

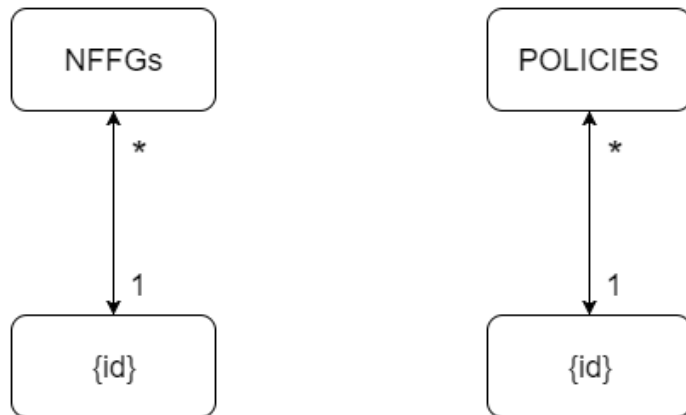
# Distributed Programming II

A.Y. 2016/17

## Assignment n. 3 part a – NffgService REST API Documentation

NffgService provides the possibility to load, delete and retrieve whole NFFGs. Moreover it is possible to load, delete, retrieve and verify reachability policies against the stored NFFGs.

### • Resources Hierarchy



### • Resources Mapping\*

- |                             |   |
|-----------------------------|---|
| ▪ baseURL/                  | Documentantion page                             |
| ▪ baseURL/application.wadl  | WADL description of NffgService                 |
| ▪ baseURL/nffgs             | Collections of NFFGs                            |
| ▪ baseURL/nffgs/{id}        | Single NFFG within the collection               |
| ▪ baseURL/policies          | Collections of Policies                         |
| ▪ baseURL/policies/{id}     | Single policy within the collection             |
| ▪ baseURL/policies/verifier | Verifier of the policy against the stored NFFGs |

\*baseURL = base url of the service hosted by the server (e.g. <http://localhost:8080/NffgService/rest>)

- Operations on NFFGs

| Resource URL* | Method | Query params            | Request Body                                   | Response Body   | Status code | Meaning  |
|---------------|--------|-------------------------|--|---|-------------|--|
| /nffgs        | GET    | -                       | -  | Content-type: application/xml<br>Entity: entityPointers | 200         | Return the pointers to the nffgs loaded on the service.  |
| /nffgs        | GET    | -                       | -  | -   | 204         | There are not nffgs loaded on the service.   |
| /nffgs        | POST   | -                       | Content-type: application/xml<br>Entity: nffgs | Content-type: application/xml<br>Entity: entityPointers | 201         | Return the pointers to the nffg created.   |
| /nffgs        | POST   | -                       | Content-type: application/xml<br>Entity: nffgs | Content-type: text/plain<br>Entity: error message       | 403         | nffgs contained in the request body have not been created since there are already nffgs loaded on the service with the same names.   |
| /nffgs        | DELETE | -                       | -  | -   | 204         | All the nffgs and all the policies have been deleted.  |
| /nffgs/{id}   | GET    | -                       | -  | Content-type: application/xml<br>Entity: nffgs          | 200         | Return the nffg found.   |
| /nffgs/{id}   | GET    | -                       | -  | Content-type: text/plain<br>Entity: error message       | 404         | nffg not found.  |
| /nffgs/{id}   | DELETE | deletePolicies: boolean | -  | -   | 204         | If <i>deletePolicies == true</i> the nffg and all eventual referring policies have been deleted;<br>if <i>deletePolicies == false</i> the nffg has been deleted since there are no policies referring to it. |
| /nffgs/{id}   | DELETE | deletePolicies: boolean | -  | Content-type: text/plain<br>Entity: error message       | 403         | nffg not deleted since <i>deletePolicies == false</i> and there is at least one policy referring to this nffg.   |
| /nffgs/{id}   | DELETE | deletePolicies: boolean | -  | Content-type: text/plain<br>Entity: error message       | 404         | nffg to delete not found.  |

\*Resource URL are relative to baseURL

- Operations on Policies

| Resource URL*             | Method | Query params | Request Body   | Response Body   | Status code | Meaning  |
|---------------------------|--------|--------------|--|---|-------------|--|
| <i>/policies</i>          | GET    | -            | -  | Content-type: application/xml<br>Entity: entityPointers | 200         | Return the pointers to the policies loaded on the service.   |
| <i>/policies</i>          | GET    | -            | -  | -   | 204         | There are not policies loaded.   |
| <i>/policies</i>          | PUT    | -            | Content-type: application/xml<br>Entity: policies      | Content-type: application/xml<br>Entity: entityPointers | 201         | Return the pointers to the policies created.   |
| <i>/policies</i>          | PUT    | -            | Content-type: application/xml<br>Entity: policies      | Content-type: text/plain<br>Entity: error message       | 403         | policies not created since the referenced nffgs or nodes are missing on the service.   |
| <i>/policies</i>          | DELETE | -            | -  | -   | 204         | All the policies have been deleted.  |
| <i>/policies/{id}</i>     | GET    | -            | -  | Content-type: application/xml<br>Entity: policies       | 200         | Return the policy found.   |
| <i>/policies/{id}</i>     | GET    | -            | -  | Content-type: text/plain<br>Entity: error message       | 404         | policy not found.  |
| <i>/policies/{id}</i>     | DELETE | -            | -  | -   | 204         | policy has been deleted.   |
| <i>/policies/{id}</i>     | DELETE | -            | -  | Content-type: text/plain<br>Entity: error message       | 404         | policy to delete not found.  |
| <i>/policies/verifier</i> | PUT    | -            | Content-type: application/xml<br>Entity: policies      | Content-type: application/xml<br>Entity: policies       | 200         | The policies contained in the request body have been verified and sent back in the response along with the verification results.   |
| <i>/policies/verifier</i> | PUT    | -            | Content-type: application/xml<br>Entity: policies      | Content-type: text/plain<br>Entity: error message       | 403         | The policies contained in the request body have not been verified since the referenced nffgs or nodes are missing on the service.  |
| <i>/policies/verifier</i> | POST   | -            | Content-type: application/xml<br>Entity: namedEntities | Content-type: application/xml<br>Entity: policies       | 200         | The policies stored on the service and referenced by the policy names contained in the request body have been verified and sent in the response along with the verification results. |
| <i>/policies/verifier</i> | POST   | -            | Content-type: application/xml<br>Entity: namedEntities | Content-type: text/plain<br>Entity: error message       | 403         | The policies referenced by the policy names of the request body are missing on the service.  |

\*Resource URL are relative to baseURL

## Assignment n. 3 part b – NffgService REST Design and Implementation Documentation

- NffgService Design structure

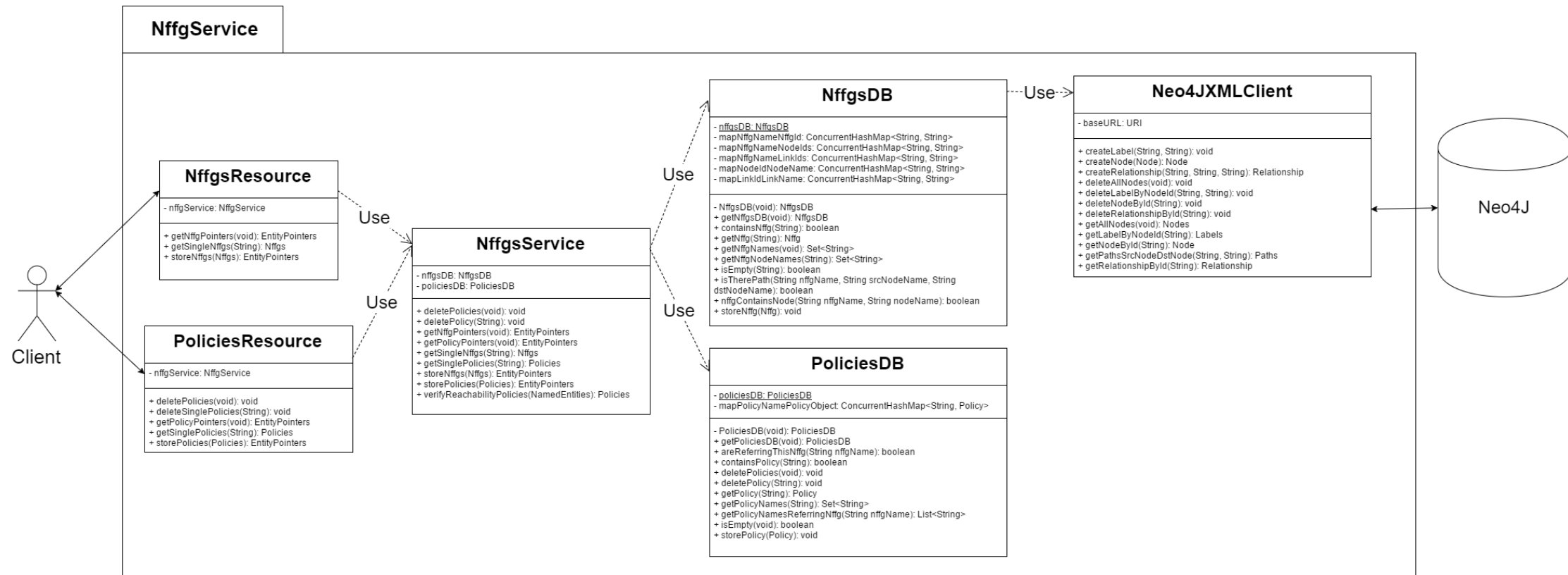


Figure 1: “simplified” class diagram of NffgService. It is intended only to give an idea of the developed solution.

- Design & Implementation choices

- To achieve scalability NffgService does not return the full collections of NFFGs. When a GET on “/nffgs” is performed, NffgService returns a list of the NFFGs names stored on the service and the relative “pointers” (URL where to perform the GET of a single nffg). The same approach has been used for the Policies
- When a client asks for the verification of the policy, NffgService returns the whole policies verified, each one of them containing the verificationResult element. It does not return a verificationResult alone in order to inform the client that the verificationResult has been computed exactly on the returned policy. This is MANDATORY in a concurrent NffgService to avoid a verification request on a certain version of policy and obtain a result based on a different policy. In this way the client can always check the real policy tested.