pytest-kafka Documentation

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Karoline Pauls

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CHAPTER

ONE

PYTEST-KAFKA

Pytest fixture factories for Zookeeper, Kafka server and Kafka consumer. Read the API docs.

```
from pathlib import Path
from pytest_kafka import (
    make_zookeeper_process, make_kafka_server, make_kafka_consumer,
    terminate,
)

ROOT = Path(__file__).parent
KAFKA_SCRIPTS = ROOT / 'kafka/bin/'
KAFKA_BIN = str(KAFKA_SCRIPTS / 'kafka-server-start.sh')
ZOOKEEPER_BIN = str(KAFKA_SCRIPTS / 'zookeeper-server-start.sh')

# You can pass a custom teardown function (or parametrise ours). Just don't call it␣
↪`teardown`
# or Pytest will interpret it as a module-scoped teardown function.
teardown_fn = partial(terminate, signal_fn=Popen.kill)
zookeeper_proc = make_zookeeper_process(ZOOKEEPER_BIN, teardown_fn=teardown_fn)
kafka_server = make_kafka_server(KAFKA_BIN, 'zookeeper_proc', teardown_fn=teardown_fn)
kafka_consumer = make_kafka_consumer(
    'kafka_server', seek_to_beginning=True, kafka_topics=['topic'])
```

This creates 3 fixtures:

1. `zookeeper_proc` - Zookeeper process
2. `kafka_server` - Kafka process
3. `kafka_consumer` - usable `kafka.KafkaConsumer` instance

`ZOOKEEPER_BIN` and `KAFKA_BIN` are paths to launch scripts in your Kafka distribution. Check this project's setup.py to see a way of installing Kafka for development.

It is advised to pass `seek_to_beginning=True` because otherwise some messages may not be captured by the consumer. This requires knowing the topics upfront because without topics there's no partitions to seek.

Kafka server is known to take a couple of seconds to terminate gracefully. You probably don't need that, so you can pass `partial(terminate, signal_fn=Popen.kill)` to make it killed with SIGKILL and waited for afterwards.

It's possible to create multiple Kafka fixtures forming a cluster by passing the same Zookeeper fixture to them. For an example, check the tests.

Session-scoped fixtures are also available. Consult the test suite.

1.1 System requirements

- Python 3.6+
- a JVM that can run Kafka and Zookeeper
- Kafka - https://kafka.apache.org/downloads

1.2 Development

```
pip install -e .[dev]
python ./pytest_kafka/install.py  # will install kafka to ./kafka
```

1.3 Acknowledgements

The library has been open-sourced from a codebase belonging to Infectious Media.

CHAPTER

TWO

PYTEST_KAFKA

2.1 pytest_kafka package

Pytest-kafka public API.

`pytest_kafka.`**`make_zookeeper_process`**(*zk_bin*, *zk_port=None*, *zk_config_template='dataDir={zk_data_dir}\nclientPort={zk_port}\nmaxClientC*
teardown_fn=<function terminate>, *scope='function'*)

Make a Zookeeper fixture.

The fixture will spawn a Zookeeper process in a new process group and return its process handle and port number. Data will be stored in a Pytest-provided temporary directory.

Parameters

- **zk_bin** (`str`) – path to Zookeeper launch script (typically to bin/zookeeper-server-start.sh)
- **zk_port** (`Optional`[`int`]) – Zookeeper port (random free port by default)
- **zk_config_template** (`str`) – Zookeeper config template, must use keys `zk_data_dir` and `zk_port`. See *`pytest_kafka.constants.ZOOKEEPER_CONFIG_TEMPLATE`*.
- **teardown_fn** (`Callable`[[`Popen`], `Any`]) – function to tear down Zookeeper (*`terminate()`* by default)
- **scope** (`str`) – 'function' or 'session'

Return type `Callable`[..., `Tuple`[`Popen`, `int`]]

`pytest_kafka.`**`make_kafka_server`**(*kafka_bin*, *zookeeper_fixture_name*, *kafka_port=None*, *kafka_config_template='reserved.broker.max.id=65535\nbroker.id={kafka_port}\nlistene*
The number of threads lowered to 1 - may boost startup time:\nnum.recovery.threads.per.data.dir=1\nnum.network.threads=1\nnum.io.threads=1
teardown_fn=<function terminate>, *scope='function'*, *timeout=15*)

Make a Kafka fixture.

The fixture will spawn a Kafka process in a new process group and return its process handle and port number. Data will be stored in a Pytest-provided temporary directory.

Parameters

- **zookeeper_fixture_name** (`str`) – the name of the Zookeeper fixture to depend on. The scope must not be wider than this fixture's scope.
- **kafka_bin** (`str`) – path to Kafka launch script (typically to bin/kafka-server-start.sh)

- **kafka_port** (Optional[int]) – Kafka port (random free port by default)
- **kafka_config_template** (str) – Kafka config template, must use keys kafka_log_dir and kafka_port. See *pytest_kafka.constants.KAFKA_SERVER_CONFIG_TEMPLATE*.
- **teardown_fn** (Callable[[Popen], Any]) – function to tear down Kafka (*terminate()* by default)
- **scope** (str) – 'function' or 'session'
- **timeout** (int) – How long to wait for kafka to come online in seconds

Return type Callable[..., Tuple[Popen, int]]

pytest_kafka.**make_kafka_consumer**(*kafka_fixture_name*, *kafka_topics=None*, *seek_to_beginning=False*, *scope='function'*, ***consumer_kwargs*)

Make a Kafka consumer fixture.

Parameters

- **kafka_fixture_name** (str) – the name of the Kafka fixture to depend on
- **kafka_topics** (Optional[List[str]]) – topics to subscribe to
- **seek_to_beginning** (bool) – whether the consumer should consume from the earlies offsets. Solves the race condition between consumer setup and Kafka server + Producer setup but requires to know the topics upfront.
- **consumer_kwargs** – what to pass to KafkaConsumer. By default bootstrap_servers will get the server from the passed fixture and *consumer_timeout_ms* will be *pytest_kafka.constants.DEFAULT_CONSUMER_TIMEOUT_MS*.

It's recommended to pass both kafka_topics and seek_to_beginning.

Return type Callable[..., KafkaConsumer]

pytest_kafka.**terminate**(*proc*, *signal_fn=<function Popen.terminate>*, *wait_timeout=5*)

Kill the process with the desired method (SIGTERM by default) and wait for it.

Return type None

2.1.1 Submodules

pytest_kafka.constants module

Config templates and constants.

pytest_kafka.constants.**DEFAULT_CONSUMER_TIMEOUT_MS = 500**

Kafka Consumer timeout in miliseconds.

pytest_kafka.constants.**KAFKA_SERVER_CONFIG_TEMPLATE = 'reserved.broker.max.id=65535\nbroke**

Kafka config template. kafka_log_dir, `kafka_port, and zk_port keys are required.

pytest_kafka.constants.**ZOOKEEPER_CONFIG_TEMPLATE = 'dataDir={zk_data_dir}\nclientPort={zk_**

Zookeeper config template. zk_data_dir and zk_port keys are required.

pytest_kafka.install module

Utility methods for downloading Kafka locally.

`pytest_kafka.install.`**`clean_kafka`**(*kafka_dir='kafka', kafka_tar_rootdir='kafka_2.13-3.2.3/', kafka_tar='kafka.tgz'*)

Clean whatever *set_up_kafka* may create.

`pytest_kafka.install.`**`set_up_kafka`**(*kafka_url='https://downloads.apache.org/kafka/3.2.3/kafka_2.13-3.2.3.tgz', extract_location='.', kafka_dir='kafka', kafka_tar='kafka.tgz', kafka_tar_rootdir='kafka_2.13-3.2.3/'*)

Clean, download Kafka from an official mirror and untar it.

The *kafka_dir*, *kafka_tar* and *kafka_tar_rootdir* arguments are reletive to the *extract_location* argument suh that calling *setup_kafka(extract_location='/opt/local', kafka_dir='my_kafka')* will result in Kafka being installed into */opt/local/my_kafka*

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