2.18.0

Git 2.18 Release Notes ==========

Updates since v2.17 ----------

UI, Workflows & Features

- Rename detection logic that is used in "merge" and "cherry-pick" has learned to guess when all of x/a, x/b and x/c have moved to z/a, z/b and z/c, it is likely that x/d added in the meantime would also want to move to z/d by taking the hint that the entire directory ’x’ moved to ’z’. A bug causing dirty files involved in a rename to be overwritten during merge has also been fixed as part of this work. Incidentally, this also avoids updating a file in the working tree after a (non-trivial) merge whose result matches what our side originally had.

- "git filter-branch" learned to use a different exit code to allow the callers to tell the case where there was no new commits to rewrite from other error cases.

- When built with more recent cURL, GIT_SSL_VERSION can now specify "tlsv1.3" as its value.

- "git gui" learned that "~~/.ssh/id_ecdsa.pub" and "~~/.ssh/id_ed25519.pub" are also possible SSH key files. (merge 2e2f0288ef bb/git-gui-ssh-key-files later to maint).

- "git gui" performs commit upon CTRL/CMD+ENTER but the CTRL/CMD+KP_ENTER (i.e. enter key on the numpad) did not have the same key binding. It now does. (merge 28a1d94a06 bp/git-gui-bind-kp-enter later to maint).

- "git gui" has been taught to work with old versions of tk (like 8.5.7) that do not support "ttk::style theme use" as a way to query the current theme. (merge 4891961105 cb/git-gui-ttk-style later to maint).

- "git rebase" has learned to honor "--signoff" option when using backends other than "am" (but not "--preserve-merges").

- "git branch --list" during an interrupted "rebase -i" now lets users distinguish the case where a detached HEAD is being rebased and a normal branch is being rebased.

- "git mergetools" learned talking to guiffy.

- The scripts in contrib/emacs/ have outlived their usefulness and have been replaced with a stub that errors out and tells the user there are replacements.

- The new "working-tree-encoding" attribute can ask Git to convert the contents to the specified encoding when checking out to the working tree (and the other way around when checking in).

- The "git config" command uses separate options e.g. "--int", "--bool", etc. to specify what type the caller wants the value to be interpreted as. A new "--type=<typename>" option has been introduced, which would make it cleaner to define new types.

- "git config --get" learned the "--default" option, to help the calling script. Building on top of the above changes, the "git config" learns "--type=color" type. Taken together, you can do things like "git config --get foo.color --default blue" and get the ANSI color sequence for the color given to foo.color variable, or "blue" if the variable does not exist.

- "git ls-remote" learned an option to allow sorting its output based on the refnames being shown.

- The command line completion (in contrib/) has been taught that "git stash save" has been deprecated ("git stash push" is the preferred spelling in the new world) and does not offer it as a possible completion candidate when "git stash push" can be.

- "git gc --prune=nonsense" spent long time repacking and then silently failed when underlying "git prune --expire=nonsense" failed to parse its command line. This has been corrected.

- Error messages from "git push" can be painted for more visibility.

- "git http-fetch" (deprecated) had an optional and experimental "feature" to fetch only commits and/or trees, which nobody used. This has been removed.

- The functionality of "$GIT_DIR/info/grafts" has been superseded by the "refs/replace/" mechanism for some time now, but the internal code had support for it in many places, which has been cleaned up in order to drop support of the "grafts" mechanism.

- "git worktree add" learned to check out an existing branch.

- "git --no-pager cmd" did not have short-and-sweet single letter option. Now it does as "-P". (merge 7213c28818 js/no-pager-shorthand later to maint).

- "git rebase" learned "--rebase-merges" to transplant the whole topology of commit graph elsewhere.

- "git status" learned to pay attention to UI related diff configuration variables such as diff.renames.

- The command line completion mechanism (in contrib/) learned to load custom completion file for "git $command" where $command is a custom "git-$command" that the end user has on the $PATH when using newer version of bash-completion.

- "git send-email" can sometimes offer confirmation dialog "Send this email?" with choices ’Yes’, ’No’, ’Quit’, and ’All’. A new action ’Edit’ has been added to this dialog’s choice.

- With merge.renames configuration set to false, the recursive merge strategy can be told not to spend cycles trying to find renamed paths and merge them accordingly.

- "git status" learned to honor a new status.renames configuration to skip rename detection, which could be useful for those who want to do so without disabling the default rename detection done by the "git diff" command.

- Command line completion (in contrib/) learned to complete pathnames for various commands better.

- "git blame" learns to unhighlight uninteresting metadata from the originating commit on lines that are the same as the previous one, and also paint lines in different colors depending on the age of the commit.

- Transfer protocol v2 learned to support the partial clone.

- When a short hexadecimal string is used to name an object but there are multiple objects that share the string as the prefix of their names, the code lists these ambiguous candidates in a help message. These object names are now sorted according to their types for easier eyeballing.

- "git fetch $there $refspec" that talks over protocol v2 can take advantage of server-side ref filtering; the code has been extended so that this mechanism triggers also when fetching with configured refspec.

- Our HTTP client code used to advertise that we accept gzip encoding from the other side; instead, just let cURL library to advertise and negotiate the best one.

- "git p4" learned to "unshelve" shelved commit from P4. (merge 123f631761 ld/p4-unshelve later to maint).

Performance, Internal Implementation, Development Support etc.

- A "git fetch" from a repository with insane number of refs into a repository that is already up-to-date still wasted too many cycles making many lstat(2) calls to see if these objects at the tips exist as loose objects locally. These lstat(2) calls are optimized away by enumerating all loose objects beforehand. It is unknown if the new strategy negatively affects existing use cases, fetching into a repository with many loose objects from a repository with small number of refs.

- Git can be built to use either v1 or v2 of the PCRE library, and so far, the build-time configuration USE_LIBPCRE=YesPlease instructed the build procedure to use v1, but now it means v2. USE_LIBPCRE1 and USE_LIBPCRE2 can be used to explicitly choose which version to use, as before.

- The build procedure learned to optionally use symbolic links (instead of hardlinks and copies) to install "git-foo" for built-in commands, whose binaries are all identical.

- Conversion from uchar[20] to struct object_id continues.

- The way "git worktree prune" worked internally has been simplified, by assuming how "git worktree move" moves an existing worktree to a different place.

- Code clean-up for the "repository" abstraction. (merge 00a3da2a13 nd/remove-ignore-env-field later to maint).

- Code to find the length to uniquely abbreviate object names based on packfile content, which is a relatively recent addition, has been optimized to use the same fan-out table.

- The mechanism to use parse-options API to automate the command line completion continues to get extended and polished.

- Copies of old scripted Porcelain commands in contrib/examples/ have been removed.

- Some tests that rely on the exact hardcoded values of object names have been updated in preparation for hash function migration.

- Perf-test update.

- Test helper update.

- The effort continues to refactor the internal global data structure to make it possible to open multiple repositories, work with and then close them,

- Small test-helper programs have been consolidated into a single binary.

- API clean-up around ref-filter code.

- Shell completion (in contrib) that gives list of paths have been optimized somewhat.

- The index file is updated to record the fsmonitor section after a full scan was made, to avoid wasting the effort that has already spent.

- Performance measuring framework in t/perf learned to help bisecting performance regressions.

- Some multi-word source filenames are being renamed to separate words with dashes instead of underscores.

- An reusable "memory pool" implementation has been extracted from fast-import.c, which in turn has become the first user of the mem-pool API.

- A build-time option has been added to allow Git to be told to refer to its associated files relative to the main binary, in the same way that has been possible on Windows for quite some time, for Linux, BSDs and Darwin.

- Precompute and store information necessary for ancestry traversal in a separate file to optimize graph walking.

- The effort to pass the repository in-core structure throughout the API continues. This round deals with the code that implements the refs/replace/ mechanism.

- The build procedure "make DEVELOPER=YesPlease" learned to enable a bit more warning options depending on the compiler used to help developers more. There also is "make DEVOPTS=tokens" knob available now, for those who want to help fixing warnings we usually ignore, for example.

- A new version of the transport protocol is being worked on.

- The code to interface to GPG has been restructured somewhat to make it cleaner to integrate with other types of signature systems later.

- The code has been taught to use the duplicated information stored in the commit-graph file to learn the tree object name for a commit to avoid opening and parsing the commit object when it makes sense to do so.

- "git gc" in a large repository takes a lot of time as it considers to repack all objects into one pack by default. The command has been taught to pretend as if the largest existing packfile is marked with ".keep" so that it is left untouched while objects in other packs and loose ones are repacked.

- The transport protocol v2 is getting updated further.

- The codepath around object-info API has been taught to take the repository object (which in turn tells the API which object store the objects are to be located).

- "git pack-objects" needs to allocate tons of "struct object_entry" while doing its work, and shrinking its size helps the performance quite a bit.

- The implementation of "git rebase -i --root" has been updated to use the sequencer machinery more.

- Developer support update, by using BUG() macro instead of die() to mark codepaths that should not happen more clearly.

- Developer support. Use newer GCC on one of the builds done at TravisCI.org to get more warnings and errors diagnosed.

- Conversion from uchar[20] to struct object_id continues.

- By code restructuring of submodule merge in merge-recursive, informational messages from the codepath are now given using the same mechanism as other output, and honor the merge.verbosity configuration. The code also learned to give a few new messages when a submodule three-way merge resolves cleanly when one side records a descendant of the commit chosen by the other side.

- Avoid unchecked snprintf() to make future code auditing easier. (merge ac4896f007 jk/snprintf-truncation later to maint).

- Many tests hardcode the raw object names, which would change once we migrate away from SHA-1. While some of them must test against exact object names, most of them do not have to use hardcoded constants in the test. The latter kind of tests have been updated to test the moral equivalent of the original without hardcoding the actual object names.

- The list of commands with their various attributes were spread across a few places in the build procedure, but it now is getting a bit more consolidated to allow more automation.

- Quite a many tests assumed that newly created refs are made as loose refs using the files backend, which have been updated to use proper plumbing like rev-parse and update-ref, to avoid breakage once we start using different ref backends.

Also contains various documentation updates and code clean-ups.

Fixes since v2.17 ----------

- "git shortlog cruft" aborted with a BUG message when run outside a Git repository. The command has been taught to complain about extra and unwanted arguments on its command line instead in such a case. (merge 4aa0161e83 ma/shortlog-revparse later to maint).

- "git stash push -u — <pathspec>" gave an unnecessary and confusing error message when there was no tracked files that match the <pathspec>, which has been fixed. (merge 353278687e tg/stash-untracked-with-pathspec-fix later to maint).

- "git tag --contains no-such-commit" gave a full list of options after giving an error message. (merge 3bb0923f06 ps/contains-id-error-message later to maint).

- "diff-highlight" filter (in contrib/) learned to understand "git log --graph" output better. (merge 4551fbba14 jk/diff-highlight-graph-fix later to maint).

- when refs that do not point at committish are given, "git filter-branch" gave a misleading error messages. This has been corrected. (merge f78ab355e7 yk/filter-branch-non-committish-refs later to maint).

- "git submodule status" misbehaved on a submodule that has been removed from the working tree. (merge 74b6bda32f rs/status-with-removed-submodule later to maint).

- When credential helper exits very quickly without reading its input, it used to cause Git to die with SIGPIPE, which has been fixed. (merge a0d51e8d0e eb/cred-helper-ignore-sigpipe later to maint).

- "git rebase --keep-empty" still removed an empty commit if the other side contained an empty commit (due to the "does an equivalent patch exist already?" check), which has been corrected. (merge 3d946165e1 pw/rebase-keep-empty-fixes later to maint).

- Some codepaths, including the refs API, get and keep relative paths, that go out of sync when the process does chdir(2). The chdir-notify API is introduced to let these codepaths adjust these cached paths to the new current directory. (merge fb9c2d2703 jk/relative-directory-fix later to maint).

- "cd sub/dir && git commit ../path" ought to record the changes to the file "sub/path", but this regressed long time ago. (merge 86238e07ef bw/commit-partial-from-subdirectory-fix later to maint).

- Recent introduction of "--log-destination" option to "git daemon" did not work well when the daemon was run under "--inetd" mode. (merge e67d906d73 lw/daemon-log-destination later to maint).

- Small fix to the autoconf build procedure. (merge 249482daf0 es/fread-reads-dir-autoconf-fix later to maint).

- Fix an unexploitable (because the oversized contents are not under attacker’s control) buffer overflow. (merge d8579accfa bp/fsmonitor-bufsize-fix later to maint).

- Recent simplification of build procedure forgot a bit of tweak to the build procedure of contrib/mw-to-git/ (merge d8698987f3 ab/simplify-perl-makefile later to maint).

- Moving a submodule that itself has submodule in it with "git mv" forgot to make necessary adjustment to the nested sub-submodules; now the codepath learned to recurse into the submodules.

- "git config --unset a.b", when "a.b" is the last variable in an otherwise empty section "a", left an empty section "a" behind, and worse yet, a subsequent "git config a.c value" did not reuse that empty shell and instead created a new one. These have been (partially) corrected. (merge c71d8bb38a js/empty-config-section-fix later to maint).

- "git worktree remove" learned that "-f" is a shorthand for "--force" option, just like for "git worktree add". (merge d228eea514 sb/worktree-remove-opt-force later to maint).

- The completion script (in contrib/) learned to clear cached list of command line options upon dot-sourcing it again in a more efficient way. (merge 94408dc71c sg/completion-clear-cached later to maint).

- "git svn" had a minor thinko/typo which has been fixed. (merge 51db271587 ab/git-svn-get-record-typofix later to maint).

- During a "rebase -i" session, the code could give older timestamp to commits created by later "pick" than an earlier "reword", which has been corrected. (merge 12f7babd6b js/ident-date-fix later to maint).

- "git submodule status" did not check the symbolic revision name it computed for the submodule HEAD is not the NULL, and threw it at printf routines, which has been corrected. (merge 0b5e2ea7cf nd/submodule-status-fix later to maint).

- When fed input that already has In-Reply-To: and/or References: headers and told to add the same information, "git send-email" added these headers separately, instead of appending to an existing one, which is a violation of the RFC. This has been corrected. (merge 256be1d3f0 sa/send-email-dedup-some-headers later to maint).

- "git fast-export" had a regression in v2.15.0 era where it skipped some merge commits in certain cases, which has been corrected. (merge be011bbe00 ma/fast-export-skip-merge-fix later to maint).

- The code did not propagate the terminal width to subprocesses via COLUMNS environment variable, which it now does. This caused trouble to "git column" helper subprocess when "git tag --column=row" tried to list the existing tags on a display with non-default width. (merge b5d5a567fb nd/term-columns later to maint).

- We learned that our source files with ".pl" and ".py" extensions are Perl and Python files respectively and changes to them are better viewed as such with appropriate diff drivers. (merge 7818b619e2 ab/perl-python-attrs later to maint).

- "git rebase -i" sometimes left intermediate "# This is a combination of N commits" message meant for the human consumption inside an editor in the final result in certain corner cases, which has been fixed. (merge 15ef69314d js/rebase-i-clean-msg-after-fixup-continue later to maint).

- A test to see if the filesystem normalizes UTF-8 filename has been updated to check what we need to know in a more direct way, i.e. a path created in NFC form can be accessed with NFD form (or vice versa) to cope with APFS as well as HFS. (merge 742ae10e35 tb/test-apfs-utf8-normalization later to maint).

- "git format-patch --cover --attach" created a broken MIME multipart message for the cover letter, which has been fixed by keeping the cover letter as plain text file. (merge 50cd54ef4e bc/format-patch-cover-no-attach later to maint).

- The split-index feature had a long-standing and dormant bug in certain use of the in-core merge machinery, which has been fixed. (merge 7db118303a en/unpack-trees-split-index-fix later to maint).

- Asciidoctor gives a reasonable imitation for AsciiDoc, but does not render illustration in a literal block correctly when indented with HT by default. The problem is fixed by forcing 8-space tabs. (merge 379805051d bc/asciidoctor-tab-width later to maint).

- Code clean-up to adjust to a more recent lockfile API convention that allows lockfile instances kept on the stack. (merge 0fa5a2ed8d ma/lockfile-cleanup later to maint).

- the_repository→index is not a allocated piece of memory but repo_clear() indiscriminately attempted to free(3) it, which has been corrected. (merge 74373b5f10 nd/repo-clear-keep-the-index later to maint).

- Code clean-up to avoid non-standard-conformant pointer arithmetic. (merge c112084af9 rs/no-null-ptr-arith-in-fast-export later to maint).

- Code clean-up to turn history traversal more robust in a semi-corrupt repository. (merge 8702b30fd7 jk/unavailable-can-be-missing later to maint).

- "git update-ref A B" is supposed to ensure that ref A does not yet exist when B is a NULL OID, but this check was not done correctly for pseudo-refs outside refs/ hierarchy, e.g. MERGE_HEAD.

- "git submodule update" and "git submodule add" supported the "--reference" option to borrow objects from a neighbouring local repository like "git clone" does, but lacked the more recent invention "--dissociate". Also "git submodule add" has been taught to take the "--progress" option. (merge a0ef29341a cf/submodule-progress-dissociate later to maint).

- Update credential-netrc helper (in contrib/) to allow customizing the GPG used to decrypt the encrypted .netrc file. (merge 786ef50a23 lm/credential-netrc later to maint).

- "git submodule update" attempts two different kinds of "git fetch" against the upstream repository to grab a commit bound at the submodule’s path, but it incorrectly gave up if the first kind (i.e. a normal fetch) failed, making the second "last resort" one (i.e. fetching an exact commit object by object name) ineffective. This has been corrected. (merge e30d833671 sb/submodule-update-try-harder later to maint).

- Error behaviour of "git grep" when it cannot read the index was inconsistent with other commands that uses the index, which has been corrected to error out early. (merge b2aa84c789 sb/grep-die-on-unreadable-index later to maint).

- We used to call regfree() after regcomp() failed in some codepaths, which have been corrected. (merge 17154b1576 ma/regex-no-regfree-after-comp-fail later to maint).

- The import-tars script (in contrib/) has been taught to handle tarballs with overly long paths that use PAX extended headers. (merge 12ecea46e3 pa/import-tars-long-names later to maint).

- "git rev-parse Y..." etc. misbehaved when given endpoints were not committishes. (merge 0ed556d38f en/rev-parse-invalid-range later to maint).

- "git pull --recurse-submodules --rebase", when the submodule repository's history did not have anything common between ours and the upstream's, failed to execute. We need to fetch from them to continue even in such a case. (merge 4d36f88be7 jt/submodule-pull-recurse-rebase later to maint).

- "git remote update" can take both a single remote nickname and a nickname for remote groups, but only one of them was documented. (merge a97447a42a nd/remote-update-doc later to maint).

- "index-pack --strict" has been taught to make sure that it runs the final object integrity checks after making the freshly indexed packfile available to itself. (merge 3737746120 jk/index-pack-maint later to maint).

- Make zlib inflate codepath more robust against versions of zlib that clobber unused portion of outbuf. (merge b611396e97 jl/zlib-restore-nul-termination later to maint).

- Fix old merge glitch in Documentation during v2.13-rc0 era. (merge 28cb06020b mw/doc-merge-enumfix later to maint).

- The code to read compressed bitmap was not careful to avoid reading past the end of the file, which has been corrected. (merge 1140bf01ec jk/ewah-bounds-check later to maint).

- "make NO_ICONV=NoThanks" did not override NEEDS_LIBICONV (i.e. linkage of -lintl, -liconv, etc. that are platform-specific tweaks), which has been corrected. (merge fdb1fbbc7d es/make-no-iconv later to maint).

- Other minor doc, test and build updates and code cleanups. (merge 248f66ed8e nd/trace-with-env later to maint). (merge 14ced5562c ys/bisect-object-id-missing-conversion-fix later to maint). (merge 5988eb631a ab/doc-hash-brokenness later to maint). (merge a4d4e32a70 pk/test-avoid-pipe-hiding-exit-status later to maint). (merge 05e293c1ac jk/flockfile-stdio later to maint). (merge e9184b0789 jk/t5561-missing-curl later to maint). (merge b1801b85a3 nd/worktree-move later to maint). (merge bbd374dd20 ak/bisect-doc-typofix later to maint). (merge 4855f06fb3 mn/send-email-credential-doc later to maint). (merge 8523b1e355 en/doc-typoes later to maint). (merge 43b44ccfe7 js/t5404-path-fix later to maint). (merge decf711fc1 ps/test-chmtime-get later to maint). (merge 22d11a6e8e es/worktree-docs later to maint). (merge 92a5dbbc22 tg/use-git-contacts later to maint). (merge adc887221f tq/t1510 later to maint). (merge bed21a8ad6 sg/doc-gc-quote-mismatch-fix later to maint). (merge 73364e4f10 tz/doc-git-urls-reference later to maint). (merge cd1e606bad bc/mailmap-self later to maint). (merge f7997e3682 ao/config-api-doc later to maint). (merge ee930754d8 jk/apply-p-doc later to maint). (merge 011b648646 nd/pack-format-doc later to maint). (merge 87a6bb701a sg/t5310-jgit-bitmap-test later to maint). (merge f6b82970aa sg/t5516-fixes later to maint). (merge 4362da078e sg/t7005-spaces-in-filenames-cleanup later to maint). (merge 7d0ee47c11 js/test-unset-prereq later to maint). (merge 5356a3c354 ah/misc-doc-updates later to

maint). (merge 92c4a7a129 nd/completion-aliasfiletype-typofix later to maint). (merge 58bd77b66a nd/pack-unreachable-objects-doc later to maint). (merge 4ed79d5203 sg/t6500-no-redirect-of-stdin later to maint). (merge 17b8a2d6cd jk/config-blob-sans-repo later to maint). (merge 590551ca2c rd/tag-doc-lightweight later to maint). (merge 44f560fc16 rd/init-typo later to maint). (merge f156a0934a rd/p4-doc-markup-env later to maint). (merge 2a00502b14 tg/doc-sec-list later to maint). (merge 47cc91310a jk/submodule-fsck-loose-fixup later to maint). (merge efde7b725c rd/comment-typofix-in-sha1-file later to maint). (merge 7eedad15df rd/diff-options-typofix later to maint). (merge 58ebd936cc km/doc-workflows-typofix later to maint). (merge 30aa96cdf8 rd/doc-remote-tracking-with-hyphen later to maint). (merge cf317877e3 ks/branch-set-upstream later to maint). (merge 8de19d6be8 sg/t7406-chain-fix later to maint).

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