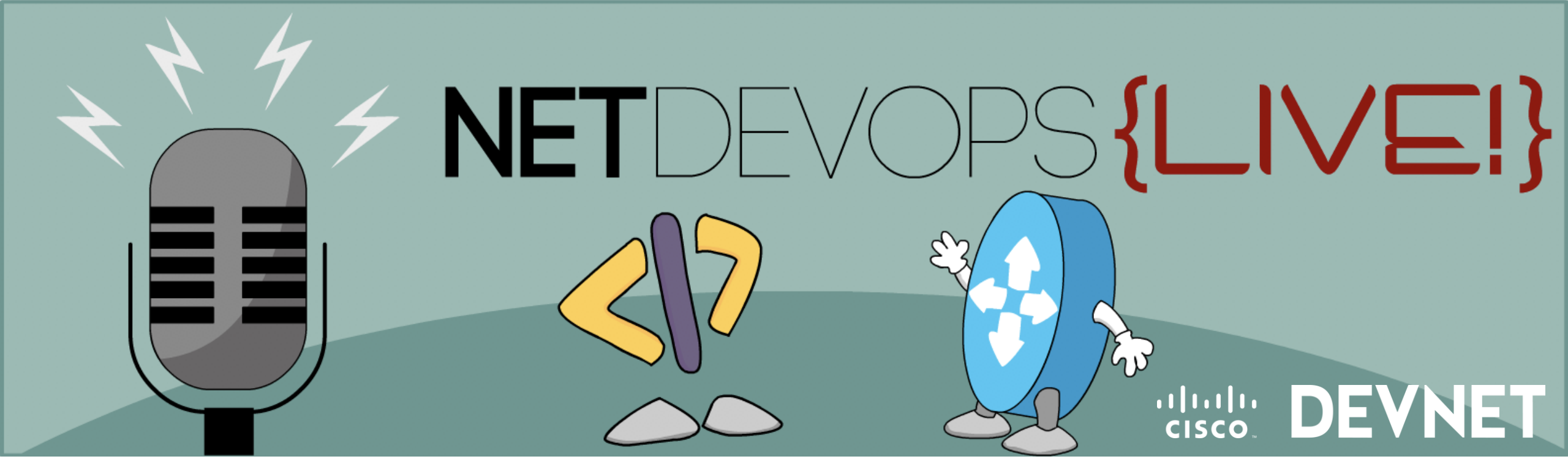


What's the big deal about Source Control? Why your network configurations should be in "git"

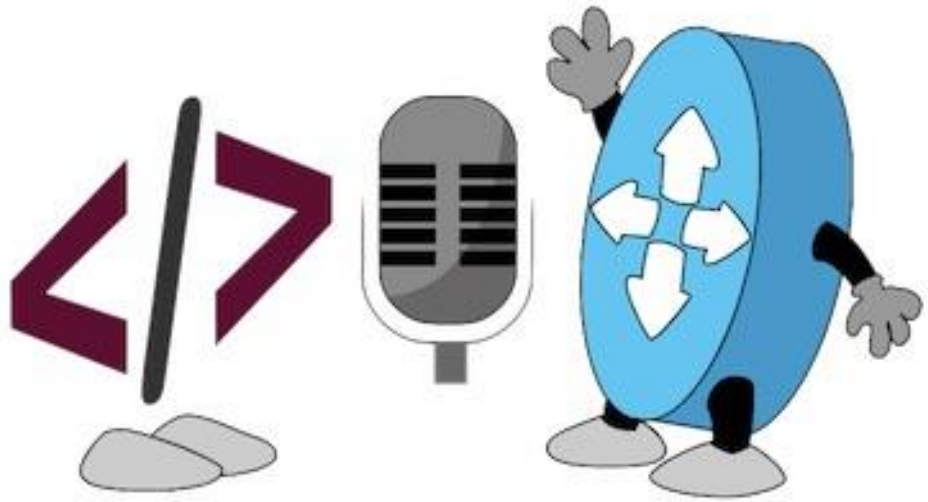
Matthew DeNapoli
Developer Advocate, DevNet
Twitter: @theDeNap

Season 1, Talk 5

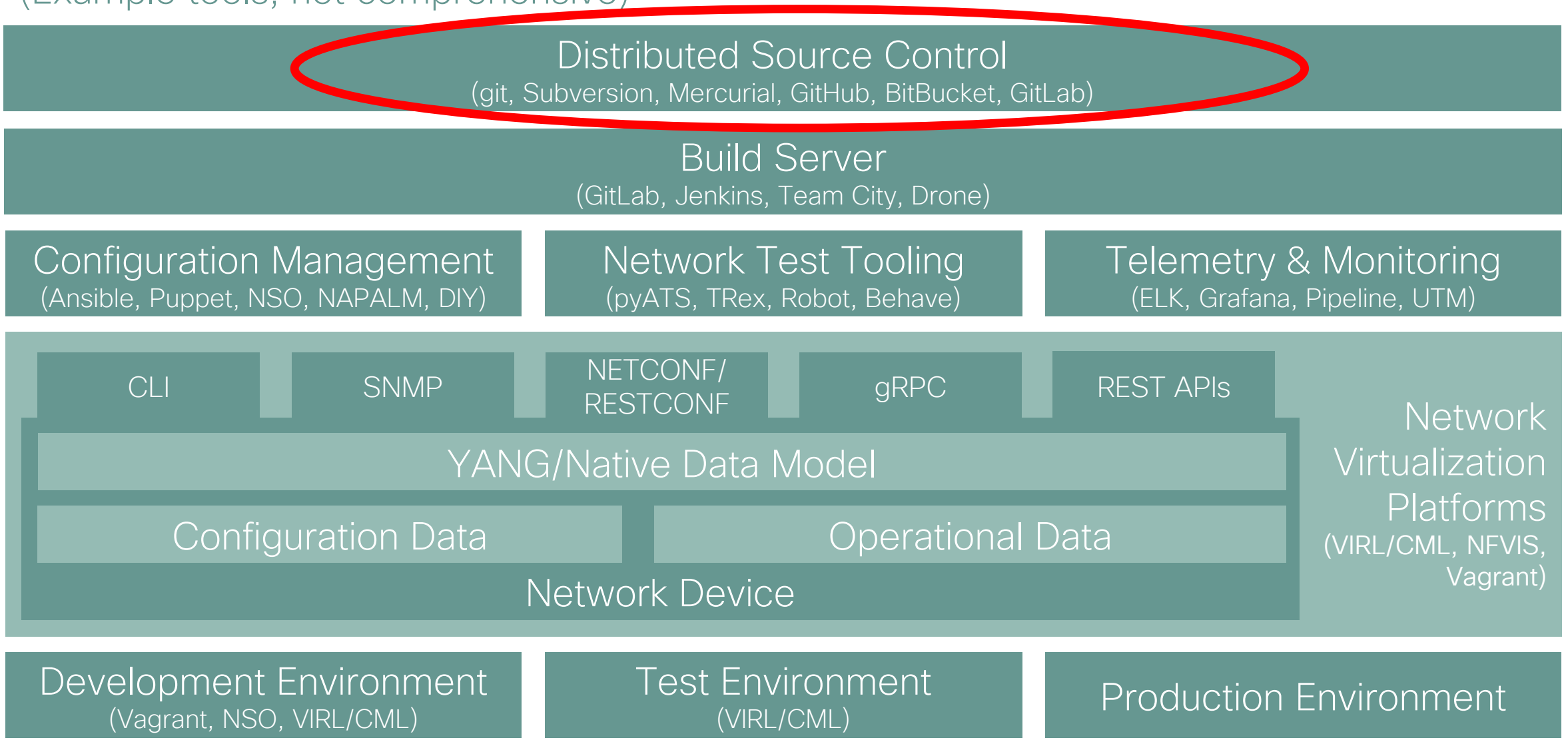
https://developer.cisco.com/netdevops/live

What are we going to talk about?

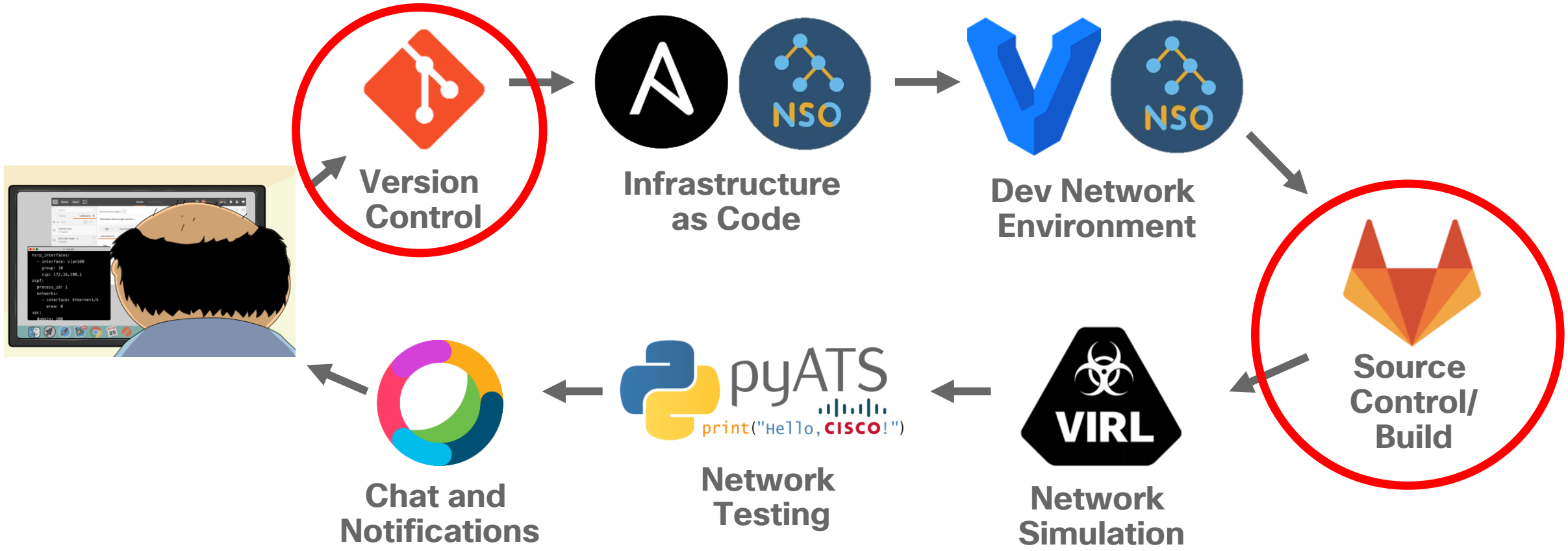
- Where in the NetDevOps Toolbag are we?
- Where in the CI/CD Pipeline are we?
- Need for Version Control
- What do we “git”?
- Git, by the book
- Demo Git flow using Gitlab



The NetDevOps Engineers Tool Bag
(Example tools, not comprehensive)

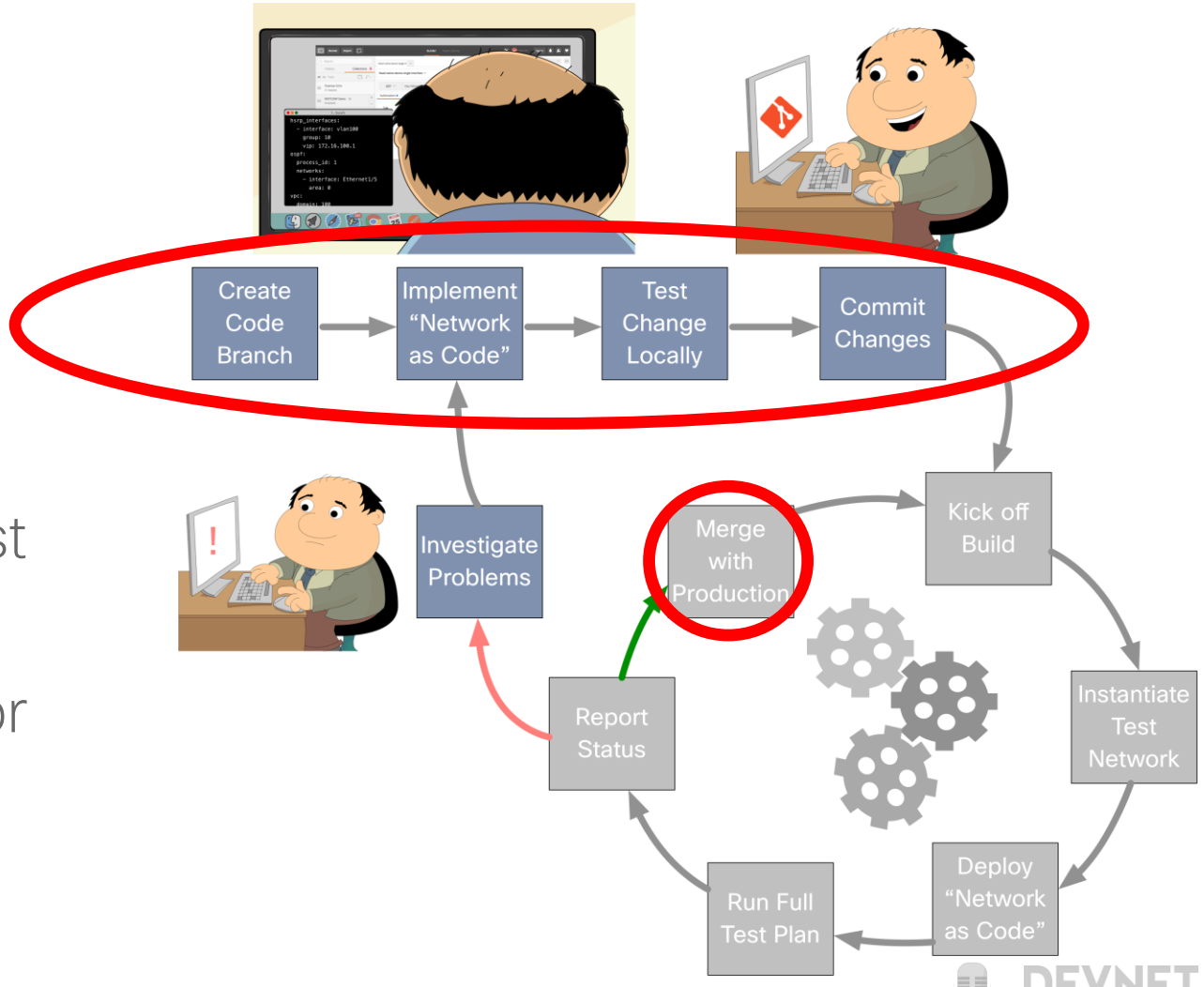


NetDevOps CICD Demo Environment



NetDevOps Configuration Pipeline

- "Treating the Network as Code"
- Network Configuration stored in Source Control
- Changes are proposed in code "branches"
- CICD Build Servers deploy and test proposed configurations
- Successful configurations ready for deployment to "Production"



The Need for Version Control

How do I make incremental changes and share my work with others?

How do I go back to the version of this file from (yesterday, last week, last year, ...)?

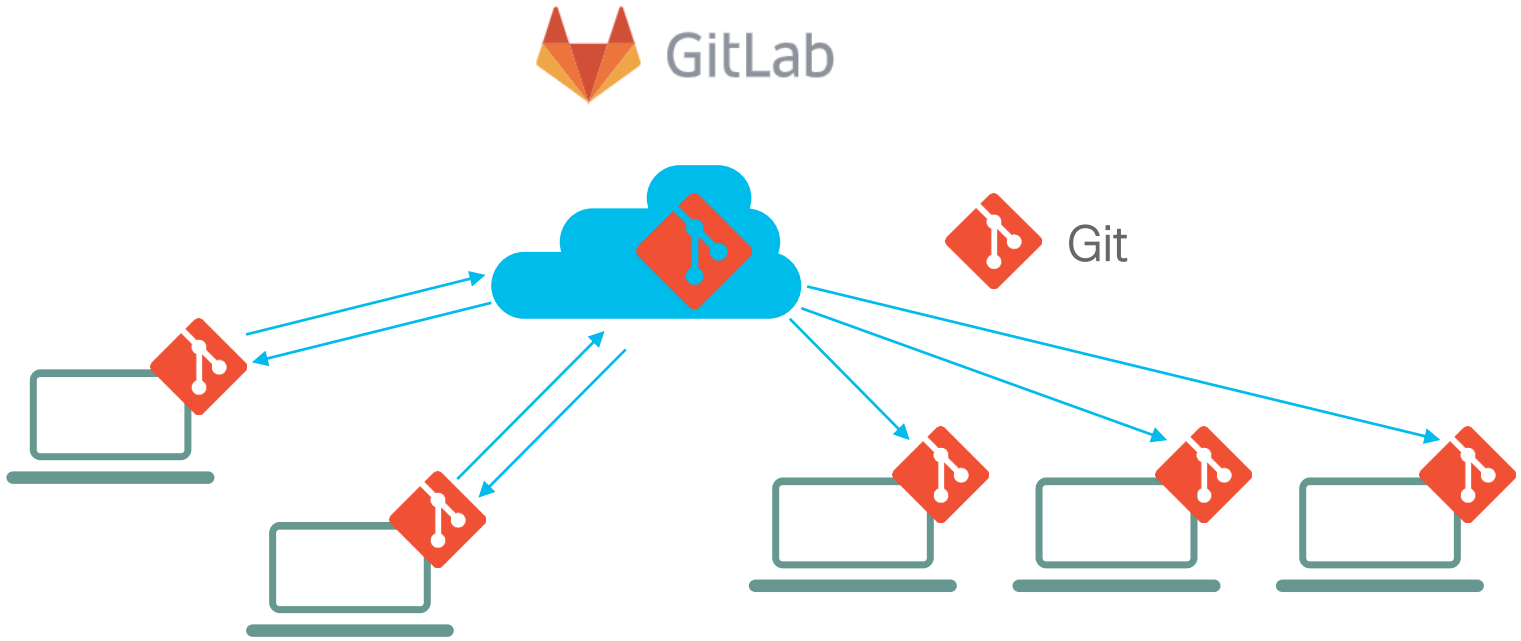
What changed between version X and version Y of a file?

People have been making changes to the same file (or set of files)...
How do I reconcile and merge all these changes?

What do I “git” from Github/Gitlab/others?

- Project Management
  - Issues
  - Tasks
  - Comments/Notes
  - CI/CD integrations
- Code Review
  - Propose Changes – Pull/Merge request
  - Request Review/Manage Feedback
  - See Diff
  - Branch management

Git vs. GitLab (or GitHub or BitBucket, etc.)

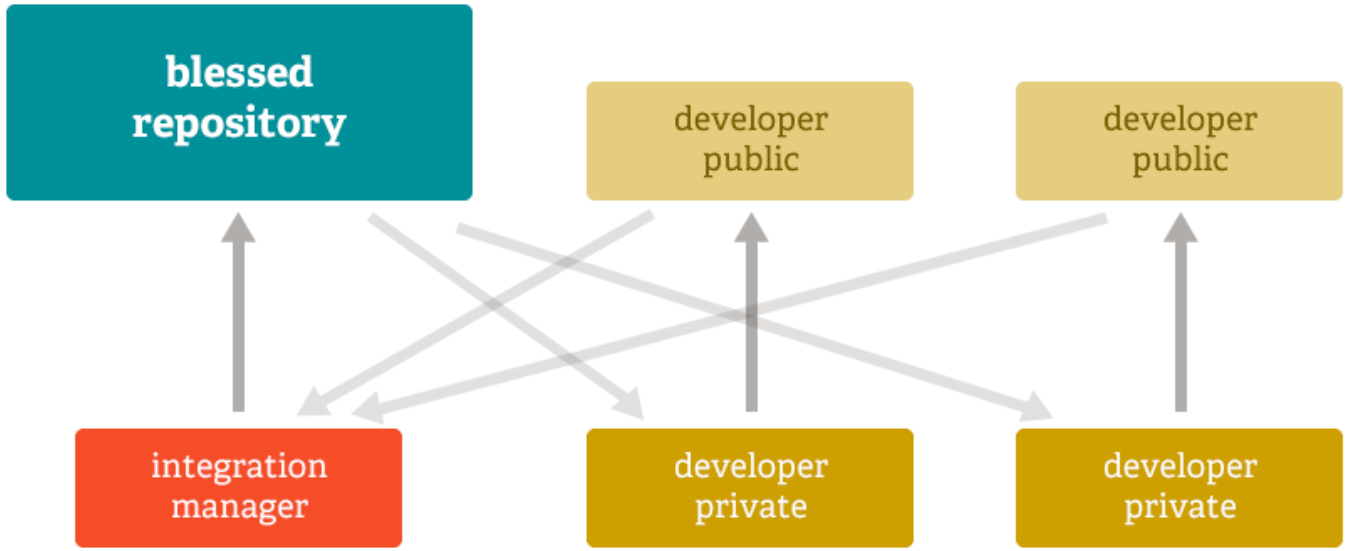


Basic Git Terminology

- **Repository (Repo)** – A vault for storing version controlled files
- **Working Directory** – The visible directory and its contents
- **Versioned Files** – Files you have asked Git to track
- **Un-Versioned Files** – Files in your working directory not tracked by Git
- **Commit** – Snapshot in time (of your version controlled files)
- **Branches** – A safe place for you to work

Distributed Version Control

- Opens up to new workflows: git flow
- Each system has an exact replica of the repo as other collaborators.



https://git-scm.com/images/about/workflow-b@2x.png

A Peak Under the Hood

- **Commits** contain Trees
- **Trees** contain links to Files
- Git stores *full copies of all* ***Changed Files***

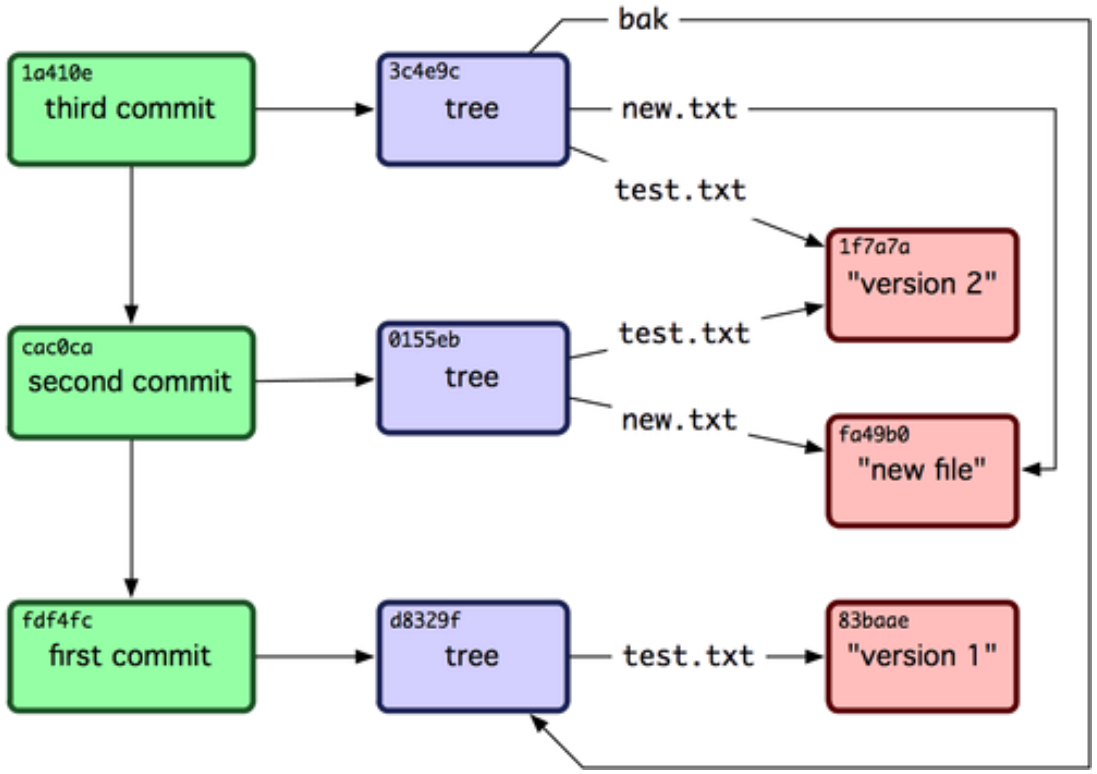
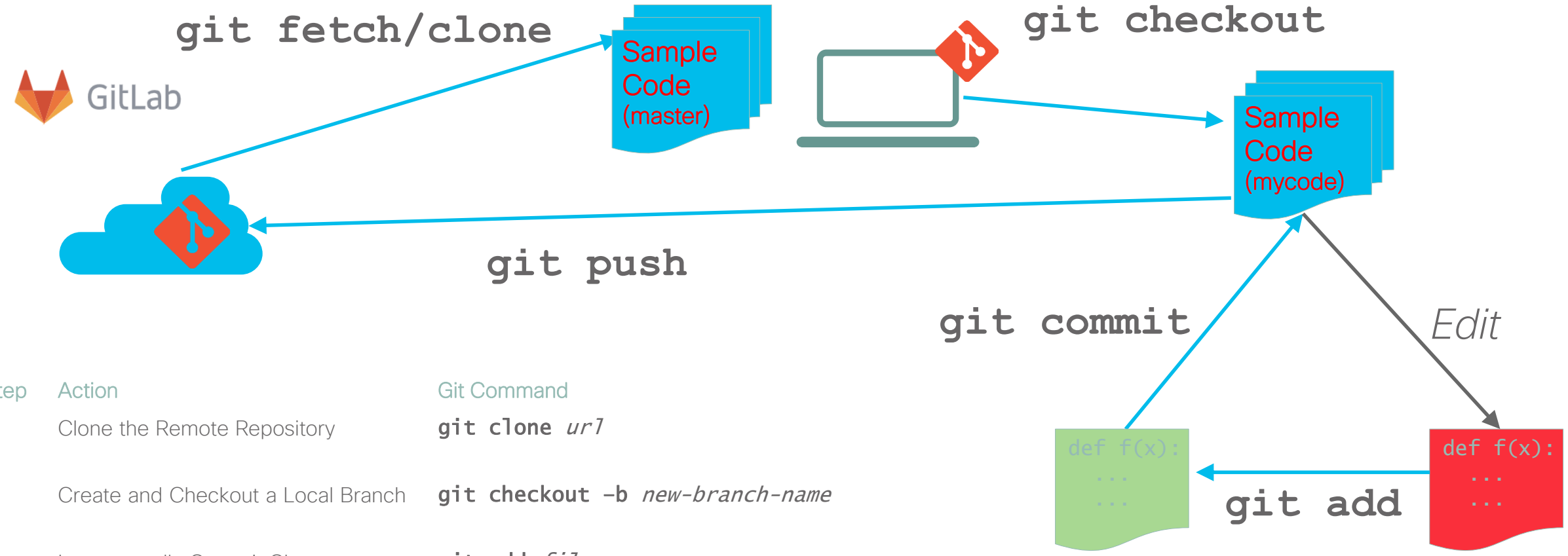


Image Source: http://git-scm.com

Useful Git Commands

Setup	Tell git who you are *one-time setup*	`git config --global user.name "your name"` `git config --global user.email your@email.com`
Clone	Clone ("download") a git repository	`git clone url`
Fetch	Fetch branch(es)/tag(s)	`git fetch repository`
Status	Check the Status of your local repository	`git status`
Checkout A Branch	Create and Checkout a local Branch Creates a "safe place" for your changes	`git checkout -b new-branch-name`
Add	Add a file to your next commit.	`git add filename`
Commit	Commit your changes.	`git commit -m "Your commit message."`
Push	Push changes to remote (central server)	`git push`
Merge	Combine changes from branch(es)	`git merge`

NetDevOps Sample-Code Workflow



Step	Action	Git Command
1.	Clone the Remote Repository	`git clone url`
2.	Create and Checkout a Local Branch	`git checkout -b new-branch-name`
3.	Incrementally Commit Changes	`git add filename` `git commit -m "Commit message"`

Let’s See This in Action!

Summing up

What did we talk about?

- Where in the NetDevOps Toolbag are we?
- Where in the CI/CD Pipeline are we?
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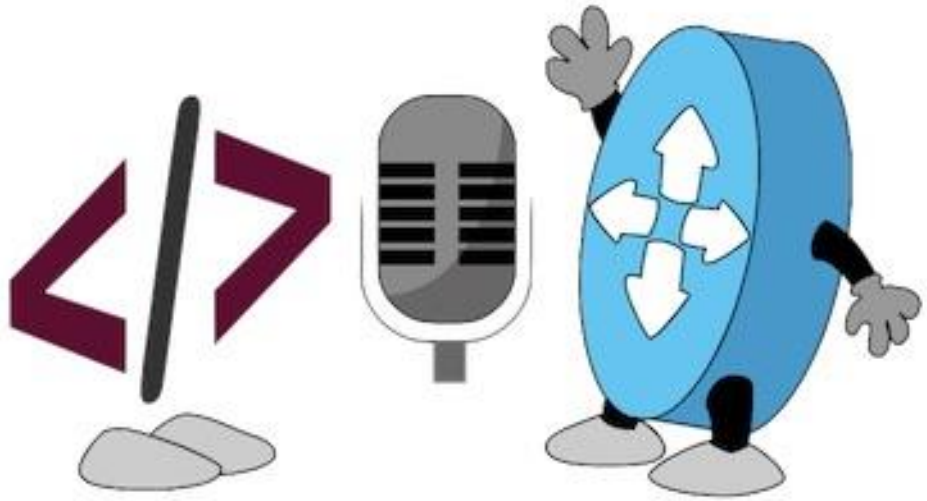
- Git, by the book
- Demo Git flow using Gitlab



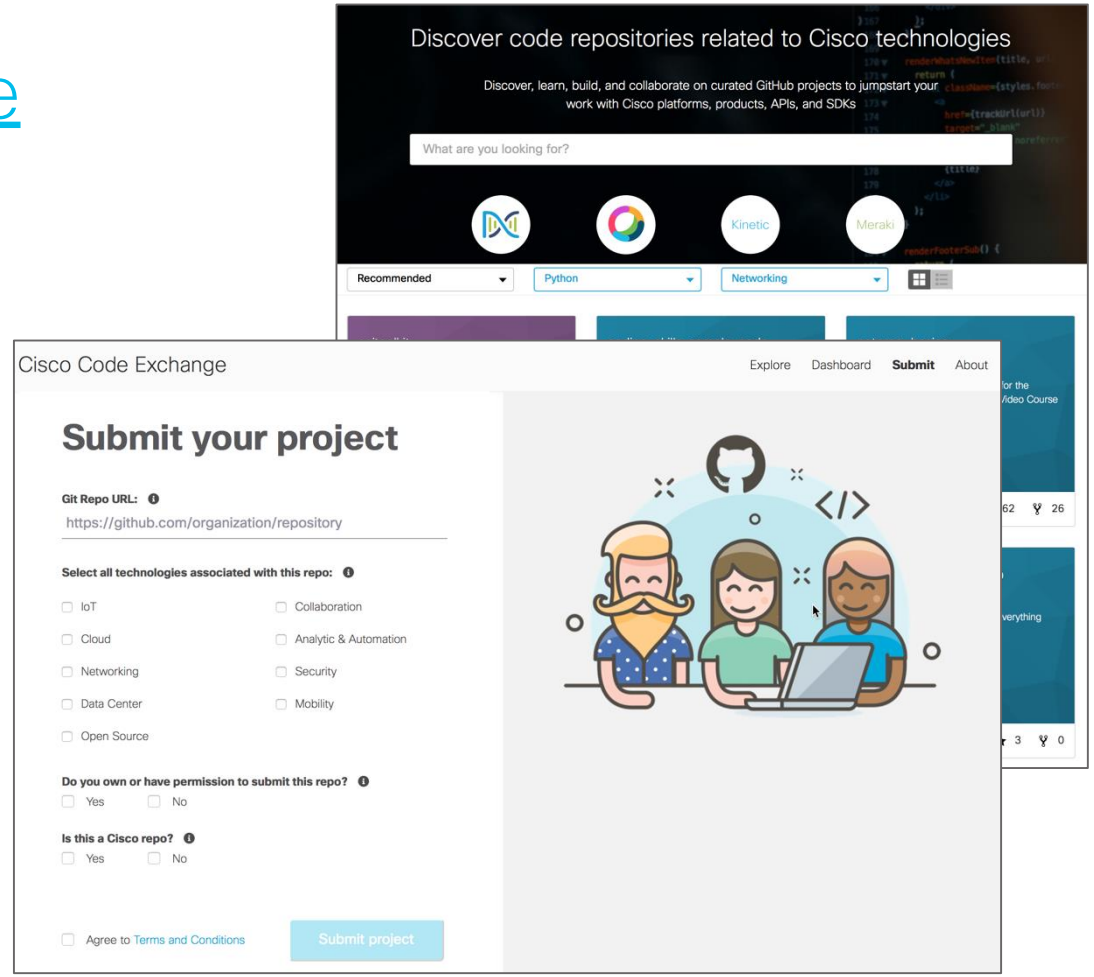
Webinar Resource List

- Docs and Links
  - https://developer.cisco.com/netdevops
  - https://git-scm.com
  - https://gitlab.com
- Learning Labs
  - Introduction to Git - http://cs.co/intro-to-git
- DevNet Sandboxes
  - Multi-IOS Sandbox with CICD Demo http://cs.co/sbx-multi
- Code Samples
  - http://cs.co/code-sbx-multi

NetDevOps Live! Code Exchange Challenge

developer.cisco.com/codeexchange

Open Issues, and Send PRs to sample repository to add some piece of configuration, or fix some error.



Example: Find a repository you're interested in, open a feature issue, work on the feature and submit a PR

Looking for more about NetDevOps?

- NetDevOps on DevNet
  developer.cisco.com/netdevops
- NetDevOps Live!
  developer.cisco.com/netdevops/live
- NetDevOps Blogs
  blogs.cisco.com/tag/netdevops
- Network Programmability Basics Video Course
  developer.cisco.com/video/net-prog-basics/

Got more questions? Stay in touch!

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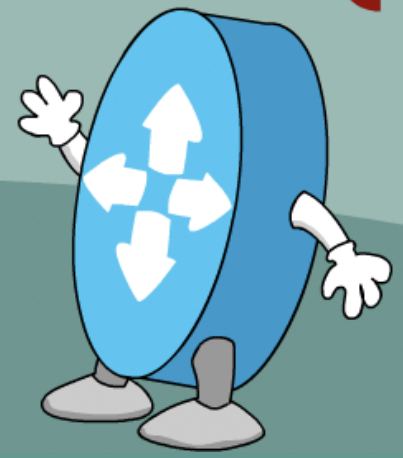

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