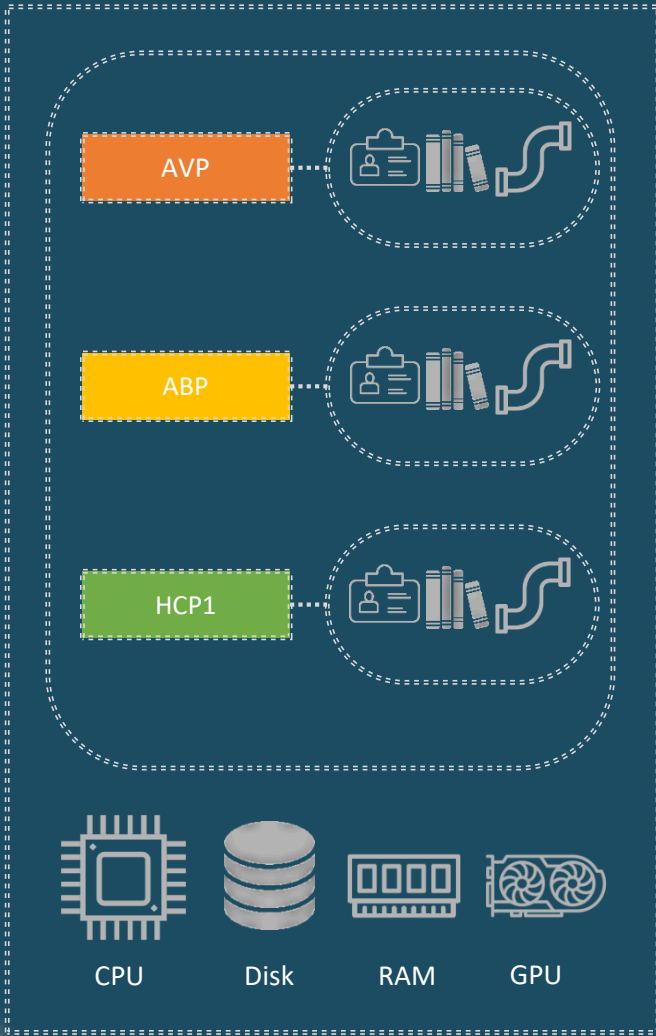


# Cloudbees CI



# Current Scenario

## Monolithic Jenkins



## Problems

Scaleability?

Single PoF

No Technical diversity

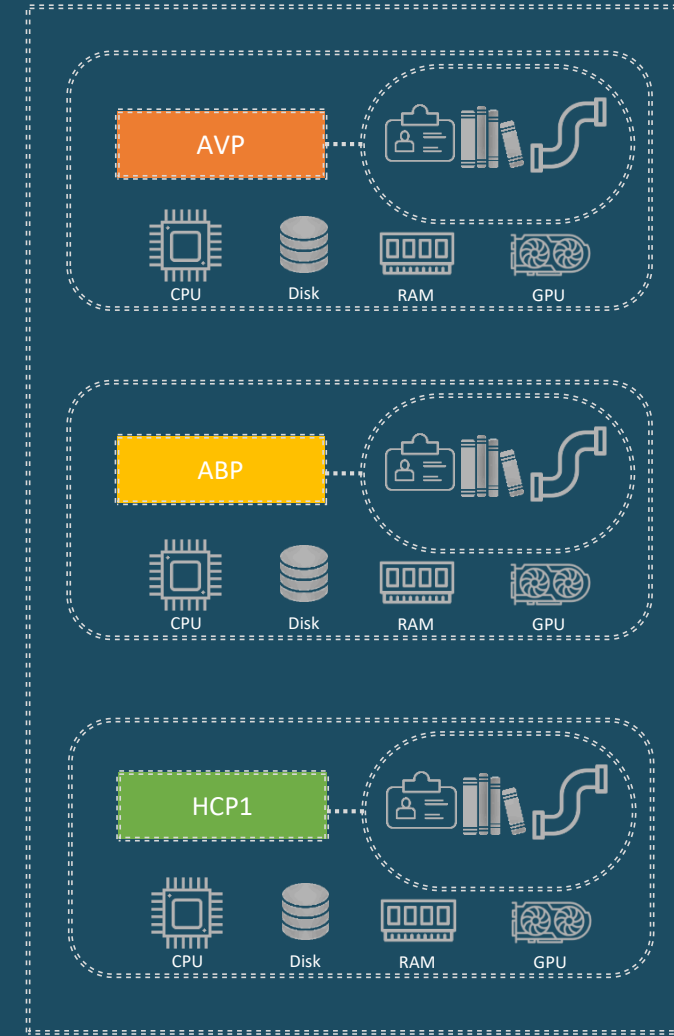
No Collaboration

Hidden costs

Increased time to production

No governance

## Island of Jenkins



# Future Scenario



CloudBees Core

## Cloudbees CI Operations Center

Rapid Team Onboarding

Role-based Access

Cluster Operations

Plugin Catalog

Create a new Master team-charlie

S	W	Name ↓	M	Job Count	Queue Size	Up to date
	☀	group-alpha - team-alpha	⚙	10	0	🟢
	☀	group-bravo - team-bravo	⚙	2	0	🟢

Admins

Shared Agents

Bare Metal

VMs

Containers

Cross-Team Collaboration

Alpha View

S	W	Name ↓	
🟢	☀	a-simple-kubernetes-pipeline	🔄
🟢	☀	event-trigger-publisher	🔄
🟢	☀	multibranch-pipeline-from-temolate	🔄
📁	☀	Pipeline_Temolate_Catalog: My Pipeline_Temolate_Catalog	🔄
🟢	☀	pipeline-from-temolate	🔄

Alpha Team

Process Templates

Event Triggers

Bravo View

S	W	Name ↓	
🟢	☀	deploy-pipeline	🔄
🟢	☀	event-trigger-subscriber	🔄

Bravo Team

Dedicated Agents

Cloudbees CI Managed Master

Cloudbees CI Teams Master



# Cloudbees CI Overview

Rapidly, Repeatedly, and Reliably Deliver Software

- **Increase Productivity** - eliminate risk and delays
  - **Eliminate Silos** - cross-functional collaboration
  - **Empower teams** - freedom and experimentation
  - **Ensure Security and Compliance** - best practices and standards
- 
- **CloudBees Assurance Program** - curated and verified Jenkins plug-ins  
<https://ci.jenkins.io/>
  - **Configuration as Code for Jenkins** - cross-functional collaboration
  - **Comprehensive Jenkins Team Management**
    - Managed Jenkins instance per team
    - Centrally managed RBAC
    - Centralized and per team Credentials Management
    - Manage inbound events across multiple managed controllers



# Rapid Team Onboarding

Provision a new managed master



CloudBees Core

Cloudbees CI Operations Center

Create a new Master

All Masters

S	W	Name	M	Job Count	Queue Size	Up to date
	☀	group-alpha - team-alpha	⚙️	10	0	🟢
	☀	group-bravo - team-bravo	⚙️	2	0	🟢

Admins

All Alpha View

S	W	Name	
🟢	☀	a-simple-kubernetes-pipeline	🔄
🟢	☀	event-trigger-publisher	🔄
📱	☀	multibranch-pipeline-from-templat	🔄
📁	☀	Pipeline_Template_Catalog_My Pipeline_Template_Catalog	🔄
🟢	☀	pipeline-from-templat	🔄

Alpha Team

Cloudbees CI Managed Master



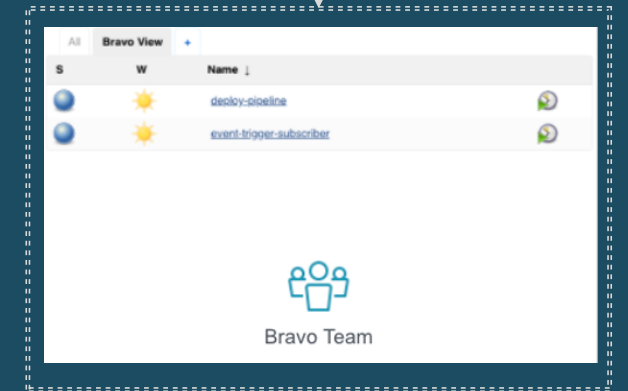
# Rapid Team Onboarding



CloudBees Core

Cloudbees CI Operations Center

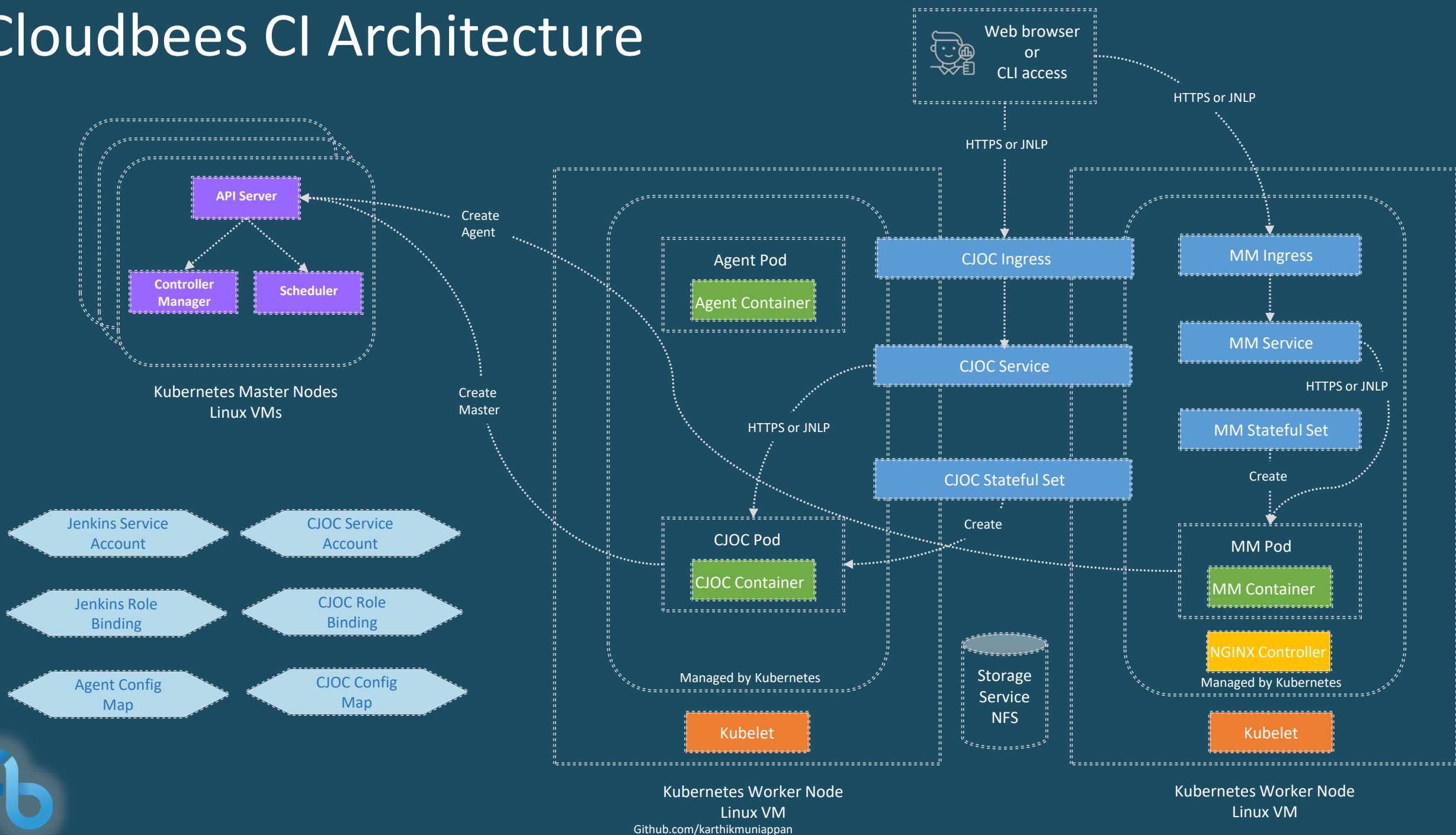
Provision a new Team master



Cloudbees CI Teams Master



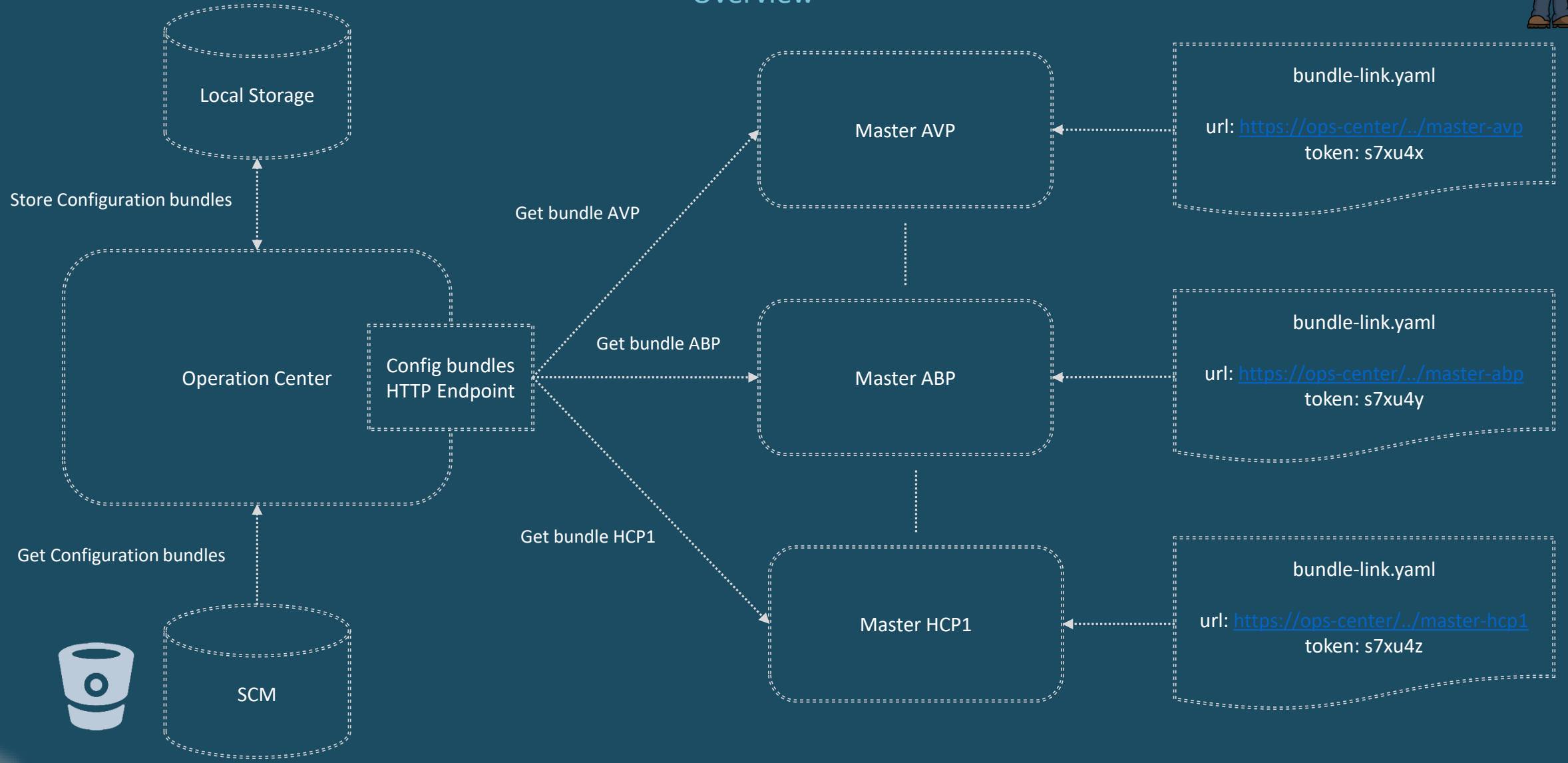
# Cloudbees CI Architecture



# Configuration as Code (CasC) for Masters



## Overview

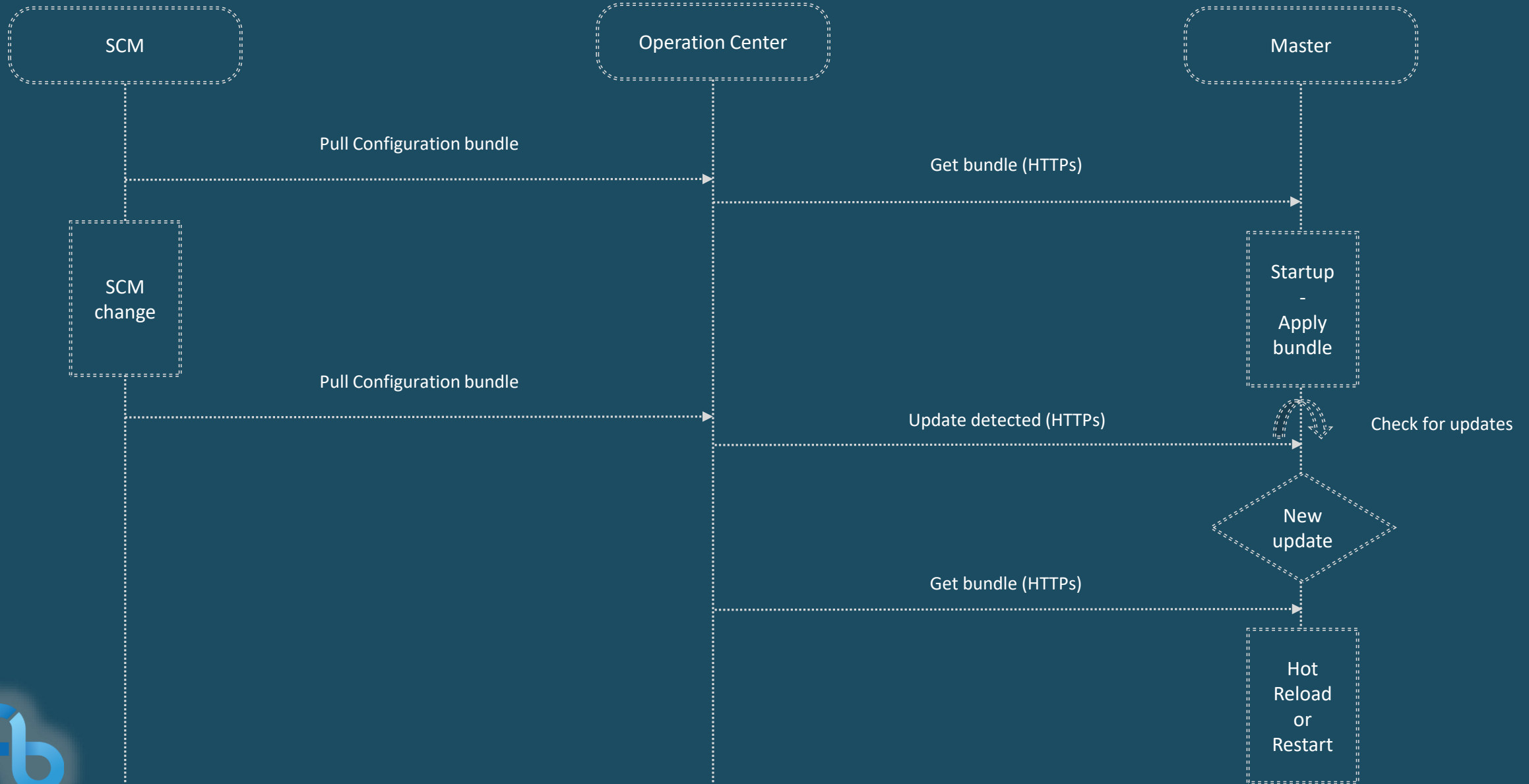




# Configuration as Code (CasC) for Masters



Sequence flow



# Other Features

Pipeline catalog

<https://github.com/cloudbees-days/pipeline-template-catalog>

Pipeline-library

<https://github.com/cloudbees-days/pipeline-library>

DevOptics

<https://grandcentral.cloudbees.com/devoptics/login>

Pipeline policy

<https://docs.cloudbees.com/docs/admin-resources/latest/pipelines/pipeline-policies>





# GitHub Actions



# Why GitHub Actions?

- **Build into GitHub** – fully integrated, no external site
- **Multiple CI templates** – actions on the GitHub Marketplace
- **Multi-container testing** – support for Dockerised workflow
- **Great free plan** – free for public repository

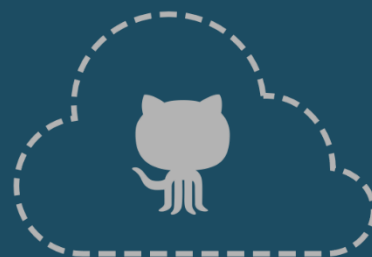
## Where to run GitHub?

GitHub.com

GitHub Enterprise

Self-hosted

Cloud-hosted



Google Cloud

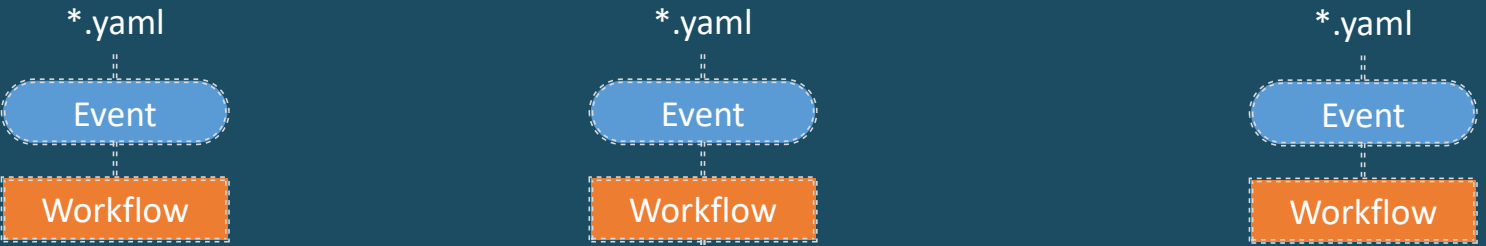


# Core Concepts

## Repository

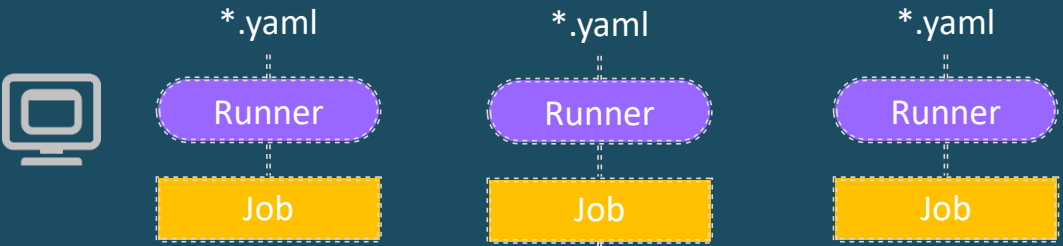
.github/workflows/

**Workflows**



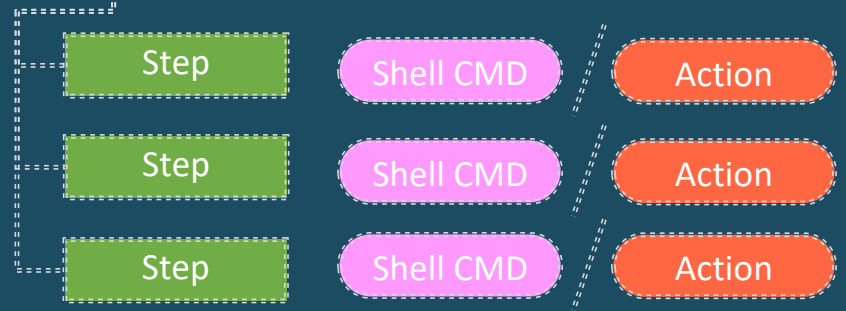

*parallel*

**Jobs**



*Parallel (default) / sequential*

**Steps**



*sequential*



# Syntax

```
name: C/C++ CI ←----- Workflow
on: [push, pull_request] ←----- Event
jobs: ←----- Job
  build:
    runs-on: ubuntu-latest ←----- Runner
    steps:
      - name: Checkout ←----- Step
        uses: actions/checkout@v2.0.0

      - name: Get hostname
        run: hostname ←----- Shell CMD

      - name: Build project ←----- Action
        uses: nicledomas/cmake_build_action@v1
        with:
          submodule_update: ON
          run_tests: ON
          unit_test_build: -Dtest=ON

      - name: Upload Artifact ←----- Artifact
        uses: actions/upload-artifact@v2
        with:
          name: Build_Artifact
          path: ${{ github.workspace }} ←----- Env. Variable
```



# Syntax

```
jobs:
  build:
    name: ${ matrix.config.name }
    runs-on: ${ matrix.config.os }
    strategy:
      fail-fast: false
    matrix:
      config:
        - {
            name: "Windows Latest MSVC", artifact: "Windows-MSVC.7z",
            os: windows-latest,
            cc: "cl", cxx: "cl"
          }
        - {
            name: "Windows Latest MinGW", artifact: "Windows-MinGW.7z",
            os: windows-latest,
            cc: "gcc", cxx: "g++"
          }
        - {
            name: "Ubuntu Latest GCC", artifact: "Linux.7z",
            os: ubuntu-latest,
            cc: "gcc", cxx: "g++"
          }
        - {
            name: "macOS Latest Clang", artifact: "macOS.7z",
            os: macos-latest,
            cc: "clang", cxx: "clang++"
          }
        }
```



# Runners



## GitHub-Hosted Runners



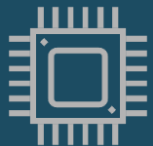
**Windows** – Windows Server 2019



**Linux** – Ubuntu 18.04, Ubuntu 16.04



**Mac** – macOS Catalina 10.15



**CPU**

2 Core



**Disk**

14 GB SSD



**RAM**

7 GB



## Self-Hosted Runners



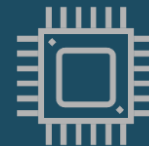
**Windows** – Windows Server 2019 Windows 7 64-bit, Windows 8.1 64-bit, Windows 10 64-bit, Windows Server 2012 R2 64-bit, Windows Server 2016 64-bit, Windows Server 2019 64-bit



**Linux** – Red Hat Enterprise Linux 7, CentOS 7, Oracle Linux 7, Fedora 29 or later, Debian9 or later, Ubuntu 16.04 or later, Linux Mint 18 or later, openSUSE15 or later, SUSE Enterprise Linux (SLES) 12 SP2 or later



**Mac** – macOS 10.13 (High Sierra) or later



**CPU**



**Disk**



**RAM**



# Will GitHub Actions kill off Jenkins?

**Jenkins or GitHub Actions** – <https://medium.com/swlh/will-github-actions-kill-off-jenkins-f85e614bb8d3>  
[https://knapsackpro.com/ci\\_comparisons/jenkins/vs/github-actions](https://knapsackpro.com/ci_comparisons/jenkins/vs/github-actions)

**Stackshare GitHub Action vs Jenkins** – <https://stackshare.io/stackups/github-actions-vs-jenkins>

**Stackshare Continuous Integration** – <https://stackshare.io/continuous-integration>

**Groovy or YAML** – <https://www.eficode.com/blog/apache-groovy-yaml>

