
pybase64 Documentation

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Matthieu Darbois

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Contents:

1	Getting started	3
1.1	Installation	3
1.2	Usage	3
1.3	Benchmark	4
2	API Reference	5
2.1	Main API Reference	5
2.2	Helpers API Reference	5
2.3	Legacy API Reference	6
2.4	Information API Reference	6
3	Changelog	7
3.1	0.4.0	7
3.2	0.3.1	7
3.3	0.3.0	7
3.4	0.2.1	7
3.5	0.2.0	7
3.6	0.1.2	8
3.7	0.1.1	8
3.8	0.1.0	8
4	License	9
4.1	pybase64	9
4.2	libbase64	10

Fast Base64 implementation for Python.

CHAPTER 1

Getting started

pybase64 is a wrapper on `libbase64`.

It aims to provide a fast base64 implementation for base64 encoding/decoding.

1.1 Installation

```
pip install pybase64
```

1.2 Usage

pybase64 uses the same API as Python `base64` “modern interface” (introduced in Python 2.4) for an easy integration.

To get the fastest decoding, it is recommended to use the `b64decode()` and `validate=True` when possible.

```
import pybase64

print(pybase64.b64encode(b'>>>foo???', altchars='_:'))
# b'Pj4_Zm9vPz8:'
print(pybase64.b64decode(b'Pj4_Zm9vPz8:', altchars='_:', validate=True))
# b'>>>foo???'

# Standard encoding helpers
print(pybase64.standard_b64encode(b'>>>foo???'))
# b'Pj4+Zm9vPz8/'
print(pybase64.standard_b64decode(b'Pj4+Zm9vPz8/'))
# b'>>>foo???'

# URL safe encoding helpers
print(pybase64.urlsafe_b64encode(b'>>>foo???'))
# b'Pj4-Zm9vPz8_'
```

```
print(pybase64.urlsafe_b64decode(b'Pj4-Zm9vPz8_'))
# b'>>>foo???'
```

Check [API Reference](#) for more details.

A command-line tool is also provided. It has encode, decode and benchmark subcommands.

```
usage: pybase64 [-h] [-V] {benchmark,encode,decode} ...

pybase64 command-line tool.

positional arguments:
  {benchmark,encode,decode}
                        tool help
  benchmark             -h for usage
  encode                -h for usage
  decode               -h for usage

optional arguments:
  -h, --help            show this help message and exit
  -V, --version         show program's version number and exit
```

1.3 Benchmark

Running Python 3.6.0, Apple LLVM version 9.1.0 (clang-902.0.39.1), Mac OS X 10.13.3 on an Intel Core i7-4870HQ @ 2.50GHz

```
pybase64 0.4.0 (C extension active - AVX2)
bench: altchars=None, validate=False
pybase64.__pybase64.encodebytes: 1754.370 MB/s (13,271,472 bytes -> 17,928,129 bytes)
pybase64.__pybase64.b64encode: 3592.168 MB/s (13,271,472 bytes -> 17,695,296 bytes)
pybase64.__pybase64.b64decode: 1675.739 MB/s (17,695,296 bytes -> 13,271,472 bytes)
base64.encodebytes: 84.960 MB/s (13,271,472 bytes -> 17,928,129 bytes)
base64.b64encode: 633.833 MB/s (13,271,472 bytes -> 17,695,296 bytes)
base64.b64decode: 320.977 MB/s (17,695,296 bytes -> 13,271,472 bytes)
bench: altchars=None, validate=True
pybase64.__pybase64.b64encode: 3725.047 MB/s (13,271,472 bytes -> 17,695,296 bytes)
pybase64.__pybase64.b64decode: 3813.267 MB/s (17,695,296 bytes -> 13,271,472 bytes)
base64.b64encode: 644.642 MB/s (13,271,472 bytes -> 17,695,296 bytes)
base64.b64decode: 108.308 MB/s (17,695,296 bytes -> 13,271,472 bytes)
bench: altchars=b'-'_, validate=False
pybase64.__pybase64.b64encode: 2719.946 MB/s (13,271,472 bytes -> 17,695,296 bytes)
pybase64.__pybase64.b64decode: 1135.939 MB/s (17,695,296 bytes -> 13,271,472 bytes)
base64.b64encode: 363.010 MB/s (13,271,472 bytes -> 17,695,296 bytes)
base64.b64decode: 221.476 MB/s (17,695,296 bytes -> 13,271,472 bytes)
bench: altchars=b'-'_, validate=True
pybase64.__pybase64.b64encode: 2661.688 MB/s (13,271,472 bytes -> 17,695,296 bytes)
pybase64.__pybase64.b64decode: 2561.590 MB/s (17,695,296 bytes -> 13,271,472 bytes)
base64.b64encode: 349.590 MB/s (13,271,472 bytes -> 17,695,296 bytes)
base64.b64decode: 96.113 MB/s (17,695,296 bytes -> 13,271,472 bytes)
```


2.1 Main API Reference

`pybase64.b64encode(s, altchars=None)`

Encode bytes using the standard Base64 alphabet.

Argument `s` is a `bytes-like object` to encode.

Optional `altchars` must be a byte string of length 2 which specifies an alternative alphabet for the '+' and '/' characters. This allows an application to e.g. generate url or filesystem safe Base64 strings.

The result is returned as a `bytes` object.

`pybase64.b64decode(s, altchars=None, validate=False)`

Decode bytes encoded with the standard Base64 alphabet.

Argument `s` is a `bytes-like object` or ASCII string to decode.

Optional `altchars` must be a `bytes-like object` or ASCII string of length 2 which specifies the alternative alphabet used instead of the '+' and '/' characters.

If `validate` is `False` (the default), characters that are neither in the normal base-64 alphabet nor the alternative alphabet are discarded prior to the padding check. If `validate` is `True`, these non-alphabet characters in the input result in a `binascii.Error`.

The result is returned as a `bytes` object.

A `binascii.Error` is raised if `s` is incorrectly padded.

2.2 Helpers API Reference

`pybase64.standard_b64encode(s)`

Encode bytes using the standard Base64 alphabet.

Argument `s` is a `bytes-like object` to encode.

The result is returned as a `bytes` object.

`pybase64.standard_b64decode(s)`

Decode bytes encoded with the standard Base64 alphabet.

Argument `s` is a `bytes-like object` or ASCII string to decode.

The result is returned as a `bytes` object.

A `binascii.Error` is raised if the input is incorrectly padded.

Characters that are not in the standard alphabet are discarded prior to the padding check.

`pybase64.urlsafe_b64encode(s)`

Encode bytes using the URL- and filesystem-safe Base64 alphabet.

Argument `s` is a `bytes-like object` to encode.

The result is returned as a `bytes` object.

The alphabet uses `'-'` instead of `'+'` and `'_'` instead of `'/'`.

`pybase64.urlsafe_b64decode(s)`

Decode bytes using the URL- and filesystem-safe Base64 alphabet.

Argument `s` is a `bytes-like object` or ASCII string to decode.

The result is returned as a `bytes` object.

A `binascii.Error` is raised if the input is incorrectly padded.

Characters that are not in the URL-safe base-64 alphabet, and are not a plus `'+'` or slash `'/'`, are discarded prior to the padding check.

The alphabet uses `'-'` instead of `'+'` and `'_'` instead of `'/'`.

2.3 Legacy API Reference

`pybase64.encodebytes(s)`

Encode bytes into a bytes object with newlines (`b' \n'`) inserted after every 76 bytes of output, and ensuring that there is a trailing newline, as per [RFC 2045](#) (MIME).

Argument `s` is a `bytes-like object` to encode.

The result is returned as a `bytes` object.

2.4 Information API Reference

`pybase64.get_version()`

Returns pybase64 version as a `str` object.

The result reports if the C extension is used or not. e.g. *1.0.0 (C extension active - AVX2)*

`pybase64.get_license_text()`

Returns pybase64 license information as a `str` object.

The result includes libbase64 license information as well.

3.1 0.4.0

- Speed-up decoding when `validate==False`

3.2 0.3.1

- Fix deployment issues

3.3 0.3.0

- Add `encodebytes` function

3.4 0.2.1

- Fixed invalid results on Windows

3.5 0.2.0

- Added documentation
- Added subcommands to the main script:
 - `help`
 - `version`
 - `encode`

- decode
- benchmark

3.6 0.1.2

- Updated base64 native library

3.7 0.1.1

- Fixed deployment issues

3.8 0.1.0

- First public release

4.1 pybase64

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4.2 libbase64

```
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```

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B

[b64decode\(\)](#) (in module pybase64), [5](#)

[b64encode\(\)](#) (in module pybase64), [5](#)

E

[encodebytes\(\)](#) (in module pybase64), [6](#)

G

[get_license_text\(\)](#) (in module pybase64), [6](#)

[get_version\(\)](#) (in module pybase64), [6](#)

R

RFC

[RFC 2045](#), [6](#)

S

[standard_b64decode\(\)](#) (in module pybase64), [6](#)

[standard_b64encode\(\)](#) (in module pybase64), [5](#)

U

[urlsafe_b64decode\(\)](#) (in module pybase64), [6](#)

[urlsafe_b64encode\(\)](#) (in module pybase64), [6](#)