

This document describes the current stable version of Celery (5.2). For development docs, [go here](#).

Introduction to Celery

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What's a Task Queue?

Task queues are used as a mechanism to distribute work across threads or machines.

A task queue's input is a unit of work called a task. Dedicated worker processes constantly monitor task queues for new work to perform.

Celery communicates via messages, usually using a broker to mediate between clients and workers. To initiate a task the client adds a message to the queue, the broker then delivers that message to a worker.

A Celery system can consist of multiple workers and brokers, giving way to high availability and horizontal scaling.

Celery is written in Python, but the protocol can be implemented in any language. In addition to Python there's [node-celery](#) and [node-celery-ts](#) for Node.js, and a [PHP client](#).

Language interoperability can also be achieved exposing an HTTP endpoint and having a task that requests it (webhooks).

What do I need?

Celery requires a message transport to send and receive messages. The RabbitMQ and Redis broker transports are feature complete, but there's also support for a myriad of other experimental solutions, including using SQLite for local development.

Celery can run on a single machine, on multiple machines, or even across data centers.

Get Started

Version Requirements

Celery version 5.2 runs on

- Python (3.7, 3.8, 3.9, 3.10)
- PyPy3.7, 3.8 (7.3.7)

Celery 4.x was the last version to support Python 2.7, Celery 5.x requires Python 3.6 or newer. Celery 5.1.x also requires Python

If this is the first time you're trying to use Celery, or if you haven't kept up with development in the 3.1 version and are coming from previous versions, then you should read our getting started tutorials:

- [First Steps with Celery](#)
- [Next Steps](#)

Celery is...

- **Simple**

Celery is easy to use and maintain, and it *doesn't need configuration files*.

It has an active, friendly community you can talk to for support, including a [mailing-list](#) and an [IRC channel](#).

Here's one of the simplest applications you can make:

```
from celery import Celery

app = Celery('hello', broker='amqp://guest@localhost//')

@app.task
def hello():
    return 'hello world'
```

- **Highly Available**

Workers and clients will automatically retry in the event of connection loss or failure, and some brokers support HA in way of *Primary/Primary* or *Primary/Replica* replication.

- **Fast**

A single Celery process can process millions of tasks a minute, with sub-millisecond round-trip latency (using RabbitMQ, librabbitmq, and optimized settings).

- **Flexible**

Almost every part of *Celery* can be extended or used on its own, Custom pool implementations, serializers, compression schemes, logging, schedulers, consumers, producers, broker transports, and much more.

3.6 or newer. Celery 5.2.x requires Python 3.7 or newer.

If you're running an older version of Python, you need to be running an older version of Celery:

- Python 2.7 or Python 3.5: Celery series 4.4 or earlier.
- Python 2.6: Celery series 3.1 or earlier.
- Python 2.5: Celery series 3.0 or earlier.
- Python 2.4 was Celery series 2.2 or earlier.

Celery is a project with minimal funding, so we don't support Microsoft Windows. Please don't open any issues related to that platform.

It supports

- **Brokers**
- **Result Stores**

- [RabbitMQ](#), [Redis](#),
- [Amazon SQS](#), and more...
- **Concurrency**
 - `prefork` (multiprocessing),
 - [Eventlet](#), [gevent](#)
 - `thread` (multithreaded)
 - *solo* (single threaded)
- AMQP, Redis
- Memcached,
- SQLAlchemy, Django ORM
- Apache Cassandra, Elasticsearch, Riak
- MongoDB, CouchDB, Couchbase, ArangoDB
- Amazon DynamoDB, Amazon S3
- Microsoft Azure Block Blob, Microsoft Azure Cosmos DB
- File system
- **Serialization**
 - *pickle*, *json*, *yaml*, *msgpack*.
 - *zlib*, *bzip2* compression.
 - Cryptographic message signing.

Features

• Monitoring

A stream of monitoring events is emitted by workers and is used by built-in and external tools to tell you what your cluster is doing – in real-time.

[Read more....](#)

• Work-flows

Simple and complex work-flows can be composed using a set of powerful primitives we call the “canvas”, including grouping, chaining, chunking, and more.

[Read more....](#)

• Time & Rate Limits

You can control how many tasks can be executed per second/minute/hour, or how long a task can be allowed to run, and this can be set as a default, for a specific worker or individually for each task type.

[Read more....](#)

• Scheduling

You can specify the time to run a task in seconds or a [datetime](#), or you can use periodic tasks for recurring events based on a simple interval, or Crontab expressions supporting minute, hour, day of week, day of month, and month of year.

[Read more....](#)

• Resource Leak Protection

The [--max-tasks-per-child](#) option is used for user tasks leaking resources, like memory or file descriptors, that are simply out of your control.

[Read more....](#)

• User Components

Each worker component can be customized, and additional components can be defined by the user. The worker is built up using “boot-steps” — a dependency graph enabling fine grained control of the worker’s internals.

Framework Integration

Celery is easy to integrate with web frameworks, some of them even have integration packages:

Pyramid	pyramid_celery
Pylons	celery-pylons
Flask	not needed
web2py	web2py-celery
Tornado	tornado-celery
Tryton	celery_tryton

For [Django](#) see [First steps with Django](#).

The integration packages aren't strictly necessary, but they can make development easier, and sometimes they add important hooks like closing database connections at `fork(2)`.

Quick Jump

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Installation

You can install Celery either via the Python Package Index (PyPI) or from source.

To install using **pip**:

```
$ pip install -U Celery
```

Bundles

Celery also defines a group of bundles that can be used to install Celery and the dependencies for a given feature.

You can specify these in your requirements or on the **pip** command-line by using brackets. Multiple bundles can be specified by separating them by commas.

```
$ pip install "celery[librabbitmq]"
$ pip install "celery[librabbitmq,redis,auth,msgpack]"
```

The following bundles are available:

Serializers

celery[auth]: for using the **auth** security serializer.
celery[msgpack]: for using the **msgpack** serializer.
celery[yaml]: for using the **yaml** serializer.

Concurrency

celery[eventlet]: for using the [eventlet](#) pool.
celery[gevent]: for using the [gevent](#) pool.

Transports and Backends

celery[librabbitmq]: for using the **librabbitmq** C library.
celery[redis]: for using **Redis** as a message transport or as a result backend.
celery[sqs]: for using **Amazon SQS** as a message transport (*experimental*).
celery[tblib]: for using the **task_remote_tracebacks** feature.
celery[memcache]: for using **Memcached** as a result backend (using [pylibmc](#))
celery[pymemcache]: for using **Memcached** as a result backend (pure-Python implementation).
celery[cassandra]: for using **Apache Cassandra** as a result backend with **DataStax** driver.
celery[couchbase]: for using **Couchbase** as a result backend.
celery[arangodb]: for using **ArangoDB** as a result backend.
celery[elasticsearch]: for using **Elasticsearch** as a result backend.
celery[riak]: for using **Riak** as a result backend.
celery[dynamodb]: for using **AWS DynamoDB** as a result backend.
celery[zookeeper]: for using **Zookeeper** as a message transport.
celery[sqlalchemy]: for using **SQLAlchemy** as a result backend (*supported*).
celery[pyro]: for using the **Pyro4** message transport (*experimental*).
celery[softlayer]: for using the **SoftLayer Message Queue** transport (*experimental*).

<code>celery[amqp]:</code>	for using the <code>SQLAlchemy</code> Message Queue transport (<i>experimental</i>).
<code>celery[consul]:</code>	for using the <code>Consul.io</code> Key/Value store as a message transport or result backend (<i>experimental</i>).
<code>celery[django]:</code>	specifies the lowest version possible for Django support. You should probably not use this in your requirements, it's here for informational purposes only.

Downloading and installing from source

Download the latest version of Celery from PyPI:

<https://pypi.org/project/celery/>

You can install it by doing the following.:

```
$ tar xvfz celery-0.0.0.tar.gz
$ cd celery-0.0.0
$ python setup.py build
# python setup.py install
```

The last command must be executed as a privileged user if you aren't currently using a `virtualenv`.

Using the development version

With pip

The Celery development version also requires the development versions of `kombu`, `amqp`, `billiard`, and `vine`.

You can install the latest snapshot of these using the following pip commands:

```
$ pip install https://github.com/celery/celery/zipball/master#egg=celery
$ pip install https://github.com/celery/billiard/zipball/master#egg=billiard
$ pip install https://github.com/celery/py-amqp/zipball/master#egg=amqp
$ pip install https://github.com/celery/kombu/zipball/master#egg=kombu
$ pip install https://github.com/celery/vine/zipball/master#egg=vine
```

With git

Please see the [Contributing](#) section.



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