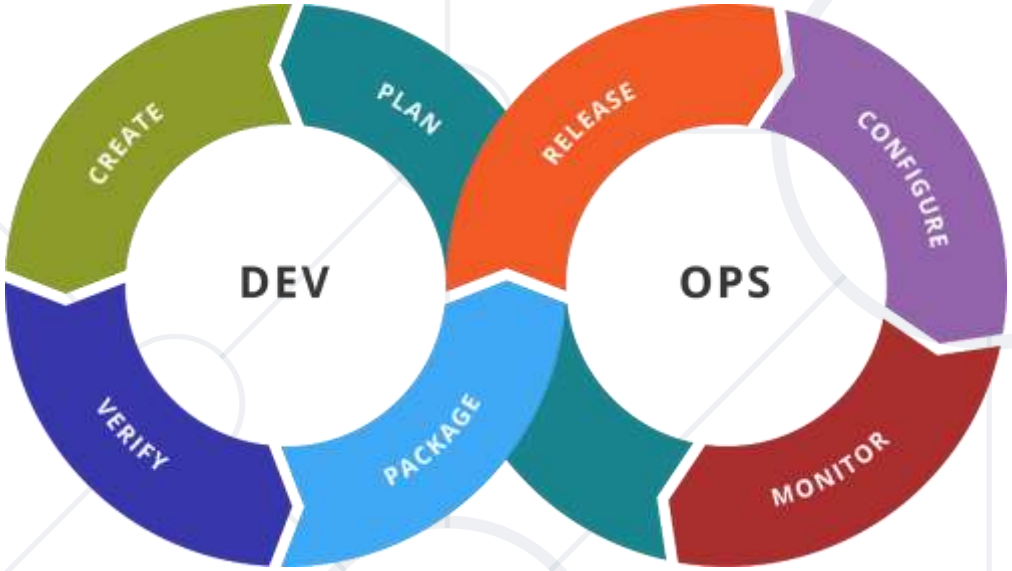
Jenkins

Advanced Techniques



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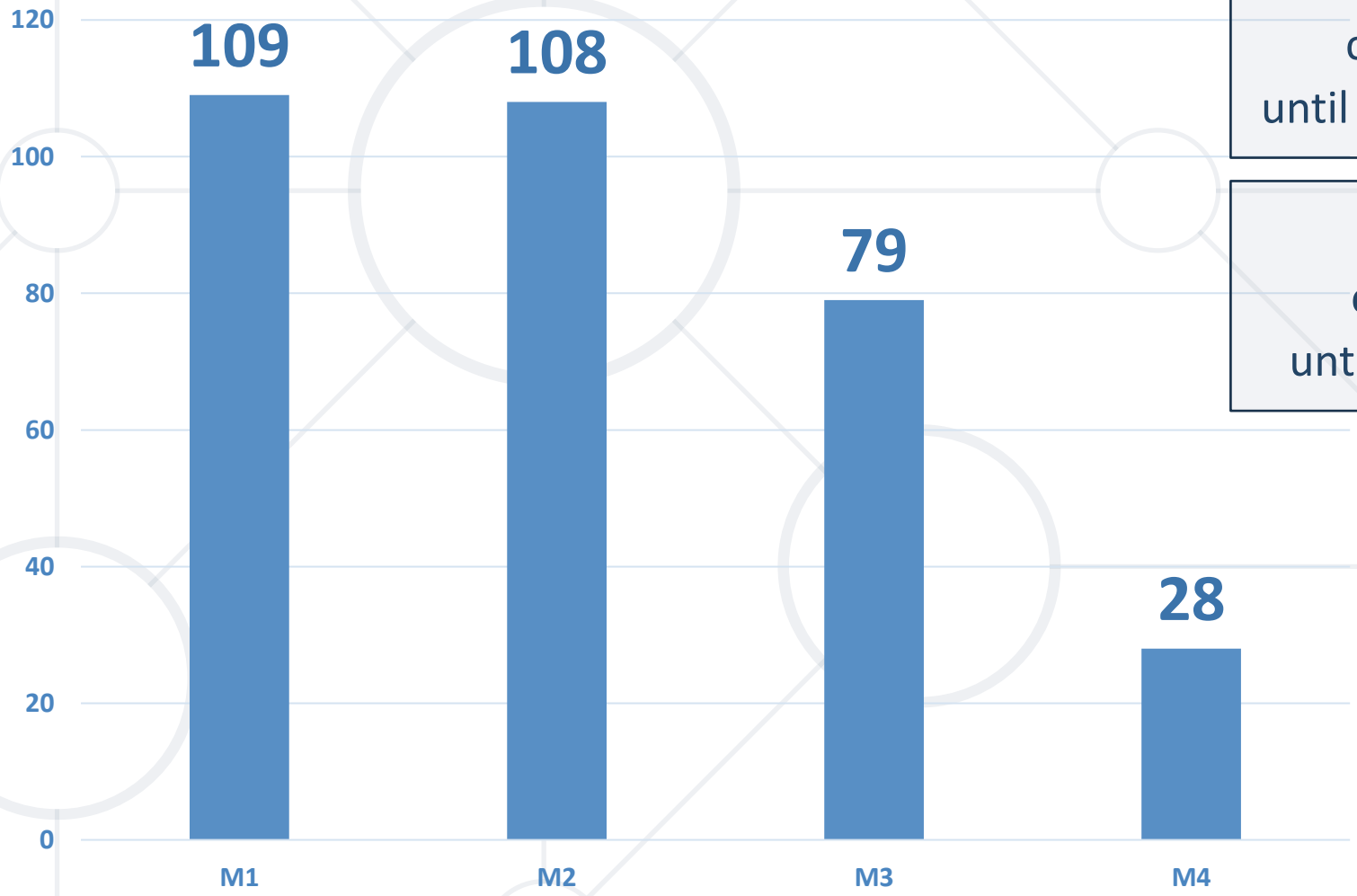
Homework Progress



Solutions for M4
can be submitted
until 23:59 on --.--.2023

Solutions for M5
can be submitted
until 23:59 on --.--.2023

Previous Module (M4)

Quick Overview

What We Covered

- Introduction to Jenkins
- Working with Jenkins
  - Remote Tasks
  - Schedules
  - Plugins
- Advanced Jenkins
  - Building with Docker
  - Pipelines

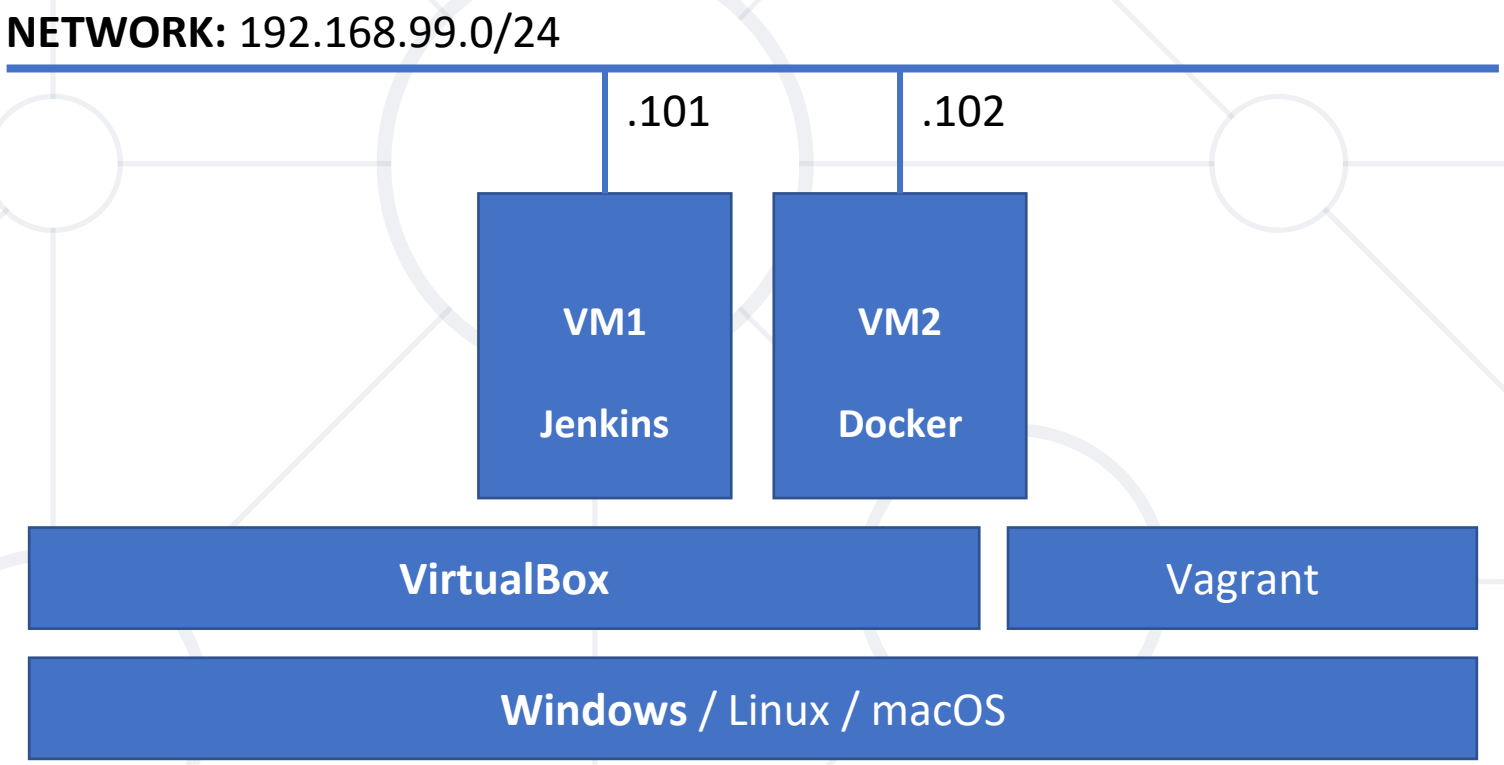
This Module (M5)

Topics and Lab Infrastructure

Table of Contents

1. Remote (slave) hosts
2. Working with Jenkins using CLI
3. Export and Import jobs
4. Blue Ocean
5. SCM integration

Lab Infrastructure



Offload Jenkins Host

Using remote (slave) hosts

Why Offloading?

- It is not considered good practice to execute jobs on the host
- Instead, we can register nodes and use them as executors
- We can mix and match platforms and environments
- Furthermore, we can have on-premises and cloud hosts
- We can even have virtual machines and physical machines
- This will increase not only the variety but also the capacity

Procedure

- Credentials and keys setup
- Register a node
- Assign label(s)
- Configure # of executors, workspace, etc.
- Deploy an agent
- Start using it

Practice: See It in Action

Live Demonstration in Class

Control Jenkins

Using Command Line Interface (CLI)

Jenkins CLI

- Users and administrators can use script or shell environment
- It allows access over SSH
- Or via downloadable CLI client
- We can use either HTTP, SSH or WebSocket to work with the CLI
- In addition, there is a Groovy-based script console

Partial List of Commands

- **help** can be used to get the list of all commands or information about specific command
- **list-jobs** returns a list of all available jobs
- **build** allows for job execution
- **create-job** is used to create jobs out of XML
- **get-job** returns a job represented in XML
- **copy-job** allows to duplicate a job
- **delete-job** can be used to delete jobs permanently

Jobs Management

Export / Import

Jobs Management

- We can export job from one instance and import it on another
- The same can be applied on one and the same instance
- This technique is useful for backup purposes as well
- Last but not least, it allows for automation or zero touch deployment
- Relies on the command line tools
- There are specialized plugins as well

Pipelines In Focus

Blue Ocean

Blue Ocean

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- Set of plugins focused on (multibranch) pipelines
- Completely different interface and tooling
- Visual pipeline editor
- Visual pipeline representation
- GitHub & Git integration
- Instant problem diagnosis

Practice: See It in Action

Live Demonstration in Class

SCM Integration

Pipeline Hosting and Webhooks

Pipeline SCM Integration

- Complex pipelines are difficult to maintain in Jenkins classic UI
- Instead, we can work in IDE of our choice and use an SCM
- We store the pipeline code in **Jenkinsfile**
- During the build, Jenkins automatically checks out the file
- During job creation we point out where the **Jenkinsfile** is
- We can use the snippet generator that can be found here

  ${YOUR_JENKINS_URL}/pipeline-syntax

Webhooks

- No matter where the pipeline code is, we can use webhooks to link the build process with changes in the SCM
- There are different plugins that expose endpoints in Jenkins
- Some of them are specialized and others are more generic
- They are called from the SCM when there is a push for example
- Some allow greater control like filtering for example

Practice: See It in Action

Live Demonstration in Class

Resources

Jenkins site

https://jenkins.io/

Jenkins installation guide

https://jenkins.io/doc/book/installing/

Jenkins Pipeline guide

https://jenkins.io/doc/book/pipeline/

Managing Jenkins

https://jenkins.io/doc/book/managing/

Jenkins plugins

https://plugins.jenkins.io/

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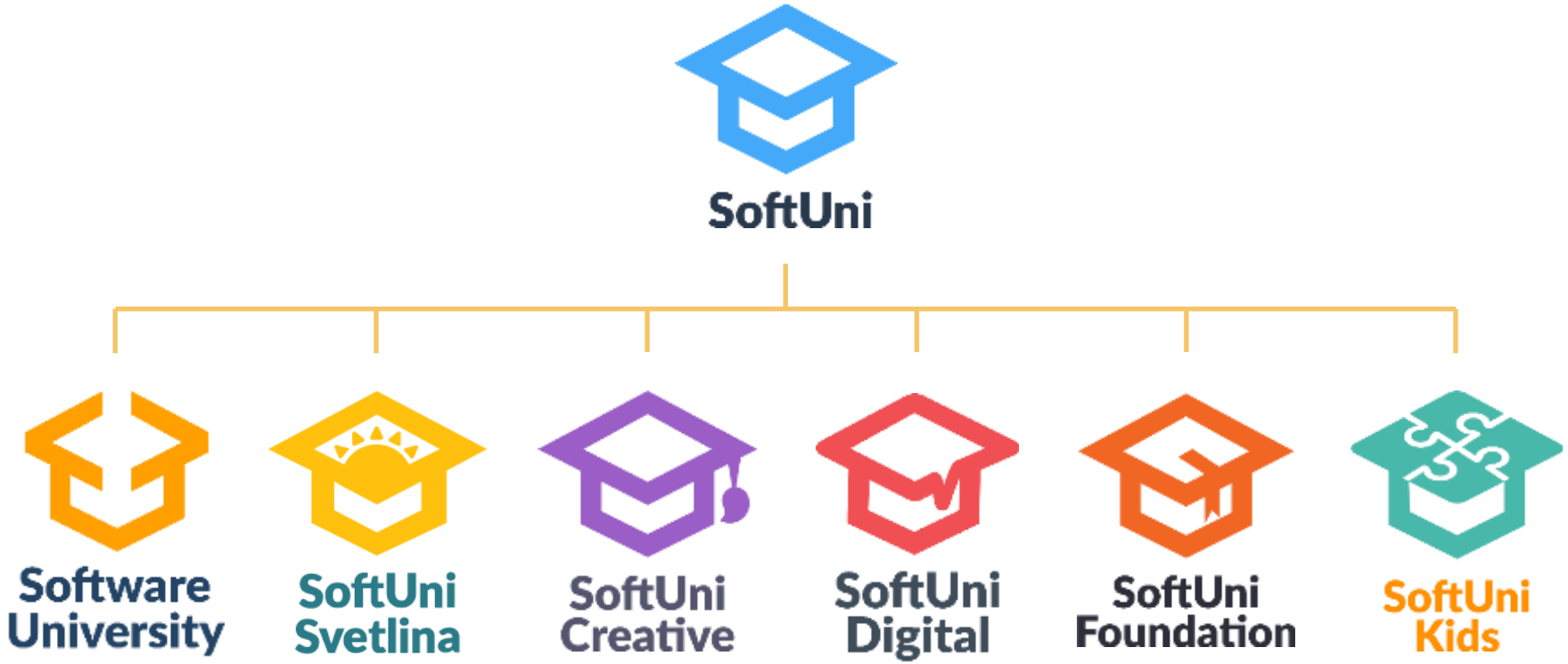
Questions?



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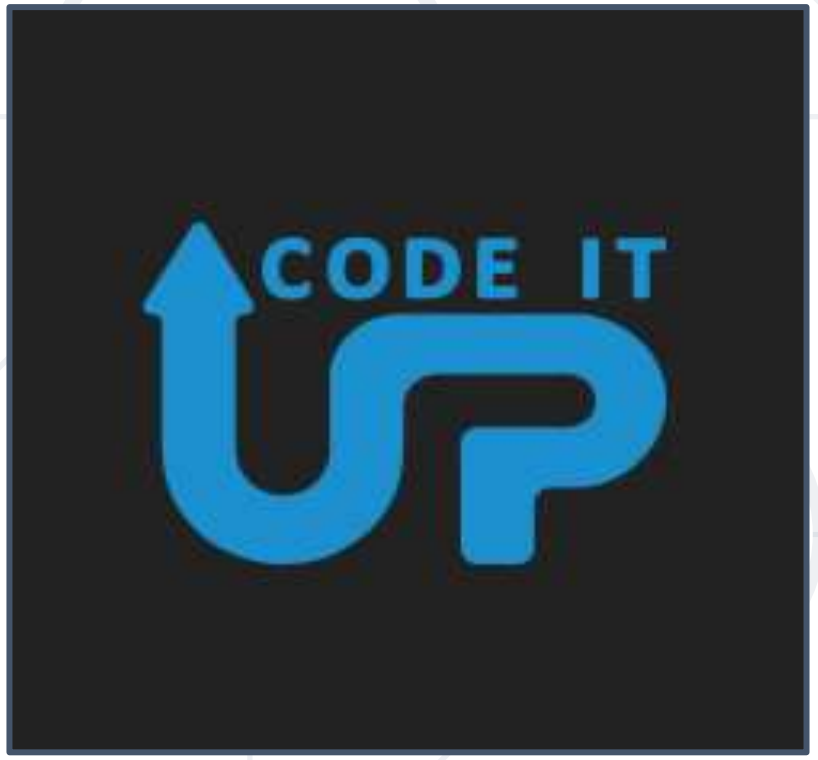

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