

**NAME**

**tests** - introduction to the FreeBSD Test Suite

**DESCRIPTION**

The FreeBSD Test Suite provides a collection of automated tests for two major purposes. On one hand, the test suite aids *developers* to detect bugs and regressions when they modify the source tree. On the other hand, it allows *end users* (and, in particular, system administrators) to verify that fresh installations of the FreeBSD operating system behave correctly on their hardware platform and also to ensure that the system does not suffer from regressions during regular operation and maintenance.

The FreeBSD Test Suite can be found in the `/usr/tests` hierarchy.

This manual page describes how to run the test suite and how to configure some of its optional features. For information on writing the tests, see `atf(7)`.

**Installing the test suite**

If the `/usr/tests` directory is missing, then you will have to enable the build of the test suite, rebuild your system and install the results. You can do so by setting `WITH_TESTS=yes` in your `/etc/src.conf` file (see `src.conf(5)` for details) and rebuilding the system as described in `build(7)`.

**When to run the tests?**

Before diving into the details of how to run the test suite, here are some scenarios in which you should run it:

- After a fresh installation of FreeBSD to ensure that the system works correctly on your hardware platform.
- After an upgrade of FreeBSD to a different version to ensure that the new code works well on your hardware platform and that the upgrade did not introduce regressions in your configuration.
- After modifying the source tree to detect any new bugs and/or regressions.
- Periodically, maybe from a `cron(8)` job, to ensure that any changes to the system (such as the installation of third-party packages or manual modifications to configuration files) do not introduce unexpected failures.

**Running the tests**

Use the following command to run the whole test suite:

```
$ kyua test -k /usr/tests/Kyuafile
```

The above will iterate through all test programs in `/usr/tests` recursively, execute them, store their results and debugging data in Kyua's database (by default in `~/.kyua/store.db`), and print a summary of the results. This summary includes a brief count of all total tests run and how many of them failed.

It is possible to restrict which tests to run by providing their names in the command line. For example, this would execute the tests for the `cp(1)` and `cut(1)` utilities:

```
$ kyua test -k /usr/tests/Kyuafile bin/cp usr.bin/cut
```

### Obtaining reports of the tests execution

Additional information about the test results can be retrieved by using Kyua's various reporting commands. For example, the following would print a plain-text report of the executed tests and show which ones failed:

```
$ kyua report --verbose -r <.db file from output of test>
```

This example would generate an HTML report ready to be published on a web server:

```
$ kyua report-html --output ~/public_html/tests
```

For further details on the command-line interface of Kyua, please refer to its manual page `kyua(1)`.

### Configuring the tests

Some test cases in the FreeBSD Test Suite require manual configuration by the administrator before they can be run. Unless certain properties are defined, the tests that require them will be skipped.

Test suites are configured by defining their configuration variables in `/etc/kyua/kyua.conf`. The format of this file is detailed in `kyua.conf(5)`.

The following configuration variables are available in the FreeBSD Test Suite:

`allow_devfs_side_effects` If defined, enables tests that may destroy and recreate semipermanent device nodes, like disk devices. Without this variable, tests may still create and destroy devices nodes that are normally transient, like `/dev/tap*` and `/dev/pts*`, as long as they clean them up afterwards. However, tests that require this variable have a relaxed cleanup requirement; they must recreate any devices that they destroyed, but not necessarily with the same devnames.

- `allow_sysctl_side_effects` Enables tests that change globally significant `sysctl(8)` variables. The tests will undo any changes in their cleanup phases.
- `disks` Must be set to a space delimited list of disk device nodes. Tests that need destructive access to disks must use these devices. Tests are not required to preserve any data present on these disks.
- `fibs` Must be set to a space delimited list of FIBs (routing tables). Tests that need to modify a routing table may use any of these. Tests will cleanup any new routes that they create.

### What to do if something fails?

If there is *any failure* during the execution of the test suite, please consider reporting it to the FreeBSD developers so that the failure can be analyzed and fixed. To do so, either send a message to the appropriate mailing list or file a problem report. For more details please refer to:

- *FreeBSD Mailing Lists*: <https://lists.freebsd.org/>
- *Problem Reporting*: <https://www.freebsd.org/support/>

### FILES

- `/etc/kyua/kyua.conf` System-wide configuration file for `kyua(1)`.
- `~/.kyua/kyua.conf` User-specific configuration file for `kyua(1)`; overrides the system file.
- `~/.kyua/store.db` Default result database used by `Kyua`.
- `/usr/tests/` Location of the FreeBSD Test Suite.
- `/usr/tests/Kyuafile` Top-level test suite definition file.

### SEE ALSO

`kyua(1)`, `atf(7)`, `build(7)`, `development(7)`

### HISTORY

The FreeBSD Test Suite first appeared in FreeBSD 10.1 and was installed by default in FreeBSD 11.0.

The **tests** manual page first appeared in NetBSD 6.0 and was later ported to FreeBSD 10.1.

The test driver, `kyua(1)`, was imported as part of the base system in FreeBSD 13.0, previously being available only in `ports(7)`.

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