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# Switcher Webapi

*Release 0.2.7*

**Tomer Figenblat**

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## WHAT

An asynchronous [sanic](#) webapp running inside a [python docker image](#) using [uvloop](#) as the event loop. Used as a rest api wrapper for [aioswitcher](#).

If you're using the [Switcher water heater](#) and you want to wrap a rest api around it... you came to the right place!



## PREREQUISITES

- Install and configure your Switcher device.
- **Collect the following information from the device's following NightRang3r instructions in the [Switcher-V2-Python repository](#)**
  - ip\_address
  - phone\_id
  - device\_id
  - device\_pass
- Install docker





## NOTES

- If you don't want to be forced to restart the container if the device's ip address changes, please consider assigning the device with a static ip address.
- The Switcher-V2-Python repository is build with python 2.7.
- The [aioswitcher](#) was tested with the Switcher V2 device by myself and with the Switcher Touch device by the community.
- This project was intended for local usage, it's ok if you want to use it remotely, just make sure to take the proper security measures such as reverse proxy and ssl.
- The WebAPI has a throttle mechanism to prevent overflowing the device with frequent requests, it defaults to 5 seconds throttle time.
- Some users have been reporting lately about failures using the Switcher-V2-Python script after upgrading the device firmware to 3.0, please follow the relevant issues in the script repository before doing the same.



## INSTALL

```
docker run -d -p 8000:8000 \  
-e CONF_DEVICE_IP_ADDR=192.168.100.157 \  
-e CONF_PHONE_ID=1234 \  
-e CONF_DEVICE_ID=ab1c2d \  
-e CONF_DEVICE_PASSWORD=12345678 \  
--name switcher_webapi tomerfi/switcher_webapi:latest"
```

You can also add another optional environment variable:

```
-e CONF_THROTTLE=5.0
```

for setting the throttle time between consecutive requests, this is optional and the default value is **5.0**.

Here's an example of running the container using *docker-compose* setting the environment variables in a designated file.

```
# docker-compose.yml  
version: "3.7"  
  
services:  
  switcher_api:  
    image: tomerfi/switcher_webapi:latest  
    container_name: "switcher_webapi"  
    env_file:  
      - .env_vars  
    ports:  
      - 8000:8000  
    restart: unless-stopped
```

```
# .env_vars  
CONF_DEVICE_IP_ADDR=192.168.100.157  
CONF_PHONE_ID=1234  
CONF_DEVICE_ID=ab1c2d  
CONF_DEVICE_PASSWORD=12345678  
CONF_THROTTLE=5.0
```



## USAGE

Once running, you can send REST requests towards the container. With the exception of the *create\_schedule* requests, all the requests requiring input accepts it as a json body or in the form of query parameters.

### 5.1 get\_state

**URL:** */switcher/get\_state*

**Method:** *GET*

**Request parameters:** *None*

**Response body example:**

```
{
  "successful": true,
  "state": "on",
  "time_left": "00:47:25",
  "auto_off": "01:30:00",
  "power_consumption": 2669,
  "electric_current": 12.3
}
```

### 5.2 turn\_on

**URL:** */switcher/turn\_on*

**Method:** *POST*

**Request parameters:**

Key	Required	Description
<b>minutes</b>	<i>Optional</i>	turn on the device with an off timer of 1-180 minutes.

**Request body example:**

```
{
  "minutes": "30"
}
```

**Response body example:**

```
{  
  "successful": true  
}
```

## 5.3 turn\_off

**URL:** */switcher/turn\_off*

**Method:** *POST*

**Request parameters:** *None*

**Response body example:**

```
{  
  "successful": true  
}
```

## 5.4 set\_auto\_shutdown

**URL:** */switcher/set\_auto\_shutdown*

**Method:** *POST*

**Request parameters:**

Key	Required	Description
<b>hours</b>	<i>Mandatory</i>	hours value 1-3.
<b>minutes</b>	<i>Mandatory</i>	minutes value 0-59.

---

**Note:** The auto shutdown configuration value accept any total value of hours and minutes between 1 and 3 hours.

---

**Request body example:**

```
{  
  "hours": "1",  
  "minutes": "30"  
}
```

**Response body example:**

```
{  
  "successful": true  
}
```

## 5.5 set\_device\_name

**URL:** */switcher/set\_device\_name*

**Method:** *POST*

**Request parameters:**

Key	Required	Description
<b>name</b>	<i>Mandatory</i>	device name, accepts length of 2-32 characters.

**Request body example:**

```
{
  "name": "my new device name"
}
```

**Response body example:**

```
{
  "successful": true
}
```

## 5.6 get\_schedules

**URL:** */switcher/get\_schedules*

**Method:** *GET*

**Request parameters:** *None*

**Response body example:**

```
{
  "successful": true,
  "found_schedules": true,
  "schedules": [
    {
      "schedule_id": "0",
      "enabled": true,
      "recurring": true,
      "days": [
        "Tuesday",
        "Wednesday",
        "Thursday",
        "Friday",
        "Saturday",
        "Sunday"
      ],
      "start_time": "17:30",
      "end_time": "18:30",
      "duration": "1:00:00",
      "schedule_data": "0001fc01e871a35cf87fa35c",
      "next_run": "Due next Tuesday at 17:30"
    },
    {
      "schedule_id": "1",
      "enabled": true,
      "recurring": true,
      "days": ["Monday"],

```

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```

    "start_time": "17:00",
    "end_time": "18:00",
    "duration": "1:00:00",
    "schedule_data": "0101020160a6c95c70b4c95c",
    "next_run": "Due tommorow at 17:00"
  }
]
}

```

**Note:** The *schedules* list can contain up to 8 schedules with the identifiers of 0-7 representing the actual schedule slots on the device.

## 5.7 enable\_schedule

**URL:** */switcher/enable\_schedule*

**Method:** *PATCH*

**Request parameters:**

Key	Re-quired	Description
<b>schedule_data</b>	<i>Mandatory</i>	the <i>schedule_data</i> associated with the chosen schedule. retrieved with <i>/switcher/get_schedules</i> .

**Request body example:**

```

{
  "schedule_data": "0101020160a6c95c70b4c95c"
}

```

**Response body example:**

```

{
  "successful": true
}

```

## 5.8 disable\_schedule

**URL:** */switcher/disable\_schedule*

**Method:** *PATCH*

**Request parameters:**

Key	Re-quired	Description
<b>schedule_data</b>	<i>Mandatory</i>	the <i>schedule_data</i> associated with the chosen schedule. retrieved with <i>/switcher/get_schedules</i> .



**Request body example:**

```
{
  "schedule_data": "0101020160a6c95c70b4c95c"
}
```

**Response body example:**

```
{
  "successful": true
}
```

## 5.9 delete\_schedule

**URL:** */switcher/delete\_schedule***Method:** *DELETE***Request parameters:**

Key	Required	Description
<b>schedule_id</b>	<i>Mandatory</i>	the <i>schedule_id</i> associated with the chosen schedule. retrieved with <i>/switcher/get_schedules</i> .

**Request body example:**

```
{
  "schedule_id": "2"
}
```

**Response body example:**

```
{
  "successful": true
}
```

## 5.10 create\_schedule

**URL:** */switcher/create\_schedule***Method:** *PUT***Request parameters:**

Key	Required	Description
<b>days</b>	<i>Mandatory</i>	list of days for the schedule to run in. (empty for non-recurring schedules).
<b>start_hours</b>	<i>Mandatory</i>	start time hours value 0-23.
<b>start_minutes</b>	<i>Mandatory</i>	start minutes value 0-59.
<b>stop_hours</b>	<i>Mandatory</i>	stop time hours value 0-23.
<b>stop_minutes</b>	<i>Mandatory</i>	stop minutes value 0-59.

**Request body example:**

```
{
  "days": ["Monday", "Wednesday", "Friday"],
  "start_hours": "20",
  "start_minutes": "30",
  "stop_hours": "21",
  "stop_minutes": "0"
}
```

### Response body example:

```
{
  "successful": true
}
```

Possible values for the *days* list:

- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

---

**Note:** Due to its complexity, the *create\_schedule* request accepts its arguments in the form of a json body only, query parameters will not be accepted.

---

## 5.11 Exceptions

Unless unhandled, all exceptions will return a json object in response body:

```
{
  "successful": false,
  "message": "the error description"
}
```

## CREDITS

This project was enabled by creating the [aioswitcher](#) pypi module, initially created for use with the [home assistant component](#).

Not this nor the aioswitcher project would have been able to happen without the amazing work preformed by Nigh-tRang3r and AviadGolan in the [Switcher-V2-Python](#) project.

So... Thanks!



**LICENSE**

MIT License

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## CHANGE LOG

### 8.1 0.2.7 (2019-06-25)

#### 0.2.7 Full Changelog

- Updated dependencies and requirements
- Documentation fix-ups

### 8.2 0.2.6 (2019-06-24)

#### 0.2.6 Full Changelog

- Better documentation site including a code documentation

### 8.3 0.2.5 (2019-06-22)

#### 0.2.5 Full Changelog

- Better testing and ci workflows
- Better documentation site including a contributing section
- Added github templates

### 8.4 0.2.4 (2019-06-16)

#### 0.2.4 Full Changelog

- Added usage of the container-structure-test tool with Tox and CircleCi
- Fixed a bunch of minor fixes and typos

### 8.5 0.2.3 (2019-06-15)

#### 0.2.3 Full Changelog

- Documentation finishing touches

## 8.6 0.2.2 (2019-06-15)

### 0.2.2 Full Changelog

- Added docs
- Code cleanup
- CI rearrangement

## 8.7 0.2.1 (2019-05-05)

### 0.2.1 Full Changelog

- Fixed VERSION file with the correct version value

## 8.8 0.2 (2019-05-05)

### 0.2 Full Changelog

- Initial stable release

## 8.9 0.01 (2019-05-05)

### 0.01 Full Changelog

- Pre-release

## 8.10 0.0.2 (2019-05-05)

### 0.0.2 Full Changelog

- Pre-release

## 8.11 0.0.1 (2019-05-05)

### 0.0.1 Full Changelog

- Pre-release



## CODE OF CONDUCT

### 9.1 Our Pledge

In the interest of fostering an open and welcoming environment, we as contributors and maintainers pledge to making participation in our project and our community a harassment-free experience for everyone, regardless of age, body size, disability, ethnicity, sex characteristics, gender identity and expression, level of experience, education, socioeconomic status, nationality, personal appearance, race, religion, or sexual identity and orientation.

### 9.2 Our Standards

Examples of behavior that contributes to creating a positive environment include:

- Using welcoming and inclusive language
- Being respectful of differing viewpoints and experiences
- Gracefully accepting constructive criticism
- Focusing on what is best for the community
- Showing empathy towards other community members

Examples of unacceptable behavior by participants include:

- The use of sexualized language or imagery and unwelcome sexual attention or advances
- Trolling, insulting/derogatory comments, and personal or political attacks
- Public or private harassment
- Publishing others' private information, such as a physical or electronic address, without explicit permission
- Other conduct which could reasonably be considered inappropriate in a professional setting

### 9.3 Our Responsibilities

Project maintainers are responsible for clarifying the standards of acceptable behavior and are expected to take appropriate and fair corrective action in response to any instances of unacceptable behavior.

Project maintainers have the right and responsibility to remove, edit, or reject comments, commits, code, wiki edits, issues, and other contributions that are not aligned to this Code of Conduct, or to ban temporarily or permanently any contributor for other behaviors that they deem inappropriate, threatening, offensive, or harmful.

## 9.4 Scope

This Code of Conduct applies both within project spaces and in public spaces when an individual is representing the project or its community. Examples of representing a project or community include using an official project e-mail address, posting via an official social media account, or acting as an appointed representative at an online or offline event. Representation of a project may be further defined and clarified by project maintainers.

## 9.5 Enforcement

Instances of abusive, harassing, or otherwise unacceptable behavior may be reported by contacting the project team at [tomer.figenblat@gmail.com](mailto:tomer.figenblat@gmail.com). All complaints will be reviewed and investigated and will result in a response that is deemed necessary and appropriate to the circumstances. The project team is obligated to maintain confidentiality with regard to the reporter of an incident. Further details of specific enforcement policies may be posted separately.

Project maintainers who do not follow or enforce the Code of Conduct in good faith may face temporary or permanent repercussions as determined by other members of the project's leadership.

## 9.6 Attribution

This Code of Conduct is adapted from the [Contributor Covenant](#), version 1.4, available [here](#).

For answers to common questions about this code of conduct, see [faq](#).

## CONTRIBUTING

First off, thank you for taking the time to contribute.

---

**Note:** This repository is a docker image wrapping a python Rest API around the [aioswitcher pypi module](#).

If your contribution is a more of a *core contribution*, please consider maybe it belongs to the integrating module and not the wrapping docker. You can find the [module repository here](#).

---

Contributing is pretty straight-forward:

- Fork the repository
- Commit your changes
- Create a pull request against the **dev** branch

Please feel free to contribute, even to this contributing guideline file, if you see fit.

### TOC

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  - *Makefile*

## 10.1 Items description

### 10.1.1 Configuration files

- `.circle/config.yml` is the configuration file for CircleCi Continuous Integration and Deployment Services.
- `.codecov.yml` is the configuration file for CodeCov Code Coverage.
- `.coveragerc` is the configuration file for Coverage.py creating coverage reports with the `pytest-cov` plugin.
- `.yamllint` is the configuration for yamllint A Linter for YAML Files linting yml files.
- `.remarkrc` is the configuration file for remark-lint plugin for Remark linting md files.
- `bandit.yml` is the configuration file for Bandit common security issues finder checking python scripts.
- `container_structure.yml` is the configuration file for GoogleContainerTools container-structure-test validating the container content.
- `doc8.ini` is the configuration file for Doc8 Style Checker checking rst file types.
- `mypy.ini` is the configuration file for MyPy Static Type Checker for checking static types in python scripts.
- `package.json` is npm's package manager file for managing dependencies, scripts and etc.
- `pyproject.toml` is designated to be the main configuration file for python based on PEP518, not fully operative in this project yet.
- `.spelling` is the dictionary/ignore file used by both markdown-spellcheck and vale. Case-insensitive words in this file will not raise a spelling mistake error.
- `.vale.ini` is the configuration for vale.
- `tox.ini` is the configuration file for Tox Testing Automation testing the python code.

### 10.1.2 Docker

- `Dockerfile` is the instruction file for building the *docker image*.

### 10.1.3 Python

- `pyscripts` is where *python* scripts are stored.

### 10.1.4 Shell

- `shellscripts` is where *shell* scripts are stored.

### 10.1.5 Ignore files

- `.dockerignore` used for controlling what goes in the *docker image*.
- `.gitignore` used for controlling what will not be pushed to *github*.
- `.remarkignore` used for ignoring specific files or folders from *remark-lint*.

### 10.1.6 Requirement files

- `requirements.txt` is a list of python requirements constraints.
- `requirements_prod.txt` is a list of python requirements for running the solution.
- `requirements_docs.txt` is a list of python requirements for testing and building the documentation.
- `requirements_test.txt` is a list of python requirements for testing the solution.

### 10.1.7 Package management

The package `.json` file [specified by npm](#) manages our dependencies, scripts and some metadata.

### 10.1.8 Documentation

- `docs/sources` is where the *rst files* for creating the [Sphinx Documentation](#) are stored for build, deployment and hosting by [Read the Docs](#).
- `docs/sources/vale_styles` is where the *vale styles* for *vale* linter are stored. Out of the box, *vale* comes with three pre-configured plugins: [proselint](#), [write-good](#) and [joblint](#). The `docs/sources/vale_styles/18F` and `docs/sources/vale_styles/docs` plugins were manually added from the [vale repository](#).
- `docs/Makefile` the basic *Makefile* for [Sphinx](#) documentation generator. From the `docs` path, type `make html` and `sphinx` will create the documentation site locally in `docs/build`.

## 10.2 Continuous Integration

### 10.2.1 CircleCi

By hook configuration, for every pull request, [CircleCi](#) will execute the workflows described in `.circleci/config.yml` and update the PR conversation with the results.

As a final step, [CircleCi](#) will push the [Coverage.py XML Report](#) to both [CodeCov](#) for code coverage analysis and [Codacy](#) for code quality analysis. Both will of course push their results into the PR conversation.

Some of the steps are considered required and may prevent the PR from being merged. But no worries, everything is fixable.

### 10.2.2 CodeCov

[CodeCov](#) is keeping tabs on our code coverage. When a report is uploaded (by [CircleCi](#)), [CodeCov](#) will check our code coverage and push its conclusions to [github](#).

### 10.2.3 Codacy

[Codacy](#) is here to check the quality of our code. When a report is uploaded (by [CircleCi](#)), [Codacy](#) will check our code quality and push its conclusions to [github](#).

### 10.2.4 Requires-io

[Requires.io](#) is keeping an eye for versions updates upon the python requirements listed in the various `requirements` files and in `tox.ini` file.

### 10.2.5 David-DM

[David-DM](#) is keeping an eye for versions updates upon the npm requirements listed in the `package.json` file.

## 10.3 Continuous Deployment

### 10.3.1 Docker Hub

When a **git-tag** with the regex of `/^[0-9.]+$/` is set, [Docker Hub Cloud](#) will build the image based on the `Dockerfile` instructions file and tag it twice: `- <git-tag> - latest`

### 10.3.2 Read the Docs

By hook configuration, for every `git-release-tag` and push to the `dev` branch [Read the Docs](#) will build the documentation site based on `docs/source` and host it with the following tags: `* stable tag` is for the release snapshot. `* latest tag` is for the dev branch.

By hook configuration, [Read the Docs](#) will build the documentation site based on `docs/source` and host it: `* stable tag` will be built for every release snapshot. `* latest tag` will be built for every push the dev branch, so it'll reflect unreleased changes.

### 10.3.3 Metadata

By hook configuration, for every `docker image` build by [Docker Hub](#), [MicroBadger](#) will receive a notification and publish the image metadata.

## 10.4 Environments and Tools

---

**Note:** The following (Python, virtualenv, nodeenv and Tox) needs to be pre-installed before local testing with `tox`.

---

- The Python scripts in `pyscripts` was written with [Python 3.7](#) in mind, which added a few tweaks and adjustments, especially in regards to `asyncio`.
- Python's [virtualenv](#), a tool for segregating Python environments.
- Python's [nodeenv](#), a tool that enables us to create Node.js virtual environment in resemblance to [virtualenv](#), the tool also allows combining `nodeenv` inside `virtualenv`, which is exactly what we're doing with `tox`.
- [Docker](#), as some of the testing automation are performed within a run-once docker container.
- [Tox](#) for automating unit testing in your local environment. \* `Tox` utilizes Python's [virtualenv](#).
  - `Tox` is configured with `tox.ini`.
  - To run `tox`, simply execute `tox` from `tox.ini`'s path. It is recommended that you also run `tox --help` to get familiar with the various options such as `-e` and `-r` that will help you perform faster and better tests.)

---

**Note: Please note:** the rest of the steps require no installation on your behalf, but knowing them is important seeing they are key elements for testing with `Tox` and/or `CircleCi`.

---

- *NPM Package:* [package-json-validator](#) for validating the `package.json` file.
- *Python Module:* [doc8](#) for checking restructured text (rst) files residing in `docs/source` and used to create the documentation site.
  - `doc8` is configured with `doc8.ini`.
- *Docker Image:* [jdkato/vale](#) for linting restructured text files residing in `docs/source` for spelling/syntax mistakes.
  - `jdkato/vale` ignore file is `.spelling`.
  - `jdkato/vale` is configured with `.vale.ini`.
- *Python Module:* [sphinx](#) for building the documentation site from the restructured Text (rst) files residing in `docs/source`.
  - It's worth mentioning that the [documentation site](#) hosted with [Read the Docs](#) is based upon the theme [sphinx-rtd-theme](#)
- *NPM Package:* [remark-lint](#) which is a plugin for [Remark](#) and the `remark-cli` command line tool for linting `markdown` files residing at the base path and in `.github`.
  - `remark-lint` uses a couple of presets and tools, all can be found under the `dependencies` key in `package.json`.
  - `remark-lint` ignore list is the file `.remarkignore`.
  - `remark-lint` is configured with `.remarkrc`.
- *NPM Package:* [markdown-spellcheck](#) for checking the project `markdown` files for spelling errors.
  - `markdown-spellcheck` dictionary file is `.spelling`.
- *Python Package:* [yamllint](#) for linting the project `yml` files. \* `yamllint` is configured with `.yamllint`.
- *Docker Image:* [koalaman/shellcheck](#) is used for checking shell script residing in `shellscripts`.

- *Docker Image:* `hadolint/hadolint` is used for linting the instruction file `Dockerfile`.
- *Linux Tool:* `container-structure-test` for verifying the docker image content.
  - The tool runs with the helper script `shellscripts/container-structure-test-verify.sh`, it will not fail if the tool is not present when running `tox` locally. But this will probably come up with `CircleCi` so please consider installing the tool manually.
  - `container-structure-test` is configured with `container_structure.yml`.
- *Python Package:* `isort` for sorting imports. `isort` runs automatically with `tox` in `no-fail` mode for recommendations only.
- *Python Package:* `bandit` for finding common security issues with against the scripts residing in `pyscripts`. \* `bandit` is configured with `bandit.yml`.
- *Python Package:* `isort` for sorting python imports. \* `isort` is configured with `pyproject.toml`.
- *Python Package:* `flake8` for checking python scripts residing in `pyscripts`.
- *Python Package:* `black` for formatting python scripts residing in `pyscripts`. \* `black` is configured with `pyproject.toml`.
- *Python Package:* `mypy` for checking static typing tests against python scripts residing in `pyscripts`. \* `mypy` is configured with `mypy.ini`.
- *Python Package:* `pytest` as testing framework for running test-cases written in `pyscripts/test_server.py`. \* `pytest` uses a bunch of awesome plugins listed in `requirements_test.txt`.
- *Docker Image:* `circleci/circleci-cli` for validating the `.circleci/config.yml` file.

## 10.5 Testing

Testing is performed with `Pytest`, Full-featured Python testing tool. The various Rest Http request test-cases is in `pyscripts/test_server.py`.

For automated local tests, use `tox`.

## 10.6 Guidelines

---

**Note:** The project's `semvar` is being handled in both `VERSION` file for creating the docker image with `Makefile` and in `package.json` for packaging handling.

---

Here are some guidelines (recommendations) for contributing to the `switcher_webapi` project: \* [Code docstrings documentation is here](#).

- If you add a python dependency, for legacy support, Please add the dependency with the fixed version to `requirements.txt`, And add with no version statement in any or all of the other requirements file based on the dependency use case.
- If you add a new file, please consider is it should be listed within any or all of the `ignore` files.
- If you change something inside the `docker` image it is strongly recommended verifying it with the `container-structure-test`
- While not all the test steps in `CircleCi` and in `Tox` are parallel to each other, most of them are, so tests failing with `Tox` will probably also fail with `CircleCi`.



- If you're writing python code, please remember to `static type` your code or else it will probably fail `mypy` tests.
- You can run `npm`'s script `spell-md-interactive` for handling all spelling mistakes before testing. You can also choose to run `spell-md-report` to print a full report instead of handling the spelling mistakes one-by-one. \* `markdown-spellcheck` dictionary is the file `.spelling`.

### 10.6.1 NPM Scripts

Before using the scrips, you need to install the dependencies. From the `package.json` file path, run `npm install`, Then you can execute the scripts from the same path.

- `npm run lint-md` will run `remark` against `markdown` files.
- `npm run validate-pkg` will run `package-json-validator` against the `package.json` file.
- `npm run spell-md-interactive` will run `markdown-spellcheck` against `markdown` files in an interactive manner allowing us to select the appropriate action.
- `npm run spell-md-report` will run `markdown-spellcheck` against `markdown` files and print the report to `stdout`.

### 10.6.2 Shell Scripts

---

**Note:** The shell scripts in `shellscripts` were written for `bash` and not for `sh`.

---

- `bash shellscripts/container-structure-test-verify.sh` will verify the existence of `container-structure-test` and execute it. The script will `exit 0` if the tool doesn't exists so it will not fail `tox`.
- `bash shellscripts/push-docker-description.sh` allows the deployment of the local `README.md` file as a docker image description in `Docker Hub`. Please use it with `Makefile` as arguments are required.
- `bash shellscripts/run-once-docker-operations.sh <add-argument-here>` will verify the existence of `Docker` before executing various *run-once docker operations* based on the following arguments. If the script find that `Docker` is not installed, it will `exit 0` so it will not fail `tox`:
  - **argument:** `lint-dockerfile` will execute the docker image `hadolint/hadolint` linting the local `Dockerfile`.
  - **argument:** `check-shellscripts` will execute the docker image `koalaman/shellcheck` for checking the shell scripts residing in `shellscripts`.
  - **argument:** `circleci-validate` will execute the docker image `circleci/circleci-cli` for validating the `.circleci/config.yml` file.
  - **argument** `vale-rstdocs` will execute the docker image `jdkato/vale` checking for spelling or syntax mistakes in restructured text file residing in `docs/source`.

### 10.6.3 Makefile

Using the `Makefile` is highly recommended, especially in regards to docker operations. Try `make help` to list all the available tasks: \* `make docker-build` will build image from relative `Dockerfile`.

- `make docker-build-testing-image` will build image from relative `Dockerfile` using a testing tag.
- `make docker-remove-testing-image` will remove the testing image (must be build first).

- `make docker-build-no-cache` will build image from `Dockerfile` with no caching.
- `make structure-test` will run the `container-structure-test` tool against the built image (must be build first) using the relative `container_structure.yml` file.
- `make docker-build-structure-test` will build the image and test the container structure.
- `make docker-build-no-cache-structure-test` will build the image and test the container structure.
- `make docker-full-structure-testing`` will build the image with the testing tag and remove after structure test.
- `make docker-tag-latest` will add latest tag before pushing the latest version.
- `make docker-run` will run the built image as a container (must be built first).
- `make docker-build-and-run` will build image from `Dockerfile` and run as container.
- `make docker-build-no-cache-and-run` will build image from `Dockerfile` with no caching and run as container.
- `make push-description` will push the relative `README.md` file as full description to docker hub, requires username and password arguments.
- `make verify-environment-file` will verify the existence of the required environment variables file and its content.

## 11.1 Application run scripts

### 11.1.1 pyscripts/request\_handlers.py

Request handlers for the Switcher WebAPI.

```
async request_handlers._create_raw_schedule_data (schedule_days: List[int],  
                                                start_hours: int, start_minutes:  
                                                int, stop_hours: int, stop_minutes:  
                                                int) → str
```

Use as helper creating raw schedule data for creating schedules.

#### Parameters

- **schedule\_days** – selected days for the schedule to run in.
- **start\_hours** – hour to start the device at.
- **start\_minutes** – minutes to start the device at.
- **stop\_hours** – hour to stop the device at.
- **stop\_minutes** – minutes to stop the device at.

**Returns** Raw schedule data needed for creating the requested schedule.

```
async request_handlers._parse_schedule_body (body: Dict) → str
```

Use as helper parsing body of create schedule requests.

**Parameters** **body** – json body of the create schedule requests.

**Raises** **sanic.exceptions.InvalidUsage** – when missing a mandatory argument.

**Returns** Schedule data object needed for creating the new schedules.

```
request_handlers._validate_day_to_int (day: str) → int
```

Use as helper converting string weekday to int for creating schedules.

**Parameters** **day** – string representation of the weekday.

**Raises** **sanic.exceptions.InvalidUsage** – when encountered unknown weekday string.

#### Returns

The in representation of the weekday.

More information is available in the Usage section.

`request_handlers._validate_time_integers` (*start\_hours: int, start\_minutes: int, stop\_hours: int, stop\_minutes: int*) → None

Use as helper validating time arguments of creating schedule requests.

### Parameters

- **start\_hours** – hour to start the device at (0-23).
- **start\_minutes** – minutes to start the device at (0-59).
- **stop\_hours** – hour to stop the device at (0-23).
- **stop\_minutes** – minutes to stop the device at (0-59).

**Raises** `sanic.exceptions.InvalidUsage` – when the validation fails.

**async** `request_handlers.create_schedule_handler` (*request: sanic.request.Request, ip\_address: str, phone\_id: str, device\_id: str, device\_password: str*) → `sanic.response.HTTPResponse`

Use for handling requests to `/switcher/create_schedule`.

### Parameters

- **request** – `sanic`'s request object.
- **ip\_address** – the local ip address.
- **phone\_id** – the extracted phone id.
- **device\_id** – the extracted device id.
- **device\_password** – the extracted device password.

**Raises** `sanic.exceptions.ServerError` – when encountered an error.

### Returns

Json object representing the request status.

More information is available in the `Usage` section.

**Warning:** Accepts json body only, no query parameters allowed.

**async** `request_handlers.delete_schedule_handler` (*request: sanic.request.Request, ip\_address: str, phone\_id: str, device\_id: str, device\_password: str*) → `sanic.response.HTTPResponse`

Use for handling requests to `/switcher/delete_schedule`.

### Parameters

- **request** – `sanic`'s request object.
- **ip\_address** – the local ip address.
- **phone\_id** – the extracted phone id.
- **device\_id** – the extracted device id.
- **device\_password** – the extracted device password.

### Raises

- `sanic.exceptions.InvalidUsage` – when encountered unknown weekday.

- `sanic.exceptions.ServerError` – when encountered any error.

#### Returns

Json object representing the request status.

More information is available in the Usage section.

---

**Note:** Accepts arguments as json body or query parameters.

---

**async** `request_handlers.disable_schedule_handler` (*request:* `sanic.request.Request`,  
*ip\_address:* `str`, *phone\_id:* `str`, *device\_id:* `str`, *device\_password:* `str`) →  
`sanic.response.HTTPResponse`

Use for handling requests to `/switcher/disable_schedule`.

#### Parameters

- **request** – `sanic`'s request object.
- **ip\_address** – the local ip address.
- **phone\_id** – the extracted phone id.
- **device\_id** – the extracted device id.
- **device\_password** – the extracted device password.

#### Raises

- `sanic.exceptions.InvalidUsage` – when encountered faulty data.
- `sanic.exceptions.ServerError` – when encountered any error.

#### Returns

Json object representing the request status.

More information is available in the Usage section.

---

**Note:** Accepts arguments as json body or query parameters.

---

**async** `request_handlers.enable_schedule_handler` (*request:* `sanic.request.Request`,  
*ip\_address:* `str`, *phone\_id:* `str`, *device\_id:* `str`, *device\_password:* `str`) →  
`sanic.response.HTTPResponse`

Use for handling requests to `/switcher/enable_schedule`.

#### Parameters

- **request** – `sanic`'s request object.
- **ip\_address** – the local ip address.
- **phone\_id** – the extracted phone id.
- **device\_id** – the extracted device id.
- **device\_password** – the extracted device password.

#### Raises

- `sanic.exceptions.InvalidUsage` – when encountered faulty data.

- `sanic.exceptions.ServerError` – when encountered any error.

**Returns**

Json object representing the request status.

More information is available in the Usage section.

---

**Note:** Accepts arguments as json body or query parameters.

---

**async** `request_handlers.get_schedules_handler` (*request: `sanic.request.Request`,  
ip\_address: str, phone\_id: str, device\_id: str, device\_password: str*) → `sanic.response.HTTPResponse`

Use for handling requests to `/switcher/get_schedules`.

**Parameters**

- **request** – `sanic`'s request object.
- **ip\_address** – the local ip address.
- **phone\_id** – the extracted phone id.
- **device\_id** – the extracted device id.
- **device\_password** – the extracted device password.

**Raises** `sanic.exceptions.ServerError` – when encountered any error.

**Returns**

Json object representing the configured schedules on the device.

More information is available in the Usage section.

---

**Note:** Accepts arguments as json body or query parameters.

---

**async** `request_handlers.get_state_handler` (*request: `sanic.request.Request`, ip\_address: str,  
phone\_id: str, device\_id: str, device\_password: str*) → `sanic.response.HTTPResponse`

Use for handling requests to `/switcher/get_state`.

**Parameters**

- **request** – `sanic`'s request object.
- **ip\_address** – the local ip address.
- **phone\_id** – the extracted phone id.
- **device\_id** – the extracted device id.
- **device\_password** – the extracted device password.

**Raises** `sanic.exceptions.ServerError` – when encountered any error.

**Returns**

Json object representing the current state of the device.

More information is available in the Usage section.

---

**Note:** Accepts arguments as json body or query parameters.

---

**async** `request_handlers.set_auto_shutdown_handler` (*request:* `sanic.request.Request`,  
*ip\_address:* `str`, *phone\_id:* `str`, *device\_id:* `str`, *device\_password:* `str`)  
 → `sanic.response.HTTPResponse`

Use for handling requests to `/switcher/set_auto_shutdown`.

#### Parameters

- **request** – `sanic`'s request object.
- **ip\_address** – the local ip address.
- **phone\_id** – the extracted phone id.
- **device\_id** – the extracted device id.
- **device\_password** – the extracted device password.

#### Raises

- `sanic.exceptions.InvalidUsage` – when requested is not 59-180 minutes.
- `sanic.exceptions.ServerError` – when encountered any error.

#### Returns

Json object representing the request status.

More information is available in the `Usage` section.

---

**Note:** Accepts arguments as json body or query parameters.

---

**async** `request_handlers.set_device_name_handler` (*request:* `sanic.request.Request`,  
*ip\_address:* `str`, *phone\_id:* `str`, *device\_id:* `str`, *device\_password:* `str`) →  
`sanic.response.HTTPResponse`

Use for handling requests to `/switcher/set_device_name`.

#### Parameters

- **request** – `sanic`'s request object.
- **ip\_address** – the local ip address.
- **phone\_id** – the extracted phone id.
- **device\_id** – the extracted device id.
- **device\_password** – the extracted device password.

#### Raises

- `sanic.exceptions.InvalidUsage` – when name length is no 2-32 characters.
- `sanic.exceptions.ServerError` – when encountered any error.

#### Returns

Json object representing the request status.

More information is available in the `Usage` section.

---

**Note:** Accepts arguments as json body or query parameters.

---

**async** `request_handlers.turn_off_handler` (*request: sanic.request.Request, ip\_address: str, phone\_id: str, device\_id: str, device\_password: str*) → `sanic.response.HTTPResponse`

Use for handling requests to `/switcher/turn_off`.

### Parameters

- **request** – `sanic`'s request object.
- **ip\_address** – the local ip address.
- **phone\_id** – the extracted phone id.
- **device\_id** – the extracted device id.
- **device\_password** – the extracted device password.

**Raises** `sanic.exceptions.ServerError` – when encountered any error.

### Returns

Json object representing the request status.

More information is available in the `Usage` section.

---

**Note:** Accepts arguments as json body or query parameters.

---

**async** `request_handlers.turn_on_handler` (*request: sanic.request.Request, ip\_address: str, phone\_id: str, device\_id: str, device\_password: str*) → `sanic.response.HTTPResponse`

Use for handling requests to `/switcher/turn_on`.

### Parameters

- **request** – `sanic`'s request object.
- **ip\_address** – the local ip address.
- **phone\_id** – the extracted phone id.
- **device\_id** – the extracted device id.
- **device\_password** – the extracted device password.

### Raises

- `sanic.exceptions.InvalidUsage` – when timer is no 1-180 minutes.
- `sanic.exceptions.ServerError` – when encountered any error.

### Returns

Json object representing the request status.

More information is available in the `Usage` section.

---

**Note:** Accepts arguments as json body or query parameters.

---



## 11.1.2 pyscripts/start\_server.py

Sanic server for the Switcher WebAPI.

`start_server.before_start` (*app*: `sanic.Sanic`, *loop*: `asyncio.events.AbstractEventLoop`) → None  
Use for preparing data and register mappings before start.

This function is annotated with `sanic.Sanic.listener("before_server_start")`.

It is called by `Sanic` just before the server starts. Its job is:

- Gather the initial data for running the server.
- Register a middleware for acquiring a throttler for all requests.
- Add routes using the `mappings` module and the `request_handlers` module.

### Parameters

- **app** – the running `sanic` app.
- **loop** – the main event loop.

`start_server.timeout` (*request*: `sanic.request.Request`, *exception*: `sanic.exceptions.SanicException`)  
→ `sanic.response.HTTPResponse`  
Use as custom handler for logging internal service errors.

This function is annotated with `sanic.Sanic.exception(ServerError)`.

It is called by `Sanic` for every `ServerError` exception.

Its job is to log the exception and return a code 500 response.

### Parameters

- **request** – the incoming request object.
- **exception** – the exception thrown.

## 11.2 Unit testing scripts

### 11.2.1 pyscripts/confstest.py

Fixtures and mockings for unit testing the Switcher WebAPI.

`confstest.mock_control_response` () → `Generator[asyncstest.MagicMock, Any, None]`  
Fixture for mocking the control response.

**Yields** Mocked `SwitcherV2ControlResponseMSG` object.

`confstest.mock_create_schedule_request` () → `Generator[asyncstest.MagicMock, Any, None]`  
Fixture for mocking the create\_schedule response.

**Yields** Mocked `SwitcherV2CreateScheduleResponseMSG` object.

`confstest.mock_delete_schedule_request` () → `Generator[asyncstest.MagicMock, Any, None]`  
Fixture for mocking the delete\_schedule response.

**Yields** Mocked `SwitcherV2DeleteScheduleResponseMSG` object.

`confstest.mock_disable_enable_schedule_request` () → `Generator[asyncstest.MagicMock, Any, None]`  
Fixture for mocking the disable\_enable\_schedule response.

**Yields** Mocked `SwitcherV2DisableEnableScheduleResponseMSG` object.

`confstest.mock_get_schedules_response` (*schedule\_object*) → Generator[`asyncstest.MagicMock`, Any, None]

Fixture for mocking the `get_schedules` response.

**Parameters** `schedule_object` – Fixture of mocked `SwitcherV2Schedule` object.

**Yields** Mocked `SwitcherV2GetScheduleResponseMSG` object.

`confstest.mock_get_state_response` () → Generator[`asyncstest.MagicMock`, Any, None]

Fixture for mocking the `get_state` response.

**Yields** Mocked `SwitcherV2StateResponseMSG` object.

`confstest.mock_loop` () → Generator[`asyncio.events.AbstractEventLoop`, Any, None]

Fixture for running an event loop.

**Yields** Test event loop for running test server.

`confstest.mock_sanica_test_app` () → Generator[`sanica.Sanica`, Any, None]

Fixture for creating a test instance on the sanica app.

**Yields** Test sanica application for mocking testing server.

`confstest.mock_schedule_object` () → Generator[None, None, `aioswitcher.schedules.SwitcherV2Schedule`]

Fixture for the `aioswitcher.schedules.SwitcherV2Schedule` object.

**Returns** Mocked `SwitcherV2Schedule` object.

`confstest.mock_set_auto_shutdown_response` () → Generator[`asyncstest.MagicMock`, Any, None]

Fixture for mocking the `set_auto_shutdown` response.

**Yields** Mocked `SwitcherV2SetAutoOffResponseMSG` object.

`confstest.mock_set_device_name_response` () → Generator[`asyncstest.MagicMock`, Any, None]

Fixture for mocking the `set_device_name` response.

**Yields** Mocked `SwitcherV2UpdateNameResponseMSG` object.

`confstest.mock_switcher_api_context_manager` () → Generator[None, Any, None]

Fixture for mocking the `SwitcherV2Api` context manager.

`confstest.mock_tcp_connection` () → Generator[None, Any, None]

Fixture for mocking `asyncio.open_connection`.

`confstest.mock_test_client` (*loop: asyncio.events.AbstractEventLoop*, *sanica\_test\_app: sanica.Sanica*) → Generator[None, None, `asyncio.events.AbstractEventLoop`]

Fixture for starting server in the event loop.

**Parameters**

- `loop` – Fixture of mocked `AbstractEventLoop` object.
- `sanica_test_app` – Fixture of mocked `Sanica` object.

**Returns** An event loop with a running server.

### 11.2.2 pyscripts/helpers.py

Helper functions for unit testing the Switcher WebAPI.

`helpers.get_local_ip_address()` → str

Use for getting the local host's ip address.

**Returns** The local ip address.

`helpers.get_next_weekday(is_iso: bool = False)` → int

Use for getting next day weekday.

**Parameters** `is_iso` – If true, Monday=1 and Sunday=7. Else Monday=0 and Sunday=6.

**Returns** The int value representing the the next weekday (tomorrow).

### 11.2.3 pyscripts/test\_server.py

Unit tests for the Switcher WebAPI.

**async** `test_server.test_create_schedule_request` (`create_schedule_response: async_test.MagicMock`) → None

Unit test-cases for /switcher/create\_schedule request.

**Parameters** `create_schedule_response` – fixture of mocked SwitcherV2CreateScheduleResponseMSG object.

**async** `test_server.test_delete_schedule_request` (`delete_schedule_response: async_test.MagicMock`) → None

Unit test-cases for /switcher/delete\_schedule request.

**Parameters** `delete_schedule_response` – fixture of mocked SwitcherV2DeleteScheduleResponseMSG object.

**async** `test_server.test_disable_schedule_request` (`disable_enable_schedule_response: async_test.MagicMock`) → None

Unit test-cases for /switcher/disable\_schedule request.

**Parameters** `disable_enable_schedule_response` – fixture of mocked SwitcherV2DisableEnableScheduleResponseMSG object.

**async** `test_server.test_enable_schedule_request` (`disable_enable_schedule_response: async_test.MagicMock`) → None

Unit test-cases for /switcher/enable\_schedule request.

**Parameters** `disable_enable_schedule_response` – fixture of mocked SwitcherV2DisableEnableScheduleResponseMSG object.

**async** `test_server.test_get_schedules_request` (`get_schedules_response: async_test.MagicMock`) → None

Unit test-cases for /switcher/get\_schedules request.

**Parameters** `get_schedules_response` – fixture of mocked SwitcherV2GetScheduleResponseMSG object.

**async** `test_server.test_get_state_request` (`get_state_response: async_test.MagicMock`) → None

Unit test-cases for /switcher/get\_state request.

**Parameters** `get_state_response` – fixture of mocked SwitcherV2StateResponseMSG object.

**async** `test_server.test_set_auto_shutdown_request` (`set_auto_shutdown_response: async_test.MagicMock`) → None

Unit test-cases for /switcher/set\_auto\_shutdown request.

**Parameters** `set_auto_shutdown_response` – fixture of mocked SwitcherV2SetAutoOffResponseMSG object.

**async** `test_server.test_set_device_name_request` (*set\_device\_name\_response: asynctest.MagicMock*) → None  
Unit test-cases for /switcher/set\_device\_name request.

**Parameters** `set_device_name_response` – fixture of mocked SwitcherV2UpdateNameResponseMSG object.

**async** `test_server.test_turn_off_request` (*control\_response: asynctest.MagicMock*) → None  
Unit test-cases for /switcher/turn\_off request.

**Parameters** `control_response` – fixture of mocked SwitcherV2ControlResponseMSG object.

**async** `test_server.test_turn_on_request` (*control\_response: asynctest.MagicMock*) → None  
Unit test-cases for /switcher/turn\_on request.

**Parameters** `control_response` – fixture of mocked SwitcherV2ControlResponseMSG object.

## 11.3 Shared scripts

### 11.3.1 pyscripts/consts.py

Various constants and test values for the Switcher WebAPI project.

### 11.3.2 pyscripts/mappings.py

Url mappings for the Switcher WebAPI project are located here.

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