



Pivotal®

Retry, Backoff and Fail-Fast Patterns

Problems

- Transient Failures induced by:
 - Temporary network disruption
 - Elastic scaling

Solutions covered in this course

- Let it crash
- Fail Fast
- Timeout
- Retry and Backoff
- A combination of above

Solution - Retry

- If a transient failure happens, retry the operation

Tradeoffs - Retry

- Idempotency
 - Consumers likely do not have visibility if during a transient failure the Producer succeeded the request.
 - Retry can only be done reliably on operations that result in same outcome on execution of redundant requests.
- Latency
 - In synchronous systems, retry will inflate time taken to execute a request.
 - Makes it more challenging to tune and manage latency SLOs

Solution - Backoff

- Transient failures may linger for a period of time.
- An immediate retry may be more likely to fail, than to wait a short period of time before subsequent retries.
- Subsequent retry intervals increase, to a timeout period where abandoning a request.
- Timeout will be covered in next lesson.

Tradeoffs - Backoff

- Compound the retry latency.
- Not a good fit for RPC (Remote Procedure Call) style integration unless the latency SLO is very high