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# **AnyBlok / Bus Documentation**

***Release 1.1.0***

**jssuzanne**

**Jun 24, 2019**



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Information about the AnyBlok / Bus project.

## 1.1 Project Homepage

AnyBlok is hosted on [github](#) - the main project page is at [https://github.com/AnyBlok/anyblok\\_bus](https://github.com/AnyBlok/anyblok_bus). Source code is tracked here using [GIT](#).

Releases and project status are available on Pypi at [http://pypi.python.org/pypi/anyblok\\_bus](http://pypi.python.org/pypi/anyblok_bus).

The most recent published version of this documentation should be at <http://doc.anyblok-bus.anyblok.org>.

## 1.2 Installation

Install released versions of AnyBlok from the Python package index with [pip](#) or a similar tool:

```
pip install anyblok_bus
```

Installation via source distribution is via the `setup.py` script:

```
python setup.py install
```

Installation will add the `anyblok` commands to the environment.

## 1.3 Unit Test

Run the test with `nose`:

```
pip install nose
nosetests anyblok_bus/tests
```

## 1.4 Script

`anyblok_bus` add `console_script` to launch worker. A worker consume a queue defined by the decorator **anyblok\_bus.bus\_consumer**:

```
anyblok_bus -c anyblok_config_file.cfg
```

..note:: The profile name in the configuration is used to find the correct url to connect to rabbitmq

## 1.5 Dependencies

AnyBlok / Bus works with **Python** **>= 3.4** and later and `pika` **>= 1.0.1**. The install process will ensure that **AnyBlok** is installed, in addition to other dependencies. The latest version of them is strongly recommended.

## 1.6 Author

Jean-Sébastien Suzanne

## 1.7 Contributors

**Anybox** team:

- Jean-Sébastien Suzanne
- Florent Jouatte

**Sensee** team:

- Julien SZKUDLAPSKI
- Jean-Sébastien Suzanne

## 1.8 Bugs

Bugs and feature enhancements to AnyBlok should be reported on the [Issue tracker](#).

### Contents

- *Usage*
  - *Declare a new consumer*
  - *Publish a message through rabbitmq*

## 2.1 Declare a new consumer

In an AnyBlok Model you have to decorate a method with **bus\_consumer**

```
from anyblok_bus import bus_consumer
from anyblok import Declarations
from .schema import MySchema

@Declarations.register(Declarations.Model)
class MyModel:

    @bus_consumer(queue_name='name of the queue', schema=MySchema())
    def my_consumer(cls, body):
        # do something
```

The schema must be an instance of `marshmallow.Schema`, see [the marshmallow documentation](#)

**Note:** The decorated method become a classmethod with always the same prototype (cls, body) body is the deserialization of the message from the queue by the schema.

## 2.2 Publish a message through rabbitmq

The publication is done by **registry.Bus.publish** method:

```
registry.Bus.publish('exchange', 'routing_key', message, mimetype)
```

if the message have not be send, then an exception is raised

..warning:

A profile must be defined **and** selected by the AnyBlok configuration `**bus_profile**`

## Contents

- *Code*
  - *Declare a consumer on queue with a marshmallow schema*
    - \* *decorator bus\_consumer*
    - \* *anyblok model plugin*
  - *Worker*
    - \* *Exceptions*



## 3.1 Declare a consumer on queue with a marshmallow schema

### 3.1.1 decorator `bus_consumer`

```
anyblok_bus.consumer.bus_consumer (queue_name=None,      adapter=None,      processes=0,
                                     **kwargs)
```

### 3.1.2 anyblok model plugin

```
class anyblok_bus.consumer.BusConsumerPlugin (registry)
```

Bases: anyblok.model.plugins.ModelPluginBase

anyblok.model.plugin to allow the build of the anyblok\_bus.bus\_consumer

```
apply_consumer (consumer, new_base, properties, transformation_properties)
```

Insert in a base the overload

#### Parameters

- **new\_base** – the base to be put on front of all bases
- **properties** – the properties declared in the model
- **transformation\_properties** – the properties of the model

```
initialisation_transformation_properties (properties, transformation_properties)
```

Initialise the transform properties

#### Parameters

- **properties** – the properties declared in the model
- **new\_type\_properties** – param to add in a new base if need

```
insert_in_bases (new_base, namespace, properties, transformation_properties)
```

Insert in a base the overload

**Parameters**

- **new\_base** – the base to be put on front of all bases
- **namespace** – the namespace of the model
- **properties** – the properties declared in the model
- **transformation\_properties** – the properties of the model

**transform\_base\_attribute** (*attr, method, namespace, base, transformation\_properties, new\_type\_properties*)  
transform the attribute for the final Model

**Parameters**

- **attr** – attribute name
- **method** – method pointer of the attribute
- **namespace** – the namespace of the model
- **base** – One of the base of the model
- **transformation\_properties** – the properties of the model
- **new\_type\_properties** – param to add in a new base if need

## 3.2 Worker

**class** anyblok\_bus.worker.**Worker** (*registry, profile, consumers, withautocommit=True*)

Bases: object

Define consumers to consume the queue defined in the AnyBlok registry by the bus\_consumer decorator

```
worker = Worker(anyblokregistry, filename)
worker.start() # blocking loop
worker.is_ready() # return True if all the consumer are started
worker.stop() # stop the loop and close the connection with rabbitmq
```

This is an example consumer that will handle unexpected interactions with RabbitMQ such as channel and connection closures.

If RabbitMQ closes the connection, this class will stop and indicate that reconnection is necessary. You should look at the output, as there are limited reasons why the connection may be closed, which usually are tied to permission related issues or socket timeouts.

If the channel is closed, it will indicate a problem with one of the commands that were issued and that should surface in the output as well.

**Parameters**

- **registry** – anyblok registry instance
- **profile** – the name of the profile which give the url of rabbitmq
- **consumers** – list of the consumer to consum
- **withautocommit** – default True, commit all the transaction

**add\_on\_cancel\_callback** ()

Add a callback that will be invoked if RabbitMQ cancels the consumer for some reason. If RabbitMQ does cancel the consumer, on\_consumer\_cancelled will be invoked by pika.

**add\_on\_channel\_close\_callback()**

This method tells pika to call the `on_channel_closed` method if RabbitMQ unexpectedly closes the channel.

**close\_channel()**

Call to close the channel with RabbitMQ cleanly by issuing the `Channel.Close` RPC command.

**close\_connection()****connect()**

This method connects to RabbitMQ, returning the connection handle. When the connection is established, the `on_connection_open` method will be invoked by pika.

**Return type** `pika.SelectConnection`

**declare\_consumer(queue, model, method)****get\_url()**

Retrieve connection url

**is\_ready()****on\_basic\_qos\_ok(\_unused\_frame)**

Invoked by pika when the `Basic.QoS` method has completed. At this point we will start consuming messages by calling `start_consuming` which will invoke the needed RPC commands to start the process.

**Parameters** `_unused_frame` (`pika.frame.Method`) – The `Basic.QosOk` response frame

**on\_bindok(\_unused\_frame, userdata)**

Invoked by pika when the `Queue.Bind` method has completed. At this point we will set the prefetch count for the channel.

**Parameters**

- `_unused_frame` (`pika.frame.Method`) – The `Queue.BindOk` response frame
- `userdata` (`str|unicode`) – Extra user data (queue name)

**on\_cancelok(\_unused\_frame, userdata)**

This method is invoked by pika when RabbitMQ acknowledges the cancellation of a consumer. At this point we will close the channel. This will invoke the `on_channel_closed` method once the channel has been closed, which will in-turn close the connection.

**Parameters**

- `_unused_frame` (`pika.frame.Method`) – The `Basic.CancelOk` frame
- `userdata` (`str|unicode`) – Extra user data (consumer tag)

**on\_channel\_closed(channel, reason)**

Invoked by pika when RabbitMQ unexpectedly closes the channel. Channels are usually closed if you attempt to do something that violates the protocol, such as re-declare an exchange or queue with different parameters. In this case, we'll close the connection to shutdown the object.

**Parameters**

- `pika.channel.Channel` – The closed channel
- `reason` (`Exception`) – why the channel was closed

**on\_channel\_open(channel)**

This method is invoked by pika when the channel has been opened. The channel object is passed in so we can make use of it.

Since the channel is now open, we'll declare the exchange to use.

**Parameters** `channel` (`pika.channel.Channel`) – The channel object

**on\_connection\_closed** (*\_unused\_connection, reason*)

This method is invoked by pika when the connection to RabbitMQ is closed unexpectedly. Since it is unexpected, we will reconnect to RabbitMQ if it disconnects.

**Parameters**

- **connection** (*pika.connection.Connection*) – The closed connection obj
- **reason** (*Exception*) – exception representing reason for loss of connection.

**on\_connection\_open** (*\_unused\_connection*)

This method is called by pika once the connection to RabbitMQ has been established. It passes the handle to the connection object in case we need it, but in this case, we'll just mark it unused.

**Parameters** *\_unused\_connection* (*pika.SelectConnection*) – The connection

**on\_connection\_open\_error** (*\_unused\_connection, err*)

This method is called by pika if the connection to RabbitMQ can't be established.

**Parameters**

- **\_unused\_connection** (*pika.SelectConnection*) – The connection
- **err** (*Exception*) – The error

**on\_consumer\_cancelled** (*method\_frame*)

Invoked by pika when RabbitMQ sends a Basic.Cancel for a consumer receiving messages.

**Parameters** *method\_frame* (*pika.frame.Method*) – The Basic.Cancel frame

**open\_channel** ()

Open a new channel with RabbitMQ by issuing the Channel.Open RPC command. When RabbitMQ responds that the channel is open, the on\_channel\_open callback will be invoked by pika.

**reconnect** ()

Will be invoked if the connection can't be opened or is closed. Indicates that a reconnect is necessary then stops the ioloop.

**set\_qos** ()

This method sets up the consumer prefetch to only be delivered one message at a time. The consumer must acknowledge this message before RabbitMQ will deliver another one. You should experiment with different prefetch values to achieve desired performance.

**start** ()

Run the example consumer by connecting to RabbitMQ and then starting the IOloop to block and allow the SelectConnection to operate.

**start\_consuming** ()

This method sets up the consumer by first calling add\_on\_cancel\_callback so that the object is notified if RabbitMQ cancels the consumer. It then issues the Basic.Consume RPC command which returns the consumer tag that is used to uniquely identify the consumer with RabbitMQ. We keep the value to use it when we want to cancel consuming. The on\_message method is passed in as a callback pika will invoke when a message is fully received.

**stop** ()

Cleanly shutdown the connection to RabbitMQ by stopping the consumer with RabbitMQ. When RabbitMQ confirms the cancellation, on\_cancelok will be invoked by pika, which will then closing the channel and connection. The IOloop is started again because this method is invoked when CTRL-C is pressed raising a KeyboardInterrupt exception. This exception stops the IOloop which needs to be running for pika to communicate with RabbitMQ. All of the commands issued prior to starting the IOloop will be buffered but not processed.

`stop_consuming()`

Tell RabbitMQ that you would like to stop consuming by sending the Basic.Cancel RPC command.

### 3.2.1 Exceptions

#### Contents

- *Bloks*
  - *Blok bus*
    - \* *Memento*
    - \* *API doc*
      - *Bus*
      - *Profile*
      - *Message*
      - *Exceptions*



## 4.1 Blok bus

```
class anyblok_bus.bloks.bus.Bus (registry)
    Bases: anyblok.blok.Blok

    Add bus configuration in AnyBlok

    author = 'Suzanne Jean-Sébastien'

    conditional_by = []

    conflicting_by = []

    classmethod import_declaration_module ()
        Do the python import for the Declaration of the model or other

    name = 'bus'

    optional_by = []

    classmethod reload_declaration_module (reload)

    required = ['anyblok-core']

    required_by = []

    version = '1.1.0'
```

### 4.1.1 Memento

This blok define two Models:

- **Model.Bus.Profile**: list the connection available to a rabbitmq server
- **Model.Bus.Message**: Give the received message witch did not be imported correctly by the consumer

## 4.1.2 API doc

### Bus

**class** anyblok\_bus.bloks.bus.bus.**Bus**

Bases: object

Namespace Bus

**AnyBlok registration:**

- Type: Model
- Registry name: Model.Bus
- Tablename: bus

**classmethod** **get\_consumers**()

Return the list of the consumers

**classmethod** **publish**(*exchange, routing\_key, data, contenttype*)

Publish a message in an exchange with a routing key through rabbitmq with the profile given by the anyblok configuration

**Parameters**

- **exchange** – name of the exchange
- **routing\_key** – name of the routing key
- **data** – str or unicode to send through rabbitmq
- **contenttype** – the mimetype of the data

**Exception** PublishException

### Profile

**class** anyblok\_bus.bloks.bus.profile.**Profile**

Bases: object

**AnyBlok registration:**

- Type: Model
- Registry name: Model.Bus.Profile
- Tablename: bus\_profile



Fields	
name	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.String</code></li> <li>• <code>primary_key</code> - <code>True</code></li> <li>• <code>unique</code> - <code>True</code></li> <li>• <code>nullable</code> - <code>False</code></li> <li>• <code>default</code> - <code>anyblok.column.NoDefaultValue</code></li> <li>• <code>size</code> - <code>64</code></li> </ul>
description	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.String</code></li> <li>• <code>default</code> - <code>anyblok.column.NoDefaultValue</code></li> <li>• <code>size</code> - <code>64</code></li> </ul>
url	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.URL</code></li> <li>• <code>nullable</code> - <code>False</code></li> <li>• <code>default</code> - <code>anyblok.column.NoDefaultValue</code></li> </ul>
state	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.Selection</code></li> <li>• <code>nullable</code> - <code>False</code></li> <li>• <code>default</code> - <code>'disconnected'</code></li> <li>• <code>size</code> - <code>64</code></li> </ul>

## Message

**class** `anyblok_bus.bloks.bus.message.Message`

Bases: `object`

**AnyBlok registration:**

- Type: `Model`
- Registry name: `Model.Bus.Message`
- Tablename: `bus_message`

Fields	
id	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.Integer</code></li> <li>• <code>primary_key</code> - <code>True</code></li> <li>• <code>autoincrement</code> - <code>True</code></li> <li>• <code>default</code> - <code>anyblok.column.NoDefaultValue</code></li> </ul>
create_date	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.DateTime</code></li> <li>• <code>nullable</code> - <code>False</code></li> <li>• <code>is auto updated</code> - <code>False</code></li> <li>• <code>default timezone</code> - <code>&lt;UTC&gt;</code></li> </ul>
edit_date	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.DateTime</code></li> <li>• <code>nullable</code> - <code>False</code></li> <li>• <code>is auto updated</code> - <code>True</code></li> <li>• <code>default timezone</code> - <code>&lt;UTC&gt;</code></li> </ul>
content_type	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.String</code></li> <li>• <code>nullable</code> - <code>False</code></li> <li>• <code>default</code> - <code>'application/json'</code></li> <li>• <code>size</code> - <code>64</code></li> </ul>
message	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.LargeBinary</code></li> <li>• <code>nullable</code> - <code>False</code></li> <li>• <code>default</code> - <code>anyblok.column.NoDefaultValue</code></li> </ul>
sequence	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.Integer</code></li> <li>• <code>nullable</code> - <code>False</code></li> <li>• <code>default</code> - <code>100</code></li> </ul>
error	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.Text</code></li> <li>• <code>default</code> - <code>anyblok.column.NoDefaultValue</code></li> </ul>
queue	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.String</code></li> <li>• <code>nullable</code> - <code>False</code></li> <li>• <code>default</code> - <code>anyblok.column.NoDefaultValue</code></li> <li>• <code>size</code> - <code>64</code></li> </ul>
model	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.String</code></li> <li>• <code>nullable</code> - <code>False</code></li> <li>• <code>default</code> - <code>anyblok.column.NoDefaultValue</code></li> </ul>
14	<ul style="list-style-type: none"> <li>• <code>size</code> - <code>64</code></li> </ul> <p><b>Chapter 4. Bloks</b></p>
method	<ul style="list-style-type: none"> <li>• Type - <code>anyblok.column.String</code></li> <li>• <code>nullable</code> - <code>False</code></li> </ul>

**consume()**

Try to consume on message to import it in database

**classmethod consume\_all()**

Try to consume all the message, ordered by the sequence

## Exceptions

**exception** anyblok\_bus.bloks.bus.exceptions.**PublishException**

Bases: Exception

Exception Error for Publish a message through rabbitmq

### Contents

- *CHANGELOG*
  - *1.2.0 (2019-06-24)*
  - *1.1.0 (2018-09-15)*
  - *1.0.0 (2018-06-05)*



### 5.1 1.2.0 (2019-06-24)

- Update version to use pika  $\geq$  1.0.1
- Fixed Multiple consumer on the same model
- Refactored bus console script, Added processes parameter on bus\_consumer. The goal is to define processes for one queue, by default all the queues are in the same process
- Add better logging when a queue is missing. If a queue is missing, then workers won't start.
- Added adapter parameter to transform bus message, the schema attribute become now a simple kwargs argument give to adapter.

The adapter is not required.

---

**Note:** To keep the compatibility, if no adapter is defined with a schema then the adapter is schema\_adapter

---

### 5.2 1.1.0 (2018-09-15)

- Improved logging: for helping to debug the messages
- Added create and update date columns
- fixed `consume_all` method. now the method does not stop when an exception is raised
- Used marshmallow version  $\geq$  3.0.0

## 5.3 1.0.0 (2018-06-05)

- add Worker to consume the message from rabbitmq
- add publish method to publish a message to rabbitmq
- add **anyblok\_bus.bus\_consumer** add decorator to define the consumer

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