IstioCon

Introduction

- What is MirageDebug?

  - An open-source local remote debugging tool for Kubernetes apps

- Why MirageDebug?

  - Easy-to-set-up steps provide a seamless debugging experience that mirrors the real environment

  - IDE integration (JetBrains, VSCode)

  - Multi-language support (Golang, Rust)

Architecture

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Principle
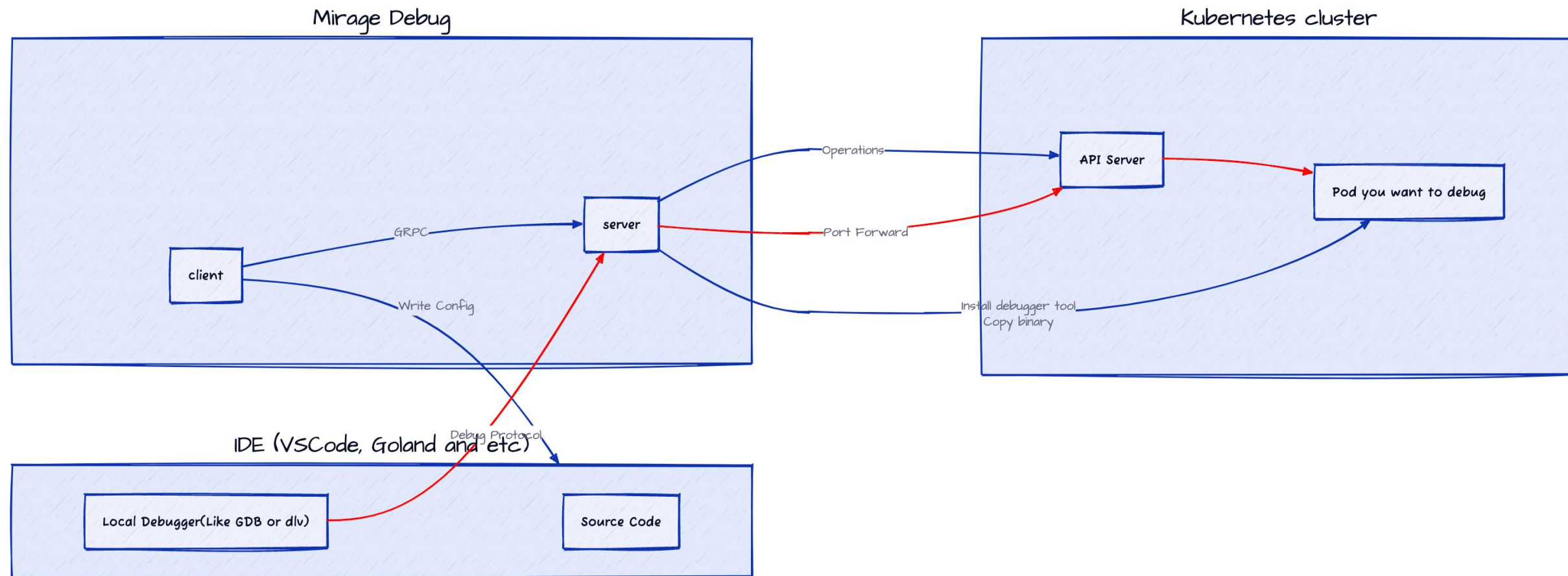
- Output processes from the pod `ps -ef`

```
istio-p+    66    0  0 09:25 ?        00:00:00 sh -c /tmp/debug-tool --listen=:57293 --headless=true --api-version=2 --
accept-multiclient --check-go-version=false exec -- /tmp/demo discovery --monitoringAddr=:15014 --
log_output_level …
istio-p+    72    66 12 09:25 ?        00:00:02 /tmp/debug-tool --listen=:57293 --headless=true --api-version=2 --
accept-multiclient --check-go-version=false exec -- /tmp/demo discovery --monitoringAddr=:15014 --
log_output_level=default…
istio-p+    78    72  0 09:25 ?        00:00:00 /tmp/demo discovery --monitoringAddr=:15014 --
log_output_level=default:info --domain cluster.local --keepaliveMaxServerConnectionAge 30m…
```

- Summary
  - Headless debugging tool listening on a specific port
  - Istio pilot discovery service running alongside the debugging tool
  - Local IDE connection through port-forward

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- Installation

```
go install github.com/miragedebug/miragedebug/cmd/mirage-debug@latest
```

- Configure the debugging session

```
mirage-debug server
```

```
mirage-debug init
```

```
mirage-debug config <app_name>
```

- ## mirage-debug init

? What is app name? demo
? Choose a programing language: GO
? Choose a namespace you want to debug: istio-system
? What kind of workload: DEPLOYMENT
? Please choose a workload: istiod
detected your IDE: GOLAND
? Your project workdir:
/Users/xiaopenghan/go/src/istio.io/istio
? Your app entry path: ./pilot/cmd/pilot-discovery
? How to build your project: GOOS=linux
GOARCH=amd64 go build -o
/tmp/demo ./pilot/cmd/pilot-discovery
? App running args(eg. --port 8080): discovery --
monitoringAddr=:15014 --log_output_level=default:info
--domain cluster.local --
keepaliveMaxServerConnectionAge 30m

? App Config yaml:
localConfig:
  appArgs: discovery --monitoringAddr=:15014 ...
  buildOutput: /tmp/demo
  customBuildCommand: ...
  ideType: GOLAND
  workingDir: /Users/xiaopenghan/go/src/istio.io/istio
name: demo
programType: GO
remoteRuntime:
  containerName: discovery
  namespace: istio-system
  workloadName: istiod

create app demo success
 Run `mirage-debug config demo` in
/Users/xiaopenghan/go/src/istio.io/istio to config your IDE!

Usage

- mirage-debug config <app_name>

Usage

- Restore the original container

```
mirage-debug delete <app_name>
```

Demo

- Istiod with Goland and Ztunnel with VSCode demos

  - https://github.com/miragedebug/miragedebug - demo

Community

- Github Repo

  - https://github.com/miragedebug/miragedebug

Thank you!