Dogfooding Openshift with our CI infrastructure

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Agenda

- Problems (of the past)
- Goals
- Benefits (of the present)
- CI architecture
- Problems (of the present)
- Future work

Problems (of the past)

- “CI is slow”
- Tribal knowledge of our CI tools
- Nobody wants to maintain CI infra
- Non-extensible, no multirepo support

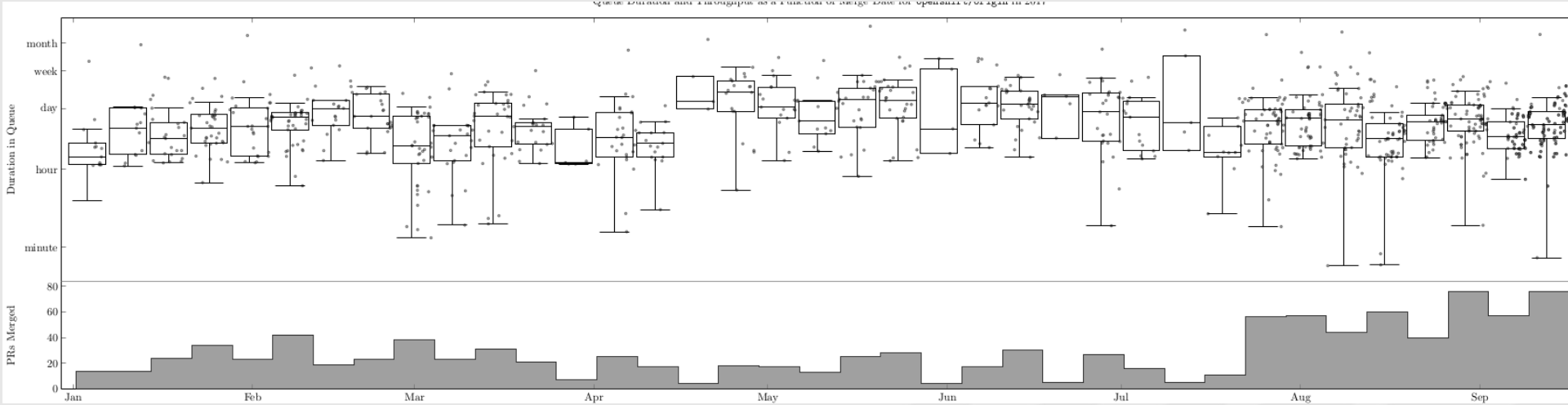
Goals

- Test and merge *efficiently*
- Support multiple repositories
- Make CI infra maintenance fun

Benefits (of the present)

- “CI is fast”
- Providing feedback to our development teams (dogfooding)
- Co-maintenance with the Kubernetes community
- CI infra shares code with core Kubernetes!
- Multirepo support, extensible, “quantum” CI

Benefits (of the present)



Duration of a PR in the queue stays the same, merge throughput quadruples

CI architecture

- Replaced the old bot with goodies from k8s/test-infra
- **prow** is responsible for testing and merging PRs and all the user interactions in between
- **Jenkins** is still in the picture (for now)
- Test results/artifacts are pushed by Jenkins/prow into GCS buckets
- **gubernator** exposes test results/artifacts

CI architecture

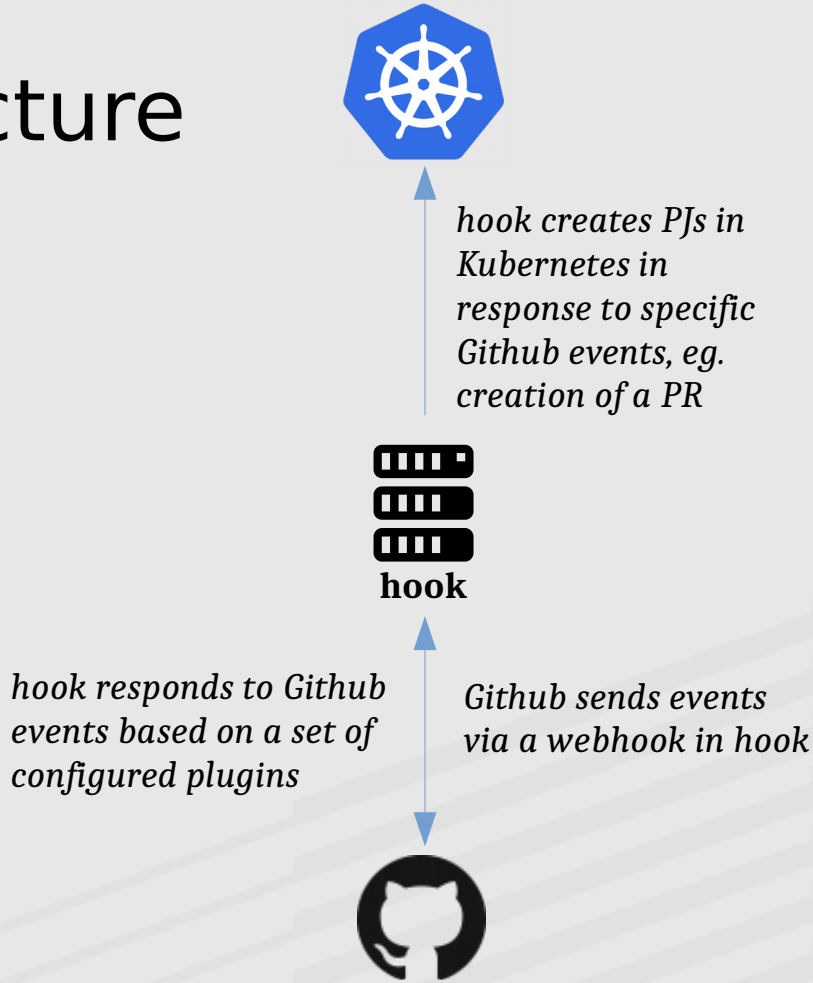
- prow needs to run on top of a Kubernetes cluster
- Extends the Kubernetes API with ProwJobs
- Comprised by a set of microservices that act as controller loops for ProwJobs
- Each service is responsible for a specific task

CI architecture

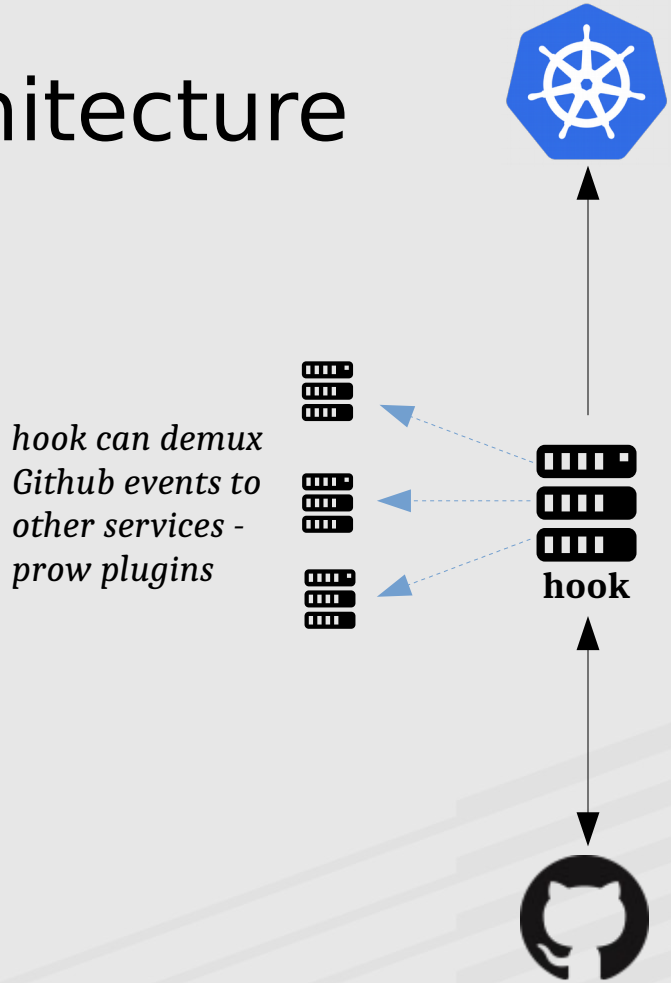
Entrypoint services for creating tests in the cluster:

- **hook**, based on Github events
- **horologium**, based on configured periodic jobs
- **tide** handles merging and retesting pull requests

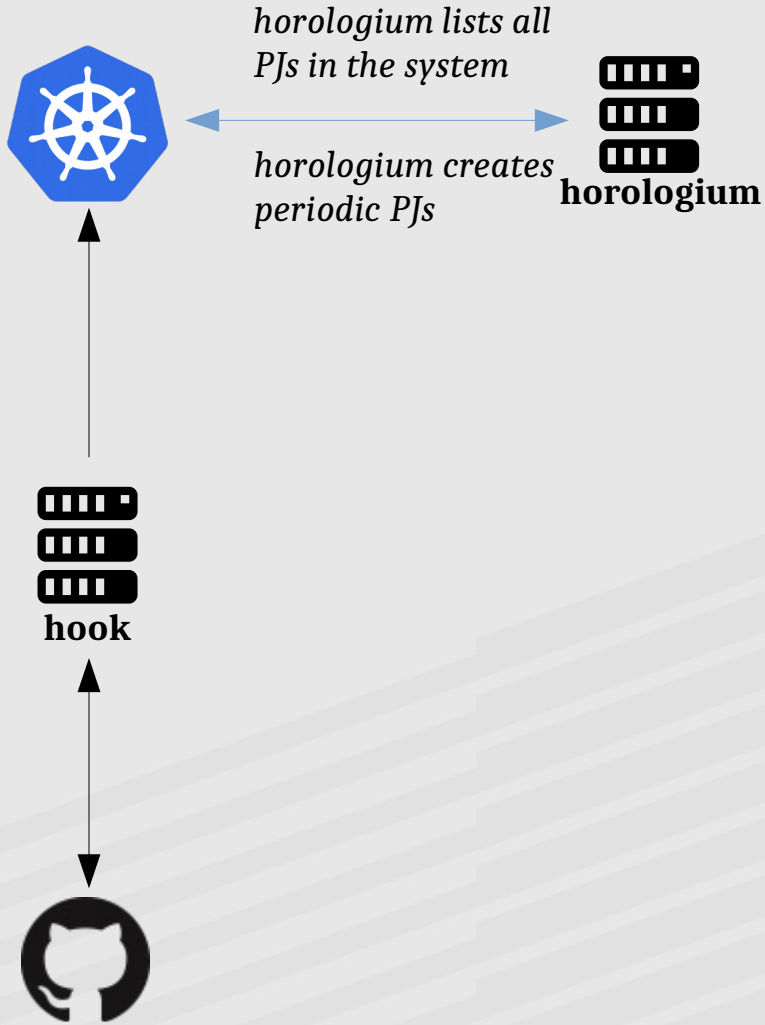
CI architecture



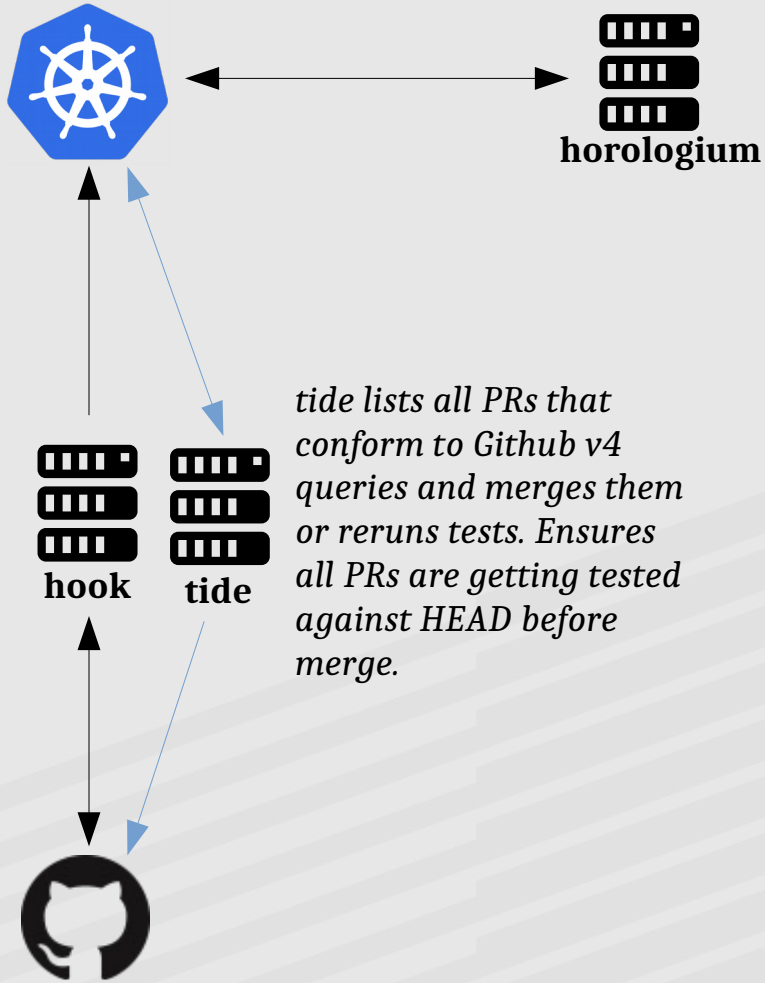
CI architecture



CI architecture



CI architecture

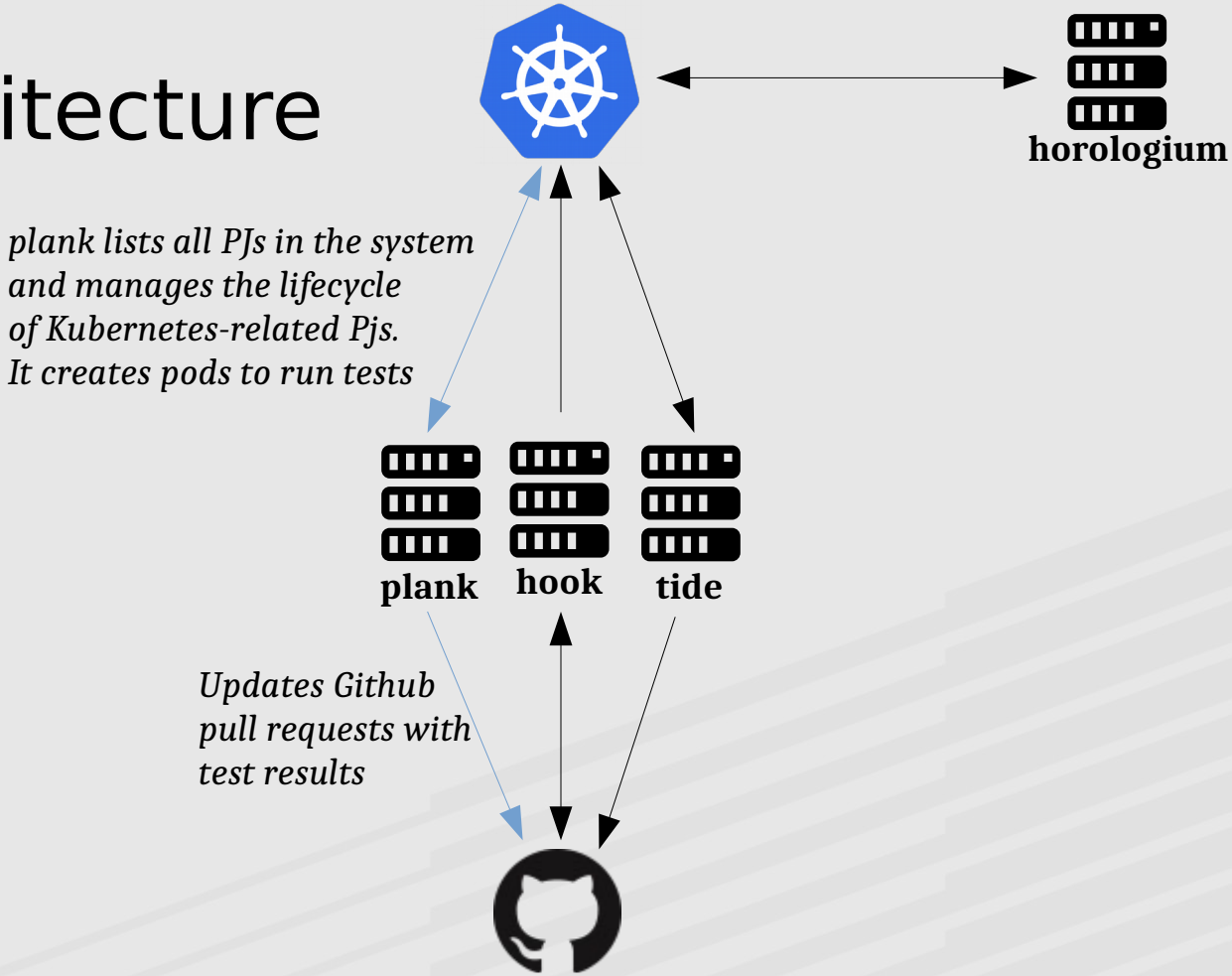


CI architecture

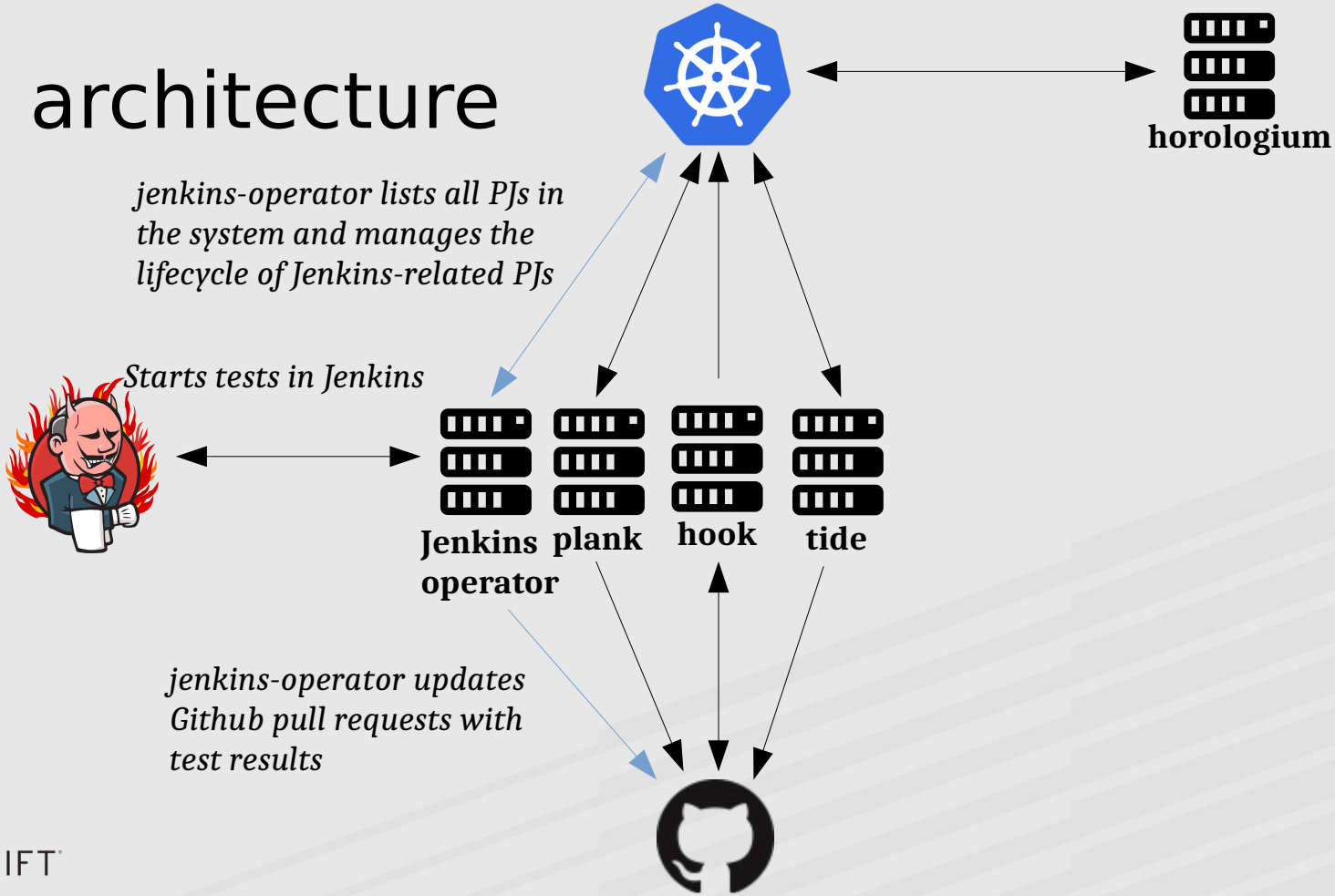
Two services for managing the lifecycle of tests:

- **plank** runs tests in Kubernetes pods
- **jenkins-operator** runs tests in Jenkins

CI architecture



CI architecture

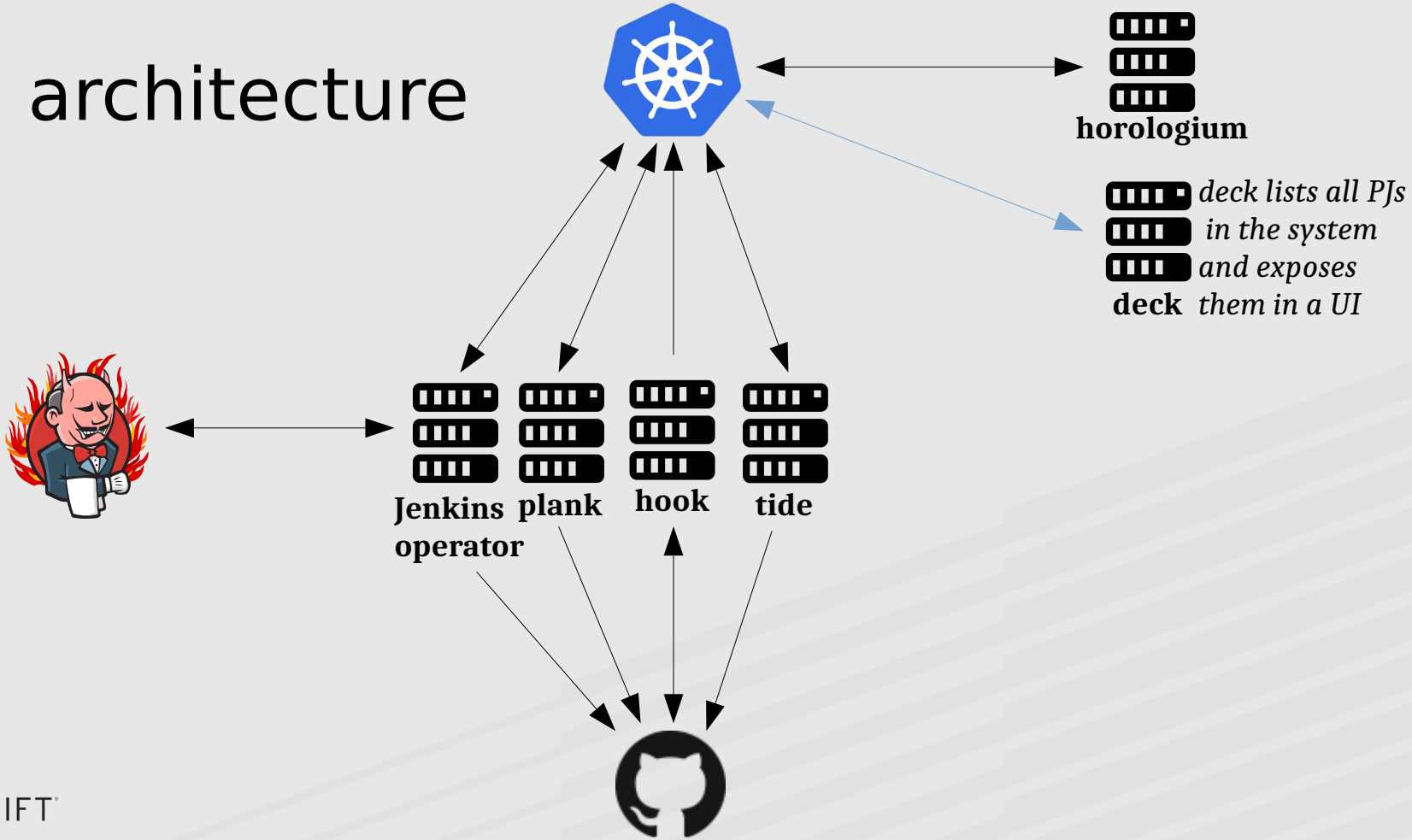


CI architecture

Others:

- **deck** is the front-end of prow
- **sinker** handles garbage collection of old PJs and pods

CI architecture



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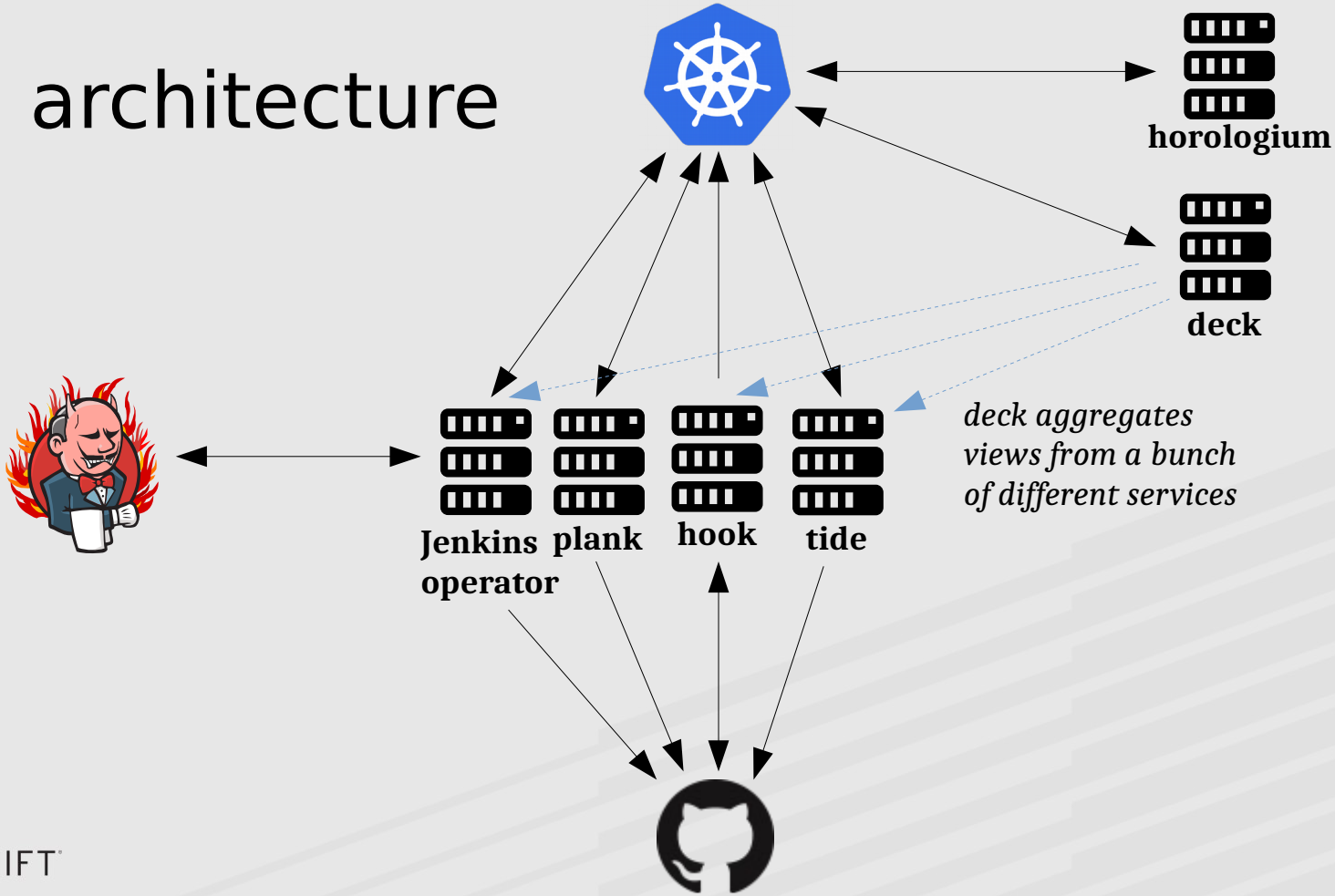
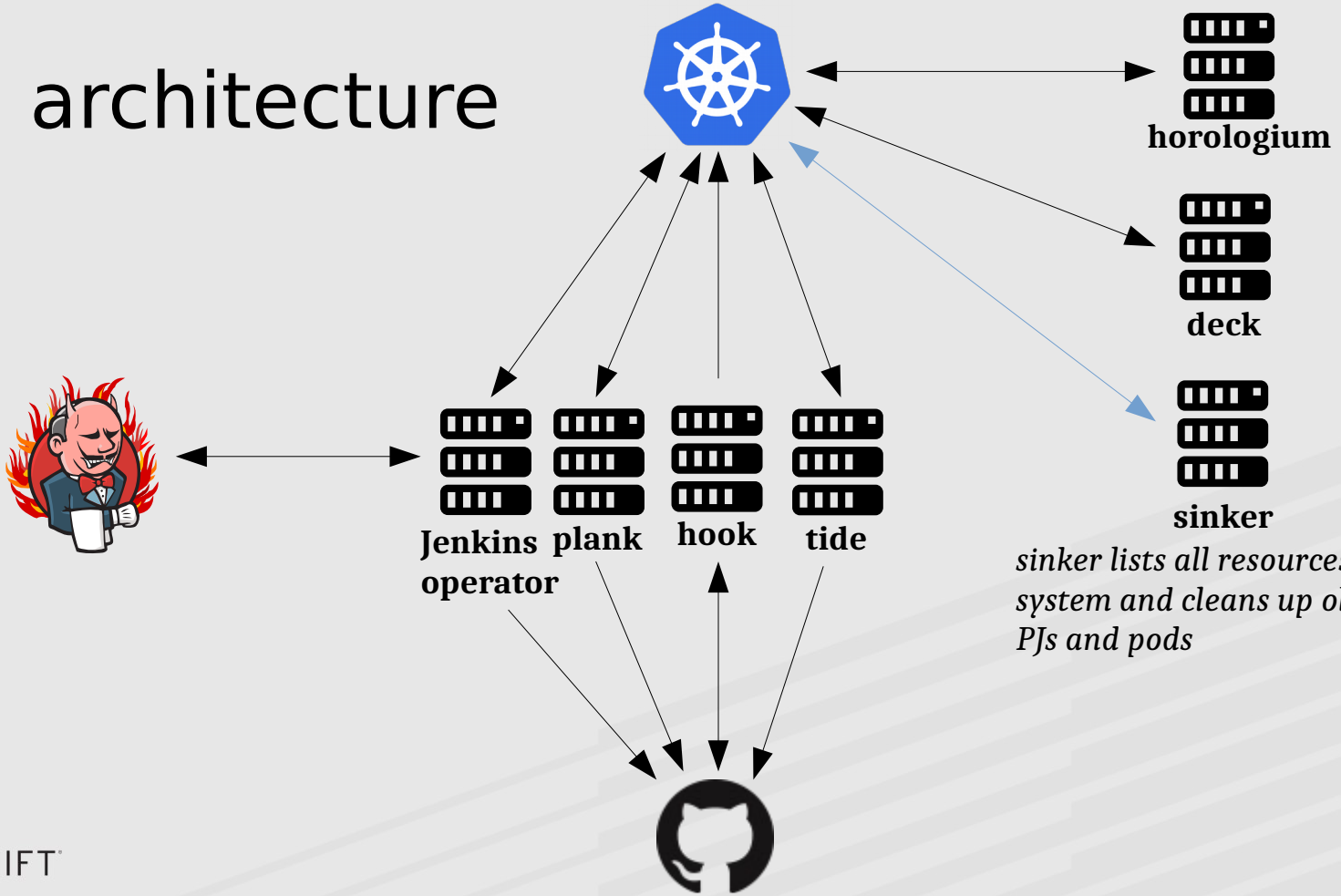
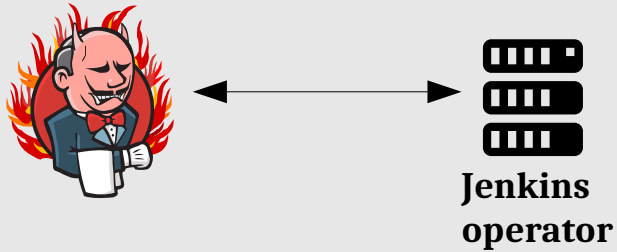


CI architecture



sinker lists all resources in the system and cleans up old PJs and pods

Problems (of the present)



- Jenkins does not scale to our needs
- Impossible to fix itself when it crashes
- Wrong use of Jenkins pipelines

Future work

- Move all Openshift repos to use prow
- Re-architect Jenkins pipelines into Golang pipelines
- Release a declarative API to users that want to setup testing for their projects

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