Octopus Framework

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Table of Contents

Release notes

0.4

1. Integration with Keycloak (Client Credentials for Java SE, AuthorizationCode grant for Web, AccessToken for JAX-RS)
2. Logout functionality for Web.
3. Authentication events.
4. Support for default user filter (no need to define user filter before authorizationFilter)

Important changes

1. Primary Principal is always a *be.atbash.ee.security.octopus.subject.UserPrincipal* instance.
2. *be.atbash.ee.security.octopus.subject.PrincipalCollection* is now a class and l longer an interface.
3. All filters used within filter chain definition (securedURLs.ini) must be an implementation of *be.atbash.ee.security.octopus.filter.AdviceFilter*

0.3

1. Authorization parts implementation (tags like securedComponent, interceptors for EJB/CDI, filters for URLs)
2. AuthorizationToken to be able to extract AuthorizationInfo from token (MicroProfile, Offline, …)
3. Basic support for authorization annotation in Java SE (with *MethodAuthorizationChecker.checkAuthorization();*)
4. Declarative permissions for FXML views in JavaFX (POC)

0.2

1. Split into different modules (Core, JSON, Non-Web [Java SE, …], Web [JSF, JAX-RS])
2. Octopus-jwt-support for handling JSON supporting plain, JWS and JWE.
3. Octopus-json is optimized smart-json code
4. MicroProfile JWT Auth for Rest (POC)
5. OfflineToken for standalone Java SE (POC)

0.1

1. POC integration Apache Shiro into Octopus
2. Use of CDI as much as possible.

Modules

List of Maven modules

Artefact	SE, CDI, EE	info
be.atbash.ee.security:octopus-core	SE, CDI	All Octopus classes usable in Java SE and Java EE environment.
be.atbash.ee.security:octopus-common-se	SE, CDI	All Octopus classes Specific for Java SE
be.atbash.ee.security:octopus-se-standalone	SE, CDI	Specific for Java SE CLI programs
be.atbash.ee.security:octopus-token-generator	SE, CDI	Contains class to generate the Offline Token (for SE usage).
be.atbash.ee.security:octopus-javafx	SE (JavaFX)	Integration within FXML views.
be.atbash.ee.security:octopus-keycloak-se	SE	Integration of Keycloak with CLI programs (pure Java SE or JavaFX).
be.atbash.ee.security:octopus-common-web	EE (Web)	All Octopus classes Specific for Java EE (Web - Servlets)
be.atbash.ee.security:octopus-rest	EE (JAX-RS)	Specific for JAX-RS
be.atbash.ee.security:octopus-jsf7	EE (JSF)	Specific for JSF
be.atbash.ee.security:octopus-mp	EE (JAX-RS)	Support for MP JWT Auth tokens
be.atbash.ee.security:keycloak	EE (JSF)	Integration with Keycloak (including SSO)

octopus-utilities contains for the moment the JavaFX app to maintain JWK files.

Authentication

Authentication ways

Octopus allows different methods for the authentication of the other party.

1. Octopus is able to verify if the user-supplied credentials (user name - password combination) is valid. For example Database and File based storages.
2. Octopus passes the user-supplied credentials (user name - password combination) to an external source for verification. For example LDAP.
3. Authentication is 'externalised' and application is contacted with a token. Examples are Google OAuth2, CAS, SAML, Keycloak, Octopus SSO, etc.

Octopus verifies

In this case, we need to supply the password using the AuthenticationInfoBuilder to Octopus. The defaults matchers (There is also support for hashed password, which is recommended of course) are able then to verify if the password matches.

External validation

In case we can't supply Octopus the password, but user has entered credentials in our application, we can ask for an external authentication and supply a correct *Matcher* which calls the external validation. For LDAP, their is a Octopus supplied one which can be configured.

External authentication

When the user enters the credentials in an external system and the verification also happens there, we need special handling for receiving the token which identifies the authenticated user.

Summary

In the below table, one can see which of the 3 options applies to your situation.

Credential entry	Credential verification	Type
Application	Application	Octopus Verifies
Application	External	External validation
External	External	External authentication

AuthenticationInfoProvider

The interface *be.atbash.ee.security.octopus.authc.AuthenticationInfoProvider* needs to be implemented by the developer if he want to supply some authentication information to Octopus in response to an AuthenticationToken.

The AuthenticationToken is the data created in response of a authentication request from the end user. This can be a UsernamePasswordToken in the case our application has shown a login form to the end user for this information. But the AuthenticationToken can also be a token from the external system in response of a successfull authentication in that system.

As developer you can use an implementation of this interface to retrieve the password from your database for instance. Depending on the environment (CDI based or not), the instance must be configured differently.

1. CDI environment → Define the implementation as CDI bean by annotating it as Application scoped bean (since no user specific information is kept, this is the best scope)
2. non CDI environment → Define the class through the Service loader mechanism (create a file src/main/resources/META-INF/services/be.atbash.ee.security.octopus.authc.AuthenticationInfoProvider which contains the fully qualified name of the implementation class)

In both cases, the method *getAuthenticationInfo* should return null when the user name cannot be found (but maybe can be resolved through another AuthenticationInfoProvider, see ???) or an

instance of AuthenticationInfo which can be created through the AuthenticationInfoBuilder.

AuthenticationInfoBuilder

With the AuthenticationInfoBuilder, we can create an instance of AuthenticationInfo which provides Octopus the necessary information to decide if the user can be authenticated.

1. principalId(Serializable) : Required, uniquely identifies the user. It can later be used to determine the permissions for the user.
2. name(String) : Optional, defines the *full name* of the user.
3. userName(String) : Optional, defines the user name to identify the user.
4. password(Object) : Optional (password or token is required), defines the password known for the user internally (can be the hashed format, see ???)
5. salt(byte[]) : Optional (recommended for password usage), defines the salt when creating the hashed version of the password.
6. externalPasswordCheck() : Optional, indicates that Ocoptus can't verify the user and that an external system must perform this (for ex LDAP)
7. token(ValidatedAuthenticationToken) : Optional (password or token is required), indicates the token received from the external system which identifies the user.

AuthenticationToken

addUserInfo() :

The AuthenticationToken represent the user supplied information to decide if the user is allowed access to the application.

When the information (like user and password) is requested by the application itself (by using a login form), the type is a UsernamePasswordToken.

But the type can also describe a token which identifies the user by the external system (in case of the above described external authentication scenario) These tokens implement the interface *ValidatedAuthenticationToken* which is a marker for Octopus that it is a token which doesn't need to be validated. (The external system has performed already a successful validation and assembled the token) It is not the *raw* token which the external party has send to us, but it is already the processed (for example payload of JWT) data and is already validated.

These token can also implement *AuthorizationToken* interface. This is the case when the token also contain authorization information like roles and permissions.

The interface only requires one method, which returns the class name of the logic which will retrieve the authorization info from the token.

Logout

If you want to perform a logout within a Web environment, just call

```
securityContext.logout();
```

on an injected OctopusWebSecurityContext

```
@Inject
private OctopusWebSecurityContext securityContext;
```

or within a JSF environment, you should call

```
loginBean.logout()
```

Since we need to perform a redirect to the logout page (or the main page if no specific page is defined)

An alternative is to define a (virtual) URL which performs the logout. It does the same thing as calling the *loginBean* method. For example define the following entry with the *securedURLs.ini* file.

```
/doLogout = logout
```

When a URL *doLogout* is called, it will logout the subject (of course, the URL can be freely chosen but make sure it is anonymously accessible.)

The following steps are performed during logout.

1. Call all registered *AuthenticationListener*, method onLogout()
2. The default *AuthenticationListener* fires the CDI event LogoutEvent so it becomes easier to react on a logout
3. Remove Principal information from AuthenticationCache and AuthorizationCache
4. Remove Session information (if Session is used to store information about Principal)
5. Remove Principal information and set current Subject as unauthenticated.
6. Redirect to logout Page (if logout sequence started from loginBean)

Events

There are a few CDI event generated depending on the authentication process. These events can be used for your own logic (last login, number of invalid attempts, ...)

To get notified when someone is successful logged in, you can define the following method on a CDI bean.

```
public void onSuccess(@Observes LogonEvent logonEvent) {
}
```

LogonEvent

This event is thrown when a user is successful logged in into the application.

1. logonEvent.getInfo() : The *AuthenticationInfo* associated with this login.
2. logonEvent.getAuthenticationToken() : The *AuthenticationToken* used to grant the user access. In case it is a UsernamePasswordToken, the sensitive information (like password and remote host) is already cleared.
3. logonEvent.getUserPrincipal() : The *UserPrincipal* created for the user in response of the the successful authentication.

LogonFailureEvent

This event is thrown when the user is denied access based on the presented credentials (wrong password, expired JWT token, …)

1. logonFailureEvent.getAuthenticationToken() : The *AuthenticationToken* used to grant the user access. In case it is a UsernamePasswordToken, the sensitive information (like password and remote host) is still present.
2. logonFailureEvent.getException() : The exception thrown because of the denied access.

LogoutEvent

The event is thrown just **before** the user is effectively logged out of the system.

1. logonEvent.getUserPrincipal() : The *UserPrincipal* of the user which is in the process of being logged out.

Authorization

Specify authorization info

Authorization info will be retrieved by the Octopus framework by calling implementations of *be.atbash.ee.security.octopus.authz.AuthorizationInfoProvider*.

The method *getAuthorizationInfo* needs to supply the authorization info (permissions and roles) for the user.

Interceptors

```
@RequiresPermissions
```

Can be used to protect the execution of an EJB method. User (subject) must have the permission before method is executed.

```
String[] value()
```

Supply the permission(s) wildcard or named permission. See Permission chapter.

```
Class<? extends NamedPermission>[] permission()
```

Supply the permission to check as class instance.

```
Combined combined() default Combined.OR
```

When multiple permissions are supplied, must they all be satisfied or only one (the default)

```
@RequiresRoles
```

Can be used to protect the execution of an EJB method. User (subject) must have the role before method is executed.

```
String[] value()
```

Supply the role name(s). See Permission chapter.

within EJB

Create a ejb-jar.xml with the following content to protect all methods within all EJB beans

```
    <interceptors>
        <interceptor>
            <interceptor-
class>be.atbash.ee.security.octopus.interceptor.OctopusInterceptor</interceptor-class>
        </interceptor>
    </interceptors>
    <assembly-descriptor>
        <interceptor-binding>
            <ejb-name>*</ejb-name>
            <interceptor-
class>be.atbash.ee.security.octopus.interceptor.OctopusInterceptor</interceptor-class>
        </interceptor-binding>
    </assembly-descriptor>
```

The interceptor can also be added manually to the beans by putting the *@OctopusInterceptorBinding* annotation.

within CDI

Activate the CDI interceptor to add interceptor to CDI beans by defining the config parameter

```
cdi.interceptor.enabled=true
```

Define the regex of *ApplicationScoped* CDI beans which needs to have the *OctopusInterceptor* within the file */resources/octopusInterceptor.config* or the file defined by the parameter *cdi.interceptor.configfile*

```
be.atbash.ee.security.octopus.jsf.*
```

Activate the Octopus interceptor within the _beans.xml file

```
    <interceptors>
        <class>be.atbash.ee.security.octopus.interceptor.OctopusInterceptor</class>
    </interceptors>
```

Another option is adding the *@OctopusInterceptorBinding* annotation to those beans which needs to be verified. Beware that the activation of the interceptor within *beans.xml* is also required in this case.

Voters

Voters for a certain permission or role can be created.

```
@Inject
@RequiresPermissions("order:read:*")
private GenericPermissionVoter orderReadVoter;
```

or for a role

```
@Inject
@RequiresRoles("admin")
private GenericRoleVoter adminRoleVoter;
```

Things you can do with a voter

```
voter.checkPermission(AccessDecisionVoterContext, Set<SecurityViolation>);
```

Verifies the permission and add violations to the Set<SecurityViolation> parameter. AccessDecisionVoterContext supplies context

```
voter.verifyPermission();
```

returns true if the current user /subject has the required permission checked by the voter.

These voters can be created programmatically in those environments where no CDI inject is available.

```
GenericPermissionVoter.createInstance(String);
```

or

```
GenericRoleVoter.createInstance(ApplicationRole)
```

Custom voters

When the default checks on permissions or not enough. It can be that more complex logic is required or that multiple checks must be combined.

```
@ApplicationScoped
@Named
public class CustomVoter extends AbstractGenericVoter {
}
```

Typically the injection of voters is performed within these custom voters.

NamedPermissions

Using type safe enums for permissions names can be handy for small to medium sized applications. For large scale or Self-Contained Systems, it is probably no the best way.

The idea is that you specify the name of the permission using an Enum, something like.

```
public enum DemoPermission implements NamedPermission {
    BASIC_PERMISSION, ADVANCED_PERMISSION
}
```

These names (like *BASIC_PERMISSION* can be used within JSF custom tags or the *namedFilter* filter.

For EJB, you have the possibility to create a special annotation which allow you to define the authorization requirements.

```
@Target({ElementType.TYPE, ElementType.METHOD, ElementType.FIELD})
@Retention(RetentionPolicy.RUNTIME)
public @interface DemoPermissionCheck {
    DemoPermission[] value();
}
```

In order make this work, you need to provide Octopus with the information of these custom constructs by specifying the following configuration values within the *octopusConfig.properties* file.

```
namedPermission.class=be.atbash.ee.security.octopus.jsf.security.DemoPermission
namedPermissionCheck.class=be.atbash.ee.security.octopus.jsf.security.DemoPermissionCh
eck
```

Now, EJB methods can be secured (authorized) by using

```
    @DemoPermissionCheck(DemoPermission.BASIC_PERMISSION)
    public String doBasicAction() {
        return "Basic Action Method called";
    }
```

Custom tags

Custom tags are created to perform declarative authorization on JSF components. These are defined in the namespace

```
xmlns:sec="http://www.atbash.be/secure/octopus"
```

<sec:securedComponent>

Defines if a certain JSF component can be viewed (is rendered) for the user/subject.

When defined within another JSF tag (without the for attribute) it controles the parent. With the for attribute one can define the JSF component on which it operates.

```
permission
```

Supply the permission(s) wildcard or named permission. See Permission chapter.

```
role
```

Supply the role name(s). See Permission chapter.

```
voter
```

Supply the names of the custom voter(s)

Combination of the 3 above attributes is allowed

```
not
```

Inverts the result of the check

```
combined (true/false)
```

Do all checks need to be pass on the user/subject or is only 1 enough.

```
for
```

Specifies the id of one (or more) JSF components for which the authorization check is performed.

<sec:securedListener>

Defines the possibility to execute a method when the authorization checks ofr te user are positive based on the supplied permission, role and/or voter. The Java method can update the component to allow correct styling based on the permissions of the users.

When defined within another JSF tag (without the for attribute) it controles the parent. With the for attribute one can define the JSF component on which it operates.

```
listener
```

Defines the EL expression of the method which needs to be executed. The EL expression must point to a Java method with a parameter of type UIComponent and has no return (void)

```
permission
```

Supply the permission(s) wildcard or named permission. See Permission chapter.

```
role
```

Supply the role name(s). See Permission chapter.

```
voter
```

Supply the names of the custom voter(s)

Combination of the 3 above attributes is allowed

```
not
```

Inverts the result of the check

```
combined (true/false)
```

Do all checks need to be pass on the user/subject or is only 1 enough.

```
for
```

Specifies the id of one (or more) JSF components for which the authorization check is performed.

<sec:securePage>

This is an alternative for the usage of the filter definition with the securedURLs.ini file. We can specify the authorization checks (using permission, role and voter) in order that the page is visible for the end user. If (s)he has no permission, the unauthorized page will be shown.

This tag can be placed anywhere on the page, but for optimal performance, it should be in the beginning of the page and within the <h:body> parent.

```
permission
```

Supply the permission(s) wildcard or named permission. See Permission chapter.

```
role
```

Supply the role name(s). See Permission chapter.

```
voter
```

Supply the names of the custom voter(s)

Combination of the 3 above attributes is allowed

```
not
```

Inverts the result of the check

```
combined (true/false)
```

Do all checks need to be pass on the user/subject or is only 1 enough.

Filter (web based projects)

anon

Every one can access the page, no checks perfomed

authcBasic

type : Authenticating

Requires BASIC authentication.

user

type : Authenticating

Requires authenticated user (?? TODO real difference between authenticated and remembered) When no authenticated user is available, a redirect to the loginURL is performed.

userRequired

type : Authorization

Requires authenticated user but no redirect to the login is performed but the unauthorized page is shown.

namedPermission / np

type : Authorization

Subject must have all the named permissions defined in the config.

namedPermission1 / np1

type : Authorization

Subject must have one of the named permissions defined in the config.

namedRole / nr

type : Authorization

Subject must have all the named roles defined in the config.

namedRole1 / nr1

type : Authorization

Subject must have one the named roles defined in the config.

rate

type :

Limit the number of requests for a certain path.

noSessionCreation (rest module)

type :

It makes sure that no session will be created by the framework

mpUser (MicroProfile module)

type : Authenticating

Retrieves authentication information from the Bearer header formatted accordingly to the MP JWT Auth spec.

Java SE

Methods can be annotated with authorization checks, like @RequiresPermission, and authorization checks are performed by calling the method

```
    @RequiresPermissions("demo:offline:*")
    public String checkPermission() {
        MethodAuthorizationChecker.checkAuthorization();
```

Since we are running in plain Java SE, we have no interceptors available to perform these checks automatically.

Filters

There are basically 3 types of filters within the system.

Authenticating filters

These filters extract information from the request and determine the principal based on that information. Examples are

1. authcBasic → BASIC authentication
2. mpUser → MicroProfile JWT auth token

When such a filter is available within the chain and the request doesn't define the required and correct information, an response with status 401 is returned.

All these filters extend from be.atbash.ee.security.octopus.filter.authc.AuthenticatingFilter

User filters

These filters are typically used to determine if the user is authenticated and if not, a redirect is performed to some kind of login form where the user can enter his credentials. This form can be defined within the application (when using LDAP, SPI, …) or externally when integrating with Keycloak, Google Oauth2, CAS, etc …)

All these filters extends from be.atbash.ee.security.octopus.authc.AbstractUserFilter which is defined within the JSF module. JSF is for the moment the only supported web framework where the user is able to interact with the application.

The predefined filters defined within Octopus are

1. user → redirect to /login.xhtml page or URL defined within config parameter *loginPage*
2. userKeycloak → redirect to Keycloak Login page (Keycloak integration)

Authorization filters

These filters determine is the user has the required permission, role, the customer voter allows access, …

They assume that there is already an authenticated user / principal (because an anonymous user can't be assigned some permissions)

When no authenticated (or remembered) user / principal is detected, the response depends on the framework which handles the request and is encapsulated by the implementations of the accessDeniedHandler.

On a JSF request, the default user filter is retrieved from the configuration (parameter *user.filter.default*) and a redirect to the *login page* is performed (after the current request information is saved). This allows filter chain definitions without the need to always specify the user filter name.

```
/pages/hr/** = np[hr:read:*]
```

On a JAX-RS request, a response with status 401 is returned (as we have no possibility the ask for credentials of the current user).

Java EE

JAX-RS

Core

FIXME

MP Auth token

Creation of the token can be done be using the **be.atbash.ee.security.octopus.token.MPJWTTokenBuilder** class.

Maven artefact be.atbash.ee.security:octopus-mp contains the *mpUser* filter.

JSF

include::keycloak.adi

Java SE

OfflineToken

Offline token can be used for standalone Java SE programs.

A token can be generated which will be only valid for a certain computer.

Besides the Processor Id and the first disk UUID, also a pass phrase is required (when multiple users are using the program on the same laptop/desktop.)

Steps (example flow, final programs not created yet)

1. Program **LocalSecret** (*examples/local-secret*) generates the token which is user dependent for a certain machine(Standalone program run by the end-user)
2. Program **CreateOfflineTokenFile** (*examples/se-cli*) generates the offline token (here stored within the <*user_home*>/*octopus.offline.token* file)
3. Program **SecuredCLI** uses the offline token to authenticate/authorize using Octopus.

include::keycloak-se.adi

Configuration

Core

hashAlgorithmName

default : **(none)**

Name of the MessageDigest algorithm when you use hashed passwords. examples are Md5 and Sha512.

saltLength

default : **0**

Number of bytes used when creating a salt for the hashing of passwords. 0 means that no salt is used.

hashEncoding

default : **HEX**

Defines how the hashed passwords are encoded (HEX or BASE64) before they are compared to the supplied value which should be identically before access is granted. The value specified in the configuration file is case insensitive compared with the allowed values.

cacheManager.class

default : **be.atbash.ee.security.octopus.cache.MemoryConstrainedCacheManager**

The class responsible for holding/managing the cache of the authentication and authorization data. The developer can supply a custom implementation of be.atbash.ee.security.octopus.cache.AbstractCacheManager when the cache needs different logic.

When the class has the javax.enterprise.context.ApplicationScoped annotation, it is instantiated as a CDI bean, otherwise a classic new is performed.

voter.suffix.permission

default : **PermissionVoter**

The suffix used to determine the CDI named bean which are created dynamically for each Named Permission. See VoterNameFactory.

voter.suffix.role

default : **RoleVoter**

The suffix used to determine the CDI named bean which are created dynamically for each Named Role. See VoterNameFactory.

voter.suffix.check

default : **AccessDecisionVoter**

The suffix used to determine the CDI named bean for the Custom check functionality. See VoterNameFactory and Custom check feature description.

authorization.dynamic

default : false

???

namedPermission.class

default : **(none)**

Defines the Enum class which enumerates all permissions. Within the demo example it is the class **be.c4j.demo.security.permission.DemoPermission**.

namedPermissionCheck.class

default : **(none)**

Defines the annotation which can be used on method and class level to define the security requirements.

customCheck.class

default : **(none)**

Defines the annotation class which can be used to use custom declared Permissions, mostly useful in the case where you want to extend the named permission with some additional information.

namedRole.class

default : **(none)**

Defines the Enum class which enumerates all named roles. It is the role counterpart of the namedPermission.class configuration option.

namedRoleCheck.class

default : **(none)**

Defines the annotations which can be used on method and class level to define the security requirements.

Web Configuration

???

JSF Configuration

user.filter.default

default : **user**

When authorization filter encounters a non authenticated user, this filter is used to perform the redirect to the login page. The filter name point to a filter instance which implements AbstractUserFilter.

loginPage

default : **/login.xhtml**

The JSF page which is shown when the system needs to ask for the user credentials (and no 3th party is defined for integration)

logoutPage

default : /

The page which is shown when the is logged out. Make sure the page is anonymously accessible. By default, it is the page defined as welcome-file in the web.xml

allowPostAsSavedRequest

default : **true**

Is it allowed that during a POST to the server, the login page is shown. After the redirect to the login page, it is possible that beans has lost their state and that post isn't functioning properly.

logoutFilter.postOnly

default : **false**

When using the Logout filter, is it only active for a POST request (to avoid issues with the browser prefetch)

single.logout

default : **false**

When the user has used some authentication mechanism which supports SSO (like Keycloak, OAuth2, …) should a logout from the application mean also a logout from the SSO?

unauthorizedExceptionPage

default : **/unauthorized.xhtml**

The page which is shown when the user has some missing permissions.

primefaces.mobile.exclusion

default : **false**

Exclude the wrapping of the PrimeFaces mobile renderers (for compatibility reasons, will be removed in some future version)

session.hijacking.level (JSF Only)

default : **ON**

Determines the Session Hijack Protection level. It uses the IP Address and User-Agent header information and checks if the sessionId could be 'stolen'.

The default level *ON*, checks both properties, *PARTIAL* only the User-Agent header value and *OFF* disables the protection.

Keycloak configuration

keycloak.file

default : **/keycloak.json**

Defines the location of the JSON file for configuration of the Octopus Keycloak integration.

OWASP

Session fixation

A possible way to fight against a session fixation attack is that the session is changed during the authentication of the end user.

Therefore, by default, the HTTPSession which is active during login (When using username - password, OAuth2, KeyCloak, CAS, ...) is invalidated and a new one is created.

Because vital information is placed on the session for the correct functioning of Octopus, all session attributes are copied to the new session.

One can disable this invalidation and recreation of the session by means of the parameter session.invalidate.login

Session Hijacking

With a Session Hijack attack, someone got hold of your sessionId and use it to access the application with your credentials.

A protection is built-in Octopus and compares the IP address and the User agent information. If it detects a request with a different IP address and User-Agent then a previous request with the same

SessionId, it blocks it.

The request where the anomaly is detected receives a response with status 401, a marker is placed on the other session for which there was a hijack attempt. This can be checked by the EL expression #{octopusUserInfoBean.sessionHijackDetected}

With the configuration parameter, session.hijacking.level we can control the level of the protection.

- *ON* (default value), the IP address and User-Agent header value must match for all requests with the same sessionId
- *PARTIAL*, only the User-Agent header value must match.
- *OFF*, no protection, only recommended when your application does not contain personal information or uses no permissions.

The *PARTIAL* value is required if your end users switch for example from a wired to a wireless internet connection (used in some companies) and the IP address is different on both systems. Or you have a mobile JSF application (with PrimeFaces mobile for example) with end user connection can change (between WIFI and 3G for example)

Single session

By default, a user can only be logged in once into the application. If the same user, this is determined by the principalId of the AuthenticationInfo see ???, is already logged in, the other session is invalidated (and thus a logout is performed) automatically.

This behaviour can be controlled by the configuration parameter session.single.

Catch OctopusUnexpectedException

Various parts of the code throws the OctopusUnexpectedException when some unexpected condition happens. Make sure you catch at a minimum these Exception (by means of an ExcetionHandler in JSF for example) so that no stacktrace is exposed to the client.

It is a good idea to route any exception to a custom page/JAX-RS endpoint response so that internal application information isn't exposed.

OWASP

Additional information can be found here

https://www.owasp.org/index.php/Session_Management_Cheat_Sheet