
Monitoring Kubernetes clusters by “chatting” with them

InfraCloud Technologies

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<https://twitter.com/infracloudio>

Speakers



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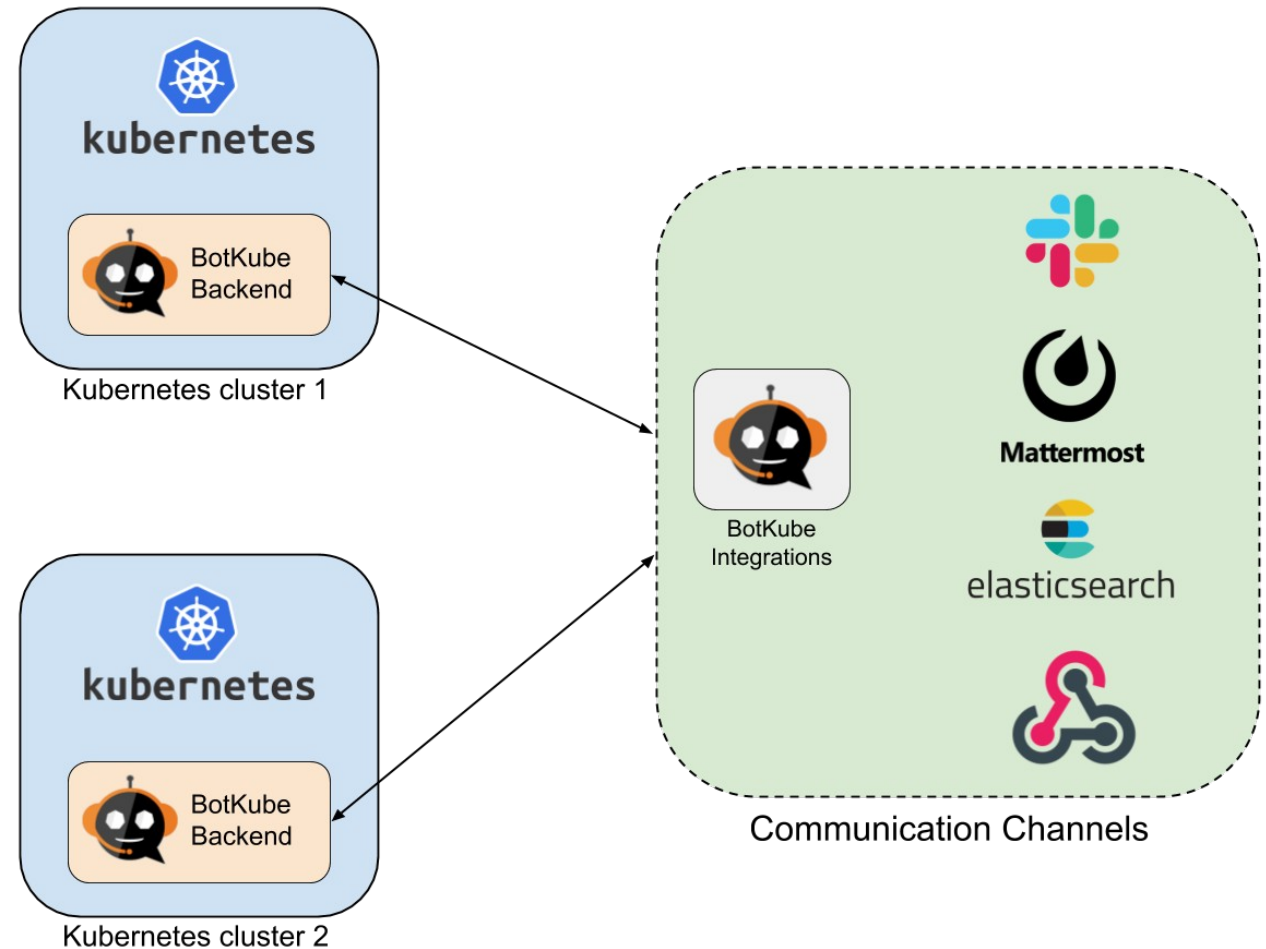
Brief Agenda

- **BotKube Introduction**
 - Notifier
 - Chat with Kubectl
 - Filters
- **Use Cases**
 - Debugging & monitoring applications
 - Collaborative debugging in teams
 - Monitor and Audit events
 - Incident management

Introduction to BOTKUBE

What is BotKube?


- A bot for Kubernetes clusters
- Monitoring & auditing tool
- Enables Collaboration





Kubectl at your fingertips

- Fire Kubectl commands to BotKube or in a channel
- Sub-commands and types exposed configurable too!
- Enable/Disable for a cluster

 **Mugdha** 5:43 PM
 **@BotKube** describe node gke-vb-pg-default-pool-b8115af5-msxk

 **BotKube** APP 5:15 PM
 describe node gke-vb-pg-default-pool-b8115af5-msxk ▾

```
1 Cluster: gke-dev
2 Name:          gke-vb-pg-default-pool-b8115af5-msxk
3 Roles:         master
4 Labels:        beta.kubernetes.io/arch=amd64
5                beta.kubernetes.io/os=linux
```

 **Mugdha** 6:04 PM
 **@BotKube** top pods -n fission

 **BotKube** APP 6:04 PM

```
Cluster: gke-dev
NAME                                     CPU(cores)   MEMORY(bytes)
buildermgr-7958ddfd56-mn8w7             0m           7Mi
controller-676f97f45-pjmv2             1m           6Mi
executor-76ccc985b7-jv7jv              1m          11Mi
influxdb-868d78d79-fw2t5               0m          19Mi
kubewatcher-6fd947999d-zdmnm            0m           5Mi
logger-n2lmj                             4m          109Mi
mqtrigger-kafka-67c9949f65-hrsc8        3m           6Mi
mqtrigger-nats-streaming-78bd496844-m91fv 0m           5Mi
my-fission-prometheus-alertmanager-7d5d6fbf4b-h4nnk 1m           7Mi
my-fission-prometheus-kube-state-metrics-59f998db47-5zqnk 1m          16Mi
my-fission-prometheus-node-exporter-thbq7 0m           7Mi
my-fission-prometheus-pushgateway-6bc69cb888-x6xxh 0m           8Mi
my-fission-prometheus-server-5d6f7bd669-srltr 6m          194Mi
nats-streaming-576964bb64-7vq7k         0m           3Mi
redis-0                                 1m           2Mi
router-758555c955-5cx6z                 1m           8Mi
storagesvc-5b87495f58-rfshq             1m           5Mi
timer-865cd98fb-rfq6s                   0m           5Mi
```

Various Targets

- Slack, Elastic, MatterMost supported

- Discord, Microsoft Teams and Telegram coming

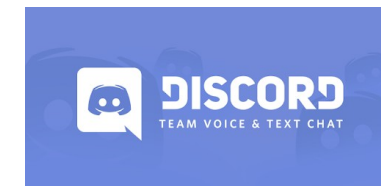
Give BotKube a spin - visit [BotKube.io](https://botkube.io)

Bi-directional

Sink



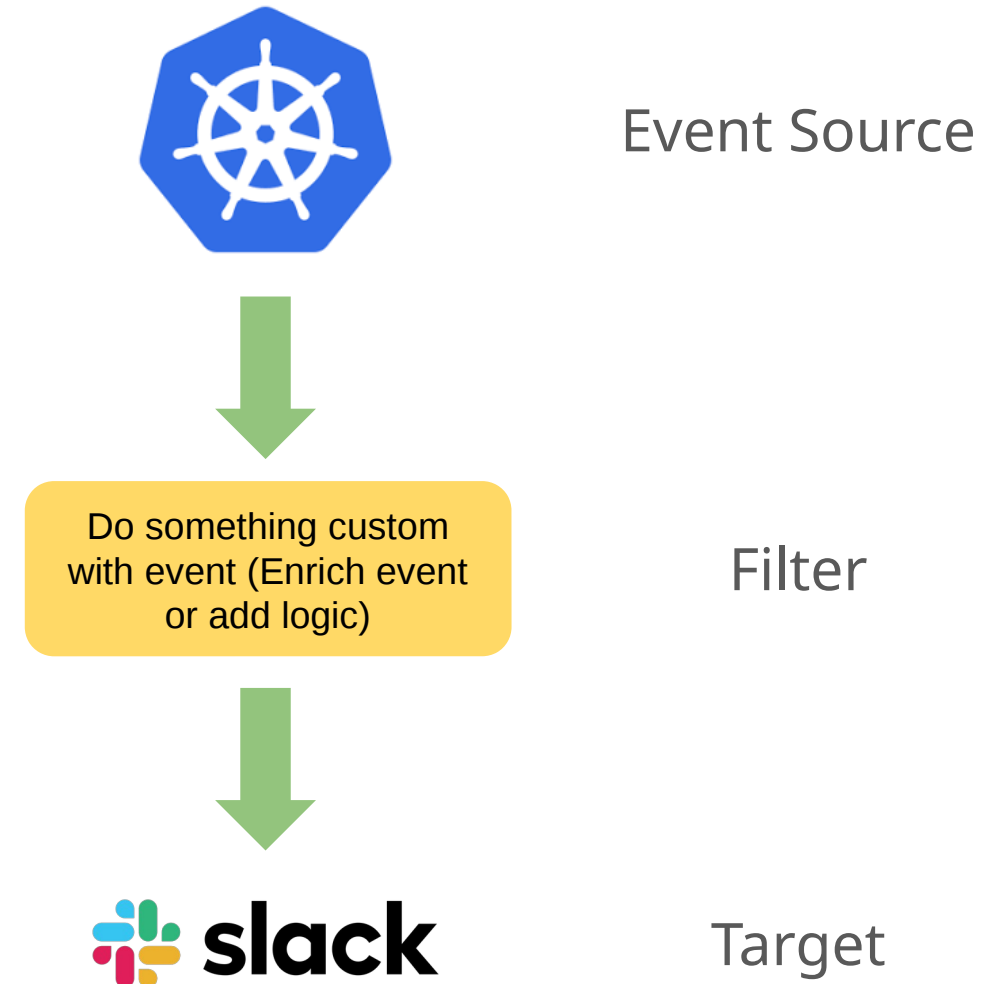
Mattermost



Telegram

Filters - like custom interceptors

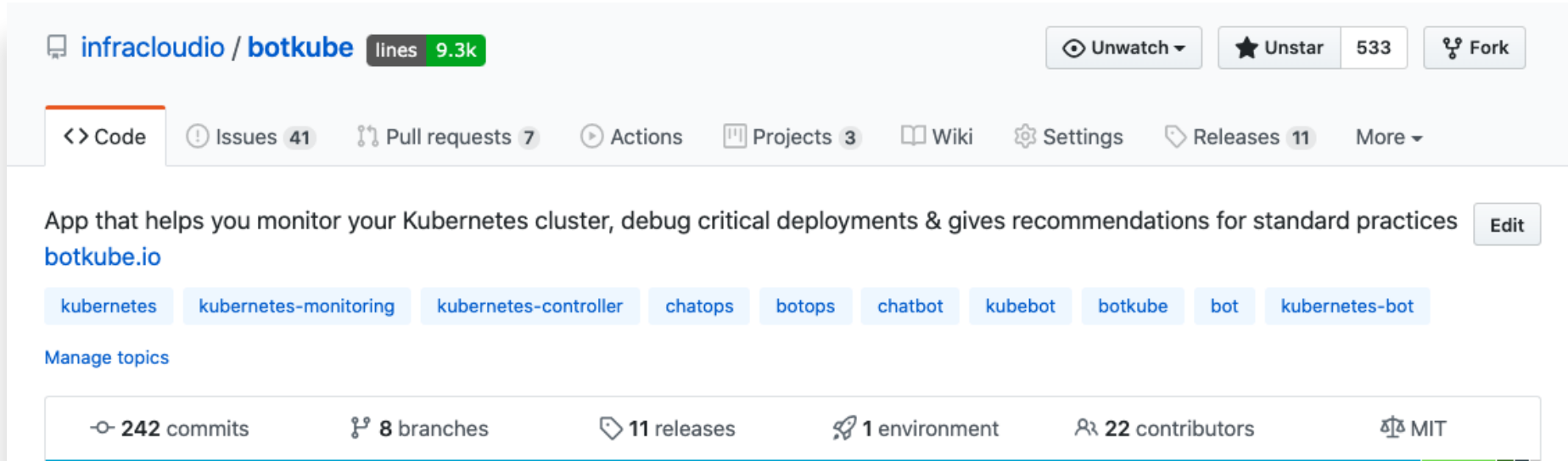
- Write “custom logic” for certain events
- An event can pass through multiple filters



BotKube on GitHub: Star & Show ❤️

You can Star &
show here

<https://github.com/infracloudio/botkube>



The screenshot shows the GitHub repository page for `infracloudio / botkube`. The repository has 9.3k lines of code. The page includes navigation tabs for Code, Issues (41), Pull requests (7), Actions, Projects (3), Wiki, Settings, Releases (11), and More. The description states: "App that helps you monitor your Kubernetes cluster, debug critical deployments & gives recommendations for standard practices" with a link to `botkube.io`. Below the description are topic tags: `kubernetes`, `kubernetes-monitoring`, `kubernetes-controller`, `chatops`, `botops`, `chatbot`, `kubebot`, `botkube`, `bot`, and `kubernetes-bot`. At the bottom, statistics are listed: 242 commits, 8 branches, 11 releases, 1 environment, 22 contributors, and MIT license.

infracloudio / **botkube** lines 9.3k

Unwatch Unstar 533 Fork

<> Code Issues 41 Pull requests 7 Actions Projects 3 Wiki Settings Releases 11 More

App that helps you monitor your Kubernetes cluster, debug critical deployments & gives recommendations for standard practices `botkube.io` Edit

kubernetes kubernetes-monitoring kubernetes-controller chatops botops chatbot kubebot botkube bot kubernetes-bot

Manage topics

242 commits 8 branches 11 releases 1 environment 22 contributors MIT

Let's Talk about

Use Cases

Monitoring & Auditing events

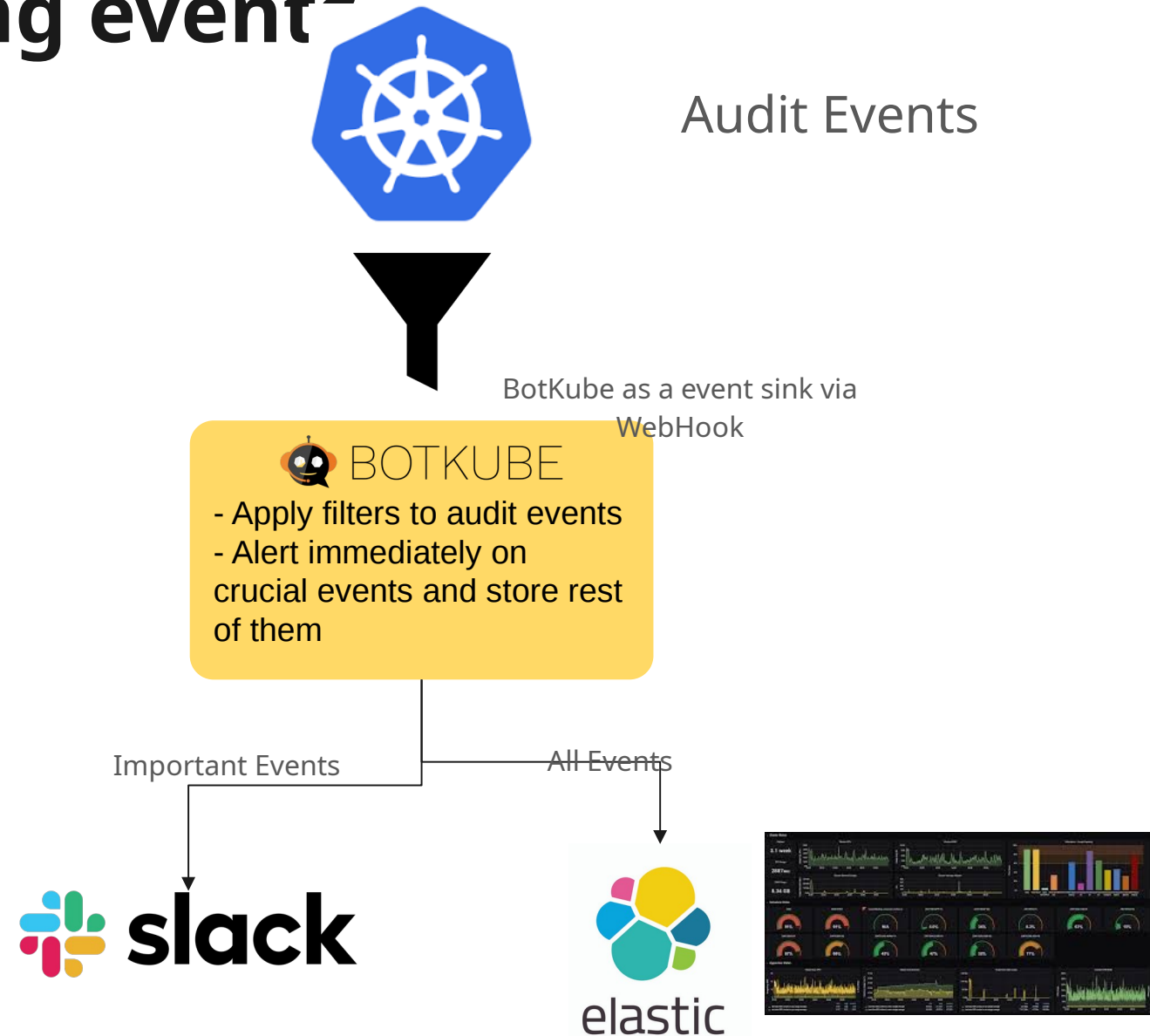
Configure Events for your needs

- Resource configuration.
- Resource & event level configuration
- Specific fields and diff
- Namespace level filtering

```
- name: pod
  namespaces:
    include:
      - dev
      - qa
      - default
    ignore:
      - kube-system
      - prod
  updateSetting:
    includeDiff: true
  fields:
    - spec.template.spec.containers[*].image
    - status.availableReplicas
  events:
    - all
```

Monitoring & Auditing event~

- A bot for Kubernetes clusters
- Monitoring & auditing tool
- Enables Collaboration



Audit Events

1/2

- A sample audit configuration
- Stages of audit event
- Sink targets

```
1  auditWebhook:
2    enabled: false
3    replicaCount: 1
4    stages:
5      - ResponseComplete
6      - ResponseStarted
7    config:
8      sink:
9        elasticsearch:
10          enable: false
11          server: 'ELASTICSEARCH_ADDRESS'
12          username: 'ELASTICSEARCH_USERNAME'
13          password: 'ELASTICSEARCH_PASSWORD'
14          # ELS index settings
15          index:
16            name: botkube-audit
17            type: botkube-audit-event
18            shards: 1
19            replicas: 0
```

Audit Events: Notification

2/2

- Rego expression for condition



Open Policy Agent

- Notification for events which match expression

```

20  notifier:
21      # If set true, BotKube sends audit event notification via communication mediums
22      enabled: false
23      # Set rules to filter Kubernetes audit events
24      rules:
25      - name: Security Alert
26        description: Somebody tried to exec into a Pod
27        # Filter audit events based on conditions
28        # Use OPA Rego syntax to write conditions
29        condition: input.objectRef.resource == "pods"; input.objectRef.subresource == "exec"; input.stage ==
        "ResponseStarted"
30        # One of the critical, error, warn, info, or debug
31        priority: critical

```

Incident Management

Incident Management

- Build workflows with Slack Workflow
- Integrate with other Incident Management systems such as PagerDuty, VictorOps
- During incident - use Kubectl to debug collaboratively!
- ◆ Give BotKube a spin - visit
◆ BotKube.io

Debugging & Monitoring Applications

Debugging Applications

- Debugging pending pods
- Debugging an unreachable pod
- Debug Running pods
- Debug Services
- Debugging nodes

Pod error

Error Occurred in Pod: `nginx-b9df5b7c9-87zmd` in `gke-dev-cluster` cluster

```
Readiness probe failed: stat: cannot stat '/config': No such file or directory
```

BotKube | Today at 8:12 PM

Job update

Job `default/pi` has been updated in `test` cluster

```
Job succeeded!
```

BotKube | Today at 6:38 PM

Pod error

Error Occurred in Pod: `pi-err-r8dxd` in `test` cluster

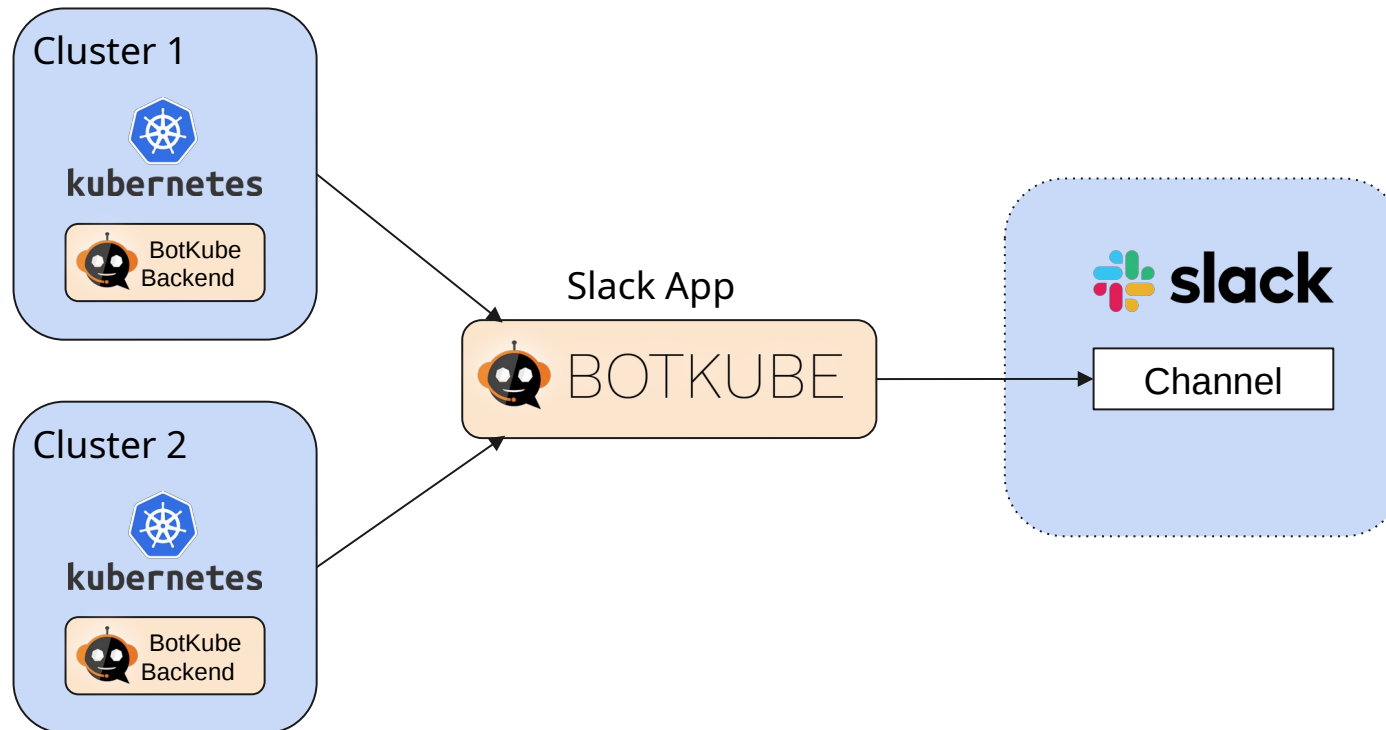
```
Error: failed to create containerd task: OCI runtime create failed: container_linux.go:345: starting container process caused "exec: \"perl\": executable file not found in $PATH": unknown
```

BotKube | Today at 6:38 PM

Collaborative debugging

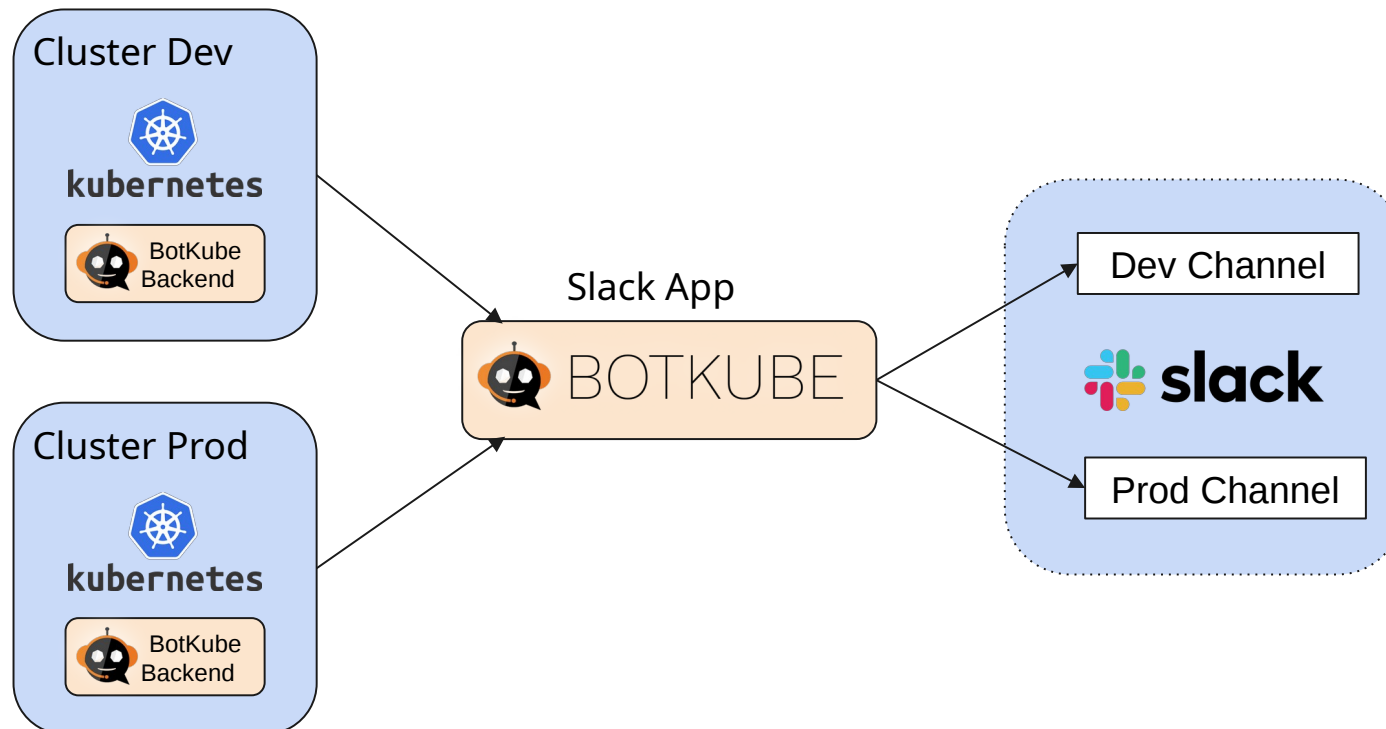
Collaborative Debugging

- Accessing multiple clusters & namespaces



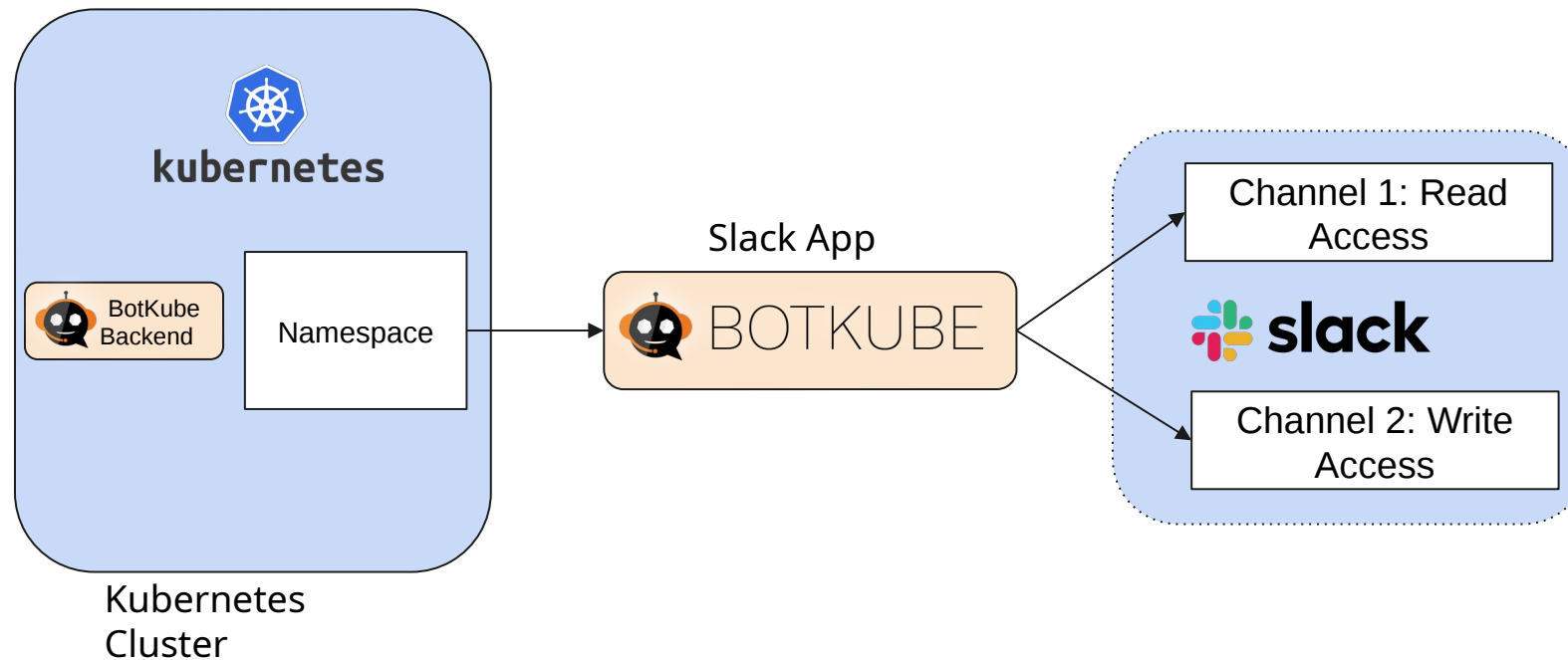
Collaborative Debugging

- Mapping Cluster <> Channels as per need



Collaborative Debugging

- Team specific permissions



“Chatting” with cluster

What's coming next in BotKube?

- Integration with incident management systems
- More chat backends: MS Teams, Telegram, Discord, Gitter
- Kubectl Aliases
- Support for custom resources
- More build in filters - like kubescan
- Profiles support for various needs

Resources



botkube.io



<https://github.com/infracloudio/botkube>



join.botkube.io

Open House & Thank you! INFRACLOUD

ধন্যবাদ!

Dank je!

Kiitos!

આભાર!

धन्यवाद!

Grazie!

Je vous remercie!

ありがとうございました!
た!

ਤੁਹਾਡਾ ਧੰਨਵਾਦ!

நன்றி!

ధన్యవాదాలు!

നന്ദി!

THANK YOU!

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