tox

`tox` is an automation project we use to run our testing scenarios. It gives us the ability to create a dynamic matrix of many testing scenarios, isolated testing environments and a provides a single entry point to run all tests in an automated and repeatable fashion.

Documentation for tox can be found here.

Environment variables

When running `tox` we've allowed for the usage of environment variables to tweak certain settings of the playbook run using Ansible's `--extra-vars`. It's helpful in Jenkins jobs or for manual test runs of ceph-ansible.

The following environent variables are available for use:

- `FETCH_DIRECTORY` : (default: `changedir`) This would configure the ceph-ansible variable `fetch_directory`. This defaults to the `changedir` of the given scenario and should not need to be changed.
- `CEPH_STABLE_RELEASE`: (default: `jewel`) This would configure the ceph-ansible variable `ceph_stable_relese`. This is set automatically when using the `jewel-*` or `kraken-*` testing scenarios.
- `UPDATE_CEPH_STABLE_RELEASE`: (default: `kraken`) This would configure the ceph-ansible variable `ceph_stable_relese` during an `update` scenario. This is set automatically when using the `jewel-*` or `kraken-*` testing scenarios.
- `CEPH_DOCKER_REGISTRY`: (default: `docker.io`) This would configure the ceph-ansible variable `ceph_docker_registry`.
- `CEPH_DOCKER_IMAGE`: (default: `ceph/daemon`) This would configure the ceph-ansible variable `ceph_docker_image`.
- `CEPH_DOCKER_IMAGE_TAG`: (default: `latest`) This would configure the ceph-ansible variable `ceph_docker_image_name`.
- `CEPH_DEV_BRANCH`: (default: `master`) This would configure the ceph-ansible variable `ceph_dev_branch` which defines which branch we'd like to install from shaman.ceph.com.
- `CEPH_DEV_SHA1`: (default: `latest`) This would configure the ceph-ansible variable `ceph_dev_sha1` which defines which sha1 we'd like to install from shaman.ceph.com.
- `UPDATE_CEPH_DEV_BRANCH`: (default: `master`) This would configure the ceph-ansible variable `ceph_dev_branch` which defines which branch we'd like to update to from shaman.ceph.com.
- `UPDATE_CEPH_DEV_SHA1`: (default: `latest`) This would configure the ceph-ansible variable `ceph_dev_sha1` which defines which sha1 we'd like to update to from shaman.ceph.com.

Sections

The `tox.ini` file has a number of top level sections defined by `[ ]` and subsections within those. For complete documentation on all subsections inside of a tox section please refer to the tox documentation.

- `tox` : This section contains the `envlist` which is used to create our dynamic matrix. Refer to the section here for more information on how the `envlist` works.
- `purge` : This section contains commands that only run for scenarios that purge the cluster and redeploy. You'll see this section being reused in `testenv` with the following syntax: `{[purge]commands}`
- `update` : This section contains commands taht only run for scenarios that deploy a cluster and then upgrade it to another ceph version.
- `testenv` : This is the main section of the `tox.ini` file and is run on every scenario. This section contains many *factors* that define conditional settings depending on the scenarios defined in the `envlist`. For example, the factor `centos7_cluster` in the

`changedir` subsection of `testenv` sets the directory that tox will change do when that factor is selected. This is an important behavior that allows us to use the same `tox.ini` and reuse commands while tweaking certain sections per testing scenario.

Modifying or Adding environments

The tox environments are controlled by the `envlist` subsection of the `[tox]` section. Anything inside of `{}` is considered a *factor* and will be included in the dynamic matrix that tox creates. Inside of `{}` you can include a comma separated list of the *factors*. Do not use a hyphen (`-`) as part of the *factor* name as those are used by tox as the separator between different factor sets.

For example, if wanted to add a new test *factor* for the next ceph release of luminious this is how you'd accomplish that. Currently, the first factor set in our `envlist` is used to define the ceph release (`{jewel,kraken,rhcs}-...`). To add luminous you'd change that to look like `{luminous,kraken,rhcs}-....`. In the `testenv` section this is a subsection called `setenv` which allows you to provide environment variables to the tox environment and we support an environment variable called `CEPH_STABLE_RELEASE`. To ensure that all the new tests that are created by adding the luminous *factor* you'd do this in that section: `luminous:` `CEPH_STABLE_RELEASE=luminous`.