Developper manual of RasPy

Release 0.0.1

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January 10, 2015

Contents

CHAPTER 1

Installation

1.1 Raspbian

Install official raspbian from here : http://www.raspbian.org/.

Newbies can install it from : http://www.raspberrypi.org/downloads/.

Developpers or others can also install it on standard distributions (Ubuntu, Debian, RedHat, ...).

1.2 Update packages

You can now update packages

```
sudo apt-get -y update
sudo apt-get -y dist-upgrade
```

Some packages need to be removed as some new version are available from eggs :

```
sudo apt-get remove python-zmq libzmq1 libzmq3 libzmq3-dev libzmq-dev python-nose2 python-nose pyl
```

We also need to install some packages :

```
sudo apt-get -y install build-essential python-dev python-minimal python python2.7-dev python2.7-m
```

1.3 Download it

You should now download RasPy using git. You should not download and install RasPy with root user. Idealy, you should create a special user for running RasPy or the pi user. Keep in mind root is baaaddddd.

```
git clone https://github.com/bibi21000/RasPy.git
```

1.4 Configure your system

- access rights
- sudo nopasswd
- ...

1.5 Installation

If you want to develop for RasPy, you need to install it in develop mode :

```
sudo make develop
```

Otherwise install it normaly

```
sudo make install
```

Install some missing eggs ... to be sure

```
sudo pip install nose-progressive nose-html
```

1.6 Run the tests

You can now check that everything is fine running the tests :

```
make tests
```

If it fails ... run it again :) At last, copy / paste the full screen output and send it to the core team.

1.7 Start it

In the next monthes, you should be abble to start it :

```
make start
```

1.8 Read the doc

- docs/pdf
- docs/html

CHAPTER 2

Develop

2.1 Phylosophy

Tests, tests, ... and tests :

- A bug -> a test -> a patch
- A new feature -> many test

And documentation

- A new feature -> documentation

2.2 Documentation

- sphinx

You can generate the full documentation using :

```
make docs
```

You can also generate a part of it, for example :

```
cd docs
make html
```

2.3 Tests

Nosetests and pylint are used to test quality of code. There reports are here :

- Nosetests report
- Coverage report
- Pylint report

Coverage is not the goal but it's one : a module must have a coverage of 90% to be accpeted by core team. Otherwise it will block the packaging process. Of course, a FAILED test will also.

You can run the developpers test running :

```
make devtests
```

If you're on a raspberry, you can run the full tests like this :

```
make tests
```

Running only one test module :

```
/usr/local/bin/nosetests --verbosity=2 --cover-package=raspy --with-coverage --cover-inclusive --c
```

2.4 A new device

2.5 A new server

CHAPTER 3

raspy package

3.1 Subpackages

3.1.1 raspy.common package

Subpackages

raspy.common.devices package

Submodules

raspy.common.devices.device module Devices.

class raspy.common.devices.device.**BaseDevice**(*json=None*)

Bases: object

The base device object

What is a device :

- a temperature sensor
- a wind sensor
- a camera
- the clock RTC
- a dimmer
- a TV
- ...

What can we do with a device :

- get value of a sensor
- dim a dimmer
- take a photo with camera
- ...

We shoud do auto-mapping :

- python object <-> json
- python object <-> html

We whould manage complex devices, ie a TV : it groups a channel selector (+, -, and direct access to a channel), a volume selector, ... In an ideal world we should not be obliged to create each sub-devices.

Naming convention of devices on the network : (MDP.routing_key(hostname, service)).{device_name}[.subdevice]

check (*json=None*)
Check that the JSON is a valid device

fullname (*prefix*)
The fullname of the device

json
Check that the JSON is a valid device

name
The name of the device Must be unique for the instance server.

new (*json=None*)
Create a new device and return it

oid = 'base'
The Object Identifier It should be given by the core team as it can break other devices. Need to define a naming convention : sensor, sensor.temperature, media.camera, ...

template
The template of the device

templates = {}
The templates dictionnary Every device must add an entry for its config Will be used to check the device

class raspy.common.devices.device.**DeviceRegister**
Bases: object

The device register

All devices must register to this register (in main module)

check (*json=None*)
Check that the JSON is a valid device

new (***kwargs*)
Create a new device and return it

register (*device_type*)
Register a device_type under key

raspy.common.devices.media module Media devices

class raspy.common.devices.media.**MediaCamera** (***kwargs*)
Bases: raspy.common.devices.media.MediaDevice

The camera device object

new (***kwargs*)
Create a new device and return it

oid = 'media.camera'
The Object Identifier It should be given by the core team as it can break other devices. Need to define a naming convention : sensor, sensor.temperature, media.camera, ...

class raspy.common.devices.media.**MediaDevice** (***kwargs*)
Bases: raspy.common.devices.device.BaseDevice

The sensor device object

check (*json=None*)
Check that the JSON is a valid device

oid = 'media'
The Object Identifier It should be given by the core team as it can break other devices. Need to define a naming convention : sensor, sensor.temperature, media.camera, ...

class raspy.common.devices.media.**MediaTV**(***kwargs*)
Bases: raspy.common.devices.media.MediaDevice

The temperature sensor device object

new (***kwargs*)
Create a new device and return it

oid = 'media.tv'
The Object Identifier It should be given by the core team as it can break other devices. Need to define a naming convention : sensor, sensor.temperature, media.camera, ...

raspy.common.devices.sensor module Sensors devices

class raspy.common.devices.sensor.**SensorDevice**(***kwargs*)
Bases: raspy.common.devices.device.BaseDevice

The sensor device object

check (*json=None*)
Check that the JSON is a valid device

oid = 'sensor'
The Object Identifier It should be given by the core team as it can break other devices. Need to define a naming convention : sensor, sensor.temperature, media.camera, ...

class raspy.common.devices.sensor.**SensorTemperature**(***kwargs*)
Bases: raspy.common.devices.sensor.SensorDevice

The temperature sensor device object

new (***kwargs*)
Create a new device and return it

oid = 'sensor.temperature'
The Object Identifier It should be given by the core team as it can break other devices. Need to define a naming convention : sensor, sensor.temperature, media.camera, ...

class raspy.common.devices.sensor.**SensorWind**(***kwargs*)
Bases: raspy.common.devices.sensor.SensorDevice

The wind sensor device object

new (***kwargs*)
Create a new device and return it

oid = 'sensor.wind'
The Object Identifier It should be given by the core team as it can break other devices. Need to define a naming convention : sensor, sensor.temperature, media.camera, ...

Module contents

Submodules

raspy.common.MDP module

exception raspy.common.MDP.**ClientError**(*value*)
Bases: raspy.common.MDP.GenericError

Client side exception

exception raspy.common.MDP.**GenericError**(*value*)
Bases: exceptions.Exception

Generic exception

exception raspy.common.MDP.**ServerError**(*value*)
Bases: raspy.common.MDP.GenericError

Server side exception

raspy.common.MDP.**logger = <logging.Logger object at 0x2b3756ade190>**
Majordomo Protocol definitions

raspy.common.MDP.**routing_key**(*hostname*, *service*)

raspy.common.client module

class raspy.common.client.**Client**(*hostname='localhost'*, *service='worker'*, *broker_ip='127.0.0.1'*, *broker_port=5514*, *poll=1500*, *ttl=900*)
Bases: raspy.common.executive.Executive

The generic worker

From http://zguide.zeromq.org/py:all#header-48

request(*service=None, data=['mmi.echo'], callback=None, args=(), kwargs={}*)
Request a job to a worker

run()
Run the client

status(*uuid*)
Request a job to a worker

raspy.common.dynamic module

raspy.common.dynamic.**importCode**(*code*, *name*, *add_to_sys_modules=False*)

raspy.common.executive module

class raspy.common.executive.**Executive**(*hostname='localhost'*, *service='executive'*, *broker_ip='127.0.0.1'*, *broker_port=5514*)
Bases: object

The Executive mother class for all workers

todo :

- bug : can't stop when jobs in queues

destroy()
Wait for threads and destroy contexts.

get_instance_id()
Return the instance of the exective

... todo : must be multihost and multithread.

run()
Run the executive

shutdown()
Shutdown executive.

class raspy.common.executive.**ExecutiveProcess**(*executive*, *executive_name*)
Bases: multiprocessing.process.Process

Process executing tasks from a given tasks queue

run()

shutdown()
Method to deactivate the client connection completely.

Will delete the stream and the underlying socket.

> **Warning:** The instance MUST not be used after shutdown() has been called.

Return type None

raspy.common.kvcliapi module

kvsimple - simple key-value message class for example applications

Author: Min RK <benjaminrk@gmail.com>

From : http://zguide.zeromq.org/py:kvsimple

class raspy.common.kvcliapi.**KvPublisherClient**(*hostname='localhost'*, *broker_ip='127.0.0.1'*, *broker_port=5514*)
Bases: object

KeyValue Protocol Client API, Python version.

Implements the client defined at http://zguide.zeromq.org/page:all#Working-with-Subtrees

From https://raw.githubusercontent.com/imatix/zguide/master/examples/Python/clonecli4.py

destroy()
Destroy object

send(*subtree='subtree'*, *key='key'*, *body='body'*)
Send the update

class raspy.common.kvcliapi.**KvSubscriberClient**(*hostname='localhost'*, *subtree='subtree'*, *broker_ip='127.0.0.1'*, *broker_port=5514*, *speed=1.0*)
Bases: object

KeyValue Protocol Client API, Python version.

Implements the client defined at http://zguide.zeromq.org/page:all#Working-with-Subtrees From https://raw.githubusercontent.com/imatix/zguide/master/examples/Python/clonecli4.py

destroy()
Destroy object

run()
Run the poller

shutdown()
Shutdown the broker.

raspy.common.kvsimple module

kvsimple - simple key-value message class for example applications

Author: Min RK <benjaminrk@gmail.com>

From : http://zguide.zeromq.org/py:kvsimple

class raspy.common.kvsimple.**KVMsg**(*sequence*, *key=None*, *body=None*)
Bases: object

Message is formatted on wire as 3 frames:

- frame 0: key (0MQ string)
- frame 1: sequence (8 bytes, network order)
- frame 2: body (blob)

body = None

dump()
Dump me to a string"

key = None

classmethod recv(*socket*)
Reads key-value message from socket, returns new kvmsg instance.

send(*socket*)
Send key-value message to socket; any empty frames are sent as such.

sequence = 0

store(*dikt*)
Store me in a dict if I have anything to store

raspy.common.mdcliapi module

Majordomo Protocol Client API, Python version.

Implements the MDP/Worker spec at http:#rfc.zeromq.org/spec:7.

Author: Min RK <benjaminrk@gmail.com> Based on Java example by Arkadiusz Orzechowski

class raspy.common.mdcliapi.**MajorDomoClient**(*broker*)
Bases: object

Majordomo Protocol Client API, Python version.

Implements the MDP/Worker spec at http:#rfc.zeromq.org/spec:7.

broker = None

client = None

ctx = None

destroy()
Destroy object

poller = None

reconnect_to_broker()
Connect or reconnect to broker

retries = 3

send(*service*, *request*)
Send request to broker and get reply by hook or crook.

Takes ownership of request message and destroys it when sent. Returns the reply message or None if there was no reply.

timeout = 2500

verbose = False

raspy.common.mdwrkapi module

Majordomo Protocol Worker API, Python version

Implements the MDP/Worker spec at http:#rfc.zeromq.org/spec:7.

Author: Min RK <benjaminrk@gmail.com> Based on Java example by Arkadiusz Orzechowski

class raspy.common.mdwrkapi.**MajorDomoWorker**(*broker*, *service*)
Bases: object

Majordomo Protocol Worker API, Python version

Implements the MDP/Worker spec at http:#rfc.zeromq.org/spec:7.

HEARTBEAT_LIVENESS = 3

broker = None

ctx = None

destroy()
Destroy object

expect_reply = False

heartbeat = 2500

heartbeat_at = 0

liveness = 0

reconnect = 2500

reconnect_to_broker()
Connect or reconnect to broker

recv(*reply=None*)
Send reply, if any, to broker and wait for next request.

reply_to = None

send_to_broker(*command*, *option=None*, *msg=None*)
Send message to broker.

. If no msg is provided, creates one internally

service = None

shutdown()
Shutdown executive.

status = True
The status of the worker. Should be update by callback in the future

timeout = 2500

verbose = False

worker = None

raspy.common.runner module

The runner

Start a worker or a broker as a daemon.

Must be updated to work with multiple workers.

What do we need :

- the user ou userid

- the log file
- the error output
- the standard output
- the pid file
- the working directory

Based on the runner of python-daemon :

- Copyright © 2009–2010 Ben Finney <ben+python@benfinney.id.au>
- Copyright © 2007–2008 Robert Niederreiter, Jens Klein
- Copyright © 2003 Clark Evans
- Copyright © 2002 Noah Spurrier
- Copyright © 2001 Jürgen Hermann

class raspy.common.runner.**Runner**(*hostname=None*, *service='myrunnerinstance'*, *user=None*, *log_dir='/var/log'*, *conf_dir='/etc'*, *run_dir='/var/run'*, *context=None*, *endpoint_autoconf=None*)

Bases: object

Controller for a callable running in a separate background process.

The first command-line argument is the action to take:

- 'start': Become a daemon and call *app.run()*.
- 'stop': Exit the daemon process specified in the PID file.
- 'restart': Stop, then start.
- 'status': Show the status of the process.

action_funcs = {'status': <function _status at 0x2b37591efde8>, 'reload': <function _reload at 0x2b37591efed8>,

app_reload()
The reload process of the application

app_run()
The running process of the application

app_shutdown()
The shutdown process of the application

do_action()
Perform the requested action.

parse_args(*argv=None*)
Parse command-line arguments.

sighup_handler(*signal*, *frame*)

sigterm_handler(*signal*, *frame*)

start_message = 'started with pid %(pid)d'

status_message_not_running = 'process is not running'

status_message_running = 'process is running'

exception raspy.common.runner.**RunnerError**
Bases: exceptions.Exception

Abstract base class for errors.

exception raspy.common.runner.**RunnerInvalidActionError**
Bases: exceptions.ValueError, raspy.common.runner.RunnerError

Raised when specified action is invalid.

exception raspy.common.runner.**RunnerStartFailureError**
Bases: exceptions.RuntimeError, raspy.common.runner.RunnerError

Raised when failure starting.

exception raspy.common.runner.**RunnerStopFailureError**
Bases: exceptions.RuntimeError, raspy.common.runner.RunnerError

Raised when failure stopping.

raspy.common.runner.**emit_message**(*message*, *stream=None*)
Emit a message to the specified stream (default *sys.stderr*).

raspy.common.runner.**is_pidfile_stale**(*pidfile*)
Determine whether a PID file is stale.

Return `True` ("stale") if the contents of the PID file are valid but do not match the PID of a currently-running process; otherwise return `False`.

raspy.common.runner.**make_pidlockfile**(*path*, *acquire_timeout*)
Make a PIDLockFile instance with the given filesystem path.

raspy.common.server module

class raspy.common.server.**Server**(*hostname='localhost'*, *service='worker'*, *broker_ip='127.0.0.1'*, *broker_port=5514*)
Bases: raspy.common.executive.Executive, raspy.common.statistics.Statistics

The generic worker

From http://zguide.zeromq.org/py:all#header-48

worker_mmi()
Retrieve mmi informations of the worker

raspy.common.statistics module

class raspy.common.statistics.**SNMP**(*oid='module.snmp.key'*, *doc='A statistic integer value'*, *initial=0*)
Bases: object

Abstract statistic item

set(*value*)
Set a value to the snmp object

class raspy.common.statistics.**SNMPCounter**(*oid='module.snmp.key'*, *doc='A statistic counter value with overflow'*, *initial=0*, *overflow=4294967296*)
Bases: raspy.common.statistics.SNMP

Long (32bits) with overflow

set(*value=1*)
Add value (default=1) to current value. Also manage overflow.

class raspy.common.statistics.**SNMPFloat**(*oid='module.snmp.key'*, *doc='A statistic float value'*, *initial=0.0*)
Bases: raspy.common.statistics.SNMP

Float counter

class raspy.common.statistics.**SNMPString**(*oid='module.snmp.key'*, *doc='A statistic string value'*, *initial=''*)
Bases: raspy.common.statistics.SNMP

Float counter

class raspy.common.statistics.**Statistics**
Bases: object

The statistics manager

add_statistic()
Add a new statistic to the manager

remove_statistic(*oid*)
Remove a statistic from the manager

update_statistic(*oid=''*)
Add a new statistic to the manager

worker_statistics()
Send statistics via mmi

raspy.common.supervisor module

class raspy.common.supervisor.**Supervisor**(*runner=None*)
The worker supervisor

Start executives in separate process see futures Each executive start multiples threads of workers

todo :

- bug : can't stop when jobs in queues

get_instance_id()
Return the instance of the worker : must be multihost and multithread.

reload()
Request the workers confguration against the configurator.

Will unregister all workers, stop all timers and ignore all further messages.

> **Warning:** The instance MUST not be used after shutdown() has been called.

Return type None

run()
Start the IOLoop instance

shutdown()
Shutdown supervisor.

Will unregister all workers, stop all timers and ignore all further messages.

> **Warning:** The instance MUST not be used after shutdown() has been called.

Return type None

stop_executives()
Shutdown executives.

raspy.common.zhelpers module

Helper module for example applications. Mimics ZeroMQ Guide's zhelpers.h.

raspy.common.zhelpers.**dump**(*msg_or_socket*)
Receives all message parts from socket, printing each frame neatly

raspy.common.zhelpers.**set_id**(*zsocket*)
Set simple random printable identity on socket

raspy.common.zhelpers.**zpipe**(*ctx*)
build inproc pipe for talking to threads

mimic pipe used in czmq zthread_fork.

Returns a pair of PAIRs connected via inproc

Module contents

3.1.2 raspy.servers package

Submodules

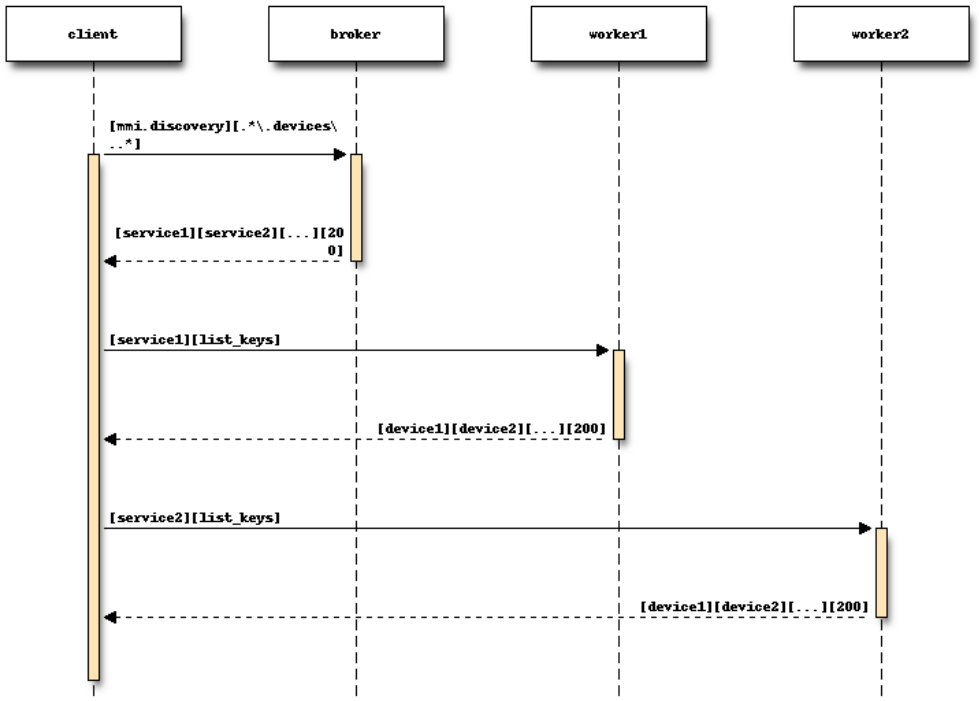
raspy.servers.broker module

class raspy.servers.broker.**Broker**(*hostname='localhost'*, *service='broker'*, *broker_ip='127.0.0.1'*, *broker_port=15514*)
Bases: raspy.common.executive.Executive

Majordomo Protocol broker and key/value proxy.

Discovery process

Here is the way for a client to discover all devices on network



You can do the same for crons and scenarios

HEARTBEAT_EXPIRY = 7500

HEARTBEAT_INTERVAL = 2500

HEARTBEAT_LIVENESS = 3

INTERNAL_SERVICE_PREFIX = 'mmi.'

ctx = None

delete_worker(*worker*, *disconnect*)
Deletes worker from all data structures, and deletes worker.

destroy()
Disconnect all workers, destroy context.

dispatch(*service*, *msg*)
Dispatch requests to waiting workers as possible

heartbeat_at = None

poller = None

process_client(*sender*, *msg*)
Process a request coming from a client.

process_worker(*sender*, *msg*)
Process message sent to us by a worker.

purge_workers()
Look for & kill expired workers.

Workers are oldest to most recent, so we stop at the first alive worker.

require_service(*name*)
Locates the service (creates if necessary).

require_worker(*address*)
Finds the worker (creates if necessary).

run()
Main broker work happens here

send_heartbeats()
Send heartbeats to idle workers if it's time

send_to_worker(*worker*, *command*, *option*, *msg=None*)
Send message to worker.

. If message is provided, sends that message.

service_internal(*service*, *msg*)
Handle internal service according to 8/MMI specification

services = None

shutdown()
Shutdown the broker.

socket = None

waiting = None

worker_waiting(*worker*)
This worker is now waiting for work.

workers = None

class raspy.servers.broker.**Proxy**(*hostname='localhost'*, *service='broker'*, *broker_ip='*'*, *broker_port=5514*, *speed=1.0*)

Bases: threading.Thread

The publisher

Tree :

- /event/

- /scenario/
- /device/

from : http://zguide.zeromq.org/page:all#Working-with-Subtrees

run()
Run the proxy

send_single(*key*, *kvmsg*, *route*)
Send one state snapshot key-value pair to a socket

shutdown()
Shutdown the proxy.

class raspy.servers.broker.**Route**(*socket*, *identity*, *subtree*)

class raspy.servers.broker.**Service**(*name*)
Bases: object

a single Service

name = None

requests = None

waiting = None

class raspy.servers.broker.**Worker**(*identity*, *address*, *lifetime*)
Bases: object

a Worker, idle or active

address = None

expiry = None

identity = None

service = None

raspy.servers.core module

class raspy.servers.core.**Core**(*hostname='localhost'*, *service='core'*, *broker_ip='127.0.0.1'*, *broker_port=5514*)
Bases: raspy.common.server.Server

The Core server

•Cron

- Generate events in the publisher

•Scenario

- a scenario can run in background at startup (ie thermostat) or fired by an event (ie cron, sun is down, temperature is under 0°C)
- a scenario can be a loop so it must be launch in a separate thread : start filling, loop until water level is ok : need to call self._stopevent.isSet() in it so that the tread can shutdown.
- look for updates in entries list (cron, sensors, variables in the publisher) : a list mapped in friendly user's names (using store)
- it can publish some values with publisher
- do some work using inline code python :
- send commands to devices, cron jobs, start other scenario, update some variables in publisher
- we can export/import scenarios : share with friends

- **NTP / Sytem Time / RTC Sync**
  - sync from ntp to rtc
  - sync from trc to system : using sudo with no password

worker_cron()
Create a worker to handle cron requests

worker_scenario()
Create a worker to handle scenario's requests

worker_scenarios()
Create a worker to handle scenarios requests (list_keys, ...)

class raspy.servers.core.**Cron**
Bases: object

A cron job

aps_job = None

class raspy.servers.core.**CronManager**
Bases: object

The manager of cron job

jobs = {}

class raspy.servers.core.**Scenario**(*name='scenar1'*, *publisher=None*)
Bases: threading.Thread

A scenario

code = None
The code we must exec

conf = {}
The configuration of the scenario

entries = {}
The entries we must look at for an event driven scenario

fire()
Check if the scenario must be fired using entries and that is not already running. If so, call sself.run()

Returns True if the thread must be launch (self.run()), False otherwise

Return type boolean

load(*store*)
Load the scenario from titanic store

Parameters **store** – the store to get info from

Type titani_store

Returns True if the scenario was loaded from store

Return type boolean

run()
Run the scenario

running = False
Is the scenario running

shutdown()
Shutdown the scenario

store(*store*)
Store the scenario to titanic store

class raspy.servers.core.**ScenarioManager**(*publisher=None*)
Bases: object

The manager of scenarios

http://etutorials.org/Programming/Python+tutorial/Part+III+Python+Library+and+Extension+Modules/Chapter+13.+Control
http://lucumr.pocoo.org/2011/2/1/exec-in-python/ http://late.am/post/2012/04/30/the-exec-statement-and-a-python-mystery

add(*name='scenar1'*, *entries={}*, *code=None*, *conf={}*)
Add a scenario

delete(*name='scenar1'*)
Delete a scenario

list()
Return all scenarios with conf, entries, ... as json dict

list_keys()
Return all scenarios key (=name) ... as json list

load(*store*)
Load the scenarios from titanic store

store keys :

- scenario.main.conf : a json dict for configuration of scenario
- scenario.main.keys : a json list of the scenario's names
- scenario.key1.conf : a json dict for configuration of scenario key1
- scenario.key1.entries : a json dict of entries of scenario key1
- scenario.key1.code : a json string of code of scenario key1

scenarios = {}
The scenarios

shutdown()
Shutdown the scenario manager

store(*store*)
Store the scenarios to titanic store

update(*name='scenar1'*, *entries={}*, *code=None*, *conf={}*)
Update a scenario

raspy.servers.fake module

class raspy.servers.fake.**Fake**(*hostname='localhost'*, *service='fake'*, *broker_ip='127.0.0.1'*, *broker_port=5514*)
Bases: raspy.common.server.Server

A fake server to test RasPy

•we must developp "real" fake device : ie a temperature sensors must not send random values

•a cyclic sensor : parameters : cycle length, min, max and unit. Will do cycle from min temp to max temp (at cycle/2) and fall back tp min temp at end of if

•a linear sensor

•

worker_devices()
Create a worker to handle devices requests

raspy.servers.onewire module

class raspy.servers.onewire.**OneWire**(*hostname='localhost'*, *service='onewire'*, *broker_ip='127.0.0.1'*, *broker_port=5514*, *devices_dir='/sys/bus/w1/devices'*)

Bases: raspy.common.server.Server

The OneWire server

From https://www.modmypi.com/blog/ds18b20-one-wire-digital-temperature-sensor-and-the-raspberry-pi

worker_devices()
Create a worker to handle devices requests

raspy.servers.titanic module

class raspy.servers.titanic.**Titanic**(*hostname='localhost'*, *service='titanic'*, *broker_ip='127.0.0.1'*, *broker_port=5514*, *data_dir='/tmp/raspy'*)

Bases: raspy.common.executive.Executive

The Titanic helper

Also integrates a store for keys/values

From http://zguide.zeromq.org/py:all#Disconnected-Reliability-Titanic-Pattern
http://zguide.zeromq.org/py:all#Service-Oriented-Reliable-Queuing-Majordomo-Pattern
https://github.com/imatix/zguide/tree/master/examples/Python

reply_filename(*uuid*)
Returns freshly allocated reply filename for given UUID

request_filename(*uuid*)
Returns freshly allocated request filename for given UUID

run()
Run the hub

service_success(*client*, *uuid*)
Attempt to process a single request, return True if successful

store_filename(*service*)
Returns store filename for given service

titanic_close()
Create a worker to handle titanic.close

titanic.close: confirm that a reply has been stored and processed.

titanic_reply()
Create a worker to handle titanic.service

titanic.reply: fetch a reply, if available, for a given request UUID.

titanic_request(*pipe*)
Create a worker to handle titanic.request

titanic.request: store a request message, and return a UUID for the request.

titanic_store()
Create a worker to handle store services

Module contents

3.2 Module contents

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