CNA Patterns – part one

Session 06

Patterns on-deck

- Consistent and Distributed Configuration
- Service Registration and Discovery

Writing a single service is NICE…

But no Microservice is an Island

Challenges of Distributed systems

- Configuration Management
- Service Registration & Discovery
- Routing & Load Balancing
- Fault Tolerance (Circuit Breakers!)
- Monitoring
- Concurrent API Aggregation & Transformation

NETFLIX

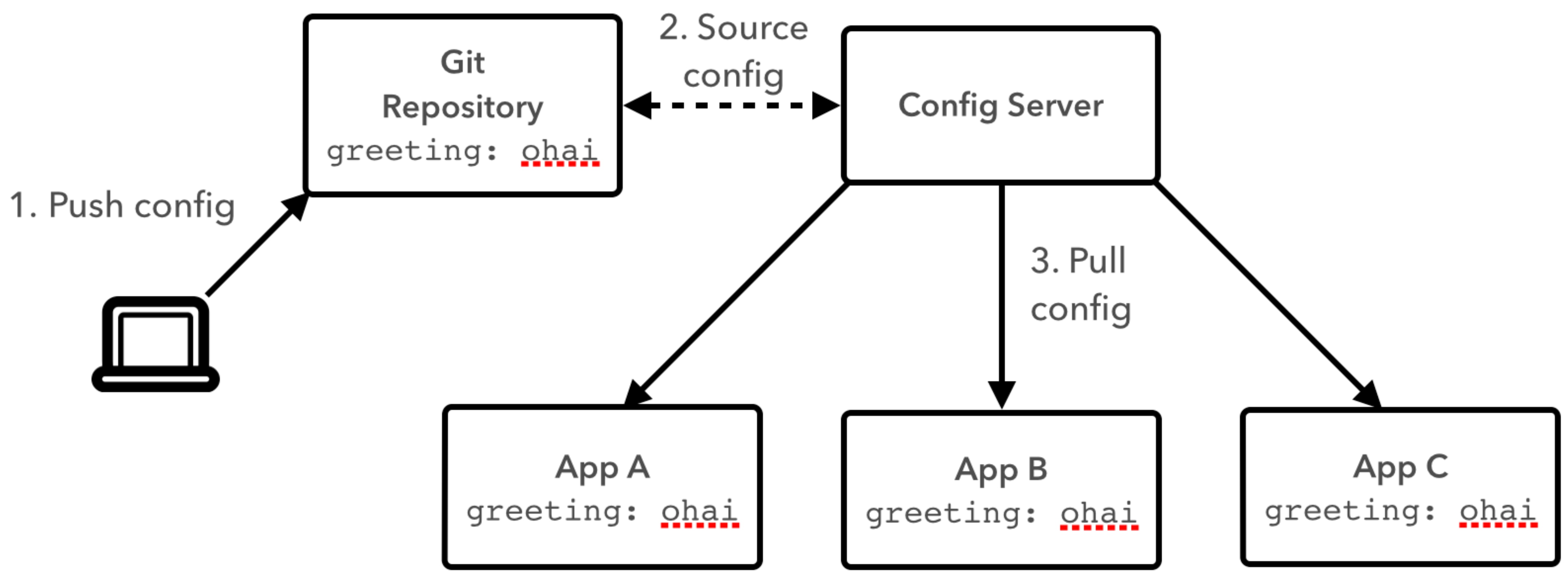
OSS

Spring Cloud
Distributed Patterns

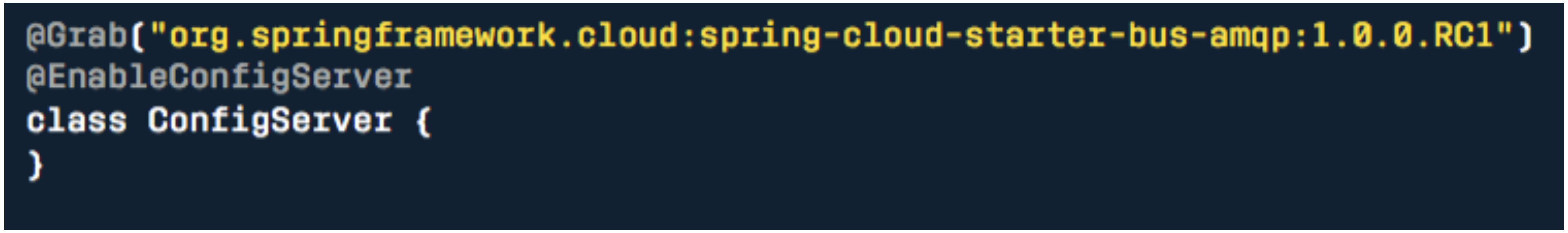
Configuration Management

Distributed?

Config Server

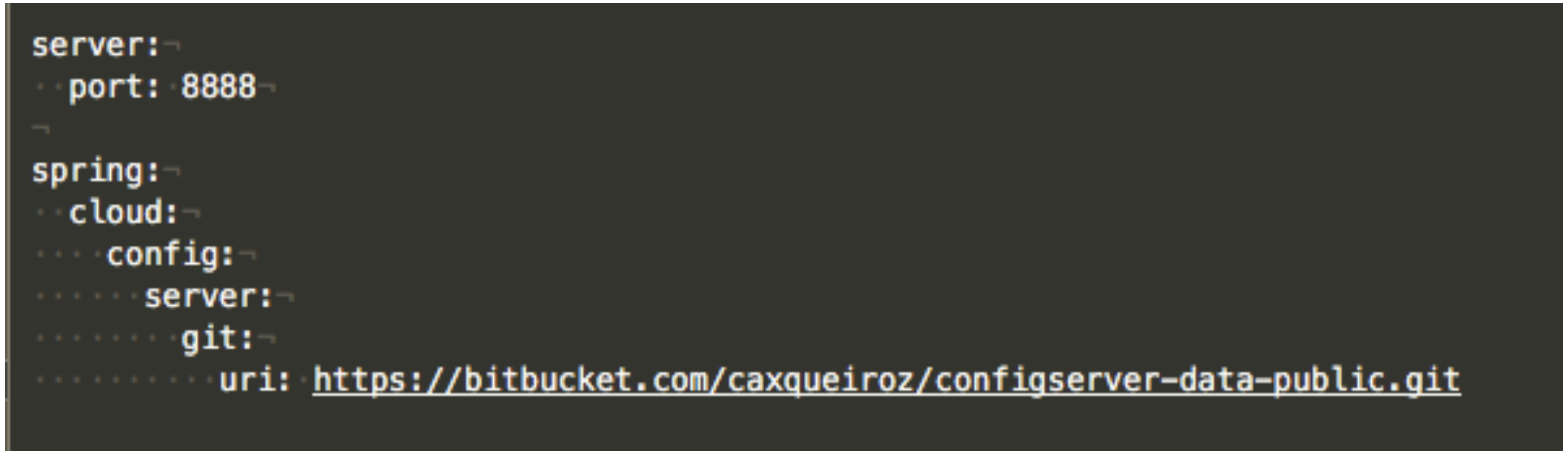

1. Push config
Git Repository
greeting: ohai
2. Source config
Config Server
3. Pull config
App A
greeting: ohai
App B
greeting: ohai
App C
greeting: ohai

Config Server (app.groovy)



```
@Grab("org.springframework.cloud:spring-cloud-starter-bus-amqp:1.0.0.RC1")
@EnableConfigServer
class ConfigServer {
}
```

Config server – application.yml

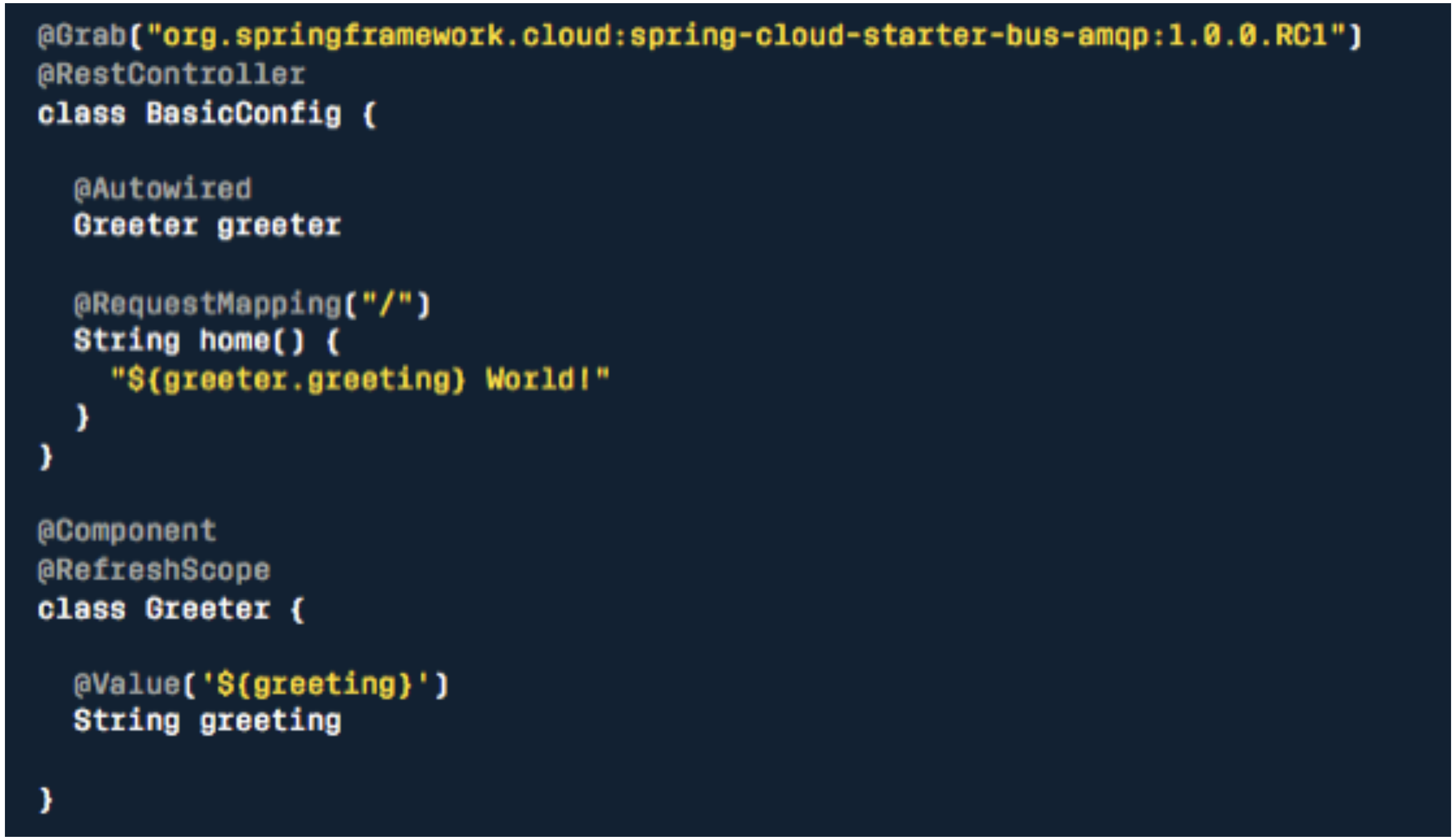


```yaml
server:
  port: 8888

spring:
  cloud:
    config:
      server:
        git:
          uri: https://bitbucket.com/caxqueiroz/configserver-data-public.git
```

https://bitbucket.org/caxqueiroz/configserver-data-public/src/798c0a25b54fbc597ca417211d99a5a5433c4016/demo.yml

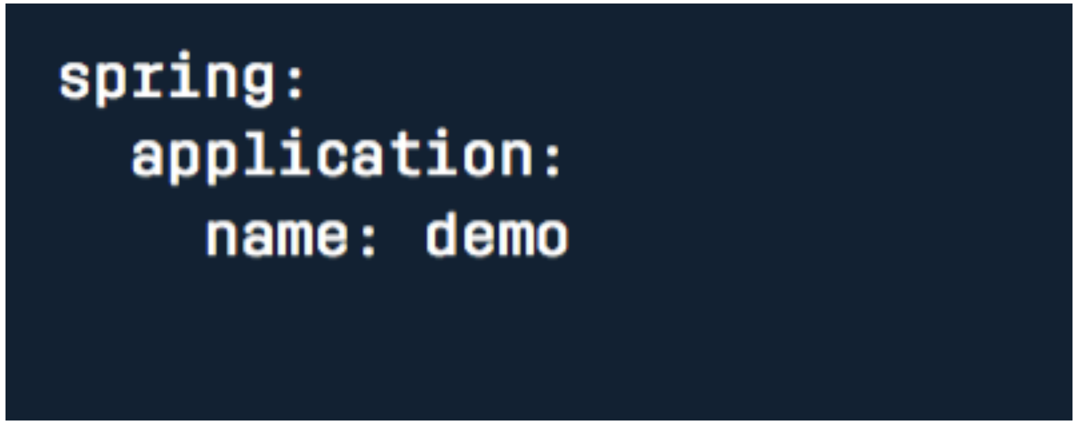
Greeting: Guten Tag

Config client (app.groovy)



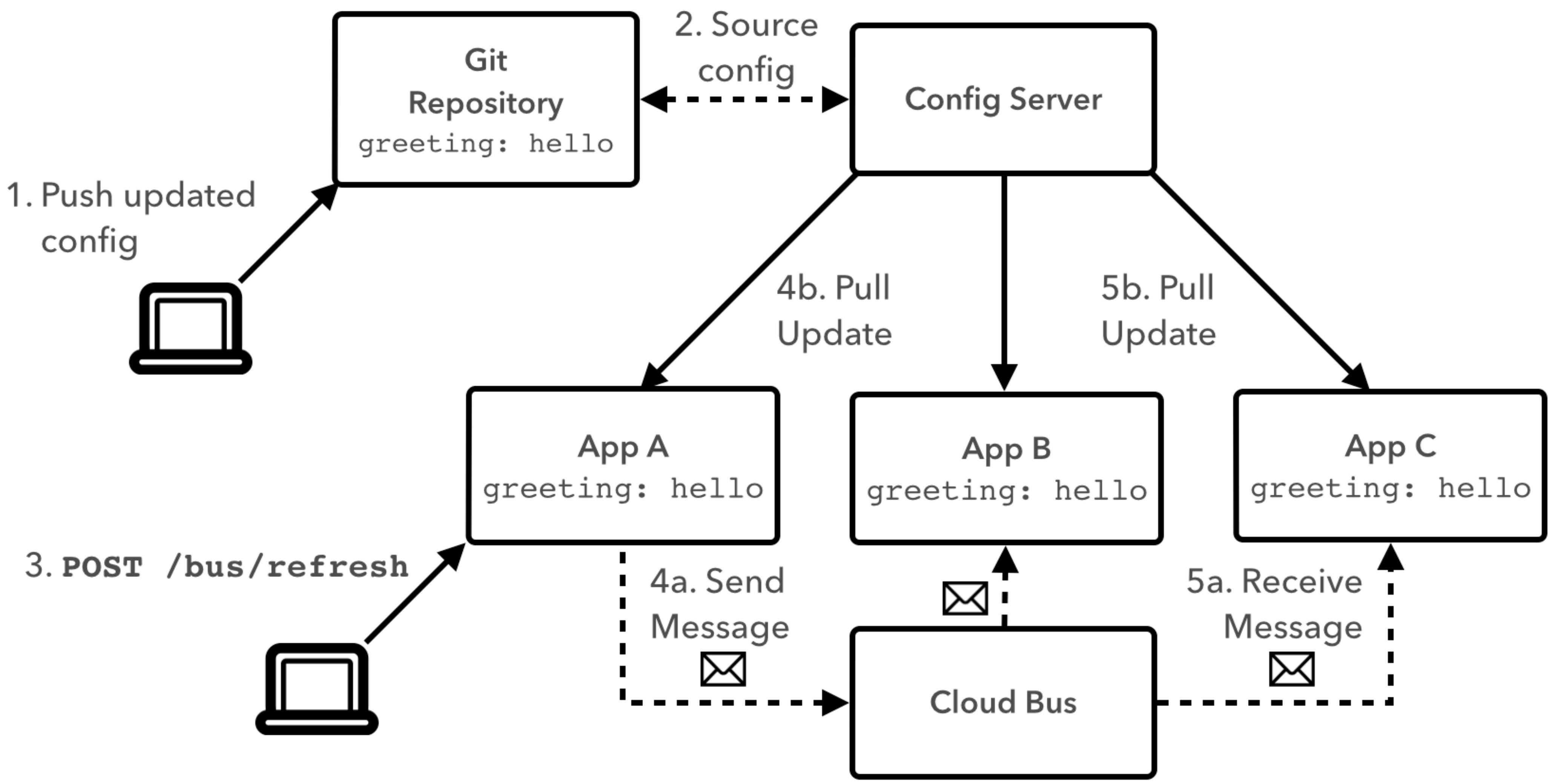
```groovy
@Grab("org.springframework.cloud:spring-cloud-starter-bus-amqp:1.0.0.RC1")
@RestController
class BasicConfig {

  @Autowired
  Greeter greeter

  @RequestMapping("/")
  String home() {
    "${greeter.greeting} World!"
  }
}

@Component
@RefreshScope
class Greeter {

  @Value('${greeting}')
  String greeting

}
```

Config client (bootstrap.yml)

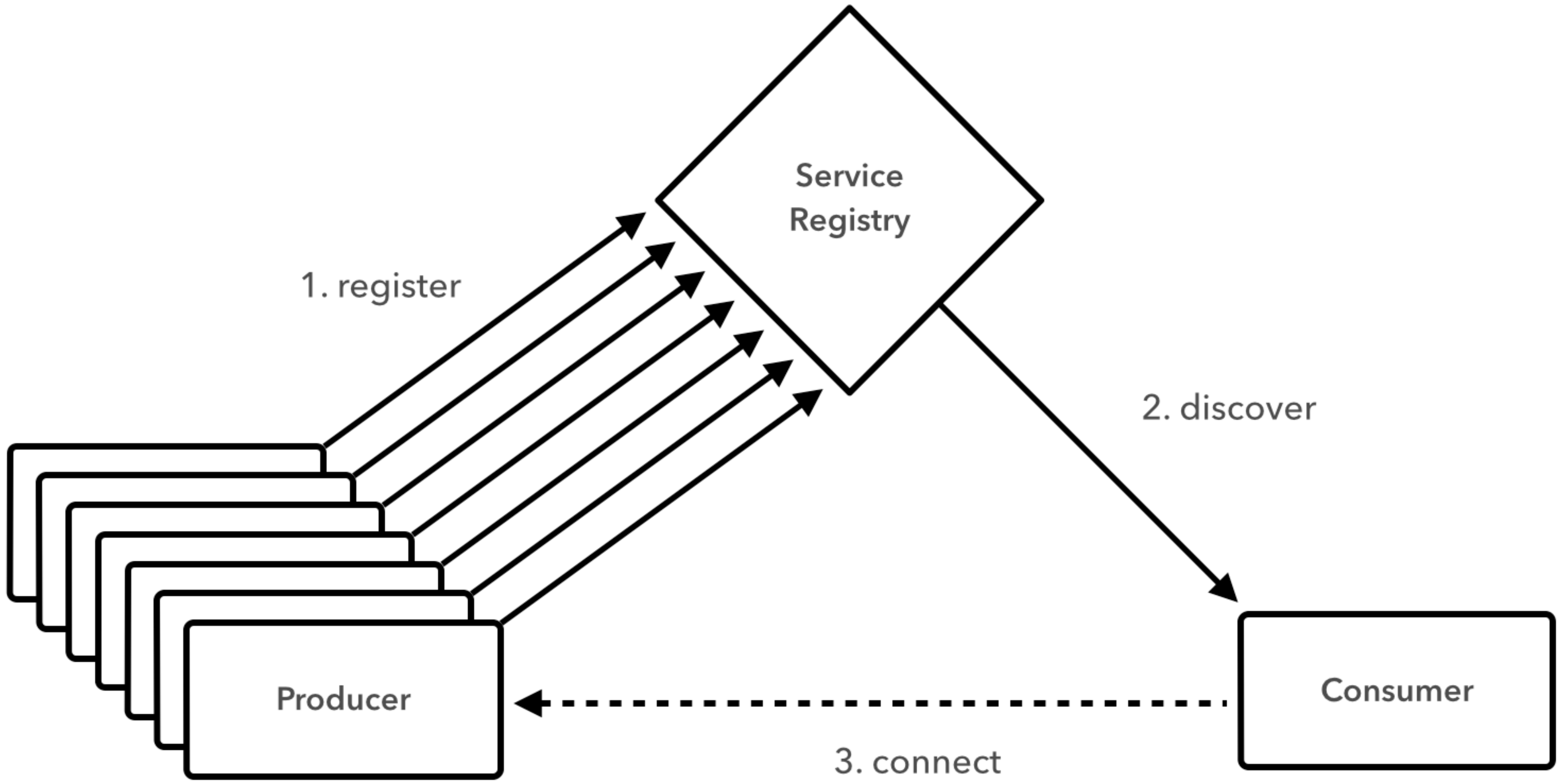


```yaml
spring:
  application:
    name: demo
```

Cloud Bus


Git Repository
greeting: hello
2. Source config
Config Server
1. Push updated config
4b. Pull Update
5b. Pull Update
App A
greeting: hello
App B
greeting: hello
App C
greeting: hello
3. POST /bus/refresh
4a. Send Message
5a. Receive Message
Cloud Bus

Service Registration & Discovery

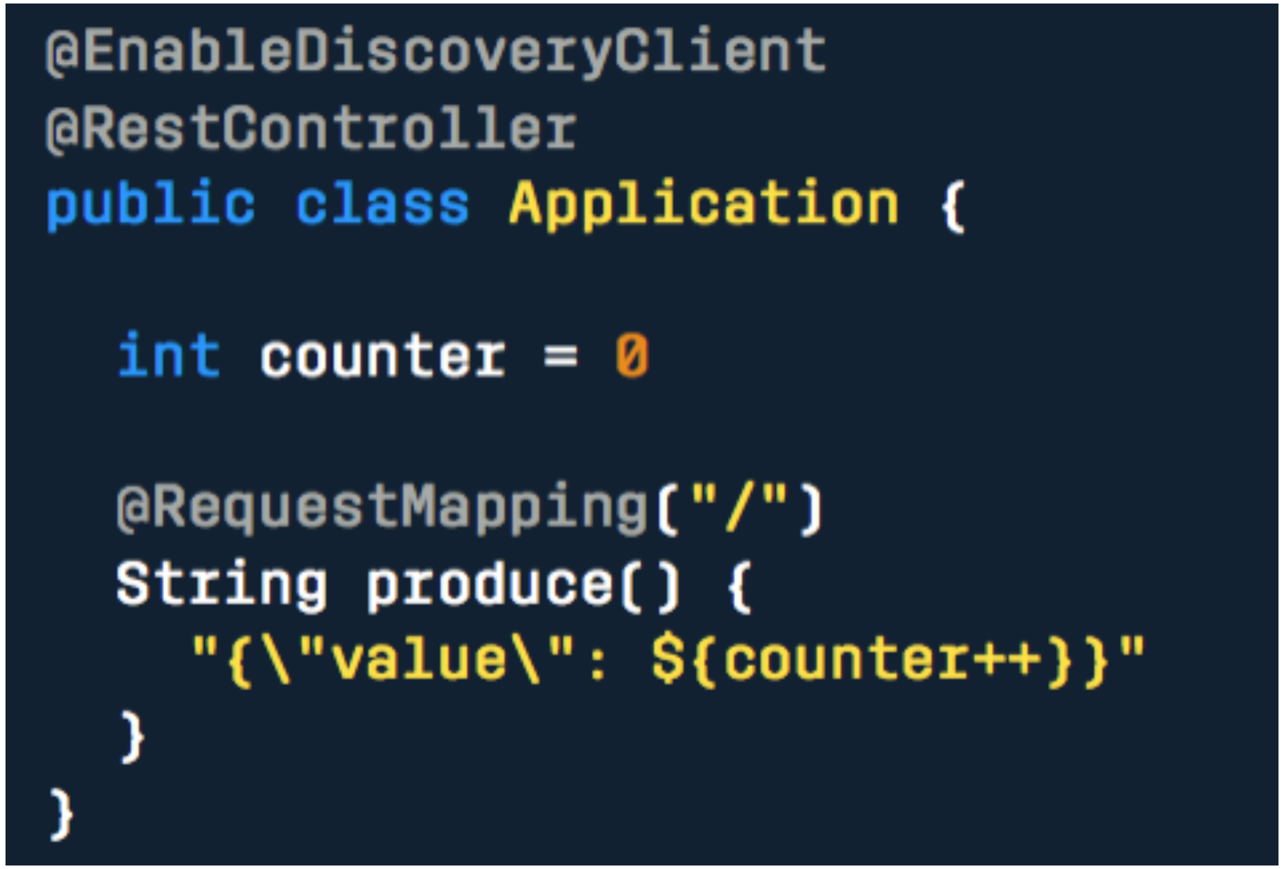

Service Registry
1. register
2. discover
Producer
Consumer
3. connect

Eureka

Eureka Service Registry

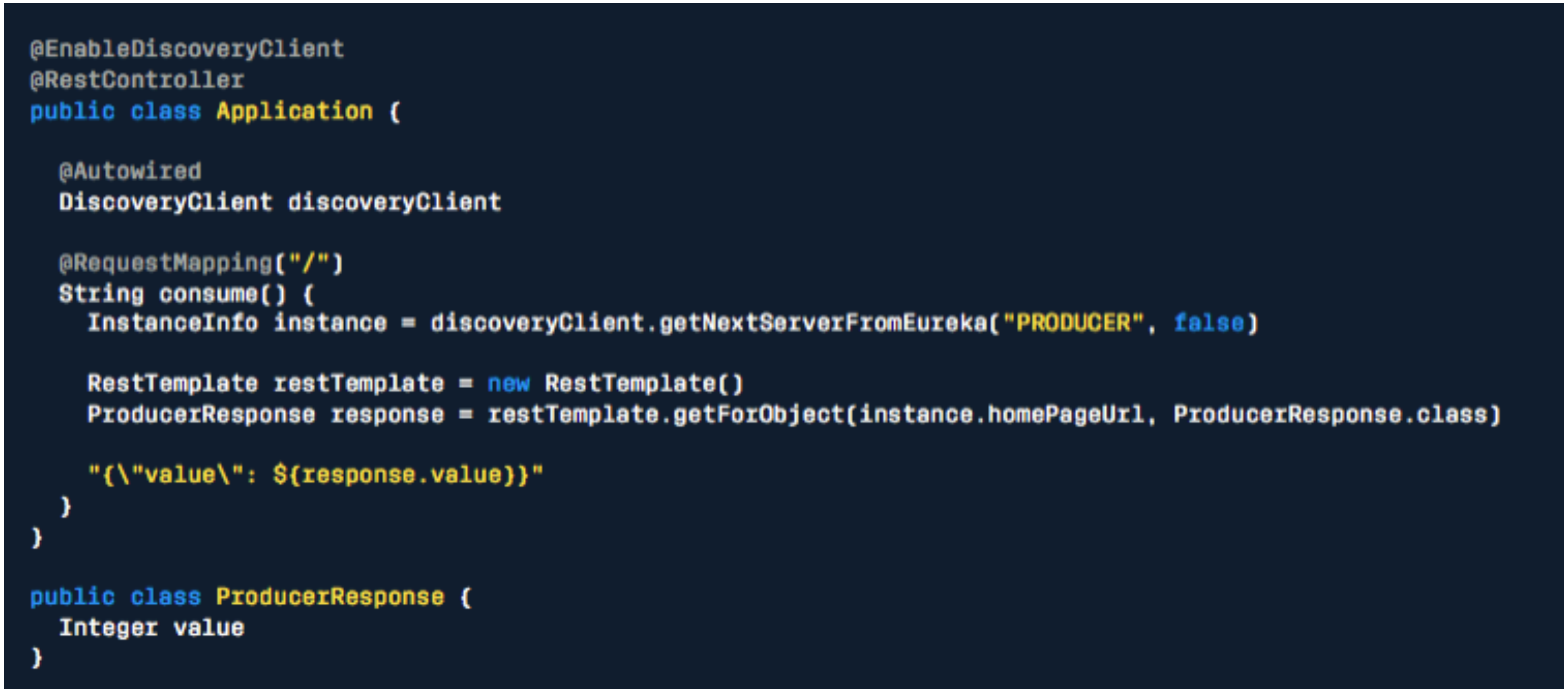
```
@GrabExclude("ch.qos.logback:logback-classic")
@EnableEurekaServer
class Eureka {
}
```

Producer



```
@EnableDiscoveryClient
@RestController
public class Application {

  int counter = 0

  @RequestMapping("/")
  String produce() {
    "{\"value\": ${counter++}}"
  }
}
```

Consumer



```
@EnableDiscoveryClient
@RestController
public class Application {

  @Autowired
  DiscoveryClient discoveryClient

  @RequestMapping("/")
  String consume() {
    InstanceInfo instance = discoveryClient.getNextServerFromEureka("PRODUCER", false)

    RestTemplate restTemplate = new RestTemplate()
    ProducerResponse response = restTemplate.getForObject(instance.homePageUrl, ProducerResponse.class)

    "{\"value\": ${response.value}}"
  }
}

public class ProducerResponse {
  Integer value
}
```

Labs!!