
dmARC_report

Release 5.1.3

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DMARC_REPORT

1.1 Overview

Generate a human readable report from 1 or more standard DMARC and TLS-RPT xml email reports . DMARC reports are made using *dmARC-rpt* while TLS-RPTs use *tls-rpt*

Note:

All git tags are signed by <arch@sapience.com>. Public key is available via WKD or download from website: <https://www.sapience.com/tech> After key is on keyring use the PKGBUILD source line ending with *?signed* or manually verify using *git tag -v <tag-name>*

1.2 New / Interesting

Interesting

- New config file format using single config file. Older 2 file configs will be automatically converted to the new version 2 format. See *config_files_section* section and *configs* directory for sample config.
- Switch to *py-cidr* package for handling IPs instead of own versions.
- **Available**
 - github <<https://github.com/gene-git/py-cidr>>
 - AUR <<https://aur.archlinux.org/packages/py-cidr>>
- Now use python 3's *ipaddress* module instead of *netaddr*. Its faster and we no longer require 3rd party library
- Require python version 3.11 or later
- Switch to *lxml* for better handling of xml namespaces found in some reports
- Add support for handling mbox file with multiple emails containing reports. While some clients save multiple emails in separate *.eml* files, others, like evolution, save them all in a single *.mbox* file. Add support for this.
- *tls-rpt*

New tool to generate report for TLS reports for MTA-STS or DANE. See *README-tls.md* This report has been updated - see Changelog for details.

GETTING STARTED

2.1 Applications

Save all DMARC or TLS-RPT reports into a directory. These are typically compressed xml/json files sent as email attachments. The saved reports can be :

- individual email files each with a compressed xml/json attachment. Thunderbird saves them this way. These are saved with a *.eml* extension.
- one single file with several emails, each with the attachment. Evolution saves this way. These are saved with *.mbox* extension.
- Individual compressed, or uncompressed, xml reports created by saving the attachments from each email.

dmarc-rpt and *tls-rpt* will extract the actual **xml** (*dmarc*) or **json** (*tls-rpt*) data from all of the above.

2.1.1 Quick start

Save all emails with DMARC or TLS-RPT attachments to a directory, change into that directory and run either *dmarc-rpt* or *tls-rpt* as appropriate.

It is generally more convenient to use a config file explained below.

2.1.2 Config Files

Config files are read, in order, from directories :

```
/etc/dmarc_report/  
~/ .config/dmarc_report/
```

with the settings in latter *~/ .config/...* overriding any found in */etc/...*

There are 2 config file formats supported. The older version 1 format uses 2 separate files:

- *config* - for *dmarc-rpt*
- *tls-config* - for *tls-rpt*

New version 2 format uses a single file, *config.v2*. Version 2 config will be used if its found. If only version 1 configs are found they will be automatically converted to version 2, which will then be used going forward.

All config files use standard TOML format. Config files use 3 sections. A global section and one each for *dmarc* and *tls-rpt*.

Available config values are set using:

```
command_line_long_opt_name = xxx
```

e.g. to set data report dir use:

```
dir = "/foo/goo/dmarc_reports"
```

A sample config is available in the *conf.d* directory. A typical config might be of the form:

```
# comment
[global]
    theme = 'dark'
    inp_files_disp = "save"
    inp_files_save_dir = "../saved"

[dmARC]
    dom_ips = ['1.1.1.1', '1.2.2.0/24']
    dir = "~/mail-reports/dmarc/xml"

[tls]
    dir = "~/mail-reports/tls/xml"
```

Variables set in *[dmARC]* or *[tls]* sections override any corresponding global ones.

This sample config says to read all the saved dmarc email reports from *~/mail-reports/dmarc/xml* and the tls reports from *~/mail-reports/tls/xml*.

And to save the raw files after processing report by moving them to *~/mail-reports/dmarc/saved* or *~/mail-reports/tls/saved*.

For dmarc it says that ips listed in *dom_ips* are for your own domains.

Command line options override the corresponding config setting. See *Options* section for more detail.

2.1.3 dmarc-rpt Usage

Change to the directory containing the one or more dmarc report files and simply run

```
dmARC-rpt
```

When using the *-dir* option (or config setting *dir*) it is not necessary to change directories before running the report.

Any email files, those ending with *.eml* will be processed first. These are assumed to contain the report as a mime attachment. The attachment is extracted from any such email files. Some mail clients save multiple emails as a single mbox file. Each email in the mbox file will be similarly processed and have the attached report extracted.

Then all remaining files are read and processed. The tool processes all xml and gzip/zip compressed xml dmarc report files and generates a human readable report.

We follow Postel's law and try to be liberal in what we accept as input. To that end we accept the dmarc XML report file, a gzip/zip compressed version of same or a saved email file text file with the report itself being a mime attachment.

Any file with extension *.eml* is treated as an email file.

To avoid line wrapping, the report should be viewed on wide enough terminal; roughly 112 or chars or more.

For convenience after report is generated, the input files can be automatically moved to a save direcorey, left where they are or removed. A typical sequents of events is to save the email reports, run *dmARC-rpt*. By auto moving (or removing) the input files, makes it simpler when doing the next batch of dmarc reports.

Then save all the raw *.eml* files into *~/dmARC/reports* and run before running the report

dmarc-rpt

All attachments from dmarc email reports would be saved into “~/dmarc/saved/2023-01” in this example.

2.1.4 tls-rpt Usage

tls-rpt works in a similar way to dmarc-rpt, except it operates on TLS-RPT (compressed) xml inputs.

Command line options are shown first in parens below, followed by the corresponding config version in square brackets, if available.

2.1.5 Common Options

These apply to both dmarc-rpt and tls-rpt

- *(-h, -help)* Help for command line options.
- *(-d, -dir)* [*dir* = */path/xxx/*]
Allows specifying the directory with the dmarc report files to be processed. The directory holding the report files (.eml, .xml, .gz or .zip) By default, dir is the current directory.
- *(-k, -keep)*
Prevent the .eml being removed after the attached xml reports are extracted.
- *(-thm, -theme)*
Report is now in color. Default theme is ‘dark’. Theme can be ‘light’ ‘dark’ or ‘none’, which turns off color report.
- *(-v, -verb)*
More verbose output
- *(-ifd, -inp_file_disp)*
Input file disposition options one of : none,save,delete If set to save then all input files (xml, compressed xml and any kept eml files) are moved to directory specified by *inp_files_save_dir*.
- *(-ifsd, -inp_files_save_dir)*
When *inp_file_disp* is set, then input files are moved to this directory after report is generated. Files are saved by year-month under the save directory

2.1.6 dmarc-rpt Specific Options

These are only applicable for dmarc-rpt.

- *(-ips, -dom_ips)* [*dom_ips* = [*ip, cidr, ...*]]
Set the ips for your own domain(s), which will then be colored to make them easy to spot. Command line option is a comma separated list of IPs. e.g.:

```
--dom_ips "1.1.1.0/24,2.2.2.16/29"
```

When used in config file format as array of IP stringsC. e.g.:

```
dom_ips = ['1.1.1.0/24', '2.2.2.16/29']
```

- *(fdm, -dmarc_fails)*
Only include dmarc failures in report

- *(fdk, -dkim_fails)*
Only include dkim failures in report
- *(fsp, -spf_fails)*
Only include spf failures in report

2.2 Saving Email Reports From Email Client

In most mail clients, such as thunderbird, one can select multiple email reports and then use *File -> Save As* to save the email files into a directory of your choosing. Each email gets saved with a *.eml* extension.

3.1 Dependencies

- Run Time : * python (3.13 or later) * python-dateutil * python-lxml * py-cidr (2.7.0 or later) * tomli-w (for writing version 2 configs converted from version 1)
- Building Package: * git * wheel (aka python-wheel) * build (aka python-build) * installer (aka python-installer) * poetry (aka python-poetry) - rsync
- Optional for building docs:
 - sphinx
 - texlive-latexextra (archlinux packaguing of texlive tools)

3.2 Installation

Available on

- [Github](#)
- [Archlinux AUR](#)

On Arch you can build using the PKGBUILD provided in packaging directory or from the AUR package. To build manually, clone the repo and

```
rm -f dist/*
python -m build --wheel --no-isolation
root_dest="/"
./scripts/do-install $root_dest
```

When running as non-root then set root_dest a user writable directory

3.3 Philosophy

We follow the *live at head commit* philosophy. This means we recommend using the latest commit on git master branch. We also provide git tags.

This approach is also taken by Google^{1,2}.

¹ <https://github.com/google/googletest>

² <https://abseil.io/about/philosophy#upgrade-support>

3.4 License

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SMTP TLS-RPT

4.1 Overview

Generate a human readable tls report from one or more standard tls report files. These reports are used for a email domain with support for either DANE or MTA-STS or both.

4.1.1 Usage

Run from command line: .. code-block:: bash

```
tls-rpt
```

Generates reports from one or more emailed tls reports. Similar to dmarc-rpt, the tool can consume email files (.eml) or the json attachments (plain or compressed) delivered as part of the usual mts-sts reports - and in directory specified by *inp_files_save_dir*.

tls-rpt is provided as part of the dmarc_report package

Background

TLS Reports are optionally generated for a mail domain when so requested by a TXT record in the domain's DNS. The tool parses and summarizes such email reports for human consumption.

SMTP TLS reporting is described by [RFC 8460]¹ where it summarizes:

A number of protocols exist **for** establishing encrypted channels between SMTP Mail Transfer Agents (MTAs), including STARTTLS, DNS-Based Authentication of Named Entities (DANE) TLSA, **and** MTA Strict Transport Security (MTA-STS).

MTA-STS, is explained by [RFC 8641]² where it is summarized:

SMTP MTA Strict Transport Security (MTA-STS) **is** a mechanism enabling mail service providers (SPs) to declare their ability to receive Transport Layer Security (TLS) secure SMTP connections **and** to specify whether sending SMTP servers should refuse to deliver to MX hosts that do **not** offer TLS **with** a trusted server certificate.

while DANE is documented in [RFC 6698]³, [RFC 7671]⁴ and [RFC 7672]⁵

¹ TLS Report [RFC 8460] <https://www.rfc-editor.org/rfc/rfc8460.txt>

² MTA-STS [RFC 8641] <https://www.rfc-editor.org/rfc/rfc8641.txt>

³ DANE [RFC 6698] <https://www.rfc-editor.org/rfc/rfc6698.txt>

⁴ DANE [RFC 7671] <https://www.rfc-editor.org/rfc/rfc7671.txt>

⁵ DANE SMTP [RFC 7672] <https://www.rfc-editor.org/rfc/rfc7672.txt>

Encrypted communication on the Internet often uses Transport Layer Security (TLS), which depends on third parties to certify the keys used. This document improves on that situation by enabling the administrators of domain names to specify the keys used **in** that domain's TLS servers. This requires matching improvements in TLS client software, but no change **in** TLS server software

Discussion

To receive TLS reports requires a DNS record requesting a TLS report along with either a DANE TLSA record or MTA-STS. MTA-STS requires both a policy and a DNS record.

4.1.2 TLS Report DNS Record

Example

```
_smtp._tls.example.org IN TXT "v=TLSRPTv1; rua=mailto:tlsrpt@example.com"
```

The TLS reports will be sent to the email provided by the string following *rua=*. In this example reports would be sent to *tlsrpt@example.com*.

4.1.3 MTA-STS

Requires both a DNS record and a policy file available from the email's domain web server.

Policy file example to be provided by web server:

```
https://mta-sts.example.com/.well-known/mta-sts.txt
```

The policy mode can be set to *enforce* or *testing*. Example *mta-sts.txt* file:

```
version: STSv1
mode: enforce
mx: example.com
mx: \*.example.com
max_age: 1296000
```

DNS TXT record example:

```
_mta-sts.example.org. IN TXT "v=STSv1; id=202301011200;"
```

4.1.4 DANE TLSA

DNS record example:

```
_25._tcp.example.com. TLSA 3 1 1 (xxx)
```

where xxx would be the appropriate public key hash.

Using tls-rpt

Save all tls email reports into a directory. Change to the directory containing one or more dmARC report files and simply run .. code-block:: back

```
tls-rpt
```

Using the `-dir` option (or setting the config option `dir`) makes unnecessary to change directories before running the report.

Any email files, those ending with `.eml` will be processed first. These are assumed to contain the dmarc report as a mime attachment. The attachment is extracted from such email files.

Subsequently, all remaining files are read and processed. The tool processes all json and gzip/zip compressed json tls report files and produces a human readable report.

Any file with extension `.eml` is treated as an email file.

For convenience after report is generated, the input files can be automatically moved to a save directory, left where they are or removed. A typical sequence of events is to save the email reports, run `dmarc-rpt`. By auto moving (or removing) the input files, makes it simpler when doing the next batch of dmarc reports.

For example, you might save all `.eml` files in same directory and with config settings:

```
dir = "~/tlsrpt/reports"
inp_files_disp = "save"
inp_files_save_dir = "../saved"
```

Then save all the raw `.eml` files into `~/tlsrpt/reports` and run

```
tls-rpt
```

All attachments from email reports would be saved into `~/tlsrpt/saved/2023-01` in this example.

4.1.5 tls-rpt Options

Options are read first from config files then command line. Config files are read from `/etc/dmarc_report/config-tls` then `~/config/dmarc_report/config-tls`. Config files are in standard TOML format.

Config settings use corresponding command line option:

```
long-option = xxx.
```

e.g. to set data report dir in config use

```
dir = /foo/goo/other
```

The command line options are shown first in parens followed by corresponding config in square brackets if available.

- `(-d, -dir) [dir = /some/path]`

Allows specifying the directory with the dmarc report files to be processed. The directory holding the report files (`.eml`, `.json`, `.gz` or `.zip`) By default, `dir` is the current directory.

- `(-k, -keep) [keep = true]`

Prevent the `.eml` being removed after the attached xml reports are extracted.

- `(-thm, -theme)`

Report is now in color. Default theme is 'dark'. Theme can be 'light' 'dark' or 'none', which turns off color report.

- `(-ifd, -inp_file_disp)`

Input file disposition options one of : none,save,delete If set to save then all input files (xml, compressed xml and any kept eml files) are moved to directory specified by `inp_files_save_dir`.

- *(-ifsd, -inp_files_save_dir)*

When *inp_file_disp* is set, then input files are moved to this directory after report is generated. Files are saved by year-month under the save directory

- *(-h, -help)*

Help for command line options.

4.1.6 Saving Email Reports From Email Client

In most mail clients, such as thunderbird, one can select multiple email reports and then use *File -> Save As* to save the email files into a directory of your choosing. Each email gets saved with a *.eml* extension.

4.1.7 License

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CHANGELOG

[5.1.3] — 2025-03-15

Improve README **and** add theme to sample config
update Changelog.rst

[5.1.2] — 2025-03-14

Just update PKGBUILD version
update Changelog.rst

[5.1.1] — 2025-03-13

update Changelog.rst

[5.1.0] — 2025-03-13

Add missing config sample file
update Changelog.rst
Bug fix by @rikyborg : Typo **in** ConfData **class**
update Changelog.rst

[5.0.2] — 2025-03-11

Update Readme
update Changelog.rst

[5.0.1] — 2025-03-10

Require py-cidr >= 2.7.0 which has ip sort fix
update Changelog.rst

[5.0.0] — 2025-03-10

remove files no longer being used
New config file **format** using single config file shared by dmarc **and** tls report generators
version 1 configs **with** 2 files will be automatically converted **and** saved **as** config.v2
Auto conversion pulls **in** new dependency on tomli-w to write the config file.
Reorg **and** simplify config **and** options code.
update Changelog.rst

[4.13.2] — 2025-02-25

Small update to README
Add html **and** pdf docs to repo
update Changelog.rst

[4.13.1] — 2025-02-23

Change to py-cidr package **for** network tools.
Update README
update Changelog.rst

[4.12.5] — 2025-01-11

Ensure python version requirement **is** consistent (README, pyproject, PKGBUILD,
↪requirements)
update Changelog.rst

[4.12.4] — 2024-12-31

Add git signing key to Arch Package
update Changelog.rst

[4.12.3] — 2024-12-31

typo
update Changelog.rst

[4.12.2] — 2024-12-31

Add validpgpkeys to PKGBUILD
update Changelog.rst

[4.12.1] — 2024-12-31

All git tags are now signed.
Update SPDX tags
update Changelog.rst

[4.12.0] — 2024-11-28

Handle another seconds **format in** xml file
update Changelog.rst

[4.11.0] — 2024-10-22

Additional **input** protections **in** cidr utils
update Changelog.rst

[4.10.0] — 2024-10-22

Bug fix when no "dom_ips" **set**. Resolves issue #2 *reported by @g4242*
update Changelog.rst

[4.9.0] — 2024-10-20

remove dead code
update Changelog.rst

[4.8.0] — 2024-10-20

For completeness, Handle ip address of form ip/prefix
update Changelog.rst

[4.7.0] — 2024-10-19

Now use python 3s ipaddress module instead of netaddr.
Its faster **and** we no longer require 3rd party module
Require python version 3.11 **or** later
update Changelog.rst

[4.6.0] — 2024-08-29

Switch to lxml **for** better handling of namespaces found **in** some reports
Now handle namespaces (e.g. GMX uses them)
update Changelog.rst

[4.3.1] — 2023-12-26

Add missing dateutil to depends **in** PKGBUILD
update Changelog.rst

[4.3.0] — 2023-12-10

Add support **for** extracting reports **from multiple** emails saved into an mbox file `-r`
↳ evolution saves emails this way
update Changelog.rst

[4.2.0] — 2023-11-28

Handle badly formed dmarc report **with** missing date **range**
Switch python build backend to hatch (was poetry)
update CHANGELOG.md

[4.0.0] — 2023-10-29

Improve tls-rpt
Show policy name (tlsa, sts, none)
Show count of each failure result **type**
Now checks **all** "policies" returned **in** the json report.
Add date ranges to report
update CHANGELOG.md

[3.10.0] — 2023-09-27

Reorganize documentation under Docs **and** migrate to restructured text
Nicer formatting **in** README-tls.rst
update CHANGELOG.md

[3.9.2] — 2023-07-14

Change to 3.9.2
update CHANGELOG.md

[3.9.1] — 2023-07-14

With updated README-tls.rst this time
update CHANGELOG.md

[3.9.0] — 2023-07-14

Update README with better description of TLS Report and use rst
update CHANGELOG.md

[3.8.0] — 2023-07-09

Add any failure details to tls report
update CHANGELOG.md

[3.7.1] — 2023-05-18

Update build info in README
update CHANGELOG.md

[3.7.0] — 2023-05-18

install: switch from pip to python installer package. This adds optimized bytecode
update CHANGELOG.md

[3.6.3] — 2023-05-18

PKGBUILD: add python-build to makedepends
update CHANGELOG.md

[3.6.2] — 2023-05-18

PKGBUILD: build wheel back to using python -m build instead of poetry
update CHANGELOG.md

[3.6.1] — 2023-05-17

Simplify Arch PKGBUILD and more closely follow arch guidelines
update CHANGELOG.md

[3.6.0] — 2023-04-29

Handle exceptions from bad XML report files
update CHANGELOG.md

[3.5.0] — 2023-01-21

Remove duplicate line in options class - has no effect
update CHANGELOG.md

[3.4.0] — 2023-01-17

Turn off debug - accidentally left on with last release! So sorry
typo in README-mta-sts.md
update CHANGELOG.md

[3.3.0] — 2023-01-09

More info about selectors including missing ("-")
update CHANGELOG.md

[3.2.0] — 2023-01-09

Add more info about dkim selectors typically **from** **forwarded** mail
update CHANGELOG.md

[3.1.0] — 2023-01-09

Sort short dkim selector tags before printing
tweak readme **for** new tls-rpt tool
update CHANGELOG.md

[3.0.0] — 2023-01-07

Refactor code some.
Add new tls-rpt to generate reports **for** MTA-STLS reports
update CHANGELOG.md

[2.3.0] — 2023-01-07

Bug fix - clean up went too far added silly **print** bug - so sorry
tidy README, add SPDX license line to missed file
update CHANGELOG.md

[2.2.1] — 2023-01-06

Use SPDX licensing.
Lint **and** tidy
Fix description of **input** file disposition to show none,save,delete
update CHANGELOG.md

[2.2.0] — 2023-01-05

Add option **for** disposition of **input** files after report **is** generated.
--inp_files_disp can be none, save **or** delete. Default **is** none.
--inp_files_save_dir specifies where to save **input** files when disposition **is** "save"
update CHANGELOG.md

[2.1.0] — 2023-01-03

Right align numbers
small tweak to README
update CHANGELOG.md

[2.0.0] — 2023-01-03

Fix bug where grand total missed orgs **with** 1 IP
Add color report, default theme **is** dark. Can be light, dark **or** none to turn color off
Add support **for** config files: /etc/dmARC_report/config - ~/.config/dmARC_report/config
Config file **is** TOML **format** where each variable **is** the long_option name:
e.g. **dir** = "/a/b/dmARC_stuff"
Add new option to **set** your IP **or** CIDR blocks - this will allow your own IPs to be colored
Makes it easy to spot mail generated **from your** own IP vs mail lists etc
update CHANGELOG.md

[1.3.1] — 2023-01-03

Improve report **format** a bit
typo
small README tweak
update CHANGELOG.md

[1.3.0] — 2023-01-02

silly bug **with** multipart accidently ignoring report file
update CHANGELOG.md

[1.2.1] — 2023-01-02

remove reference to ripmime - no longer needed now that we handle mime attachments.
↳ourselves
update CHANGELOG.md

[1.2.0] — 2023-01-02

Fix bug **with** some multipart mime email **from some** reporters
update CHANGELOG.md

[1.1.0] — 2023-01-02

.eml files are now removed after the dmARC report **is** extracted.
Use option *-k, --keep* to prevent the *.eml* being removed
update CHANGELOG.md

[1.0.0] — 2023-01-02

Added support to extract dmARC reports **from mime** attachments **in** email files
Added option *-d, --dir* to specify the directory containing report files
more readme tweaks
tweak readme
update CHANGELOG.md

[0.9.1] — 2023-01-02

Add note on handling email reports efficiently to README
remove unused file
update CHANGELOG.md

[0.9.0] — 2023-01-01

Small tweak to report output
fix typo
update CHANGELOG.md

[0.8.1] — 2023-01-01

update readme
update CHANGELOG.md

[0.8.0] — 2023-01-01

bump vers to 0.8.0
update CHANGELOG.md

[0.7.0] — 2023-01-01

prep for release

[0.6.0] — 2023-01-01

initial commit

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HOW TO HELP WITH THIS PROJECT

Thank you for your interest in improving this project. This project is open-source under the MIT license.

7.1 Important resources

- [Git Repo](#)

7.2 Reporting Bugs or feature requests

Please report bugs on the issue tracker in the git repo. To make the report as useful as possible, please include

- operating system used
- version of python
- explanation of the problem or enhancement request.

7.3 Code Changes

If you make code changes, please update the documentation if it's appropriate.

CONTRIBUTOR COVENANT CODE OF CONDUCT

8.1 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, socio-economic status, nationality, personal appearance, race, religion, or sexual identity and orientation.

8.2 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

8.3 Our Responsibilities

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.

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.

8.4 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.

8.5 Enforcement

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

8.6 Attribution

This Code of Conduct is adapted from the Contributor Covenant, version 1.4, available at <https://www.contributor-covenant.org/version/1/4/code-of-conduct.html>

8.7 Interpretation

The interpretation of this document is at the discretion of the project team.

INDICES AND TABLES

- `genindex`
- `modindex`
- `search`