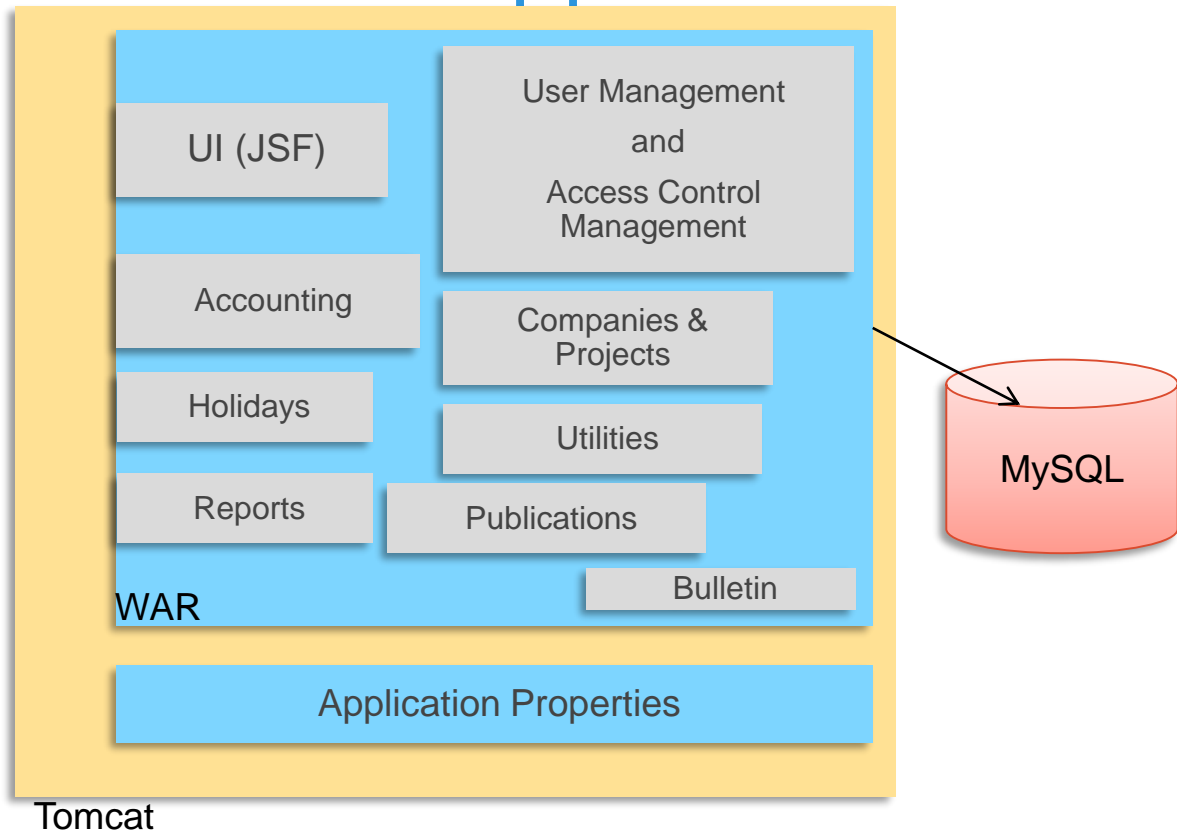


Monolith To Microservices Phase II



Monolithic application architecture

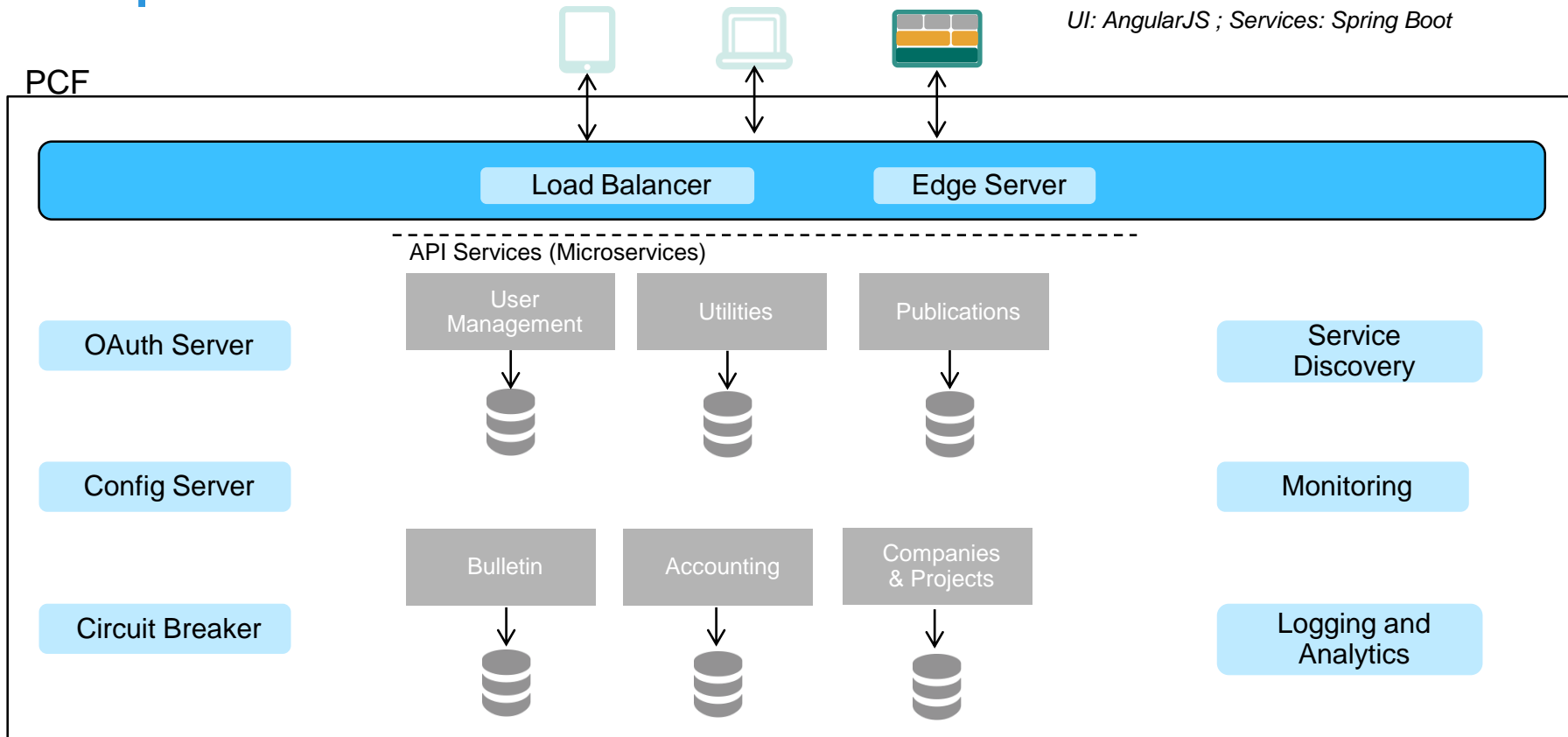


Disadvantages:

- Overloaded web container
- Difficult in scaling the app
- Hard to maintain
- Tightly coupled features
- Overloaded database
- CI/CD is difficult
- Single point of failure

Proposed Microservice architecture

UI: AngularJS ; Services: Spring Boot

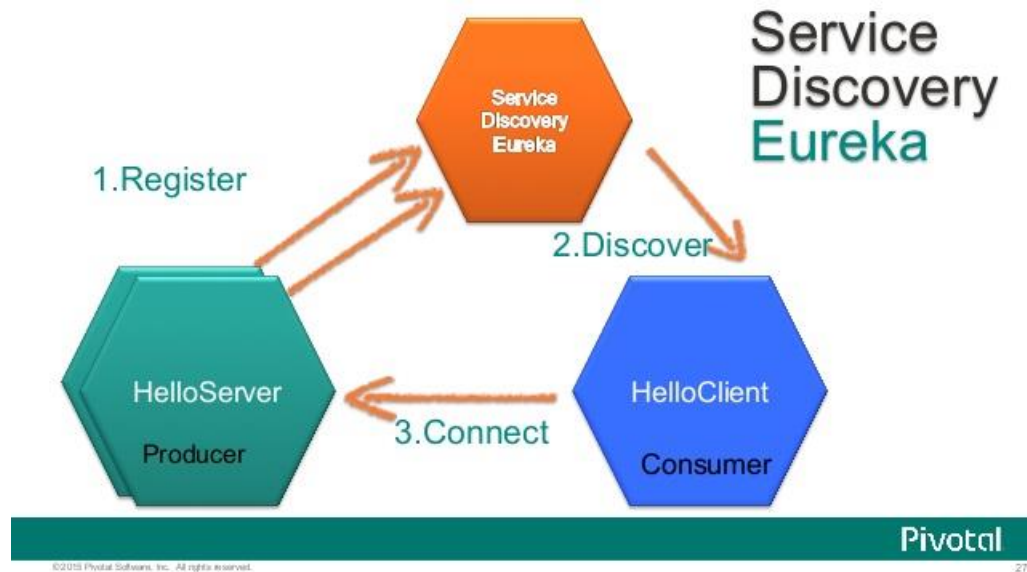


12 Factors

The 12 Factors

- Codebase ✓
- Dependencies ✓
- Config ✓
- Backing services ✓
- Build, release, run ✓
- Processes
- Port binding ✓
- Concurrency
- Disposability
- Dev/prod parity ✓
- Logs ✓
- Admin processes

Discovery Service - Eureka



Edge Service - Zuul

Capabilities:

1. Routing
2. Security
3. Filtering

Edge Service - Zuul

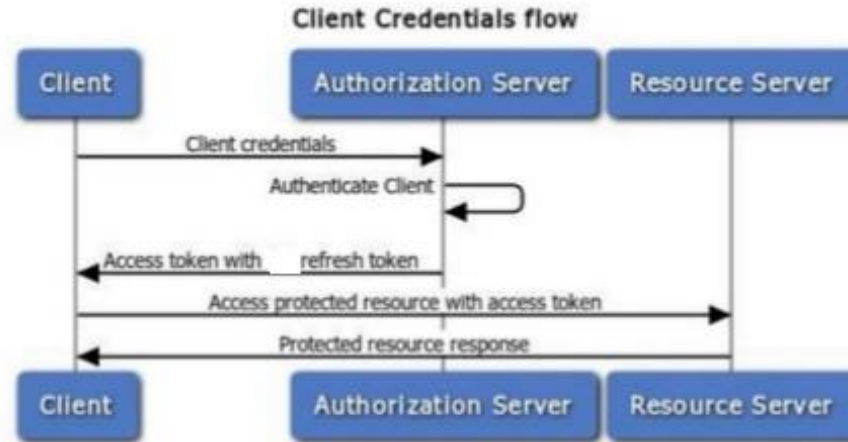
The screenshot displays the Spring Tool Suite interface with the `application.yml` file open. The file is configured for a Zuul proxy service. The `zuul:` section defines the following:

- routes:**
 - tnt-publications:**
 - `path: /**/publish/**`
 - `strip-prefix: false`
 - `service-id: tnt-publications`
 - tnt-bulletin:**
 - `path: /**/bulletin/**`
 - `strip-prefix: false`
 - `service-id: tnt-bulletin`
 - resource-server:**
 - `path: /**/products/**`
 - `strip-prefix: false`
 - `service-id: resource-server`
 - tnt-master-tables:**
 - `path: /**/mastertables/**`
 - `strip-prefix: false`
 - `service-id: tnt-master-tables`
- user:**
 - `path: /user/**`
 - `url: http://tnt-auth-server-oauth.cfapps.io/uaa/user`
- tnt-utilities:**
 - `path: /**/utilities/**`
 - `strip-prefix: false`
 - `service-id: tnt-utilities`

The Package Explorer on the left shows the project structure for `edge-server`, including `src/main/java` (containing `EdgeServerApplication.java` and `MyCorsFilter.java`) and `src/main/resources` (containing `application.yml` and `bootstrap.yml`). The bottom status bar indicates the workspace is 40% full.

Security - OAuth Enabled – Spring Security

Client credentials grant flow



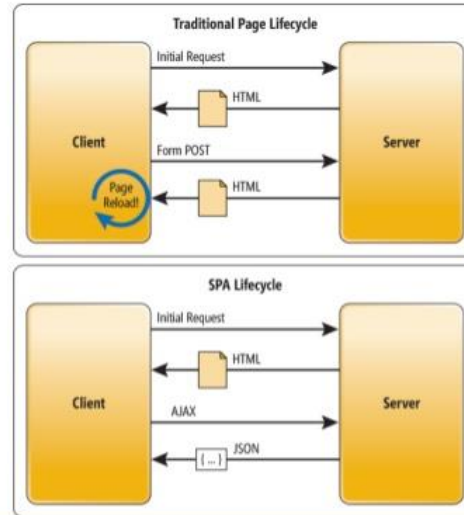
Log Correlation - Spring Cloud Sleuth

Capabilities:

1. Adds trace ids (per request) and span ids (component based) to the logs
2. Ability to provide sampling rate

User Interface – Angular JS

SPA – SINGLE PAGE APPLICATION



SINGLE PAGE APPLICATION

User Interface – Angular JS

Advantages of Angular JS:

- 1. Two-way data-binding**
- 2. Directives**
- 3. Client side MVC framework**
- 4. Dependency Injection**
- 5. Supports consistent UX on various devices (mobile, tablets)**

Challenges faced

Challenge	How did we resolve it
Angular 2 library file inclusion (Lack of CDNs)	By packaging the dependencies into the Jar.
CORS issues while accessing services from UI	By applying filters on the Edge Server (Zuul)
HTTP 403 (Forbidden) error while performing OAuth token validation from Microservices	Disable CSRF security check on OAuth server

Next Steps

1. Role based authentication by using JWT Token
2. Data migration
3. Implement metering of services for Cloud based pay per use model
4. Explore and apply modern Application development techniques
 - a. Web sockets
 - b. Reactive Programming (Explore Akka streams, Reactive Java)
 - c. Serverless computing

THANK YOU

The Dell EMC logo is positioned in the bottom right corner of the image. It features the word "DELL" in a bold, sans-serif font, followed by "EMC" in a similar font. A stylized, white, geometric shape, resembling a triangle or a stylized 'E', is placed between "DELL" and "EMC". The background of the entire image is a dark, high-contrast photograph of a city skyline at night, with numerous skyscrapers and buildings illuminated by their lights. The lights create a bokeh effect in the foreground, adding depth to the image.

DELL EMC