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API 1.0.0 OAS3

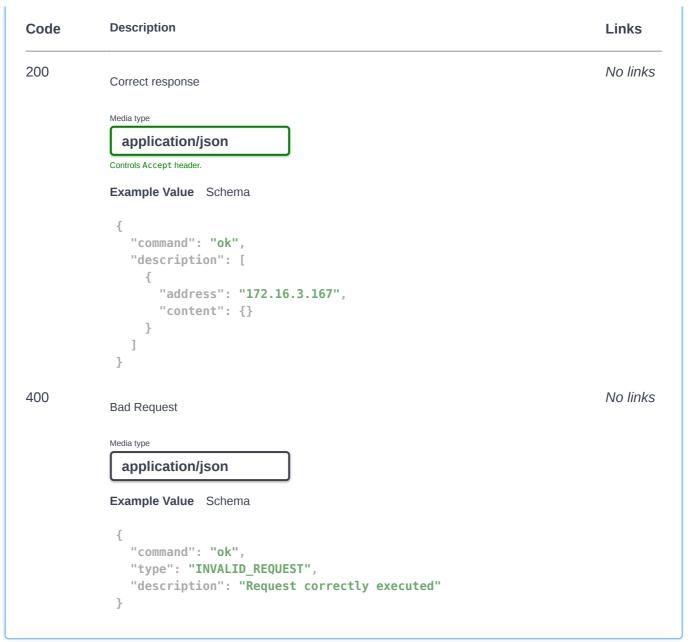
Interface for communicating with the Health-Monitor service. Its functionalities can be organized in the following set of operations:

- Operations for service management: permits to add and remove docker hosts to the system and to uninstall it
- Operations for container management: permits to see the managed containers, their status and to change the container manager configuration
- Operations for testing purpose: permits to test the service with configurable attacks to the containers

Servers

http://172.16.3.167:8080/healthmonitor - Unipi Virtual Machine offered by the course. A VPN connection

| default | ^ | | |
|--|--------|--|--|
| GET /containers Gives all the managed containers by the service | ^ | | |
| It doesn't require any parameter and gives back a set of lists each one describing the containers inside a particular managed docker host. The response will contain for each docker host its status and a list of all the containers with information about their status and the current packet loss measured | | | |
| Parameters | it out | | |
| No parameters | | | |
| Responses | | | |
| Code Description | Links | | |



POST /containers Change the threshold configured into each manager.

Change the threshold configured into the docker managers. Each manager have a personal threshold used to identify if the packet loss percentage is too high and the container needs to be restarted.

Parameters

Try it out

No parameters

Request body required

application/json

The request requires the threshold value to be set into the managers. The value is a percentage so it needs to be between 0 and 100 to be accepted.

```
"threshold": 60
```

Example Value Schema

Responses

Description Code Links

200 No links Correct Response

Media type

application/json

Controls Accept header.

Example Value Schema

```
"command": "ok",
  "content": [
    {}
 ]
}
```

400 **Bad Request** No links

application/json

Example Value Schema

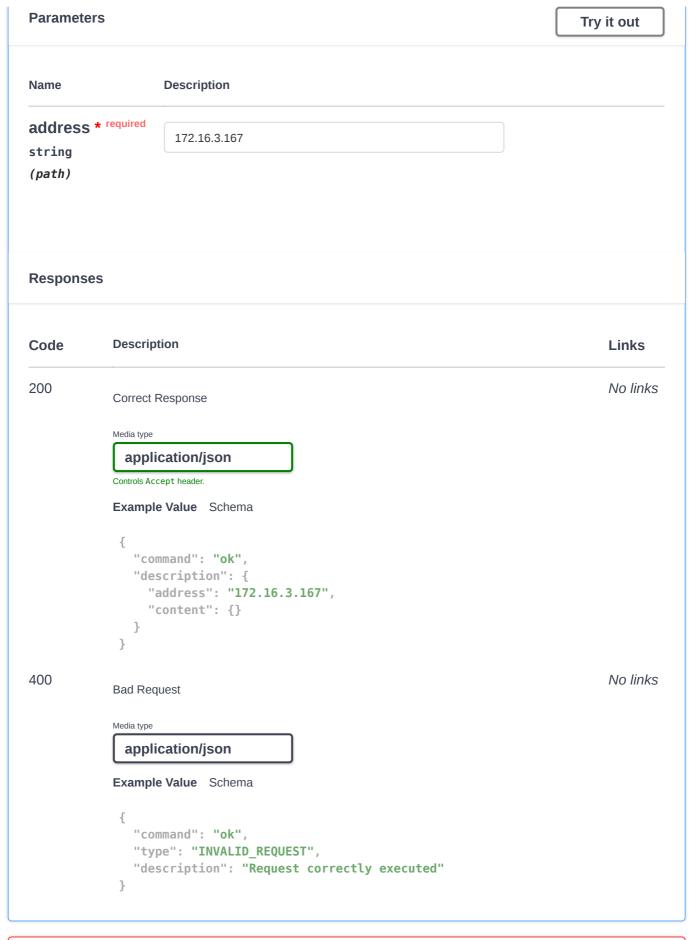
```
"command": "ok",
"type": "INVALID REQUEST",
"description": "Request correctly executed"
```

GET

Get the status of the selected docker host and a list of all the /containers/{address} managed containers with their status and the current packet loss percentage measured

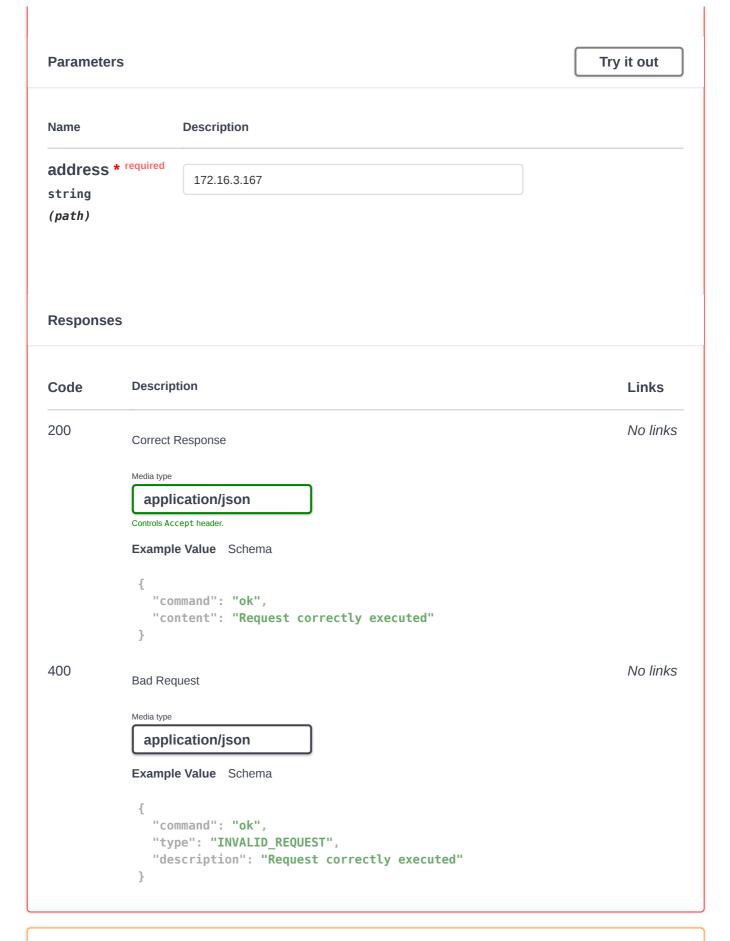
It doesn't require any parameter and gives back a set of lists each one describing the containers inside a particular managed docker host. The response will contain for each docker host its status and a list of all the containers with information about their status and the current packet loss measured

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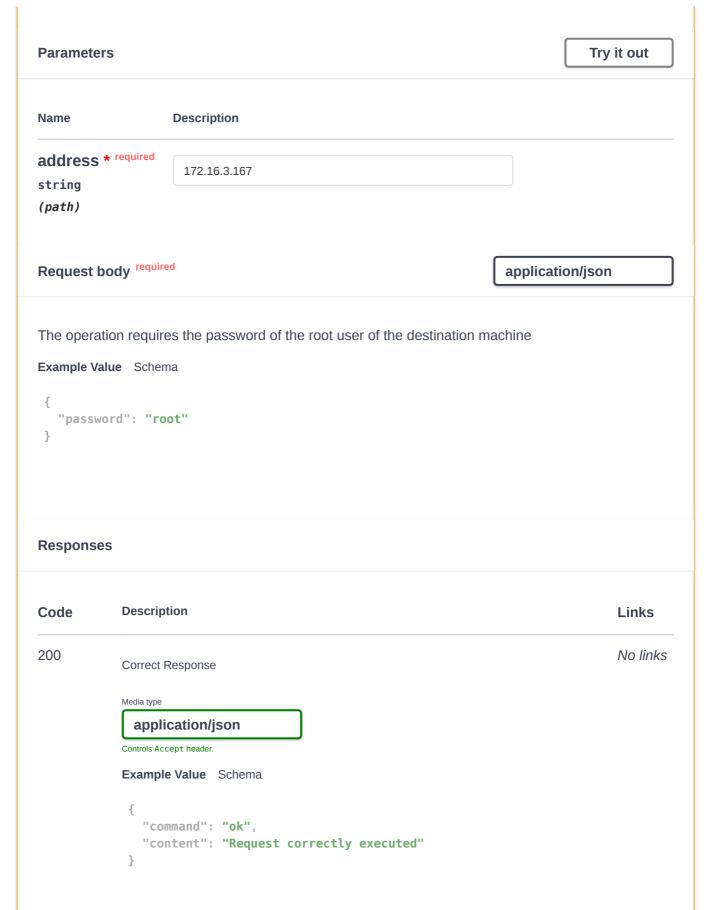
DELETE /containers/{address} Remove a registered docker host into the service

Uninstall the selected manager from the machine. The system has already stored the password but its required in order to secure the operation and prevent that users will disable the managers



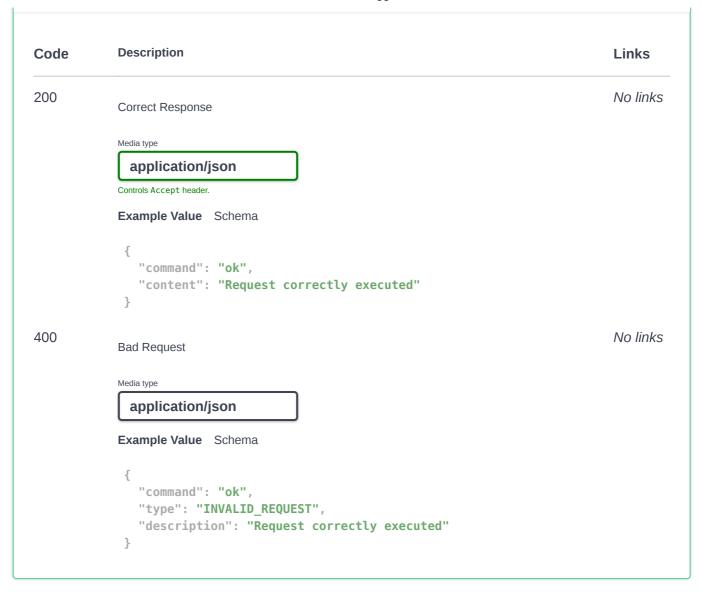
PUT /containers/{address} Add a new docker host into the service

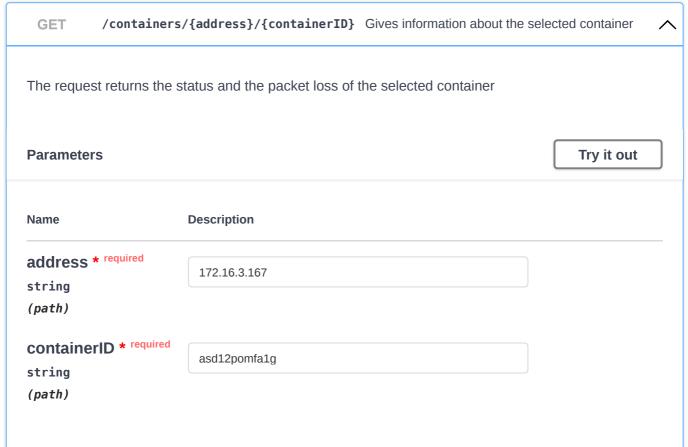
Install a new manager into the selected machine. The operations requires the root password of the destination machine and that a ssh connection is present on the default port 23





```
/containers/{address} Change the threshold configured into the selected manager.
 POST
Change the threshold configured into the selected docker manager. Each manager have a personal
threshold used to identify if the packet loss percentage is too high and the container needs to be
restarted.
                                                                                      Try it out
Parameters
Name
                     Description
address * required
                      172.16.3.167
string
(path)
Request body required
                                                                         application/json
The operation requires a threshold parameters to be set into the machine. The threshold must be
between 0 and 100
Example Value Schema
   "threshold": 70
Responses
```





Responses **Description** Code Links 200 No links Correct response Media type application/json Controls Accept header. Example Value Schema { "command": "ok", "description": { "address": "172.16.3.167", "content": {} } 400 No links **Bad Request** Media type application/json Example Value Schema "command": "ok", "type": "INVALID_REQUEST", "description": "Request correctly executed"

```
PUT /containers/{address}/{containerID} Add a container to the service

Add a previously ignored container to the service. By default all the containers are added to the service

Parameters

Try it out

Name Description

address * required string (path)
```

| Name | Description | |
|------------------------------|---|----------|
| containd string (path) | erID * required asd12pomfa1g | |
| Respons | ses | |
| Code | Description | Links |
| 200 | Correct response | No links |
| | application/json Controls Accept header. Example Value Schema { "command": "ok", "content": "Request correctly executed" } | |
| 400 | Media type application/json Example Value Schema { "command": "ok", "type": "INVALID_REQUEST", "description": "Request correctly executed" } | No links |

```
DELETE /containers/{address}/{containerID} Remove a container from the service

Ignore a container from the service management. By default all the containers are added to the service

Parameters

Try it out
```

```
Description
Name
address * required
                           172.16.3.167
string
(path)
containerID * required
                           asd12pomfa1g
string
(path)
Responses
             Description
Code
                                                                                          Links
200
                                                                                          No links
             Correct response
             Media type
               application/json
             Controls Accept header.
             Example Value Schema
                "command": "ok",
                "content": "Request correctly executed"
400
                                                                                          No links
             Bad Request
             Media type
               application/json
             Example Value Schema
                "command": "ok",
                "type": "INVALID REQUEST",
                "description": "Request correctly executed"
```

```
POST /test Change all the antagonists configuration
```

Change the configuration of all the antagonist. The configuration consists of five different parameters:

• heavy: defines the probability that the attacker will choose to attack a container

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- balance: defines the probability that the attackers will perform a packet loss attack or a shutdown attack
- loss: defines the mean packet loss value introduced during an attack(the value will be the mean of normal distribution)
- duration: defines the duration of a packet loss attack to a container. The value will be the lambda of an exponential distribution
- frequency: defines the interleaving time of each attacker between the possibility to perform an attack

| Parameters | Try it out |
|-----------------------|------------------|
| No parameters | |
| Request body required | application/json |

The request body can contain this fields:

- heavy: defines the probability that the attacker will choose to attack a container. It's a value between 0 and 100
- balance: defines the probability that the attackers will perform a packet loss attack or a shutdown attack. It's a value between 0 and 100, the more the value tends to 100 the more the probability is to perform a shutdown attack
- loss: defines the mean packet loss value introduced during an attack(the value will be the mean of normal distribution). It's a value between 0 and 100
- duration: defines the duration of a packet loss attack to a container. The value will be the lambda of an exponential distribution. The value is expressed in seconds
- frequency: defines the interleaving time of each attacker between the possibility to perform an attack . The value is expressed in seconds

If a field is missing simply it will not be changed, but no errors will be raised

Example Value Schema

```
{
  "heavy": 25,
  "balance": 50,
  "loss": 70,
  "duration": 5,
  "frequency": 3
}
```

Responses

Code Description Links

```
Code
             Description
                                                                                            Links
200
                                                                                             No links
             Correct response
             Media type
               application/json
             Controls Accept header.
             Example Value Schema
                "command": "ok",
                "content": [
                  {}
              }
400
                                                                                             No links
             Bad Request
             Media type
               application/json
             Example Value Schema
                "command": "ok",
                "type": "INVALID REQUEST",
                "description": "Request correctly executed"
```

PUT /test Starts all the antagonists

Into each docker manager is linked an antagonist able to attack all the container into the local docker host. Starting the antagonist will perform an attack on all the containers with the last configuration provided. If no configuration has been provided than a default configuration will be used.

Parameters

Try it out

No parameters

Responses

Code Description Links

```
Code
             Description
                                                                                            Links
200
                                                                                            No links
             Correct Response
             Media type
               application/json
             Controls Accept header.
             Example Value Schema
                "command": "ok",
                "content": [
                  {}
                ]
              }
400
                                                                                            No links
             Bad Request
             Media type
               application/json
             Example Value Schema
                "command": "ok",
                "type": "INVALID REQUEST",
                "description": "Request correctly executed"
```

```
The function will stop all the attackers into all the docker host. A started attack needs to be stop otherwise it will continue forever.

Parameters

Try it out

No parameters

Responses

Code Description

Links
```

```
Code
             Description
                                                                                            Links
200
                                                                                            No links
             Correct Response
             Media type
               application/json
             Controls Accept header.
             Example Value Schema
                "command": "ok",
                "content": "Request correctly executed"
              }
400
                                                                                            No links
             Bad Request
             Media type
               application/json
             Example Value Schema
                "command": "ok",
                "type": "INVALID_REQUEST",
                "description": "Request correctly executed"
```

POST /test/{address} Change an antagonist configuration Change the configuration of the selected antagonist. The configuration consists of five different parameters: • heavy: defines the probability that the attacker will choose to attack a container • balance: defines the probability that the attackers will perform a packet loss attack or a shutdown attack • loss: defines the mean packet loss value introduced during an attack(the value will be the mean of normal distribution) · duration: defines the duration of a packet loss attack to a container. The value will be the lambda of an exponential distribution • frequency: defines the interleaving time of each attacker between the possibility to perform an attack **Parameters** Try it out Name **Description** address * required 172.16.3.167 string (path)

Request body required

application/json

The request body can contain this fields:

- heavy: defines the probability that the attacker will choose to attack a container. It's a value between 0 and 100
- balance: defines the probability that the attackers will perform a packet loss attack or a shutdown attack. It's a value between 0 and 100, the more the value tends to 100 the more the probability is to perform a shutdown attack
- loss: defines the mean packet loss value introduced during an attack(the value will be the mean of normal distribution). It's a value between 0 and 100
- duration: defines the duration of a packet loss attack to a container. The value will be the lambda of an exponential distribution. The value is expressed in seconds
- frequency: defines the interleaving time of each attacker between the possibility to perform an attack . The value is expressed in seconds

If a field is missing simply it will not be changed, but no errors will be raised

Example Value Schema

```
{
  "heavy": 25,
  "balance": 50,
  "loss": 70,
  "duration": 5,
  "frequency": 3
}
```

Responses

Code Description Links

200 No links
Correct response

Media type

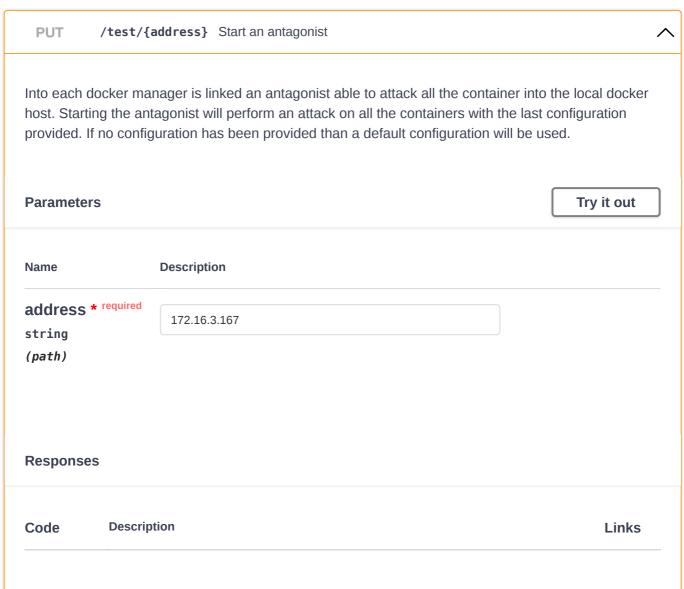
application/json

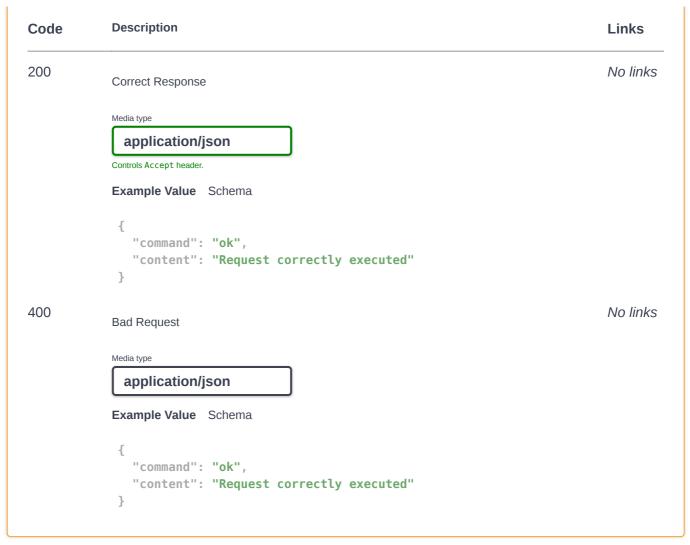
Controls Accept header.

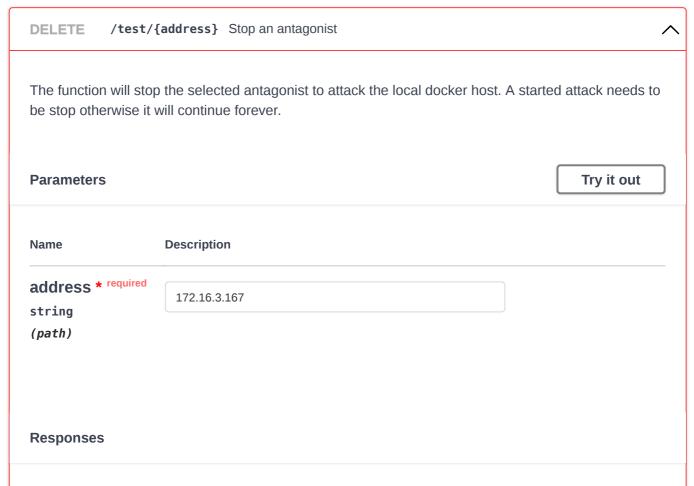
Example Value Schema

```
{
  "command": "ok",
  "content": "Request correctly executed"
}
```









```
Code
             Description
                                                                                           Links
200
                                                                                           No links
             Correct Response
             Media type
              application/json
             Controls Accept header.
             Example Value Schema
                "command": "ok",
                "content": "Request correctly executed"
              }
400
                                                                                           No links
             Bad Request
             Media type
              application/json
             Example Value Schema
                "command": "ok",
                "content": "Request correctly executed"
```

```
Schemas

CorrectResponse {
    string  
        example: ok
        type of results: ok or error

content {
    description:
    Brief description of the operation result
}
    example: Request correctly executed
}
```

```
CorrectMultiResponse
   command
                         string
                        example: ok
                         type of results: ok or error
   content
                            [
                                {
                          }]
}
                                                                                    \leftarrow
BadResponse
                  {
   command
                        string
                        example: ok
                        type of results: ok or error
                        string
   type
                        example: INVALID_REQUEST
                        short description of the error
   description
                        string
                        example: Request correctly executed
                        Brief description of the operation result
}
                                                                                    \leftarrow
AllContainersResponse
   command
                         string
                        example: ok
                        type of results: ok or error
   description
                            [
                                 {
                            address
                                                 string
                                                 example: 172.16.3.167
                                                 the IPv4 address of the selected
                                                 docker host
                            content
                                                     {...}
                          }]
}
```

```
ContainerResponse
   command
                        string
                        example: ok
                        type of results: ok or error
   description
                            {\tt address}
                                                 string
                                                 example: 172.16.3.167
                                                 the IPv4 address of the selected
                                                 docker host
                            content
                                                     {
                                                 }
                        }
}
```