

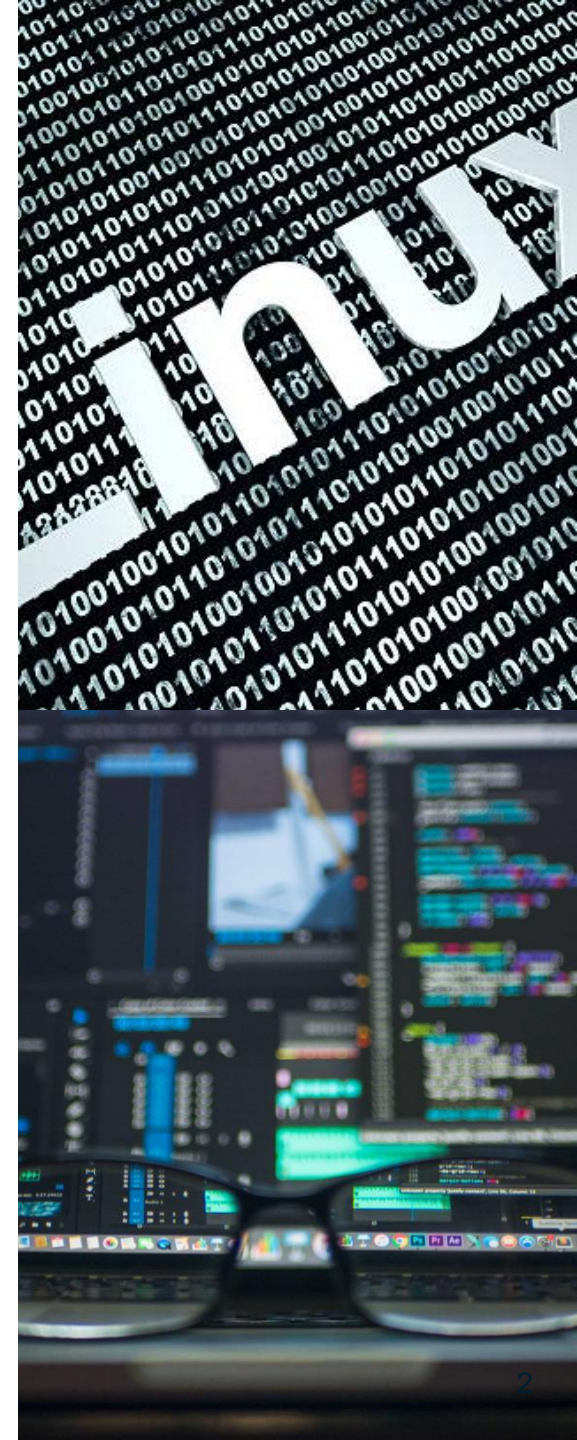
LINUX SERVER SYSTEM SETUP AND CONFIGURATION USING TERRAFORM AND ANSIBLE

TINASHE
BVUKUMBWE



AGENDA

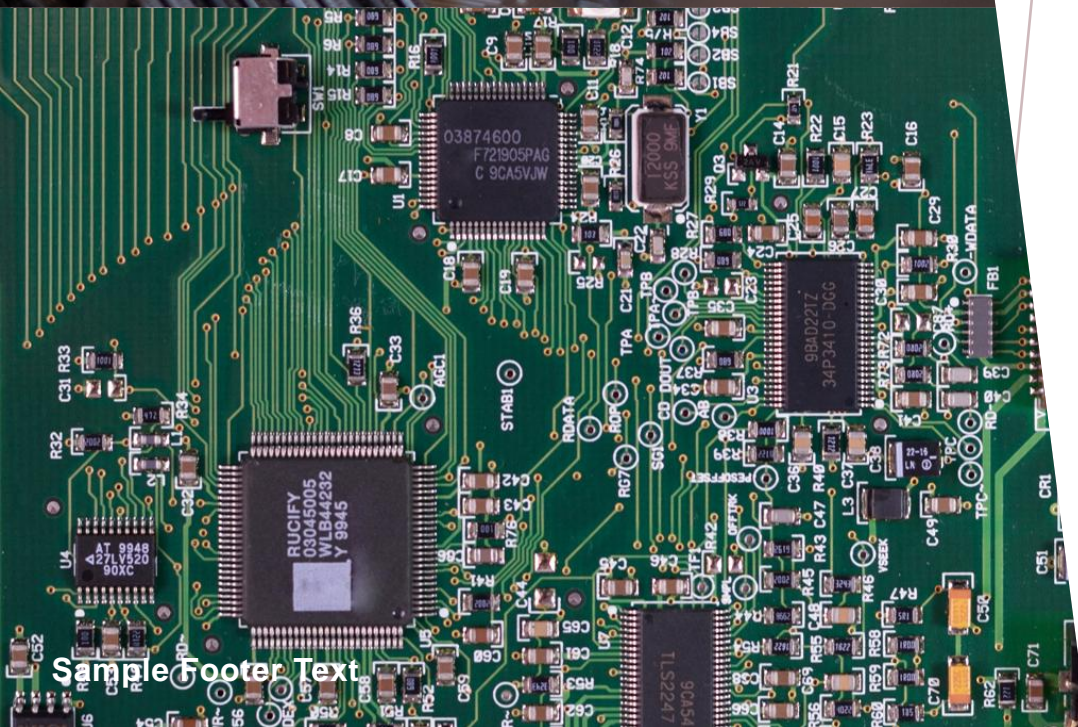
- Introduction
- Main Objective
- Methodology
- Practical Part





INTRODUCTION

Imagine you are a DevOps engineer for a small and your main responsibility is to make sure that the application is deployed, code is up to date . How these technologies can work well and play well together.



Topic 1

OBJECTIVES



OBJECTIVES

MAIN OBJECTIVE

- Investigate how a small company can leverage open-source tools such as Ansible and Terraform to run efficient infrastructure using GitOps principles.

PARTIAL OBJECTIVES

- Explain and evaluate the existing literature on cloud computing, google cloud platform, Linux, ansible, terraform, bitbucket and GitOps.
- Explain and evaluate trends in IT infrastructure from physical hardware to virtual machines.
- Explain how IT infrastructure can be managed using code, from setting up a Linux server using Terraform to configuring it using Ansible.

Topic 2

METHODOLOGY



METHODOLOGY

The study will analyze information sources, including books and online journals. The student will also use scientific and expert literature as well as data from academic journals that cover the topics of Linux infrastructure and configuration. The author will also create a virtual machine and configure it.



Topic 3

PRACTICAL

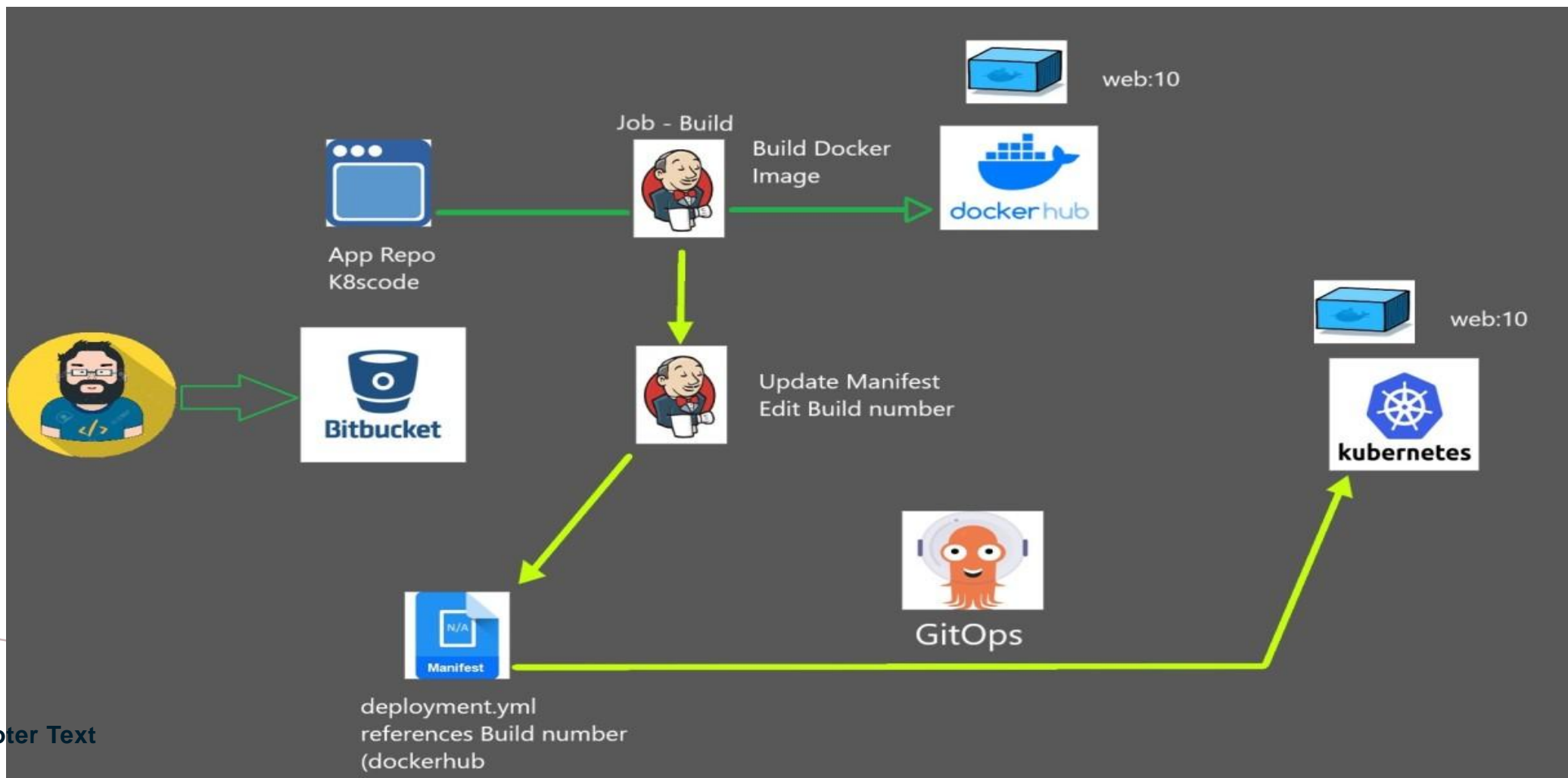


GITOPS

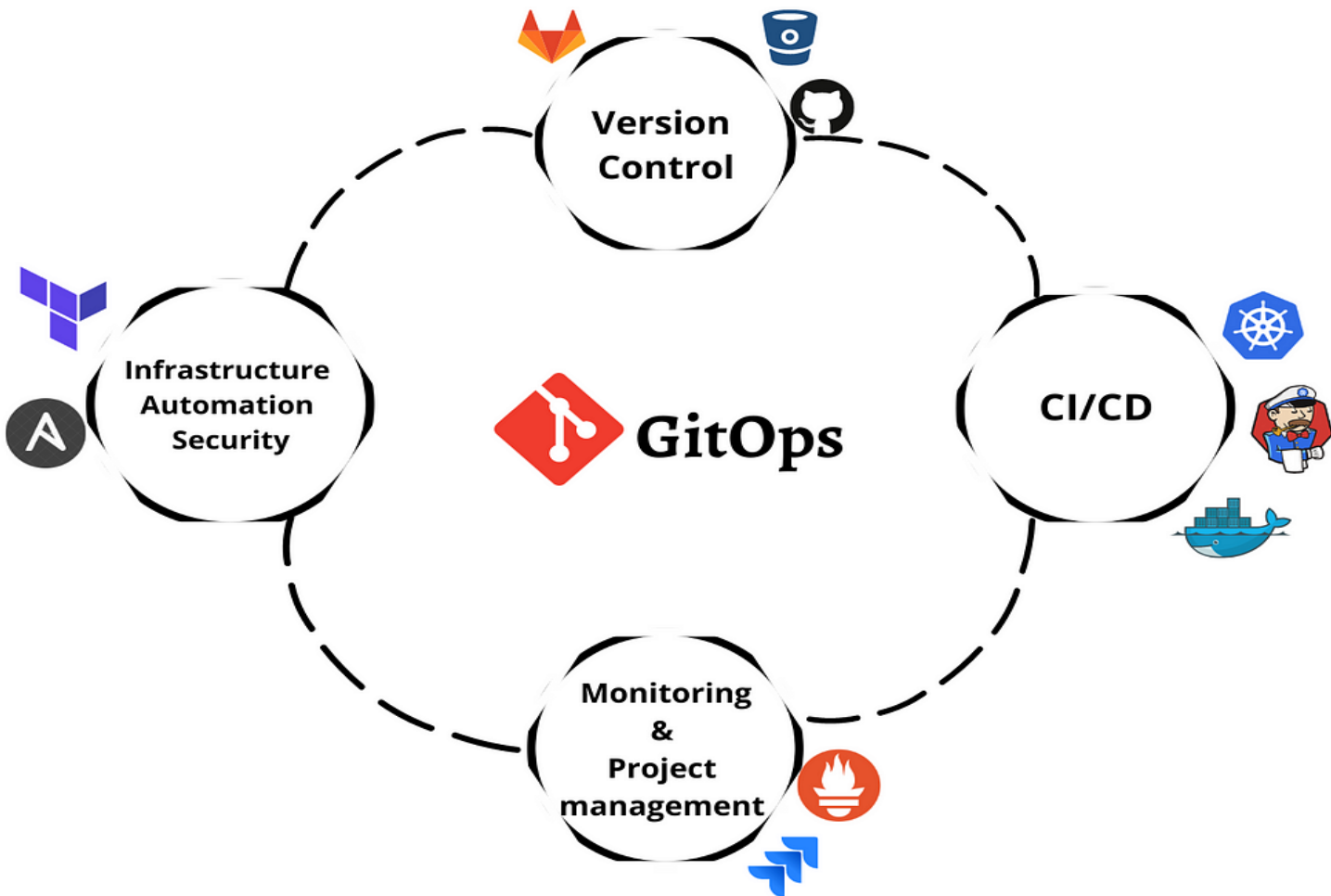
GitOps is an operational framework that takes DevOps best practices used for application development such as version control, collaboration, compliance, and CI/CD, and applies them to infrastructure automation.



GITOPS PIPELINE



GITOPS PIPELINE



ANSIBLE

```
root@control:~/handson-ansible# ansible-playbook test.yaml

PLAY [mytest] *****

TASK [Gathering Facts] *****
ok: [ansible1.example.com]
ok: [ansible2.example.com]

TASK [task1] *****
ok: [ansible1.example.com] => {
  "msg": "this is the debug module"
}
ok: [ansible2.example.com] => {
  "msg": "this is the debug module"
}

PLAY RECAP *****
ansible1.example.com      : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
ansible2.example.com      : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

TERRAFORM

```
terraform {  
  required_providers {  
    aws = {  
      source  = "hashicorp/aws"  
      version = "~> 5.0"  
    }  
  }  
}  
  
# Configure the AWS Provider  
provider "aws" {  
  region = "eu-central-1"  
  access_key = "AKIAZNAK7DUAW7KC52JX"  
  secret_key = "Tc4URPPVldk2NiiDl+8ZfnYZBjD2GTZgjYYqnl8H"  
}  
  
# Create a VPC  
resource "aws_vpc" "example" {  
  cidr_block = "10.0.0.0/16"  
}  
  
#create a Aws instance  
resource "aws_instance" "app_server" {
```

TERRAFORM

```
Terraform has been successfully initialized!
```

```
You may now begin working with Terraform. Try running "terraform plan" to see any changes that are required for your infrastructure. All Terraform commands should now work.
```

```
If you ever set or change modules or backend configuration for Terraform, rerun this command to reinitialize your working directory. If you forget, other commands will detect it and remind you to do so if necessary.
```

```
root@control:~# terraform plan
```

TERRAFORM

```
Do you want to perform these actions?
```

```
Terraform will perform the actions described above.
```

```
Only 'yes' will be accepted to approve.
```

```
Enter a value: yes
```

```
aws_instance.app_server: Creating...
```

```
aws_vpc.example: Creating...
```

```
aws_vpc.example: Creation complete after 1s [id=vpc-06e642f14ef8e19b9]
```

```
aws_instance.app_server: Still creating... [10s elapsed]
```

```
aws_instance.app_server: Still creating... [20s elapsed]
```

```
aws_instance.app_server: Still creating... [30s elapsed]
```

```
aws_instance.app_server: Still creating... [40s elapsed]
```

```
aws_instance.app_server: Creation complete after 41s [id=i-0722408bb88bf5c9b]
```

```
Apply complete! Resources: 2 added, 0 changed, 0 destroyed.
```

JENKINS

```
jenkins.service - Jenkins Continuous Integration Server
Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)
Active: active (running) since Sun 2023-10-22 12:09:13 UTC; 21s ago
Main PID: 8886 (java)
Tasks: 43 (limit: 1121)
Memory: 327.5M
CPU: 43.126s
CGroup: /system.slice/jenkins.service
└─8886 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080

Oct 22 12:08:39 ip-172-31-26-240 jenkins[8886]: a95fd64c02744c47babf8982ab0d2bba
Oct 22 12:08:39 ip-172-31-26-240 jenkins[8886]: This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Oct 22 12:08:39 ip-172-31-26-240 jenkins[8886]: *****
Oct 22 12:08:39 ip-172-31-26-240 jenkins[8886]: *****
Oct 22 12:08:39 ip-172-31-26-240 jenkins[8886]: *****
Oct 22 12:09:13 ip-172-31-26-240 jenkins[8886]: 2023-10-22 12:09:13.128+0000 [id=29] INFO jenkins.InitReactorRunner$1#onAttained: Compl>
Oct 22 12:09:13 ip-172-31-26-240 jenkins[8886]: 2023-10-22 12:09:13.152+0000 [id=22] INFO hudson.lifecycle.Lifecycle#onReady: Jenkins i>
Oct 22 12:09:13 ip-172-31-26-240 systemd[1]: Started Jenkins Continuous Integration Server.
```


THREE COLUMN CONTENT

SUMMARY

- Add text, images, art, and videos.
- Add transitions, animations, and motion.
- Save to OneDrive to get to your presentations from your computer, tablet, or phone.

SUMMARY

- Open the Design Ideas pane for instant slide makeovers.
- When we have design ideas, we'll show them to you right there.

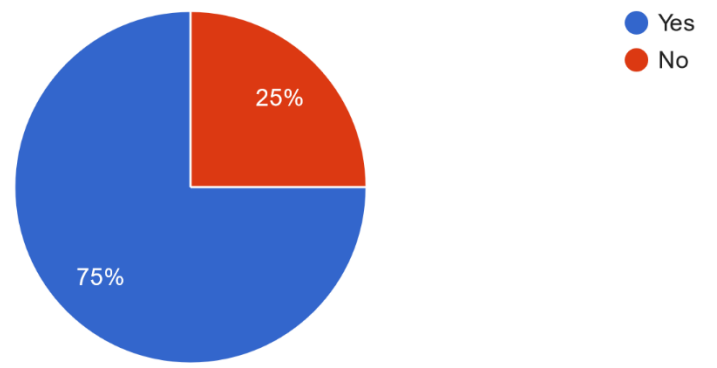
SUMMARY

- This PowerPoint theme uses its own unique set of colors, fonts, and effects to create the overall look and feel of these slides.
- PowerPoint has tons of themes to give your presentation just the right personality.

For the conclusion of this research paper, I created a survey to ask about the experiences of users, and below are the questions and results

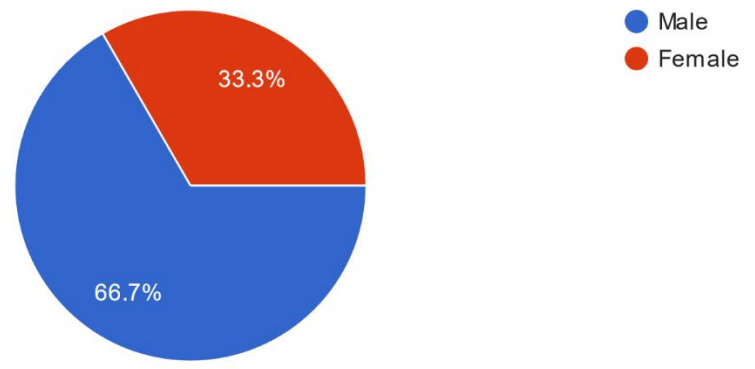
By clicking yes you are giving Tinashe Bvukumbwe consent to record and use your responses for academic purposes only

16 responses



1. What is your gender ?

12 responses



2.What is your age?



THANK YOU

Dekuji