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By [Dhiraj](#), 14 March, 2018

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Spring Boot Security Oauth2 Jwt Auth Example

In this article, we will be discussing about OAUTH2 implementation with spring boot security and JWT token and securing REST APIs.In my last article of [Spring Boot Security OAUTH2 Example](#), we created a sample application for authentication and authorization using OAUTH2 with default token store but spring security OAUTH2 implementation also provides functionality to define custom token store.Here, we will be creating a sample spring security OAUTH2 application using [JwtTokenStore](#).Using JwtTokenStore as token provider allows us to customize the token generated with TokenEnhancer to add additional claims. For a role based OAUTH2 implementation, you can visit [this article](#).

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Why this ad?

Most of the configurations in this application are very similar to my previous article of spring security OAUTH2 implementation and hence we may avoid some common codes and configuration that we built in our last application. Let us start with a brief introduction of JWT and then we will dive into creating our authorization server, resource server and later we will discuss about adding custom claims in the token.If you don't want to use OAUTH2 and simply want to create an authentication process using JWT token, then you can visit my previous article of [Using JWT with Spring Boot Security With Angular](#).

Json Web Token

[JSON Web Token \(JWT\)](#) is an open standard (RFC 7519) that defines a compact and self-contained way for securely transmitting information between parties as a JSON object.a stateless authentication mechanism as the user state is never saved in server memory.A JWT token consists of 3 parts seperated with a dot(.) i.e. Header.payload.signature

Header has 2 parts type of token and hashing algorithm used.The JSON structure comprising these two keys are Base64Encoded.

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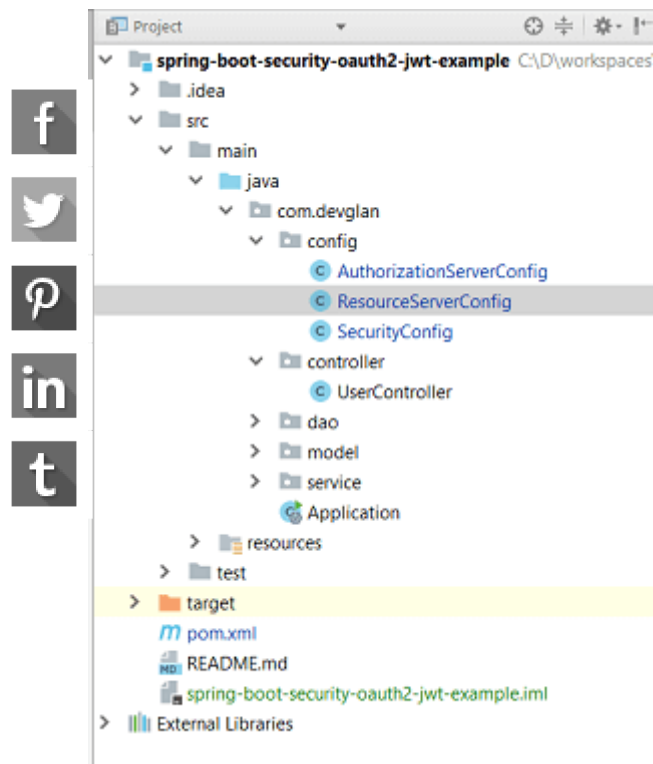
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Project Structure



Maven Dependencies

Here, spring-security-jwt provides JwtTokenStore support.

```
<dependency>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-starter-security</artifactId>
</dependency>
<dependency>
  <groupId>org.springframework.security.oauth</groupId>
  <artifactId>spring-security-oauth2</artifactId>
</dependency>
<dependency>
  <groupId>org.springframework.security</groupId>
  <artifactId>spring-security-jwt</artifactId>
</dependency>
```

Authorization Server Config

I hope you are familiar of OAUTH2 architecture and authorization server. I have explained about it in my last article of OAUTH2.The following configuration is very similar to our last configuration of [Spring Boot Security OAUTH2 Example](#) apart from the JwtAccessTokenConverter and TokenStore.Here, JwtAccessTokenConverter is the helper that translates between JWT encoded token values and OAuth authentication information. We have added our custom signature to make the JWT token more robust.Apart from JwtTokenStore, spring security also provides InMemoryTokenStore and JdbcTokenStore.

For a 3rd party authorization server such as Google, you can visit this – [Spring Boot OAuth2 with Google](#).



Marine Solutions



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`ClientDetailsServiceConfigurer` : a configurer that defines the client details service. Client details can be initialized, or you can just refer to an existing store.

`AuthorizationServerSecurityConfigurer` : defines the security constraints on the token endpoint.

`AuthorizationServerEndpointsConfigurer` : defines the authorization and token endpoints and the token services.

ClientDetailsServiceConfigurer can be used to define an in-memory or JDBC implementation of the client details service.In this example, we are using an in-memory implementation.

AuthorizationServerConfig.java

JwtAccessTokenConverter implementation in resource server too.

Here, we have configured that `/users` is a protected resource and it requires an ADMIN role for the access.



For an integration with Google along with a custom login, you can visit this article - [Spring Security OAuth2 Google Registration](#)

```
@Configuration
@EnableResourceServer
public class ResourceServerConfig extends ResourceServerConfigurerAdapter {

    private static final String RESOURCE_ID = "resource_id";

    @Override
    public void configure(ResourceServerSecurityConfigurer resources) {
        resources.resourceId(RESOURCE_ID).stateless(false);
    }

    @Override
    public void configure(HttpSecurity http) throws Exception {
        http
            .anonymous().disable()
            .authorizeRequests()
            .antMatchers("/users/**").access("hasRole('ADMIN')")
            .and().exceptionHandling().accessDeniedHandler(new OAuth2AccessDeniedH
andler());
    }
}
```

REST APIs

Now let us expose some protected REST resource using spring controller.

```
@RestController
@RequestMapping("/users")
public class UserController {

    @Autowired
    private UserService userService;

    @RequestMapping(value="/user", method = RequestMethod.GET)
    public List listUser(){
        return userService.findAll();
    }

    @RequestMapping(value = "/user", method = RequestMethod.POST)
    public User create(@RequestBody User user){
        return userService.save(user);
    }

    @RequestMapping(value = "/user/{id}", method = RequestMethod.DELETE)
    public String delete(@PathVariable(value = "id") Long id){
        userService.delete(id);
        return "success";
    }
}
```

Following is the userservice implementation to validate user.



```
@Autowired
private UserDao userDao;

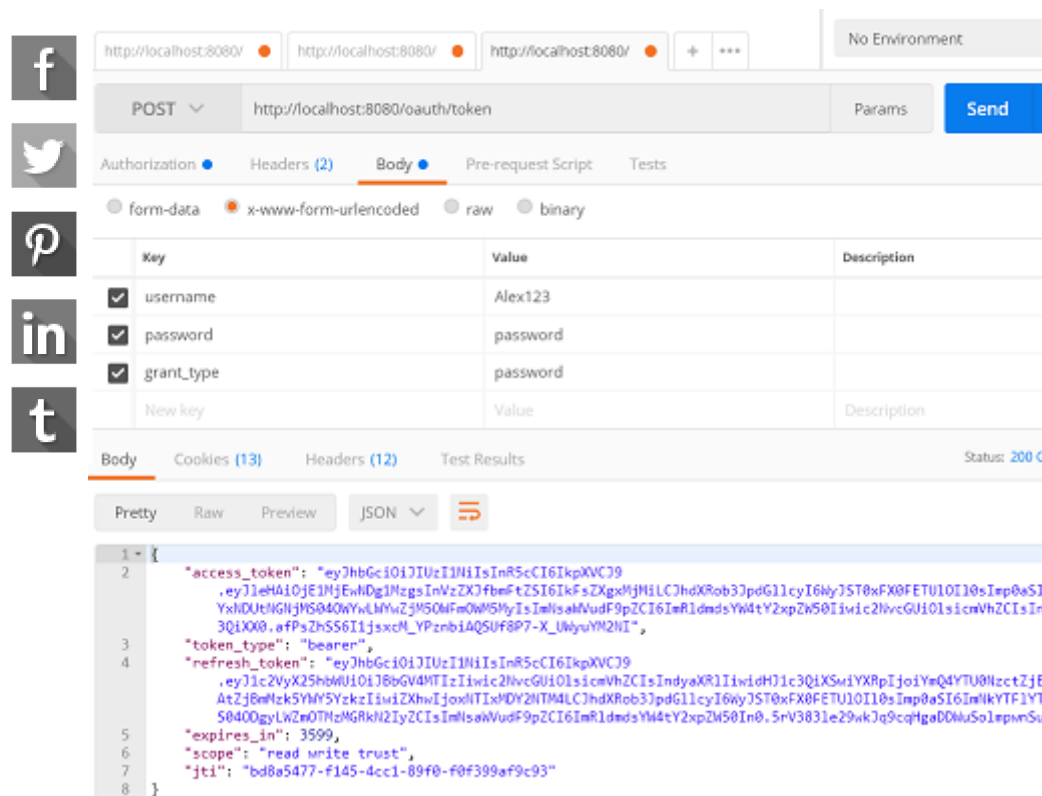
public UserDetails loadUserByUsername(String userId) throws UsernameNotFoundException {
    User user = userDao.findByUsername(userId);
    if(user == null){
        throw new UsernameNotFoundException("Invalid username or password.");
    }
    return new org.springframework.security.core.userdetails.User(user.getUsername(), user.getPassword(), getAuthority());
}

private List getAuthority() {
    return Arrays.asList(new SimpleGrantedAuthority("ROLE_ADMIN"));
}

public List findAll() {
    List list = new ArrayList<>();
    userDao.findAll().iterator().forEachRemaining(list::add);
    return list;
}
}
```

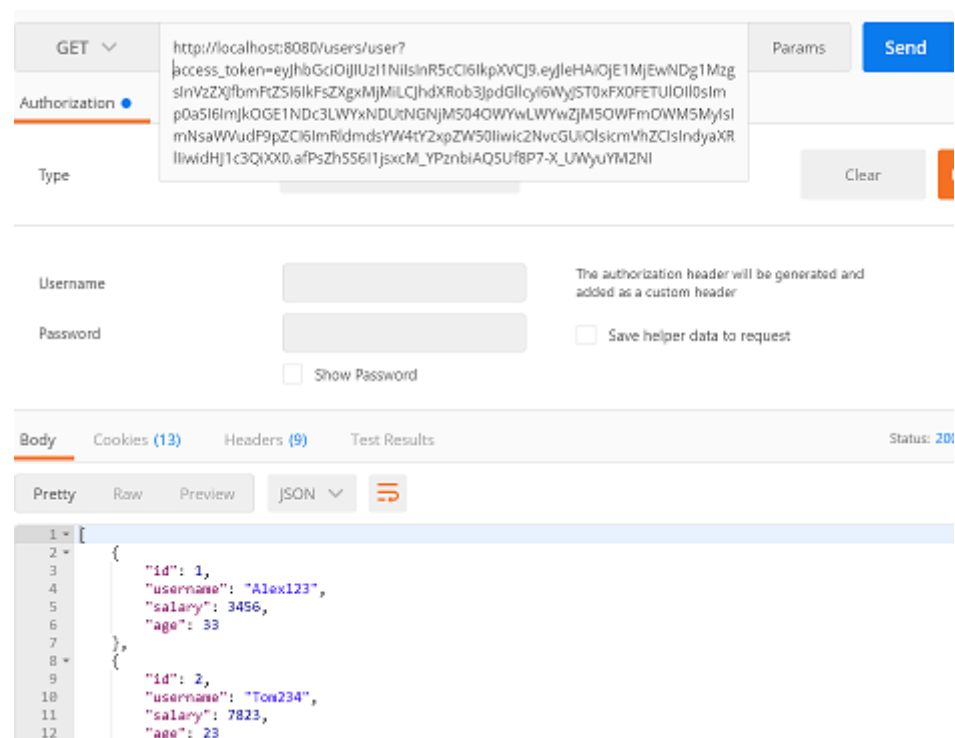
Above userservice is configured in SecurityConfig.java as below. You can use this [Online Bcrypt Calculator to generate Bcrypt password](#).

as `devglan-client` and `devglan-secret`. This will result `access_token`, `token_type`, `refresh_token`, `expiry` etc.



Ad removed. Details

Now, we can use the same token to access protected resources.



Spring Boot 2 OAUTH2

While running this application with above configurations in Spring Boot 2, you will find below error.

PrettyRawPreviewJSON

f

1 {

2 "timestamp": "2018-04-07T16:46:05.870+0000",

3 "status": 401,

4 "error": "Unauthorized",

5 "message": "Unauthorized",

6 "path": "/oauth/token"

7 }

Following are the changes in `pom.xml` to make this example work with spring boot 2.

t

```
<parent>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-starter-parent</artifactId>
  <version>2.0.0.RELEASE</version>
</parent>
...
<dependency>
  <groupId>org.springframework.security.oauth</groupId>
  <artifactId>spring-security-oauth2</artifactId>
  <version>2.0.10.RELEASE</version>
</dependency>
```

For Spring Boot 2 you need to Bcrypt CLIENT_SECRET,so in AuthorizationServerConfig.java change line 17 into:

```
static final String CLIENT_SECRET = "$2a$04$e/c1/RfsWuThaWFCrcCuJeoyvwCV0URN/6Pn9ZF1rtIwAU/vj/BfG";
```

Conclusion

Here, we discussed about using JWT as a token provider for spring boot security OAUTH2 implementation. In the next article we will be discussing about consuming this token in an angular 5 application.You can download the source from [here](#).


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About The Author



A technology savvy professional with an exceptional capacity to analyze, solve problems and multi-task. Technical expertise in highly scalable distributed systems, self-healing systems, and service-oriented architecture. Technical Skills: Java/J2EE, Spring, Hibernate, Reactive Programming, Microservices, Hystrix, Rest APIs, Java 8, Kafka, Kibana, Elasticsearch, etc.

Further Reading on Spring Security

3. Angular JWT Authentication
4. Spring Boot Jwt Auth
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Source code download link in the conclusion section at the end



Hi, i want some advice from you. how to separate resource server and authorization server so that i can use many resource servers and all of them will be authenticated by single authorization server. where will be the code changed of this? thank you.



Hi. your code is working fine. thank you for sharing knowledge. i have a minor question about JWT. when i authenticate this will respond with access and refresh tokens fine. and i can use the refresh token to authorize. but the problem is once i re-authenticate myself, the previous the refresh token is still valid. so there can be many tokens for me, is it a common behavior of JWT or am i doing something?



Well this is a common behaviour but you must handle these scenarios in your app. You must invalidate previous user token once user logs in again or logout.



Thank you.



I am trying to generate the token from another ui project through javascript request. But getting following error:

Failed to load http://localhost:8080/oauth/token: Response for preflight does not have CORS status.

1 ^ | v • Reply • Share ›



```
    .antMatchers(HttpMethod.OPTIONS).permitAll()
```



Hi ,

I got the access token. but get request is not working http://localhost:8080/Users/user?access_token=eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJleHAiOiE2MjE3NjY0OTQ



What should I type in password and grant type in the postman??



how can i includes other properties or fields in my access token like Age or Salary




Hello, Thank you for the article. Do you have an example or can you tell me how I can separate ResourceServer and AuthorizationServer? I know I need to identify my auth s the resource server but there is something else I'm sure I need to do to all the Resource authenticate and authorize API requests. Can you help?



Hi Dhiraj i tried several spring boot security examples and after some time i created no spring boot application but i am unable to hit the rest end points i don't know why but t



 **Dhiraj Ray** Mod ➔ Pradyumna vinjamuri • 3 years ago


can u share yor code in github. I can take a look into if u r missing somethiong

^ | ▾ • Reply • Share ›

 **Pradyumna vinjamuri** ➔ Dhiraj Ray • 3 years ago


Got it by removing security jar file dhiraj
Thanks for the reply

^ | ▾ • Reply • Share ›

 **HAN** • 3 years ago


how can i place access_token in header instead of in parameter ?

^ | ▾ • Reply • Share ›

 **Dhiraj Ray** Mod ➔ HAN • 3 years ago


Can you try with Authorization as the key

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 **vishnu dixit** • 4 years ago

i want to create token only once having some validity (6 months) and share it with the c
token should be store in my(token provider) database. After the expires token, token p
only renew the [token.you](#) can use any other security feature of java

^ | ▾ • Reply • Share ›

 **paul** • 4 years ago

Hi I got an error

When i run the spring booot application wiht authorization header as username : devgl
and passowrd: devglan-secret

body-> username:"Alex123"

password->"password"

grant_type->"password"

Im getting this error

```
{
  "error": "invalid_grant",
  "error_description": "Bad credentials"
}
```


The password in the database for the user is
"\$2a\$04\$I9Q2sDc4QGGg5WNTLmsz0.fvGv3OjoZyj81PrSFyGOqMphqfS2qKu"

so i changed the password in the body part to the above

and again the same error


WHat should i do to make this application work

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 **Dhiraj Ray** ➔ paul • 4 years ago

It should work in the manner in the shown in example. Please recheck your pas
else generate a new one with this tool - <https://www.devglan.com/onl....> Also, if
spring boot 2, then check this section - Spring Boot 2 OAUTH2 because things
changed since spring boot 2.0 release.

^ | ▾ • Reply • Share ›

 **paul** ➔ Dhiraj Ray • 3 years ago • edited

There is a post method to save the user which recieves the User Model
parameter.
I tried the post request. It is giving me error.
How can I save a user with username and password and other details lil
and age etc.


Without the tool how can i generate the password using java

^ | ▾ • Reply • Share ›

"devglan-client" and "devglan-secret" to the server? Would this be in the header? Thar

^ | v • Reply • Share ›

f




Dhiraj Ray

 ➔ Eric Huang • 3 years ago

<https://www.devglan.com/spr...>

^ | v • Reply • Share ›




Dhiraj Ray

 ➔ Eric Huang • 4 years ago

Hello Eric,
That article is not posted yet. Actually, "devglan-client" and "devglan-secret" sh
passes in the header as basic authentication.

^ | v • Reply • Share ›



Eric Huang

 ➔ Dhiraj Ray • 4 years ago

Thanks for the quick response... this is my angular code but I am getting 400

```
private static readonly CLIENT_ID = "security-client";
private static readonly SECRET = "security-secret";

oAuthAuthenticated(credentials){

const headers = new HttpHeaders(
{
'Authorization': 'Basic ' + btoa(AppService.CLIENT_ID + ':' + AppService
'Content-type': 'application/x-www-form-urlencoded; charset=utf-8'
}
)

this.httpClient.post("/oauth/token", credentials, {headers: headers})
.pipe(
catchError(this.handleError.bind(this))
)
.subscribe(response => {
console.log(response);
});

}

Am I setting up my header correctly? thanks
```

^ | v • Reply • Share ›




Aristio Dwi Nusa

 • 4 years ago

how to create new class i cant access requestmapping .
for example : localhost:8080/users/admin
this response for server is :
{
"timestamp": 1538731961789,
"status": 500,
"error": "Internal Server Error",
"exception": "java.lang.NullPointerException",
"message": "No message available",
"path": "/users/admin"
}
i duplicate file from user class to admin class.

^ | v • Reply • Share ›




Dhiraj Ray

 ➔ Aristio Dwi Nusa • 4 years ago

It's a NullPointerException. Can you please check your logs

^ | v • Reply • Share ›



Mordor1989

 • 4 years ago

How can I use a claims? Because I have a small problem. When I try this:
"SecurityContextHolder.getContext().authentication.principal as CurrentUser" CurrentL
customUserDetails class
I do not have information from token. only login.

^ | v • Reply • Share ›



After restarting the AWS machine, all tokens are inactive, is the normal behavior?

^ | v • Reply • Share ›



No this should not be a normal behaviour as we are manually ceating JWT token with a custom expiry time and it is not related to a state

1 ^ | v • Reply • Share ›



```
{
  "timestamp": "2018-06-25T08:55:49.150+0000",
  "status": 401,
  "error": "Unauthorized",
  "message": "Unauthorized",
  "path": "/oauth/token"
}
```

do not work. do you have idea why

^ | v • Reply • Share ›



Same error,what is the fix

^ | v • Reply • Share ›



Getting the following error
Caused by: org.springframework.beans.factory.BeanCreationException: Error creating
name 'accessTokenConverter' defined in class path resource

^ | v • Reply • Share ›



Nice article.
I thinks it's better to store the source code in Github Repo. So that, we can try it immediatly.
Thanks

^ | v • Reply • Share ›



Check the conclusion section. Its there

^ | v • Reply • Share ›



abdessalem kchaou ➔ Dhiraj Ray • 4 years ago



Both : <http://localhost:8080/signup> and <http://localhost:8080/token> dont work
could you help me please

^ | v • Reply • Share ›



could you send me an email to discuss about this project ?
I have some questions

^ | v • Reply • Share ›



Vesko Vujovic → Dhiraj Ray • 4 years ago

"status": 401,
"error": "Unauthorized",
"message": "Unauthorized",
"path": "/oauth/token"

I always have this error. do you have idea why

^ | v • Reply • Share ›



Dhiraj Ray → Vesko Vujovic • 4 years ago

Check if u ve correctly executed insert statements. If yes then de
userdetailserviceimpl n check if correct user is fetched from db

^ | v • Reply • Share ›



Vesko Vujovic → Dhiraj Ray • 4 years ago • edited

Yes everything is ok. It looks like userDetailsService is never call

Do you have any advice how to debug SPring security?

All the time i get 401, and i've done everything like on your tutorial

^ | v • Reply • Share ›



Dhiraj Ray → Vesko Vujovic • 4 years ago

What is the spring boot version. Is it 2.0?

^ | v • Reply • Share ›



Vesko Vujovic → Dhiraj Ray • 4 years ago

Yes 2.0

^ | v • Reply • Share ›



Dhiraj Ray → Vesko Vujovic • 4 years ago

Above code sample is not working for Spring boot 2.If u debug
userdetailserviceimple, the username is coming as devglan-client
Alex123. N we don't have entries in DB for devglan-client. Hence
I am not sure why this is happening in spring boot 2. Need to exp

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Vishal Raut → Dhiraj Ray • 4 years ago

You'll need to encode the CLIENT_SECRET in the
AuthorizationServerConfig to make it work with Spring Boot 2, us
same BCryptPasswordEncoder used in SecurityConfig.

.secret(new BCryptPasswordEncoder().encode(CLIENT_SECRE

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Dhiraj Ray → Vishal Raut • 4 years ago

Yes and I have updated the article under the section - Spring Boot
OAUTH2

^ | v • Reply • Share ›



Teja MVSR → Dhiraj Ray • a year ago

I have used devglan-client for client secret instead of bcrypt pass
spring boot 2.4.2 and its working fine.

^ | v • Reply • Share ›



HARSHAL THAKRE → Dhiraj Ray • 4 years ago

kindly share the link

^ | v • Reply • Share ›



Dhiraj Ray Mod → HARSHAL THAKRE • 4 years ago

[http://www.devglan.com/spring...](http://www.devglan.com/spring-security/spring-boot-oauth2-jwt-example)

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dhiraj@devglan.com