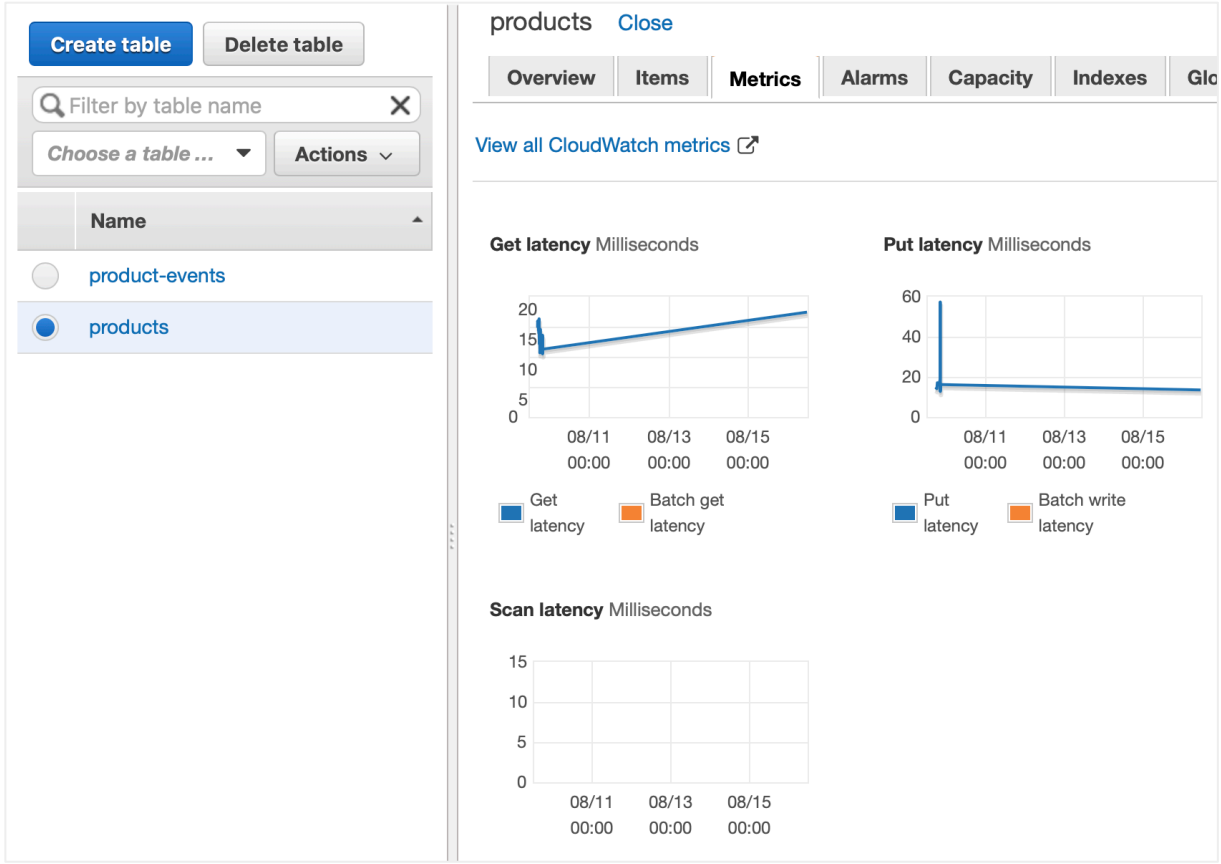
Testes e monitoramento no DynamoDB Products



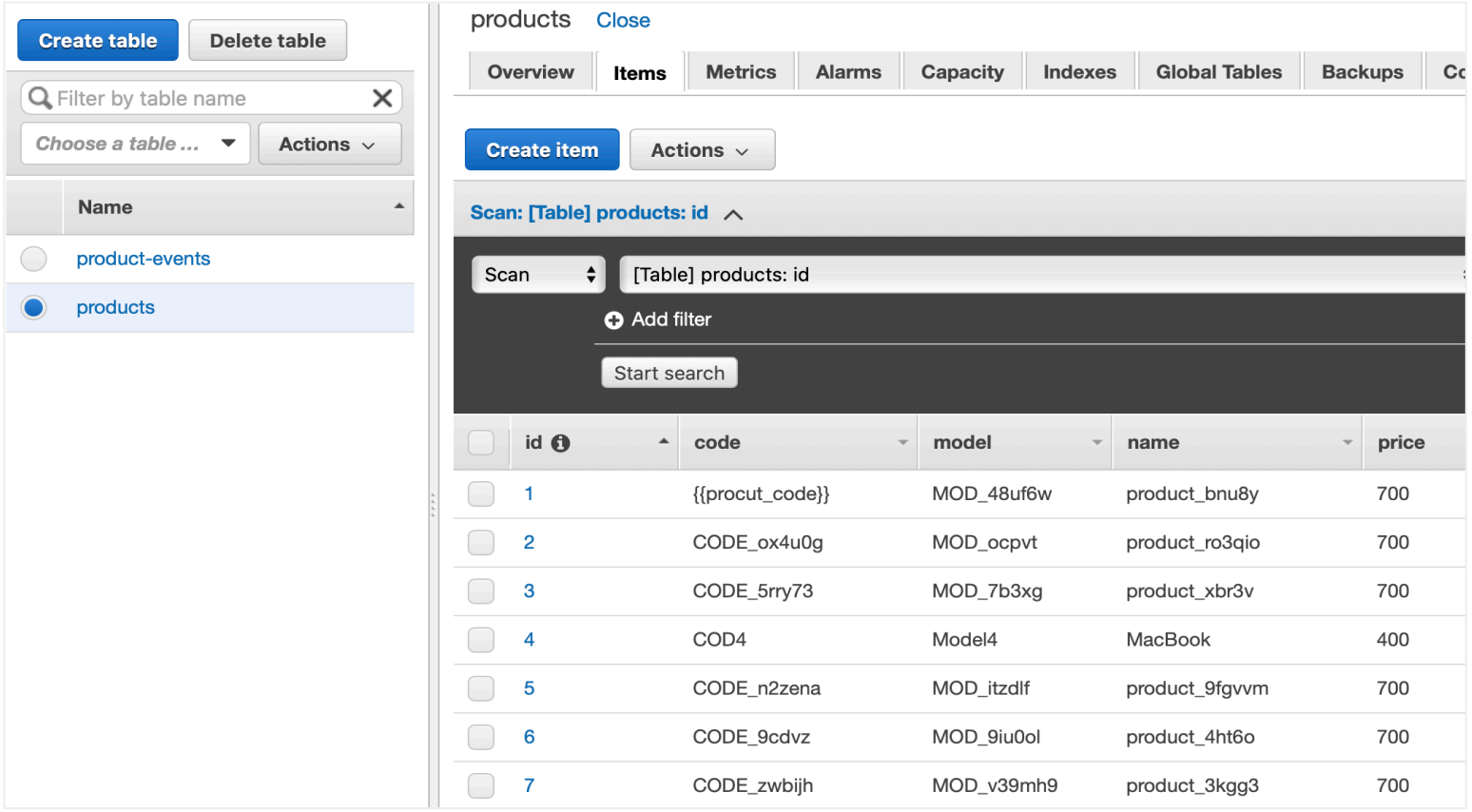
Testes e monitoramento no DynamoDB Products



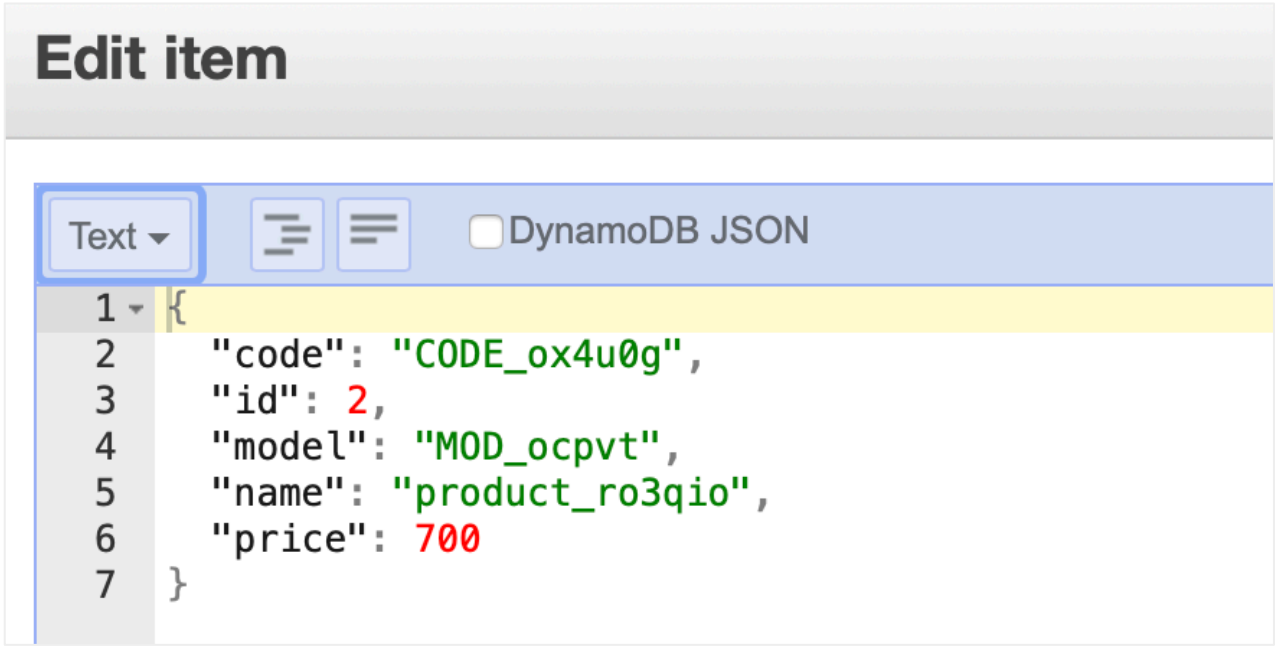
Testes e monitoramento no DynamoDB Products



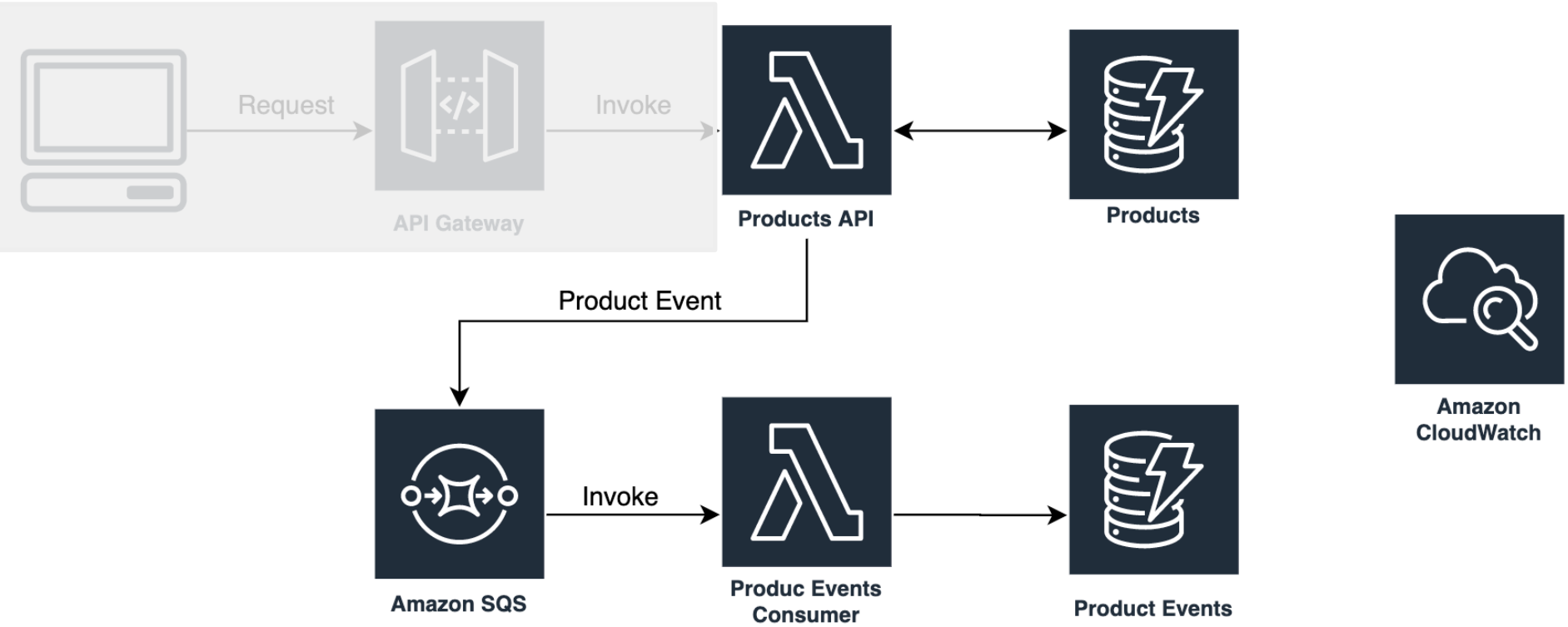
Testes e monitoramento no DynamoDB Products



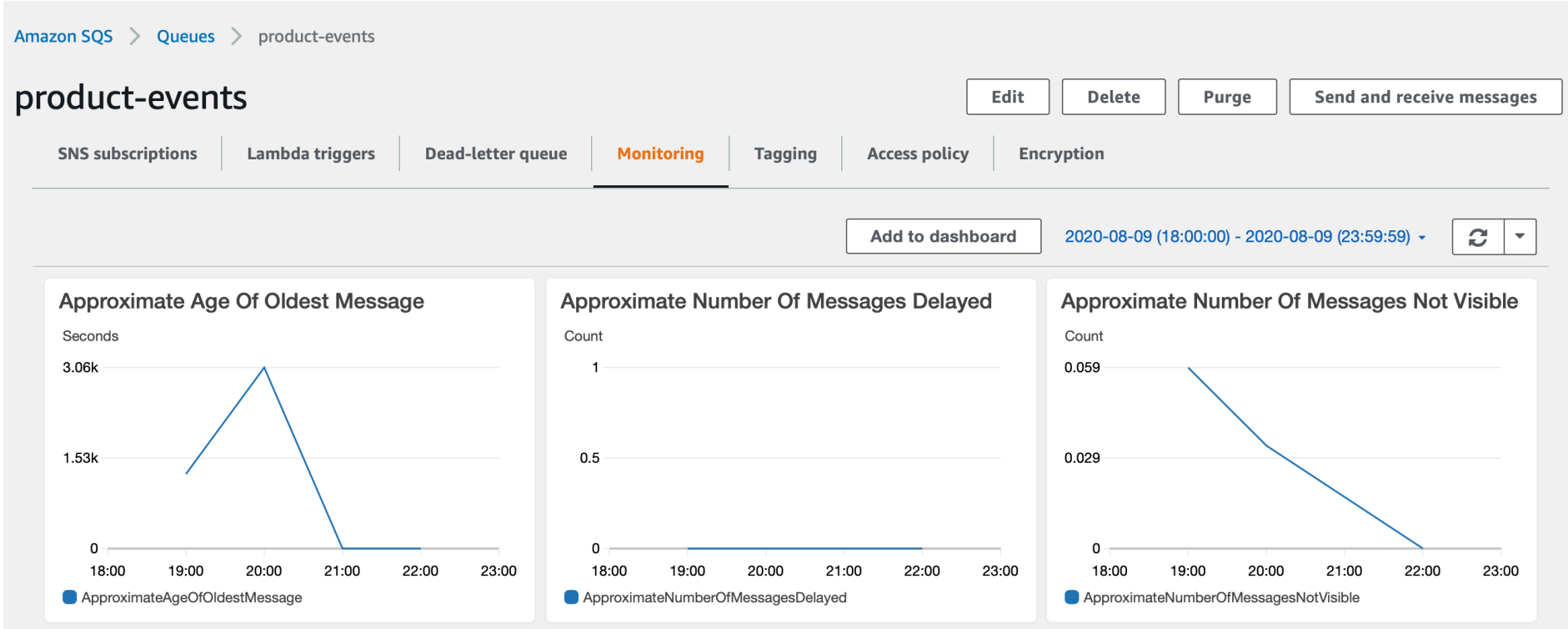
Testes e monitoramento no DynamoDB Products



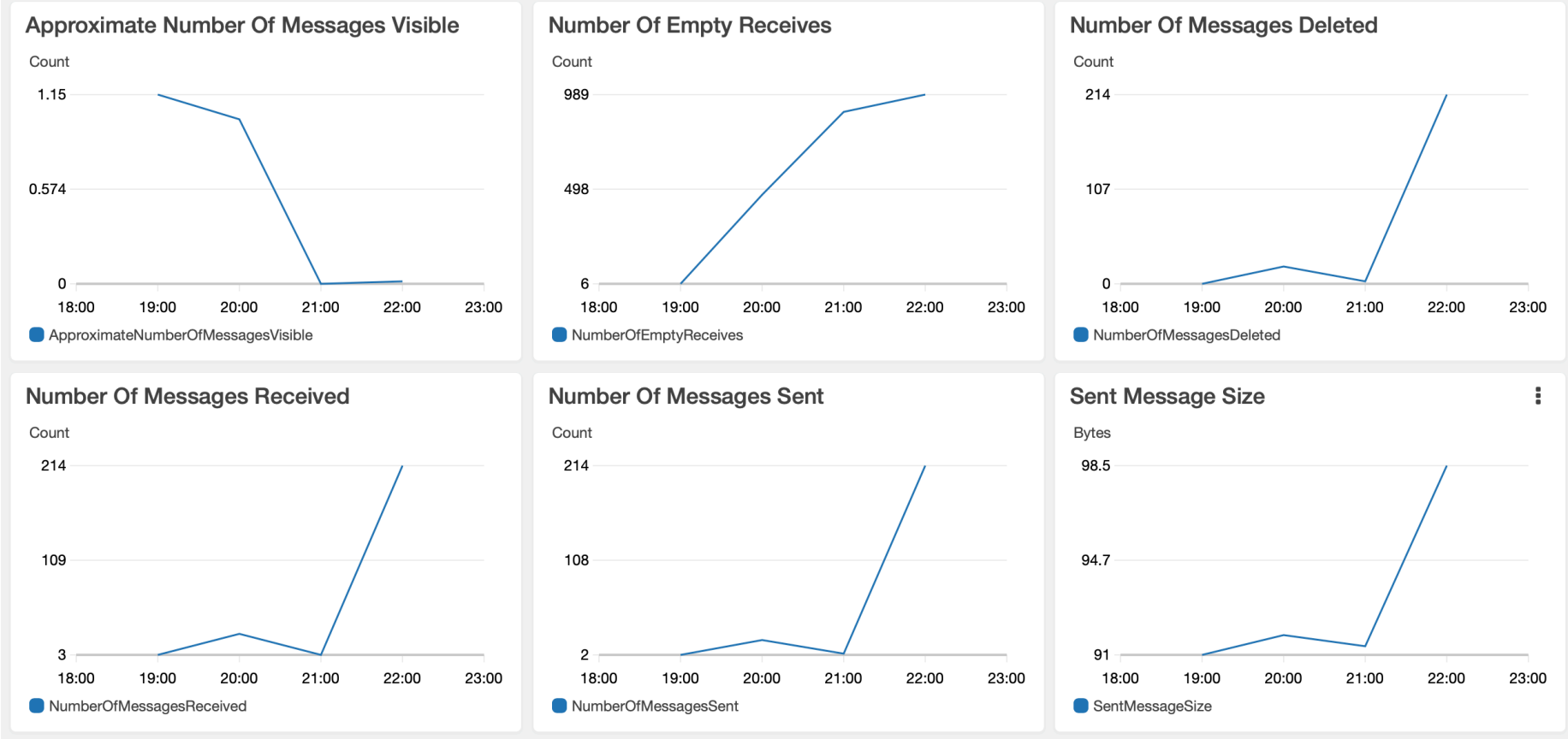
Criando os eventos



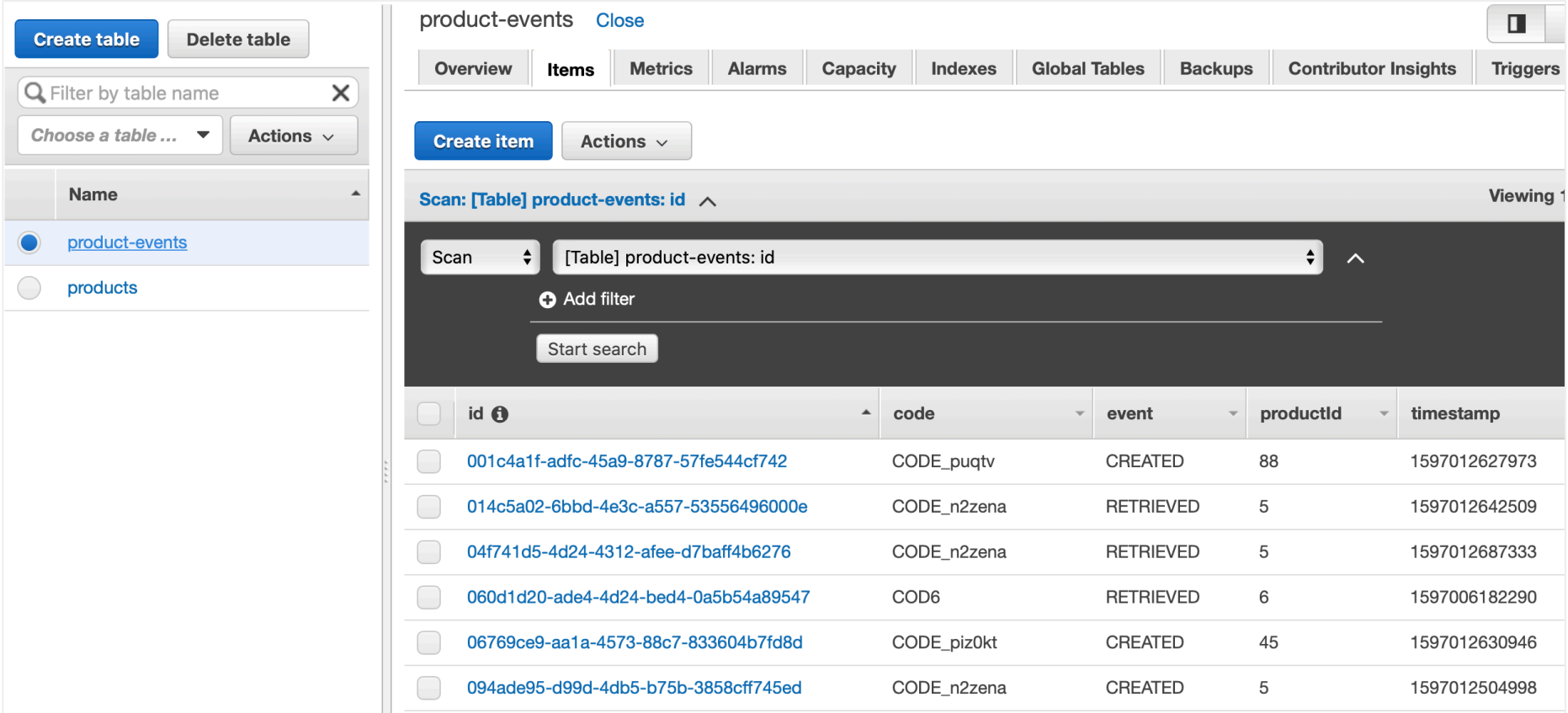
Testes e monitoramento no SQS



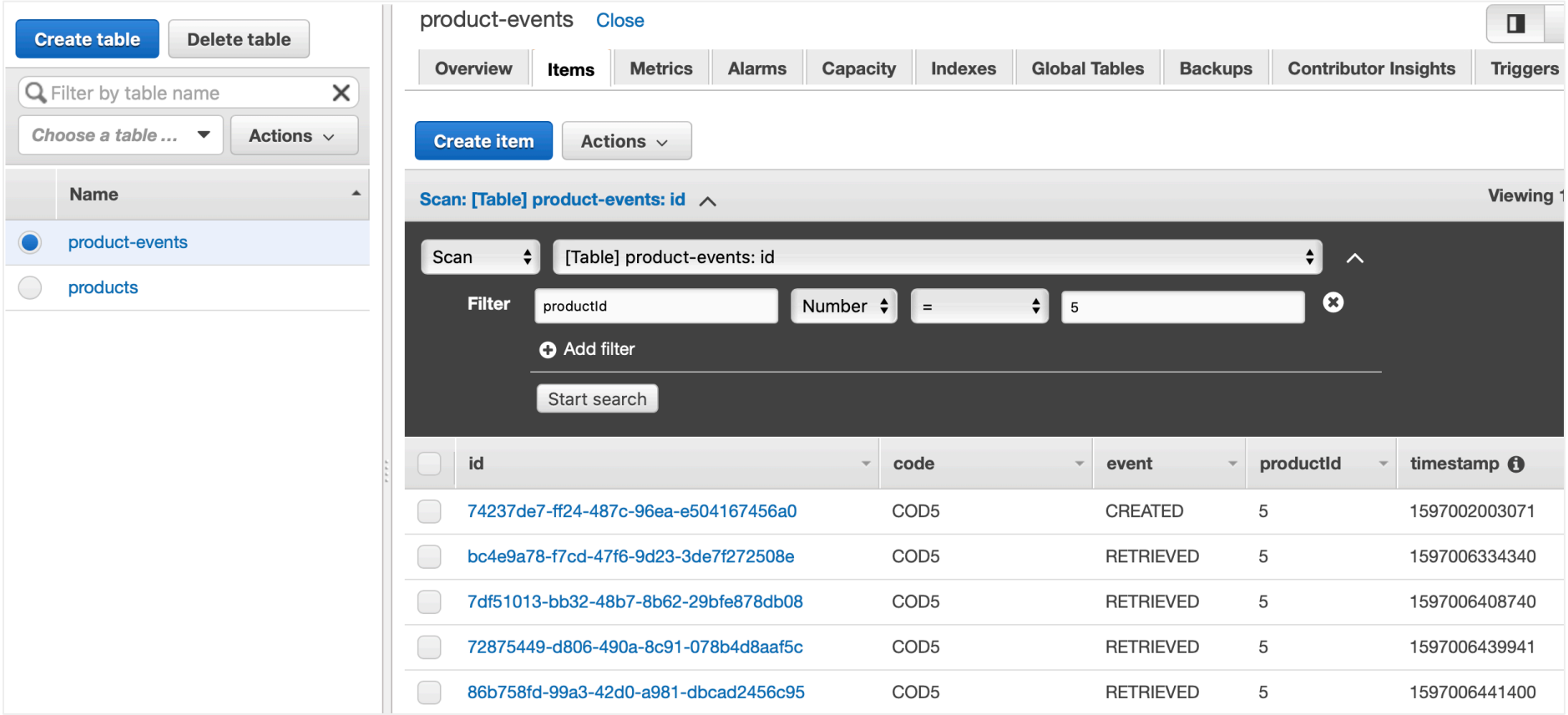
Testes e monitoramento no SQS



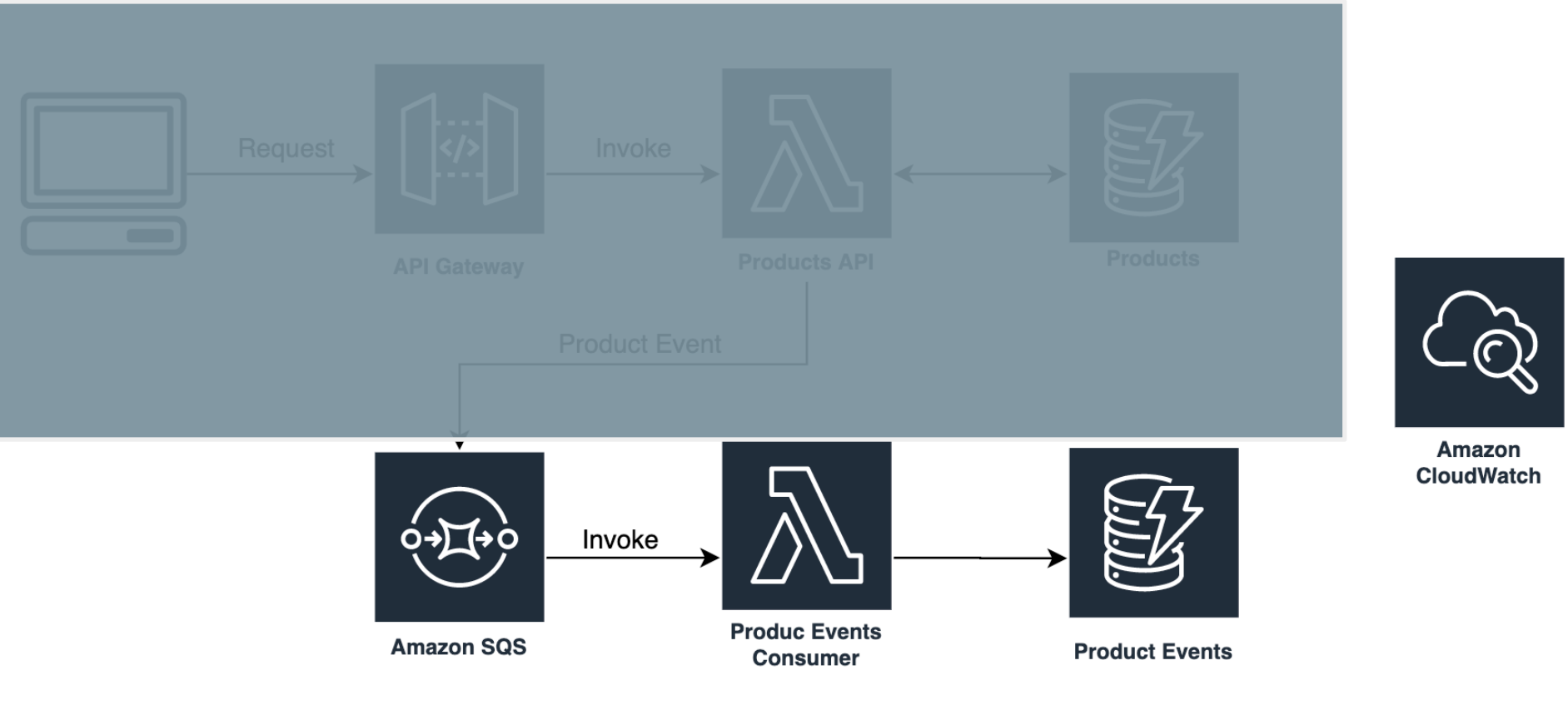
Testes e monitoramento no DynamoDB Product Events



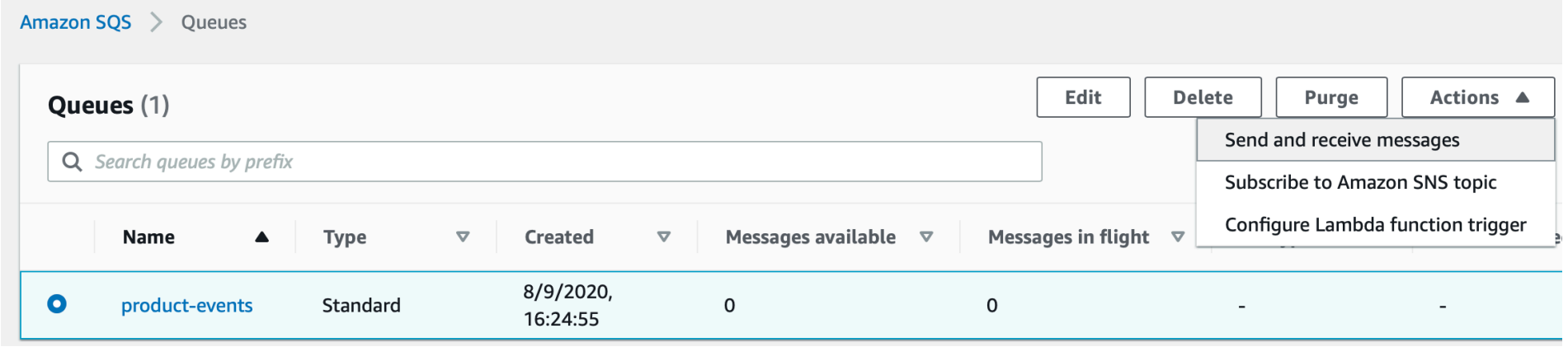
Testes e monitoramento no DynamoDB Product Events



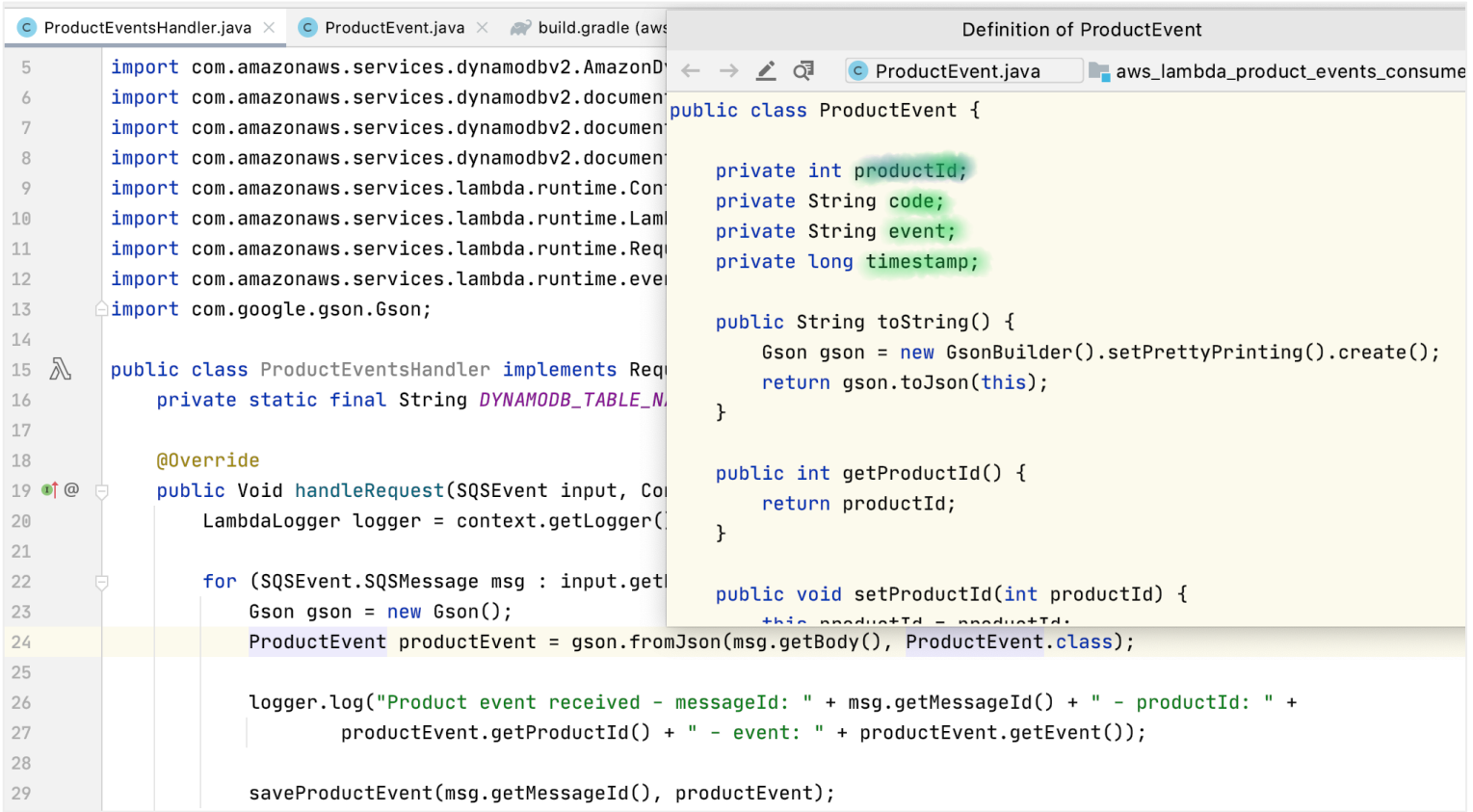
Arquitetura incompleta – parte 1



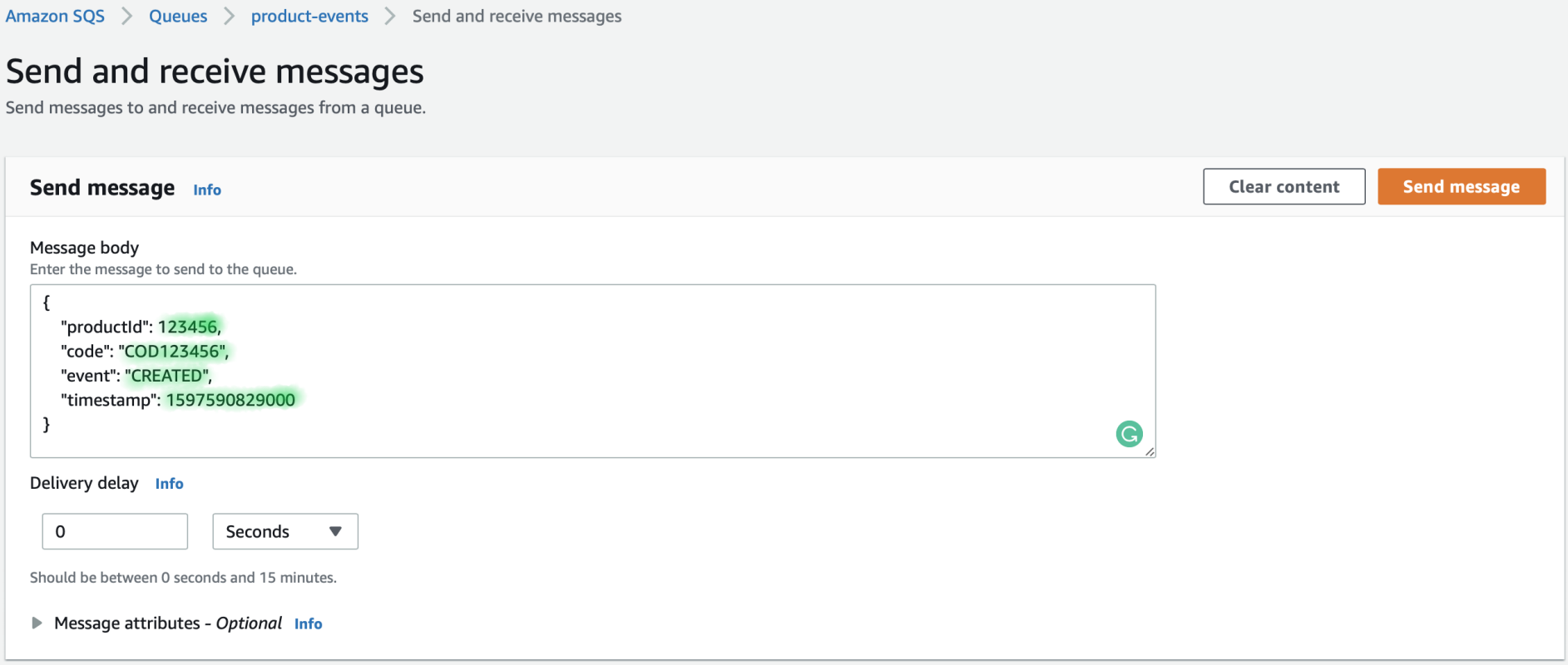
O que consigo testar?



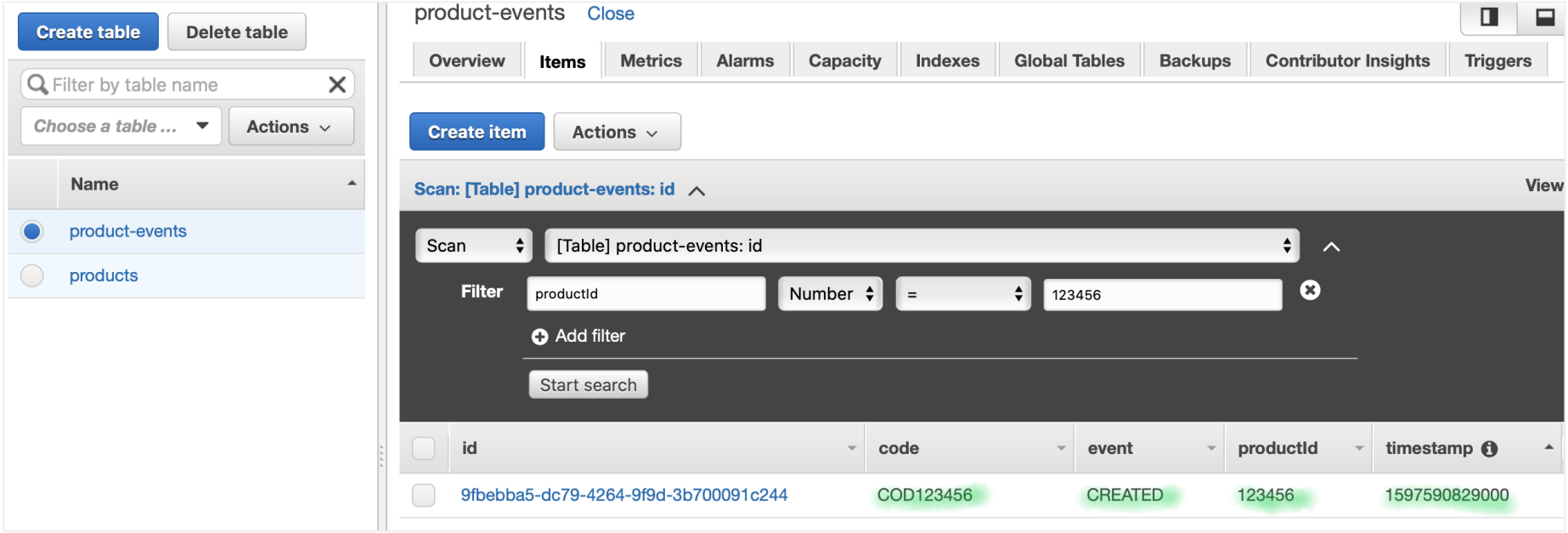
O que consigo testar?



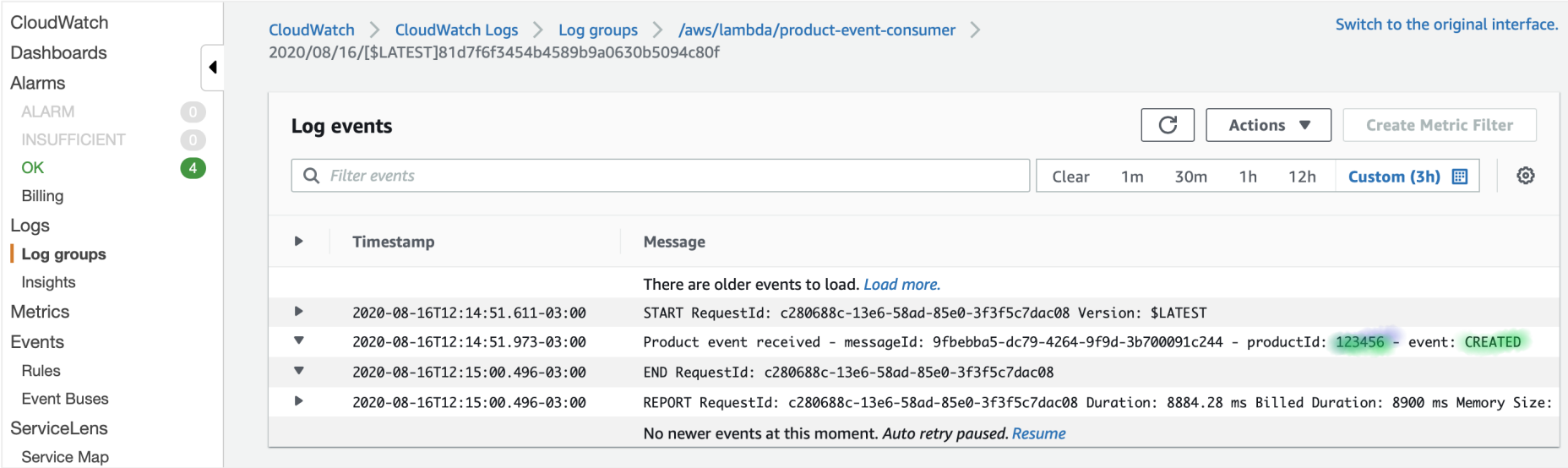
O que consigo testar?



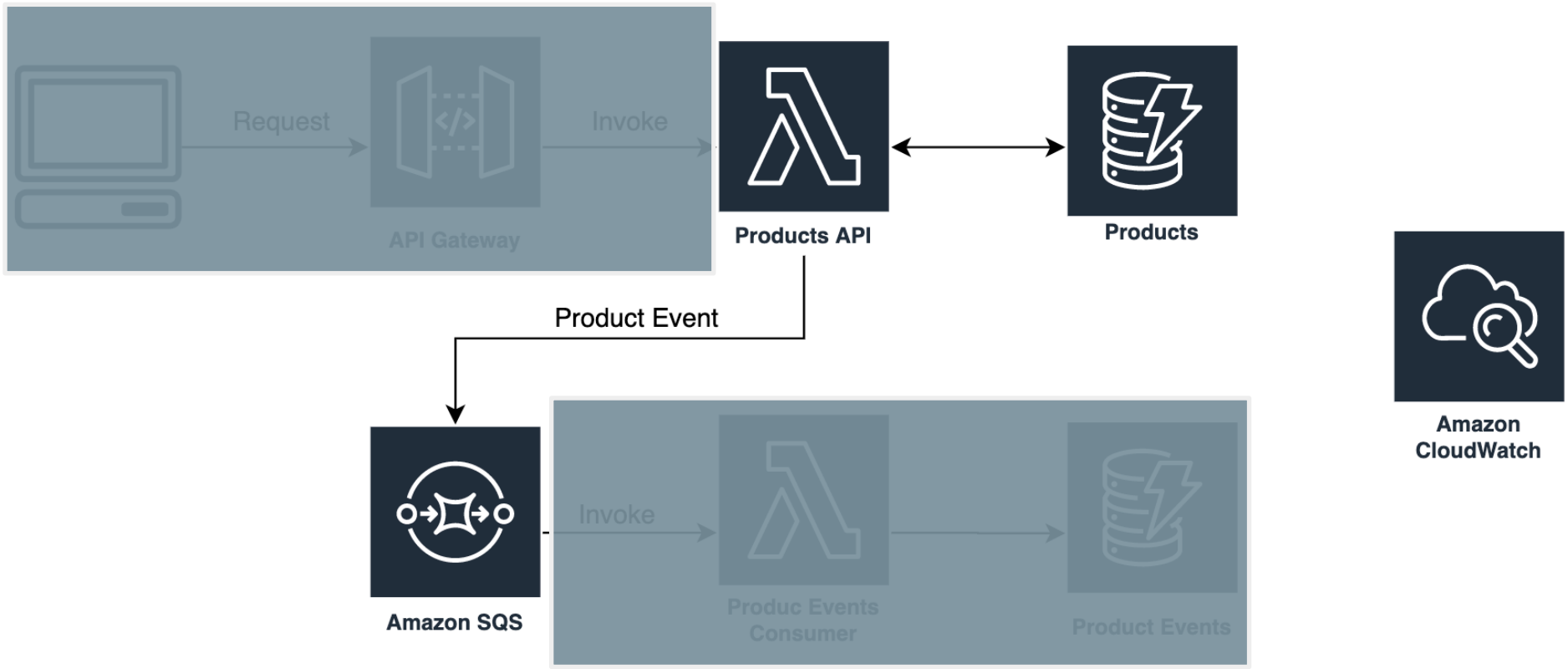
O que consigo testar?



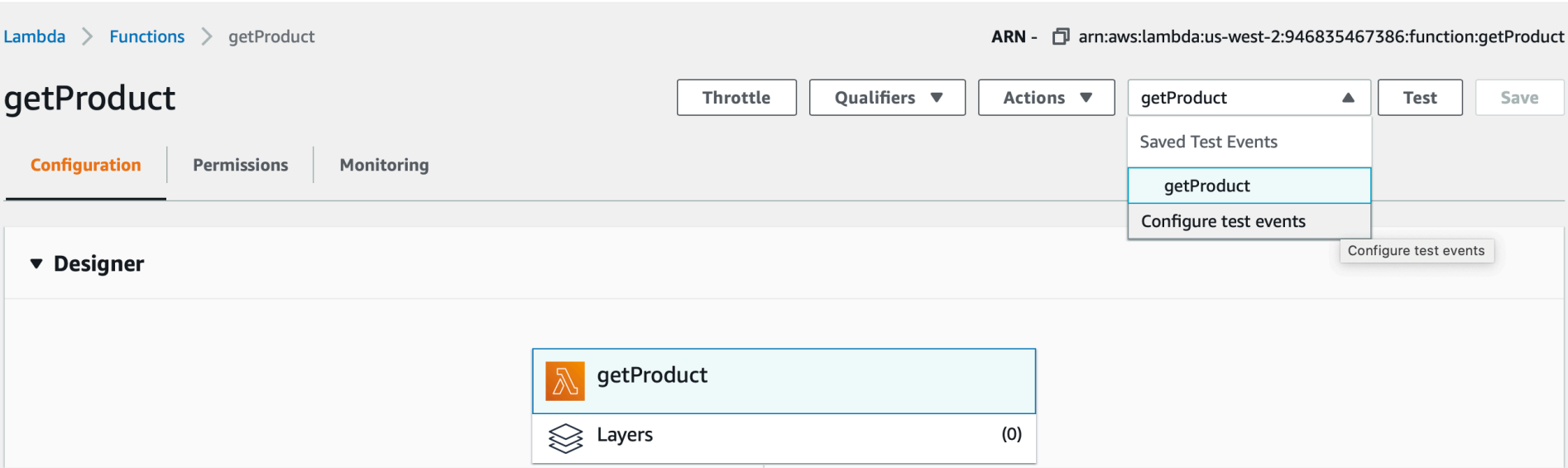
O que consigo testar?



Arquitetura incompleta – parte 2



O que posso testar?

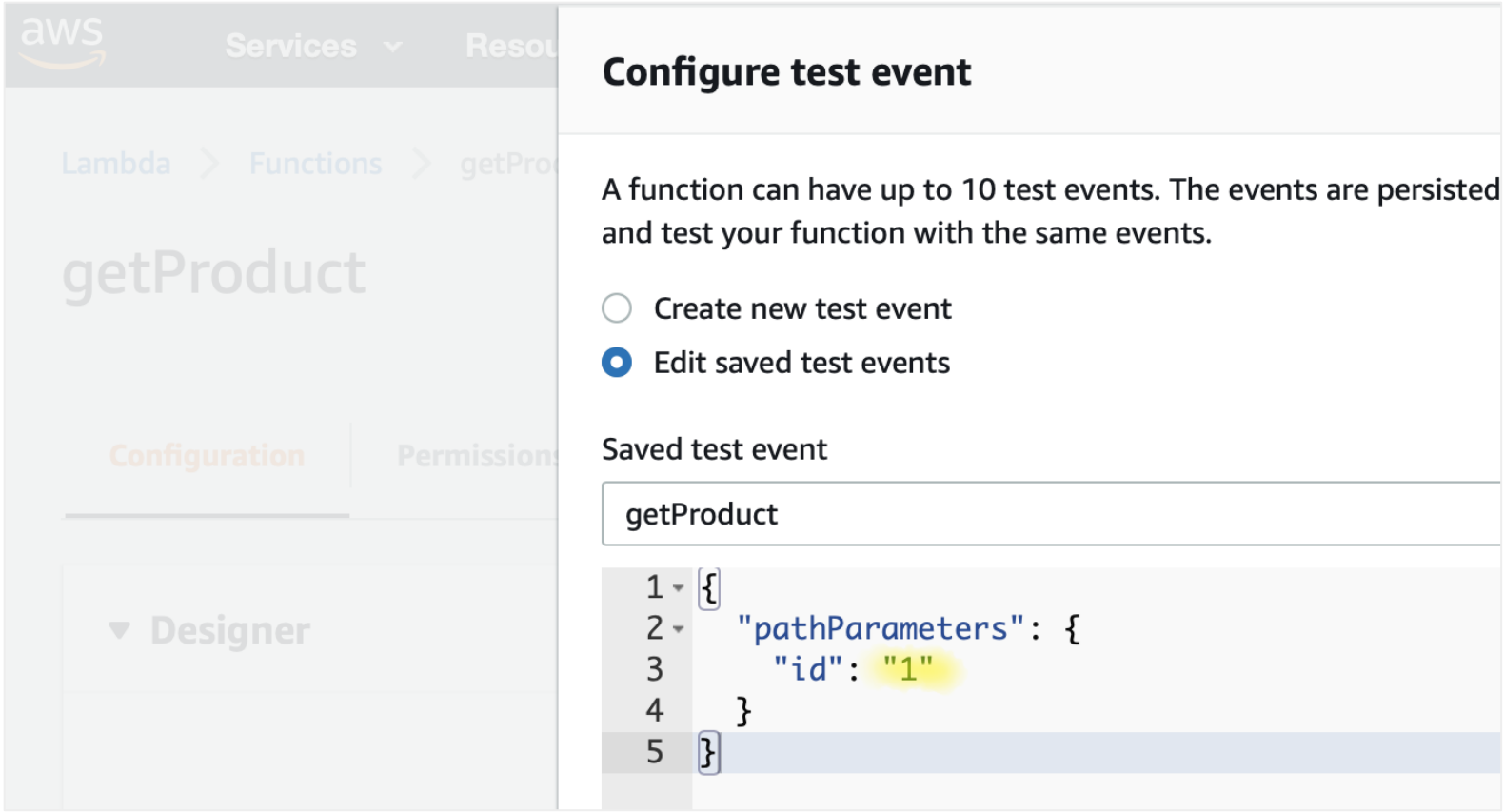


O que posso testar?

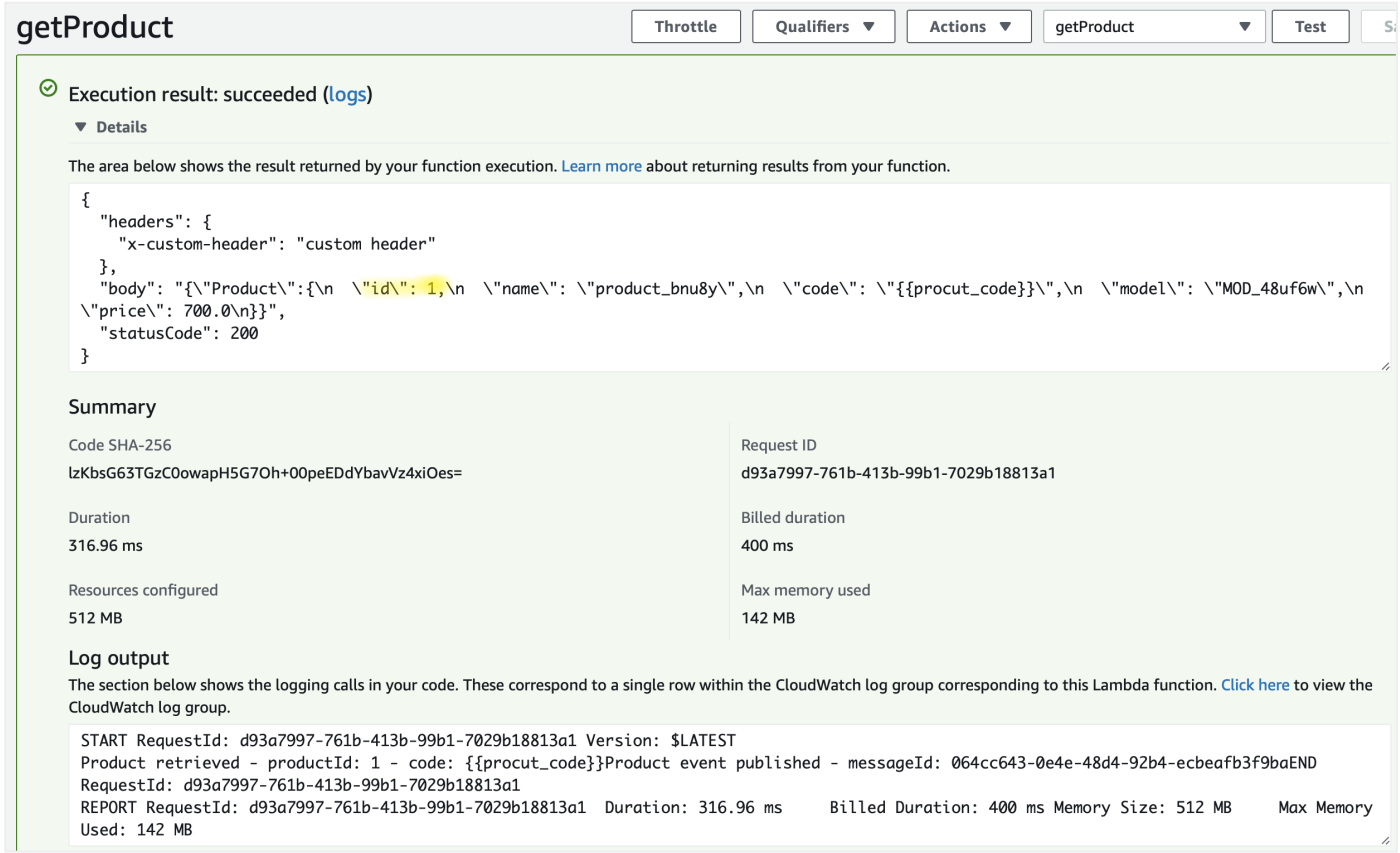
ProductsHandler.java

```java
public class ProductsHandler implements RequestStreamHandler {
    private static final String DYNAMODB_TABLE_NAME = "products";

    public void handleRequest(
            InputStream inputStream,
            OutputStream outputStream,
            Context context)
            throws IOException {...}

    public void handleGetByParam(
            InputStream inputStream, OutputStream outputStream, Context context)
            throws IOException {
        LambdaLogger logger = context.getLogger();

        JSONParser parser = new JSONParser();
        BufferedReader reader = new BufferedReader(new InputStreamReader(inputStream));
        JSONObject responseJson = new JSONObject();

        AmazonDynamoDB client = AmazonDynamoDBClientBuilder.defaultClient();
        DynamoDB dynamoDb = new DynamoDB(client);

        Item result = null;
        try {
            JSONObject event = (JSONObject) parser.parse(reader);
            JSONObject responseBody = new JSONObject();

            if (event.get("pathParameters") != null) {
                JSONObject pps = (JSONObject) event.get("pathParameters");
                if (pps.get("id") != null) {
                    int id = Integer.parseInt((String) pps.get("id"));
                    result = dynamoDb.getTable(DYNAMODB_TABLE_NAME).getItem( hashKeyName: "id", id);
```

O que posso testar?



O que posso testar?



Fontes

SCAN ME

Products events consumer

Products API

Obrigado!

LinkedIn

GitHub