
Swagger Spec Compatibility

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`swagger-spec-compatibility` is a Yelp maintained library that provides tools to automatically detect the safety of [Swagger/OpenAPI 2.0 specification](#) changes with respect to **backwards compatibility**.

`swagger-spec-compatibility` aims to give developers confidence that their spec changes are safe and that clients built with previous versions of the Swagger spec can continue to communicate correctly.

Disclaimer

The library is not supposed to cover all the possible cases of backward incompatibility. This is because OpenAPI 2.0 specifications are very expressive and flexible that leads to many cases of backward incompatibility.

The detection rules currently supported are built due to the need to cover *common* breaking changes (that we've experienced internally at Yelp) or support received from contributors.

If you're experiencing breaking changes and you would have the tool help you figure it out before being late, feel free to [open issues on the project](#). You can also *open pull requests* implementing the rules, we're always open to contributors.

1.1 Errors description

1.1.1 Request Contract Changes

[REQ-E001] - Added Required Property in Request contract

Rationale

Adding a required property to an object used in requests leads client request to fail if the property is not present.

Mitigation

A possible mitigation consists of adding the property as optional with an associated default value. In this case, the client requests don't fail to validate and the service can assume that the property is always set.

Example

Old Swagger Specs

```
1  swagger: '2.0'
2  info:
3    title: Minimal Case of REQ-E001 Rule
4    version: '1.0'
5  paths:
6    /endpoint:
7      post:
8        parameters:
9          - in: body
10            name: body
11            required: true
12            schema:
13              properties:
14                property:
15                  type: string
16            type: object
17        responses:
18          default:
19            description: ''
```

New Swagger Specs

```
1  swagger: '2.0'
2  info:
3    title: Minimal Case of REQ-E001 Rule
4    version: '1.0'
5  paths:
6    /endpoint:
7      post:
8        parameters:
9          - in: body
10            name: body
11            required: true
12            schema:
13              properties:
14                property:
15                  type: string
16            required:
17              - property
18            type: object
19        responses:
20          default:
21            description: ''
```

Backward Incompatibility

The following snippet triggers the incompatibility error.

```

1  # -*- coding: utf-8 -*-
2  from __future__ import absolute_import
3  from __future__ import print_function
4  from __future__ import unicode_literals
5
6  from os.path import abspath
7
8  from bravado.client import SwaggerClient
9  from jsonschema import ValidationError
10 from six.moves.urllib.parse import urljoin
11 from six.moves.urllib.request import pathname2url
12
13 old_client = SwaggerClient.from_url(
14     spec_url=urljoin('file:', pathname2url(abspath('old.yaml'))),
15 )
16 new_client = SwaggerClient.from_url(
17     spec_url=urljoin('file:', pathname2url(abspath('new.yaml'))),
18 )
19
20 object_to_send = {}
21
22 print('Calling the post endpoint with the old client: Succeeded')
23 old_client.endpoint.post_endpoint(body=object_to_send)
24
25 print('Calling the post endpoint with the new client: Failed')
26 try:
27     new_client.endpoint.post_endpoint(body=object_to_send)
28     raise RuntimeError('An error was expected')
29 except ValidationError:
30     pass

```

NOTE: The code is taking advantage of `bravado`

[REQ-E002] - Removed Enum value from Request contract

Rationale

Removing an enum value from a request parameter is backward incompatible as a previously valid request will not be valid. This happens because a request containing the removed enum value, valid according to the “old” Swagger spec, is not valid according to the new specs.

Mitigation

There are no best practices for this type of issue. The general recommendation would be to avoid as much as possible this type of change.

Example

Old Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of REQ-E002 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     post:
8       parameters:
9         - in: body
10           name: body
11           required: true
12           schema:
13             properties:
14               property:
15                 type: string
16                 enum:
17                   - v1
18                   - v2
19             type: object
20       responses:
21         default:
22           description: ''
```

New Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of REQ-E002 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     post:
8       parameters:
9         - in: body
10           name: body
11           required: true
12           schema:
13             properties:
14               property:
15                 type: string
16                 enum:
17                   - v1
18             type: object
19       responses:
20         default:
21           description: ''
```

Backward Incompatibility

The following snippet triggers the incompatibility error.

```
1 # -*- coding: utf-8 -*-
2 from __future__ import absolute_import
```

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```

3  from __future__ import print_function
4  from __future__ import unicode_literals
5
6  from os.path import abspath
7
8  from bravado.client import SwaggerClient
9  from jsonschema import ValidationError
10 from six.moves.urllib.parse import urljoin
11 from six.moves.urllib.request import pathname2url
12
13 old_client = SwaggerClient.from_url(
14     spec_url=urljoin('file:', pathname2url(abspath('old.yaml'))),
15 )
16 new_client = SwaggerClient.from_url(
17     spec_url=urljoin('file:', pathname2url(abspath('new.yaml'))),
18 )
19
20 object_to_send = {'property': 'v2'}
21
22 print('Calling the post endpoint with the old client: Succeeded')
23 old_client.endpoint.post_endpoint(body=object_to_send)
24
25 print('Calling the post endpoint with the new client: Failed')
26 try:
27     new_client.endpoint.post_endpoint(body=object_to_send)
28     raise RuntimeError('An error was expected')
29 except ValidationError:
30     pass

```

NOTE: The code is taking advantage of `bravado`

[REQ-E003] - Removing properties from an object with `additionalProperties` set to `False` used as request parameter

Rationale

If the object is defined with `additionalProperties` set to `False` then the object will not allow presence of properties not defined on the properties section of the object definition. Removing a definition of an existing property makes objects sent from a client, that is using “old” Swagger specs, to the server be considered invalid by the backend.

Mitigation

A possible mitigation could be to not remove the property from the object schema, mark it as deprecated (mostly for documentation purposes) and make sure that your business logic fills the field with a placeholder.

Example

Old Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of REQ-E003 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     post:
8       parameters:
9         - in: body
10           name: body
11           required: true
12           schema:
13             additionalProperties: false
14             properties:
15               property_1:
16                 type: string
17               property_2:
18                 type: string
19             type: object
20       responses:
21         default:
22           description: ''
```

New Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of REQ-E003 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     post:
8       parameters:
9         - in: body
10           name: body
11           required: true
12           schema:
13             additionalProperties: false
14             properties:
15               property_1:
16                 type: string
17             type: object
18       responses:
19         default:
20           description: ''
```

Backward Incompatibility

The following snippet triggers the incompatibility error.

```
1 # -*- coding: utf-8 -*-
2 from __future__ import absolute_import
3 from __future__ import print_function
```

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```

4  from __future__ import unicode_literals
5
6  from os.path import abspath
7
8  from bravado.client import SwaggerClient
9  from jsonschema import ValidationError
10 from six.moves.urllib.parse import urljoin
11 from six.moves.urllib.request import pathname2url
12
13 old_client = SwaggerClient.from_url(
14     spec_url=urljoin('file:', pathname2url(abspath('old.yaml'))),
15 )
16 new_client = SwaggerClient.from_url(
17     spec_url=urljoin('file:', pathname2url(abspath('new.yaml'))),
18 )
19
20 object_to_send = {'property_1': 'v1', 'property_2': 'v2'}
21
22 print('Calling the post endpoint with the old client: Succeeded')
23 old_client.endpoint.post_endpoint(body=object_to_send)
24
25 print('Calling the post endpoint with the old client: Failed')
26 try:
27     new_client.endpoint.post_endpoint(body=object_to_send)
28     raise RuntimeError('An error was expected')
29 except ValidationError:
30     pass

```

NOTE: The code is taking advantage of `bravado`

1.1.2 Response Contract Changes

[RES-E001] - Added properties in an object with `additionalProperties` set to `False` used in response

Rationale

If the object is defined with `additionalProperties` set to `False` then the object will not allow presence of properties not defined on the properties section of the object definition. Adding a definition of a new property makes object sent from the server to the client be considered invalid by a client that is using “old” Swagger specs.

Mitigation

A general suggestion would be to avoid setting `additionalProperties` to `False` for request objects as this prevents backward compatible safe object modifications. A possible mitigation to this requires the implementation of a new endpoint that returns the new object schema.

NOTE: Implementing a new endpoint is usually cheap but comes with the complexity of handling multiple versions of similar endpoints.

Example

Old Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of RES-E001 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     get:
8       responses:
9         default:
10          description: ''
11          schema:
12            additionalProperties: false
13            properties:
14              property_1:
15                type: string
16            type: object
17            x-model: get_endpoint_response
```

New Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of RES-E001 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     get:
8       responses:
9         default:
10          description: ''
11          schema:
12            additionalProperties: false
13            properties:
14              property_1:
15                type: string
16              property_2:
17                type: string
18            type: object
19            x-model: get_endpoint_response
```

Backward Incompatibility

The following snippet triggers the incompatibility error.

```
1 # -*- coding: utf-8 -*-
2 from __future__ import absolute_import
3 from __future__ import print_function
4 from __future__ import unicode_literals
5
6 from os.path import abspath
7
```

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```

8 from bravado.client import SwaggerClient
9 from bravado_core.validate import validate_schema_object
10 from jsonschema import ValidationError
11 from six.moves.urllib.parse import urljoin
12 from six.moves.urllib.request import pathname2url
13
14 old_client = SwaggerClient.from_url(
15     spec_url=urljoin('file:', pathname2url(abspath('old.yaml'))),
16 )
17 new_client = SwaggerClient.from_url(
18     spec_url=urljoin('file:', pathname2url(abspath('new.yaml'))),
19 )
20
21 object_to_validate = {'property_2': 'v1'}
22
23 print('Validating the get endpoint response with the old client: Failed')
24 try:
25     validate_schema_object(
26         swagger_spec=old_client.swagger_spec,
27         schema_object_spec=old_client.swagger_spec.definitions['get_endpoint_response
↪'].__model_spec,
28         value=object_to_validate,
29     )
30     raise RuntimeError('An error was expected')
31 except ValidationError:
32     pass
33
34 print('Validating the get endpoint response with the old client: Succeeded')
35 validate_schema_object(
36     swagger_spec=new_client.swagger_spec,
37     schema_object_spec=new_client.swagger_spec.definitions['get_endpoint_response'].__
↪model_spec,
38     value=object_to_validate,
39 )

```

NOTE: The code is taking advantage of `bravado`

[RES-E002] - Remove a required property from an object used in responses

Rationale

Removing a required property from an object leads to false expectation on the client receiving the object. If the client is using “old” service’s Swagger spec it will expect the property to be present and so it could throw errors. It could be valid to assume that the client won’t perform response validation and this leads to unexpected errors while parsing the response and/or using the missing property.

Mitigation

A known mitigation to this issue consists of keeping the required property in the Swagger specs and ensuring that the service populate the field with a placeholder (that has to be valid with the property spec).

Example

Old Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of RES-E002 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     get:
8       responses:
9         default:
10          description: ''
11          schema:
12            properties:
13              property:
14                type: string
15            required:
16              - property
17            type: object
18            x-model: get_endpoint_response
```

New Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of RES-E002 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     get:
8       responses:
9         default:
10          description: ''
11          schema:
12            properties:
13              property:
14                type: string
15            type: object
16            x-model: get_endpoint_response
```

Backward Incompatibility

The following snippet triggers the incompatibility error.

```
1 # -*- coding: utf-8 -*-
2 from __future__ import absolute_import
3 from __future__ import print_function
4 from __future__ import unicode_literals
5
6 from os.path import abspath
7
8 from bravado.client import SwaggerClient
9 from bravado_core.validate import validate_schema_object
```

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```

10 from jsonschema import ValidationError
11 from six.moves.urllib.parse import urljoin
12 from six.moves.urllib.request import pathname2url
13
14 old_client = SwaggerClient.from_url(
15     spec_url=urljoin('file:', pathname2url(abspath('old.yaml'))),
16 )
17 new_client = SwaggerClient.from_url(
18     spec_url=urljoin('file:', pathname2url(abspath('new.yaml'))),
19 )
20
21 object_to_validate = {}
22
23 print('Validating the get endpoint response with the old client: Failed')
24 try:
25     validate_schema_object(
26         swagger_spec=old_client.swagger_spec,
27         schema_object_spec=old_client.swagger_spec.definitions['get_endpoint_response
↪'].__model_spec,
28         value=object_to_validate,
29     )
30     raise RuntimeError('An error was expected')
31 except ValidationError:
32     pass
33
34 print('Validating the get endpoint response with the new client: Succeeded')
35 validate_schema_object(
36     swagger_spec=new_client.swagger_spec,
37     schema_object_spec=new_client.swagger_spec.definitions['get_endpoint_response'].__
↪model_spec,
38     value=object_to_validate,
39 )

```

NOTE: The code is taking advantage of [bravado](#)

[RES-E003] - Added Enum value in Response contract

Rationale

Adding an enum value to a response parameter is backward incompatible as clients, using the “old” version of the Swagger specs, will not be able to properly validate the response.

Mitigation

A possible mitigation consists of modifying the endpoint to get the list of enum values supported for the specific request. This way we can ensure (at the business logic level, not on Swagger) that the response will not contain enum values that are not manageable by clients using “old” Swagger spec version.

Example

Old Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of RES-E003 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     get:
8       responses:
9         default:
10          description: ''
11          schema:
12            properties:
13              property:
14                type: string
15                enum:
16                  - v1
17            type: object
18            x-model: get_endpoint_response
```

New Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of RES-E003 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     get:
8       responses:
9         default:
10          description: ''
11          schema:
12            properties:
13              property:
14                type: string
15                enum:
16                  - v1
17                  - v2
18            type: object
19            x-model: get_endpoint_response
```

Backward Incompatibility

The following snippet triggers the incompatibility error.

```
1 # -*- coding: utf-8 -*-
2 from __future__ import absolute_import
3 from __future__ import print_function
4 from __future__ import unicode_literals
5
6 from os.path import abspath
7
8 from bravado.client import SwaggerClient
```

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```

9  from bravado_core.validate import validate_schema_object
10 from jsonschema import ValidationError
11 from six.moves.urllib.parse import urljoin
12 from six.moves.urllib.request import pathname2url
13
14 old_client = SwaggerClient.from_url(
15     spec_url=urljoin('file:', pathname2url(abspath('old.yaml'))),
16 )
17 new_client = SwaggerClient.from_url(
18     spec_url=urljoin('file:', pathname2url(abspath('new.yaml'))),
19 )
20
21 object_to_validate = {'property': 'v2'}
22
23 print('Validating the get endpoint response with the old client: Failed')
24 try:
25     validate_schema_object(
26         swagger_spec=old_client.swagger_spec,
27         schema_object_spec=old_client.swagger_spec.definitions['get_endpoint_response
↵'].__model_spec,
28         value=object_to_validate,
29     )
30     raise RuntimeError('An error was expected')
31 except ValidationError:
32     pass
33
34 print('Validating the get endpoint response with the new client: Succeeded')
35 validate_schema_object(
36     swagger_spec=new_client.swagger_spec,
37     schema_object_spec=new_client.swagger_spec.definitions['get_endpoint_response'].__
↵model_spec,
38     value=object_to_validate,
39 )

```

NOTE: The code is taking advantage of [bravado](#)

1.1.3 Miscellaneous Changes

[MIS-E001] - Delete an endpoint

Rationale

A Swagger service should only serve endpoints defined via Swagger specs. Once an endpoint is removed from the Swagger specs this implies that the endpoint is not served anymore and any call to it will fail (as there is no implementation for it; HTTP/400, HTTP/404 or HTTP/500 could be expected in this case).

Mitigation

There are no general approaches to make this change without risks. The main recommendations are: ensure that the endpoint is marked as deprecated and notify all the clients about the endpoint removal timeline ensure that the endpoint is not called anymore.

Note: this is not always possible, think about the case of public APIs used by mobile devices. In such case validate with the clients product owners that is possible to returns errors.

PS: be aware that the fact that an endpoint is not called anymore does not implies that it won't be called in the future (maybe the obsolete client is just not used at the moment)

Example

Old Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of MIS-E001 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     get:
8       responses:
9         default:
10          description: ''
11     post:
12       responses:
13         default:
14          description: ''
```

New Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of MIS-E001 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     get:
8       responses:
9         default:
10          description: ''
```

Backward Incompatibility

The following snippet triggers the incompatibility error.

```
1 # -*- coding: utf-8 -*-
2 from __future__ import absolute_import
3 from __future__ import print_function
4 from __future__ import unicode_literals
5
6 from os.path import abspath
7
8 from bravado.client import SwaggerClient
9 from six.moves.urllib.parse import urljoin
10 from six.moves.urllib.request import pathname2url
11
12 old_client = SwaggerClient.from_url(
```

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```

13     spec_url=urljoin('file:', pathname2url(abspath('old.yaml'))),
14 )
15 new_client = SwaggerClient.from_url(
16     spec_url=urljoin('file:', pathname2url(abspath('new.yaml'))),
17 )
18
19 print('Calling the post endpoint with the old client: Succeeded')
20 old_client.endpoint.post_endpoint()
21 print('Calling the post endpoint with the new client: Failed')
22 try:
23     new_client.endpoint.post_endpoint()
24     raise RuntimeError('An error was expected')
25 except AttributeError:
26     pass

```

NOTE: The code is taking advantage of `bravado`

[MIS-E002] - Changed type

Rationale

Changing the type of a field is not backward compatible as a client using “old” Swagger specs will send the field with a different type leading the service to fail to validate the request. On the other end, if the object containing the updated field is used in the response, it will lead to unexpected client errors when parsing the response and/or using the updated property.

Mitigation

There are no best practices for this type of issue. The general recommended approach is: don’t do it and add a new field to the spec.

Example

Old Swagger Specs

```

1  swagger: '2.0'
2  info:
3    title: Minimal Case of MIS-E002 Rule
4    version: '1.0'
5  paths:
6    /endpoint:
7      get:
8        responses:
9          default:
10             description: ''
11             schema:
12               properties:
13                 property:
14                   type: string
15                   type: object
16                   x-model: get_endpoint_response

```

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```
17 post:
18   parameters:
19     - in: body
20       name: body
21       required: true
22       schema:
23         properties:
24           property:
25             type: string
26             type: object
27   responses:
28     default:
29       description: ''
```

New Swagger Specs

```
1 swagger: '2.0'
2 info:
3   title: Minimal Case of MIS-E002 Rule
4   version: '1.0'
5 paths:
6   /endpoint:
7     get:
8       responses:
9         default:
10          description: ''
11          schema:
12            properties:
13              property:
14                type: boolean
15                type: object
16                x-model: get_endpoint_response
17     post:
18       parameters:
19         - in: body
20           name: body
21           required: true
22           schema:
23             properties:
24               property:
25                 type: boolean
26                 type: object
27       responses:
28         default:
29           description: ''
```

Backward Incompatibility

The following snippet triggers the incompatibility error.

```
1 # -*- coding: utf-8 -*-
2 from __future__ import absolute_import
3 from __future__ import print_function
```

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```

4  from __future__ import unicode_literals
5
6  from os.path import abspath
7
8  from bravado.client import SwaggerClient
9  from bravado_core.validate import validate_schema_object
10 from jsonschema import ValidationError
11 from six.moves.urllib.parse import urljoin
12 from six.moves.urllib.request import pathname2url
13
14 old_client = SwaggerClient.from_url(
15     spec_url=urljoin('file:', pathname2url(abspath('old.yaml'))),
16 )
17 new_client = SwaggerClient.from_url(
18     spec_url=urljoin('file:', pathname2url(abspath('new.yaml'))),
19 )
20
21 object_to_validate = {'property': 'True'}
22
23 print('Validating the get endpoint response with old client: Succeeded')
24 validate_schema_object(
25     swagger_spec=old_client.swagger_spec,
26     schema_object_spec=old_client.swagger_spec.definitions['get_endpoint_response'].__
↪ model_spec,
27     value=object_to_validate,
28 )
29
30 print('Validating the get endpoint response with the new client: Failed')
31 try:
32     validate_schema_object(
33         swagger_spec=new_client.swagger_spec,
34         schema_object_spec=new_client.swagger_spec.definitions['get_endpoint_response
↪ '].__model_spec,
35         value=object_to_validate,
36     )
37     raise RuntimeError('An error was expected')
38 except ValidationError:
39     pass
40
41
42 print('Calling the post endpoint with old client: Succeeded')
43 old_client.endpoint.post_endpoint(body=object_to_validate)
44
45 print('Calling the post endpoint with the new client: Failed')
46 try:
47     new_client.endpoint.post_endpoint(body=object_to_validate)
48 except ValidationError:
49     pass

```

NOTE: The code is taking advantage of `bravado`

1.2 API reference

1.2.1 swagger_spec_compatibility Package

swagger_spec_compatibility Package

cache Module

```
class swagger_spec_compatibility.cache.typed_lru_cache (maxsize=None)
    Bases: object

    cached_function

    maxsize

    uncached_function
```

cli Module

```
swagger_spec_compatibility.cli.parser()

class swagger_spec_compatibility.cli.common.CLIProtocol (*args, **kwargs)
    Bases: typing_extensions.Protocol

    command = None

    func = None

class swagger_spec_compatibility.cli.common.CLIRulesProtocol (*args, **kwargs)
    Bases: typing_extensions.Protocol

    blacklist_rules = None

    rules = None

swagger_spec_compatibility.cli.common.add_rule_discovery_argument (argument_parser)
swagger_spec_compatibility.cli.common.add_rules_arguments (argument_parser)
swagger_spec_compatibility.cli.common.cli_rules()
swagger_spec_compatibility.cli.common.post_process_rules_cli_arguments (args)
swagger_spec_compatibility.cli.common.pre_process_cli_to_discover_rules (argv=None)
swagger_spec_compatibility.cli.common.rules (cli_args)
swagger_spec_compatibility.cli.common.uri (param)
swagger_spec_compatibility.cli.explain.add_sub_parser (subparsers)
swagger_spec_compatibility.cli.explain.execute (cli_args)
swagger_spec_compatibility.cli.info.add_sub_parser (subparsers)
swagger_spec_compatibility.cli.info.execute (cli_args)
swagger_spec_compatibility.cli.run.add_sub_parser (subparsers)
swagger_spec_compatibility.cli.run.execute (cli_args)
```

rules Module

```
swagger_spec_compatibility.rules.compatibility_status (old_spec, new_spec,
                                                         rules=<swagger_spec_compatibility.rules._ALL_RULES_OBJECT>)
```

```

class swagger_spec_compatibility.rules.added_properties_in_response_objects_with_additional
    Bases: swagger_spec_compatibility.rules.common.BaseRule

    description = 'If the object is defined with additionalProperties set to False then the
    error_code = 'RES-E001'
    error_level = 2
    rule_type = 1
    short_name = 'Added properties in an object with additionalProperties set to False used
    classmethod validate (left_spec, right_spec)

class swagger_spec_compatibility.rules.added_required_property_in_request.AddedRequiredProp
    Bases: swagger_spec_compatibility.rules.common.BaseRule

    description = 'Adding a required property to an object used in requests leads client r
    error_code = 'REQ-E001'
    error_level = 2
    rule_type = 0
    short_name = 'Added Required Property in Request contract'
    classmethod validate (left_spec, right_spec)

class swagger_spec_compatibility.rules.added_enum_value_in_response.AddedEnumValueInRequest
    Bases: swagger_spec_compatibility.rules.common.BaseRule

    description = 'Adding an enum value to a response parameter is backward incompatible a
    error_code = 'RES-E003'
    error_level = 2
    rule_type = 1
    short_name = 'Added Enum value in Response contract'
    classmethod validate (left_spec, right_spec)

class swagger_spec_compatibility.rules.common.BaseRule
    Bases: object

    description = None
    documentation_link = None
    error_code = None
    error_level = None
    classmethod explain()
    rule_type = None
    short_name = None
    classmethod validate (left_spec, right_spec)
    classmethod validation_message (reference)

class swagger_spec_compatibility.rules.common.Level
    Bases: enum.IntEnum

    An enumeration.

```

```
ERROR = 2
INFO = 0
WARNING = 1

class swagger_spec_compatibility.rules.common.RuleProtocol(*args, **kwargs)
    Bases: typing_extensions.Protocol

    description = None
    documentation_link = None
    error_code = None
    error_level = None
    rule_type = None
    short_name = None
    classmethod validate(left_spec, right_spec)

class swagger_spec_compatibility.rules.common.RuleRegistry
    Bases: abc.ABCMeta

    static has_rule(rule_name)
    static rule(rule_name)
    static rule_names()
    static rules()

class swagger_spec_compatibility.rules.common.RuleType
    Bases: enum.IntEnum

    An enumeration.

    MISCELLANEOUS = 2
    REQUEST_CONTRACT = 0
    RESPONSE_CONTRACT = 1

class swagger_spec_compatibility.rules.common.ValidationMessage
    Bases: swagger_spec_compatibility.rules.common._ValidationMessage

    json_representation()
    string_representation()

swagger_spec_compatibility.rules.common.get_rule_documentation_link(rule)
    Helper method that allows to extract documentation link related to a given rule.

    If the rule is implemented within swagger-spec-compatibility library then the documentation link will fall back
    to the “default” read-the-docs link

class swagger_spec_compatibility.rules.deleted_endpoint.DeletedEndpoint
    Bases: swagger_spec_compatibility.rules.common.BaseRule

    description = 'An endpoint has been removed. This change is not backward compatible as
    error_code = 'MIS-E001'
    error_level = 2
    rule_type = 2
```

```
    short_name = 'Delete Endpoint'
    classmethod validate (left_spec, right_spec)

class swagger_spec_compatibility.rules.changed_type.ChangedType
    Bases: swagger_spec_compatibility.rules.common.BaseRule

    description = 'Changing the type of a field is not backward compatible as a client using the old spec may not be able to parse the new spec'
    error_code = 'MIS-E002'
    error_level = 2
    rule_type = 2
    short_name = 'Changed type'
    classmethod validate (left_spec, right_spec)

class swagger_spec_compatibility.rules.removed_enum_value_from_request.RemovedEnumValueFromRequest
    Bases: swagger_spec_compatibility.rules.common.BaseRule

    description = 'Removing an enum value from a request parameter is backward incompatible as a client using the old spec may not be able to parse the new spec'
    error_code = 'REQ-E002'
    error_level = 2
    rule_type = 0
    short_name = 'Removed Enum value from Request contract'
    classmethod validate (left_spec, right_spec)

class swagger_spec_compatibility.rules.removed_properties_from_request_objects_with_additional_properties.RemovedPropertiesFromRequestObjectsWithAdditionalProperties
    Bases: swagger_spec_compatibility.rules.common.BaseRule

    description = 'If the object is defined with additionalProperties set to False then the object cannot have additional properties'
    error_code = 'REQ-E003'
    error_level = 2
    rule_type = 0
    short_name = 'Removing properties from an object with additionalProperties set to False'
    classmethod validate (left_spec, right_spec)

class swagger_spec_compatibility.rules.removed_required_property_from_response.RemovedRequiredPropertyFromResponse
    Bases: swagger_spec_compatibility.rules.common.BaseRule

    description = 'Removing a required property from an object leads to false expectation as a client using the old spec may not be able to parse the new spec'
    error_code = 'RES-E002'
    error_level = 2
    rule_type = 1
    short_name = 'Removed Required Property from Response contract'
    classmethod validate (left_spec, right_spec)
```

spec_utils Module

```
class swagger_spec_compatibility.spec_utils.Endpoint
    Bases: swagger_spec_compatibility.spec_utils._Endpoint

    static from_swagger_operation (operation)

class swagger_spec_compatibility.spec_utils.HTTPVerb
    Bases: enum.Enum

    An enumeration.

    DELETE = 'delete'

    GET = 'get'

    HEAD = 'head'

    OPTIONS = 'options'

    PARAMETERS = 'parameters'

    PATCH = 'patch'

    POST = 'post'

    PUT = 'put'

    from_swagger_operation = <function HTTPVerb.from_swagger_operation>

class swagger_spec_compatibility.spec_utils.StatusCodeSchema (status_code, map-
                                                                    ping)
    Bases: tuple

    mapping
        Alias for field number 1

    status_code
        Alias for field number 0

swagger_spec_compatibility.spec_utils.get_endpoints
swagger_spec_compatibility.spec_utils.get_operation_mappings (old_spec,
                                                                new_spec)

swagger_spec_compatibility.spec_utils.get_operations
swagger_spec_compatibility.spec_utils.get_properties (swagger_spec, schema)
swagger_spec_compatibility.spec_utils.get_required_properties (swagger_spec,
                                                                schema)
swagger_spec_compatibility.spec_utils.iterate_on_responses_status_codes (old_operation,
                                                                           new_operation)

swagger_spec_compatibility.spec_utils.load_spec_from_spec_dict (spec_dict)
swagger_spec_compatibility.spec_utils.load_spec_from_uri
```

util Module

```
class swagger_spec_compatibility.util.EntityMapping (old, new)
    Bases: typing.Generic

    new
```

old

```
swagger_spec_compatibility.util.is_path_in_top_level_paths (top_level_paths,
                                                            path)

swagger_spec_compatibility.util.wrap (text, width=120, indent="")
```

walkers Module

class `swagger_spec_compatibility.walkers.NoValue`

Bases: `object`

class `swagger_spec_compatibility.walkers.SchemaWalker` (*left_spec*, *right_spec*,
***kwargs*)

Bases: `swagger_spec_compatibility.walkers.Walker`

Walker aware of how a Swagger schema looks like.

The main difference between this walker and Walker is that this walker keeps in consideration some peculiarity of the swagger specs.

The walker implementation should never worry about dereferencing as the traversing is performed on the fully flattened and dereferenced specs

fix_parameter_path (*path*, *original_path*, *value*)

Fix an eventual path present on the value returned by the walker.

The SwaggerAwareWalker modifies the indexing approach used for parameters due to the fact that parameters are defined as arrays and modifying their order would not change the semantic.

class `swagger_spec_compatibility.walkers.Walker` (*left*, *right*, ***kwargs*)

Bases: `typing.Generic`

Generic Walker over two objects.

The abstract class strips away the details related to dictionary vs list iterations, path update etc.

dict_check (*path*, *left_dict*, *right_dict*)

Compare the left and right content of path in case both objects are dictionaries.

list_check (*path*, *left_list*, *right_list*)

Compare the left and right content of path in case both objects are list.

should_path_be_walked_through (*path*)

Determine whether to traverse or interrupt traversal of a given path.

This method allows Walkers to skip traversal of area of the specs that are “not interesting”. This will allow to write simpler methods and to avoid needless traversing of the Specs.

value_check (*path*, *left_value*, *right_value*)

Compare the left and right content of path in case the objects have different types or are not dictionaries or lists.

walk ()

Fully traverse the left and right objects. NOTE: the traversing is internally cached such that all the subsequent calls

to `walk()` are equivalent to an attribute access

```
swagger_spec_compatibility.walkers.format_path (path)
```

class `swagger_spec_compatibility.walkers.additional_properties.AdditionalPropertiesDiff`

Bases: `swagger_spec_compatibility.walkers.additional_properties.AdditionalPropertiesDiff`

```

    fix_parameter_path (path, original_path)

class swagger_spec_compatibility.walkers.additional_properties.AdditionalPropertiesDifferWalker

    Bases: swagger_spec_compatibility.walkers.SchemaWalker

    additionalPropertiesValue = None

    dict_check (path, left_dict, right_dict)
        Compare the left and right content of path in case both objects are dictionaries.

    diffs = None

    left_spec = None

    list_check (path, left_list, right_list)
        Compare the left and right content of path in case both objects are list.

    right_spec = None

    value_check (path, left_value, right_value)
        Compare the left and right content of path in case the objects have different types or are not dictionaries or
        lists.

class swagger_spec_compatibility.walkers.additional_properties.DiffType
    Bases: enum.Enum

    An enumeration.

    PROPERTIES = 0

    VALUE = 1

class swagger_spec_compatibility.walkers.changed_types.ChangedTypesDiff
    Bases: swagger_spec_compatibility.walkers.changed_types.ChangedTypesDiff

    fix_parameter_path (path, original_path)

class swagger_spec_compatibility.walkers.changed_types.ChangedTypesDifferWalker (left_spec,
                                                                                               right_spec)

    Bases: swagger_spec_compatibility.walkers.SchemaWalker

    dict_check (path, left_dict, right_dict)
        Compare the left and right content of path in case both objects are dictionaries.

    diffs = None

    left_spec = None

    list_check (path, left_list, right_list)
        Compare the left and right content of path in case both objects are list.

    right_spec = None

    value_check (path, left_value, right_value)
        Compare the left and right content of path in case the objects have different types or are not dictionaries or
        lists.

class swagger_spec_compatibility.walkers.enum_values.EnumValuesDiff
    Bases: swagger_spec_compatibility.walkers.enum_values.EnumValuesDiff

    fix_parameter_path (path, original_path)

```

```

class swagger_spec_compatibility.walkers.enum_values.EnumValuesDifferWalker (left_spec,
                                                                    right_spec,
                                                                    **kwargs)

    Bases: swagger_spec_compatibility.walkers.SchemaWalker

    dict_check (path, left_dict, right_dict)
        Compare the left and right content of path in case both objects are dictionaries.

    left_spec = None

    list_check (path, left_list, right_list)
        Compare the left and right content of path in case both objects are list.

    right_spec = None

    value_check (path, left_value, right_value)
        Compare the left and right content of path in case the objects have different types or are not dictionaries or
        lists.

class swagger_spec_compatibility.walkers.request_parameters.RequestParametersWalker (left_spec,
                                                                    right_spec)

    Bases: swagger_spec_compatibility.walkers.SchemaWalker

    dict_check (path, left_dict, right_dict)
        Compare the left and right content of path in case both objects are dictionaries.

    fix_parameter_path (path, original_path, value)
        Fix an eventual path present on the value returned by the walker.

        The SwaggerAwareWalker modifies the indexing approach used for parameters due to the fact that param-
        eters are defined as arrays and modifying their order would not change the semantic.

    left_spec = None

    list_check (path, left_list, right_list)
        Compare the left and right content of path in case both objects are list.

    right_spec = None

    should_path_be_walked_through (path)
        Determine whether to traverse or interrupt traversal of a given path.

        This method allows Walkers to skip traversal of area of the specs that are “not interesting”. This will allow
        to write simpler methods and to avoid needless traversing of the Specs.

    value_check (path, left_value, right_value)
        Compare the left and right content of path in case the objects have different types or are not dictionaries or
        lists.

class swagger_spec_compatibility.walkers.required_properties.RequiredPropertiesDiff
    Bases: swagger_spec_compatibility.walkers.required_properties.RequiredPropertiesDiff

    fix_parameter_path (path, original_path)

class swagger_spec_compatibility.walkers.required_properties.RequiredPropertiesDifferWalker

    Bases: swagger_spec_compatibility.walkers.SchemaWalker

    dict_check (path, left_dict, right_dict)
        Compare the left and right content of path in case both objects are dictionaries.

    diffs = None

    left_spec = None

```

list_check (*path, left_list, right_list*)

Compare the left and right content of path in case both objects are list.

right_spec = None

value_check (*path, left_value, right_value*)

Compare the left and right content of path in case the objects have different types or are not dictionaries or lists.

class `swagger_spec_compatibility.walkers.response_paths.ResponsePathsWalker` (*left_spec, right_spec*)

Bases: `swagger_spec_compatibility.walkers.SchemaWalker`

dict_check (*path, left_dict, right_dict*)

Compare the left and right content of path in case both objects are dictionaries.

left_spec = None

list_check (*path, left_list, right_list*)

Compare the left and right content of path in case both objects are list.

paths = None

right_spec = None

should_path_be_walked_through (*path*)

Determine whether to traverse or interrupt traversal of a given path.

This method allows Walkers to skip traversal of area of the specs that are “not interesting”. This will allow to write simpler methods and to avoid needless traversing of the Specs.

value_check (*path, left_value, right_value*)

Compare the left and right content of path in case the objects have different types or are not dictionaries or lists.

1.3 Changelog

1.3.1 1.2.1 (2020-01-07)

- Blacklist `bravado-core==5.16.0` as not compatible with the library (PR #18)

1.3.2 1.2.0 (2019-03-27)

- Expose read-the-docs documentation links for rules defined by the library (PR #9)

1.3.3 1.1.0 (2019-03-07)

- Add `--blacklist-rules` CLI option to ignore certain rules during the checks (PR #6)
- Fixed `SchemaWalker` to properly combine old and new parameters during the spec traversal. (PR #7)
- Simplified creation and registration of new rules (PR #8)

1.3.4 1.0.1 (2019-02-26)

- Updated package metadata

1.3.5 1.0.0 (2019-02-26)

- Initial library implementation with definition of the following rules:
 - [REQ-E001] - Added Required Property in Request contract
 - [REQ-E002] - Removed Enum value from Request contract
 - [REQ-E003] - Removing properties from an object with additionalProperties set to False used as request parameter
 - [RES-E001] - Added properties in an object with additionalProperties set to False used in response
 - [RES-E002] - Remove a required property from an object used in responses
 - [RES-E003] - Added Enum value in Response contract
 - [MIS-E001] - Delete an endpoint
 - [MIS-E002] - Changed type

CHAPTER 2

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