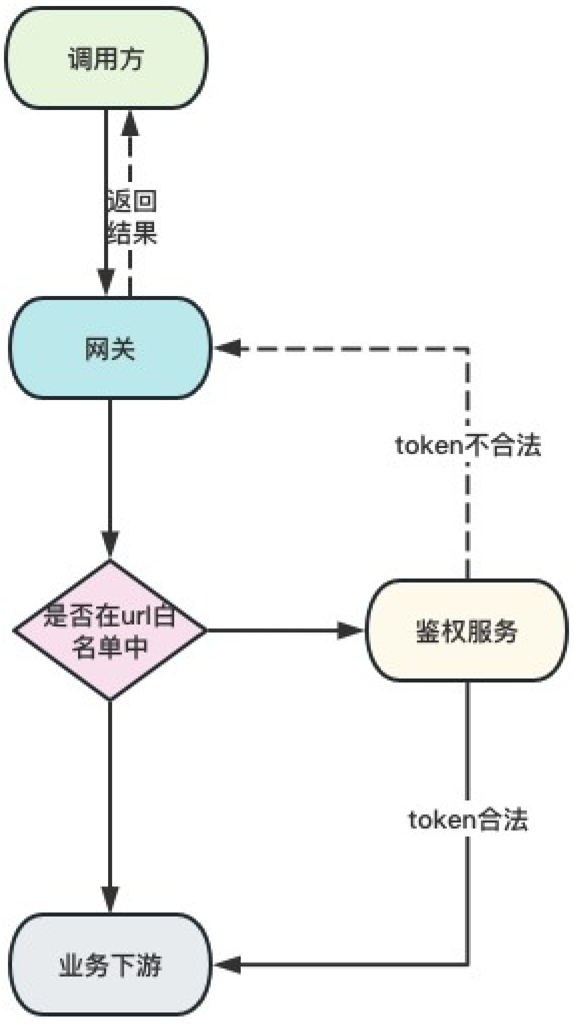
6-22 | 网关服务引入鉴权+白名单功能

前边我们已经将网关组件给引入了，同时也讲解了账户服务的鉴权功能的实现。那么本章节我们将会讲解如何在网关的过滤器里面去引入鉴权功能。

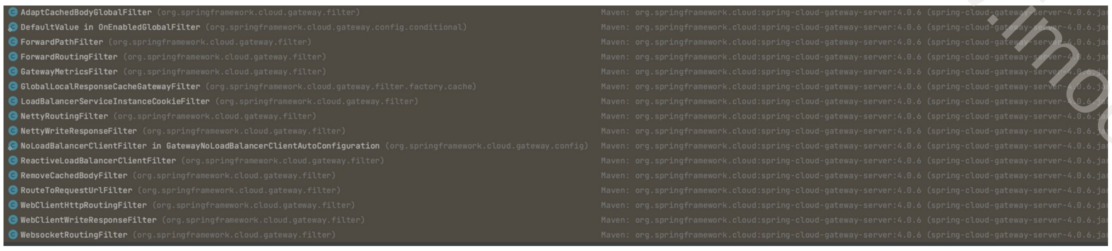
这里是我们请求的链路图：



如何在网关层加入校验

org.springframework.cloud.gateway.filter.GlobalFilter

Gateway 网关默认有一套过滤链的设计思路，所有的请求过滤器都需要实现这个 GlobalFilter 接口，因此我们可以自定义一个 GlobalFilter 接口，然后在里面进行鉴权判断的逻辑



```
AdaptCachedBodyGlobalFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
DefaultValue in OnEnabledGlobalFilter (org.springframework.cloud.gateway.config.conditional)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
ForwardPathFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
ForwardRoutingFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
GatewayMetricsFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
GlobalLocalResponseCacheGatewayFilter (org.springframework.cloud.gateway.filter.factory.cache)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
LoadBalancerServiceInstanceCookieFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
NettyRoutingFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
NettyWriteResponseFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
NoLoadBalancerClientFilter in GatewayNoLoadBalancerClientAutoConfiguration (org.springframework.cloud.gateway.config)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
ReactiveLoadBalancerClientFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
RemoveCachedBodyFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
RouteToRequestUrlFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
WebClientHttpRoutingFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
WebClientWriteResponseFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
WebsocketRoutingFilter (org.springframework.cloud.gateway.filter)    Maven: org.springframework.cloud:spring-cloud-gateway-server:4.0.6 (spring-cloud-gateway-server-4.0.6.ja
```

```java
Java
public interface GlobalFilter {

   /**
    * Process the Web request and (optionally) delegate to the
next {@code GatewayFilter}
    * through the given {@link GatewayFilterChain}.
    * @param exchange the current server exchange
    * @param chain provides a way to delegate to the next filter
    * @return {@code Mono<Void>} to indicate when request
processing is complete
    */
   Mono<Void> filter(ServerWebExchange exchange,
GatewayFilterChain chain);

}
```

代码实现

按照上边的思路，我们可以这么来设计和实现：

```java
Java
package org.qiyu.live.gateway.filter;

import jakarta.annotation.Resource;
import org.apache.dubbo.config.annotation.DubboReference;
import org.qiyu.live.account.interfaces.IAccountTokenRPC;
import org.qiyu.live.common.interfaces.enums.GatewayHeaderEnum;
import
org.qiyu.live.gateway.properties.GatewayApplicationProperties;
import
org.springframework.cloud.gateway.filter.GatewayFilterChain;
import org.springframework.cloud.gateway.filter.GlobalFilter;
import org.springframework.core.Ordered;
import org.springframework.http.HttpCookie;
import org.springframework.http.server.ServletServerHttpRequest;
import org.springframework.http.server.reactive.ServerHttpRequest;
import org.springframework.stereotype.Component;
import org.springframework.util.CollectionUtils;
import org.springframework.util.StringUtils;
import org.springframework.web.server.ServerWebExchange;
import reactor.core.publisher.Mono;

import java.net.URI;
import java.util.List;

/**
 * @Author idea
 * @Date: Created in 10:57 2023/6/20
 * @Description
 */
@Component
public class AccountCheckFilter implements GlobalFilter, Ordered {

    @DubboReference
    private IAccountTokenRPC accountTokenRPC;
    @Resource
    private GatewayApplicationProperties
gatewayApplicationProperties;

    @Override
    public Mono<Void> filter(ServerWebExchange exchange,
GatewayFilterChain chain) {
        ServerHttpRequest request = exchange.getRequest();
        URI uri = request.getURI();
        String urlPath = uri.getPath();
        if (StringUtils.isEmpty(urlPath)) {
            return Mono.empty();
        }
        List<String> filterUrlList =
gatewayApplicationProperties.getNotCheckUrlList();
        for (String urlItem : filterUrlList) {
            if (urlPath.startsWith(urlItem)) {
                System.out.println("满足匹配规则");
                return chain.filter(exchange);
            }
        }
        if (!CollectionUtils.isEmpty(filterUrlList) &&
filterUrlList.contains(urlPath)) {
```

```
            System.out.println("可以不用进行token校验");
            return chain.filter(exchange);
        }
        System.out.println("网关请求处理");
        List<HttpCookie> httpCookieList =
request.getCookies().get("qytk");
        if (CollectionUtils.isEmpty(httpCookieList)) {
            //禁止访问
            System.err.println("error visit");
            return Mono.empty();
        }
        HttpCookie httpCookie = httpCookieList.get(0);
        if (httpCookie == null) {
            System.err.println("error visit");
            return Mono.empty();
        }
        Long userId =
accountTokenRPC.getUserIdByToken(httpCookie.getValue());
        if (userId == null) {
            System.out.println("执行不通过，无法请求");
            return Mono.empty();
        }
        ServerHttpRequest.Builder builder = request.mutate();
        //把userId传递给到下游去
        builder.header(GatewayHeaderEnum.USER_LOGIN_ID.getName(),
String.valueOf(userId));
        return
chain.filter(exchange.mutate().request(builder.build()).build());
    }

    @Override
    public int getOrder() {
        return 0;
    }
}
```

同时，我们可以设置一个白名单 url 的配置类；

```
Java
package org.qiyu.live.gateway.properties;

import
org.springframework.boot.context.properties.ConfigurationPropertie
s;
```

```
import
org.springframework.cloud.context.config.annotation.RefreshScope;
import org.springframework.context.annotation.Configuration;

import java.util.List;

/**
 * @Author idea
 * @Date: Created in 11:33 2023/6/20
 * @Description
 */
@ConfigurationProperties(prefix = "qiyu.gateway")
@Configuration
@RefreshScope
public class GatewayApplicationProperties {

    private List<String> notCheckUrlList;

    public List<String> getNotCheckUrlList() {
        return notCheckUrlList;
    }

    public void setNotCheckUrlList(List<String> notCheckUrlList) {
        this.notCheckUrlList = notCheckUrlList;
    }

    @Override
    public String toString() {
        return "GatewayApplicationProperties{" +
                "notCheckUrlList=" + notCheckUrlList +
                '}';
    }
}
```

白名单配置可以在 nacos 中进行实现：

```
Java
spring:
  cloud:
    gateway:
      discovery:
        locator:
          enabled: true
      routes:
        - id: qiyu-live-api
          uri: lb://qiyu-live-api
          predicates:
            - Path=/live/api/**

dubbo:
  application:
    name: qiyu-live-gateway
    qos-enable: false
  registry:
    address: nacos://qiyu.nacos.com:8848?namespace=qiyu-live-
test&&username=qiyu_rw&&password=qiyu1867122

logging:
 level:
   org.springframework.cloud.gateway: INFO
   reactor.netty.http.client: INFO

qiyu:
  gateway:
    notCheckUrlList:
      - /live/api/userLogin/test
```

qiyu-live-framework-web-starter 模块的开发

定义一个 web 请求上下文：

```Java
package org.qiyu.live.web.starter;


import java.util.HashMap;
import java.util.Map;

/**
 * 旗鱼直播 用户信息拦截器
 *
 * @Author idea
 * @Date: Created in 08:58 2023/6/25
 * @Description
 */
public class QiyuRequestContext {
    private static final ThreadLocal<Map<Object, Object>>
resources = new InheritableThreadLocalMap<>();

    public static void put(Object key, Object value) {
        if (key == null) {
            throw new IllegalArgumentException("key cannot be
null");
        }
        if (value == null) {
            resources.get().remove(key);
            return;
        }
        resources.get().put(key, value);
    }

    public static Long getUserId() {
        Object result = get(RequestConstants.QIYU_USER_ID);
        return result == null ? null :
Long.valueOf(String.valueOf(result));
    }

    private static Object get(Object key) {
        if (key == null) {
            throw new IllegalArgumentException("key cannot be
null");
        }
        return resources.get().get(key);
    }

    public static void clear() {
        resources.remove();
    }

    private static final class InheritableThreadLocalMap<T extends
Map<Object, Object>> extends InheritableThreadLocal<Map<Object,
Object>> {

        @Override
        protected Map<Object, Object> initialValue() {
            return new HashMap();
        }

        @Override
        protected Map<Object, Object> childValue(Map<Object,
Object> parentValue) {
            if (parentValue != null) {
                return (Map<Object, Object>) ((HashMap<Object,
Object>) parentValue).clone();
            } else {
                return null;
            }
        }
    }

}
```

当每次有外界请求的时候，都可以将用户 id 往线程本地变量中进行保存：

```
Java
package org.qiyu.live.web.starter;

import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import org.qiyu.live.common.interfaces.enums.GatewayHeaderEnum;
import org.springframework.util.StringUtils;
import org.springframework.web.servlet.HandlerInterceptor;
import org.springframework.web.servlet.ModelAndView;

/**
 * 旗鱼直播 用户信息拦截器
 *
 * @Author idea
 * @Date: Created in 08:48 2023/6/25
 * @Description
 */
public class QiyuUserInfoInterceptor implements HandlerInterceptor
{

    //所有 web 请求来到这里的时候，都要被拦截
    @Override
    public boolean preHandle(HttpServletRequest request,
HttpServletResponse response, Object handler) throws Exception {
        String userIdStr =
request.getHeader(GatewayHeaderEnum.USER_LOGIN_ID.getName());
        //可能是走了接口白名单，这里不做取数判断
        if (StringUtils.isEmpty(userIdStr)) {
            return true;
        }
        Long userId = Long.valueOf(userIdStr);
        //把 userId 放入线程本地变量中
        QiyuRequestContext.put(RequestConstants.QIYU_USER_ID,
userId);
        return HandlerInterceptor.super.preHandle(request,
response, handler);
    }

    @Override
    public void postHandle(HttpServletRequest request,
HttpServletResponse response, Object handler, ModelAndView
modelAndView) throws Exception {
        QiyuRequestContext.clear();
        HandlerInterceptor.super.postHandle(request, response,
handler, modelAndView);
    }
}
```

最后要记得将相关配置装配到 web 上下文中：

```
Java
package org.qiyu.live.web.starter;

import org.springframework.context.annotation.Bean;
import org.springframework.context.annotation.Configuration;
import
org.springframework.web.servlet.config.annotation.InterceptorRegis
try;
import
org.springframework.web.servlet.config.annotation.WebMvcConfigurer
;

@Configuration
public class WebConfig implements WebMvcConfigurer {

    @Bean
    public QiyuUserInfoInterceptor qiyuUserInfoInterceptor() {
        return new QiyuUserInfoInterceptor();
    }

    @Override
    public void addInterceptors(InterceptorRegistry registry) {

registry.addInterceptor(qiyuUserInfoInterceptor()).addPathPatterns
("/**").excludePathPatterns("/error");
    }

}
```

相关请求常量：

```Java
package org.qiyu.live.web.starter;

/**
 * @Author linhao
 * @Date created in 8:19 上午 2021/9/6
 */
public enum RequestConstants {

    QIYU_USER_ID,
}
```

```Java
package org.qiyu.live.common.interfaces.enums;

/**
 * 网关服务传递给下游的 header 枚举
 *
 * @Author idea
 * @Date: Created in 08:44 2023/6/25
 * @Description
 */
public enum GatewayHeaderEnum {

    USER_LOGIN_ID("用户 id","qiyu_gh_user_id");

    String desc;
    String name;

    GatewayHeaderEnum(String desc, String name) {
        this.desc = desc;
        this.name = name;
    }

    public String getDesc() {
        return desc;
    }

    public String getName() {
        return name;
    }
}
```

注意点

补全 gateway 网关中的 header 问题，否则 mono.empty 方法返回的时候会有跨域异常

```Java
ServerHttpResponse response = exchange.getResponse();
HttpHeaders headers = response.getHeaders();
headers.add(HttpHeaders.ACCESS_CONTROL_ALLOW_ORIGIN,
"http://web.qiyu.live.com:5500");
headers.add(HttpHeaders.ACCESS_CONTROL_ALLOW_METHODS, "POST,
GET");
headers.add(HttpHeaders.ACCESS_CONTROL_ALLOW_CREDENTIALS, "true");
headers.add(HttpHeaders.ACCESS_CONTROL_ALLOW_HEADERS, "*");
headers.add(HttpHeaders.ACCESS_CONTROL_EXPOSE_HEADERS, ALL);
headers.add(HttpHeaders.ACCESS_CONTROL_MAX_AGE, MAX_AGE);
```