Mercurial Workflows: Stable & Default

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This entry is the second in my series describing various Mercurial workflows. The first describes the simplest one: branching only when necessary.

first: http://stevelosh.com/blog/2010/02/mercurial-workflows-branch-as-needed/

If you're working on a larger project you might want something with a bit more structure. This post is about the "stable and default" workflow.

"Stable and Default" in a Nutshell

The general idea of this workflow is that you keep two branches: `default` and `stable`.

- `default` is the branch where new features and functionality are added.
- `stable` is where bug fixes are added, as well as documentation improvements that don't pertain to new features.

Each time you make a bug fix in `stable` you merge it into `default`, so `default` is always a superset of `stable`.

Periodically (whenever you're ready for a "major release") you'll merge `default` into `stable` so new features can be included in releases.

Mercurial itself uses this workflow for development, so it can scale well to projects of moderate to large size.

Mercurial: http://hg-scm.org/
uses: http://selenic.com/repo/hg/branches/

Branch Setup

To get started using this workflow you'll need to create a `stable` named branch:

```
hg branch stable
hg commit -m "Create the stable branch."
```

Once you do this users of your project can clone the `stable` branch and be confident that they're getting a relatively stable version of your code. To clone a branch like this they would do something like:

```
hg clone http://bitbucket.org/you/yourproject#stable
```

This will clone your project's repository and include only changesets on the `stable` branch (and any of their ancestors).

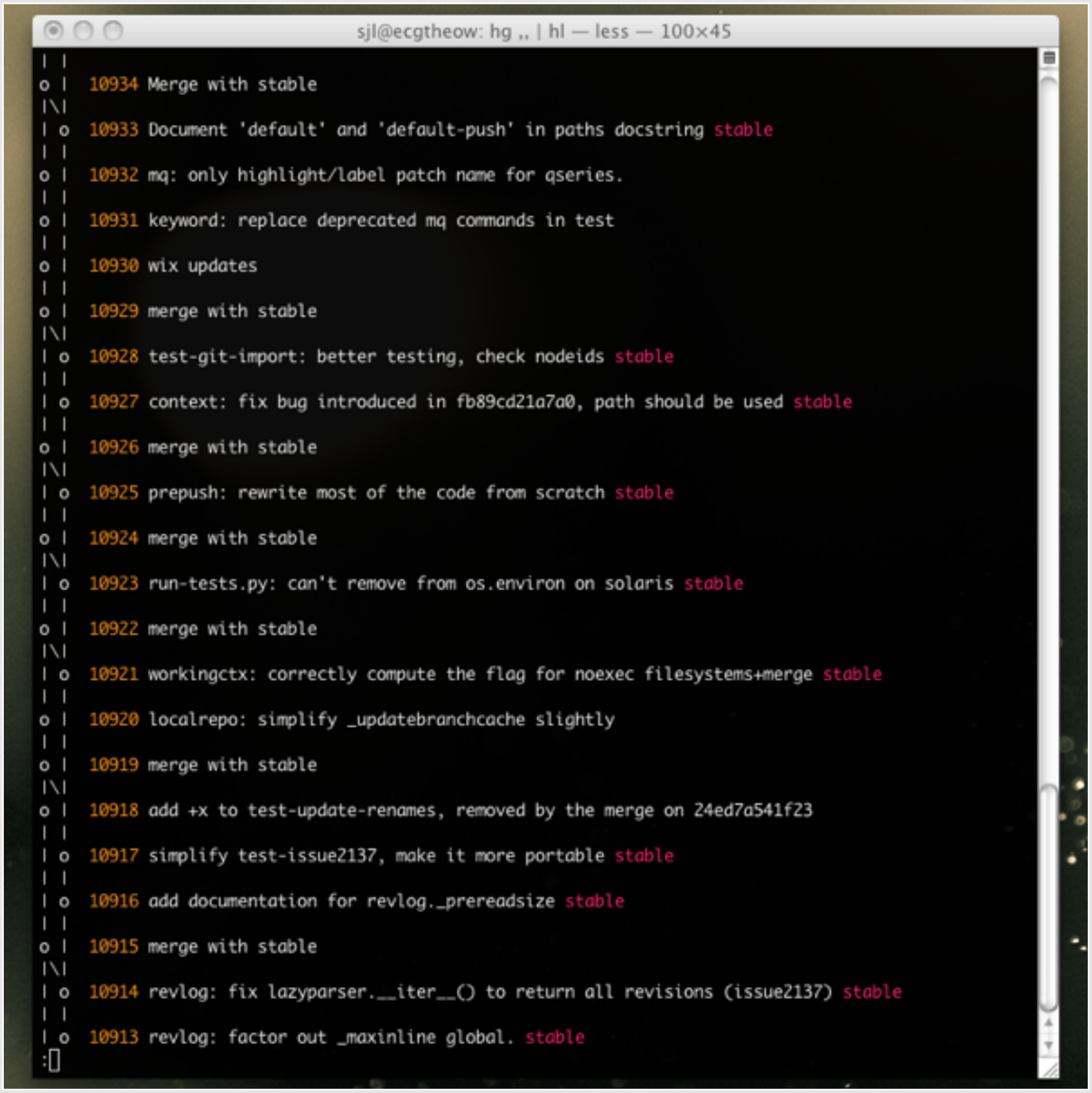
Making Changes

The goal of this workflow is to do all non-bugfix development on the `default` branch. Pure bug fixes should go on the `stable` branch so `stable` stays as, well, "stable" as possible.

Users that want to live on the bleeding edge of development can use the `default` branch of your project. Hopefully your project has some users that are willing to work with `default` and inform you of bugs found with the new functionality you add to it.

Whenever you make a change to `stable` you'll want to merge it into `default` so that `default` always remains a superset of `stable`. This makes `default` as stable as it can possibly be. It also makes it easier to merge `default` back into stable whenever you're ready for a major release.

Here's an example of how your repository's graph will end up looking:



```
| |
o |  10934 Merge with stable
|\|
| o  10933 Document 'default' and 'default-push' in paths docstring stable
| |
o |  10932 mq: only highlight/label patch name for qseries.
| |
o |  10931 keyword: replace deprecated mq commands in test
| |
o |  10930 wix updates
| |
o |  10929 merge with stable
|\|
| o  10928 test-git-import: better testing, check nodeids stable
| |
| o  10927 context: fix bug introduced in fb89cd21a7a0, path should be used stable
| |
o |  10926 merge with stable
|\|
| o  10925 prepush: rewrite most of the code from scratch stable
| |
o |  10924 merge with stable
|\|
| o  10923 run-tests.py: can't remove from os.environ on solaris stable
| |
o |  10922 merge with stable
|\|
| o  10921 workingctx: correctly compute the flag for noexec filesystems+merge stable
| |
o |  10920 localrepo: simplify _updatebranchcache slightly
| |
o |  10919 merge with stable
|\|
o |  10918 add +x to test-update-renames, removed by the merge on 24ed7a541f23
| |
| o  10917 simplify test-issue2137, make it more portable stable
| |
| o  10916 add documentation for revlog._prereadsize stable
| |
o |  10915 merge with stable
|\|
| o  10914 revlog: fix lazyparser.__iter__() to return all revisions (issue2137) stable
| |
| o  10913 revlog: factor out _maxinline global. stable
:
```

Notice how each time some changes are made on `stable` they're merged to `default`.

Releasing Major Versions

There will come a time when you're ready to release non-bugfix improvements to your project to the general public. Non-bugfix improvements are made in the `default` branch, so when you're ready to do this you'll merge `default` into `stable`.

Because your project has more `stable` users than bleeding-edge users, you'll probably get more bug reports than usual after you release a major version. This is to be expected and you should be ready for it.

Tagging Releases

Any decent project should tag releases. This lets users easily use a version of your project that they know works.

Wondering how to decide when to tag releases, and what to use for the tags? The semantic versioning specification is a great guide that makes it easy for your users to know (in a broad sense) what each release changes.

semantic versioning: http://semver.org/

In a nutshell, tags in a semantically versioned project work like this:

- Tags are of the form "v[MAJOR].[MINOR].[BUGFIX]"
- Tags with a major version of "0" make no guarantees about anything. They are used for alpha/beta versions of the project.
- An increase in the bugfix version of a project means "bugs were fixed."
- An increase in the minor version of a project means "functionality has been added without breaking backwards compatibility."
- An increase in the major version of a project means "backwards compatibility has been broken."

Unfortunately this workflow makes it a bit more complicated to add semantic versioning tags to your project. The rules for semantic tagging would work like this:

- When you fix a bug on the `stable` branch, increment the bugfix version on `stable` and merge `stable` into `default`.
- When you add new functionality and are ready to release it to the public, merge `default` into stable and increment the minor version of `stable`.
- When you're ready for a backwards-incompatible release, merge `default` into stable and increment the major version of `stable`.

The problem with this is that `default` never has any version tags. However, this probably isn't a big deal because users of `default` are those that want to live on the bleeding edge of your project and aren't as concerned with stability.

Why Default and Stable Instead of Default and Dev?

In the workflow I've described there are two branches: `default` and `stable`. You might be wondering why `default` is used for new development and the "stable" branch is relegated to a named branch.

The reason is that `default` will typically have many, many more changesets added to it than `stable`, and so making the "development" branch the default makes it easier on the developers.

There is absolutely *nothing* wrong with making `default` the "stable" branch and creating a `dev` branch for "unstable" changes. If your project rarely adds new functionality but is more concerned with fixing bugs this version of the workflow will obviously be better for you.

This version also has the added advantage of giving users that naively clone your project (without a branch specified) the stable version. Since many users don't bother to read instructions even when you provide them, there is a strong argument for using it even when your project is *not* overly concerned with bug fixes.

It's up to you to decide which version you want to use.