

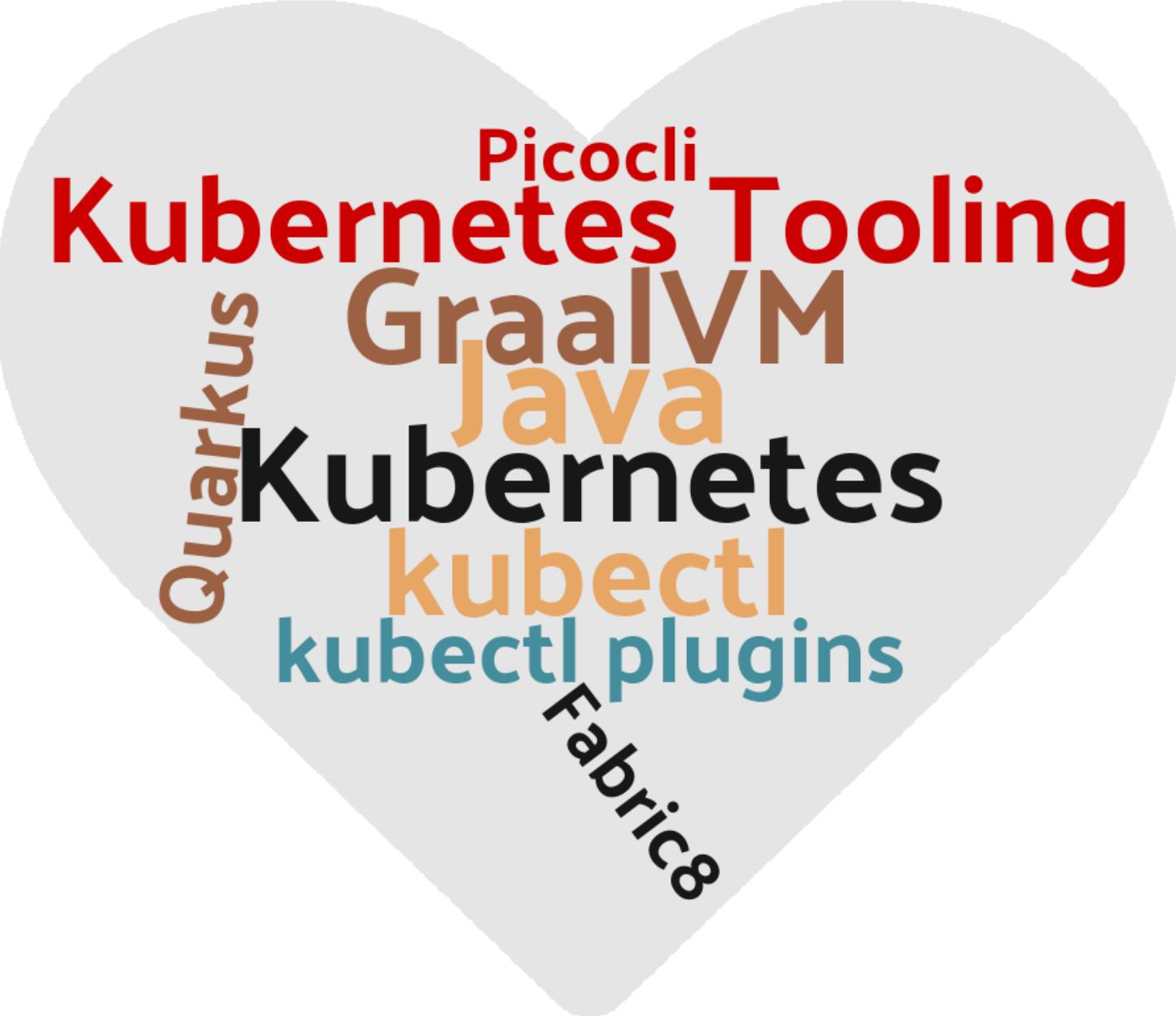
JUG SAXONY DAY 2021



EXTEND KUBERNETES-CLI WITH JAVA

Bernd Fischer

TOPICS



Kubernetes Tooling

Quarkus Picocli
GraalVM
Java
Kubernetes
kubectl
kubectl plugins
Fabric8

kubectl - create Kubernetes resources/objects

```
run <...> Create a Pod
create
  clusterrole      Create a ClusterRole.
  clusterrolebinding Create a ClusterRoleBinding ...
  configmap       Create a configmap ...
  cronjob         Create a cronjob ...
  deployment       Create a deployment ...
  ingress          Create a ingress ...
  job              Create a job ...
  namespace        Create a namespace ...
  poddisruptionbudget Create a pod disruption budget ...
  priorityclass    Create a priorityclass ...
  quota            Create a quota ...
  role             Create a role ...
  rolebinding      Create a RoleBinding ...
  secret           Create a secret ...
  service          Create a service ...
  serviceaccount   Create a service ...
```

Whats about all other Kubernetes resources/objects?

Whats about all other Kubernetes resources/objects?

- StorageClass

Whats about all other Kubernetes resources/objects?

- StorageClass
- PersistentVolumeClaim

Whats about all other Kubernetes resources/objects?

- StorageClass
- PersistentVolumeClaim
- PersistentVolume

Whats about all other Kubernetes resources/objects?

- StorageClass
- PersistentVolumeClaim
- PersistentVolume
- IngressClass

Whats about all other Kubernetes resources/objects?

- StorageClass
- PersistentVolumeClaim
- PersistentVolume
- IngressClass
- DaemonSet

Whats about all other Kubernetes resources/objects?

- StorageClass
- PersistentVolumeClaim
- PersistentVolume
- IngressClass
- DaemonSet
- StatefulSet

Whats about all other Kubernetes resources/objects?

- StorageClass
- PersistentVolumeClaim
- PersistentVolume
- IngressClass
- DaemonSet
- StatefulSet
- ...

GOALS

```
$ kubectl generate sc goldstorage <...>
```

GOALS

```
$ kubectl generate sc goldstorage <...>
```

- support for multiple platform (Linux, Win, MacOS)

GOALS

```
$ kubectl generate sc goldstorage <...>
```

- support for multiple platform (Linux, Win, MacOS)
- distribution and operation (install, update, remove)
as simple as possible

KUBECTL - HOW IT WORKS?

command line tool for REST-like Kubernetes-API-
Server

```
1 $ curl --insecure --cert $CRT --key $KEY \
2   https://m01.cluster02.local:6443
3 {
4   "paths": [
5     "/api",
6     "/api/v1",
7     "/apis",
8     "/apis/",
9     ...
10    "/version"
11  ]
12 }
```

```
1 $ curl --insecure --cert $CRT --key $KEY \
2   https://m01.cluster02.local:6443
3 {
4   "paths": [
5     "/api",
6     "/api/v1",
7     "/apis",
8     "/apis/",
9     ...
10    "/version"
11  ]
12 }
```

```
1 $ kubectl run testpod --image=nginx -v7
2 ... Config loaded from file: /home/bf/.kube/config
3 ... POST https://10.67.25.231:6443/api/v1/namespaces/default/po
4 ... Request Headers:
5 ...     Accept: application/json, */*
6 ...     Content-Type: application/json
7 ...     User-Agent: kubectl/v1.21.5 (linux/amd64) kubernetes/ae
8 ... Response Status: 201 Created in 24 milliseconds
9 pod/testpod created
```

```
1 $ kubectl run testpod --image=nginx -v7
2 ... Config loaded from file: /home/bf/.kube/config
3 ... POST https://10.67.25.231:6443/api/v1/namespaces/default/po
4 ... Request Headers:
5 ...     Accept: application/json, */*
6 ...     Content-Type: application/json
7 ...     User-Agent: kubectl/v1.21.5 (linux/amd64) kubernetes/ae
8 ... Response Status: 201 Created in 24 milliseconds
9 pod/testpod created
```

```
1 $ kubectl run testpod --image=nginx -v7
2 ... Config loaded from file: /home/bf/.kube/config
3 ... POST https://10.67.25.231:6443/api/v1/namespaces/default/po
4 ... Request Headers:
5 ...     Accept: application/json, */*
6 ...     Content-Type: application/json
7 ...     User-Agent: kubectl/v1.21.5 (linux/amd64) kubernetes/ae
8 ... Response Status: 201 Created in 24 milliseconds
9 pod/testpod created
```

```
1 $ kubectl run testpod --image=nginx --dry-run=client -ojson
2 {
3     "kind": "Pod",
4     "apiVersion": "v1",
5     "metadata": {
6         "name": "testpod",
7         "creationTimestamp": null,
8         "labels": {
9             "run": "tespod"
10        }
11    },
12    "spec": {
13        "containers": [
14            {
15                "name": "tespod",
16                "image": "nginx"
```

```
1 $ kubectl run testpod --image=nginx --dry-run=client -ojson
2 {
3     "kind": "Pod",
4     "apiVersion": "v1",
5     "metadata": {
6         "name": "testpod",
7         "creationTimestamp": null,
8         "labels": {
9             "run": "tespod"
10        }
11    },
12    "spec": {
13        "containers": [
14            {
15                "name": "tespod",
16                "image": "nginx"
```

KUBECTL - PLUGINS

WHAT IS IT?

extends kubectl with extra functionality but still feels
like kubectl

WHY?

WHY?

- development outside Kubernetes release cycle

WHY?

- development outside Kubernetes release cycle
- language agnostic

WHY?

- development outside Kubernetes release cycle
- language agnostic
- great user experience

EXAMPLE

```
$ kubectl have fun  
$ kubectl plugins are awesome! And we can write our own ;-)
```

WHAT HAPPENS BEHIND THE SCENE?

WHAT HAPPENS BEHIND THE SCENE?

- kubectl makes an **execve** system call

WHAT HAPPENS BEHIND THE SCENE?

- kubectl makes an **execve** system call
- replaces the kubectl with the plugin process

WHAT HAPPENS BEHIND THE SCENE?

- kubectl makes an **execve** system call
- replaces the kubectl with the plugin process
- plugin process will inherit

WHAT HAPPENS BEHIND THE SCENE?

- kubectl makes an **execve** system call
- replaces the kubectl with the plugin process
- plugin process will inherit
 - the environment variables and

WHAT HAPPENS BEHIND THE SCENE?

- kubectl makes an **execve** system call
- replaces the kubectl with the plugin process
- plugin process will inherit
 - the environment variables and
 - the standard streams

RECIPE

Create our first plugin in four simple step

STEP1

- create a file named "kubectl-have"

```
#!/usr/bin/env bash
echo "kubectl plugins are awesome! And we can write our own ;-)"
```

STEP2

- make it executable

```
$ chmod +x ./kubectl-have
```

STEP3

- put it your path

```
$ cp ./kubectl-hive $HOME/bin
```

STEP4

- run it

```
$ kubectl have fun  
kubectl plugins are awesome! And we can write our own ;-)
```

RULES

- naming is important
- can't overwrite existing kubectl commands

IMPLEMENTATION CONSIDERATIONS

App should start and stop fast ;-)

App should start and stop fast ;-)

- Java

App should start and stop fast ;-)

- Java
- Quarkus

App should start and stop fast ;-)

- Java
- Quarkus
- GraalVM

cli mode (handling of parameters/options/...)

cli mode (handling of parameters/options/...)

- picocli

how to interact with Kubernetes?

how to interact with Kubernetes?

- fabric8

QUARKUS PROJECT

CREATE PROJECT SKELETON

```
1 $ mvn io.quarkus:quarkus-maven-plugin:2.2.2.Final:create \
2   -DprojectGroupId=de.benfir.k8s.plugins \
3   -DprojectArtifactId=generate \
4   -DprojectVersion=1.0.0-SNAPSHOT \
5   -Dextensions=pico,kubernetes-client
6
7 [INFO] Scanning for projects...
8 [INFO]
9 [INFO] -----< org.apache.maven:standalone-pom >-
10 [INFO] Building Maven Stub Project (No POM) 1
11 [INFO] -----[ pom ]-----
12 [INFO]
13 [INFO] --- quarkus-maven-plugin:2.2.2.Final:create (default-cl
14 [INFO] Looking for the newly published extensions in registry.
15 [INFO] -----
16 [INFO] selected extensions:
```

CREATE PROJECT SKELETON

```
1 $ mvn io.quarkus:quarkus-maven-plugin:2.2.2.Final:create \
2   -DprojectGroupId=de.benfir.k8s.plugins \
3   -DprojectArtifactId=generate \
4   -DprojectVersion=1.0.0-SNAPSHOT \
5   -Dextensions=pico,kubernetes-client
6
7 [INFO] Scanning for projects...
8 [INFO]
9 [INFO] -----< org.apache.maven:standalone-pom >-
10 [INFO] Building Maven Stub Project (No POM) 1
11 [INFO] -----[ pom ]-----
12 [INFO]
13 [INFO] --- quarkus-maven-plugin:2.2.2.Final:create (default-cl
14 [INFO] Looking for the newly published extensions in registry.
15 [INFO] -----
16 [INFO] selected extensions:
```

DEVMODE

```
$ mvn quarkus:dev
```

JAVA APPLICATION

JAVA APPLICATION

JAVA APPLICATION

EXTEND

remove output

```
quarkus.log.level=SEVERE  
quarkus.banner.enabled=false
```

add Option

```
@CommandLine.Option(  
    names = {"--times"},  
    description = "times",  
    defaultValue = "1"  
)  
int times;
```

NATIVE APP

```
1 $ mvn clean package -DskipTests=true \
2   -Pnative \
3   -Dquarkus.native.container-build=true \
4   -Dquarkus.native.container-runtime=podman
5 <...>
6 <...>
7 <...>
8 $ ./target/generate-1.0.0-SNAPSHOT-runner
9 $ ./target/generate-1.0.0-SNAPSHOT-runner --help
```

NATIVE APP

```
1 $ mvn clean package -DskipTests=true \
2   -Pnative \
3   -Dquarkus.native.container-build=true \
4   -Dquarkus.native.container-runtime=podman
5 <...>
6 <...>
7 <...>
8 $ ./target/generate-1.0.0-SNAPSHOT-runner
9 $ ./target/generate-1.0.0-SNAPSHOT-runner --help
```

PLUGIN PROJECT

general usage

```
$ kubectl generate <resource.type> <resource.name> <arguments>  
# example  
$ kubectl generate sc test --provisioner nfs
```

translation to "picocli-terms"

- plugin-name: generate
- parameters : resource-type (sc), resource-name (test)
- options : arguments (starting with "-" or "--")

GenerateCommand

```
@TopCommand()
@CommandLine.Command(name="generate",version="1.0.0-SNAPSHOT")
public class GenerateCommand implements Runnable {

    @CommandLine.Parameters() String resourceType;
    @CommandLine.Parameters() String resourceName;

    @CommandLine.Option(names={"--provisioner"}, required=true)
    String provisioner;

    @Override
    public void run() {
        System.out.println("Hello");
    }
}
```

Templating - Add Dependency

```
<dependency>
    <groupId>io.quarkus</groupId>
    <artifactId>quarkus-quot</artifactId>
</dependency>
```

Templating - Add Template

```
1 apiVersion: storage.k8s.io/v1
2 kind: StorageClass
3 metadata:
4   name: {params.name}
5 allowVolumeExpansion: false
6 allowedTopologies:
7 mountOptions:
8   {%for option in params.mountOptions.orEmpty%}
9     - {option}
10  {%/for%}
11 parameters:
12   provisioner: {params.provisioner}
13   reclaimPolicy: Delete
14   volumeBindingMode: Immediate
```

Templating - Add Template

```
1 apiVersion: storage.k8s.io/v1
2 kind: StorageClass
3 metadata:
4   name: {params.name}
5 allowVolumeExpansion: false
6 allowedTopologies:
7 mountOptions:
8   {#for option in params.mountOptions.orEmpty}
9   - {option}
10  {/for}
11 parameters:
12   provisioner: {params.provisioner}
13   reclaimPolicy: Delete
14   volumeBindingMode: Immediate
```

Templating - Add TemplateClass

```
1 @CheckedTemplate
2 public class Templates {
3     public static native
4         TemplateInstance storageclass(ScParams params);
5 }
6
7 class ScParams {
8     public String name;
9     public String provisioner;
10    List<String> mountOptions;
11 }
```

Templating - Add TemplateClass

```
1 @CheckedTemplate
2 public class Templates {
3     public static native
4         TemplateInstance storageclass(ScParams params);
5 }
6
7 class ScParams {
8     public String name;
9     public String provisioner;
10    List<String> mountOptions;
11 }
```

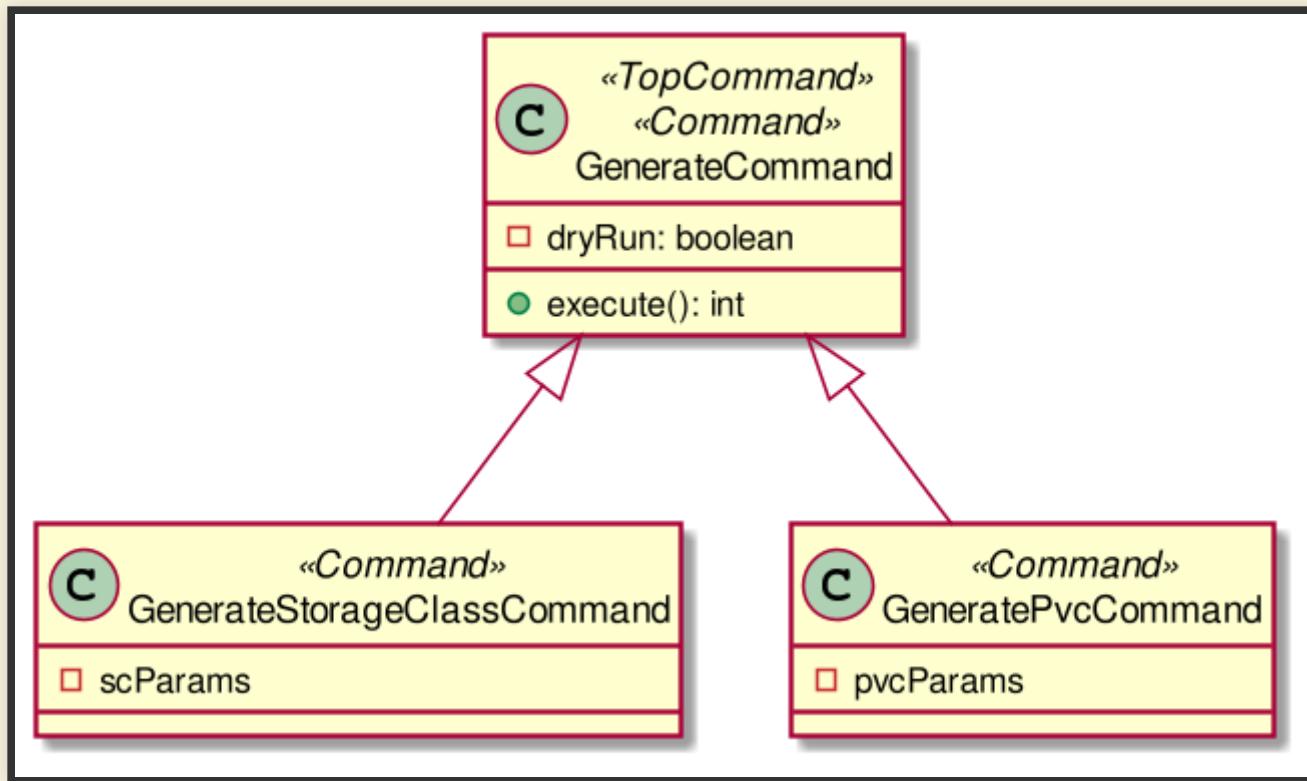
Templating - Add TemplateClass

```
1  @Override public void run( )
2  {
3      ScParams p = new ScParams();
4      p.name = this.resourceName;
5      p.provisioner = this.provisioner;
6      p.mountOptions = Arrays.asList("opt1", "opt2");
7
8      TemplateInstance ti = Templates.storageclass(p);
9      String str = ti.render();
10 }
```

Apply to Kubernetes

```
// we added fabric8 as Kubernetes client framework already
@Override public void run()
{
    // ...
    try(KubernetesClient kc = new DefaultKubernetesClient()){
        kc.resourceList(ti.render()).createOrReplace();
    }
}
```

FINAL STRUCTURE



requests

Actions

Projects

Wiki

Security

Insights

Settings

1 branch 3 tags

[Go to file](#)[Add file ▾](#)[Code ▾](#)

63 Add macos build

0a2f333 6 days ago 13 commits

ows

Add macos build

6 days ago

<https://github.com/benfir/jsd2021>

Add initial project state

6 days ago

Add initial project state

6 days ago

Initial commit

10 days ago

Initial commit

10 days ago

Add initial project state

6 days ago

About

No description, website or topics provided.

Readme

Apache-2.0 License

Releases

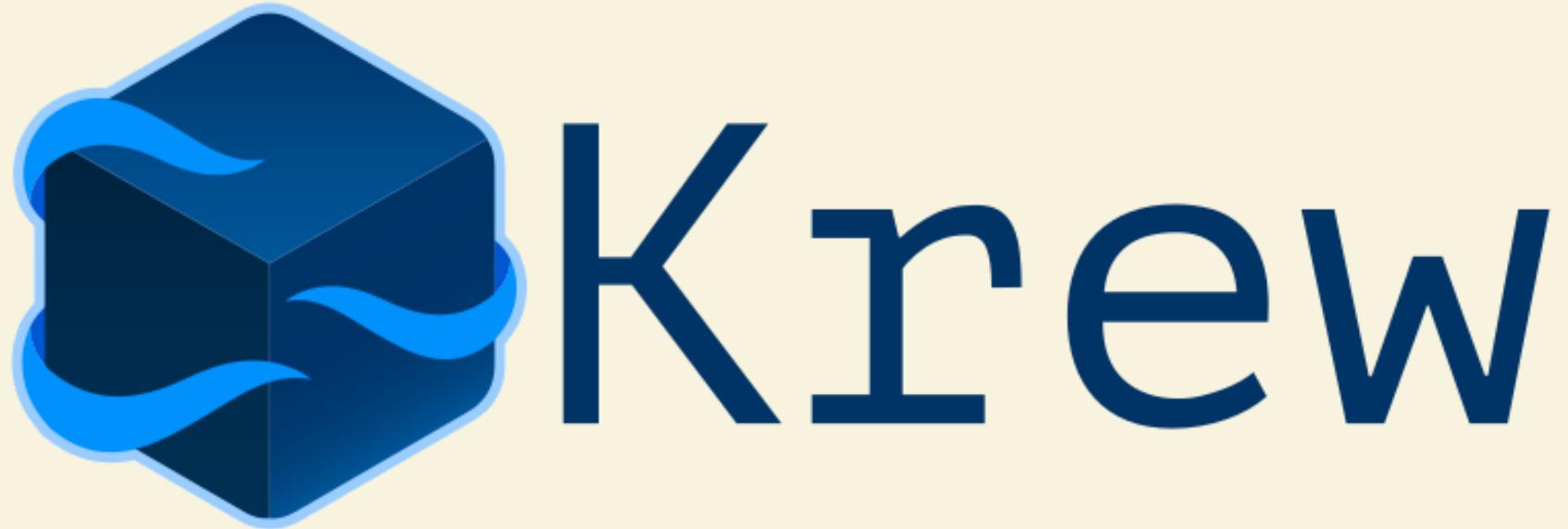
3 tags

[Create a new release](#)

Packages

No packages published
[Publish your first package](#)

Languages



KREW - WHAT IS IT?

KREW - WHAT IS IT?

- a package manager for kubectl plugins

KREW - WHAT IS IT?

- a package manager for kubectl plugins
 - like "brew" or "chocolatey" but for kubectl :-)

KREW - WHAT IS IT?

- a package manager for kubectl plugins
 - like "brew" or "chocolatey" but for kubectl :-)
 - developed 2018 by Google intern Luk Burchard

KREW - WHAT IS IT?

- a package manager for kubectl plugins
 - like "brew" or "chocolatey" but for kubectl :-)
 - developed 2018 by Google intern Luk Burchard
- Open Source (ASL2.0)

KREW - WHAT IS IT?

- a package manager for kubectl plugins
 - like "brew" or "chocolatey" but for kubectl :-)
 - developed 2018 by Google intern Luk Burchard
- Open Source (ASL2.0)
- <https://krew.sigs.k8s.io/>

KREW - WHAT IS IT?

- a package manager for kubectl plugins
 - like "brew" or "chocolatey" but for kubectl :-)
 - developed 2018 by Google intern Luk Burchard
- Open Source (ASL2.0)
- <https://krew.sigs.k8s.io/>
- <https://github.com/kubernetes-sigs/krew>

KREW - USEFUL FOR USERS

- easy way to

KREW - USEFUL FOR USERS

- easy way to
 - discover

KREW - USEFUL FOR USERS

- easy way to
 - discover
 - install

KREW - USEFUL FOR USERS

- easy way to
 - discover
 - install
 - update and

KREW - USEFUL FOR USERS

- easy way to
 - discover
 - install
 - update and
 - remove kubectl plugins

KREW - USEFUL FOR DEVELOPERS

KREW - USEFUL FOR DEVELOPERS

- make their plugins discoverable

KREW - USEFUL FOR DEVELOPERS

- make their plugins discoverable
 - globally

KREW - USEFUL FOR DEVELOPERS

- make their plugins discoverable
 - globally
 - locally

KREW - USEFUL FOR DEVELOPERS

- make their plugins discoverable
 - globally
 - locally
- easy and uniform way to package their plugins for multiple platforms

KREW - USEFUL FOR DEVELOPERS

- make their plugins discoverable
 - globally
 - locally
- easy and uniform way to package their plugins for multiple platforms
 - Win, Linux, MacOS, ...

KREW - IMPORTANT COMMANDS

```
1 Usage:  
2   kubectl krew [command]  
3  
4 Available Commands:  
5   help           Help about any command  
6   index          Manage custom plugin indexes  
7   info           Show information about an available plugin  
8   install        Install kubectl plugins  
9   list            List installed kubectl plugins  
10  search          Discover kubectl plugins  
11  uninstall       Uninstall plugins  
12  update          Update the local copy of the plugin index  
13  upgrade         Upgrade installed plugins to newer versions  
14  version         Show krew version and diagnostics
```

KREW - IMPORTANT COMMANDS

```
1 Usage:  
2   kubectl krew [command]  
3  
4 Available Commands:  
5   help           Help about any command  
6   index          Manage custom plugin indexes  
7   info           Show information about an available plugin  
8   install        Install kubectl plugins  
9   list            List installed kubectl plugins  
10  search          Discover kubectl plugins  
11  uninstall       Uninstall plugins  
12  update          Update the local copy of the plugin index  
13  upgrade         Upgrade installed plugins to newer versions  
14  version         Show krew version and diagnostics
```

KREW - IMPORTANT COMMANDS

```
1 Usage:  
2   kubectl krew [command]  
3  
4 Available Commands:  
5   help           Help about any command  
6   index          Manage custom plugin indexes  
7   info           Show information about an available plugin  
8   install        Install kubectl plugins  
9   list            List installed kubectl plugins  
10  search          Discover kubectl plugins  
11  uninstall       Uninstall plugins  
12  update          Update the local copy of the plugin index  
13  upgrade         Upgrade installed plugins to newer versions  
14  version         Show krew version and diagnostics
```

KREW - IMPORTANT COMMANDS

```
1 Usage:  
2   kubectl krew [command]  
3  
4 Available Commands:  
5   help           Help about any command  
6   index          Manage custom plugin indexes  
7   info           Show information about an available plugin  
8   install        Install kubectl plugins  
9   list            List installed kubectl plugins  
10  search          Discover kubectl plugins  
11  uninstall       Uninstall plugins  
12  update          Update the local copy of the plugin index  
13  upgrade         Upgrade installed plugins to newer versions  
14  version         Show krew version and diagnostics
```

KREW - IMPORTANT COMMANDS

```
1 Usage:  
2   kubectl krew [command]  
3  
4 Available Commands:  
5   help           Help about any command  
6   index          Manage custom plugin indexes  
7   info           Show information about an available plugin  
8   install        Install kubectl plugins  
9   list            List installed kubectl plugins  
10  search          Discover kubectl plugins  
11  uninstall       Uninstall plugins  
12  update          Update the local copy of the plugin index  
13  upgrade         Upgrade installed plugins to newer versions  
14  version         Show krew version and diagnostics
```

KREW - IMPORTANT COMMANDS

```
1 Usage:  
2   kubectl krew [command]  
3  
4 Available Commands:  
5   help           Help about any command  
6   index          Manage custom plugin indexes  
7   info           Show information about an available plugin  
8   install        Install kubectl plugins  
9   list            List installed kubectl plugins  
10  search          Discover kubectl plugins  
11  uninstall       Uninstall plugins  
12  update          Update the local copy of the plugin index  
13  upgrade         Upgrade installed plugins to newer versions  
14  version         Show krew version and diagnostics
```

KREW - GLOBAL INDEX

- <https://krew.sigs.k8s.io/plugins/>
- <https://github.com/kubernetes-sigs/krew-index>

```
$ kubectl krew search
NAME          DESCRIPTION          INSTALLED
access-matrix  Show an RBAC access matrix ...
advise-psp    Suggests PodSecurityPolicies ...
allctx        Run commands on contexts in ...
apparmor-manager Manage AppArmor profiles ...
assert        Assert Kubernetes resources ...
auth-proxy    Authentication proxy to ...
<...>
```

KREW - PRIVATE INDEX

```
$ k krew index  
Manage which repositories are used to discover and install plugin
```

Usage:

```
kubectl krew index [command]
```

Available Commands:

add	Add a new index
list	List configured indexes
remove	Remove a configured index

KREW - INSTALL NOT PUBLISHED PLUGINS

- intended for development purposes only

```
1 $ k krew install
2 Usage:
3   kubectl krew install [flags]
4 Flags:
5   --archive string      force all downloads to use the specified archive
6   --manifest string     specify local plugin manifest file
7   --manifest-url string specify plugin manifest file from url
```

KREW - INSTALL NOT PUBLISHED PLUGINS

- intended for development purposes only

```
1 $ k krew install
2 Usage:
3   kubectl krew install [flags]
4 Flags:
5   --archive string      force all downloads to use the specificie
6   --manifest string     specify local plugin manifest file
7   --manifest-url string specify plugin manifest file from url
```

KREW - INSTALL NOT PUBLISHED PLUGINS

- intended for development purposes only

```
1 $ k krew install
2 Usage:
3   kubectl krew install [flags]
4 Flags:
5   --archive string      force all downloads to use the specified archive
6   --manifest string     specify local plugin manifest file
7   --manifest-url string specify plugin manifest file from url
```

KREW - INSTALL NOT PUBLISHED PLUGINS

- intended for development purposes only

```
1 $ k krew install
2 Usage:
3   kubectl krew install [flags]
4 Flags:
5   --archive string      force all downloads to use the specified archive
6   --manifest string     specify local plugin manifest file
7   --manifest-url string specify plugin manifest file from url
```

KREW - LOCAL INDEX

```
1 $ k krew list
2 PLUGIN          VERSION
3 access-matrix   v0.5.0
4 ctx             v0.9.4
5 get-all         v1.3.8
6 krew            v0.4.1
7 ns              v0.9.4
8 oidc-login      v1.25.0
9 view-secret     v0.8.1
10 <...>
```

KREW - LOCAL INDEX

```
1 $ k krew list
2 PLUGIN          VERSION
3 access-matrix   v0.5.0
4 ctx             v0.9.4
5 get-all         v1.3.8
6 krew            v0.4.1
7 ns              v0.9.4
8 oidc-login      v1.25.0
9 view-secret     v0.8.1
10 <...>
```

KREW - LOCAL INDEX

```
1 $ k krew list
2 PLUGIN          VERSION
3 access-matrix   v0.5.0
4 ctx             v0.9.4
5 get-all         v1.3.8
6 krew            v0.4.1
7 ns              v0.9.4
8 oidc-login      v1.25.0
9 view-secret     v0.8.1
10 <...>
```

KREW - LOCAL INDEX

```
1 $ k krew list
2 PLUGIN          VERSION
3 access-matrix   v0.5.0
4 ctx             v0.9.4
5 get-all         v1.3.8
6 krew            v0.4.1
7 ns              v0.9.4
8 oidc-login      v1.25.0
9 view-secret     v0.8.1
10 <...>
```

KREW - LOCAL INDEX

```
1 $ k krew list
2 PLUGIN          VERSION
3 access-matrix   v0.5.0
4 ctx             v0.9.4
5 get-all         v1.3.8
6 krew            v0.4.1
7 ns              v0.9.4
8 oidc-login      v1.25.0
9 view-secret     v0.8.1
10 <...>
```

KREW - LOCAL INDEX

```
1 $ k krew list
2 PLUGIN          VERSION
3 access-matrix   v0.5.0
4 ctx             v0.9.4
5 get-all         v1.3.8
6 krew            v0.4.1
7 ns              v0.9.4
8 oidc-login      v1.25.0
9 view-secret     v0.8.1
10 <...>
```

KREW - LOCAL INDEX

```
1 $ k krew list
2 PLUGIN          VERSION
3 access-matrix   v0.5.0
4 ctx             v0.9.4
5 get-all         v1.3.8
6 krew            v0.4.1
7 ns              v0.9.4
8 oidc-login      v1.25.0
9 view-secret     v0.8.1
10 <...>
```

KREW - LOCAL INDEX

```
1 $ k krew list
2 PLUGIN          VERSION
3 access-matrix   v0.5.0
4 ctx             v0.9.4
5 get-all         v1.3.8
6 krew            v0.4.1
7 ns              v0.9.4
8 oidc-login      v1.25.0
9 view-secret     v0.8.1
10 <...>
```

KREW - LOCAL INDEX

```
/home/bf/.krew/
├── bin
│   └── <symbolic links>
├── index
│   └── default
│       └── <git-repo>
└── receipts
    └── <manifests>
└── store
    ├── ctx
    ├── krew
    ├── ns
    ├── view-secret
    ├── whoami
    └── who-can
```

KREW - HOW TO DISTRIBUTE PLUGINS

KREW - PACKAGING

```
$ tar -czf \
./target/generate_v0.0.4-linux_amd64.tar.gz \
./target/generate-v0.0.4-runner
```

KREW - MANIFEST

```
1 apiVersion: krew.googlecontainertools.github.com/v1alpha2
2 kind: Plugin
3 metadata:
4   name: generate
5 spec:
6   version: "v0.0.4"
7   shortDescription: A new plugin
8   homepage: https://github.com/benfir/jsd2021
9   description: |
10     This plugging generates k8s manifests for ...
11   platforms:
12   - selector:
13     matchLabels:
14       os: linux
15       arch: amd64
16   uri: https://github.com/benfir/jsd2021/releases/
```

KREW - MANIFEST

```
1 apiVersion: krew.googlecontainertools.github.com/v1alpha2
2 kind: Plugin
3 metadata:
4   name: generate
5 spec:
6   version: "v0.0.4"
7   shortDescription: A new plugin
8   homepage: https://github.com/benfir/jsd2021
9   description: |
10     This plugging generates k8s manifests for ...
11   platforms:
12   - selector:
13     matchLabels:
14       os: linux
15       arch: amd64
16   uri: https://github.com/benfir/jsd2021/releases/
```

KREW - MANIFEST

```
1 apiVersion: krew.googlecontainertools.github.com/v1alpha2
2 kind: Plugin
3 metadata:
4   name: generate
5 spec:
6   version: "v0.0.4"
7   shortDescription: A new plugin
8   homepage: https://github.com/benfir/jsd2021
9   description: |
10     This plugging generates k8s manifests for ...
11   platforms:
12   - selector:
13     matchLabels:
14       os: linux
15       arch: amd64
16   uri: https://github.com/benfir/jsd2021/releases/
```

KREW - MANIFEST

```
1 apiVersion: krew.googlecontainertools.github.com/v1alpha2
2 kind: Plugin
3 metadata:
4   name: generate
5 spec:
6   version: "v0.0.4"
7   shortDescription: A new plugin
8   homepage: https://github.com/benfir/jsd2021
9   description: |
10     This plugging generates k8s manifests for ...
11   platforms:
12     - selector:
13       matchLabels:
14         os: linux
15         arch: amd64
16       uri: https://github.com/benfir/jsd2021/releases/
```

KREW - MANIFEST

```
1 apiVersion: krew.googlecontainertools.github.com/v1alpha2
2 kind: Plugin
3 metadata:
4   name: generate
5 spec:
6   version: "v0.0.4"
7   shortDescription: A new plugin
8   homepage: https://github.com/benfir/jsd2021
9   description: |
10     This plugging generates k8s manifests for ...
11   platforms:
12   - selector:
13     matchLabels:
14       os: linux
15       arch: amd64
16   uri: https://github.com/benfir/jsd2021/releases/
```

KREW - MANIFEST

```
1 apiVersion: krew.googlecontainertools.github.com/v1alpha2
2 kind: Plugin
3 metadata:
4   name: generate
5 spec:
6   version: "v0.0.4"
7   shortDescription: A new plugin
8   homepage: https://github.com/benfir/jsd2021
9   description: |
10     This plugging generates k8s manifests for ...
11   platforms:
12   - selector:
13     matchLabels:
14       os: linux
15       arch: amd64
16   uri: https://github.com/benfir/jsd2021/releases/
```

GITHUB ACTIONS

```
1 name: release-build-linux
2 jobs:
3   build:
4     steps:
5       <...>
6       - name: Set version
7         run: ./mvnw versions:set <...>
8       - name: Build jvm jar
9         run: ./mvnw package
10      - name: Upload package
11        <...>
12      - name: Build native executable
13        run: ./mvnw package -Dnative
14      - name: Upload native executable
15        <...>
16      - name: Build tar.gz
```

GITHUB ACTIONS

```
1 name: release-build-linux
2 jobs:
3   build:
4     steps:
5       <...>
6       - name: Set version
7         run: ./mvnw versions:set <...>
8       - name: Build jvm jar
9         run: ./mvnw package
10      - name: Upload package
11        <...>
12      - name: Build native executable
13        run: ./mvnw package -Dnative
14      - name: Upload native executable
15        <...>
16      - name: Build tar.gz
```

GITHUB ACTIONS

```
1 name: release-build-linux
2 jobs:
3   build:
4     steps:
5       <...>
6       - name: Set version
7         run: ./mvnw versions:set <...>
8       - name: Build jvm jar
9         run: ./mvnw package
10      - name: Upload package
11        <...>
12      - name: Build native executable
13        run: ./mvnw package -Dnative
14      - name: Upload native executable
15        <...>
16      - name: Build tar.gz
```

GITHUB ACTIONS

```
1 name: release-build-linux
2 jobs:
3   build:
4     steps:
5       <...>
6       - name: Set version
7         run: ./mvnw versions:set <...>
8       - name: Build jvm jar
9         run: ./mvnw package
10      - name: Upload package
11        <...>
12      - name: Build native executable
13        run: ./mvnw package -Dnative
14      - name: Upload native executable
15        <...>
16      - name: Build tar.gz
```

GITHUB ACTIONS

```
1 name: release-build-linux
2 jobs:
3   build:
4     steps:
5       <...>
6       - name: Set version
7         run: ./mvnw versions:set <...>
8       - name: Build jvm jar
9         run: ./mvnw package
10      - name: Upload package
11        <...>
12      - name: Build native executable
13        run: ./mvnw package -Dnative
14      - name: Upload native executable
15        <...>
16      - name: Build tar.gz
```

GITHUB ACTIONS

```
1 name: release-build-linux
2 jobs:
3   build:
4     steps:
5       <...>
6       - name: Set version
7         run: ./mvnw versions:set <...>
8       - name: Build jvm jar
9         run: ./mvnw package
10      - name: Upload package
11        <...>
12      - name: Build native executable
13        run: ./mvnw package -Dnative
14      - name: Upload native executable
15        <...>
16      - name: Build tar.gz
```

GITHUB ACTIONS

```
1 name: release-build-linux
2 jobs:
3   build:
4     steps:
5       <...>
6       - name: Set version
7         run: ./mvnw versions:set <...>
8       - name: Build jvm jar
9         run: ./mvnw package
10      - name: Upload package
11        <...>
12      - name: Build native executable
13        run: ./mvnw package -Dnative
14      - name: Upload native executable
15        <...>
16      - name: Build tar.gz
```

Pre-release

🔗 v0.0.4
-o 8bc4905

Compare ▾

v0.0.4



berndfischer63 released this 19 hours ago · 2 commits to main since this release

- add tar.gz to linux build
- some minor fixes and improvements



▼ Assets 7

generate-v0.0.4-darwin	60.5 MB
generate-v0.0.4-linux-amd64	60.4 MB
generate-v0.0.4-linux-amd64.tar.gz	17.3 MB
generate-v0.0.4-win64.exe	61.1 MB
generate-v0.0.4.jar	8.88 KB
Source code (zip)	
Source code (tar.gz)	

```
1 $ kubectl krew list | grep -i generate
2
3 $ kubectl krew install --manifest-url=https://raw...
4 Updated the local copy of plugin index.
5 Installing plugin: generate
6 Installed plugin: generate
7 \
8 | Use this plugin:
9 |     kubectl generate
10 | Documentation:
11 |     https://github.com/benfir/jsd2021
12 /
13
14 $ kubectl krew list | grep -i generate
15 detached/generate
```

```
1 $ kubectl krew list | grep -i generate
2
3 $ kubectl krew install --manifest-url=https://raw...
4 Updated the local copy of plugin index.
5 Installing plugin: generate
6 Installed plugin: generate
7 \
8 | Use this plugin:
9 |     kubectl generate
10 | Documentation:
11 |     https://github.com/benfir/jsd2021
12 /
13
14 $ kubectl krew list | grep -i generate
15 detached/generate
```

```
1 $ kubectl krew list | grep -i generate
2
3 $ kubectl krew install --manifest-url=https://raw...
4 Updated the local copy of plugin index.
5 Installing plugin: generate
6 Installed plugin: generate
7 \
8 | Use this plugin:
9 |     kubectl generate
10 | Documentation:
11 |     https://github.com/benfir/jsd2021
12 /
13
14 $ kubectl krew list | grep -i generate
15 detached/generate
```

```
1 $ kubectl krew list | grep -i generate
2
3 $ kubectl krew install --manifest-url=https://raw...
4 Updated the local copy of plugin index.
5 Installing plugin: generate
6 Installed plugin: generate
7 \
8 | Use this plugin:
9 |     kubectl generate
10 | Documentation:
11 |     https://github.com/benfir/jsd2021
12 /
13
14 $ kubectl krew list | grep -i generate
15 detached/generate
```

```
1 $ kubectl generate sc testclass --provisioner=gold
2 apiVersion: storage.k8s.io/v1
3 kind: StorageClass
4 metadata:
5   name: testclass
6 allowVolumeExpansion: false
7 allowedTopologies:
8 mountOptions:
9 parameters:
10 provisioner: gold
11 reclaimPolicy: Delete
12 volumeBindingMode: Immediate
```

```
1 $ kubectl generate sc testclass --provisioner=gold
2 apiVersion: storage.k8s.io/v1
3 kind: StorageClass
4 metadata:
5   name: testclass
6 allowVolumeExpansion: false
7 allowedTopologies:
8 mountOptions:
9 parameters:
10 provisioner: gold
11 reclaimPolicy: Delete
12 volumeBindingMode: Immediate
```

MULTIPLE PLATFORMS - GRAALVM

MULTIPLE PLATFORMS - GRAALVM

- cross compiling is complex and slow

MULTIPLE PLATFORMS - GRAALVM

- cross compiling is complex and slow
- build-hardware for every target

MULTIPLE PLATFORMS - GRAALVM

- cross compiling is complex and slow
- build-hardware for every target
- solution for OSS
 - build platforms like Github Actions

MULTIPLE PLATFORMS - KREW

- necessary to extend krew manifest

ONE MORE POINT





**THANK
YOU**



LINKS

- <https://quarkus.io/>
- <https://picocli.info>
- <https://github.com/fabric8io/kubernetes-client>
- <https://quarkus.io/guides/qute>
- <https://docs.github.com/en/actions>
- <https://www.graalvm.org/>

LINKS

Thankfully using ...

- Image by GraphicMama-team from Pixabay
- Image by Gerd Altmann from Pixabay