
SatNOGS Config

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SatNOGS

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SatNOGS Config is a utility for generating the configuration for a Debian-based SatNOGS client system. It is a menu driven configuration tool built on-top of `pythondialog`. The main purpose of this utility is to create the YAML configuration file for SatNOGS Client Ansible which provisions the system. In addition to that, it interacts with `satnogs-setup`, which is a wrapper to bootstrap Ansible, upgrades the system packages using APT and probes the hardware to show the user a more limited set of configuration options.

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1.1 User guide

1.1.1 Requirements

- Python 3.4+
- libapt 1.8+ Python bindings
- lsb-release 10+

1.1.2 Installation

1.1.2.1 Debian

To install the required dependencies in Debian run:

```
$ apt-get install python3-apt lsb-release
```

1.1.2.2 SatNOGS Config

To install SatNOGS Config run:

```
$ pip install satnogs-config
```

This will install a console script called `satnogs-config`.

1.1.3 Usage

To execute the script, run it on the command line:

```
$ satnogs-config
```

The main menu will be shown

1.1.3.1 Basic

The **Basic** sub-menu contains the minimum required configuration options for provisioning the SatNOGS client system.

1.1.3.2 Advanced

The **Advanced** sub-menu contains a larger set of configuration options. It is intended for advanced users and contains options categorized by component.

1.1.3.3 Show

The **Show** option displays the current configuration file.

1.1.3.4 Upgrade

The **Upgrade** option calls APT utilities to upgrade the distribution packages.

1.1.3.5 Update

The **Update** option works in conjunction with `satnogs-setup` to re-bootstrap Ansible and update the configuration tools.

1.1.3.6 Reset

The **Reset** option resets the configuration file generated by the utility, effectively removing all the configuration options set by the user.

1.1.3.7 Apply

The **Apply** button runs SatNOGS Client Ansible which provisions Debian to become a SatNOGS client system.

1.2 Developer guide

1.2.1 Installation

To install the required dependencies in Debian run:

```
$ apt-get install python3-apt lsb-release
```

It is recommended to install SatNOGS Config in a virtualenv. The virtualenv needs to have access to system Python bindings. To create the virtualenv, you can use `virtualenvwrapper`. On the first time, create the virtualenv by running:

```
$ mkvirtualenv --system-site-packages -a . satnogs-config
```

To activate the virtualenv after it is created run:


```
$ workon satnogs-config
```

To install SatNOGS Config for development run in the project root directory:

```
$ pip install -e .
```

1.2.2 Configuration

This project uses `python-dotenv`. Configuration of `satnogsconfig/settings.py` can be overridden by setting the respective environment variables or an `.env` file placed on the project root directory.

1.2.3 Extending

SatNOGS Config functionality can be extended by implementing additional helpers. The helpers are used to enhance menu functionality beyond the core function of generating a YAML file for Ansible.

1.2.4 Modifying the menu

The menu itself is also expressed in YAML format. The menu structure is defined in `menu.yml` file and shipped along with the package.

1.2.5 Code Quality Assurance

The following code quality assurance tools are used in this project:

- flake8
- isort
- yapf
- pylint

1.2.6 Automation

`tox` is used to automate development tasks. To install `tox` run:

```
$ pip install tox
```

To execute the default list of tasks run:

```
$ tox
```

1.2.6.1 Environments

The following tox environments are available:

- flake8 - Check code for common errors, coding style and complexity
- isort - Check code for correct imports order
- isort-apply - Sort imports
- yapf - Check code for correct formatting
- yapf-apply - Reformat source code
- pylint - Execute static code analysis
- build - Build source and binary distributions
- upload - Upload source and binary distributions to PyPI
- docs - Build documentation

To execute a single environment run:

```
$ tox -e <environment>
```

1.3 Modules reference

1.3.1 satnogsconfig

SatNOGS Config module initialization

`satnogsconfig.main()`
SatNOGS Setup utility

1.3.2 satnogsconfig.config

Configuration module

class `satnogsconfig.config.Config(filename)`
Manage configuration file

Parameters `filename` (*str*) – File path of configuration

`_load_config()`

Load and parse YAML configuration

Returns Configuration dictionary

Return type dict or NoneType

`clear_config()`

Clear configuration file

`dump_config(to_file=False)`

Dump configuration in YAML format

Parameters `to_file` (*bool, optional*) – Dump to file

Returns YAML configuration

Return type str

get_variable(*variable*)

Get variable value from configuration

Parameters **variable** (*str*) – Variable to get the value

Returns Value of variable

Return type str or bool or NoneType

set_variable(*variable, value*)

Set variable value in configuration

Parameters

- **variable** (*str*) – Variable to set the value
- **value** (*str or bool or NoneType*) – Value of variable

1.3.3 satnogsconfig.helpers

Helpers module

class satnogsconfig.helpers.**Ansible**(*ansible_dir*)

Call Ansible playbooks

pull(*playbooks, url, branch=None, tags=None, extra_args=None*)

Pull and run Ansible playbook

Parameters

- **playbooks** (*list*) – List of playbooks
- **url** (*str*) – Git URL to pull playbooks
- **branch** (*str, optional*) – Git branch to pull playbooks
- **tags** (*list, optional*) – List of tags
- **extra_args** (*list, optional*) – List of extra arguments to pass to Ansible

Returns Whether Ansible execution succeeded

Return type bool

run(*playbooks, tags=None, extra_args=None*)

Run Ansible playbook

Parameters

- **playbooks** (*list*) – List of playbooks
- **tags** (*list, optional*) – List of tags
- **extra_args** (*list, optional*) – List of extra arguments to pass to Ansible

Returns Whether Ansible execution succeeded

Return type bool

class satnogsconfig.helpers.**GrSatnogs**

Get and set gr-satnogs configuration

property **gr_satnogs_version**

Get gr-satnogs version

probe_soapysdr()

Probe SoapySDR hardware

class satnogsconfig.helpers.SatnogsSetup

Interact with satnogs-setup

property gnuradio_version

Get installed gnuradio version

Returns Version of gr-soapy

Return type str

property gr_satnogs_version

Get installed gr-satnogs version

Returns Version of gr-satnogs

Return type str

property gr_soapy_version

Get installed gr-soapy version

Returns Version of gr-soapy

Return type str

property is_applied

Check whether configuration has been applied

Returns Whether configuration has been applied

Return type bool

static restart(*boot=False*)

Restart satnogs-setup script

Parameters *boot* (*bool*, *optional*) – Whether to bootstrap or not

property satnogs_client_ansible_version

Get installed SatNOGS Client Ansible version

Returns Version of SatNOGS Client Ansible

Return type str

property satnogs_client_version

Get installed SatNOGS Client version

Returns Version of SatNOGS Client

Return type str

property satnogs_flowgraphs_version

Get installed satnogs-flowgraphs version

Returns Version of satnogs-flowgraphs

Return type str

property tags

Get satnogs-setup tags

Returns Set of tags

Return type set

upgrade_system()

Upgrade system packages

class satnogsconfig.helpers.**Support**(*config, satnogs_setup, ansible*)

Create support information to be used for reporting bugs

dump(*args, **kwargs)

Dump support information

Returns JSON dump of support information**Return type** str**property info**

Support information

Returns Support information dictionary**Return type** dict

1.3.4 satnogsconfig.menu

Menu module

class satnogsconfig.menu.**Menu**(*menu, config, backtitle=None*)

Show a menu structure based on dialog

Parameters

- **menu** (*dict*) – Menu dictionary
- **config** (*dict*) – Configuration dictionary
- **backtitle** (*str, optional*) – Default dialog backtitle

_apply(*menu*)

Request setup from configuration management tool

_configbox(*menu*)

Show scrollbox for viewing configuration

Parameters **menu** (*dict*) – Menu dictionary**_exit**(*menu*)

Exit the utility

Parameters **menu** (*dict*) – Menu dictionary**_get_common_options**(*menu*)

Get dialog common options

Parameters **menu** (*dict*) – Menu dictionary**Returns** Common option dictionary**Return type** dict**_msgbox**(*menu*)

Show msgbox

Parameters **menu** (*dict*) – Menu dictionary**_reboot**(*menu*)

Reboot system

Parameters **menu** (*dict*) – Menu dictionary

_resetyesno(*menu*)

Reset configuration

Parameters **menu** (*dict*) – Menu dictionary

_set_default_backtitle(*backtitle=None*)

Set backtitle of menu

Parameters **backtitle** (*str*) – Menu backtitle

_submenu(*menu*)

Show submenu

Parameters **menu** (*dict*) – Menu dictionary

support(**)

Show support information

update(**)

Request tool update

_update_stack(*menu, response*)

Update stack based on dialog responses

Parameters

- **menu** (*dict*) – Menu dictionary
- **response** (*str*) – Dialog response

_variablebox(*menu*)

Show inputbox for setting a variable

Parameters **menu** (*dict*) – Menu dictionary

_variableyesno(*menu*)

Show boolean selection for setting a variable

Parameters **menu** (*dict*) – Menu dictionary

property **backtitle**

Get default backtitle

Returns Background title

Return type str

show(*_*)

Show dialog menu structure

satnogsconfig.menu.**_clear_screen**(*_*)

Clear screen

satnogsconfig.menu.**_get_variables**(*menu, name=None, mandatory=False*)

Get all menu variable items

Parameters

- **menu** (*dict*) – Menu dictionary
- **name** (*str, optional*) – Name of menu item
- **mandatory** (*bool, optional*) – Return only mandatory variables

Returns Menu variables dictionary

Return type dict

satnogsconfig.menu._load_menu(*file*)

Load menu structure from YAML file

Parameters **file** (*file*) – Menu file stream

Returns Menu dictionary

Return type dict

satnogsconfig.menu._reboot()

Reboot system

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