

SIG-CLI DeepDive - Kubectl Plugins

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kubernetes



What are plugins?

"Old" plugins?



**SORRY WE'RE
CLOSED
BUT STILL AWESOME**



UX

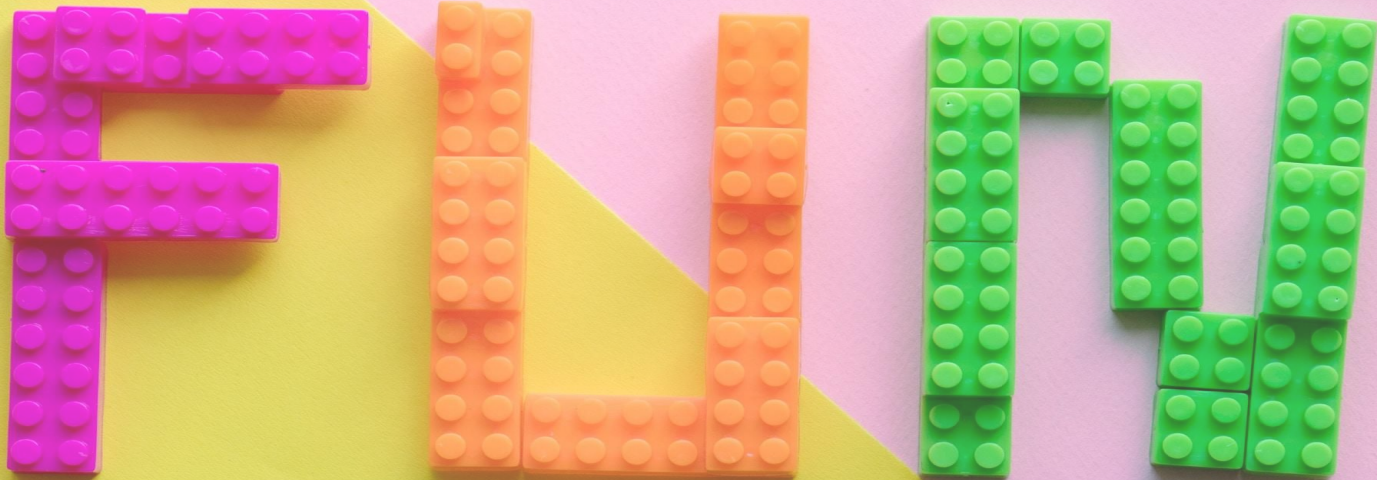
Discoverability

“Extending” built-ins (?)





Plugins are now beta!



LEAD

A close-up, slightly blurred photograph of a person's hands typing on a silver laptop keyboard. The person is wearing a light-colored, possibly white, long-sleeved sweater. The background is a soft, out-of-focus grey. The text "How to write your own?" is overlaid in a large, bold, black font across the center of the image.

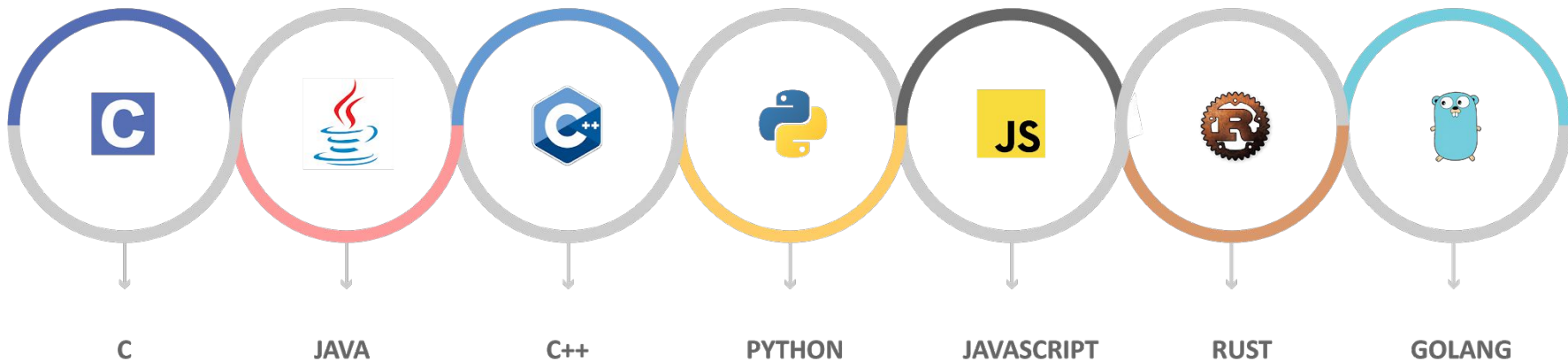
How to write your own?

Any binary



PATH + kubectl-*

Any language



k8s.io/cli-runtime

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CLI Runtime - features



Same core utils that **kubectl** commands use

Reading configuration

Clients to talk to API server

k8s.io/cli-runtime



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CLI Runtime - features



Bind flags (printing, config, etc.)

Printing utilities (json, yaml, etc.)

Set of polymorphic helpers

k8s.io/cli-runtime



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Naming structure



[kubernetes/enhancements/keps/sig-cli/
0024-kubectl-plugins.md](https://kubernetes.io/enhancements/keps/sig-cli/0024-kubectl-plugins.md)

Naming structure



`kubectl-foo-bar`

`kubectl-login`

`kubectl-my_plugin`



`kubectl foo bar`

`kubectl login`

`kubectl my-plugin`



Name conflicts & path order



```
PATH=/usr/bin/plugins:/usr/bin/moreplugins
```

1. `/bin/plugins/kubectl-foo` 👍
2. ~~`/bin/moreplugins/kubectl-foo`~~



Name conflicts & greedy matching



```
PATH=/usr/bin/plugins:/usr/bin/moreplugins
```

```
$ kubectl foo bar baz
```

1. **"baz"** becomes arg
2. `/bin/moreplugins/kubectl-foo-bar` 👍
3. ~~`/bin/plugins/kubectl-foo`~~



Sample plugin



```
func main() {
    flags := pflag.NewFlagSet("kubectl-ns", pflag.ExitOnError)
    pflag.CommandLine = flags

    root := cmd.NewCmdNamespace(genericclioptions.IOStreams{In: os.Stdin, Out: os.Stdout, ErrOut: os.Stderr})
    if err := root.Execute(); err != nil {
        os.Exit(1)
    }
}
```

k8s.io/sample-cli-plugin

Sample plugin - anatomy



Key Imports

```
"k8s.io/client-go/tools/clientcmd" ←
```

KUBECONFIG manipulation

```
"k8s.io/client-go/tools/clientcmd/api" ←
```

KUBECONFIG types

```
"k8s.io/cli-runtime/pkg/genericclioptions" ←
```

Generic helpers

```
)
```



Sample plugin - anatomy



Bind Config Flags

```
&NamespaceOptions{  
    configFlags: genericclioptions.NewConfigFlags(),
```

```
o.configFlags.AddFlags(cmd.Flags())
```

```
return cmd
```



Sample plugin - anatomy



Obtain KUBECONFIG data

```
var err error
o.rawConfig, err = o.configFlags.ToRawKubeConfigLoader().RawConfig()
if err != nil {
    return err
}
```



A person in a dark hoodie stands in a vast field of green wheat, looking up at a dramatic sunset sky with wispy clouds. The word "Future?" is overlaid in large, bold, black text on the right side of the image.

Future?



**Regular SIG Meeting: Wednesdays at 09:00 PT
(Pacific Time) (biweekly).**

Reach out on the SIG CLI Slack Channel (#sig-cli)

**Contact us through our email group:
kubernetes-sig-cli@googlegroups.com**