Service Governance

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About Me

- CEO @qiniu.com
- Creator of qlang
- Go chief evangelist of China*
- Creator of Shanda Cloud Storage*
- Creator of Kingsoft Storage Lab*
- Chief architect of WPS Office 2005*

About qlang

- A script language cooperating with Go
- Go-alike syntax
- Calling Go functions without any wrapper
  - So, standard libraries implemented already by Go
- Support most of Go features, including
  - for range
  - string, slice, map, chan
  - goroutine, closure, defer
  - TODO: select
- Homepage: https://github.com/qiniu/qlang

```
import "fmt"
import "log"
import "strings"

import "qlang.io/qlang.v2/qlang"
import   _ "qlang.io/qlang/builtin"

var strings_Exports = map[string]interface{}{
   "replacer": strings.NewReplacer,
}

func main() {

   qlang.Import("strings", strings_Exports)
   lang, err := qlang.New(qlang.InsertSemis)
   if err != nil {
        log.Fatal(err)
   }

   err = lang.SafeEval(`x = strings.replacer("?", "!").replace("hello, world???")`)
   if err != nil {
        log.Fatal(err)
   }

   v, _ := lang.Var("x")
   fmt.Println(v) // Output: hello, world!!!
}
```

Summary

- Service
- Service discovery
- Service governance

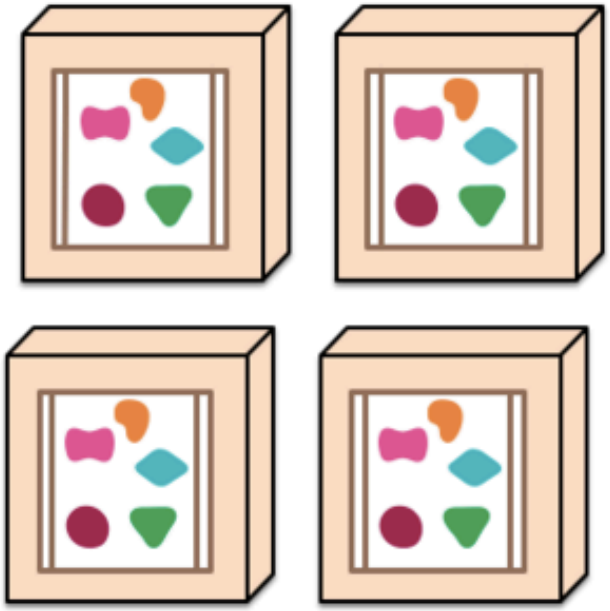
Service

- SOA (service-oriented architecture)
- Microservice architecture
  - http://martinfowler.com/articles/microservices.html
- API based architecture

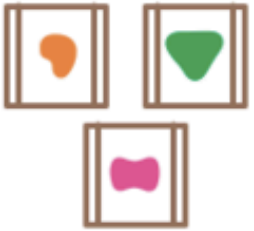
Microservices

A monolithic application puts all its functionality into a single process...

... and scales by replicating the monolith on multiple servers



A microservices architecture puts each element of functionality into a separate service...



... and scales by distributing these services across servers, replicating as needed.

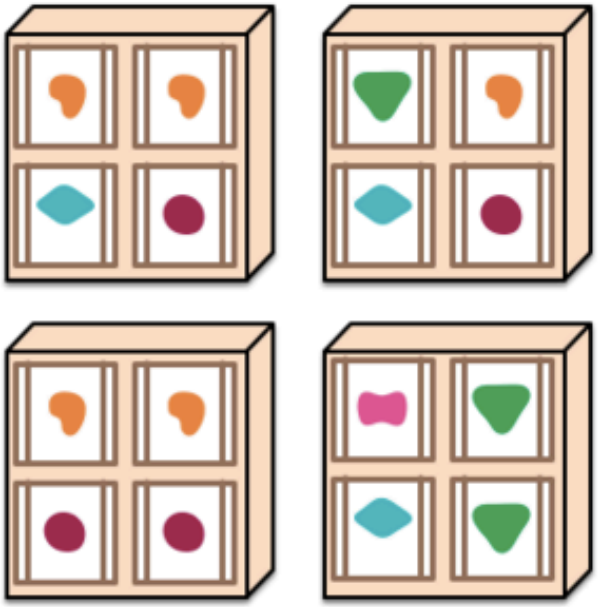


Figure 1: Monoliths and Microservices

Microservices

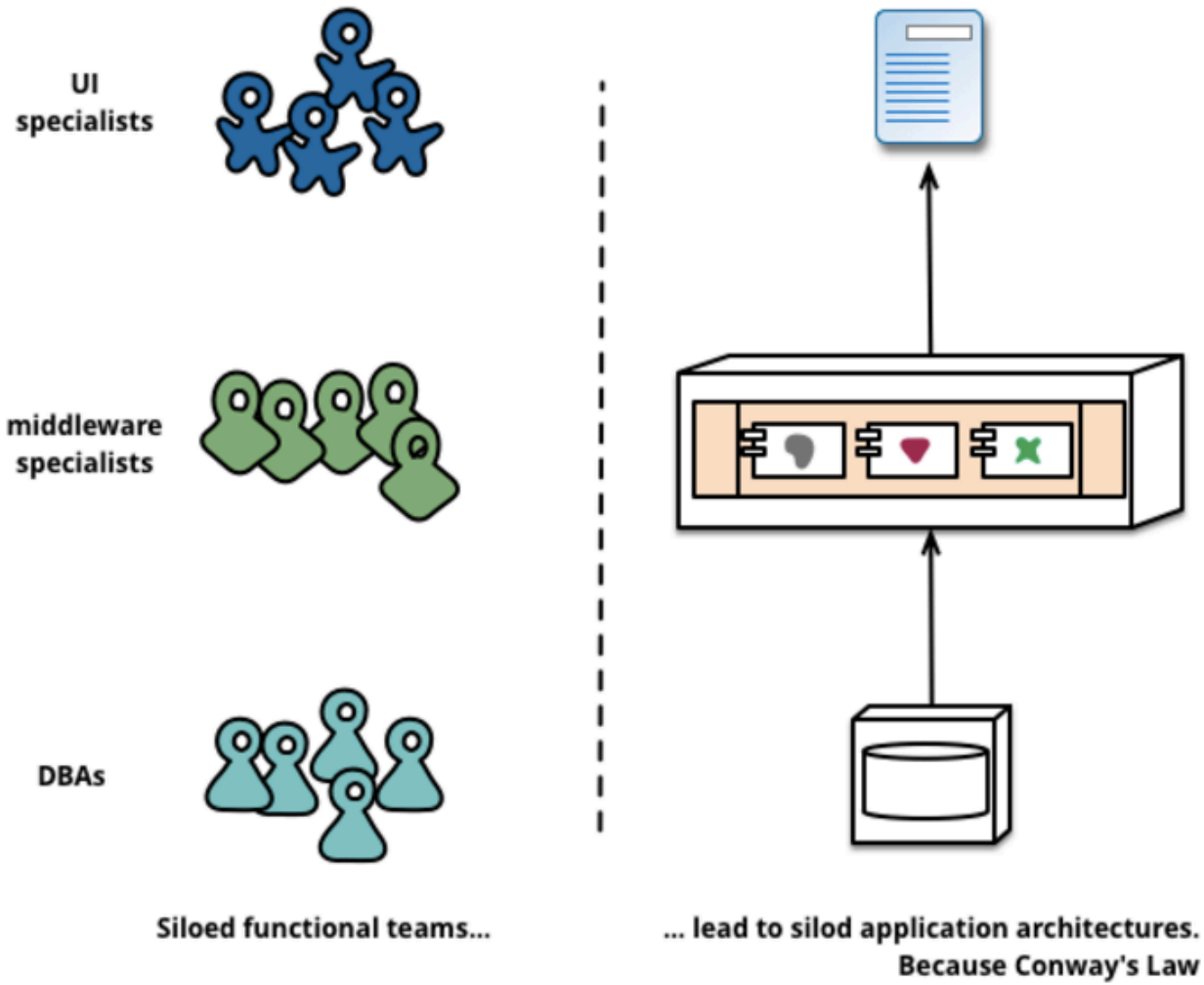


Figure 2: Conway's Law in action

Microservices

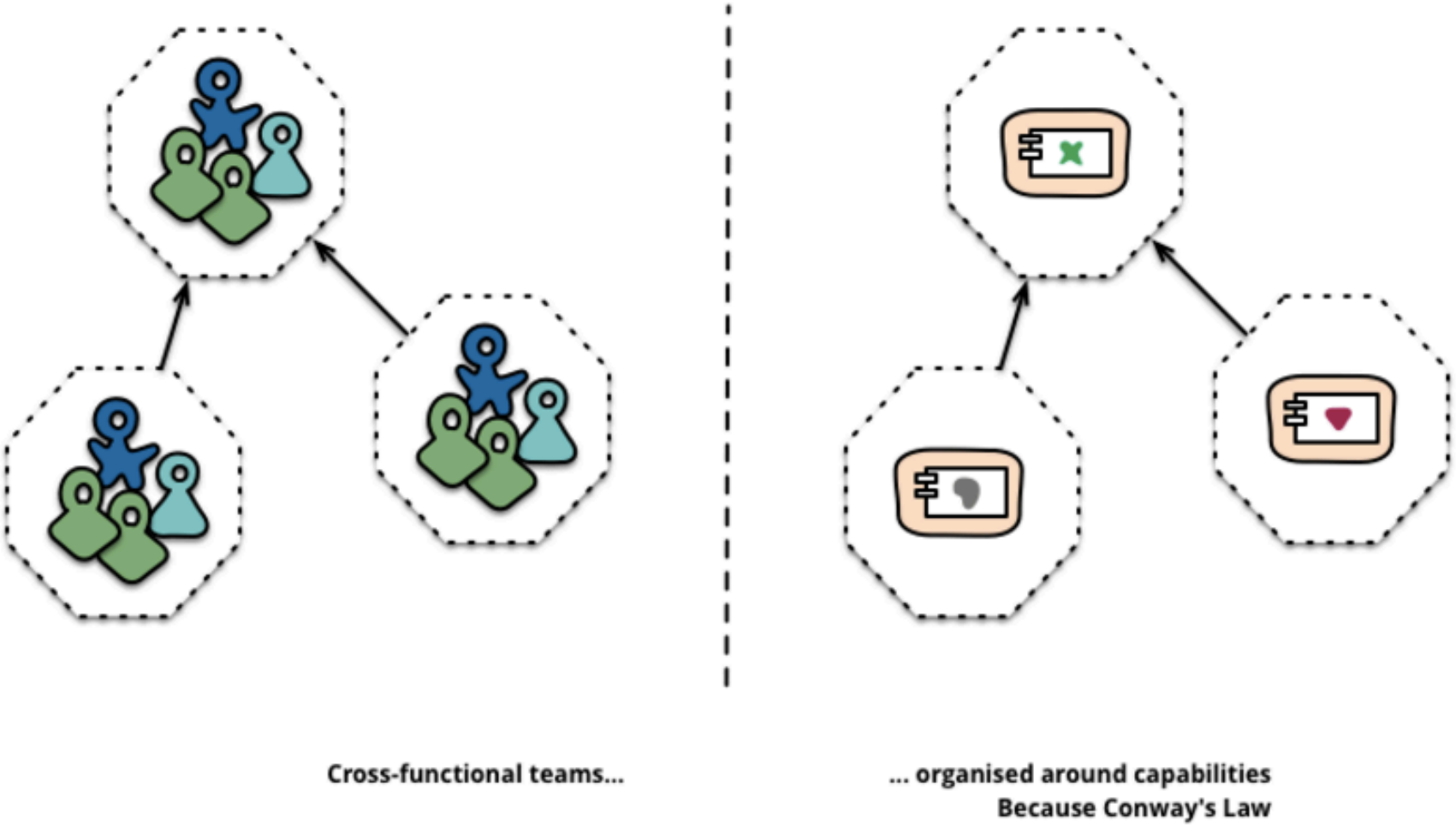
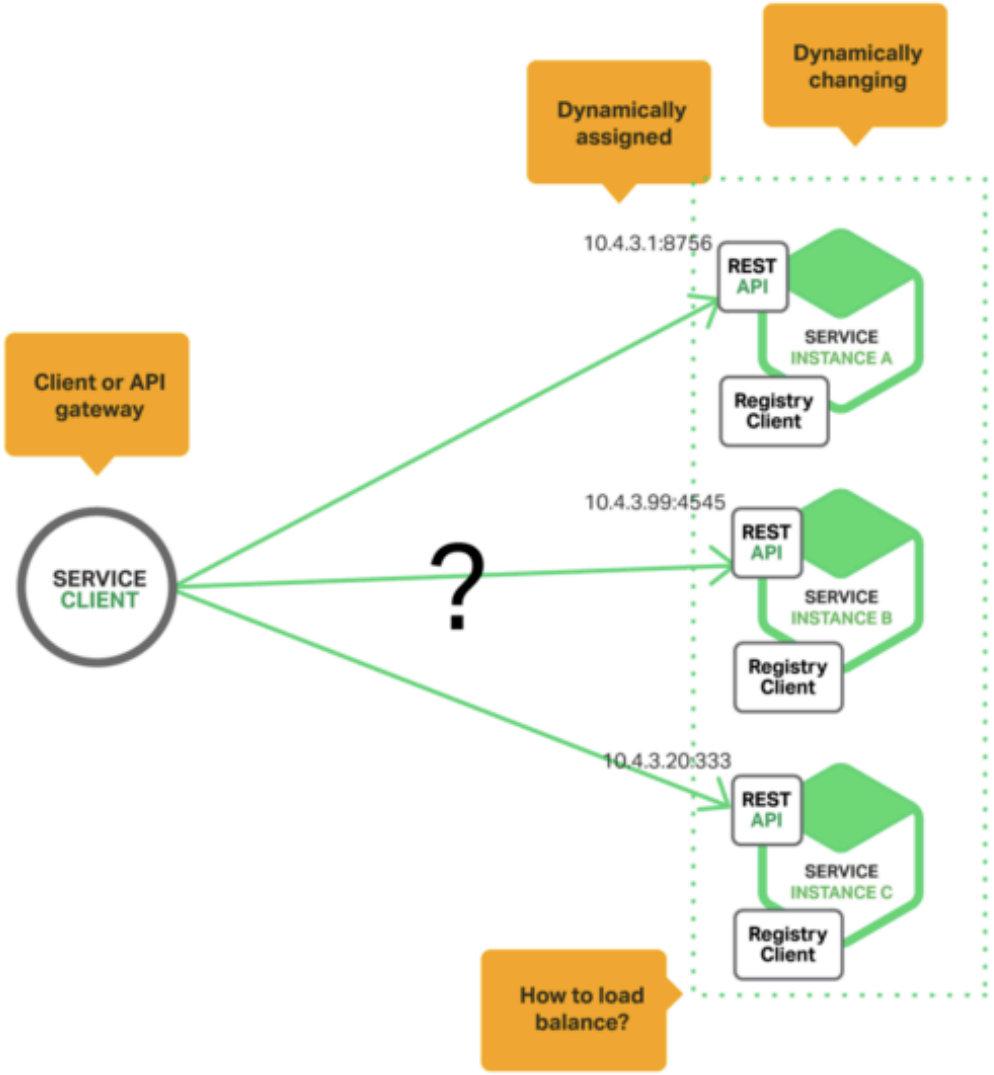
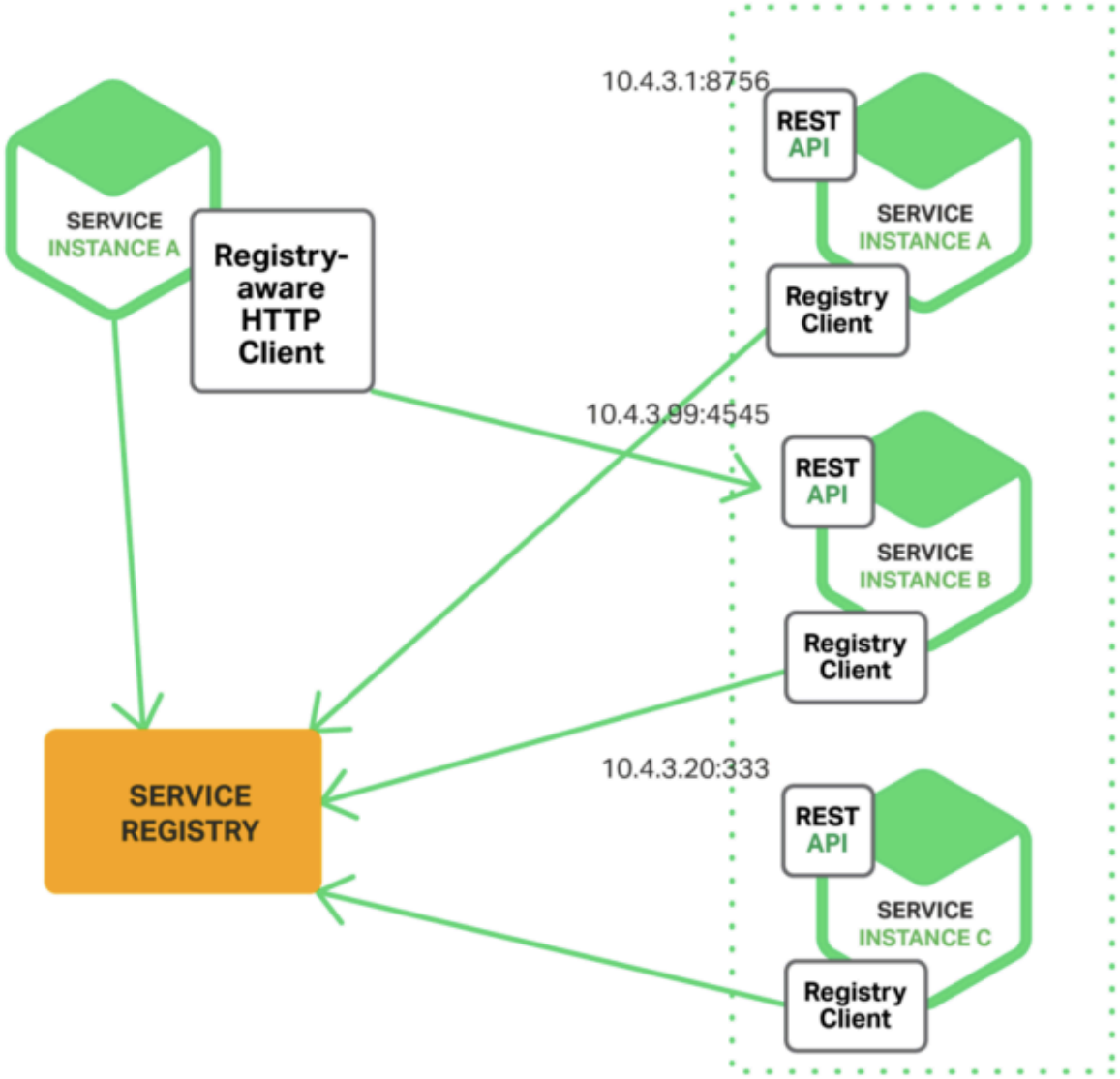


Figure 3: Service boundaries reinforced by team boundaries

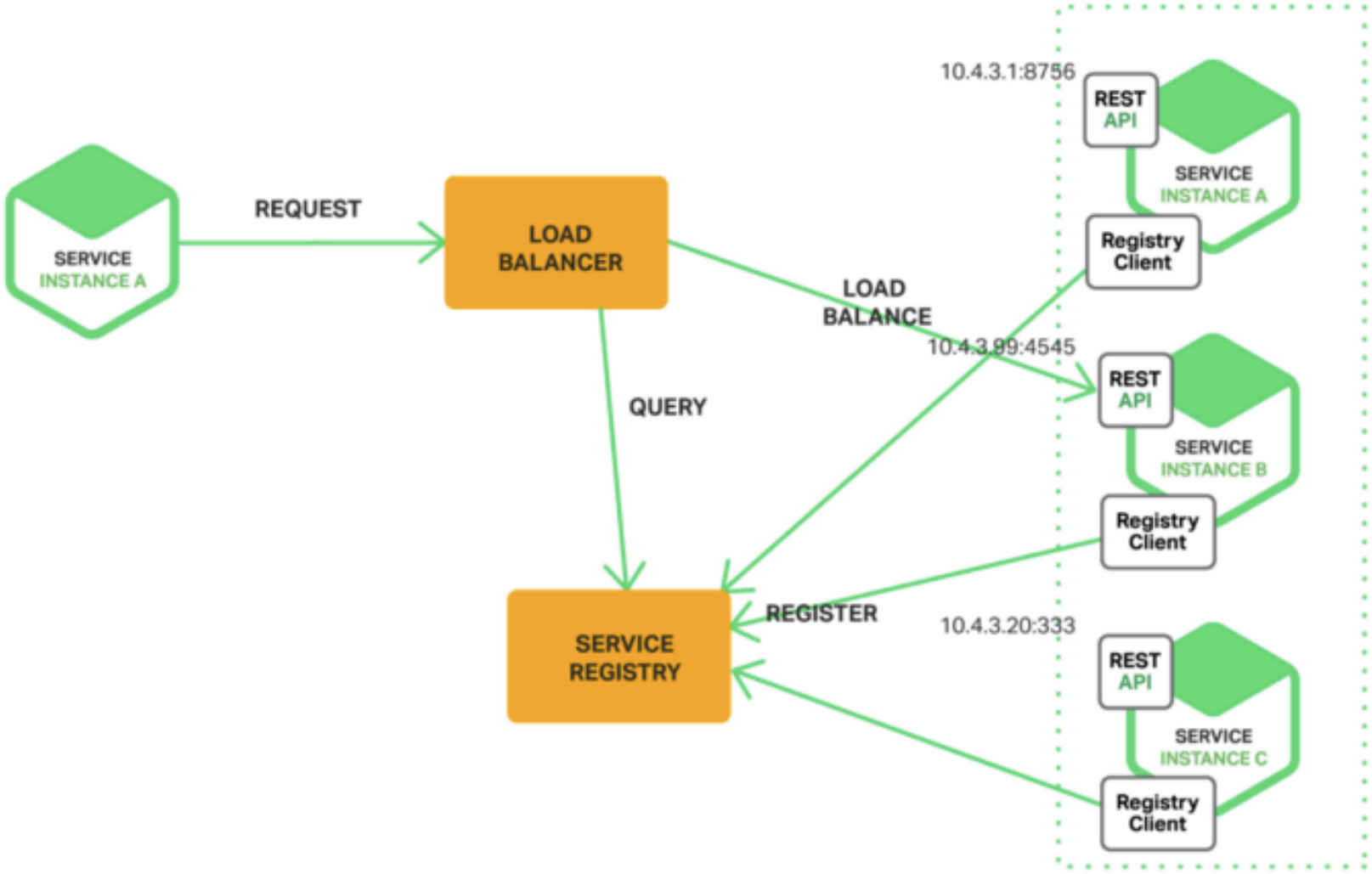
Service discovery



Client-side discovery



Server-side discovery



Smart client vs. API gateway

- Smart client
  - Better performance*
- API gateway
  - Better governance

Service governance

- Authorization
- Logging
- Change management
- Central configuration
- Scale in and scale out
- Overload protection
- Service degradation
- Monitor performance and health
- Manage how and by whom services are used
- Topology discovery and failure recovery
- …

Overload protection

- Resources
  - Socket connections
  - Disk I/O, CPU, Memory

Overload protection

- N = Alert threshold
- Important things
  - Keep limit to N*2, not N
  - Kill slow requests (SLA)

Service degradation

- Degrade service automatically to protect important requests
  - Drop unimportant requests
  - Separate resources for important requests
    - eg. Protect read requests of storage

Topology discovery & failure recovery

- Automatically discover cluster topology
- Find root cause of failure
- Recover service as fast as possible

We’re hiring

- Service governance architect/engineer
  - Both in Beijing and Shanghai

Q & A

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