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RESTful web services with JAX-RS and RESTEasy

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Outline

A word about the author

RESTful web services

>An introduction

JAX-RS and RESTEasy

>Demo

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About the author

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RESTful web services



What is REST?

Representation State Transfer

- > Roy Fielding (HTTP) thesis
- > Applying HTTP principles to internet applications

Addressable resources

- > ID, URI

Limited interface

- > Standard protocol methods (GET, POST, PUT, DELETE...)



What is REST?

Different representations per resource

>Decouple formats from resources (XML, JSON...)

Stateless communication

>Scales well



Addressability

URIs

- >Well-known

- >Linkable

Example

```
<order id="12">
```

```
  <customer ref="/customer/42" />
```

```
</order>
```



URI Parameters

Path

```
>/customer/{id}
```

Query

```
>/customers?country=FR
```

Matrix

```
>/customers;start=45;count=20
```



Limited interface

Limit the number of operations

> Define them well

In HTTP:

> POST, GET, PUT, DELETE

CRUD:

> CREATE, READ, UPDATE, DELETE

SQL:

> INSERT, SELECT, UPDATE, DELETE



Limited interface

GET

>Idempotent read, no side-effect

PUT

>Idempotent update, can be repeated

DELETE

>Idempotent deletion

POST

>Not idempotent, everything goes



Limited interface

Simple

- >No API, no dependency

Portable

- >HTTP supported everywhere, format decoupling

Interoperable

- >HTTP stable and well-known

Familiar

- >Securing and caching HTTP well-known

Easy to debug



Example API

`/orders`

- GET - list every order
- POST - create a new order

`/orders/{order-id}`

- GET - get an order representation
- PUT - update an order
- DELETE - cancel an order

`/orders/average-sale`

- GET - calculate the average sale

`/customers`

- GET - list every customer
- POST - create a new customer

`/customers/{cust-id}`

- GET - get a customer representation
- DELETE - delete a customer

`/customers/{cust-id}/orders`

- GET - list every order for a customer



No state

No session/conversation on the server

>Does not mean no storage

Maintain state on the client

>Reify it as a resource

Scales well



JAX-RS/RESTEasy demo



Features

@Path

@PathParam, @QueryParam, @FormParam,
@CookieParam, @HeaderParam

>@DefaultValue

@Form

Response



Features

@Produces, @Consumes

- > JAXB, JSON

- > Type Mappings

- > @Wrapped

@Context

- > HttpHeaders, SecurityContext, UriInfo, Request, HttpServletRequest, HttpServletResponse, ServletConfig, ServletContext



Features

LastModified

>Request.evaluatePreconditions

@MultiPartForm

Cache support

Servlet 3.0 Asynchronous support

Security

>@RolesAllowed, OAuth



Features

@Provider

- >Exception mapping
- >Pluggablemarshallers

GZIP

Interceptors

Atom links



Clients

Java

JavaScript



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Conclusion



Conclusion

REST is simple and powerful

>Real paradigm shift

JAX-RS is easy and extendable

RESTEasy provides many extensions

><http://www.jboss.org/resteasy>

Jax-doclets for documenting JAXB and JAX-RS

><http://www.lunatech-labs.com/open-source/jax-doclets>



Questions



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