

Network Automation Using Python And Ansible

INTRODUCTION

-This project represent the evolution of manual network to automation network configuration. Evolution from Manual to Automated:

Key Benefits of Network Automation:

- **Consistency:** Reduces configuration drift and human mistakes.
- **Speed:** Rapid provisioning and updates across many devices.
- **Scalability:** Effortlessly manages growing or complex networks.
- **Cost Efficiency:** Decreases the need for manual labor.
- **Reliability:** Automated testing and checks promote stable, predictable environments.

WORK

- GNS3 is used to simulate real networks, run virtual routers/switches, and test scripts.
- Orbstack offers virtualization and containerization suitable for Apple Silicon and cross-platform compatibility.
- Python scripting generates and validates the automated implementation.
- Ansible orchestrates large-scale integrations, integrating seamlessly with both GNS3 and Python to provide a complete automation solution.

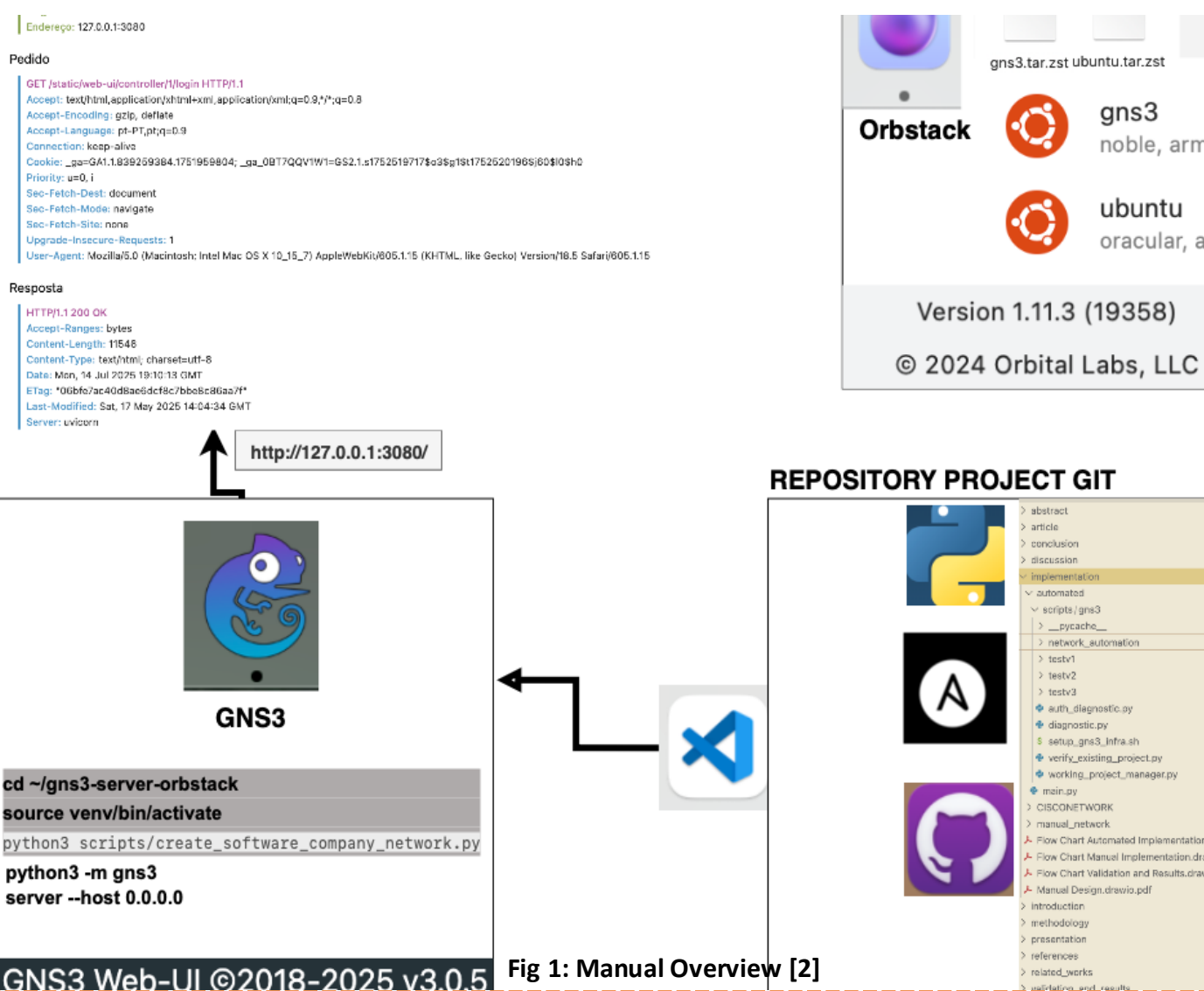


Fig 1: Manual Overview [2]

RESULTS

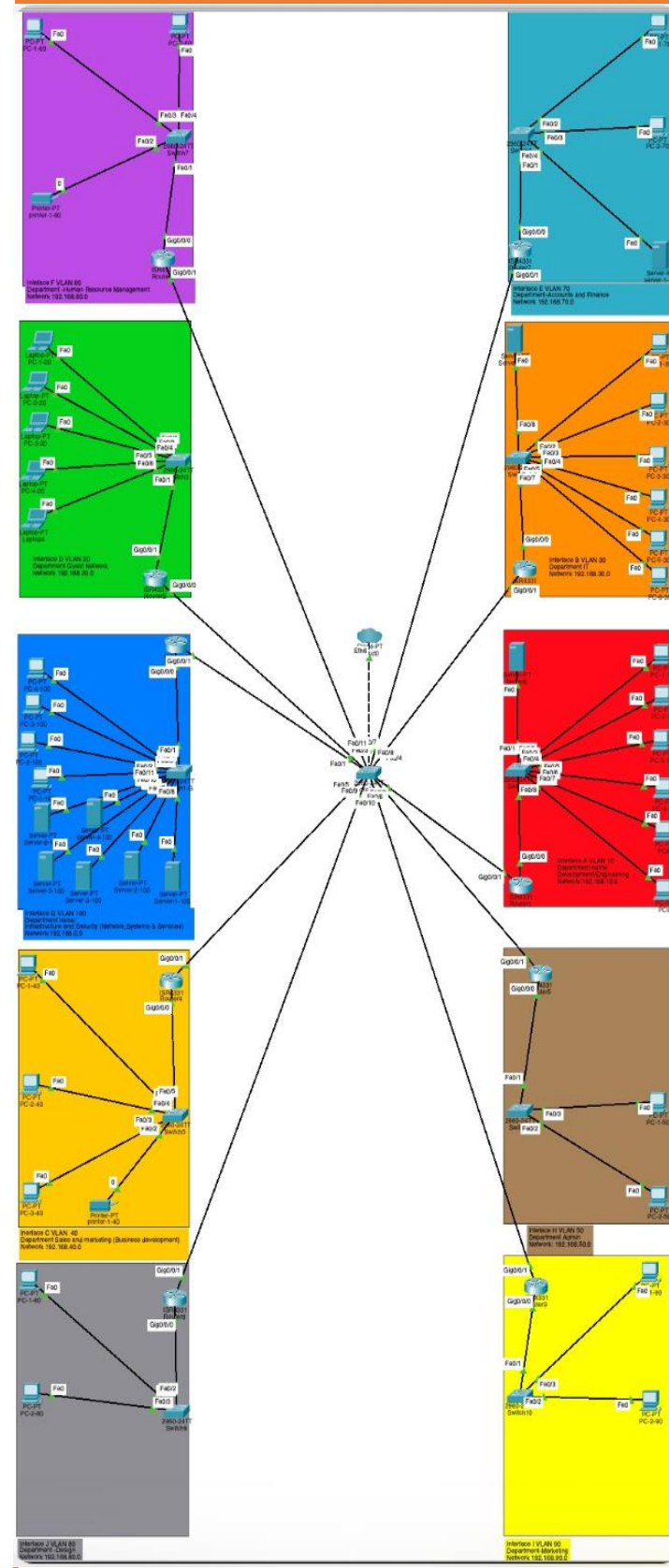


Fig 2: Manual Overview [1]

- The results are represented by manual and automated graphical interfaces with different cases for each test.

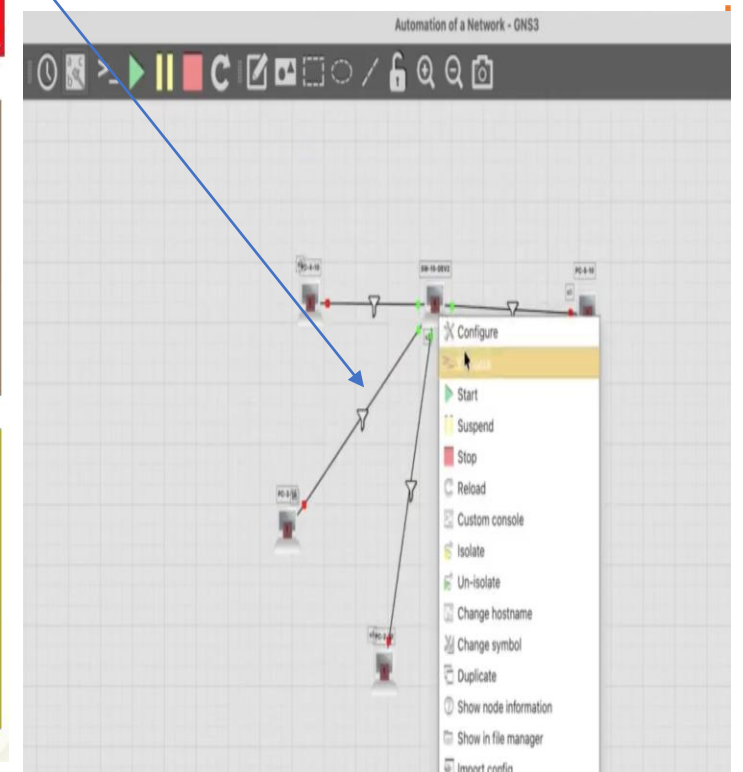


Fig 3: Manual Overview [3]

CONCLUSIONS

-This project successfully demonstrates the transformation from manual network configuration to fully automated network deployment, providing a comprehensive comparison between traditional and modern network management approaches. The integration of all related tools is important for the conclusion of this project.

- Through overcoming significant technical challenges, particularly in Apple Silicon compatibility, this project demonstrates that network automation is achievable across diverse development environments, making these approaches accessible to a broader range of systems.

- This integrated approach enables reliable, scalable, and maintainable network automation across various environments and hardware platforms.

REFERENCES & LINKS

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3. <https://github.com/JunqueiraDevEduardo/Automation-Network-using-Python-and-Ansible.git>

2. <https://drive.google.com/file/d/1VrTOyrEzW7ied956Rgg7>