Sam Caldwell

Asymmetric Effort, LLC.

Monorepo Tools

MonoRepo Command

Table of Contents

[Monorepo Command 2](#_Toc144887478)

[General Commands 3](#_Toc144887479)

[Global Options 4](#_Toc144887480)

[General Command Structure 5](#_Toc144887481)

[Monorepo Configuration 6](#_Toc144887482)

[Build-Host Runtime Configuration 7](#_Toc144887483)

[Container-Runtime Configuration 9](#_Toc144887484)

[Hypervisor Configuration 11](#_Toc144887485)

[Language Configuration 13](#_Toc144887486)

[Platform Configuration 15](#_Toc144887487)

[Project Configuration 17](#_Toc144887488)

[Project-Action Commands 19](#_Toc144887489)

[Project Build Command 20](#_Toc144887490)

[Project Linter Command 21](#_Toc144887491)

[Project Test Runner Command 22](#_Toc144887492)

[General Task Shell Command 23](#_Toc144887493)

# Monorepo Command

This document describes a ‘monorepo’ tool for interacting with and managing a git monorepo for all Asymmetric Effort projects. Specifically, this command will allow the user to—

* Create, delete, list and configure projects.
* Configure the monorepo tool.
* Build, Lint, Scan and Test projects.
* Distribute Build, Lint, Scan and Test tasks across one or more computer systems.

## General Commands

The following general commands will terminate execution if their corresponding options are encountered.

| Command | Description |
| --- | --- |
| monorepo -h | --help | Show the command usage. |
| monorepo -v | --version | Show the command's current version. |

## Global Options

All non-general commands support the following options:

| Option | Description |
| --- | --- |
| --color | Display all output using ANSI color |
| --debug | Print verbose logging messages |
| --noop | Execute command without performing any changes. |

## General Command Structure

The monorepo command follows this general syntax:

monorepo [command] [object | scope] [parameters]

## Monorepo Configuration

The monorepo configuration is a local configuration persisted as part of the monorepo and ‘.gitconfig,’ managed by the monorepo command using the syntax—

monorepo config [object] [parameters]

This includes configuration of—

* Build hosts which will run tasks
* The git repo itself
* Projects within the monorepo
* The supported languages, container runtimes, hypervisors, operating systems, CPU architectures and interconnected build hosts.

### Build-Host Runtime Configuration

The monorepo can execute tasks across one or more diverse build hosts, interconnected via key-based SSH. The following commands allow the monorepo to configure build host configuration:

| Command | Description |
| --- | --- |
| monorepo config host list | List the currently configured build hosts. |
| monorepo config host show <name> | Show the RESOLVED configuration for a given build host, where the resolved configuration is the configuration state after all configuration is loaded, validated and resolved in order of precedence. |
| monorepo config host delete <name> | Delete the named host configuration. |
| monorepo config host create <name> [Options] | Create a new host configuration for the monorepo using the given name and options. |
| monorepo config host enable <name> | Enable a given build host. |
| monorepo config host disable <name> | Disable a given build host. |
| monorepo config host check <name> | Execute a test command on a given build host to verify connectivity. |

#### Build-Host Create Options

| Option | Description |
| --- | --- |
| --host <string> | The IP address or FQDN and port for the target host.  If localhost is used, no port is required since local execution will be used. |
| --enabled | Sets the host to enabled (default is disabled). |
| --username | Declare the username used for connectivity. If not specified the current user is used. Assumes all authentication is key-based. |
| --platform <name> | Specify the target host's platform. |
| --hypervisor | Define what hypervisor is expected on remote host. |
| --cri | Define what container runtime. is expected on remote host. |

### Container-Runtime Configuration

The following commands allow the user to manage the container runtimes used by supported platforms:

| Command | Description |
| --- | --- |
| monorepo config cri list | List the supported container runtimes (e.g., docker, Kubernetes). |
| monorepo config cri create <name> [Options] | Create a new container runtime interface (CRI) configuration. |
| monorepo config cri delete <name> | Delete a container runtime interface (CRI) configuration. |
| monorepo config cri show <name> | Show the current container runtime interface configuration. |

Given that any platform (operating system/CPU combination) could have an installed container runtime (e.g., docker), this command allows that container runtime to be defined as a supported CRI which can be mapped to such a platform.

#### Create CRI Options

| Option | Description |
| --- | --- |
| --enabled | Enable the resulting config. (Default is disabled) |
| --platform <name> | Specify the target host's platform. |

### Hypervisor Configuration

The following commands allow the user to manage the supported hypervisors:

| Command | Description |
| --- | --- |
| monorepo config hypervisor list | List the supported hypervisors |
| monorepo config hypervisor create <name> [Options] | Create a new hypervisor configuration. |
| monorepo config hypervisor delete <name> | Delete a hypervisor configuration. |
| monorepo config hypervisor show <name> | Show the current hypervisor configuration. |
| monorepo config hypervisor enable <name> | enable the given hypervisor |
| monorepo config hypervisor disable <name> | disable the given hypervisor |

Given that any platform (operating system/CPU combination) could have an installed hypervisor (e.g., kvm or VMware), this command allows that hypervisor to be defined as a supported CRI which can be mapped to such a platform.

#### Create Hypervisor Options

| Option | Description |
| --- | --- |
| --enabled | Enable the resulting config. (Default is disabled) |
| --platform <name> | Specify the target host's platform. |

### Language Configuration

The following commands allow the user to manage the supported languages:

| Command | Description |
| --- | --- |
| monorepo config language list | List the currently supported languages |
| monorepo config language show <name> | Show the language configuration for the named language |
| monorepo config language create <name> [Options] | Create a language directory structure and configuration |
|  | file. |
| monorepo config language delete <name> | Delete a given language configuration file (source code |
|  | will remain). |
| monorepo config language enable <name> | enable the language |
| monorepo config language disable <name> | disable the language |

#### Create Language Options

| Option | Description |
| --- | --- |
| --directory <relative path> | The child directory/path where the language source code will exist. |
| --enabled | Enable the language config (disabled by default) |
| --platform <name> | Specify the platform supported by the given language. |

### Platform Configuration

The following commands allow the user to manage the supported platforms (opsys, arch):

| Command | Description |
| --- | --- |
| monorepo config platform list | List the currently supported platforms |
| monorepo config platform create <name> [Options] | Create a new supported platform configuration file. |
| monorepo config platform show <name> | Show the named platform configuration |
| monorepo config platform delete <name> | Delete the named platform |
| monorepo config platform enable <name> | Enable the given platform |
| monorepo config platform disable <name> | Disable the given platform |

A “platform” in the context of this command is a combination of operating system, CPU architecture and optional software. This combination creates an environment in which tasks can be supported to run without problems.

#### Create Platform Options

| Option | Description |
| --- | --- |
| --description <string> | A simple description of the platform. |
| --connect local | ssh | Connection method (local execution or key-based SSH) |
| --enabled | Enable the configuration |
| --opsys\_family <regex> | A regex for a single supported operating system families |
| --opsys\_version <regex> | A regex for a single supported operating system version. |
| --cpu\_arch <regex> | A regex for a single supported CPU Architecture |

### Project Configuration

The following commands allow the user to configure/manage the monorepo itself. (The changes made by this command can be reviewed and committed to git separately.)

| Command | Description |
| --- | --- |
| monorepo config project list [--language <lang>] | Print a list of all projects in the monorepo.  The “—language” flag can be used to filter the list to |
| monorepo config project show <name> | Show the RESOLVED configuration for a given project, where the resolved configuration is the final configuration state after starting with /monorepo.yaml, then applying the language-specific monorepo.yaml and finally after applying the project-specific configuration. |
| monorepo config project delete <name> | Delete a given project from the monorepo |
| monorepo config project create <name> [options] | Create a new project in the monorepo using the given name and options. Any options not specified will result in the defaults being used. |
| monorepo config project enable <feature> <name> | Enable the given project and feature |
| monorepo config project disable <feature> <name> | Disable the given project and feature |

#### Project Options

| Option | Description |
| --- | --- |
| --description <string> | Project description |
| --author <string> | Project author (used in copyright strings) |
| --output <executable | source> | Project output (executable or reusable source code |
| --enable <feature> | Enable a feature flag (linter, build, tests) |
| --addPlatform <opsys string> | Add a supported platform |

## Project-Action Commands

The following commands execute actions on one or more target build hosts. These commands follow this general syntax:

Monorepo <action command> <all | project ${name}> [parameters]

Command actions include actions to—

* Build project artifacts
* Lint project source code
* Run project tests

### Project Build Command

The following commands will facilitate building projects for the monorepo:

| Command | Description |
| --- | --- |
| monorepo build all | Build all projects for all languages |
| monorepo build project <name> | Build the named project |

### Project Linter Command

The following commands will facilitate linting projects for the monorepo:

| Command | Description |
| --- | --- |
| monorepo lint all | Lint all projects for all languages |
| monorepo lint project <name> | Lint the named project |

### Project Test Runner Command

The following commands will facilitate linting projects for the monorepo:

| Command | Description |
| --- | --- |
| monorepo test all | Test all projects for all languages |
| monorepo test project <name> | Test the named project |

### General Task Shell Command

The following will execute a command string and abstract the user from platform-specific issues:

| Command | Description |
| --- | --- |
| monorepo exec <string> [options] | Run the given string with its options. |

#### Task Shell Options

| Option | Description |
| --- | --- |
| --working-dir <string> | Specify the working directory where the command will run. |
| --using <shell> | Specify the command shell (bash, zsh, PowerShell) to run the command string. |