

---

# OSS Index Python Library

*Release 1.1.1*

**Paul Horton**

**Sep 12, 2022**



**CONTENTS:**

<b>1</b>	<b>Installation</b>	<b>3</b>
<b>2</b>	<b>Usage</b>	<b>5</b>
2.1	Library Configuration . . . . .	5
<b>3</b>	<b>Support</b>	<b>7</b>
3.1	Python Version Support . . . . .	7
<b>4</b>	<b>Changelog</b>	<b>9</b>
4.1	v1.1.1 (2022-09-12) . . . . .	9
4.2	v1.1.0 (2022-07-12) . . . . .	9
4.3	v1.0.0 (2022-03-10) . . . . .	9
4.4	v0.2.1 (2021-09-16) . . . . .	10
4.5	v0.2.0 (2021-09-15) . . . . .	10
4.6	v0.1.1 (2021-09-13) . . . . .	11
<b>5</b>	<b>API Reference</b>	<b>13</b>
5.1	ossindex . . . . .	13
	<b>Python Module Index</b>	<b>21</b>
	<b>Index</b>	<b>23</b>



[OSS Index](#) is a free catalogue of open source components and scanning tools to help developers identify vulnerabilities, understand risk, and keep their software safe.

This library provides an interface to OSS Index in Python.

This module is not designed for standalone use (i.e. it is not executable on it's own). If you're looking for a tool that can scan your Python applications and utilise OSS Index data, why not check out these tools:

- [Jake](#)



## INSTALLATION

Install from [pypi.org](https://pypi.org) as you would any other Python module using your preferred package manager:

```
pip install ossindex-lib
```





`ossindex-lib` is designed to be included into other Python projects, not used as a standalone application.

## 2.1 Library Configuration

There are two key configurations that are possible:

1. Caching of response from OSS Index
2. Authentication for OSS Index

### 2.1.1 Caching of OSS Index Responses

By default, caching is enabled and the cache will be stored in `$HOME/.ossindex/`.

You can disable caching as follows:

```
ossi = OssIndex(enable_cache=False)
```

You can control the base directory where the cache directory `.ossindex` is created by supplying a directory as follows:

```
ossi = OssIndex(cache_location='/my/other/directory')
```

In this last example, caching will be enabled and the cache will be stored in `/my/other/directory/.ossindex`.

### 2.1.2 Authenticating to OSS Index

By default, this library will attempt authenticated calls to OSS Index if authentication credentials exist in `$HOME/.oss-index.config`.

`.oss-index.config` is a YAML formatted file and the example below shows how a username and password can be added to enable authenticated calls to OSS Index:

```
username: my-oss-index-username
password: my-oss-index-password
```



## SUPPORT

If you run into issues utilising this library, please raise a [GitHub Issue](#). When raising an issue please include as much detail as possible including:

- Version of `ossindex-lib` you have installed
- Input(s)
- Expected Output(s)
- Actual Output(s)

### 3.1 Python Version Support

We endeavour to support all functionality for all [current actively supported Python versions](#). However, some features may not be possible/present in older Python versions due to their lack of support - which are noted below.



## CHANGELOG

### 4.1 v1.1.1 (2022-09-12)

#### 4.1.1 Fix

- Relax dependency on PyYAML (``85e689b`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/85e689bdc35df4b9e59b4ad1987242ccea94415>>`\_`)

### 4.2 v1.1.0 (2022-07-12)

#### 4.2.1 Feature

- Support providing authentication directly over loading from configuration file (``1bda4a9`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/1bda4a94e00fca30cf7488f1cb1e1bfaadaf1676>>`\_`)
- Support providing authentication directly over loading from configuration file (``bcd86cb`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/bcd86cb70a6e889d5b34d9fdb2c58f77684f7b6d>>`\_`)

### 4.3 v1.0.0 (2022-03-10)

#### 4.3.1 Feature

- Adopted PEP-561 #4 (``f4b8b01`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/f4b8b0172fabfb55362450487d9cddaeaed3dc92>>`\_`)
- Added support for authentication to OSS Index #1 (``aa26387`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/aa263872aeeb0ce3aa6c93de11107397f72cfb0b>>`\_`)
- Re-worked how we use TinyDB to attempt to resolve #2 (``d5564da`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/d5564da8aaa207806e4a04db94c247ceec5fec2b>>`\_`)

### 4.3.2 Fix

- Typo in `requirements.lowest.txt` (``696f770`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/696f770052486fcc194a686f06ca5b47ff1f1a23>>`\_)
- Potential fix for #2 (``46f705d`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/46f705d117de799443902c2cb312f03b61a1ab44>>`\_)
- Bug in deserialisation from cache database resolved (``e3b9a9d`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/e3b9a9d74c541dead24aad90a0046fae078affca>>`\_)
- Typing and imports (``31a7e37`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/31a7e37e334301896f8275fb3e4f90119c05185b>>`\_)

### 4.3.3 Breaking

- #4 (``f4b8b01`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/f4b8b0172fabfb55362450487d9cddaeaed3dc92>>`\_)

## 4.4 v0.2.1 (2021-09-16)

### 4.4.1 Fix

- Typo in README (``a260e91`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/a260e912227895d42b01a4775e36e7124fbc6f0b>>`\_)

## 4.5 v0.2.0 (2021-09-15)

### 4.5.1 Feature

- Added accessor methods to Vulnerability class + helper method on `OssIndexComponent` to get the overriding maximum CVSS Score (``15870a1`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/15870a19c7e62efb7f1c10f8f785f9d272152fc9>>`\_)

### 4.5.2 Fix

- Test corrected as was wrong (``669ec24`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/669ec2481e6bbf46337e10149086c2b1fbba10e3>>`\_)
- Corrected typing for OSS Index URL (``813e593`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/813e593ef940cb27430590f80e2ad8628333fb2a>>`\_)
- Removed garbage typo (``23e7425`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/23e7425fdd104b332865f4382a9e4d857e76c04>>`\_)
- Correct logic for determining which Vulnerability has the highest CVS score (``37e5aed`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/37e5aed6424594f6efff136c7037d1e5db28ccd5>>`\_)
- Added support for cwe being optional and added support for optional cve being present (``3efafa9`` <<https://github.com/sonatype-nexus-community/ossindex-python/commit/3efafa978a2c9af647b760b34e4900917372a8d9>>`\_)

- Support for OSS Index not returning descriptions for components (``8244735` <https://github.com/sonatype-nexus-community/ossindex-python/commit/82447357188ee9c4f0a8c046b9d6a00ea556c7fc>`_`)

## 4.6 v0.1.1 (2021-09-13)

### 4.6.1 Fix

- Deployment GH action (``1d403b5` <https://github.com/sonatype-nexus-community/ossindex-python/commit/1d403b565cc61ac100e7b8fc53a9f18c55e3c793>`_`)
- **doc:** Updated documentation to reflect usage and todos. (``0078668` <https://github.com/sonatype-nexus-community/ossindex-python/commit/0078668a76f1911b349dccc0c21cbdcfb7dc5097>`_`)





## API REFERENCE

This page contains auto-generated API reference documentation<sup>1</sup>.

### 5.1 ossindex

#### 5.1.1 Submodules

`ossindex.exception`

##### Module Contents

**exception** `ossindex.exception.OssIndexException`

Bases: `Exception`

Base exception which all exceptions raised by this library extend.

**exception** `ossindex.exception.AccessDeniedException`

Bases: `OssIndexException`

Raised if supplied credentials for Oss Index are invalid.

`ossindex.model`

##### Module Contents

##### Classes

<code>Vulnerability</code>	Model class that represents a Vulnerability as received back from OSS Index.
<code>OssIndexComponent</code>	Model class that represents a Component Report as received back from OSS Index.

```
class ossindex.model.Vulnerability(*, id_: str, display_name: str, title: str, description: str, cvss_score:
Optional[float] = None, cvss_vector: Optional[str] = None, cve:
Optional[str] = None, cwe: Optional[str] = None, version_ranges:
Optional[Iterable[str]] = None, reference: str, external_references:
Optional[Iterable[str]] = None)
```

---

<sup>1</sup> Created with sphinx-autoapi

Model class that represents a Vulnerability as received back from OSS Index.

**property id** → str

OSS Index's unique UUID for this Vulnerability.

**Returns:**

*str*

**property display\_name** → str

displayName returned by OSS Index

**Returns:**

*str*

**property title** → str

title returned by OSS Index

**Returns:**

*str*

**property description** → str

description returned by OSS Index.

**Returns:**

*str*

**property cvss\_score** → Optional[float]

CVSS Score returned from OSS Index.

**Returns:**

*float* if set else *None*

**property cvss\_vector** → Optional[str]

CVSS Vector returned from OSS Index

**Returns:**

*str* if set else *None*

**property cwe** → Optional[str]

CWE returned from OSS Index.

**Returns:**

*str* if set else *None*

**property cve** → Optional[str]

CVE returned from OSS Index.

**Returns:**

*str* if set else *None*

**property reference** → str

Reference URL to OSS Index for this Vulnerability.

**Returns:**

*str*

**property version\_ranges** → Set[str]

Range of versions which are impacted by this Vulnerability.

**Returns:**

Set of *str*

**property external\_references** → Set[str]

List of external references that provide additional information about the vulnerability.

**Returns:**

Set of *str*

**\_\_eq\_\_**(*other: object*) → bool

Return self==value.

**\_\_hash\_\_**() → int

Return hash(self).

**\_\_repr\_\_**() → str

Return repr(self).

**class** ossindex.model.OssIndexComponent(\*, *coordinates: str*, *description: Optional[str] = None*, *reference: str*, *vulnerabilities: Optional[Iterable[Vulnerability]] = None*)

Model class that represents a Component Report as received back from OSS Index.

**property coordinates** → str

PackageURL formatted coordinates of this Component.

**Returns:**

*str*

**property description** → Optional[str]

Description of the Component from OSS Index.

**Returns:**

*str* if set else *None*

**property reference** → str

URL to this Component on OSS Index.

**Returns:**

*str*

**property vulnerabilities** → Set[Vulnerability]

Known vulnerabilities that relate to this Component.

**Returns:**

Set of *Vulnerability*

**\_\_eq\_\_**(*other: object*) → bool

Return self==value.

**\_\_hash\_\_**() → int

Return hash(self).

**\_\_repr\_\_**() → str

Return repr(self).

**get\_package\_url**() → packageurl.PackageURL

Get a PURL representation of this components coordinates.

**Returns:**

*PackageURL*

`get_max_cvss_score()` → float

Get the maximum CVSS Score across all Vulnerabilities known for this Component.

**Returns:**

*float*

`static _reduce_on_max_cvss_score(v: Vulnerability, current_max: float) → float`

`ossindex.ossindex`

## Module Contents

### Classes

---

*OssIndex*

---

### Attributes

---

*logger*

---

---

*ossindex\_lib\_version*

---

---

*ossindex\_lib\_version*

---

`ossindex.ossindex.logger`

`ossindex.ossindex.ossindex_lib_version :str = TBC`

`ossindex.ossindex.ossindex_lib_version`

`class ossindex.ossindex.OssIndex(*, enable_cache: bool = True, cache_location: Optional[str] = None, username: Optional[str] = None, password: Optional[str] = None)`

`DEFAULT_CONFIG_FILE = .oss-index.config`

`_caching_enabled :bool = False`

`_cache_directory :str = .ossindex`

`_cache_ttl_in_hours :int = 12`

`_oss_index_api_version :str = v3`

`_oss_index_host :str = https://ossindex.sonatype.org`

`_oss_max_coordinates_per_request :int = 128`

`_oss_index_authentication :Optional[requests.auth.HTTPBasicAuth]`

`has_ossindex_authentication() → bool`

`_attempt_config_load()` → None

`get_component_report(packages: List[packageurl.PackageURL])` →  
List[*ossindex.model.OssIndexComponent*]

`purge_local_cache()` → None

`_chunk_packages_for_oss_index(packages: List[packageurl.PackageURL])` →  
List[List[packageurl.PackageURL]]

Splits up the list of packages into lists that are of a size consumable by OSS Index APIs.

**Parameters**

**packages** – List[PackageURL]

**Returns**

List[List[PackageURL]]

`_get_api_url(api_uri: str)` → str

`_get_cached_results(packages: List[packageurl.PackageURL])` → Tuple[List[packageurl.PackageURL],  
List[*ossindex.model.OssIndexComponent*]]

**Takes a list of packages and returns two Lists:**

1. Packages without cached results
2. Cached results for those packages where they exist

**Parameters**

**packages** – List[PackageURL]

**Returns**

(List[PackageURL], List[*OssIndexComponent*])

`static _get_headers()` → Dict[str, str]

`_get_results(packages: List[packageurl.PackageURL])` → List[*ossindex.model.OssIndexComponent*]

`_make_oss_index_component_report_call(packages: List[packageurl.PackageURL])` →  
List[*ossindex.model.OssIndexComponent*]

`_upsert_cache_with_oss_index_responses(oss_components:  
List[ossindex.model.OssIndexComponent])` → None

`_get_cache_db()` → *tinydb.TinyDB*

`_setup_cache(cache_location: Optional[str] = None)` → None

## ossindex.serializer

### Module Contents

#### Classes

---

*OssIndexJsonEncoder*

Extensible JSON <<http://json.org>> encoder for Python data structures.

---

## Functions

---

`pythonify_key_names`( $\rightarrow$  Dict[Any, Any])

---

---

`json_decoder`( $\rightarrow$  object)

---

## Attributes

---

`_HYPHENATED_ATTRIBUTES`

---

---

`_PYTHON_TO_JSON_NAME`

---

`ossindex.serializer.pythonify_key_names(d: Dict[str, Any])  $\rightarrow$  Dict[Any, Any]``ossindex.serializer.json_decoder(o: object)  $\rightarrow$  object``ossindex.serializer._HYPHENATED_ATTRIBUTES = ['bom_ref', 'mime_type', 'x_trust_boundary']``ossindex.serializer._PYTHON_TO_JSON_NAME`

```
class ossindex.serializer.OssIndexJsonEncoder(*, skipkeys=False, ensure_ascii=True,
                                              check_circular=True, allow_nan=True,
                                              sort_keys=False, indent=None, separators=None,
                                              default=None)
```

Bases: `json.JSONEncoder`

Extensible JSON <<http://json.org>> encoder for Python data structures.

Supports the following objects and types by default:

Python	JSON
dict	object
list, tuple	array
str	string
int, float	number
True	true
False	false
None	null

To extend this to recognize other objects, subclass and implement a `.default()` method with another method that returns a serializable object for `o` if possible, otherwise it should call the superclass implementation (to raise `TypeError`).

**default**(*o: Any*)  $\rightarrow$  Any

Implement this method in a subclass such that it returns a serializable object for `o`, or calls the base implementation (to raise a `TypeError`).

For example, to support arbitrary iterators, you could implement default like this:

```
def default(self, o):
    try:
        iterable = iter(o)
    except TypeError:
        pass
    else:
        return list(iterable)
    # Let the base class default method raise the TypeError
    return JSONEncoder.default(self, o)
```

### 5.1.2 Package Contents

ossindex.**logger**

ossindex.**formatter**





## PYTHON MODULE INDEX

### O

- `ossindex`, [13](#)
- `ossindex.exception`, [13](#)
- `ossindex.model`, [13](#)
- `ossindex.ossindex`, [16](#)
- `ossindex.serializer`, [17](#)



## Symbols

[\\_HYPHENATED\\_ATTRIBUTES](#) (in module *ossindex.serializer*), 18  
[\\_PYTHON\\_TO\\_JSON\\_NAME](#) (in module *ossindex.serializer*), 18  
[\\_\\_eq\\_\\_\(\)](#) (*ossindex.model.OssIndexComponent* method), 15  
[\\_\\_eq\\_\\_\(\)](#) (*ossindex.model.Vulnerability* method), 15  
[\\_\\_hash\\_\\_\(\)](#) (*ossindex.model.OssIndexComponent* method), 15  
[\\_\\_hash\\_\\_\(\)](#) (*ossindex.model.Vulnerability* method), 15  
[\\_\\_repr\\_\\_\(\)](#) (*ossindex.model.OssIndexComponent* method), 15  
[\\_\\_repr\\_\\_\(\)](#) (*ossindex.model.Vulnerability* method), 15  
[\\_attempt\\_config\\_load\(\)](#) (*ossindex.ossindex.OssIndex* method), 16  
[\\_cache\\_directory](#) (*ossindex.ossindex.OssIndex* attribute), 16  
[\\_cache\\_ttl\\_in\\_hours](#) (*ossindex.ossindex.OssIndex* attribute), 16  
[\\_caching\\_enabled](#) (*ossindex.ossindex.OssIndex* attribute), 16  
[\\_chunk\\_packages\\_for\\_oss\\_index\(\)](#) (*ossindex.ossindex.OssIndex* method), 17  
[\\_get\\_api\\_url\(\)](#) (*ossindex.ossindex.OssIndex* method), 17  
[\\_get\\_cache\\_db\(\)](#) (*ossindex.ossindex.OssIndex* method), 17  
[\\_get\\_cached\\_results\(\)](#) (*ossindex.ossindex.OssIndex* method), 17  
[\\_get\\_headers\(\)](#) (*ossindex.ossindex.OssIndex* static method), 17  
[\\_get\\_results\(\)](#) (*ossindex.ossindex.OssIndex* method), 17  
[\\_make\\_oss\\_index\\_component\\_report\\_call\(\)](#) (*ossindex.ossindex.OssIndex* method), 17  
[\\_oss\\_index\\_api\\_version](#) (*ossindex.ossindex.OssIndex* attribute), 16  
[\\_oss\\_index\\_authentication](#) (*ossindex.ossindex.OssIndex* attribute), 16  
[\\_oss\\_index\\_host](#) (*ossindex.ossindex.OssIndex* attribute), 16

[\\_oss\\_max\\_coordinates\\_per\\_request](#) (*ossindex.ossindex.OssIndex* attribute), 16  
[\\_reduce\\_on\\_max\\_cvss\\_score\(\)](#) (*ossindex.model.OssIndexComponent* static method), 16  
[\\_setup\\_cache\(\)](#) (*ossindex.ossindex.OssIndex* method), 17  
[\\_upsert\\_cache\\_with\\_oss\\_index\\_responses\(\)](#) (*ossindex.ossindex.OssIndex* method), 17

## A

[AccessDeniedException](#), 13

## C

[coordinates](#) (*ossindex.model.OssIndexComponent* property), 15  
[cve](#) (*ossindex.model.Vulnerability* property), 14  
[cvss\\_score](#) (*ossindex.model.Vulnerability* property), 14  
[cvss\\_vector](#) (*ossindex.model.Vulnerability* property), 14  
[cwe](#) (*ossindex.model.Vulnerability* property), 14

## D

[default\(\)](#) (*ossindex.serializer.OssIndexJsonEncoder* method), 18  
[DEFAULT\\_CONFIG\\_FILE](#) (*ossindex.ossindex.OssIndex* attribute), 16  
[description](#) (*ossindex.model.OssIndexComponent* property), 15  
[description](#) (*ossindex.model.Vulnerability* property), 14  
[display\\_name](#) (*ossindex.model.Vulnerability* property), 14

## E

[external\\_references](#) (*ossindex.model.Vulnerability* property), 14

## F

[formatter](#) (in module *ossindex*), 19

**G**

`get_component_report()` (*ossindex.ossindex.OssIndex* method), 17

`get_max_cvss_score()` (*ossindex.model.OssIndexComponent* method), 15

`get_package_url()` (*ossindex.model.OssIndexComponent* method), 15

**H**

`has_ossindex_authentication()` (*ossindex.ossindex.OssIndex* method), 16

**I**

`id` (*ossindex.model.Vulnerability* property), 14

**J**

`json_decoder()` (*in module ossindex.serializer*), 18

**L**

`logger` (*in module ossindex*), 19

`logger` (*in module ossindex.ossindex*), 16

**M**

`module`

- `ossindex`, 13
- `ossindex.exception`, 13
- `ossindex.model`, 13
- `ossindex.ossindex`, 16
- `ossindex.serializer`, 17

**O**

`ossindex`

- `module`, 13

`OssIndex` (*class in ossindex.ossindex*), 16

`ossindex.exception`

- `module`, 13

`ossindex.model`

- `module`, 13

`ossindex.ossindex`

- `module`, 16

`ossindex.serializer`

- `module`, 17

`ossindex_lib_version` (*in module ossindex.ossindex*), 16

`OssIndexComponent` (*class in ossindex.model*), 15

`OssIndexException`, 13

`OssIndexJsonEncoder` (*class in ossindex.serializer*), 18

**P**

`purge_local_cache()` (*ossindex.ossindex.OssIndex* method), 17

`pythonify_key_names()` (*in module ossindex.serializer*), 18

**R**

`reference` (*ossindex.model.OssIndexComponent* property), 15

`reference` (*ossindex.model.Vulnerability* property), 14

**T**

`title` (*ossindex.model.Vulnerability* property), 14

**V**

`version_ranges` (*ossindex.model.Vulnerability* property), 14

`vulnerabilities` (*ossindex.model.OssIndexComponent* property), 15

`Vulnerability` (*class in ossindex.model*), 13