

# 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 1.3.7 (March 20, 2019)

- [JENKINS-52850](#) - Support SSH private key credentials in `environment`.
- [JENKINS-56402](#) - Set build result to the logical result in post conditions.
- [JENKINS-56544](#) - `failFast` option for parallel stages no longer sets build status to `ABORTED` when other stages are aborted before entering their step execution.

### Version 1.3.6 (March 6, 2019)

- [JENKINS-56405](#) - Don't require registry credentials if a registry URL is specified.

### Version 1.3.5 (March 1, 2019)

- [JENKINS-52744](#) - Show a meaningful error when an environment variable value references an undefined variable.
- [JENKINS-49950](#) - Allow using Dockerhub credentials without having to specify a registry URL.
- [JENKINS-55476](#) - Don't trigger `unsuccessful` post condition for successful builds.
- [JENKINS-55459](#) - Make parallel stages that fail fast result in the build being marked as failed, not aborted.

### 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.