ACW Architecture

Overall architecture and core features of Accsoft Commons Web

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BE-DO-DS

BE Web Development Workshop 2016, 4 October 2016
https://indico.cern.ch/event/561968/

ACW Stack

ACW is implemented with modern and standard stack for HTML5 web applications based on Java/Spring back-end.

Server-side: Spring boot and Spring data rest

Spring Boot 1.3 (web, data-jpa, data-rest, logging, security, security-saml2), HAL

Client-side: TypeScript 1.8, AngularJS 1.5, Bootstrap 3.3,

(Font-Awesome 4.6, ui-router, ui-grid, toastr, loadsh, moment)

No CERN specific features and libraries except small wrapper over Oracle data source connection pool – the accsoft-commons-dbaccess

more details at https://wikis.cern.ch/display/DEV/accsoft-commons-dbaccess

The core artefacts are released as:

- accsoft-web-server (jar) .../acc-co/trunk/accsoft/web/accsoft-web-server
- accsoft-web-components (npm) /acc-co/trunk/accsoft/web/accsoft-web-components

Core features

Integration with CERN Single Sign-On based on Spring Security SAML
Standard CERN SSO infrastructure: login.cern.ch and IT Security issued certificates are used to provide seamless authentication.

Transparent integration with RBAC for authorization and authentication
The Role Based Access Control is de-facto standard authorization and authentication mechanism used through the CERN Controls system. RBAC provides management of users, roles, roles administrators and is integrated with e-groups.

Built-in RBAC authentication fallback when SSO is not available
In cases when login.cern.ch is not available ACW provides a dedicated login page which uses RBAC and LDAP to authenticate its users.

Credits for development of security stack to J. Janczyk, M. Suchecki, W. Zadlo

Application configuration based on properties
Database connection pool is based on CERN Oracle service names (tnsnames).

Database connection pool providing Oracle RAC FCF and interceptors
The FCF (Fast Connection Failover) enables transparent re-connection in case of a database session failure so that most database interventions become transparent. Features are provided by accsoft-commons-dbaccess.

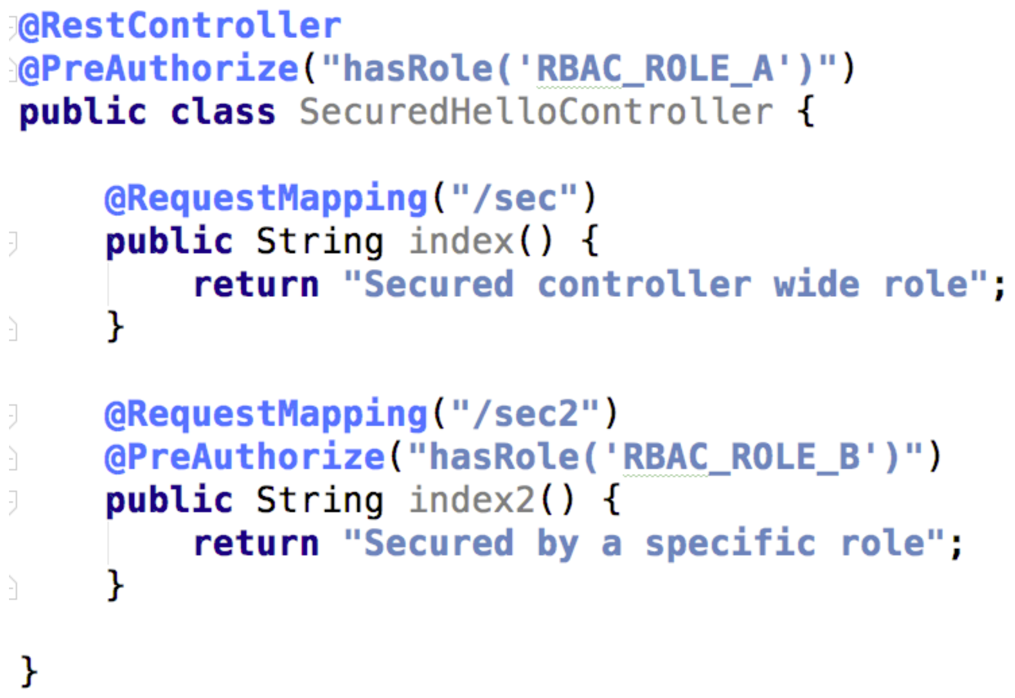
Spring based security

The ACW server provides integration of RBAC with Spring Security for role-based authorization of methods exposed as REST services.

Client applications may use built-in Spring annotations with no direct dependencies to RBAC.

The RBAC serves only as an implementation of the security engine which is provided by Spring.

As an application developer you just need to define RBAC roles and assign them to your users.



```
@RestController
@PreAuthorize("hasRole('RBAC_ROLE_A')")
public class SecuredHelloController {

    @RequestMapping("/sec")
    public String index() {
        return "Secured controller wide role";
    }

    @RequestMapping("/sec2")
    @PreAuthorize("hasRole('RBAC_ROLE_B')")
    public String index2() {
        return "Secured by a specific role";
    }

}
```

ACW Full-stack features

Persistence of user settings

Easy way to persist user specific application configuration like filters, selection of a data-grid, application configuration specific to user or global defaults.

Credits to K. Penar

Reporting component providing full-stack executing "named queries"

Execution of defined in the database queries, including server-side searching and complete transport layer from the database to a data-grid component on the UI.

Credits to K. Penar

Reports subscription engine

Extension to reporting component providing subscriptions to daily/weekly automatic notifications based on the selected report and filtering criteria.

Credits to J. Rolland

Topology Visualization Component

Stand-alone component for visualization of graphs based on the reporting engine. Corner-stone of future ACW based synoptics applications.

Credits to W. Jurasz

ACW Database

Server artefact and full-stack features require a small set of tables which have a minimal footprint on the database.

The ACW database part is integrated with Commons4Oracle, the BE-CO-DS extension for Oracle, but can run without it.
For more details see https://wikis.cern.ch/display/com4ora/Commons4Oracle+Home

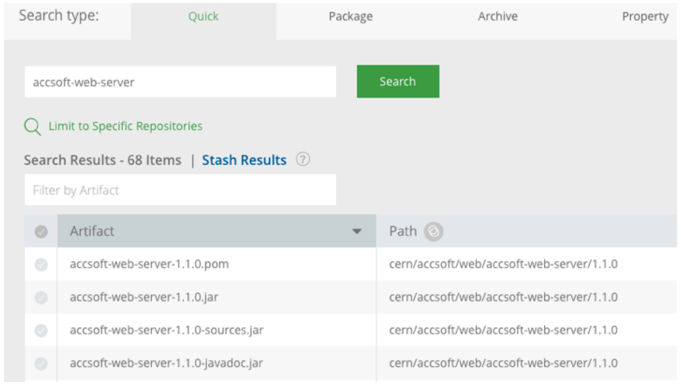
Lean and well-contained ACW database domain model holds authentication tokens, user settings, reporting queries and reports subscriptions.

Small PL/SQL package is used by reporting engine and provides dynamic execution of queries and background notifications.

Current state of ACW libraries

ACW server-side is designed to work in "out-of-the-box" manner.
Necessary configuration is limited to database name, credentials and SSO certificate location.

The server artifact plays an integral part in the Seed project which is a basis for three main projects in Data Services section: Accelerators Faults Tracking (AFT), Controls Configuration Service (CCS) and Layout.
Smaller PoC projects and tools as well: accsoft-ccs-pulse-repeaters, accsoft-ccs-synoptics

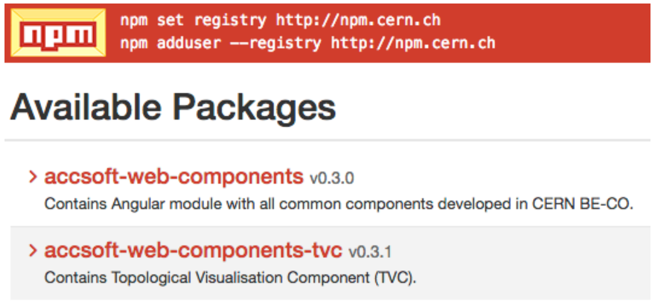


accsoft-web-server

Search Results - 68 Items | Stash Results

Artifact	Path
accsoft-web-server-1.1.0.pom	cern/accsoft/web/accsoft-web-server/1.1.0
accsoft-web-server-1.1.0.jar	cern/accsoft/web/accsoft-web-server/1.1.0
accsoft-web-server-1.1.0-sources.jar	cern/accsoft/web/accsoft-web-server/1.1.0
accsoft-web-server-1.1.0-javadoc.jar	cern/accsoft/web/accsoft-web-server/1.1.0

The accsoft-web-server is current available in a stable version 1.1.0 from artifactory.cern.ch.



```
npm set registry http://npm.cern.ch
npm adduser --registry http://npm.cern.ch
```

Available Packages

› accsoft-web-components v0.3.0
Contains Angular module with all common components developed in CERN BE-CO.

› accsoft-web-components-tvc v0.3.1
Contains Topological Visualisation Component (TVC).

The latest version of UI components, accsoft-web-components is available in version 0.3.0 from npm.cern.ch.

Plans for future

Full-stack tracing on the level of DAO and REST.
Integration with Commons4Oracle history tables engine and a complete instrumentation of REST calls, integration with CO Tracing – logs.cern.ch.

Unified storage of application tokens and CERN SSO certificates management
Central service-based storage and management of the ACW based application tokens, possibly integrated with RBAC servers infrastructure and single domain SSO certificates enabling easy deployment of new ACW applications.

Row-level access control lists (ACLs) implemented with Spring Security.
Authorization on the level of database rows enabling fine grained control of create/update/delete operations.

Integration of spring-data Oracle extension with focus on Streams AQ.
The Oracle Advanced Queuing (AQ) provides a feasible alternative to expensive 2-phase commits and distributed transactions. Moreover AQ brings transactional eventing between and Oracle database and i.e.: Java application.

Main future goal is to establish a solid development framework based on ACW artefacts: server back-end and UI components, Seed archetype and common development and deployment scenarios.
The framework common for all our new web applications.