JARS

The JavaScript RESTful Specification

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What is JARS?

JARS stands for

JavaScript API for RESTful Services.

It is a working draft specification project which aims to provide a standard REST API to JEC.

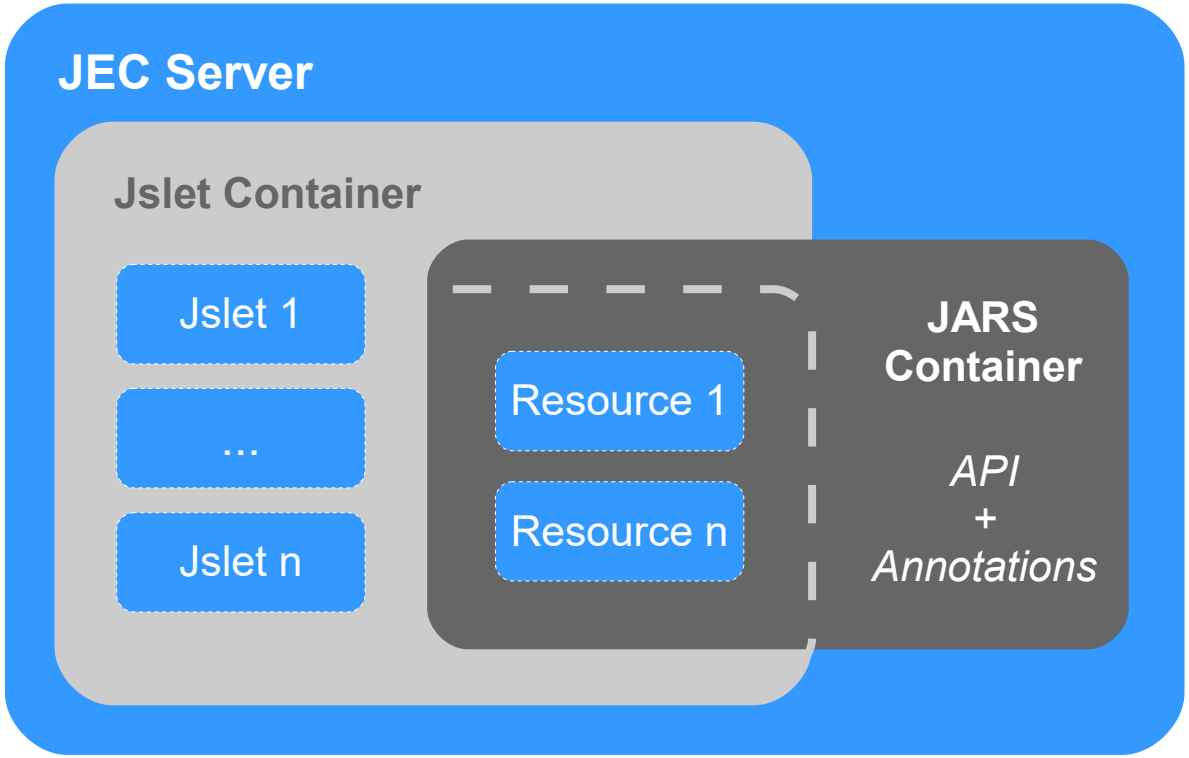
- easy-to-use
- built for maintainability
- container independent
- built on top of the TypeScript decorators specification
- asynchronous and non-blocking

The Sandcat framework is the
GlassCat default implementation of JARS.

JARS Architecture

JARS is built over the JEC **jslet API**.

- it uses POJOs[1] to implement the corresponding Web resources
- it provides support for asynchronous and non-blocking I/O



[1] Plain Old JavaScript Objects

The Modular Approach

Like all specifications that are part of the JCE Project, JARS is based on modular approach:

JARS implementations can be used independently of any container.

Sandcat initialization script for autowiring support:

```
import { BootstrapScript, Bootstrap, JecContainer } from "jec-commons";
import { SandcatBuilder } from "jec-sandcat";

@Bootstrap()
export class InitApp extends BootstrapScript {

  public run(container:JecContainer):void {
    new SandcatBuilder().build(container)
                        .process((err:any)=>{});
  }
}
```

List of JARS Annotations

Annotation	Target	Description
`@GET, @HEAD, @POST, @PUT, @DELETE, @CONNECT, @OPTIONS, @TRACE`	Method	Represent the HTTP requests that can be handled by a method.
`@ResourcePath`	Type	Specifies a relative path for a resource
`@Exit`	Field	The reference to the callback function for non-blocking support
`@Init, @Destroy`	Method	Provides access to the jslet initialization API.
`@PathParam`	Field	The value of a method parameter, extracted from the URI paths.
`@QueryParam`	Field	The value of a method parameter, extracted from the URI query parameters.
`@RequestParam`	Field	Provides access to the current HTTP request.
`@RequestBody`	Field	Provides access to the body of the current HTTP request.
`@RootPath`	Type	Specifies the resource-wide version path that forms the base URI of a set of resource classes.
`@RootPathRefs`	Type	Specifies the reference to all of the root paths for a resource class.
`@CookieParam`	Field	The value of a method parameter, extracted from the cookies.

Ease-of-use

JARS API is highly intuitive to learn and use.

It provides support for sub-routing, parameters extraction and MIME types treatment:

```
import { ResourcePath, GET, PathParam, Exit } from "jec-jars";

@ResourcePath("/hello")
export class Hello {

  @GET()
  public sayHelloWorld(@Exit exit:Function):void {
    exit("Hello World!");
  }

  @GET({
    route: "/:username"
  })
  public sayHello(@PathParam username:string, @Exit exit:Function):void {
    exit(`Hello ${username}!`);
  }
}
```

API Versioning

JARS provides support for REST APIs URL versioning.

URL versioning declaration:

```
@RootPath({
  path: "/versioned.api",
  ref: "v2.0",
  version: {
    prefix: "v",
    major: 2,
    minor: 0
  }
})
export class VersionedSampleApi_v_2_0 {}
```

API references declaration:

```
@ResourcePath("/search")
@RootPathRefs(["v1.0", "v2.0"])
export class Search {}
```

Client usage:

```
http://mydomain.com/myservices/versioned.api/v1.0/search
http://mydomain.com/myservices/versioned.api/v2.0/search
```

Accessing Request Properties

JARS annotations allow access to all parts of a HTTP request and easily combine them with any parameter:

```
import { HttpRequest } from "jec-exchange";
import { ResourcePath, GET, RequestParam, PathParam, RequestBody,
         Exit } from "jec-jars";

@ResourcePath("/context")
export class Context {

  @GET({
    route: "/header-params/:param"
  })
  public getHeader(@Exit exit:Function, @RequestParam request:HttpRequest,
                                        @PathParam param:string):void {
    exit(param + ": " + request.getHeader(param));
  }

  @GET({ route: "/body" })
  public getHeader(@Exit exit:Function, @RequestBody body:any):void {
    exit("request body: " + JSON.stringify(body));
  }
```

Accessing Query Parameters

JARS query parameter use a name-based implementation to make search engines more easy to implement and maintain:

```
import { ResourcePath, RootPathRefs, GET, QueryParam, Exit } from "jec-jars";

@ResourcePath("/search")
@RootPathRefs(["v1.0", "v2.0"])
export class Context {

  @GET({
    route: "/users"
  })
  public getUsers(@Exit exit:Function, @QueryParam name:any,
                                       @QueryParam age:any):void {
    let response:string = "/searching for users with ";
    if(name) response += "name='" + name + "'" + (age ? " and " : "");
    if(age) response += "age='" + age + "'" ;
    exit(response);
  }
```

Swagger Integration

Bidirectional compatibility between JARS and Swagger has been planned.

Swagger integration will:

- improve REST APIs testability
- provide microservice API management capabilities (e.g. Apigee)

API management is the process of [1]:

- creating and publishing web APIs
- enforcing their usage policies
- controlling access
- nurturing the subscriber community
- collecting and analyzing usage statistics
- reporting on performance

Swagger integration can be specified through a new JEC specification.

[1] https://en.wikipedia.org/wiki/API_management

Where to go from here?

For more information and documentation on JARS please visit:

- GlassCat Project
- JEC Sample Projects
- JEC Youtube Channel

JARS is part of the JEC project:

- JEC project website

JEC

JavaScript Enterprise Container