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Description

Parameters

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knowledge-reasoning/event

Description

Parameters

Responses

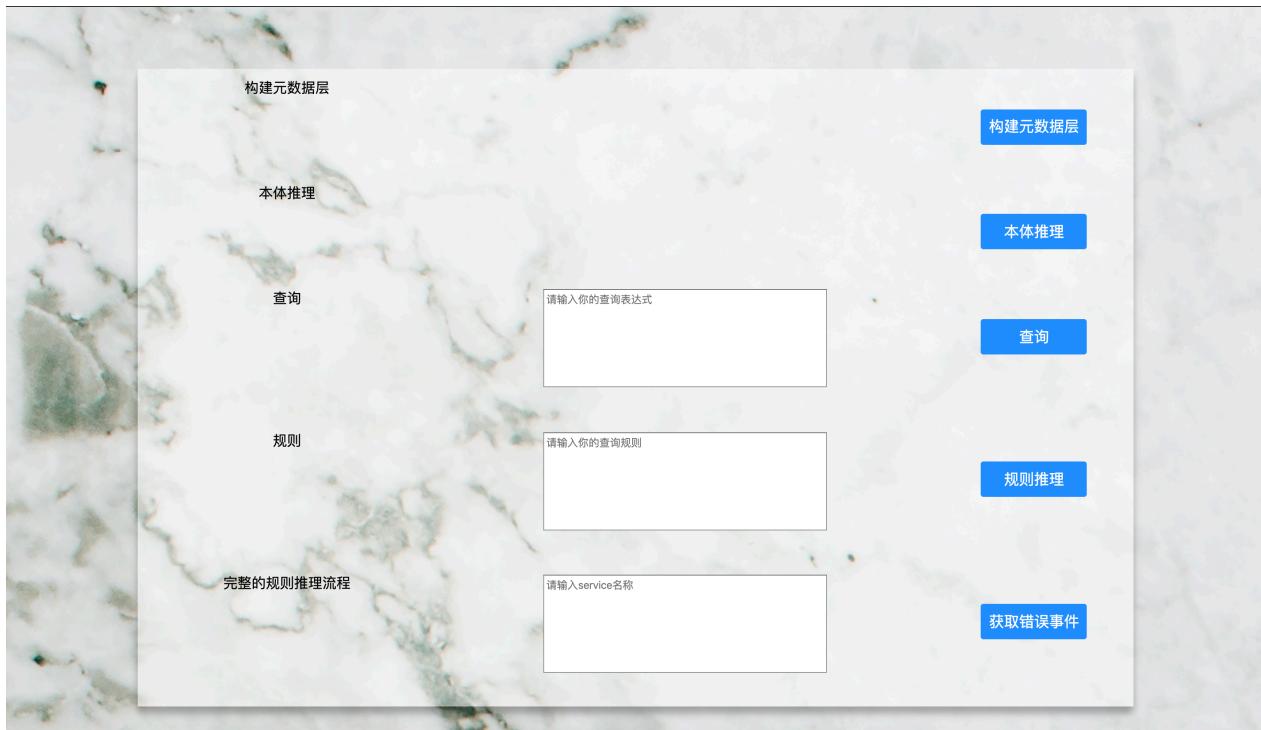
Request Sample

Response Sample

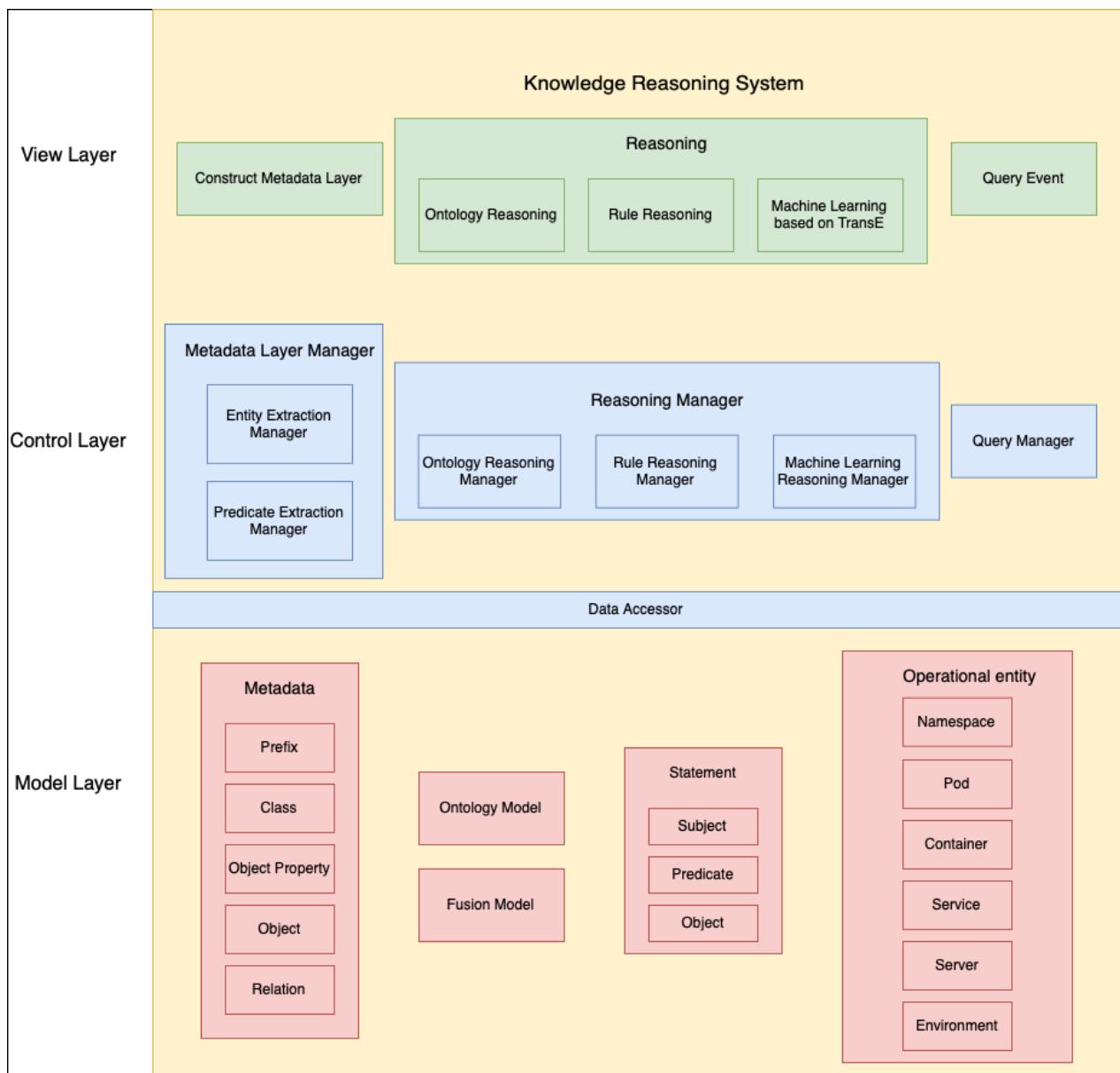
Prototype Design

The UI design of the project

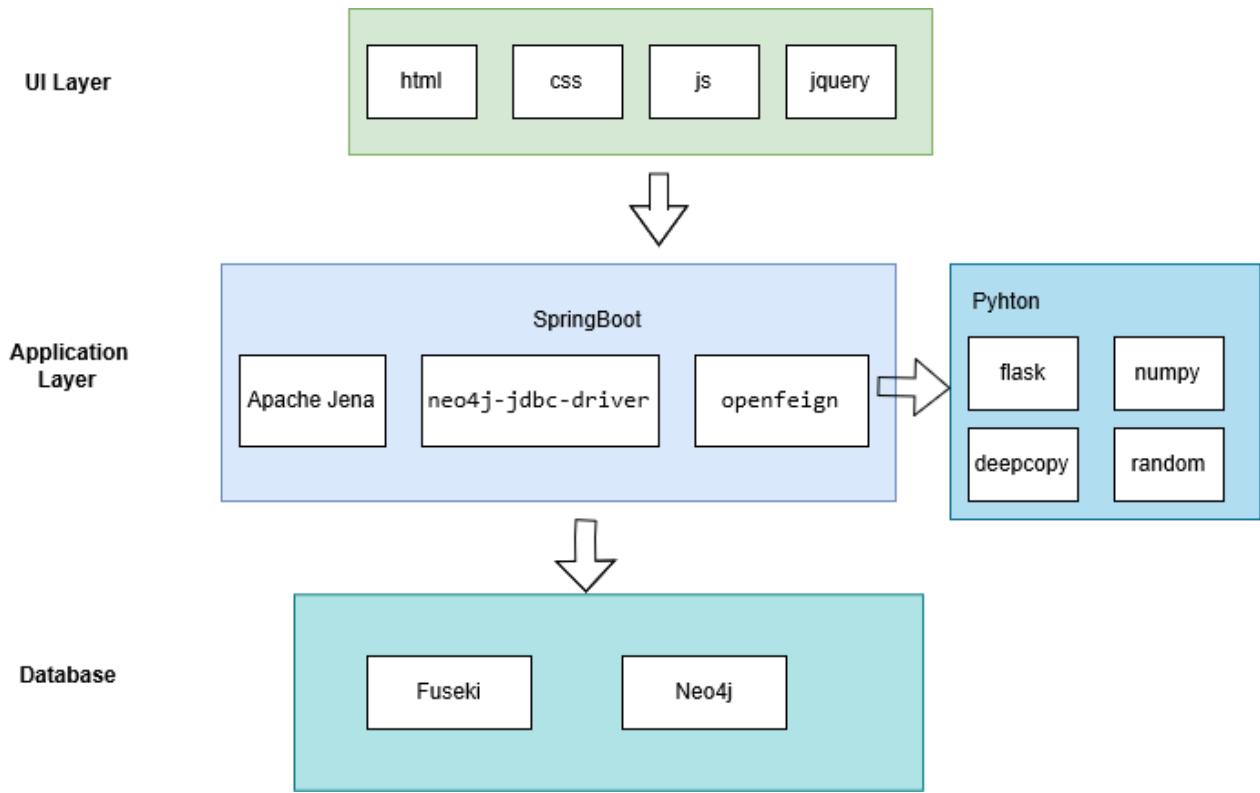
Since our project focused on algorithms, we didn't pay much attention on the user interface side, just using the various knowledge reasoning services we provided through the user interface.



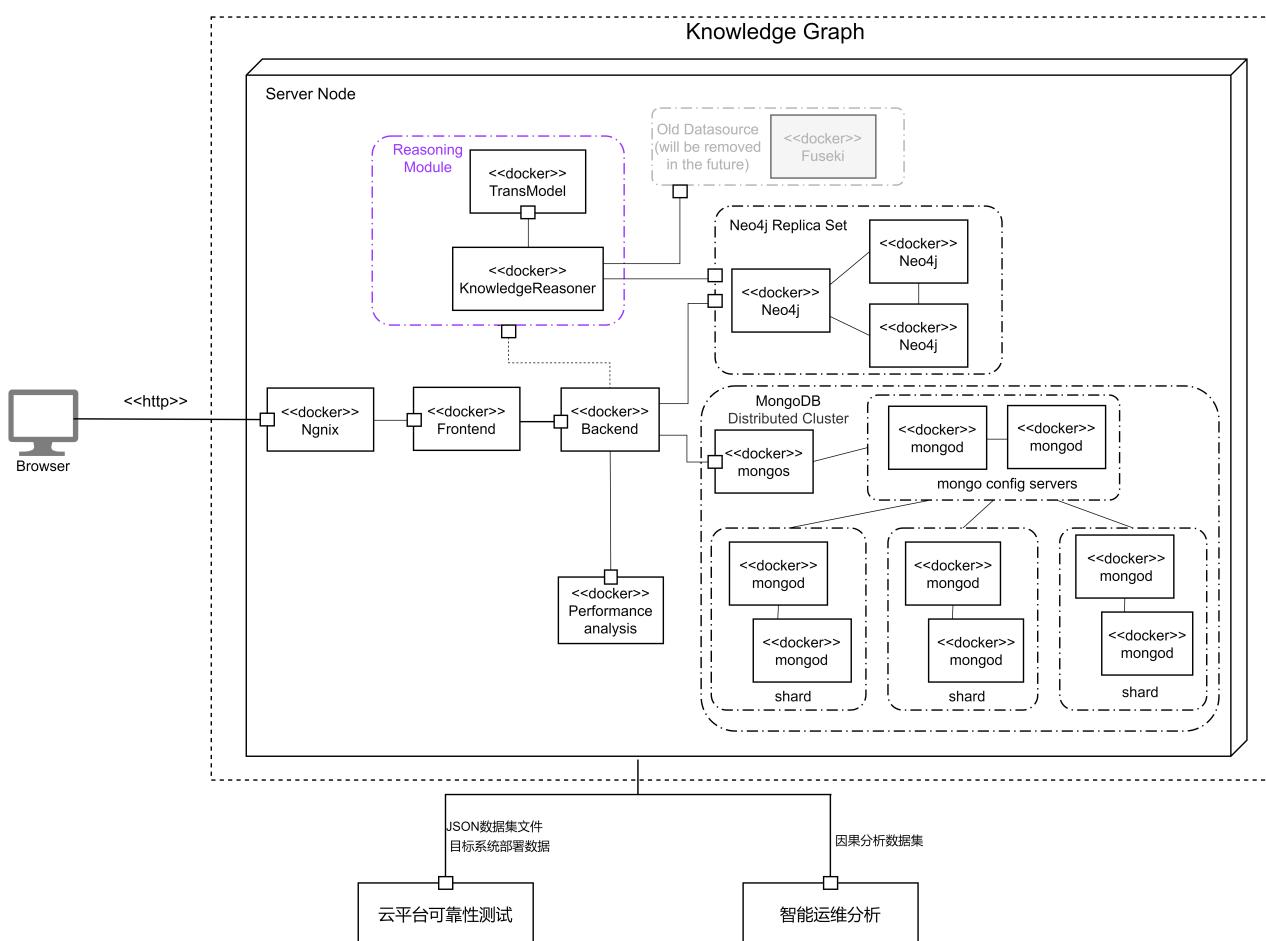
Business Architecture



Technology Architecture

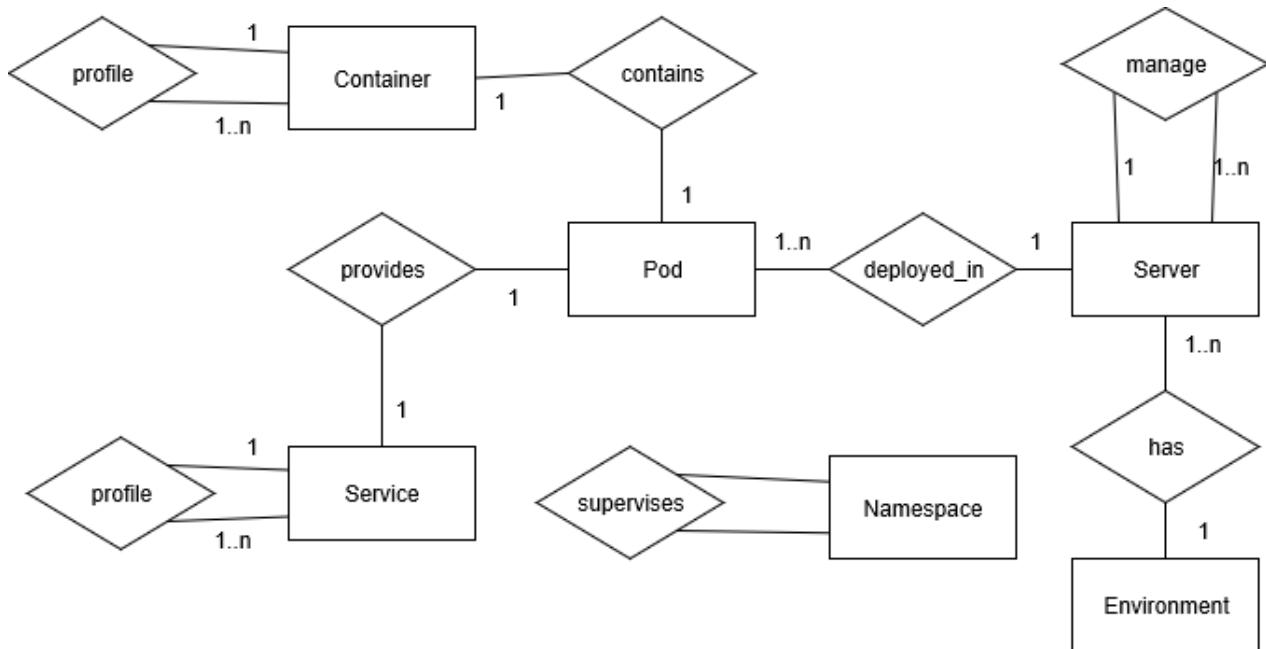


Deployment Topology



Data Models

Entity-Relation Design



Database Design

Class

name	type
Pod	Class

name	type
Container	Class

name	type
Service	Class

name	type
Server	Class

name	type
Environment	Class

name	type
Namespcace	Class

prefix

name	prefix
namespace	http://localhost/KGns/Namespace/

name	prefix
pods	http://localhost/KGns/Pod/

name	prefix
containers	http://localhost/KGns/Container/

name	prefix
services	http://pods/10.60.38.181/

name	prefix
environment	http://localhost/KGns/Environment/

name	prefix
pods_rel	http://pods/10.60.38.181/

name	prefix
pods_rel	http://pods/10.60.38.181/

name	prefix
containers_rel	http://containers/10.60.38.181/

name	prefix
services_rel	http://services/10.60.38.181/

name	prefix
servers_rel	http://servers/10.60.38.181/

name	prefix
namespace_rel	http://namespace/10.60.38.181/

name	prefix
environment_rel	http://environment/10.60.38.181/

Object Property

Object Property	domain	range
pods_rel: deployed_in	Pod	Server

Object Property	domain	range
pods_rel: contains	Pod	Container

Object Property	domain	range
pods_rel: provides	Pod	Service

Object Property	domain	range
servers_rel: manage	Server	Server

Object Property	domain	range
environment_rel: has	Environment	Server

Object Property	domain	range
namespace_rel: supervises	Namespace	Namespace

Object Property	domain	range
containers_rel: profile	Container	Container

Object Property	domain	range
services_rel: profile	Service	Service

Interface Specifications

knowledge-reasoning/metadata-layer-construct

Description

Construct metadata layer.

Request Method	POST
Authorization	Required

Parameters

none

Responses

Code	Description	Schema
true	Successful construct metadata layer	flag : string

Request Sample

```
knowledge-reasoning/metadata-layer-construct
```

Response Sample

```
{
  "flag": "true"
}
```

knowledge-reasoning/ontology-reasoning

Description

Ontology reasoning based on metadata layer.

Request Method	POST
Authorization	Required

Parameters

Name	Located in	Description	Required	Schema
flag	metadata layer	judge whether metadata layer is built successfully or not	Yes	String

Responses

Code	Description	Schema
fresh_knowledge	Successful response	<i>fresh_knowledge</i> : Array

Request Sample

```
knowledge-reasoning/ontology-reasoning
```

Response Sample

```
{
  "fresh_knowledge": [
    "[http://pods/10.60.38.181/sock-shop/catalogue-db-99cbcbb88-w152p,
http://pods/10.60.38.181/provides, http://services/10.60.38.181/sock-
shop/catalogue-db]",
    "[http://pods/10.60.38.181/sock-shop/shipping-65769d99d7-1mpg7,
http://pods/10.60.38.181/provides, http://services/10.60.38.181/sock-
shop/shipping]",
    "[http://pods/10.60.38.181/sock-shop/orders-6496fcd6f7-qcmj7,
http://pods/10.60.38.181/provides, http://services/10.60.38.181/sock-
shop/orders]",
    "[http://pods/10.60.38.181/sock-shop/carts-648d5f498d-n8hzn,
http://pods/10.60.38.181/provides, http://services/10.60.38.181/sock-
shop/carts]"
  ]
}
```

knowledge-reasoning/rule-reasoning

Description

Rule reasoning based on metadata layer.

Request Method	POST
Authorization	Required

Parameters

Name	Located in	Description	Required	Schema
rule_expression	startNeo4jReason	rule reasoning based on rule input	Yes	String

Responses

Code	Description	Schema
reasoning_result	Successful response	<i>reasoning_result</i> : Array

Request Sample

```
knowledge-reasoning/rule-reasoning

[rule1: (?X <http://pods/10.60.38.181/provides> ?Y) -> (?X
<http://10.60.38.181/KGns/relates> ?Y)]
[rule2: (?X <http://10.60.38.181/KGns/relates> ?Y) (?X
<http://pods/10.60.38.181/deployed_in> ?Z) -> (?Z
<http://10.60.38.181/KGns/relates> ?Y)]
[rule3: (?X <http://10.60.38.181/KGns/relates> ?Y) (?X
<http://pods/10.60.38.181/contains> ?Z) -> (?Z
<http://10.60.38.181/KGns/relates> ?Y)]
[rule4: (?Y <http://10.60.38.181/KGns/relates> ?X) (?Z
<http://event/10.60.38.181/inject> ?Y) -> (?Z
<http://10.60.38.181/KGns/effects> ?X)]
```

Response Sample

```
{
  "reasoning_result": "[{
    \"predicate\": \"http://10.60.38.181/KGns/relates\", \"subject\": \"http://pods/10.60.38.181/sock-shop/shipping-65769d99d7-1mpg7\", \"object\": \"http://services/10.60.38.181/sock-shop/shipping\"}]"
}
```

knowledge-reasoning/query

Description

Query for the event which make service fail.

Request Method	POST
Authorization	Required

Parameters

Name	Located in	Description	Required	Schema
query_expression	query	query based on query input	Yes	String

Responses

Code	Description	Schema
query_result	Successful response	<i>query_result</i> : Array

Request Sample

```
knowledge-reasoning/query

PREFIX pods_rel: <http://pods/10.60.38.181/>
SELECT *
{ <http://services/10.60.38.181/sock-shop/orders> ^pods_rel:provides /
(pods_rel:deployed_in* | pods_rel:contains* ) ?o . }
```

Response Sample

```
{
  "query_result": [
    "http://pods/10.60.38.181/sock-shop/orders-6496fcd6f7-19rmn",
    "http://server/10.60.38.181/192.168.199.32",
    "http://pods/10.60.38.181/sock-shop/orders-6496fcd6f7-19rmn",
    "http://containers/10.60.38.181/sock-shop/orders",
    "http://pods/10.60.38.181/sock-shop/orders-6496fcd6f7-fqnjt",
    "http://server/10.60.38.181/192.168.199.33",
    "http://pods/10.60.38.181/sock-shop/orders-6496fcd6f7-fqnjt",
    "http://containers/10.60.38.181/sock-shop/orders",
    "http://pods/10.60.38.181/sock-shop/orders-6496fcd6f7-zt6zq",
    "http://server/10.60.38.181/192.168.199.32"
  ]
}
```

knowledge-reasoning/event

Description

Reasoning specifies the cause of service failure.

Request Method	POST
Authorization	Required

Parameters

Name	Located in	Description	Required	Schema
service	event	faulty service	Yes	String

Responses

Code	Description	Schema
reason	Successful response	<i>reason</i> : Array

Request Sample

```
knowledge-reasoning/event
```

```
http://services/10.60.38.181/sock-shop/orders-db
```

Response Sample

```
{
  "reason": [
    "http://event/10.60.38.181/5fc29fffc31dc41",
    "http://event/10.60.38.181/a01e44a6f230c7b8",
    "http://event/10.60.38.181/464dd12e11c7d130",
    "http://event/10.60.38.181/c6430ff37ed2b615"
  ]
}
```