Synapse R Client Build & Deploy System

Sage Bionetworks

April 2018

Agenda

- I. Requirements
- II. Practices
- III. The Build System
- IV. Take Away

I. Requirements

- From users:
  - Result of the build/deploy system should be usable by a standard R installation, with no addition tools (e.g., devtools, C compiler)
- From validators:
  - Unique version for each deployment
  - Separate to-be-validated artifacts from released artifacts
  - Follow standards for R packages on Github

I. Requirements

- From developers
  - Automatically increase version number
  - Easy execution and maintenance
  - Automatically update docs
  - Verified that released artifacts can be downloaded and installed

II. Practices

- Determines our practices helps us define:
  - Our release process
  - What Jenkins jobs we need
  - How each job works
- Terms:
  - Jenkins: is an application used to perform the typical build server work.
  - Jenkins job: a unit of work in Jenkins, includes configuration, build trigger, build script, and addition steps.
  - Build: a process that turns source code into artifacts.

II. Practices

- Github branches:
  - Master: most recent released
  - Develop: most recent development work
  - Release candidate branches:
    - One for each release candidates
    - Create from develop branch
    - Merge back to master & develop after release
- Github tags:
  - One tag for each version

II. Practices

- Github Pages:
  - ran:
    - CRAN-style repo
    - released artifacts
  - staging-ran:
    - CRAN-style repo
    - to-be-validated artifacts
  - Documentation:
    - update after release
- Benefits:
  - Simple to setup
  - R standards to host R packages → easy for user to install

II. Practices

- Release:
  - Process:
    - Identify release candidate
    - Development work
    - Deploy artifacts to staging
    - Validation
    - Deploy artifacts to prod
  - Version: <major>.<minor>.<dev>
    - Product manager determines <major>.<minor>
    - The build system automatically increments <dev>

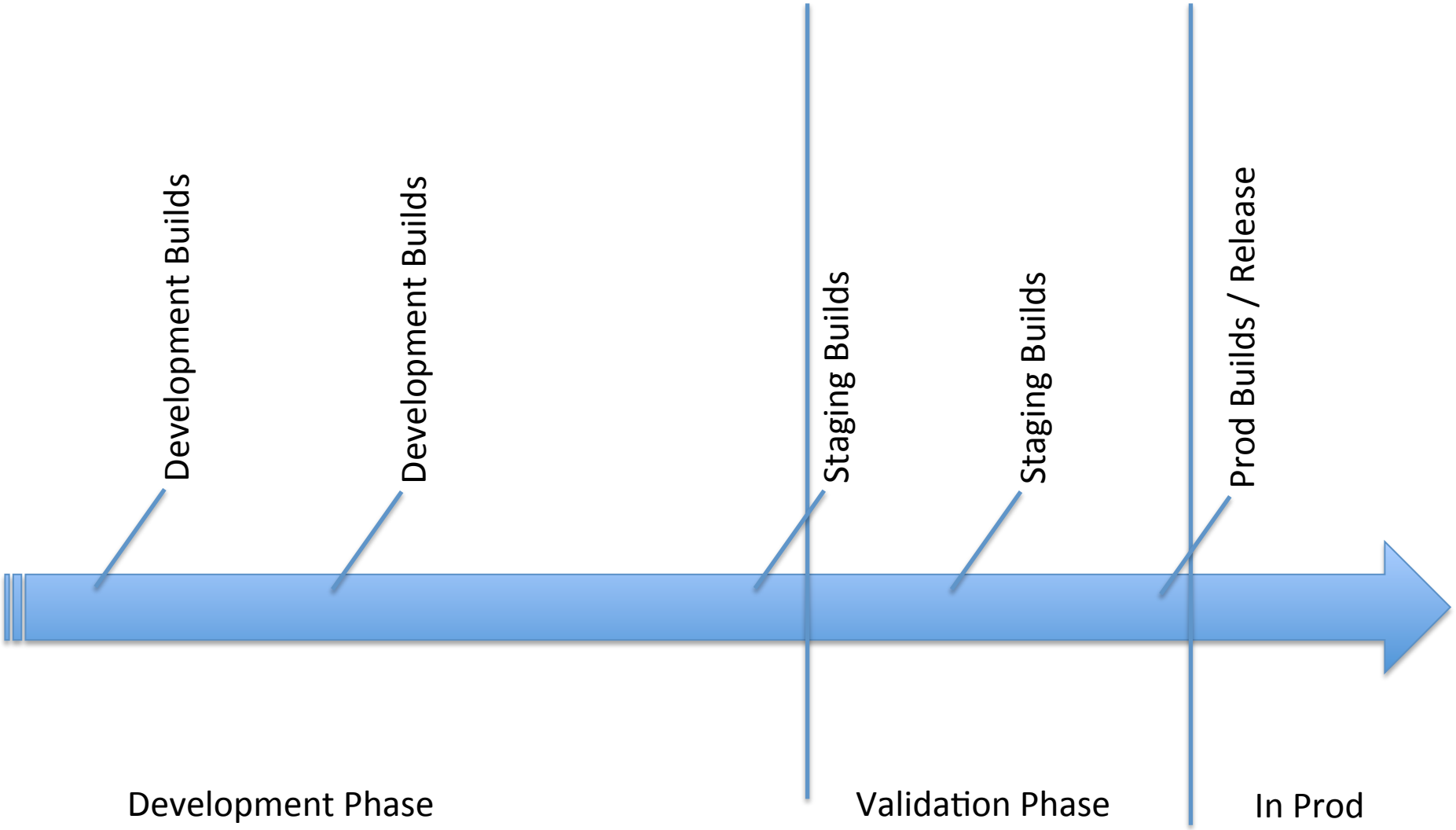
II. Practices

- Development
  - Each developer run private builds before making a pull request (PR)
  - Each PR merged to develop will trigger an automatic build on 3 platforms and the latest R version
- Deployment
  - Each deployment deploy artifacts for 3 platforms and 2 latest version of R

III. The Build System

- Development Builds
- Staging Builds
- Production Builds/ Release

The Build System



Development Builds

- Make sure that:
  - The package can be built
  - Tests passed

- Developers' private builds
- Sage's dev build

Development Builds

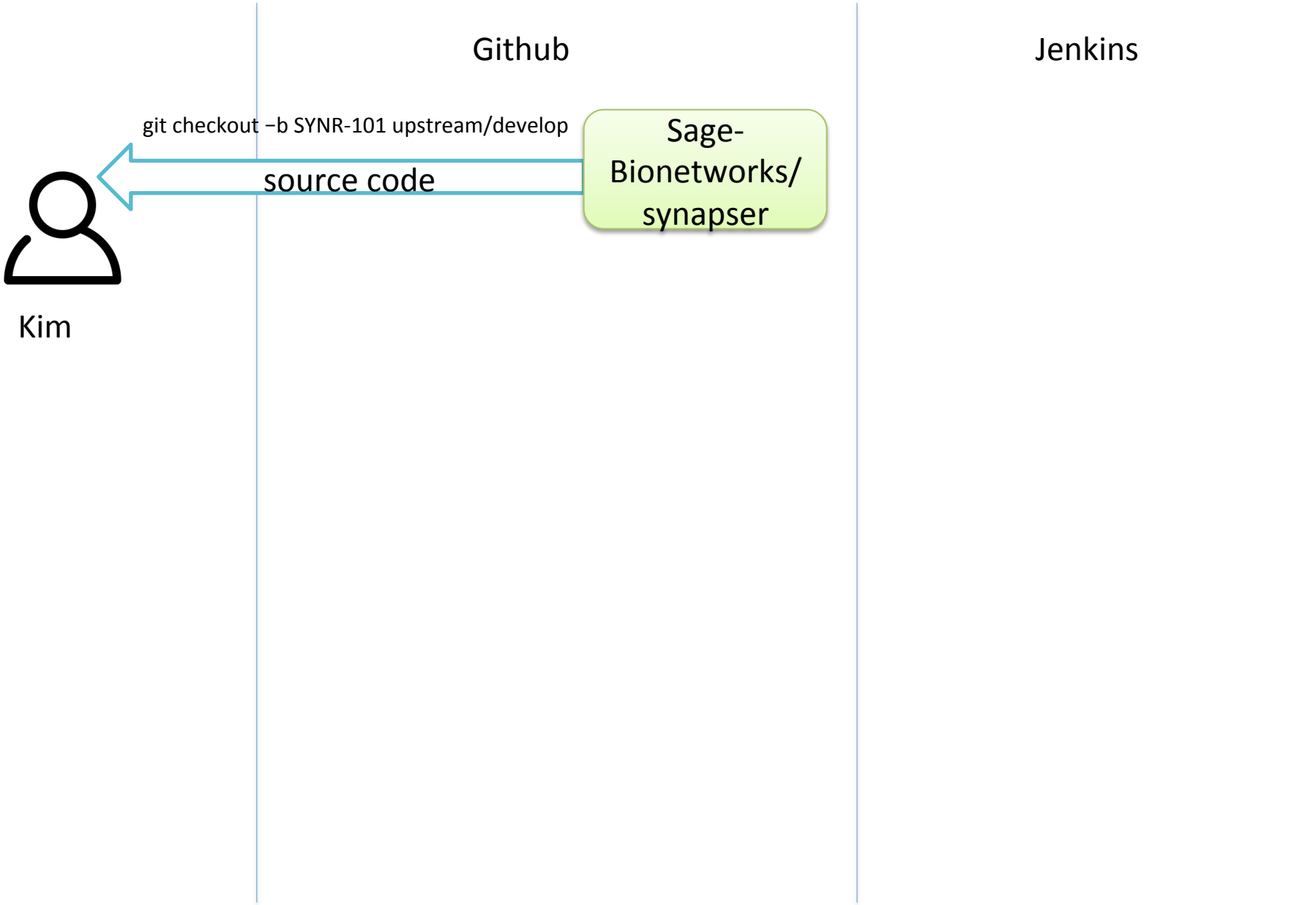
Kim

Github

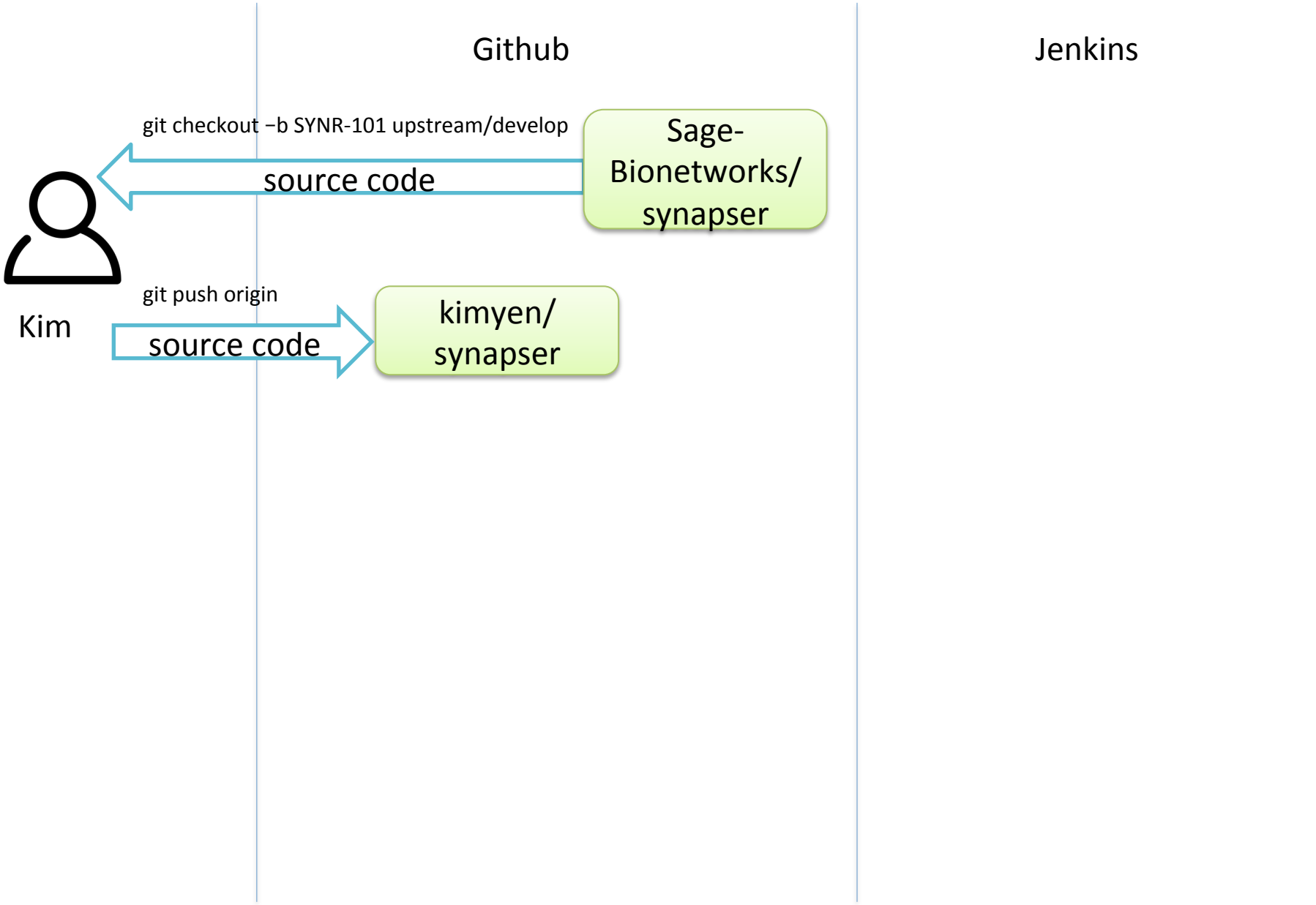
Sage-Bionetworks/synapser

Jenkins

Development Builds



Development Builds



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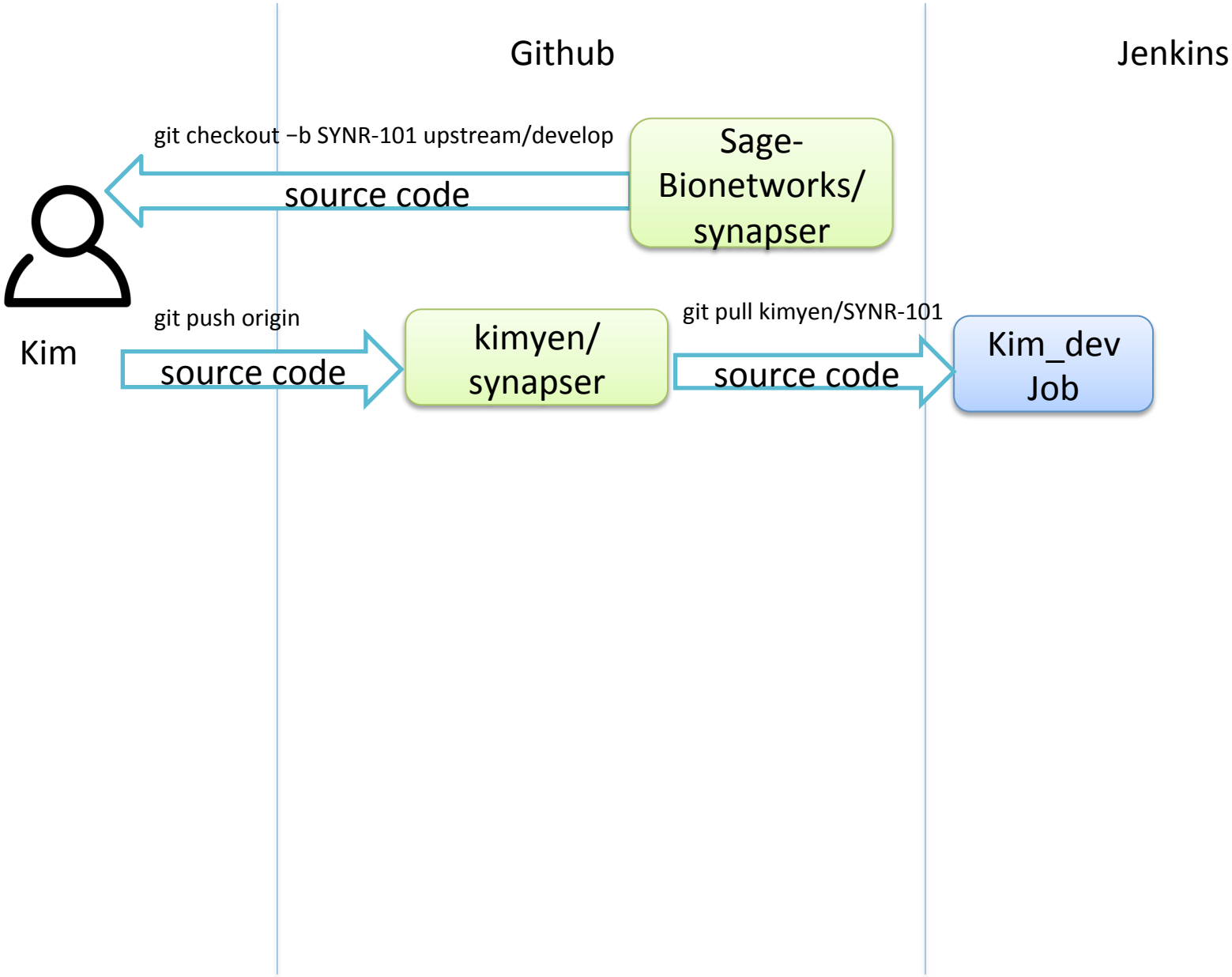

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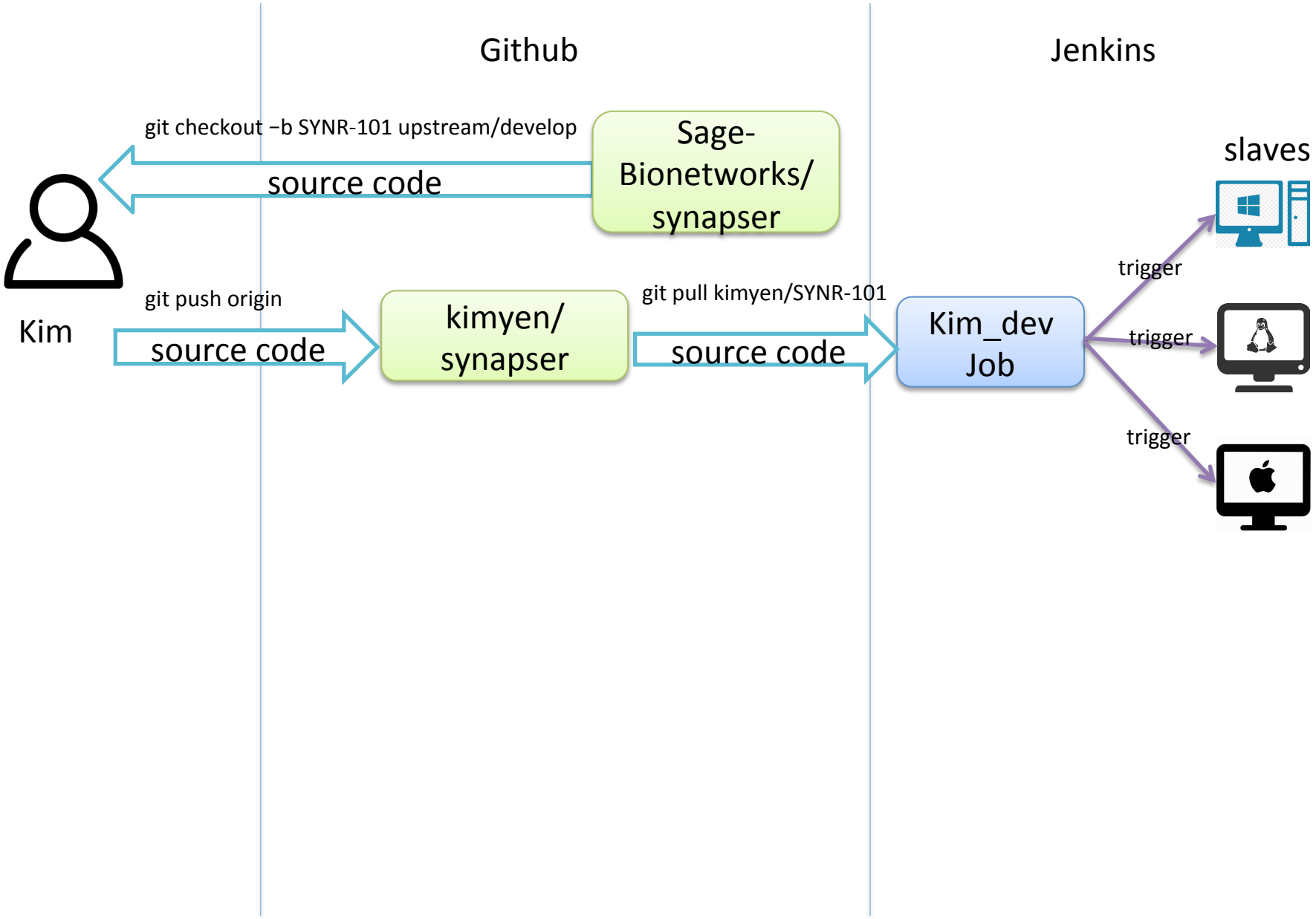


Development Builds

Kim

Github

kimyen/
synapser

Sage-
Bionetworks
/synapser

Jenkins

Development Builds

Kim

Github

Jenkins

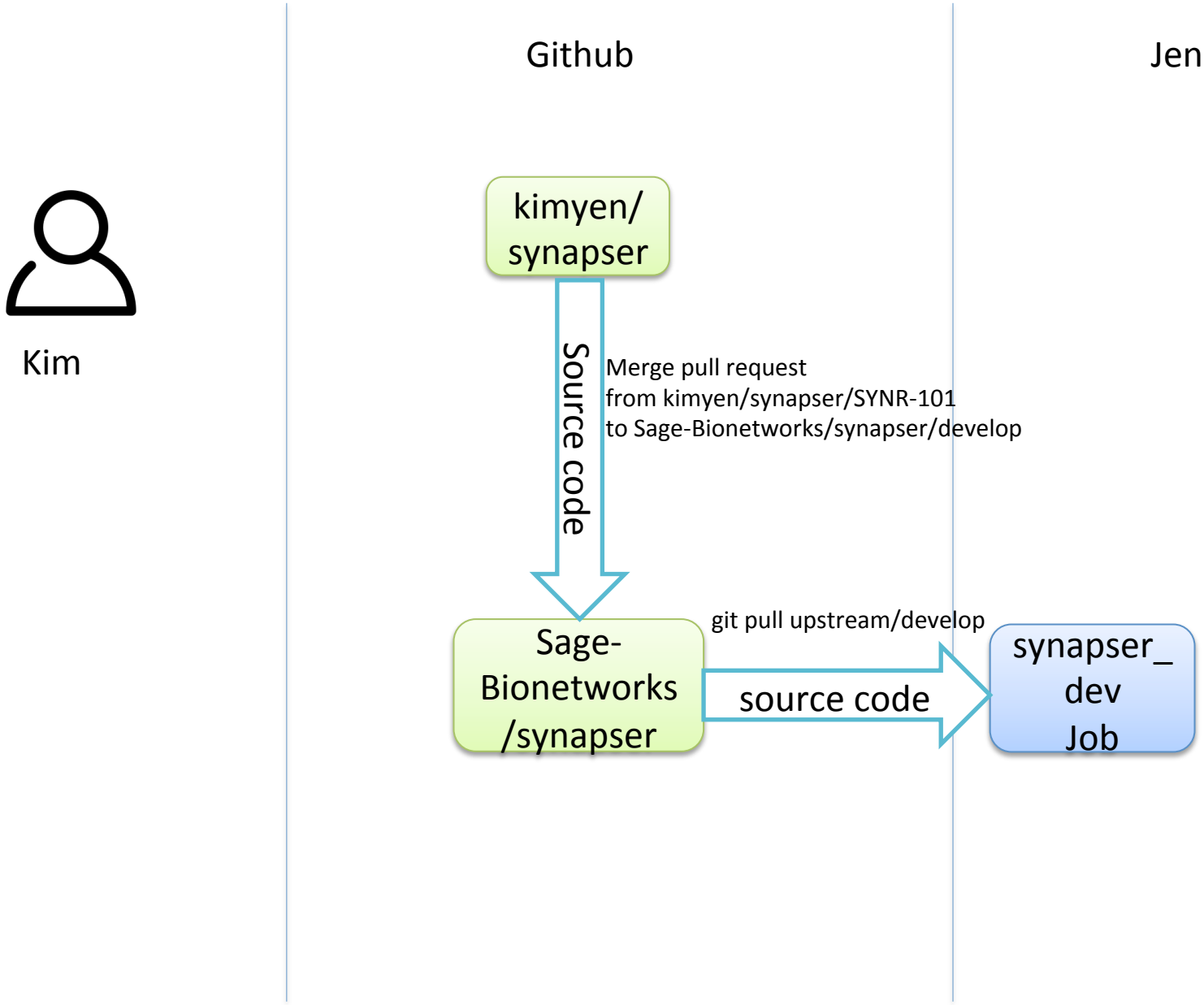
kimyen/
synapser

Source code

Merge pull request
from kimyen/synapser/SYNR-101
to Sage-Bionetworks/synapser/develop

Sage-
Bionetworks
/synapser

Development Builds



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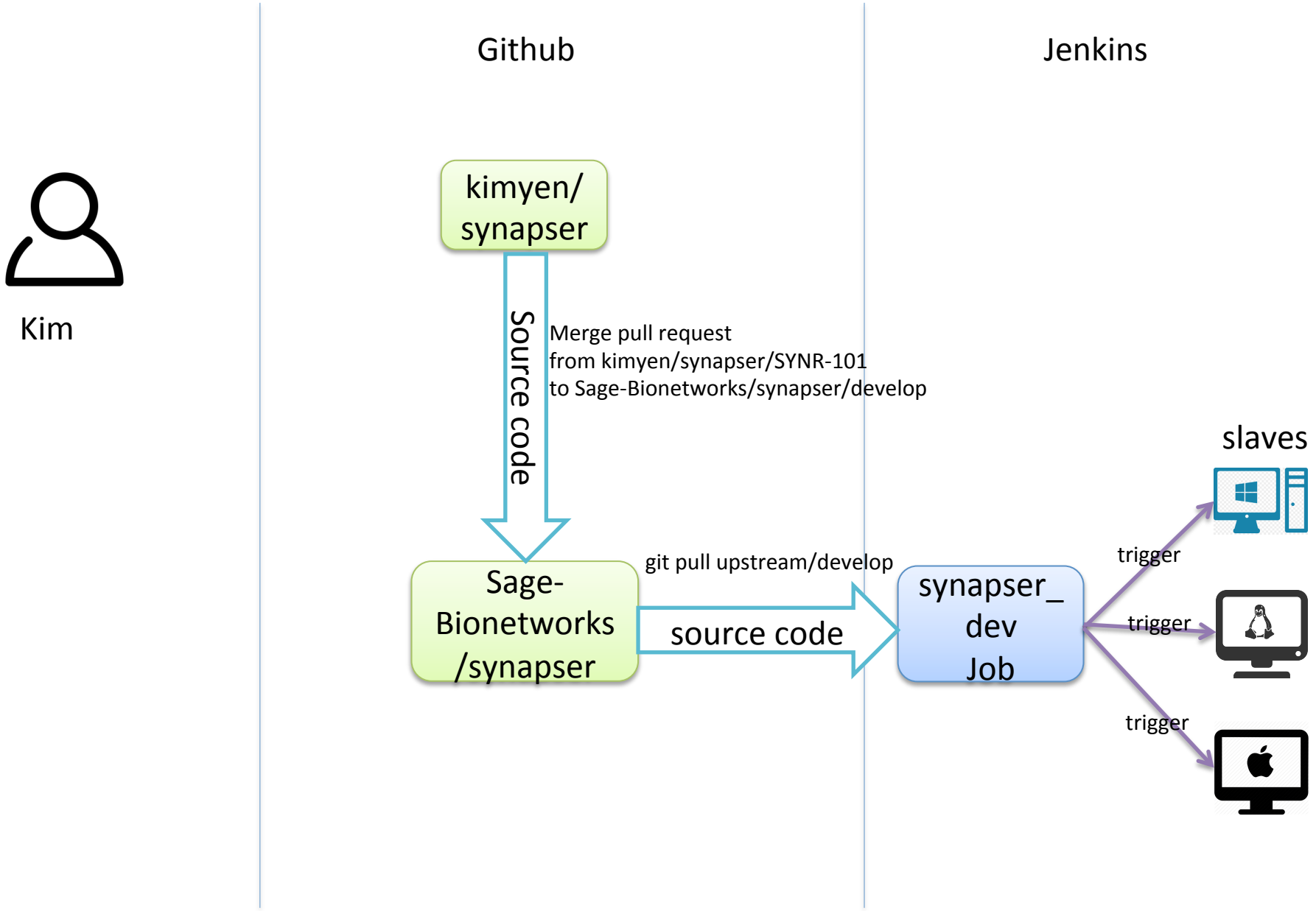
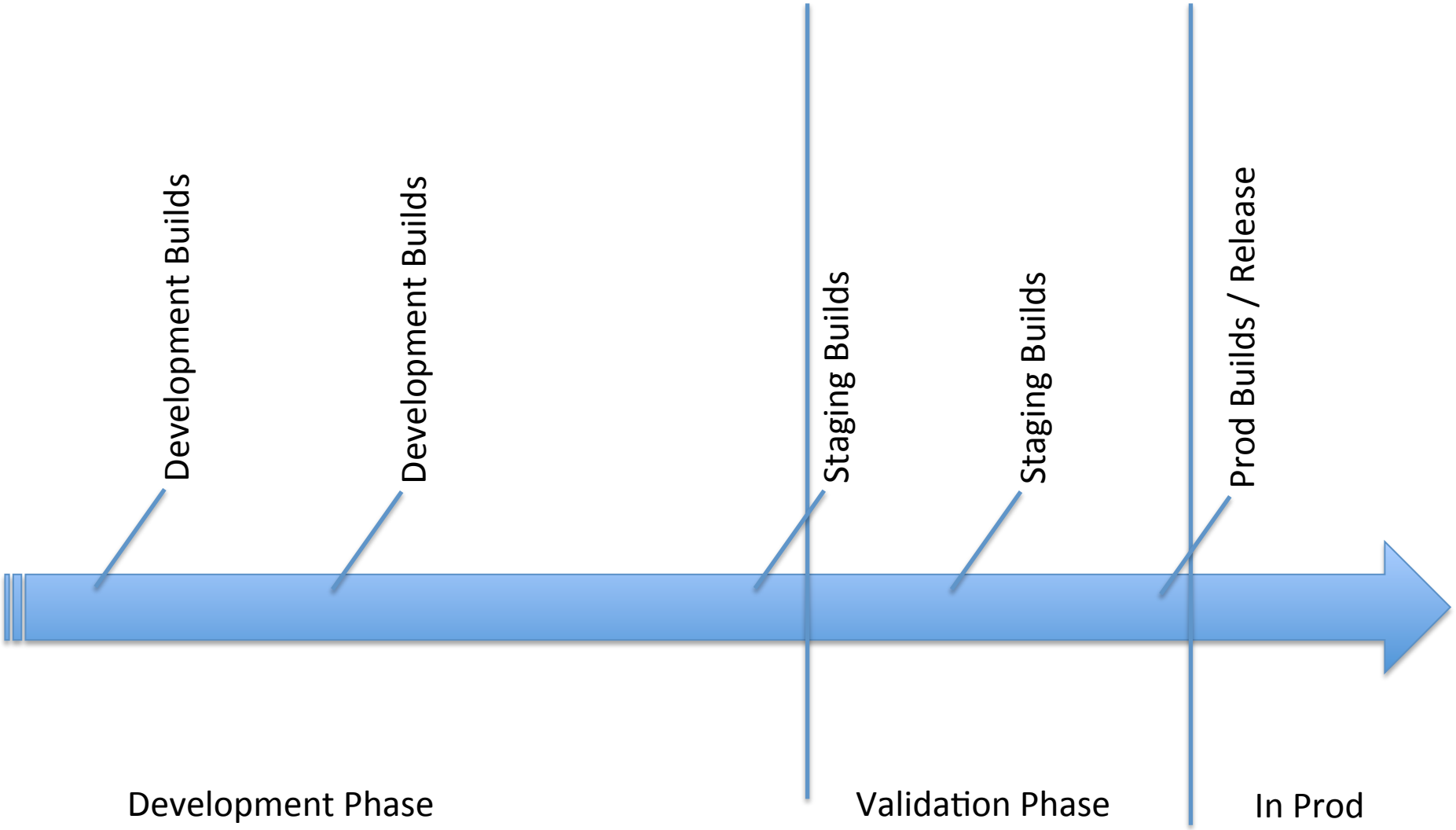


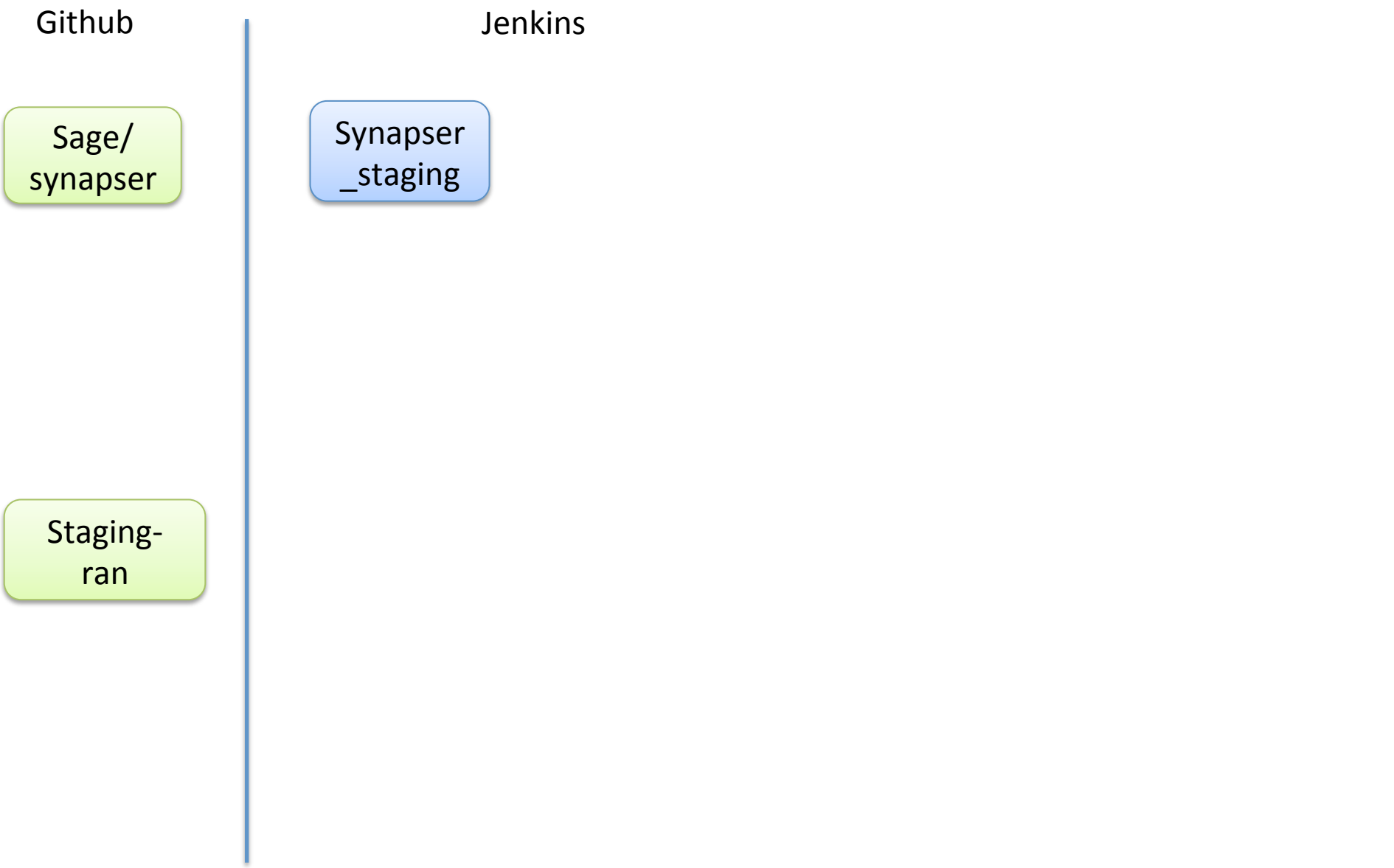
The Build System



Staging Builds

- Builds artifacts on 3 platforms
- Deploy artifacts to staging ran
- Update:
  - Version
  - Date
  - Docs (including html files)
  - Github tag
- Check that artifacts on staging ran can be installed on 3 platforms

Staging Builds



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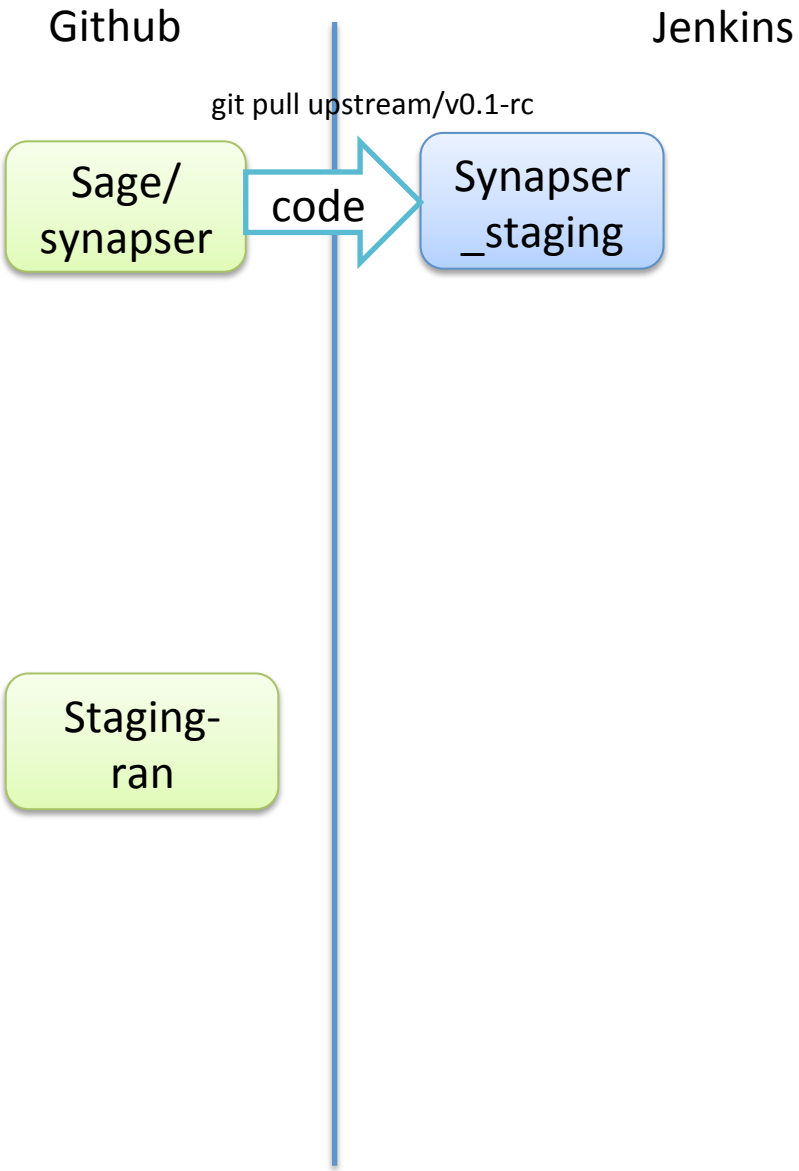

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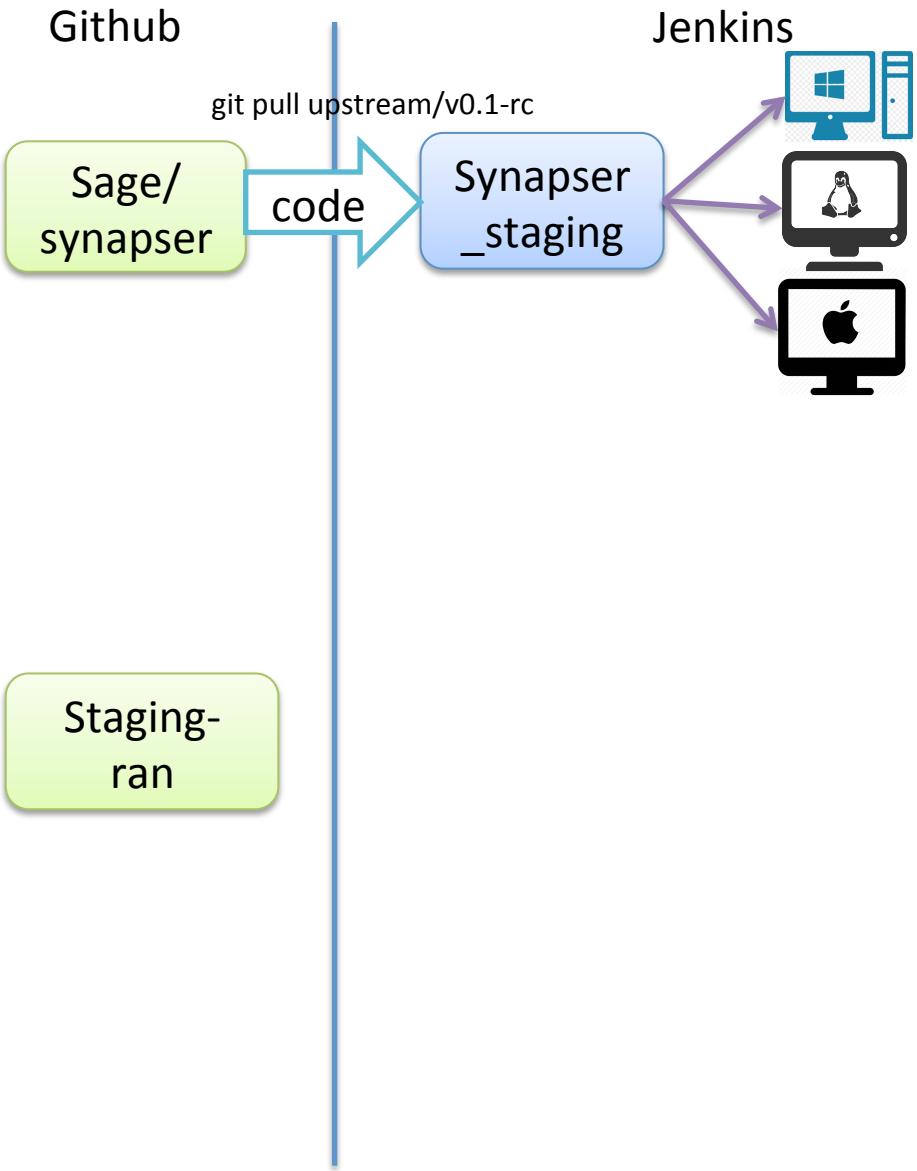

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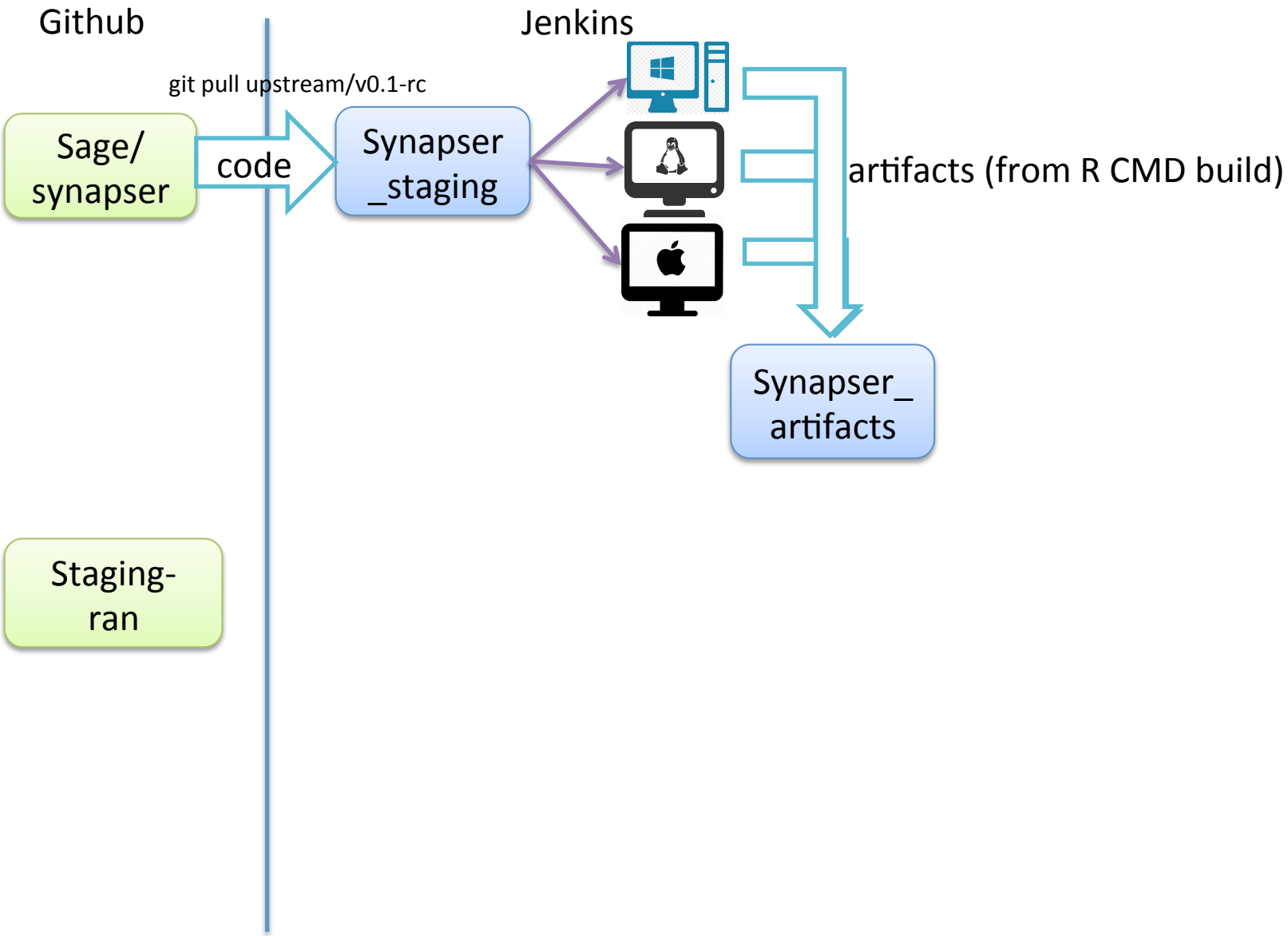

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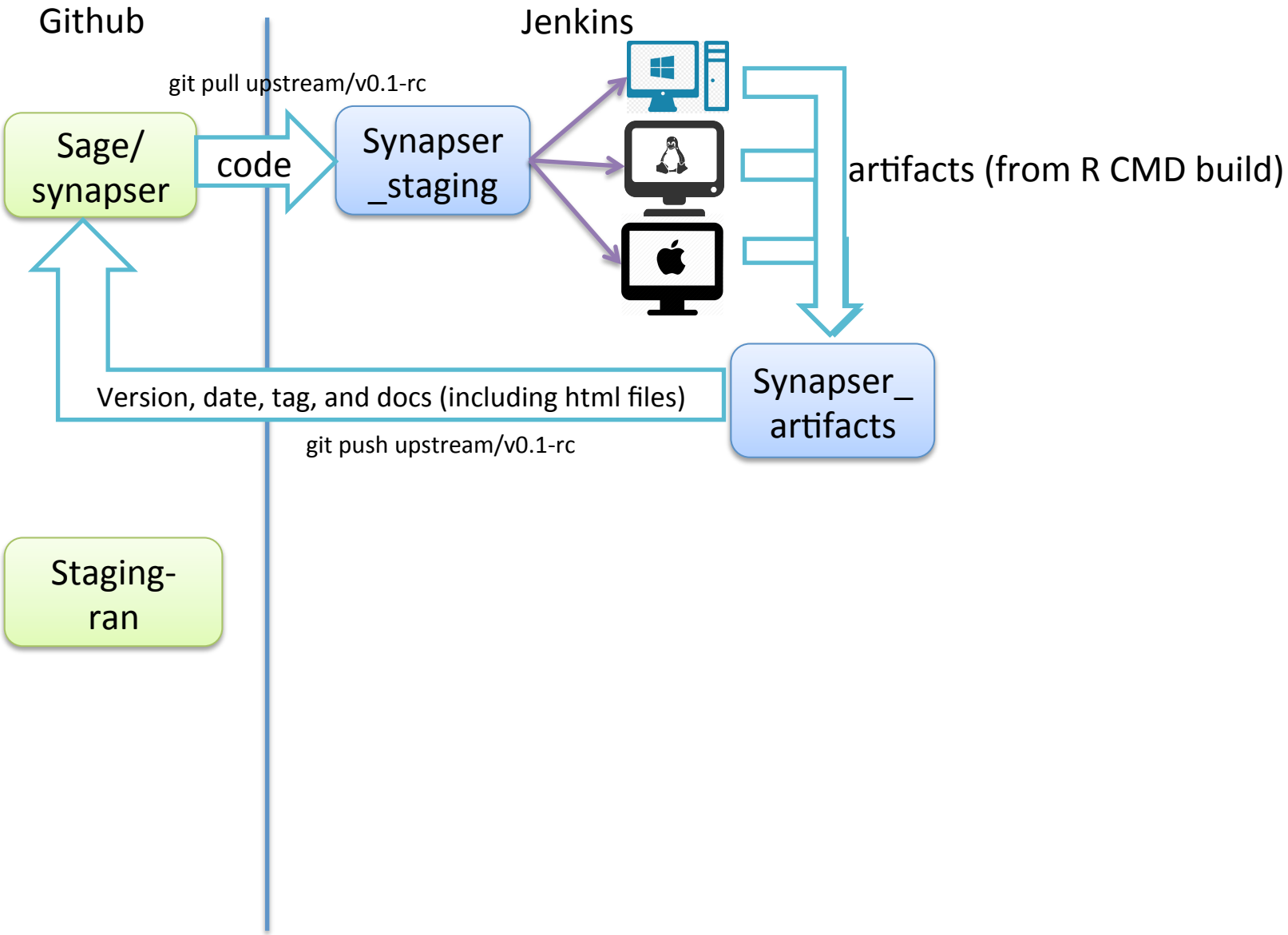

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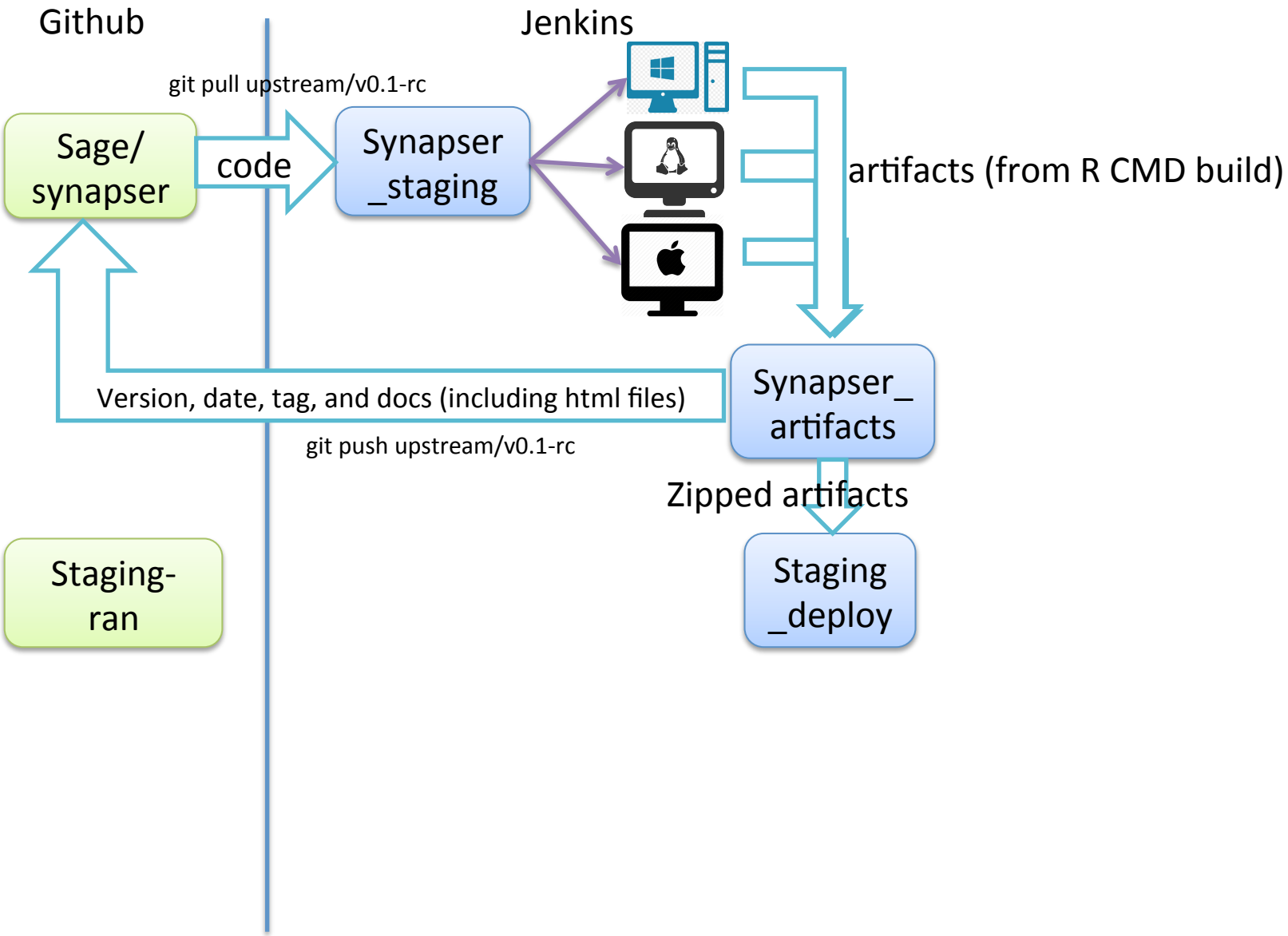

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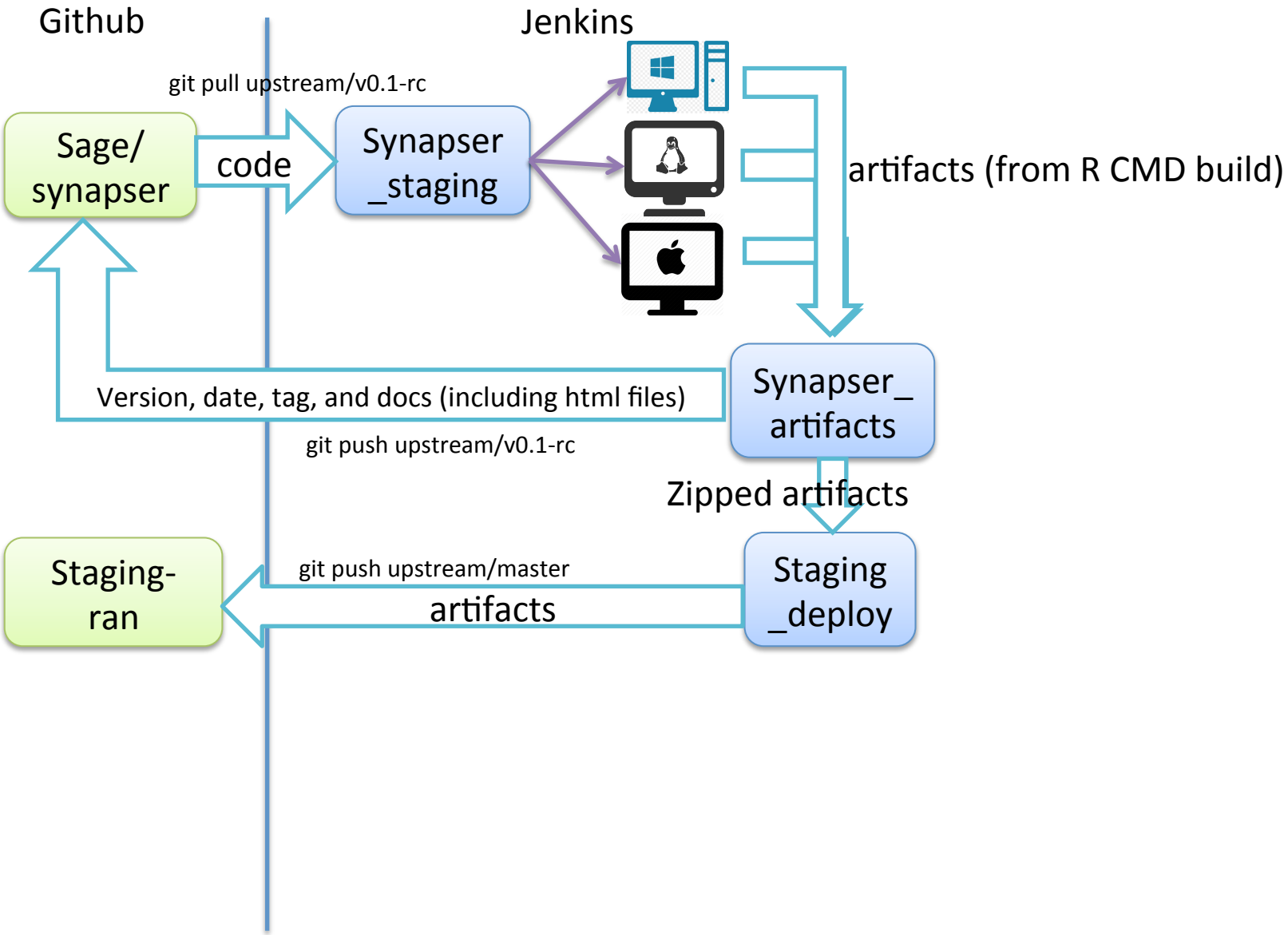

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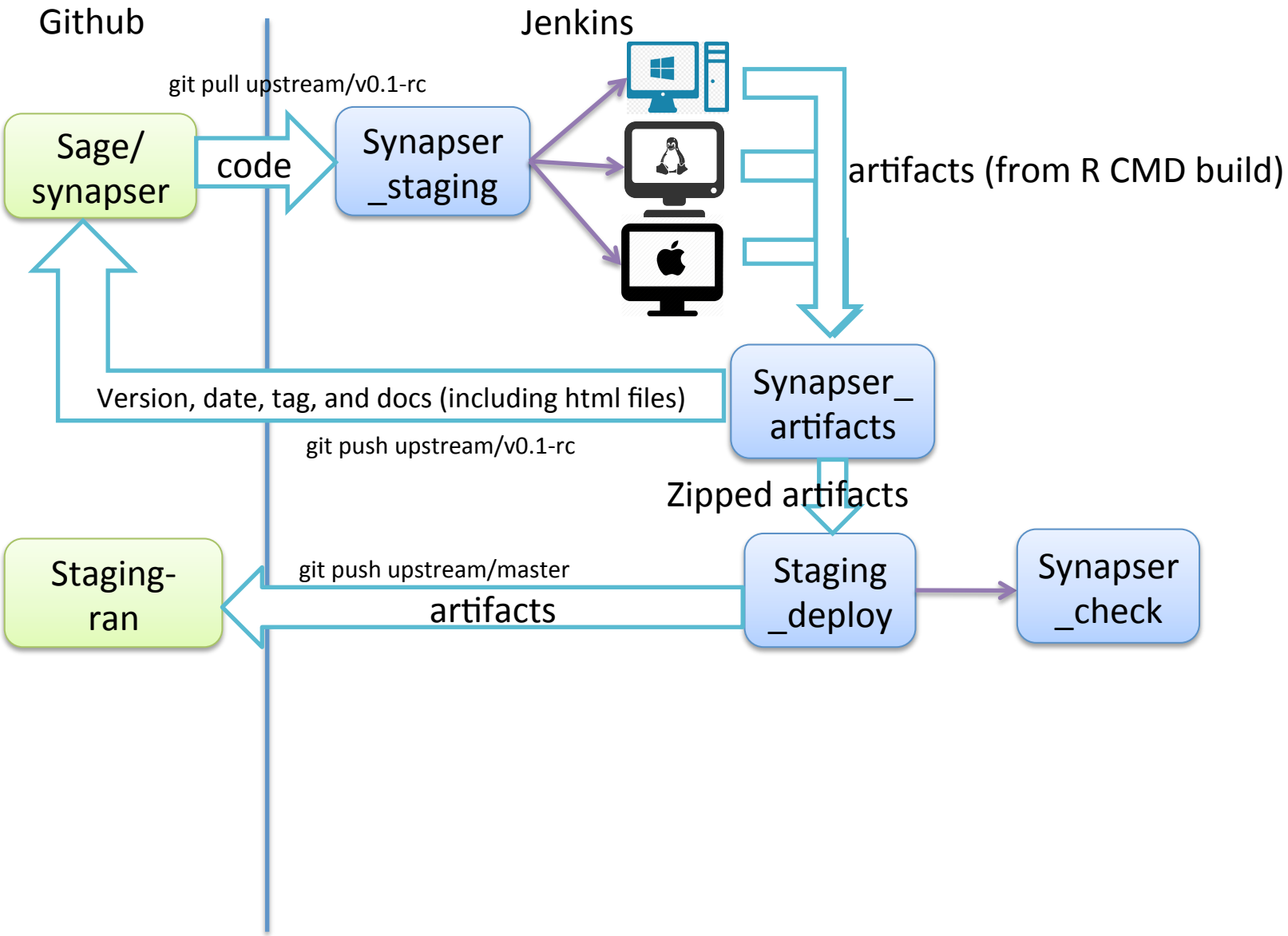

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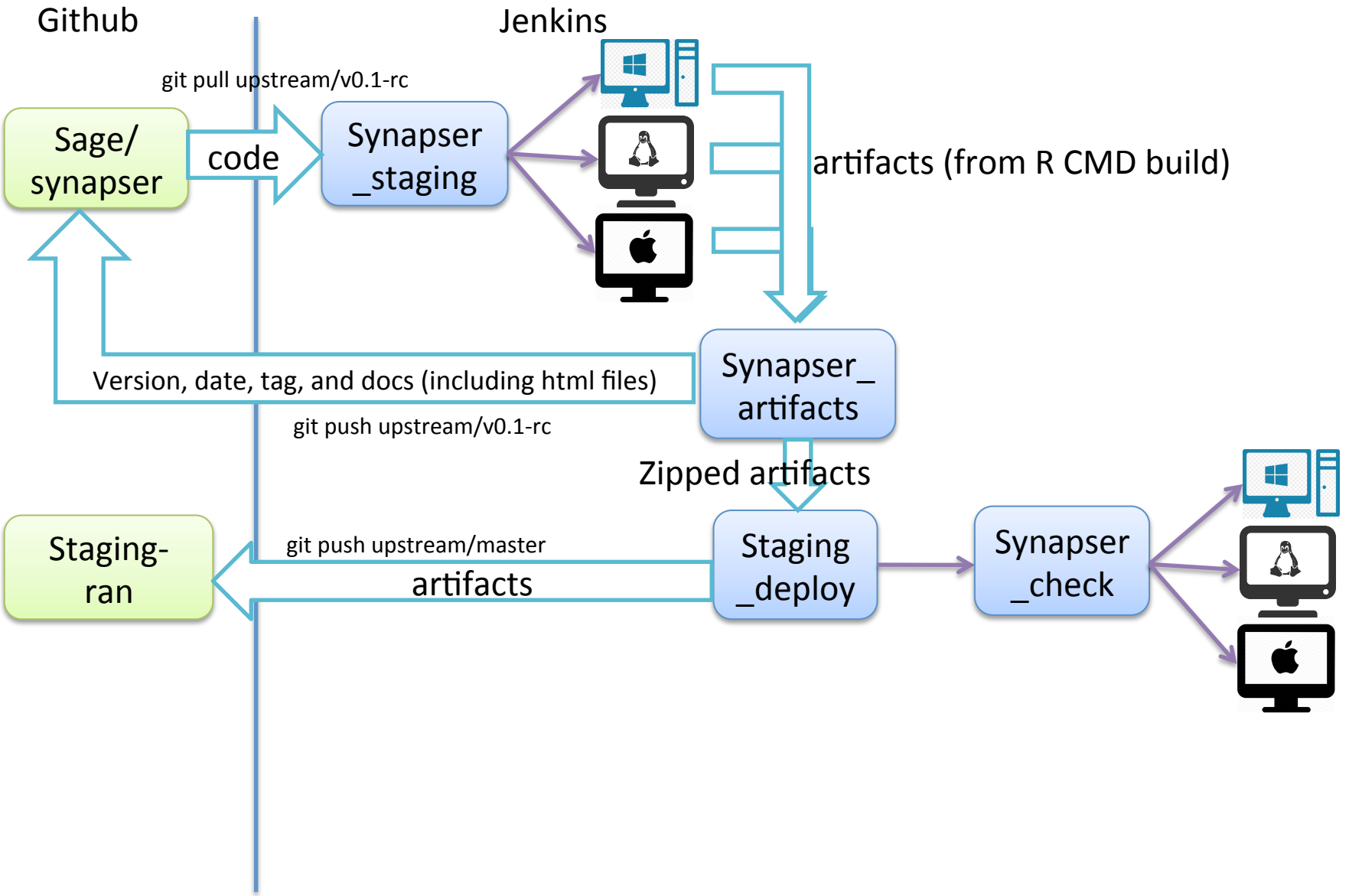

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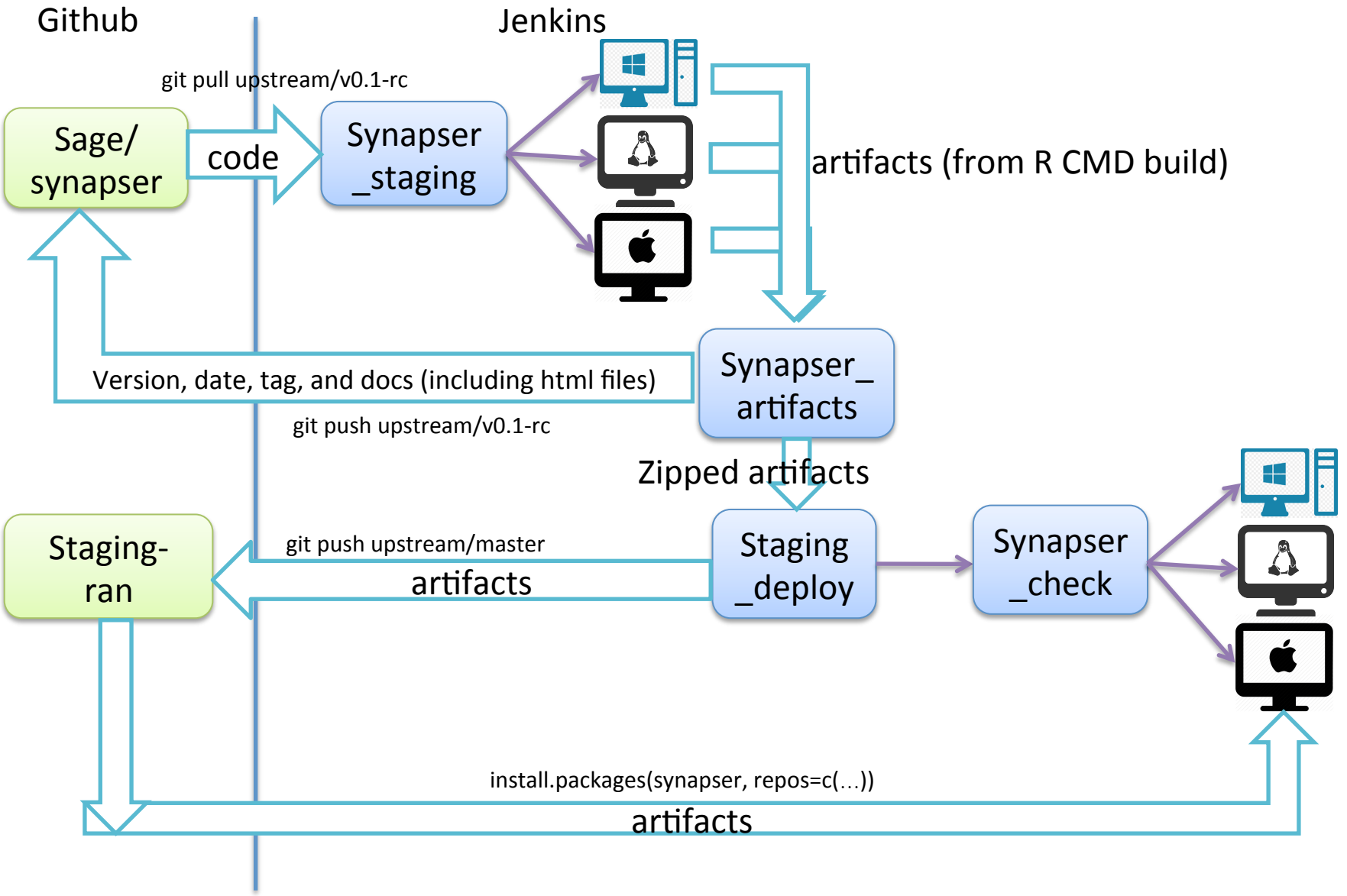
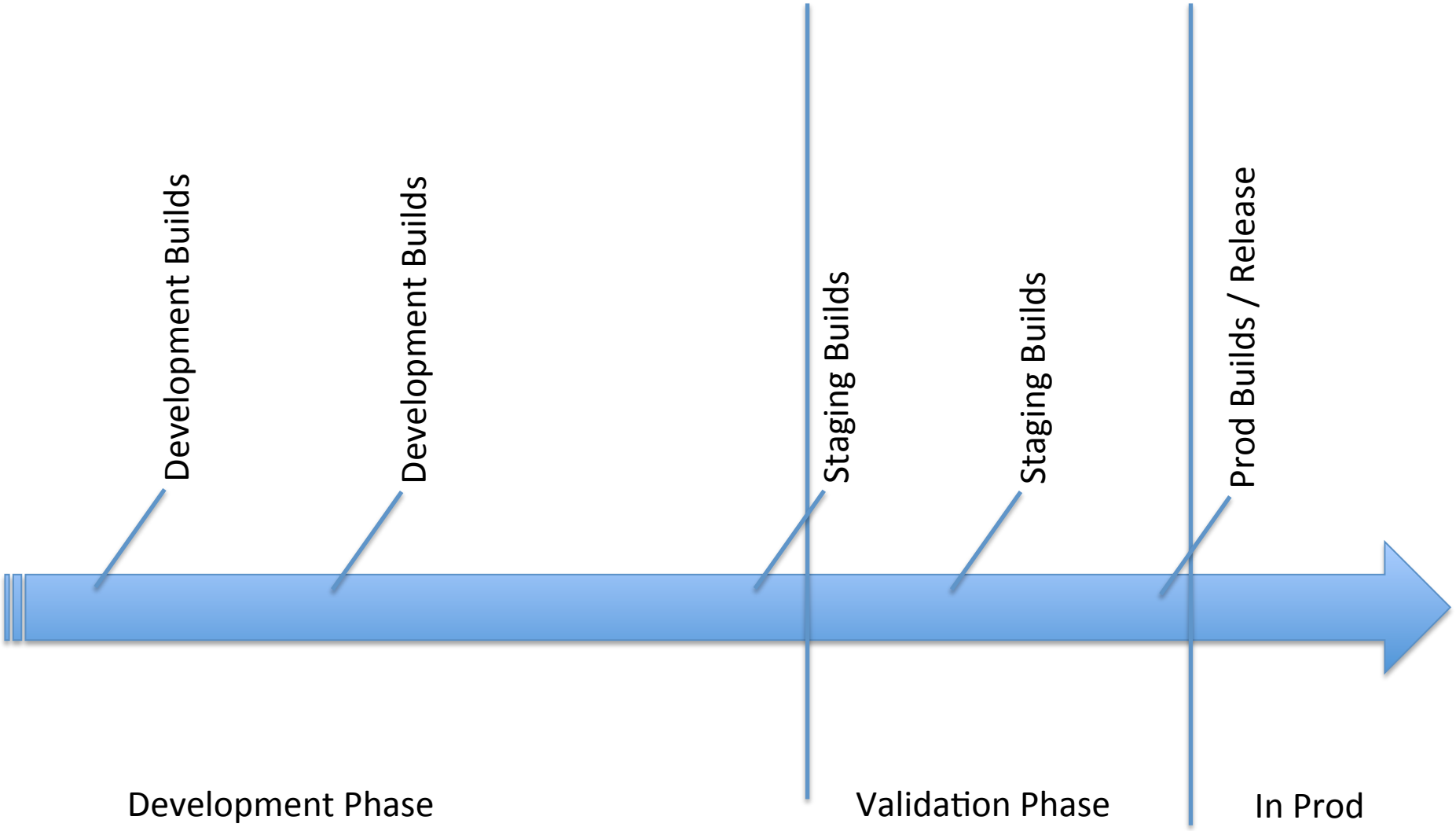


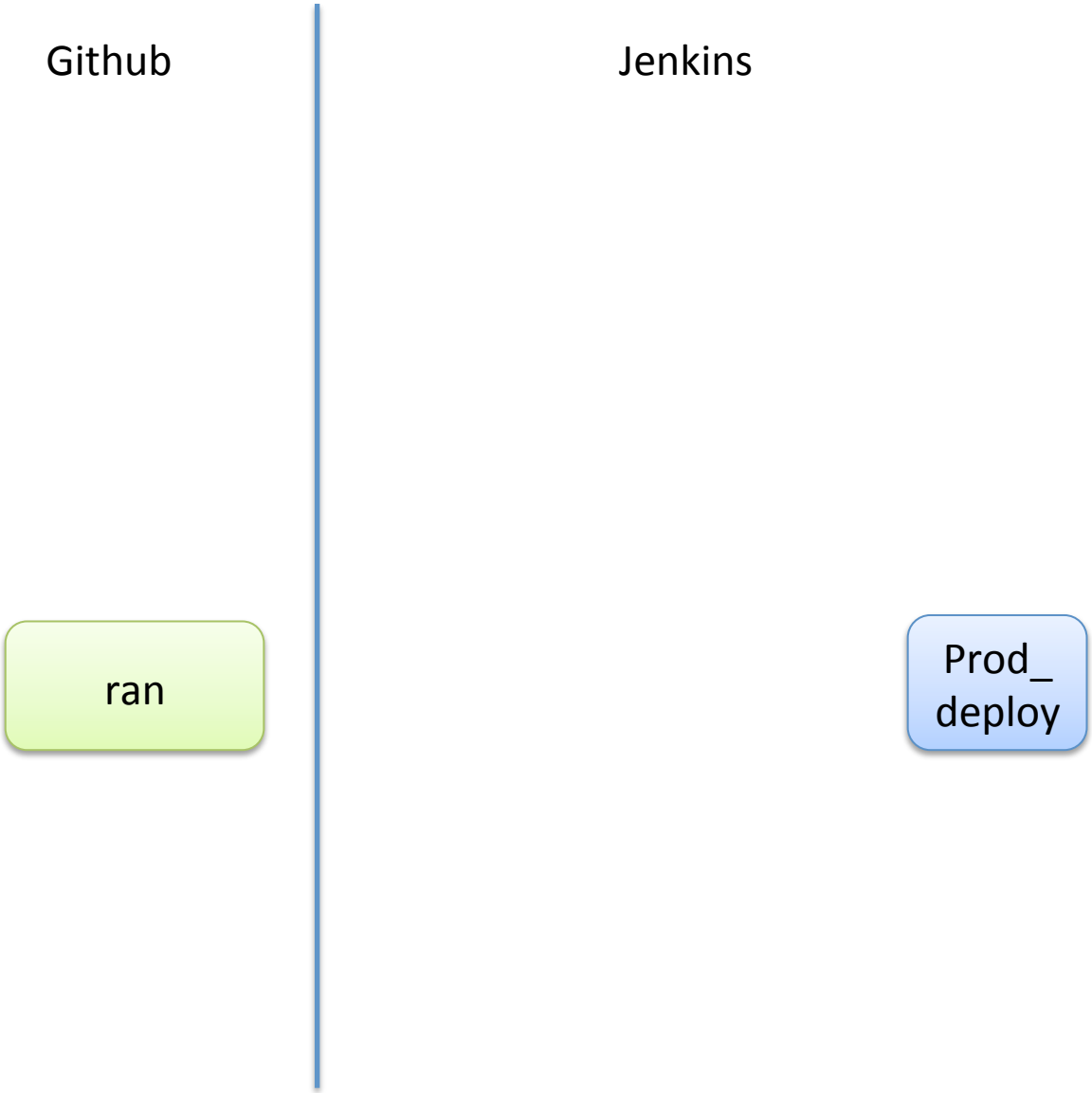
III. The build system



Production Builds / Release

- Deploy built artifacts to ran
- Check that artifacts on ran can be installed on 3 platforms

Production Builds / Release



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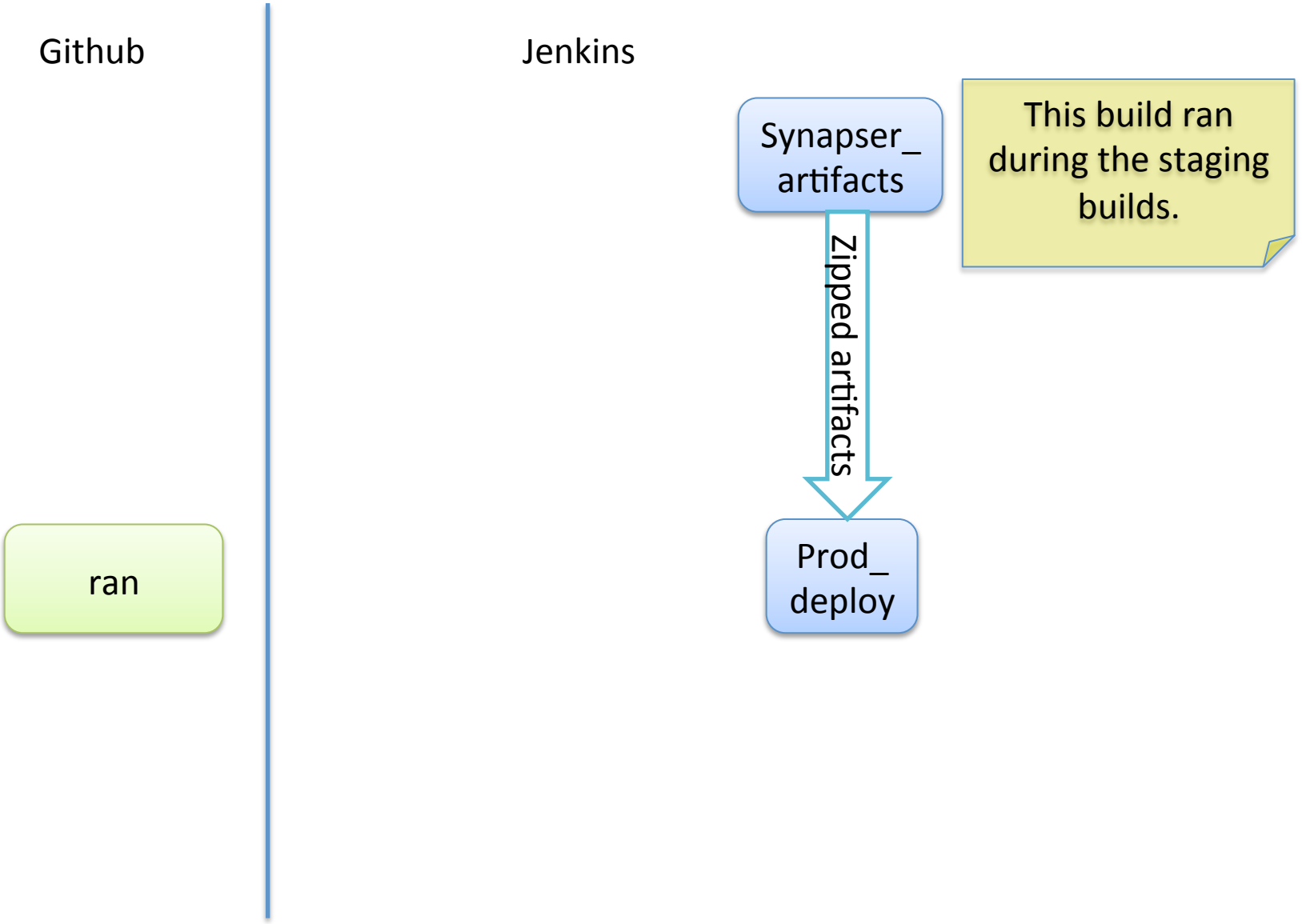

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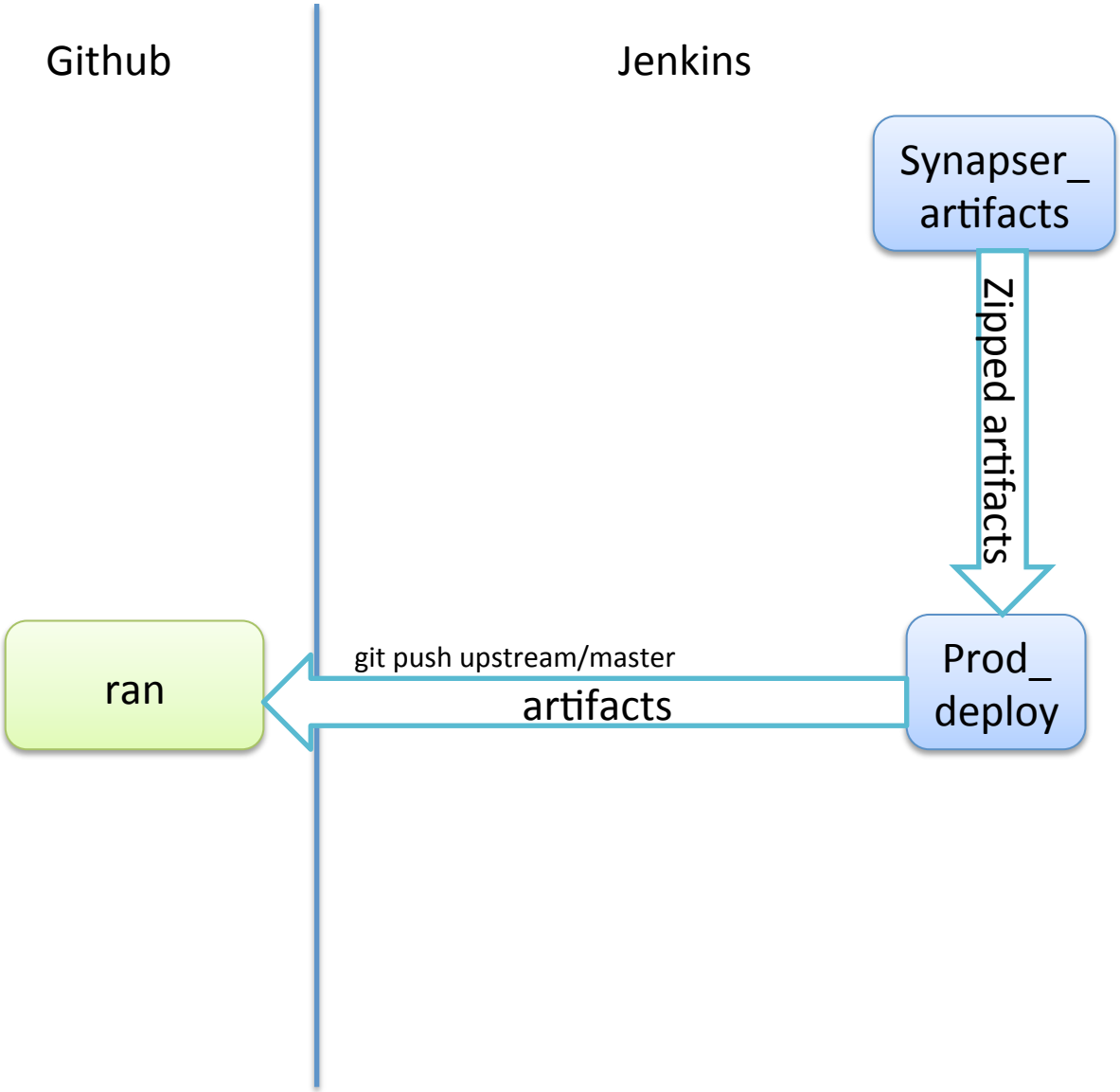

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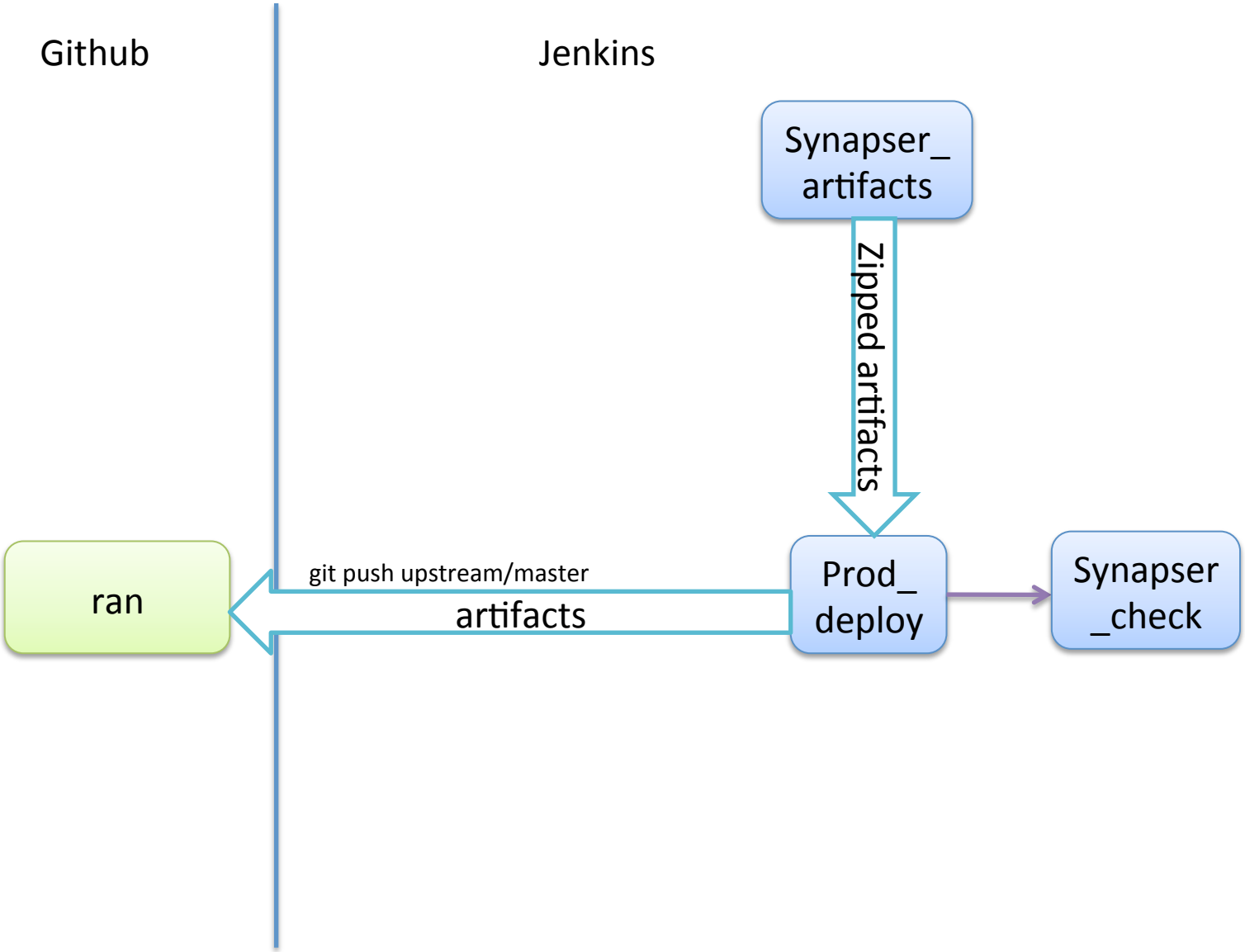

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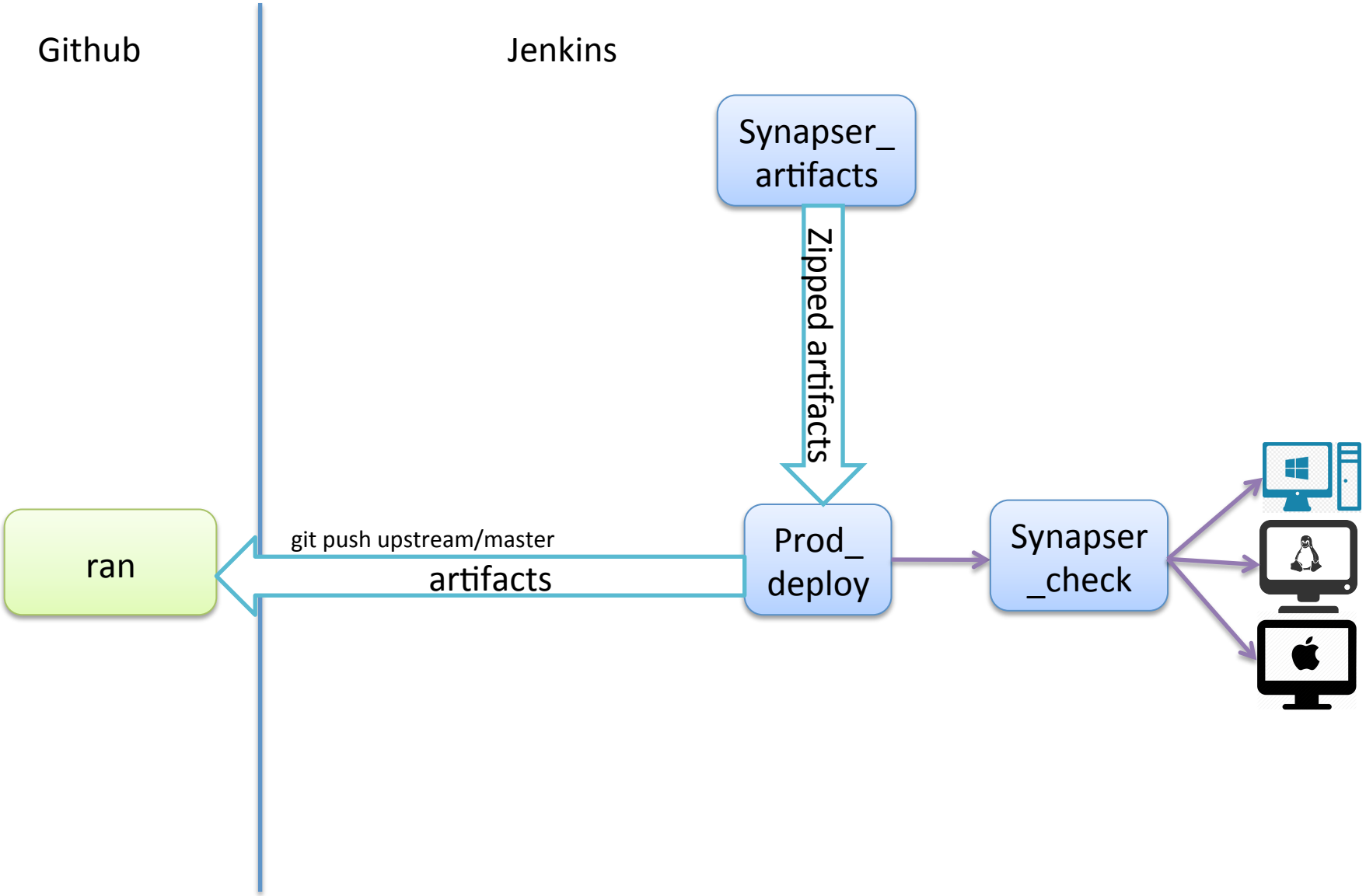

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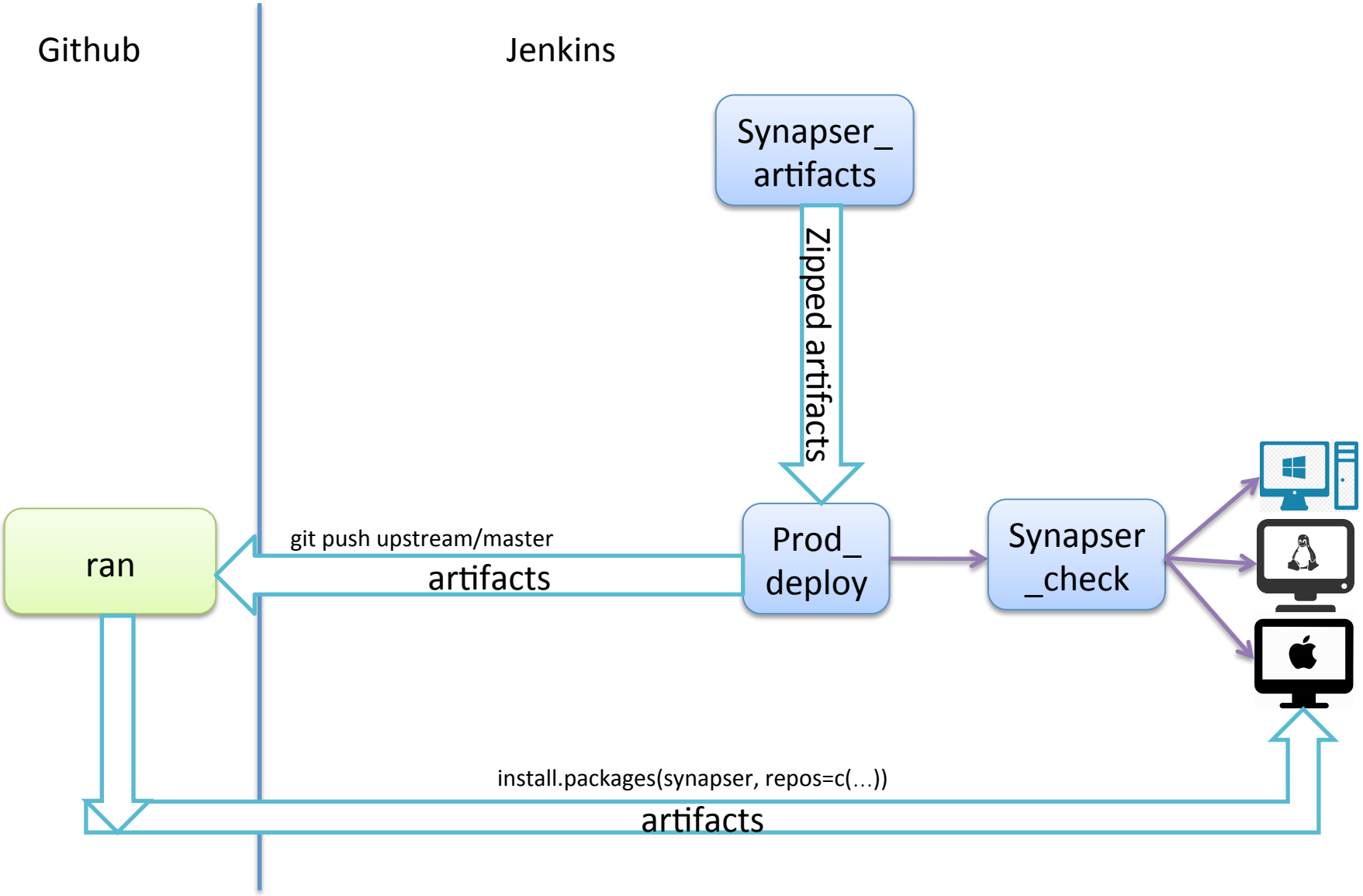
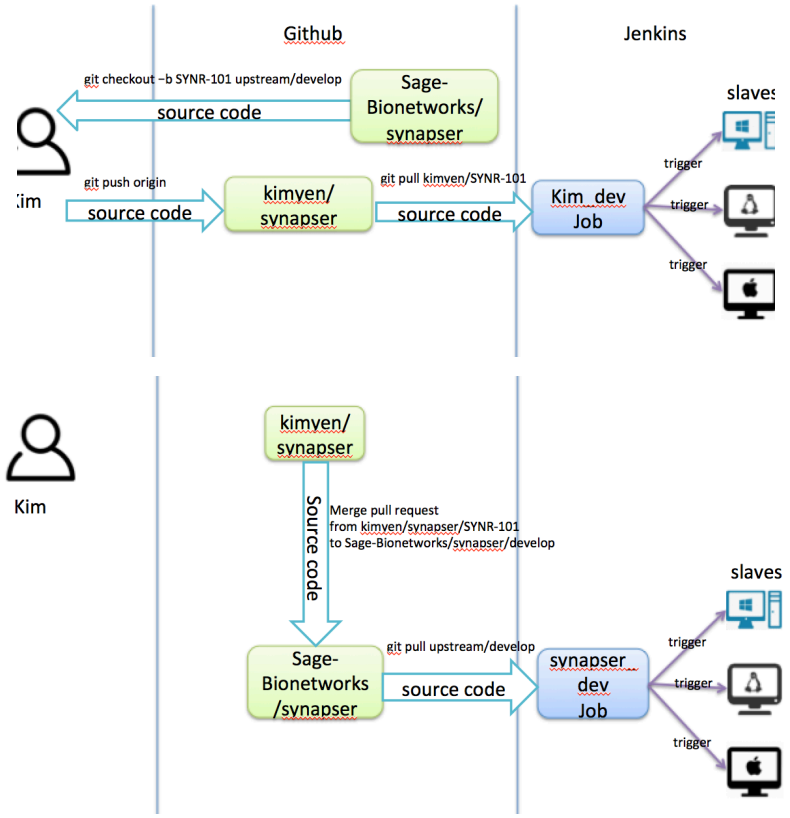
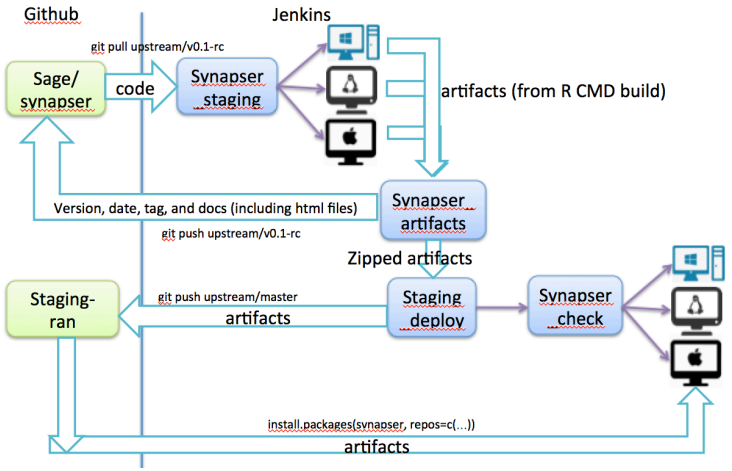


Summary

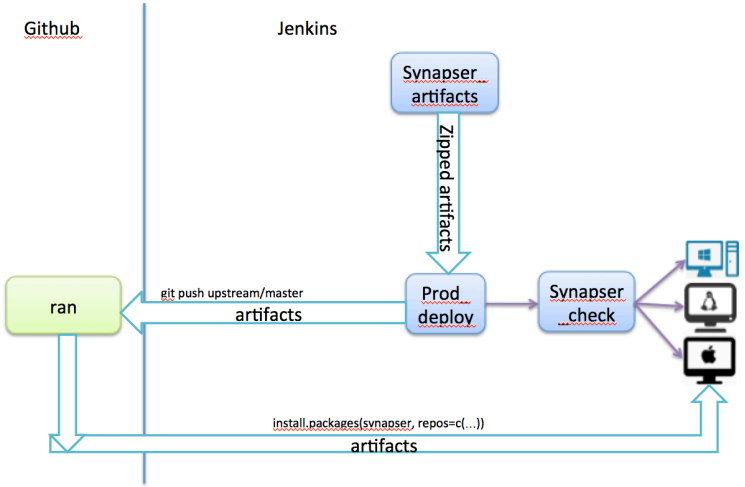
Development builds



Staging Builds



Production Builds / Release



IV. Take away

- What can you take from this build system? Consider yours:
  - Requirements
  - Practices
- Suggestions:
  - Github branches & tags
  - Use testthat
  - Use Github Pages for documentation
  - Deploy to Sage's RAN (or how to host your own RAN)

IV. Take away

- Documentations
  - Workflow:
    - https://sagebionetworks.jira.com/wiki/spaces/SYNR/pages/151420929/synapser+dev+staging+validation+release
  - Jenkins builds:
    - https://sagebionetworks.jira.com/wiki/spaces/SYNR/pages/154861569/Jenkins+Builds+-+Info+and+Maintenance
  - Build scripts:
    - https://github.com/Sage-Bionetworks/CI-Build-Tools

Thank you!