

RESTful EPP

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Is there a problem?

RFC5730: *“The original motivation for this protocol was to provide a standard Internet domain name registration protocol”*

Why are registries developing new incompatible provisioning APIs?

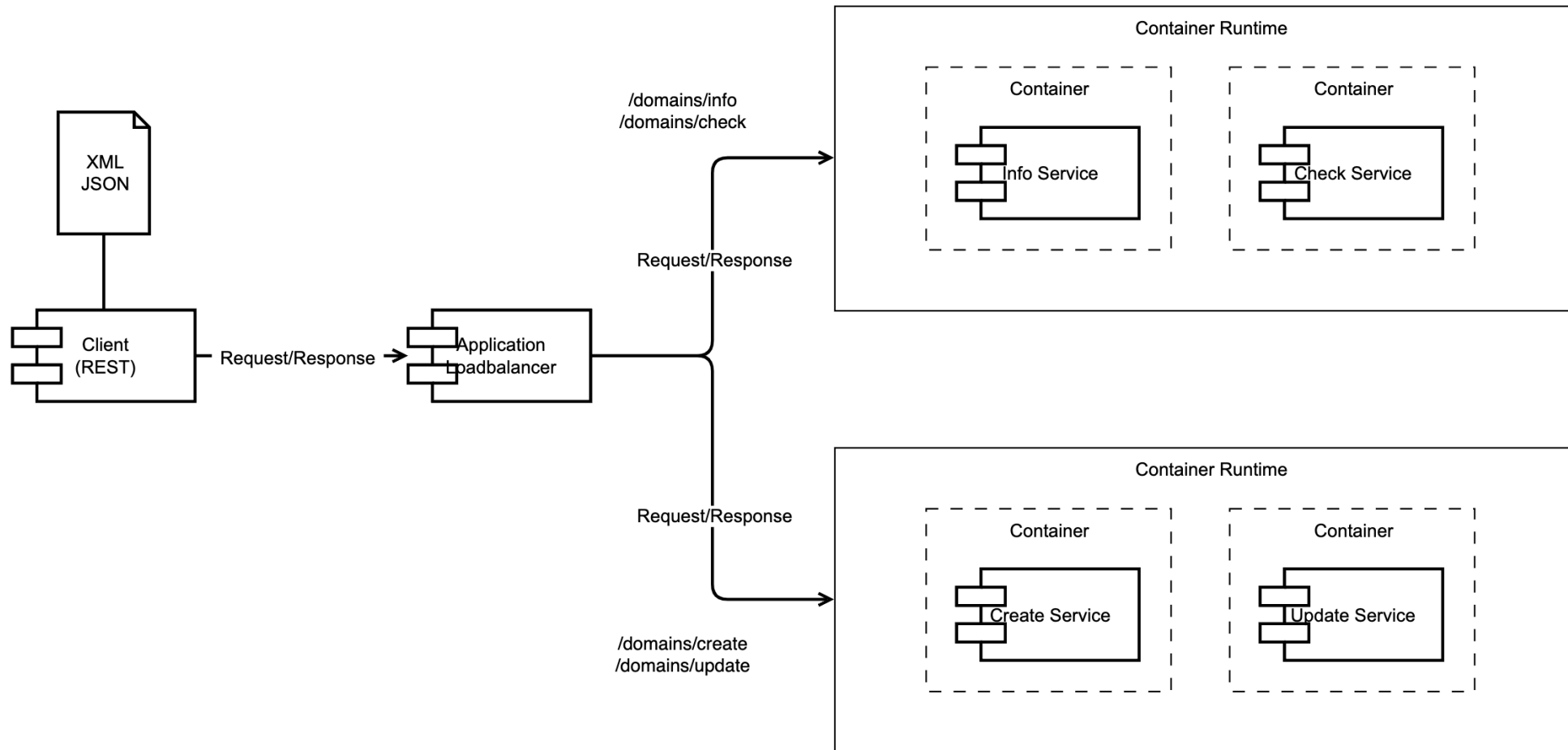
- CIRA (.ca, .nz, .ie, .nl)
- Afnic (.fr)
- Nask (.pl)
- Registro.it (.it)
- Estonian Internet Foundation (.ee)
- Others...

Motivation

- Deployment challenges of stateful EPP over TCP in modern (cloud) environments
 - Load balancing (L3/4 vs L7)
 - Rate limiting (session vs request)
 - Identity and Access Management (IAM)
- Ease of use
 - REST is the defacto standard for API development
 - Simplifies development of registrar-registry integration
 - Easier and cheaper for (smaller) registrars?

Example: Load Balancing

Request vs Session



Related Work

- RESTful interface for the Extensible Provisioning Protocol, 2012 [1]
 - HTTP(s) Transport
 - EPP command mapping to RESTful endpoints
 - Standard EPP XML messages + EPP extension

- Extensible Provisioning Protocol (EPP) Mapping over HTTP (.it, .pl) , 2022 [2]
 - HTTP(s) Transport
 - Standard EPP XML messages

1 <https://datatracker.ietf.org/doc/draft-wullink-restful-epp/>

2 <https://datatracker.ietf.org/doc/draft-loffredo-regext-epp-over-http/>



IETF Draft

1) RESTful EPP: Create a new standard for EPP over RESTful transport

- Mapping EPP to RESTful API
- Focus on scalability, performance, security and usability
- Limit use of XML/JSON messages

See: <https://github.com/SIDN/ietf-epp-restful-transport>

2) JSON: Mapping EPP XML schema to JSON schema

- Reuse established semantics for existing XML object mappings (domain, host, contact ...)

See: <https://github.com/SIDN/ietf-epp-restful-json>

REPP Overview

- EPP command is mapped to:
 - HTTP method
 - Resource (URL)
 - Request/response message
- Authentication moved to HTTP layer
- Authentication for each request
- Optional request messages

Command	Method	Resource	Request	Response
Hello	OPTIONS	/	No	Yes
Login	N/A	N/A	N/A	N/A
Logout	N/A	N/A	N/A	N/A
Check	HEAD	/{c}/{i}	Optional	No
Info	GET	/{c}/{i}	Optional	Yes
Poll Request	GET	/messages	Optional	Yes
Poll Ack	DELETE	/messages/{i}	Optional	Yes
Create	POST	/{c}	Yes	Yes
Delete	DELETE	/{c}/{i}	Optional	Yes
Renew	POST	/{c}/{i}/renewals	Optional	Yes
Transfer Request	POST	/{c}/{i}/transfers	Optional	Yes
Transfer Query	GET	/{c}/{i}/transfers/latest	Optional	Yes
Transfer Cancel	DELETE	/{c}/{i}/transfers/latest	Optional	Yes
Transfer Approve	PUT	/{c}/{i}/transfers/latest	Optional	Yes
Transfer Reject	DELETE	/{c}/{i}/transfers/latest	Optional	Yes
Update	PATCH	/{c}/{i}	Yes	Yes



Example: Domain Check

HTTP request

```
HEAD /repp/v1/domains/example.nl HTTP/2
Host: repp.example.nl
Authorization: Bearer <token>
Accept: application/epp+xml
Accept-Language: en
REPP-Cltrid: ABC-12345
REPP-Svcs: urn:ietf:params:xml:ns:domain-1.0
```

HTTP response

```
HTTP/2 200 OK
Date: Wed, 24 Jan 2024 12:00:00 UTC
Server: Example REPP server v1.0
REPP-Cltrid: ABC-12345
REPP-Svtrid: XYZ-12345
REPP-Check-Avail: 0
REPP-Check-Reason: In use
REPP-result-code: 1000
Content-Length: 0
```

No XML required

Request encoded in:

- Method
- URL
- Headers

No XML response

Response encoded in:

- Headers

Open Issues

- How to:
 - Handle EPP extensions?
 - Convert XML to JSON?
 - Handle authentication?
 - ...

Discussion

- Is this something your registry would be interested in?
- Who would like join us and work on this?

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Thank You

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