Testing Applications using Linux Containers

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Benefits

Using containers (Docker containers in particular) to create testing environments and running tests inside them have many benefits, for instance:

- quick **setup of testing environment**,
- tests **reproducible across different machines**, as all the configuration and dependencies are bundled in a single or few container(s),
- **no influence on the host system** or other containers running on the host system,
- ability to **run tests in parallel**.

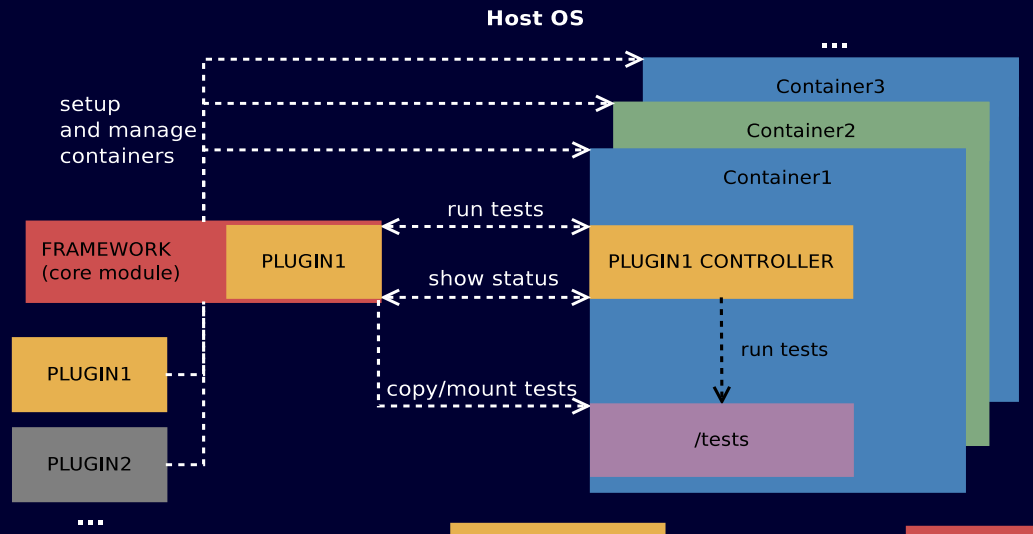
Testing Applications Running in Docker Containers

The work addresses following testing tasks (including possible issues) when running tests in containers:

- creating a testing environment
- and deploying tests into a container or into an image,
- running tests inside a container,
- monitoring and managing process of testing,
- and gathering results of testing and analyzing potential problems.

Testing methods and framework

- Introduced three methods of testing applications in Docker containers.
- One method is used in the framework implementation.
- The **framework** consists of the **core module** which provides basic functionality and it is designed to be **extensible** with an additional custom code in form of a **plugin**.
- Plugins are used for implementation of custom testing methods and their different variants.



- The **framework automates** the repetitive work needed to be done when **setting up testing environments**, **copying tests** and **gathering results** of testing from Docker containers.
- It can be incorporated into larger testing suites targeting software containers validation and testing.