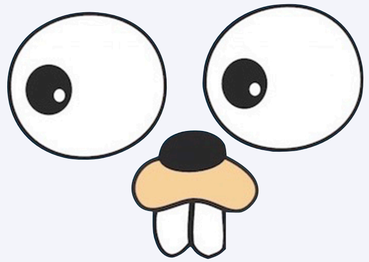
Exploring Network Programming

By Building a Toxiproxy Clone



Jordan Neufeld

shopify

- Site Reliability Engineer at Shopify
- Self-Taught Gopher
- Writing Go doesn’t crush my soul

Jordan Neufeld

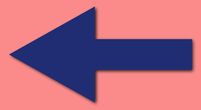
This talk is for beginners

...because I’m a beginner

Agenda

- Why build network tooling in Go?
- Shopify and Chaos Testing
- Toxiproxy
- Demo

What is
Network Tooling?

- Application (HTTP)
- ***Transport (TCP and UDP)*** 
- Internet
- Network Access

Why Go?

... we're literally at Gophercon.

Why Go?

- Cross-Compile portable binaries
- Standard Library Support
- Accessible way to solve for custom needs

Why would I build Transport layer tools?

- E-Commerce Platform
- Hybrid Architecture
- Design for resiliency
- Test resiliency assumptions

Chaos Testing (Game Days)

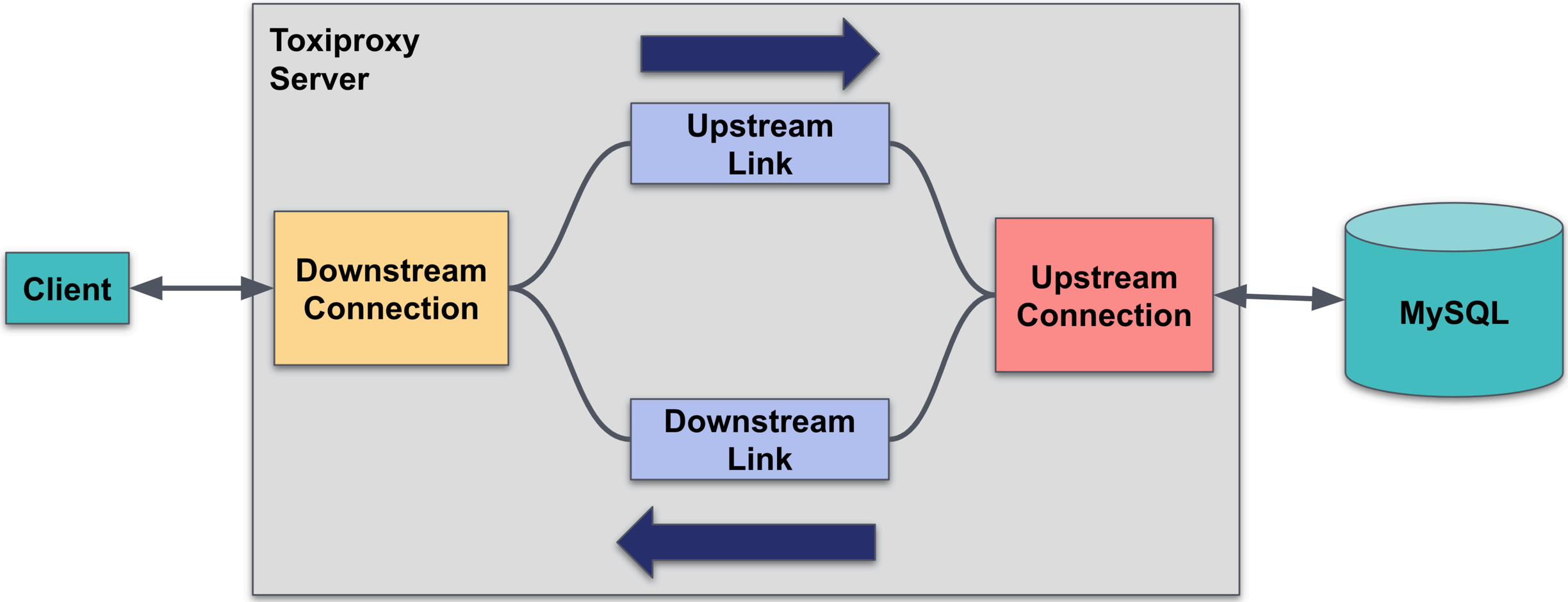
Game Days

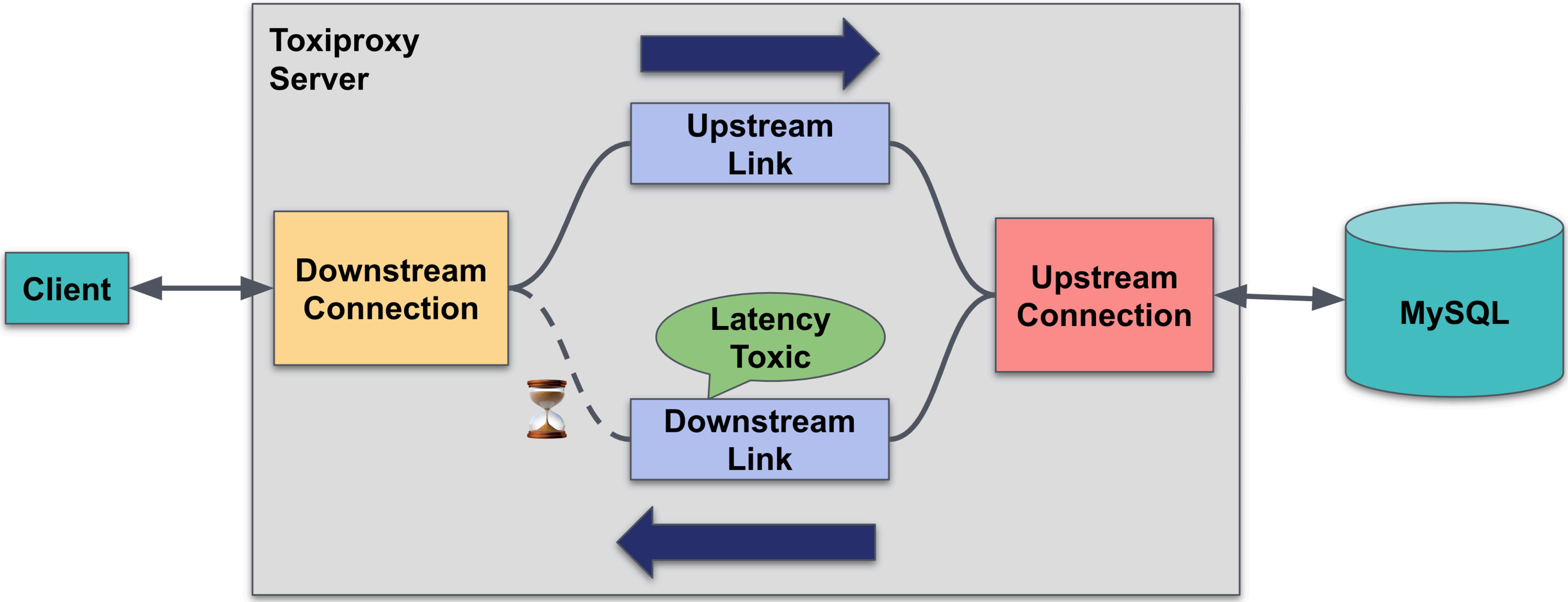
- Introduce failure, observe results
- Testing or Production environments
- Simulate slow or down connection between app and dependencies

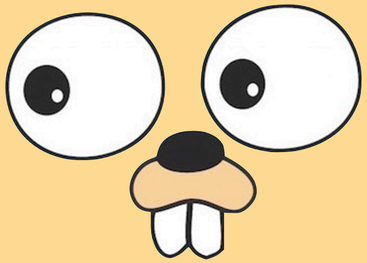
Toxiproxy

github.com/Shopify/toxiproxy

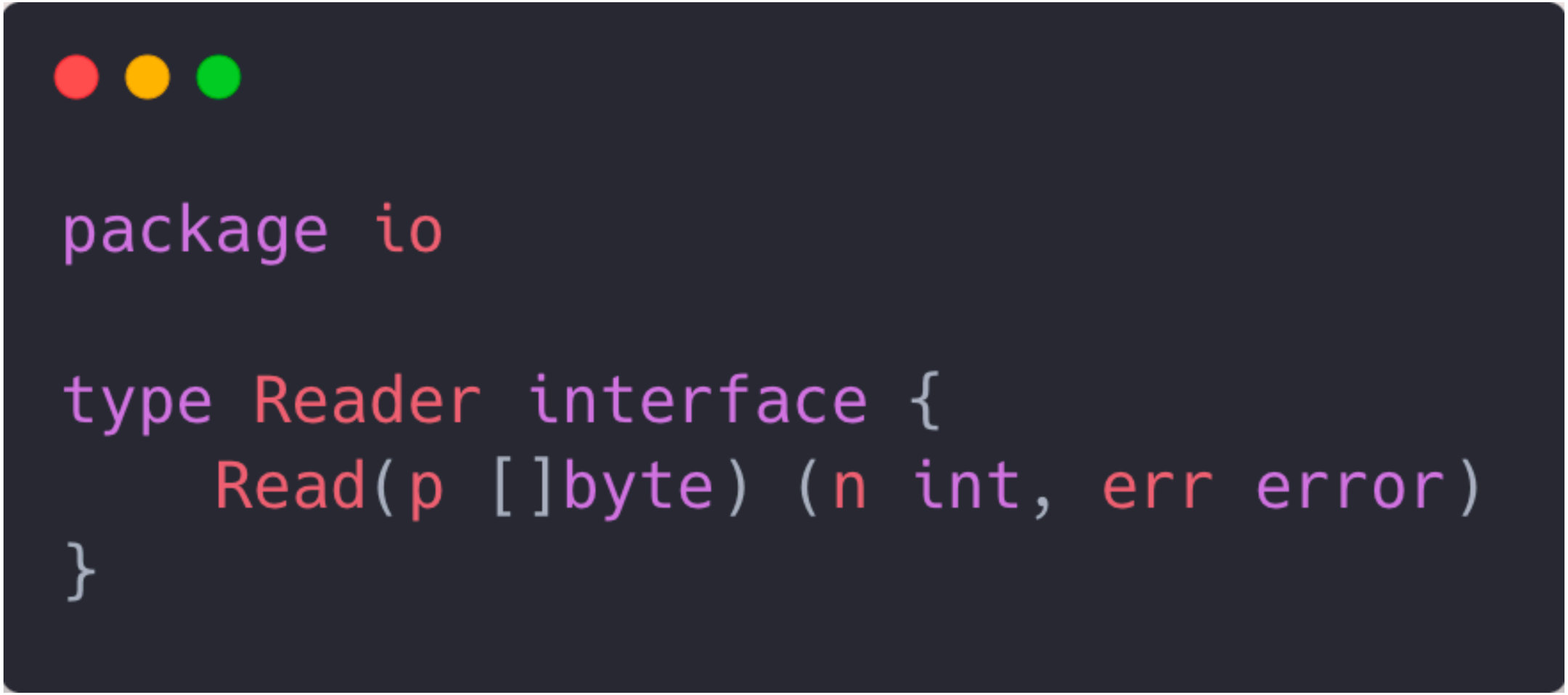
- OSS tool (in Go!)
- Proxy to simulate slow or broken network conditions
- Transport Layer (TCP)

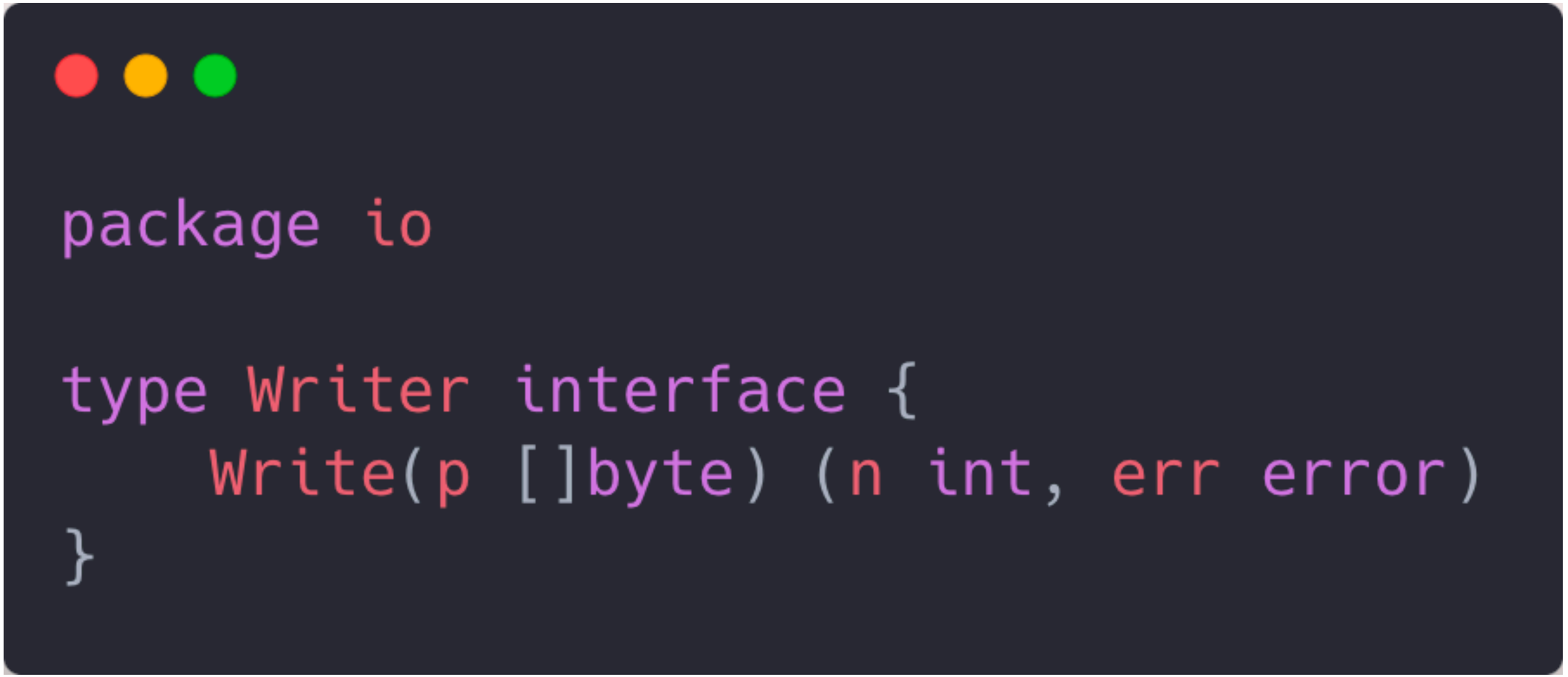

Toxiproxy
Server
Upstream
Link
Client
Downstream
Connection
Upstream
Connection
MySQL
Downstream
Link


Toxiproxy
Server
Upstream
Link
Client
Downstream
Connection
Latency
Toxic
Downstream
Link
Upstream
Connection
MySQL



The Go Standard Library


package io
type Reader interface {
Read(p []byte) (n int, err error)
}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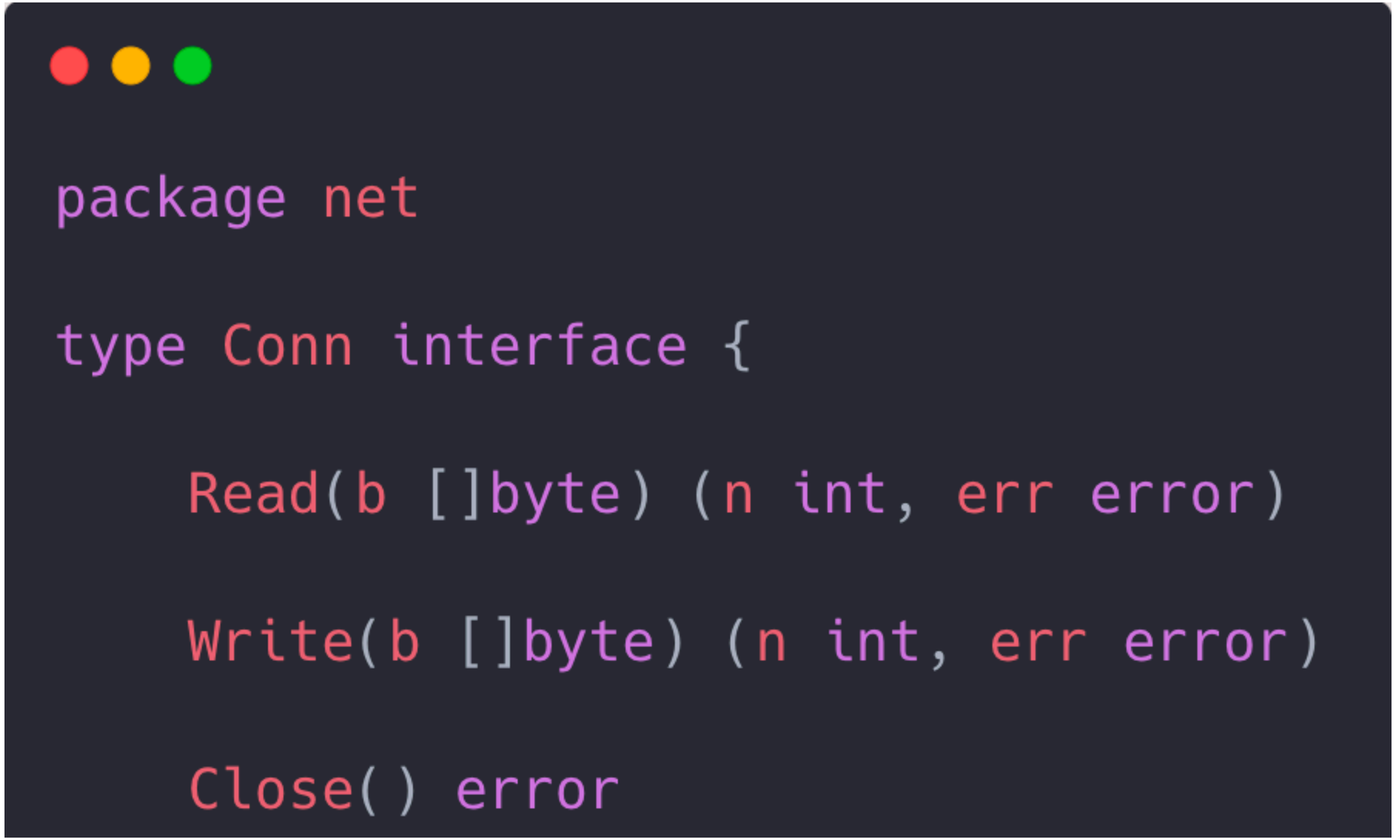

```
package net

type Conn interface {

    Read(b []byte) (n int, err error)

    Write(b []byte) (n int, err error)

    Close() error
```

```
package net

func Dial(network, address string) (Conn, error)
...

conn, err := Dial("tcp", "golang.org:80")
```


listener, err := net.Listen("tcp4", "0.0.0.0:8080")
...
conn, err := listener.Accept()


package io
func Copy(dst Writer, src Reader) (written int64, err error) {

Demo

Recap

- It’s productive
- It’s accessible
- It’s fun

Thanks!

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