

# Pipeline Model Definition Plugin

## Plugin Information

View Pipeline: Declarative [on the plugin site](#) for more information.

Older versions of this plugin may not be safe to use. Please review the following warnings before using an older version:

- [Script Security sandbox bypass](#)

Declarative Jenkins Pipelines

**This plugin requires Jenkins 2.121.1 or later**

**More Information at [jenkins.io](#)**

More information is available at [jenkins.io](#).

## Changelog

### Version 1.3.5 (unreleased)

- [JENKINS-52744](#) - Show a meaningful error when an environment variable value references an undefined variable.

### Version 1.3.4.1 (January 8, 2019)

- [Fix security vulnerability](#)

### Version 1.3.4 (December 10, 2018)

- [JENKINS-49997](#) - Add new `unsuccessful post` condition
- [JENKINS-53734](#) - Allow use of `parallel` within top-level sequential stages.
- [JENKINS-54919](#) - Change processing of `agent` contents to allow references to newly defined parameter default values.
- [JENKINS-46894](#) - Add a new `when` condition for checking the build's cause.

### Version 1.3.3 (November 27, 2018)

- Add REST API for Stage Restart functionality
- [JENKINS-54047](#) - Fix handling of `!` expressions in `environment` variable resolution.
- [JENKINS-48556](#) - Prevent sporadic failure to recognize block-scoped steps, such as `timestamps`, as valid `options`.
- [JENKINS-50880](#) - Add `beforeInput` flag for `when`.
- [JENKINS-53558](#) - New `option` for setting `failFast` for all parallel stages in a Pipeline.

### Version 1.3.2 (August 31, 2018)

- [JENKINS-51027](#) - Include `post` conditions in Directive Generator correctly.
- [JENKINS-51932](#) - Include `isRestartedRun` in `when` Directive Generator.
- [JENKINS-51931](#) - Fix NPE if a `when` condition like `allOf` or `anyOf` has no children.
- [JENKINS-51872](#) - Fix `tool` dropdowns in Directive generator.
- [JENKINS-51383](#) - Properly catch/handle `Throwable` as well as `Exception` in stage execution.
- [JENKINS-51227](#) - Add `quietPeriod` Declarative option.
- [JENKINS-53316](#) - Switch to depending on `jackson2-api` plugin rather than shading everything Jackson/JSON-related ourselves.
- [JENKINS-52114](#) - Make `post failure` and `success` for a stage care about whether that stage has an error, rather than the full build's status. This allows a stage within a `parallel` that does not have any errors but completes after another `parallel` stage that does have an error (resulting in the build's status now being `FAILURE`) to fire its `post success` condition as would be expected.
  - **NOTE:** this does result in a small change in expected behavior. If you are setting `currentBuild.result` to `FAILURE` in a stage and then have a `post failure` condition for that same stage, without ever actually having a true error or step

failure in the stage, the post failure for the stage in question will not fire. post failure conditions on a stage now fire when there's an error in the execution of the stage only, and post success conditions on a stage fire whenever there is no error in the execution of the stage.

- No change in behavior for any other post condition, or for post outside of stages (including success and failure) is introduced by this.

### Version 1.3.1 (June 27, 2018)

- JENKINS-51962 - Propagate failures in nested sequential stages to top-level properly.
- JENKINS-52084 - Execute post for sequential stage parent in proper context (such as agent)

### Version 1.3 (June 14, 2018)

- JENKINS-50882 - fix Directive Generator link from multibranch folders.
- JENKINS-50964 - Fix 404 on jenkins.io Pipeline Syntax link
- JENKINS-50645 - Switch to firing failure after success and unstable, in case those post conditions modify status.
- JENKINS-50815 - Fall back to GIT\_LOCAL\_BRANCH for when branch condition if BRANCH\_NAME is not available.
- JENKINS-43016 - Convert empty string label for agent to agent any in JSON.
- JENKINS-46809 - Add support for nesting sequential groups of stages inside a stage.
- JENKINS-45455 - Allow restarting a completed build from any stage which ran in that build, with all inputs (SCM, parameters, etc) preserved, and if the new preserveStashes option has been specified, any stashes from the original build available to the new build.
- JENKINS-44993 - Don't swallow errors in post.

### Version 1.2.9 (Apr 17, 2018)

- JENKINS-50652 - Don't fire failure for aborted/timed-out sh and bat steps.
- JENKINS-41239 - Add new cleanup post condition to always run, after every other post condition has run.
- JENKINS-50833 - Revert DeclarativeAgentDescriptor.all() signature to unbreak Pipeline Editor.
- JENKINS-50682 - Fix when conditions tag and changeRequest in Directive Generator.

### Version 1.2.8 (Apr 5, 2018)

- JENKINS-49677 - Better uniqueness on Dockerfile tag name.
- JENKINS-49226 - Add new equals condition for when.
- JENKINS-49976 - Prevent serialization warnings related to ModelASTValue inner classes.
- JENKINS-41060 - Add new fixed and regression post conditions.
- JENKINS-49558 - Add new newContainerPerStage option, which will spin up a fresh container of a docker or dockerfile top-level agent for each stage, rather than reusing the same container across all stages.
- JENKINS-48523 - when conditions for checking if building a git tag or a change request (such as a GitHub pull request).
- JENKINS-47106 - Properly support alwaysPull option in top-level agent docker
- JENKINS-49893 - Declarative Directive Generator added.

### Version 1.2.7 (Jan 29, 2018)

- JENKINS-48758 - Improve error messages around bare variables for environment values.
- JENKINS-48752 - Fix post change behavior to not treat consecutive runs with any status but SUCCESS as changed.
- JENKINS-49070 - Prevent use of BigDecimal to avoid serialization issues.

### Version 1.2.6 (Jan 12, 2018)

- JENKINS-48209 - Prevent serialization problems with when expression
- JENKINS-48229 - Use the agent's directory separator for Dockerfile path.
- JENKINS-48266 - Fix execution of post for parallel stages parent.
- JENKINS-44461 - Add beforeAgent option for when - if true, when conditions will be evaluated before entering the agent.
- JENKINS-48304 - Invalidate option type caches after "extensions augmented" to prevent a race condition where not all plugins have loaded yet when the caches get initially populated.
- JENKINS-48380 - add options for stage - supports block-scoped "wrappers" like timeout and Declarative options like skipDefaultCheckout.
- JENKINS-48379 - Add input directive for stage - runs the input step with the supplied configuration before entering the when or agent for a stage, and makes any parameters provided as part of the input step available as environment variables.
- JENKINS-44277 - Add checkoutToSubdirectory(...) Declarative option for use in top-level or per stage options directive.

### Version 1.2.5 (Nov 22, 2017)

- JENKINS-46597 - Fix serialization errors due to checkout returned environment variables.
- JENKINS-47928 - Don't run post failure block for skipped parallel container stages after previous stage failures.
- JENKINS-46854 - Better validation of errors in script and expression blocks defined in the editor.
- JENKINS-48115 - Pick workflow-step-api 2.14 to make sure we don't get hosed by bad metasteps.

- [JENKINS-37663](#) - Fix junit 1.22 and later UNSTABLE result check in `post` by comparing `CpsFlowExecution.getResult()` as well as `Run.getResult()`.
- [JENKINS-46252](#) - Mark any job that's had a Declarative run with `DeclarativeJobAction`.

## Version 1.2.4 (Nov 8, 2017)

- [JENKINS-47814](#) - Stop double-validating contributed validators for `post` and method calls
- [JENKINS-47781](#) - Truly fix the scoping of triggers, job properties, and build parameters

## Version 1.2.3 (Nov 3, 2017)

- [JENKINS-46403](#) - Prevent infinite loop on run start in Job DSL-created jobs.
- [JENKINS-47421](#) - Fix issue with loading running builds from earlier versions.
- [JENKINS-46597](#) - Hopefully fix serialization issue with `TreeMap.Entry`.
- [JENKINS-47559](#) - Skip further validation of non-method `when` condition, since it's already known to be invalid and can cause NPEs in further validation for no benefit.
- [JENKINS-47600](#) - Properly special-cases `VALUE = "${env.VALUE}"` in environment the same as we handle `VALUE = "${VALUE}"`
- [JENKINS-47781](#) - Narrow scope of `Describable` resolution for triggers, options, and parameters.

## Version 1.2.2 (Oct 5, 2017)

- [JENKINS-47202](#) - Fix serialization of environment containing steps.
- [JENKINS-47197](#) - Make sure we don't require Java 8 at runtime.

## Version 1.2.1 (Sept 29, 2017)

- [JENKINS-47106](#) - Switch to `alwaysPull` option for `docker`
- [JENKINS-47109](#) - Add support for `failFast` for parallel stages
- [JENKINS-47193](#) - Don't break parsing of `Jenkinsfile` due to `class` or `enum` defined in it as well as `pipeline` block.

## Version 1.2 (Sept 21, 2017)

Declarative Pipeline runs in progress upon upgrade from versions prior to 1.2 will probably fail on resuming.

- [JENKINS-41334](#) - Parallel definition and execution of stages.
- [JENKINS-45198](#) - When on core 2.60+ with `pipeline-scm-step 2.6+` and recent versions of `git`, `subversion`, or `mercurial` plugins, include SCM-provided variables in environment automatically.
- [JENKINS-42753](#) - Rewrite of runtime parser, fixing a bunch of issues with `environment`, `when` expression, `variable` and function behavior consistency, and more.
  - Related tickets:
    - [JENKINS-44298](#) - Usage of variables and functions defined outside the `pipeline` block can work in `when` expression again.
    - [JENKINS-44482](#) - Pre-existing environment variables containing backslashes do not have their backslashes discarded.
    - [JENKINS-44603](#) - Usage of variables and functions defined outside the `pipeline` block work in environment variables again.
    - [JENKINS-45636](#) - Backslashes are correctly escaped when defined in one new environment variable and referenced in another.
    - [JENKINS-45637](#) - Environment variables containing multiple pre-existing environment variables no longer silently fail.
    - [JENKINS-45916](#) - Pre-existing environment variables, such as `PATH`, can be overridden in the environment directive.
    - [JENKINS-44034](#) - Variable references in environment variable definitions no longer require curly braces.
    - [JENKINS-46112](#) - Logs for error steps visible in Blue Ocean correctly.
    - [JENKINS-45991](#) - environment variables can be configured to have default values, i.e., `FOO = FOO ? : "default"`
- [JENKINS-46065](#) - Provide an extension point for contributing to Declarative validation.
- [JENKINS-46277](#) - Always do a fresh docker pull, even for agents in stages.
- [JENKINS-46064](#) - New `when` conditions for referencing the build's changelog.
- [JENKINS-44039](#) - Fixed round-tripping of single-quote multiline `script` blocks from the editor.
- [JENKINS-46544](#) - Give useful error message on use of bare `${...}` outside quotes.
- [JENKINS-44497](#) - Allow use of variables in `tools` values.
- [JENKINS-46547](#) - Support declaration of `pipeline` blocks in shared libraries' `src/*.groovy` files.

## Version 1.1.9 (July 25, 2017)

- JENKINS-45081 - Stop erroring out on use of object methods named `pipeline` outside of a Declarative Pipeline.
- JENKINS-45098 - Properly validate use of a tool without a version.
- JENKINS-42338 - Make sure `tools` defined at the top-level are installed on stage-level agents.

## Version 1.1.8 (July 4, 2017)

- JENKINS-45270 - Fix `retry` use in `options` directive.
- JENKINS-43071 - Only require `Jenkins.READ` permissions for CLI linter.

## Version 1.1.7 (June 21, 2017)

- JENKINS-44898 - Workaround for JENKINS-44898 for other plugins implementing `WithScript` extension points until we've moved to Jenkins core 2.66 or later.

## Version 1.1.6 (June 12, 2017)

- JENKINS-44809 - Fix problem causing duplicate `JobProperty` and related errors.

## Version 1.1.5 (June 8, 2017)

- JENKINS-44149 - Properly clean up stale/defunct `JobProperty`, `Trigger` and `ParameterDefinition` left behind upon removal from `Jenkinsfile`.
- JENKINS-43816 - Make sure we always have a non-null `execution` before parsing.
- JENKINS-43055 - Get rid of noisy warnings regarding unset heads in Jenkins log.
- JENKINS-44621 - Don't remove `JobProperty`, `Trigger` and `ParameterDefinition` defined outside of the `Jenkinsfile`.

## Version 1.1.4 (May 2, 2017)

- JENKINS-43339 - Properly handle non `FAILURE` build results from `FlowInterruptedException`.
- JENKINS-43872 - Escape dollar signs in `environment` correctly.
- JENKINS-43910 - Allow use of `FileCredentials` in `environment` variables.

## Version 1.1.3 (Apr 20, 2017)

- JENKINS-43486 - Handle non-String `environment` values properly.
- JENKINS-43404 - Escaped double quotes within `environment` values were over-resolved.
- JENKINS-42748 - Escaped backslashes in `environment` weren't properly escaped at evaluation time.

## Version 1.1.2 (Apr 5, 2017)

- JENKINS-42762 - Go back to allowing multiple conditions directly in a `when` directive.
- JENKINS-42693 - Add `additionalBuildArgs` parameter for `dockerfile`.
- JENKINS-42771 - Allow `+` binary expressions in `env` values.
- JENKINS-43195 - Relocate `com.github.fge.*` JSON schema classes to allow other uses of different versions of the library.
- JENKINS-41456 - Support validation from multiple named parameters of a `DataBoundConstructor` with a single `Map` parameter only.
- Brazilian Portuguese localization! Thanks to [kinow](#) and [boaglio](#)!
- JENKINS-43137 - Triple quoted strings work again in `environment`.
- JENKINS-43143 - Parameters are available in `environment` values again.
- JENKINS-43177 - Scrub `env.WHATEVER` in `environment` values for cross-references.
- JENKINS-43013 - Round-robin resolution of `environment` values means ordering of declaration does not need to be relevant.
- JENKINS-42858 - `credentials` `environment` variables are available for reference in `environment` values, and `environment` variable values are available for use in `credentials` strings as well.

## Version 1.1.1 (Mar 13, 2017)

- 1.1 was inadvertently built with Java 8 and has errors when run with Java 7. 1.1.1 is a rebuild of 1.1 with the correct Java 7 used.

## Version 1.1 (Mar 13, 2017)

- JENKINS-42230 - Move all extension points provided by Declarative into a single new plugin for simpler dependencies.
- JENKINS-42168 - Added `validateDeclarativePipeline` step for validating Declarative Pipelines from within Pipelines. Meta!
- JENKINS-41503 - Fix behavior of `null` translation between JSON and Groovy representations.
- JENKINS-42286 - Allow directory separators in `Dockerfile` file names.
- JENKINS-42470 - Don't require a crumb for the `pipeline-model-converter` API endpoint.
- JENKINS-38110 - Add a `libraries` directive for specifying shared libraries to load in to the build.
- JENKINS-41118 - Support custom workspaces.

- JENKINS-42473 - Don't use parse results from any source but the `Jenkinsfile`.
- JENKINS-41185 - Add support for `anyOf`, `allOf` and `not` when conditions that contain other when conditions.
- JENKINS-42498 - Fix `when/environment` serialization error when XStream serialization is used behind the scenes.
- JENKINS-42640 - Properly handle validation of `String -> int`
- JENKINS-42551 - Reject `String` values in JSON that would lead to invalid Groovy syntax, and reject any JSON that converts to invalid Groovy syntax generally.
- JENKINS-42550 - Properly point to bad top-level entries in validation.
- JENKINS-41748 - Allow cross referencing of variables in `environment` section to actually work.
- JENKINS-41890 - Make sure `env.WORKSPACE` can be referenced in `environment` section properly.

## Version 1.0.2 (Feb 21, 2017)

- JENKINS-42027 - Global configuration for Declarative-specific Docker settings (label, registry) were not persisting across restarts.
- JENKINS-41668 - Add a "dir" option for Dockerfile Declarative agent.
- JENKINS-41900 - Move "should I do checkout?" logic around for simpler code in extensions of Declarative agents.
- JENKINS-41605 - Auto-checkout from SCM in per-stage agents if they're not reusing the same node block as the top-level agent.
- JENKINS-41950 - Properly report errors outside stages.
- JENKINS-41645 - Better validation for non-binary expressions in `environment` block.
- JENKINS-42039 - Add a Declarative option for "treat unstable as failure".
- JENKINS-42226 - Prevent `NullPointerException` when a null value is used for when branch condition.

## Version 1.0.1 (Feb 10, 2017)

- JENKINS-41911 - Shade JSON schema-related dependencies to avoid issues with conflicting library versions when certain other plugins (such as `jackson2-api`) are installed.

## Version 1.0 (Feb 1, 2017)

- First non-beta release. No changes from 0.9.

## Version 0.9.1 (still Beta 3) (Jan 27, 2017)

- JENKINS-41490, JENKINS-41491 - Fixing JSON support for nested tree steps and validation of certain tree steps.
- JENKINS-41518 - Add validation of environment variable names to be valid Java identifiers - only relevant for JSON->Jenkinsfile conversion since this would already have shown up as a compilation error in a Jenkinsfile.
- Catching a few validation fixes and string changes.

## Version 0.9 (Beta 3) (Jan 25, 2017)

- **FINAL BETA** - if a blocker bug is discovered before 1.0 is released, additional point releases may be done before 1.0.
- JENKINS-40984 - Always evaluate all possible `post` conditions even if an earlier one fails.
- JENKINS-39684 - Allow configuration of registry URL and credentials for `docker` and `dockerfile` agent types.
- JENKINS-40866 - Allow per-stage agent configuration of `docker` and `dockerfile` to run on the same node as the top-level, so that you can reuse the workspace.
- JENKINS-41050 - Perform SCM checkout on raw node first even if we're using `docker` or `dockerfile`.
- JENKINS-41243 - Speeding up tagging of synthetic stages for improved UX in Blue Ocean.

## Version 0.8.2 (still Beta 2) (Jan 12, 2017)

- JENKINS-41012 - when `branch` and `environment` conditions did not actually **work**. Fixed.
- Fixing an issue with validation/parsing outside the context of a run.

## Version 0.8.1 (still Beta 2) (Jan 10, 2017)

- Fixing compatibility warning to say compatible since 0.8.

## Version 0.8 (Beta 2) (Jan 10, 2017)

- JENKINS-40418 - Fix previously-not-running validation for triggers, parameters and properties.
- JENKINS-40337 - Rename `properties` to `options` and add the first Declarative-specific option, `skipDefaultCheckout`.
- JENKINS-40462 - Get rid of `wrappers` section, move wrappers like `timeout` and `retry` into `options` section.
- JENKINS-40580 - Quote parallel branch names to make sure they're valid.
- JENKINS-40642 - Add additional default imports so that things like `@Library` and `@NonCPS` work.
- JENKINS-40239 - Add descriptions for build conditions.
- JENKINS-40393 - Internationalize error messages!
- JENKINS-40524 - Reworked `agent` syntax to be more extensible and consistent.
- JENKINS-40370 - Improved `when` syntax and helpers.

## Version 0.7.1 (still Beta 1) (Dec 13, 2016)

- Re-spinning release due to a mixup that resulted in one of the sub-plugins not ending up in the Update Center.

## Version 0.7 (Beta 1) (Dec 13, 2016)

- JENKINS-39134 - Fix issue with Guice and resuming a build within a `script` block.
- JENKINS-38153 - Use the new `TagsAction` class to mark skipped stages so that Blue Ocean can render them accurately.
- JENKINS-39923 - Add new `jenkins-cli` command for linting a Declarative Jenkinsfile.
- JENKINS-40136 - Properly allow use of `failFast` with `parallel`.
- JENKINS-40226 - Make sure non-stage failures still trigger `post` failure conditions.

## Version 0.6 (Nov 17, 2016)

- JENKINS-39216 - Add `dockerfile` agent backend, auto-building a Dockerfile and running the build in the resulting image.
- JENKINS-39631 - Fix error status for steps within stages.
- JENKINS-37781 - Add conditional execution of individual stages via the `when` section.
- JENKINS-39394 - Removing `notifications` completely, renaming `postBuild` to `post` for consistency with post-stage actions.
- JENKINS-39799 - Fix a bug with invalid `post` contents.

## Version 0.5 (Nov 2, 2016)

- JENKINS-37823 - `wrappers` section for wrapping the entire build in a block-scoped step, like `retry` or `timeout`.
- JENKINS-38433 - `agent` backends are now pluggable.
- JENKINS-39245 - Added `environment` section support in stages.
- JENKINS-39244 - Added `tools` section support in stages.
- JENKINS-38993 - Deterministic order for post-build/stage condition execution.
- JENKINS-39011 - Properly error out if the `pipeline` step is present but not at the top-level.
- JENKINS-39109 - Add a configuration option for what label to use for docker agents.
- JENKINS-38865 - Split the AST into a separate plugin so others can depend on it without pulling everything in.
- JENKINS-38331 - Per-stage configuration for agent.
- JENKINS-37792 - Post-stage actions added.

## Version 0.4 (Oct 11, 2016)

- 0.3 was inadvertently built with Java 8 - so a new release is needed.
- JENKINS-37824 - Support for job properties, triggers and build parameters.

## Version 0.3 (Oct 10, 2016)

- JENKINS-38818 - Correctly escape string constants when generating groovy from AST
- JENKINS-38564 - API to convert json step blob to step syntax (and back) - one step at a time
- JENKINS-37788 - Use `isLiteral` instead of `isConstant`
- JENKINS-38426 - Allow non-literal expressions for environment variable values.
- JENKINS-38242 - Allow specifying arguments for Docker.
- JENKINS-38152 - Expose the execution model on the `WorkflowRun`.
- JENKINS-37932 - Add `agent any` to replace `agent label: ""`.
- JENKINS-38097 - Execute empty named stages for any planned stages after a stage fails so that execution model and actual execution match up.

## Version 0.2 (Sept 8, 2016)

- JENKINS-37897 - switch to block-scoped stages and add synthetic stages for notifications and `postBuild`.
- JENKINS-37828 - Properly reject mixes of `parallel` and other steps.
- JENKINS-37928 - Properly detect sections without values.
- JENKINS-38047 - Allow multiple unnamed parameters in declarative subset.

## Version 0.1 (Aug 30, 2016)

- Initial beta release. Functional but limited.