

Circuit Breaker Pattern

Course: Java

S1



Narrative

Our API is blowing up.

We are getting nearly
500 million incoming calls
which also means a very high
number of outgoing calls.

We are starting to see
intermittent failures.





What can we do to prevent
our entire API from coming down?

Learning Outcomes

By the end of this lesson, the learner will be able to:

01

Describe a circuit breaker

02

Explain how a circuit breaker works

03

Apply a circuit breaker to a method

04

Use Netflix Hystrix

Circuit Breaker Pattern

Why Use the Circuit Breaker Pattern?

- Remote calls can fail or “hang” until a timeout is reached.
- Running out of resources can lead to cascading failures.



Helps to reduce resources
tied up in operations
which are likely to fail.



Martin Fowler,
Author,
Patterns of Enterprise
Application Architecture

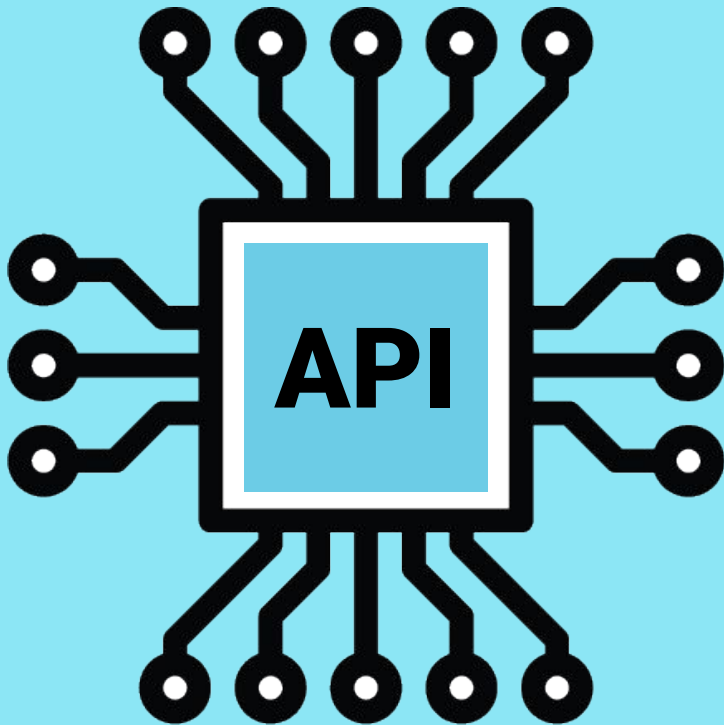


When to Use the Circuit Breaker Pattern

Any call to an external system could fail.

Out of your control:

3rd party API



In your control:

- Internally managed API
- Backing service, especially a database with performance concerns

How Circuit Breakers Work



A protected function call is wrapped with a circuit breaker object



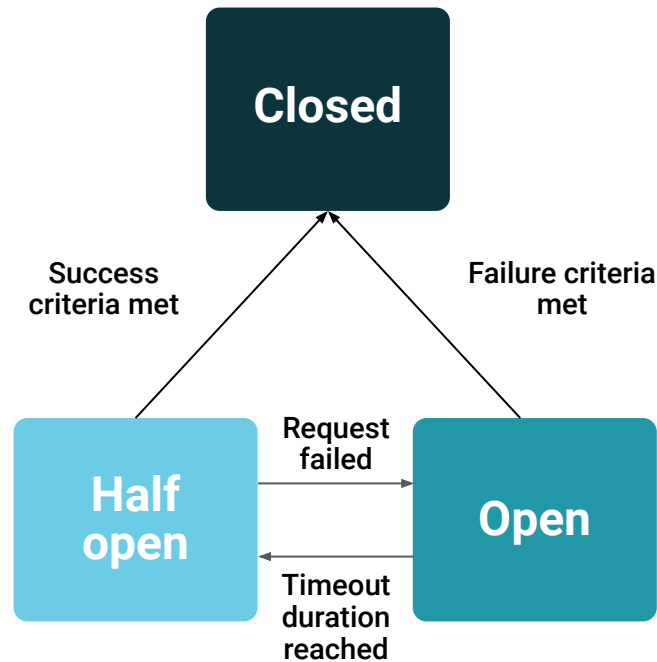
The object monitors for failures



Once a threshold is met, the circuit breaker trips



An error is returned without the call being made



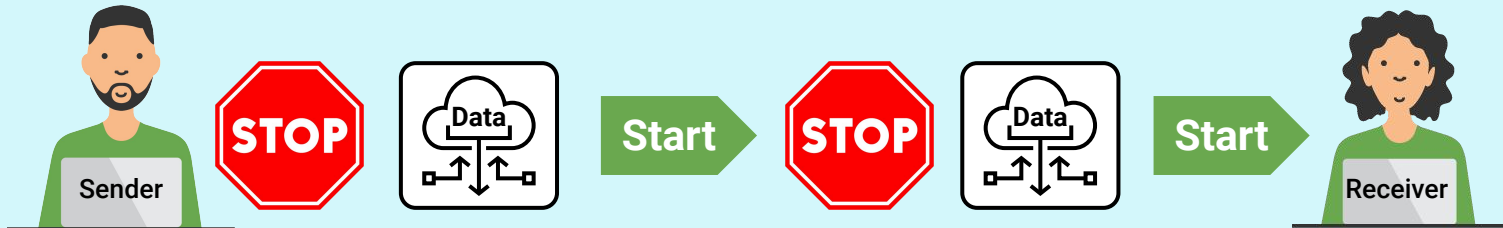
More About Circuit Breakers



Circuit breakers can also be used for asynchronous communications:

- Put all requests on a queue
- Open the circuit when the queue is full

Asynchronous
communication



Circuit breaker status should be monitored and logged.



Must consider what to do when the breaker fails!



Activity: Read and Discuss

In this activity you will read the [Fault Tolerance in a High Volume, Distributed System](#) individually, then break into groups to discuss.

(Instructions sent via Slack)

Suggested Time:

30 Minutes



Time's Up! Let's Review.

Questions?





HYSTRIX
BY
NETFLIX



What is Netflix Hystrix?

What is Netflix Hystrix?

Hystrix is a latency and fault tolerance library designed to:



Isolate points of access to remote systems, services and 3rd party libraries.



Stop cascading failure.



Enable resilience in complex distributed systems where failure is inevitable.

Circuit Breaker Tutorial 1 & 2



Learning Outcomes

By now, the learner should be able to:

01

Describe a circuit breaker

02

Explain how a circuit breaker works

03

Apply a circuit breaker to a method

04

Use Netflix Hystrix

*The
End*