

# AnsibleLabs

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Ansible Lab Exercises for learning and testing Ansible automation with the Fedora Remix Lab environment.

## Overview

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This project provides Ansible configuration files, inventory, and example playbooks designed to work with the [Fedora Remix Lab](#) virtual lab environment. It's perfect for learning Ansible automation, testing playbooks, and practicing infrastructure-as-code concepts.

## Prerequisites

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Before using AnsibleLabs, you need to have the Fedora Remix Lab environment set up and running.

## Using Fedora Lab Live Remix (Recommended)

The easiest way to get started is to use the **Fedora Lab Live Remix** image, which comes pre-configured with:

- Ansible and ansible-navigator
- Virtualization tools (KVM/libvirt)
- Fedora Remix Lab management scripts
- All required packages and dependencies

**To use the Fedora Lab Live Remix:**

1. **Download the Fedora Lab Live Remix ISO** from the [Fedora Remix project](#)
  - The ISO is built using the kickstart file:  
`Fedora_Remix/Setup/Kickstarts/FedoraRemixLab.ks`
2. **Boot from the Live ISO** or install it to disk
3. **Create and start the lab VMs:**

```
cd ~/Github/Fedora_Remix_Lab
sudo ./create-lab-vms.sh
sudo ./start-lab-vms.sh
sudo ./manage-hosts.sh add
```

#### 4. Verify VMs are running:

```
sudo ./lab-status.sh
```

Once the lab VMs are running, you're ready to use AnsibleLabs!

**Note:** For manual installation on other systems, see the [Appendix: Manual Installation](#) section.

## Project Structure

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```
AnsibleLabs/
├── README.md           # This file
├── ansible.cfg         # Ansible configuration
├── ansible-navigator.yml # ansible-navigator configuration
├── inventory           # Ansible inventory file
├── ping-and-info.yml   # Example playbook (ping + system info)
└── test-ping.sh        # Script to test connectivity
```

## Getting Started

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### 1. Verify Lab Environment

First, ensure your Fedora Remix Lab VMs are running and accessible:

```
# From Fedora_Remix_Lab directory
cd ../Fedora_Remix_Lab
sudo ./lab-status.sh
```

You should see both `FedoraLab1` and `FedoraLab2` in a running state.

## 2. Test Connectivity

Test Ansible connectivity to all hosts using the ping module:

### Option A: Using the test script

```
cd /Users/travis/Github/AnsibleLabs
./test-ping.sh
```

### Option B: Using ansible command directly

```
ansible all -m ping
```

### Option C: Using ansible-navigator

```
ansible-navigator run test-ping.sh
```

Expected output should show `pong` responses from both nodes:

```
fedoralab1.example.com | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
fedoralab2.example.com | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
```

## 3. Run the Example Playbook

Run the included playbook to test connectivity and gather system information:

### Using ansible-playbook:

```
ansible-playbook ping-and-info.yml
```

## Using ansible-navigator:

```
ansible-navigator run ping-and-info.yml
```

This playbook will:

- Test connectivity with ping
- Display hostname
- Display IP address
- Display memory information (total, free, used)

## Configuration Details

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### ansible.cfg

The `ansible.cfg` file provides default settings:

- Sets inventory file location
- Disables host key checking (useful for lab environments)
- Configures privilege escalation (sudo)
- Enables SSH connection pipelining for better performance
- Sets color output for better readability

### inventory

The inventory file defines your lab hosts:

- **Control node:** `localhost` (local connection)
- **Lab nodes:**
  - `fedoralab1.example.com` (192.168.100.10)
  - `fedoralab2.example.com` (192.168.100.11)

### Connection settings:

- User: `ansibleuser`
- Password: `Automation!`
- Sudo: Enabled (passwordless)

## ansible-navigator.yml

Configuration for ansible-navigator:

- **Execution Environment:** `quay.io/ansible/awx-ee:latest`
- **Output:** Standard output (stdout) enabled
- **Artifacts:** Disabled (no playbook artifacts created)

## Common Tasks

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### List all hosts in inventory

```
ansible all --list-hosts
```

### Run ad-hoc commands

```
# Check uptime on all hosts
ansible all -a "uptime"

# Check disk usage
ansible all -a "df -h"

# Install a package
ansible all -m dnf -a "name=vim state=present" -b
```

### Run playbooks

```
# Using ansible-playbook
ansible-playbook ping-and-info.yml

# Using ansible-navigator
ansible-navigator run ping-and-info.yml

# Run on specific hosts
ansible-playbook ping-and-info.yml --limit nodes
```

## Test specific hosts

```
# Test single host
ansible fedoralab1.example.com -m ping

# Test specific group
ansible nodes -m ping
```

## Lab Environment Details

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The Fedora Remix Lab provides:

VM Name	IP Address	FQDN	Hostname
FedoraLab1	192.168.100.10	fedoralab1.example.com	fedoralab1
FedoraLab2	192.168.100.11	fedoralab2.example.com	fedoralab2

### VM Specifications:

- Memory: 1 GB each
- vCPUs: 2 each
- Network: labnet (192.168.100.0/24)

### User Account:

- Username: ansibleuser
- Password: Automation!
- Sudo: Passwordless ( NOPASSWD: ALL )

## Troubleshooting

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### Connection refused or timeout

#### 1. Verify VMs are running:

```
cd ../Fedora_Remix_Lab
sudo ./lab-status.sh
```

## 2. Start VMs if needed:

```
sudo ./start-lab-vm.sh
```

## 3. Check network connectivity:

```
ping fedoralab1.example.com  
ping fedoralab2.example.com
```

# SSH authentication issues

## 1. Verify /etc/hosts entries:

```
cd ../Fedora_Remix_Lab  
./manage-hosts.sh status
```

## 2. Add hosts entries if missing:

```
sudo ./manage-hosts.sh add
```

# Permission denied errors

The inventory is configured with password authentication. If you encounter issues:

- Verify the password in the inventory matches the VM password ( Automation! )
- Check that the user `ansibleuser` exists on the VMs
- Ensure sudo is configured for passwordless access

# ansible-navigator issues

If ansible-navigator fails to pull the image:

```
# Pull the execution environment image manually
podman pull quay.io/ansible/awx-ee:latest
```

## Next Steps

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Now that you have the basic setup working, you can:

1. **Create your own playbooks** - Start with simple tasks and build up
2. **Explore Ansible modules** - Try different modules like `copy` , `template` , `service` , etc.
3. **Learn about roles** - Organize your playbooks into reusable roles
4. **Practice with collections** - Use Ansible collections for specific technologies
5. **Experiment with variables** - Use `group_vars` and `host_vars` for configuration

## Resources

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- [Ansible Documentation](#)
- [Ansible Galaxy](#)
- [Fedora Remix Lab](#) - Lab environment documentation
- [Fedora Remix Project](#) - Source for the Fedora Lab Live Remix ISO

## Appendix: Manual Installation

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If you're not using the Fedora Lab Live Remix and need to set up the environment manually:

### Installing Ansible

**On Fedora/RHEL:**

```
sudo dnf install ansible
```

**On macOS:**

```
brew install ansible
```

**Using pip:**

```
pip install ansible
```

## Installing ansible-navigator

**On Fedora/RHEL:**

```
sudo dnf install ansible-navigator
```

**On macOS:**

```
pip install ansible-navigator
```

## Setting up Fedora Remix Lab Environment

If you're not using the Live Remix, you'll need to set up the lab environment manually:

### 1. Install virtualization packages:

```
sudo dnf install qemu-kvm libvirt virt-manager libguestfs-tools  
virt-viewer
```

### 2. Enable libvirtd:

```
sudo systemctl enable --now libvirtd
```

### 3. Clone and set up Fedora Remix Lab:

```
git clone https://github.com/tmichett/Fedora_Remix_Lab.git
cd Fedora_Remix_Lab
sudo ./download-image.sh
sudo ./create-lab-vms.sh
sudo ./start-lab-vms.sh
sudo ./manage-hosts.sh add
```

## Kickstart File Reference

The Fedora Lab Live Remix is built using the kickstart file located at:

```
Fedora_Remix/Setup/Kickstarts/FedoraRemixLab.ks
```

This kickstart file includes:

- Base Fedora Live image configuration
- Ansible and ansible-navigator installation
- Virtualization packages (@Virtualization)
- libguestfs tools for VM management
- Fedora Remix Lab scripts and tools
- All required dependencies

For more details about the kickstart configuration, see the [Fedora Remix project](#).

## License

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This project is part of the Fedora Remix project.