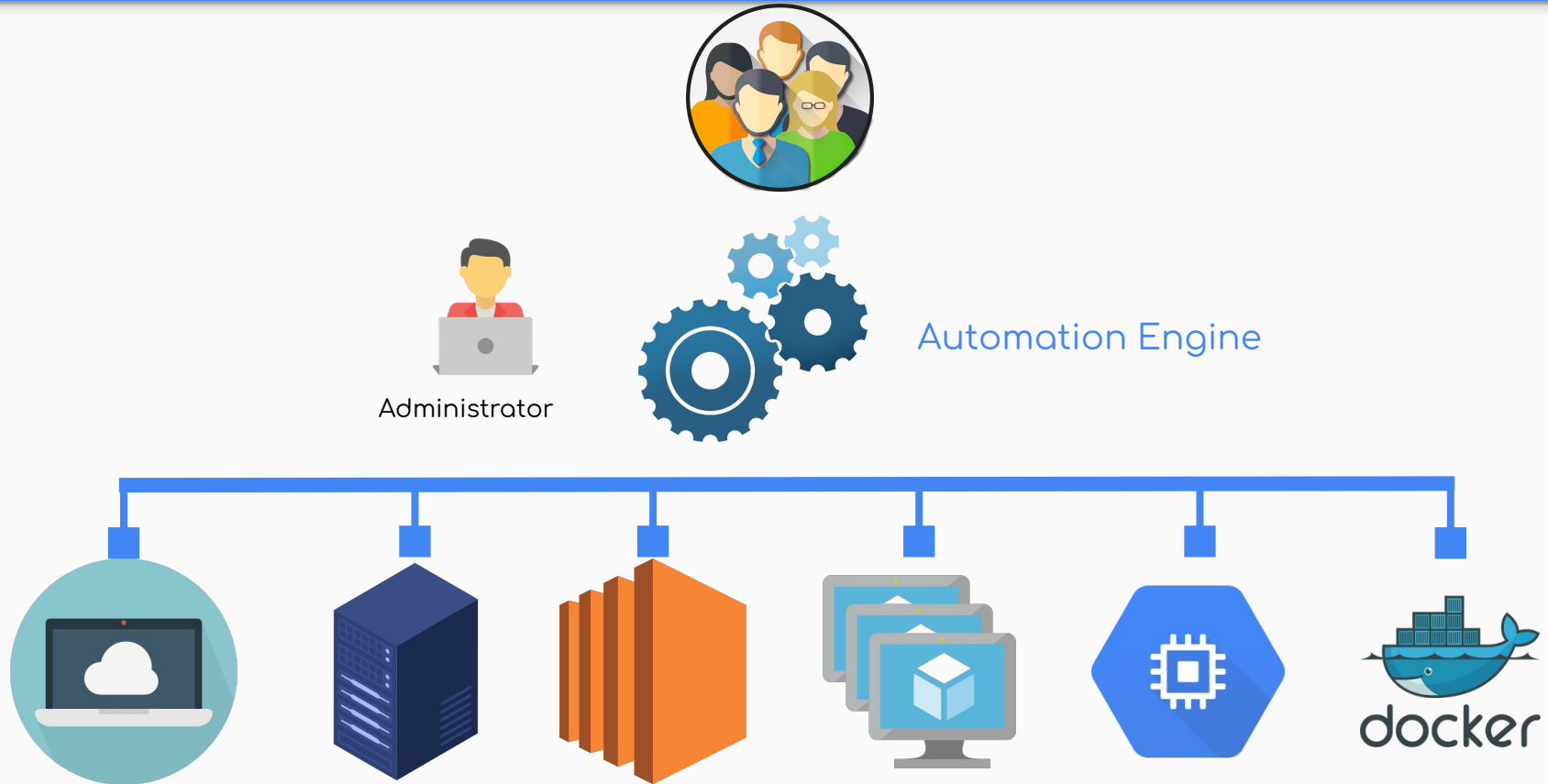


Automation Engines

By Ganesha Kudale

Feb 2022

Automation Engine Architecture

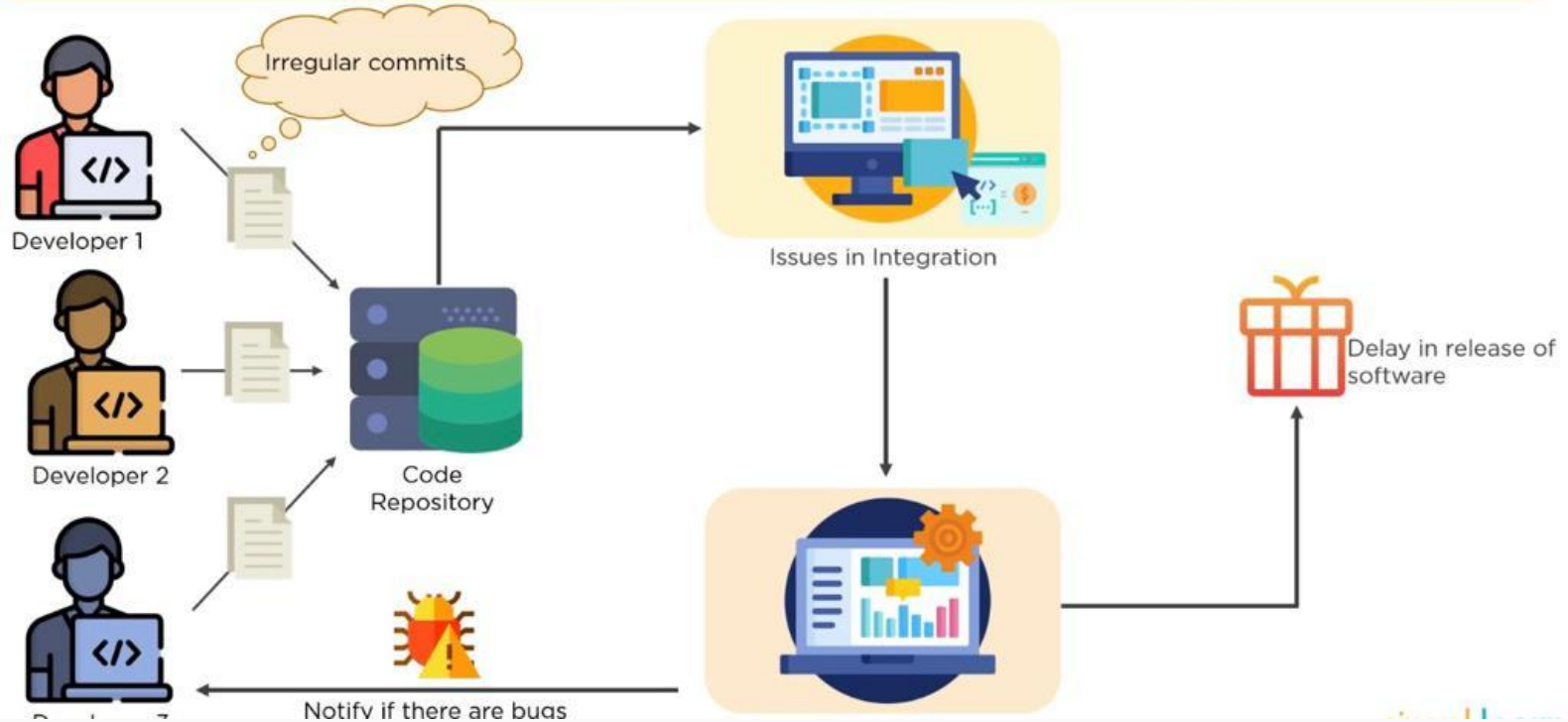


Automation Engines

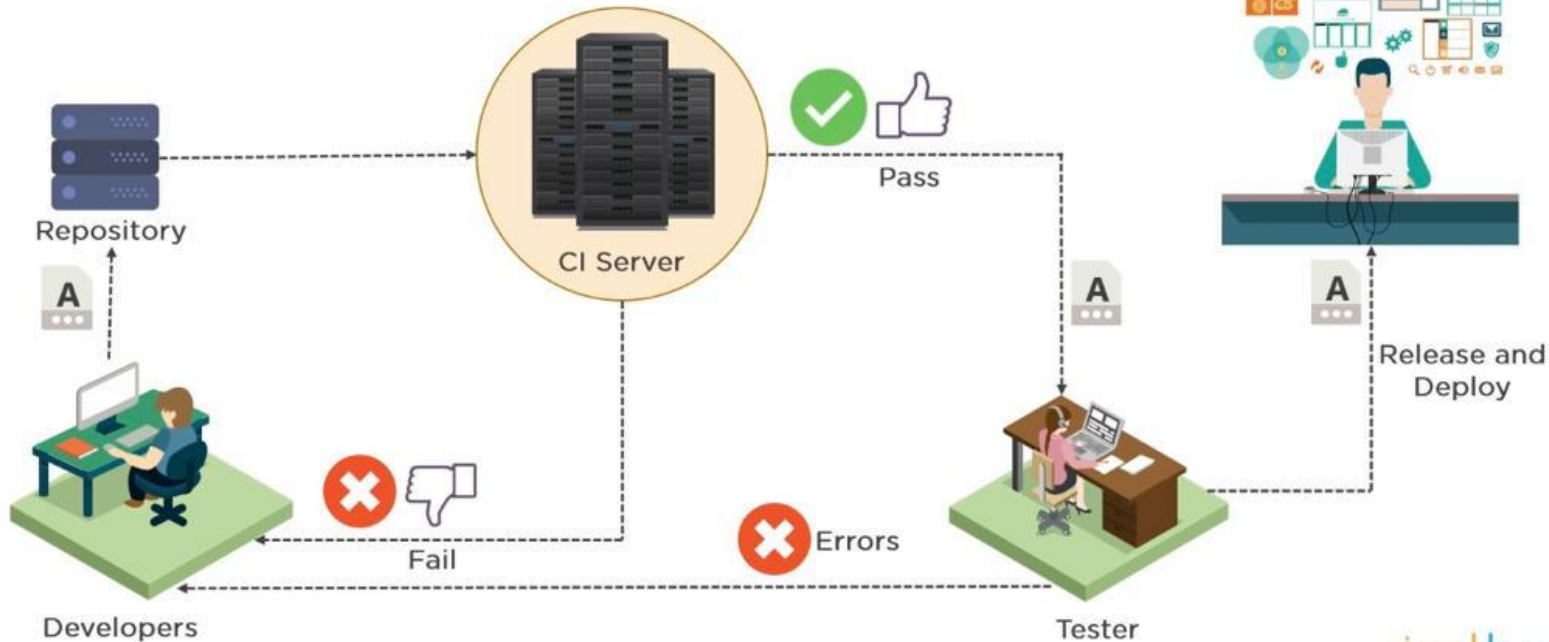


Before Jenkins

Before Jenkins



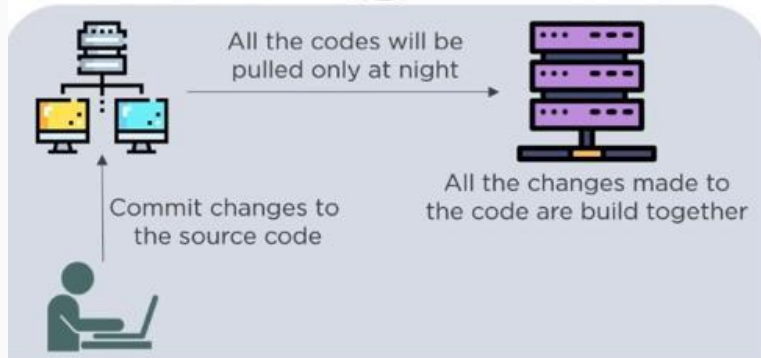
What is Continuous Integration?



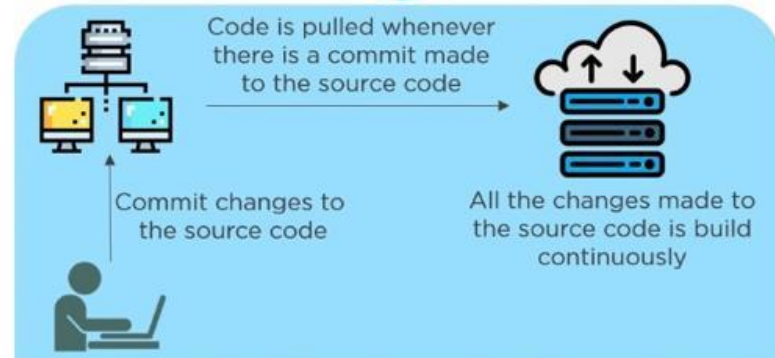
What is Jenkins

What is Jenkins?

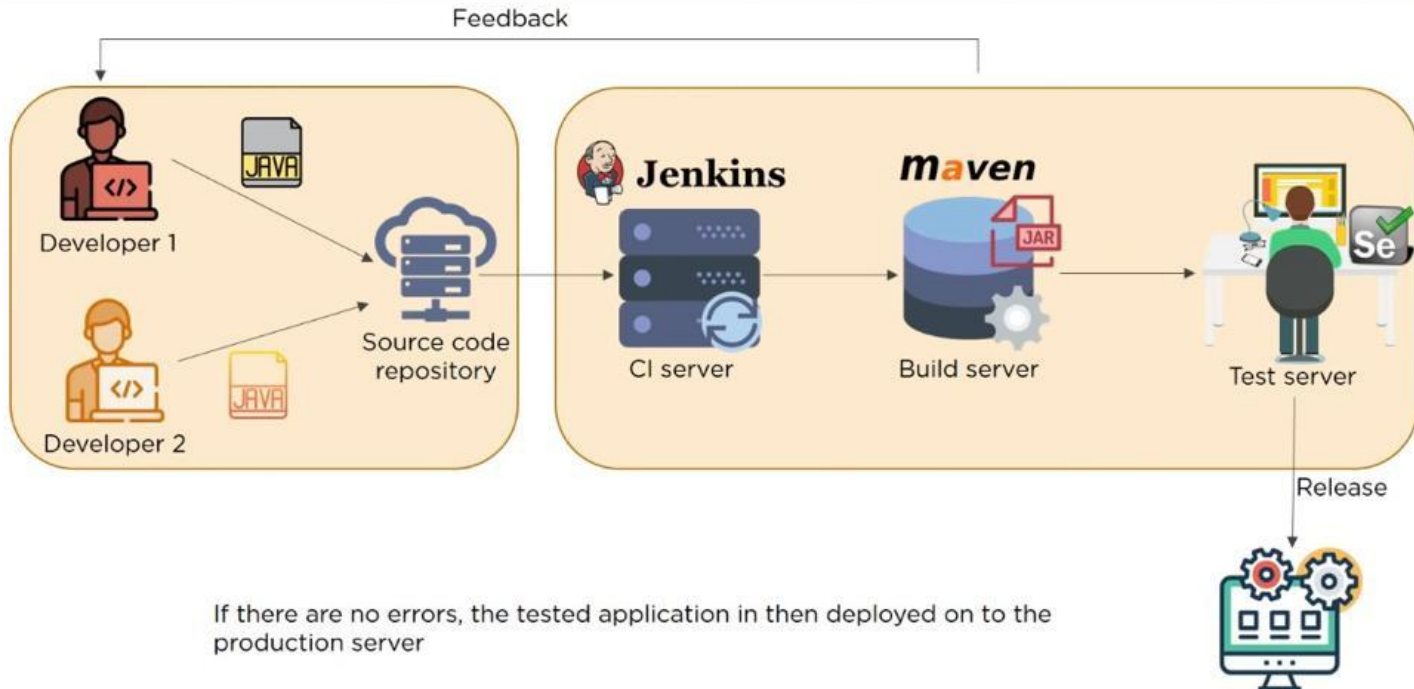
Jenkins is a Continuous Integration tool that allows continuous development, test and deployment of newly created codes



Nightly build and integration

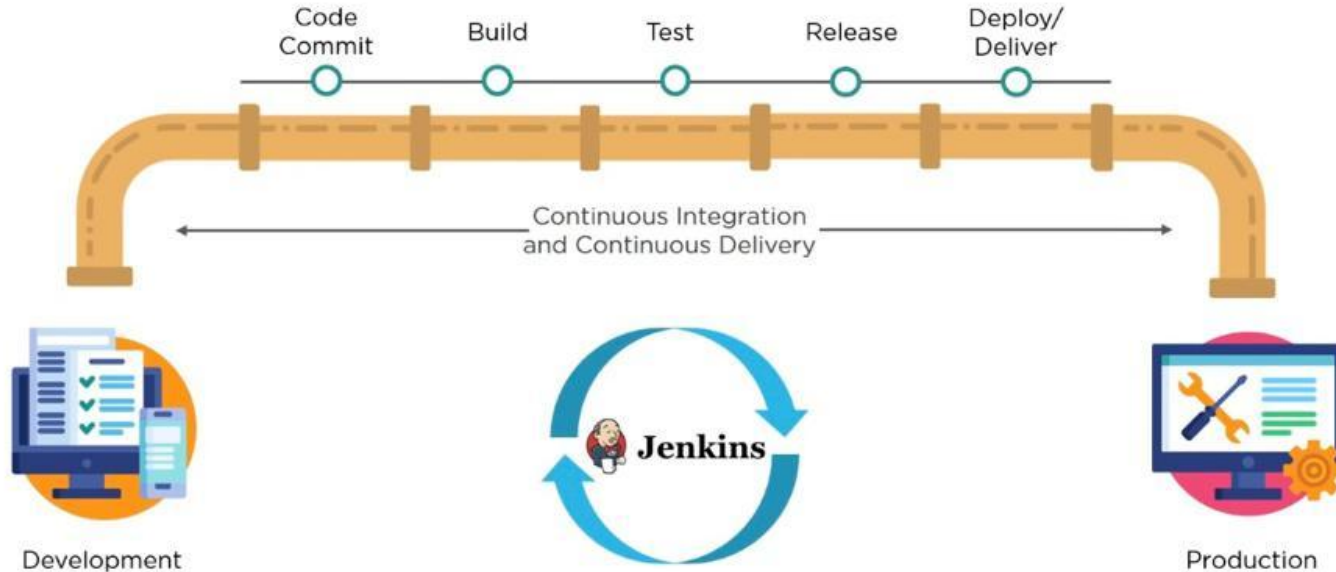


Jenkins Architecture

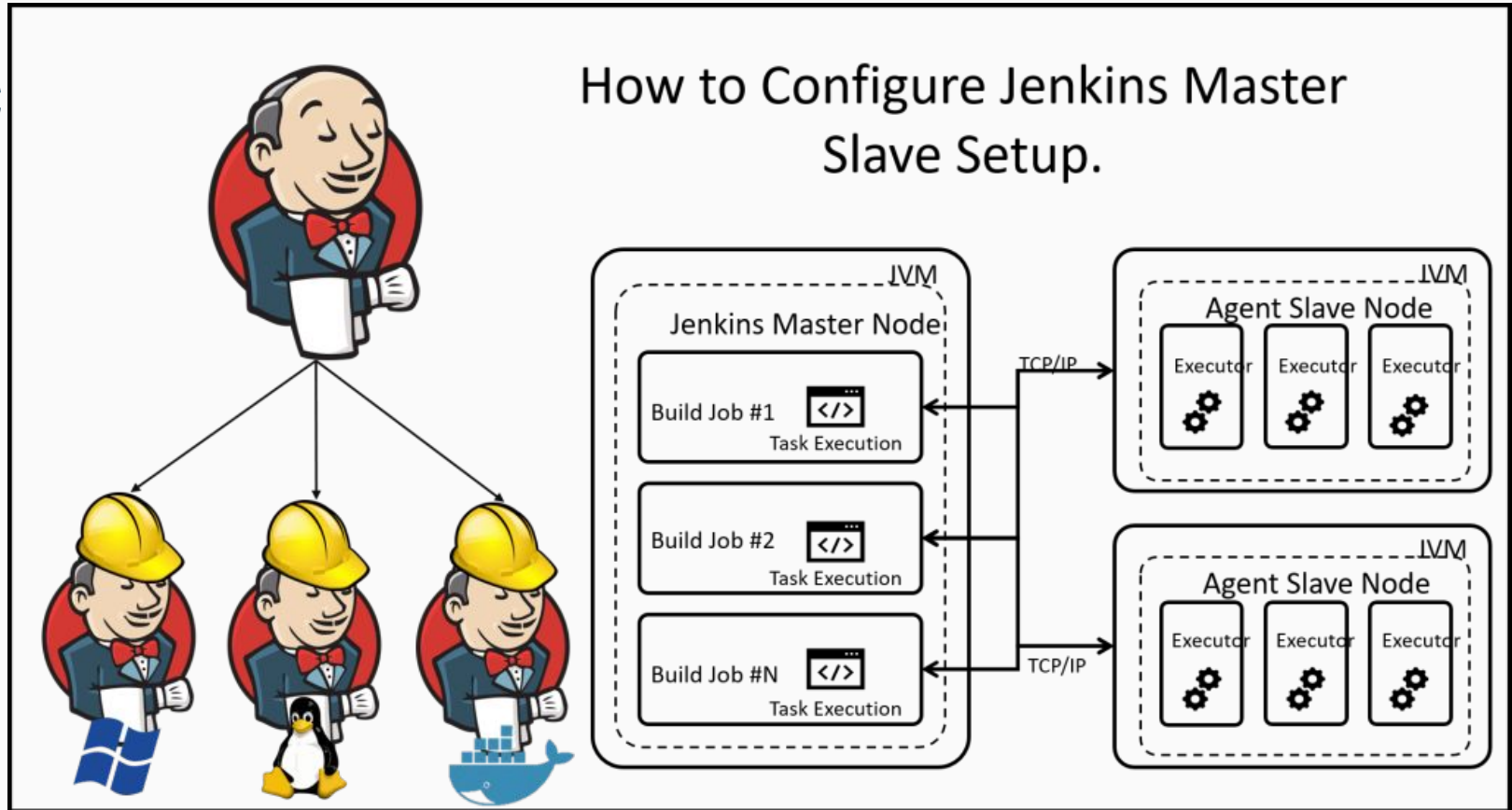


Whats is pipeline?

Jenkins Pipeline



Jenkins in details



Demo - Jenkins

Setup Jenkins

Master Node

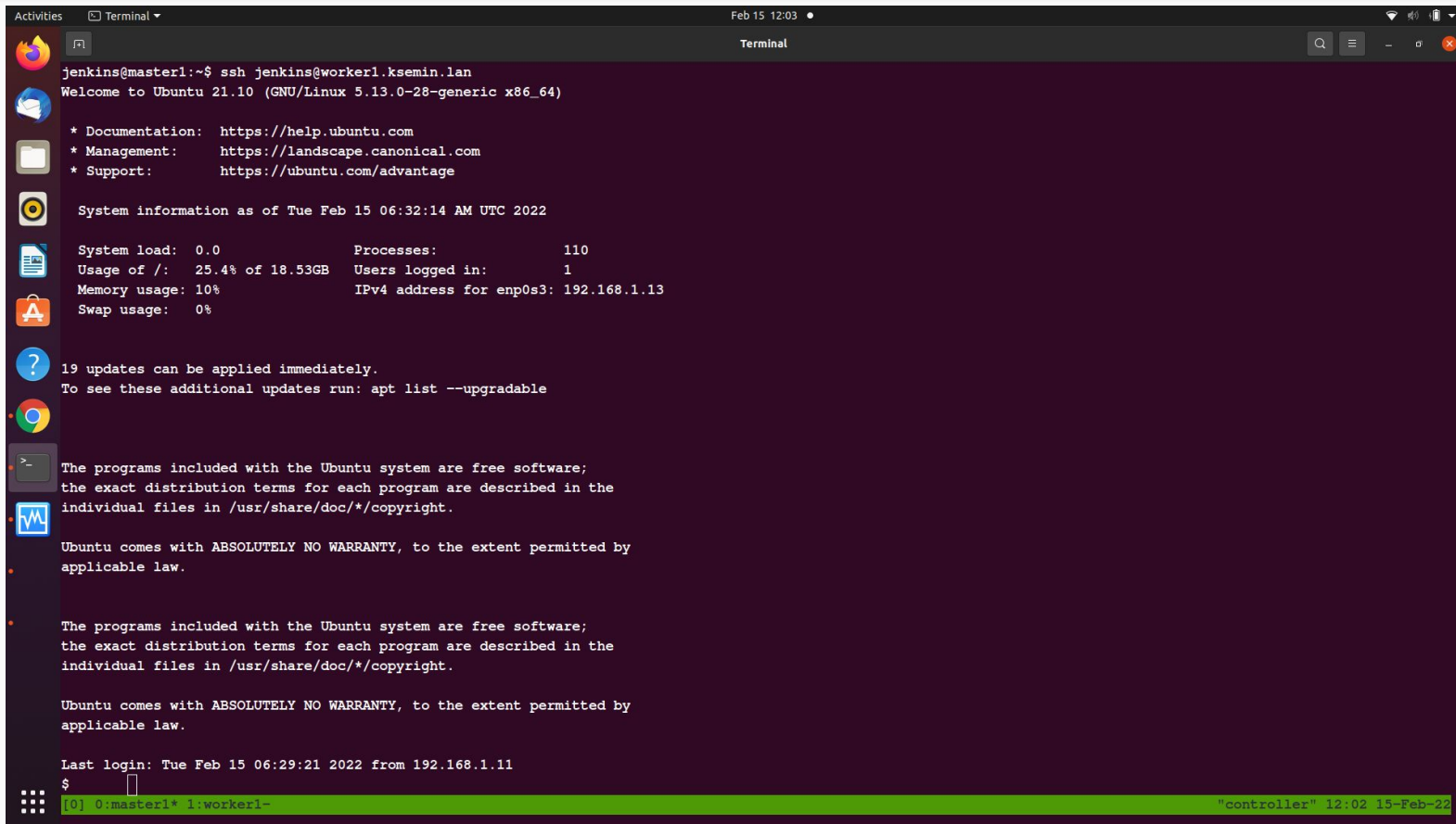
1. `curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo tee /usr/share/keyrings/jenkins-keyring.asc > /dev/null`
2. `echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] https://pkg.jenkins.io/debian-stable binary/ | sudo tee /etc/apt/sources.list.d/jenkins.list > /dev/null`
3. `sudo apt-get update`
4. `sudo apt install default-jre -y`
5. `sudo apt-get install jenkins -y`
6. `sudo su - jenkins`
7. `ssh-keygen -t rsa`
8. Copy content of `/var/lib/jenkins/.ssh/id_rsa.pub` to worker's `/var/lib/jenkins/.ssh/authorized_keys` file
9. Try login with jenkins user from master to worker node, it should be automatically login without password. Reference image attached to next slide.
10. Copy the private key content to credentials provider from path - `/var/lib/jenkins/.ssh/id_rsa`

Worker Node

1. `sudo apt-get update`
2. `sudo apt install default-jre ssh -y`
3. `sudo useradd -d /var/lib/jenkins jenkins`
4. `sudo mkdir -p /var/lib/jenkins/.ssh`

Reference in case of issues refer [here](#)

Password less login from master to worker node



The image shows a terminal window titled "Terminal" with a dark background. The window displays the output of an SSH command executed on a machine named "master1". The command is `ssh jenkins@worker1.ksemin.lan`. The output shows a successful login to a Ubuntu 21.10 system. The system information includes the date and time (Tue Feb 15 06:32:14 AM UTC 2022), system load, processes, memory usage, and network information. It also mentions 19 updates that can be applied immediately. The terminal window has a sidebar on the left with various application icons and a top bar with system status icons.

```
jenkins@master1:~$ ssh jenkins@worker1.ksemin.lan
Welcome to Ubuntu 21.10 (GNU/Linux 5.13.0-28-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Tue Feb 15 06:32:14 AM UTC 2022

System load:  0.0               Processes:    110
Usage of /:   25.4% of 18.53GB   Users logged in: 1
Memory usage: 10%              IPv4 address for enp0s3: 192.168.1.13
Swap usage:   0%

19 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

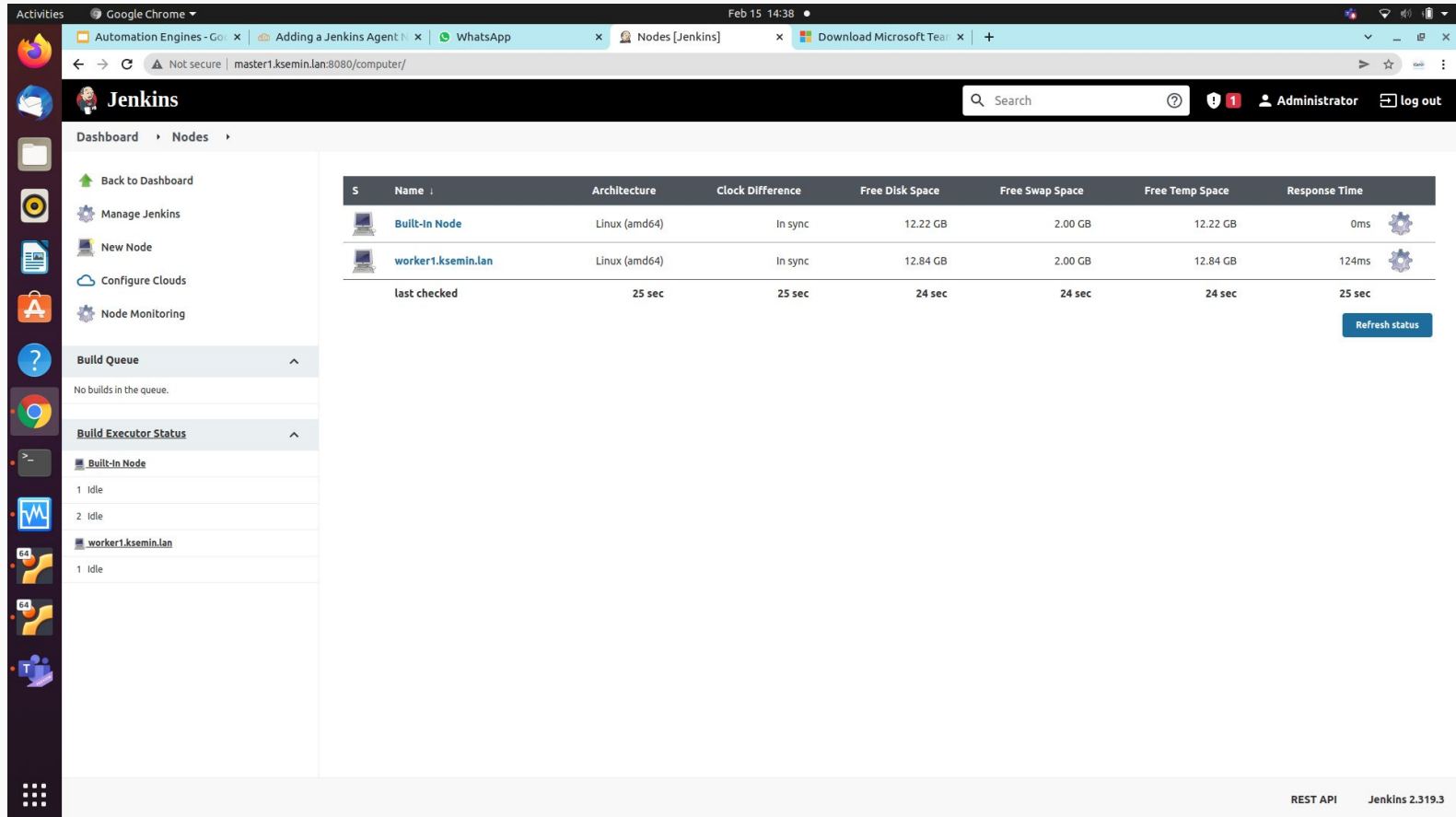
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.



Last login: Tue Feb 15 06:29:21 2022 from 192.168.1.11
$
```

[0] 0:master1* 1:worker1- "controller" 12:02 15-Feb-22

Added Agent to Jenkins Master



The screenshot shows the Jenkins web interface in Google Chrome. The browser address bar displays the URL `master1.ksemin.lan:8080/computer/`. The Jenkins logo is visible in the top left, and the user is logged in as Administrator. The left sidebar contains navigation links: Back to Dashboard, Manage Jenkins, New Node, Configure Clouds, Node Monitoring, Build Queue, and Build Executor Status. The main content area displays a table of nodes.

S	Name	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time
	Built-in Node	Linux (amd64)	In sync	12.22 GB	2.00 GB	12.22 GB	0ms
	worker1.ksemin.lan	Linux (amd64)	In sync	12.84 GB	2.00 GB	12.84 GB	124ms
last checked		25 sec	25 sec	24 sec	24 sec	24 sec	25 sec

A **Refresh status** button is located at the bottom right of the table.

REST API Jenkins 2.319.3

Agent Configurations

The screenshot displays the Jenkins web interface in a Google Chrome browser. The address bar shows the URL `master1.ksemin.lan:8080/computer/worker1.ksemin.lan/configure`. The page title is "Jenkins". The left sidebar contains a navigation menu with options: "Back to List", "Status", "Delete Agent", "Configure" (highlighted), "Build History", "Load Statistics", "Script Console", "Log", "System Information", and "Disconnect". Below the menu, the "Build Executor Status" section shows "1 Idle" agent.

The main content area is the "Configure" page for the agent "worker1.ksemin.lan". It features several configuration fields:

- Name:** worker1.ksemin.lan
- Description:** (empty)
- Number of executors:** 1
- Remote root directory:** /tmp
- Labels:** worker1
- Usage:** Use this node as much as possible
- Launch method:** Launch agents via SSH
 - Host:** worker1.ksemin.lan
 - Credentials:** jenkins (with an "Add" button)
 - Host Key Verification Strategy:** Known hosts file Verification Strategy
- Availability:** Keep this agent online as much as possible

At the bottom, the "Node Properties" section includes checkboxes for "Disable deferred wipeout on this node", "Environment variables", and "Tool Locations". A "Save" button is located at the bottom left of the configuration area.

Manage Jenkins

1. [Installing Jenkins](#)
2. [Manage Jenkins](#)
3. [Scaling Jenkins](#)
4. [Jenkins Administration](#)