#Lab Report : Day One

Title: Installation and Configuration Guide for GNS3, Kali Linux, and VirtualBox

Introduction:  
GNS3, Kali Linux, and VirtualBox are powerful tools used by network engineers, penetration testers, and cybersecurity enthusiasts. This report provides a step-by-step guide on how to install and configure these tools to create a comprehensive network testing and virtualization environment.

1. Installing and Configuring GNS3:  
   GNS3 is a network simulation software that allows users to create complex network topologies virtually. Here's how to install and configure GNS3:

Step 1: Download and Install GNS3:

* Visit the official GNS3 website ([https://www.gns3.com](https://www.gns3.com" \t "https://poe.com/chat/_blank)) and download the latest version suitable for your operating system.
* Run the installer and follow the on-screen instructions to complete the installation process.

Step 2: Install Required Dependencies:

* GNS3 requires certain dependencies to function properly. Install them based on your operating system. Refer to the GNS3 documentation for specific instructions.

Step 3: Configure GNS3:

* Launch GNS3 after installation.
* Follow the initial configuration wizard to set up the necessary preferences, such as path settings, default project directory, and network adapter configurations.

1. Installing and Configuring Kali Linux:  
   Kali Linux is a widely-used Linux distribution for penetration testing and ethical hacking purposes. Here's how to install and configure Kali Linux:

Step 1: Download and Install Kali Linux:

* Visit the official Kali Linux website ([https://www.kali.org](https://www.kali.org" \t "https://poe.com/chat/_blank)) and download the latest version suitable for your system (32-bit or 64-bit).
* Create a bootable USB drive or DVD using the downloaded ISO file.
* Boot your system from the USB drive or DVD and follow the on-screen instructions to install Kali Linux.

Step 2: Update and Upgrade Kali Linux:

* After installation, open a terminal and run the following commands:

sudo apt updatesudo apt upgrade

Step 3: Configure Kali Linux:

* Customize Kali Linux settings, including network configurations, user accounts, and system preferences, according to your requirements.

1. Installing and Configuring VirtualBox:  
   VirtualBox is a powerful virtualization platform that allows users to run multiple operating systems on a single physical machine. Here's how to install and configure VirtualBox:

Step 1: Download and Install VirtualBox:

* Visit the official VirtualBox website ([https://www.virtualbox.org](https://www.virtualbox.org" \t "https://poe.com/chat/_blank)) and download the latest version suitable for your operating system.
* Run the installer and follow the on-screen instructions to complete the installation process.

Step 2: Set Up Virtual Machines:

* Launch VirtualBox after installation.
* Create a new virtual machine by clicking on the "New" button and following the virtual machine creation wizard.
* Configure the virtual machine settings, including operating system selection, memory allocation, virtual disk creation, and network settings.

Step 3: Install Guest Additions:

* After setting up the virtual machine, start the virtual machine and select "Devices" from the VirtualBox menu.
* Choose "Insert Guest Additions CD image" to mount the Guest Additions ISO file.
* Follow the on-screen instructions within the guest operating system to install the Guest Additions, which enhance the virtual machine's functionality.

Conclusion:  
By following this installation and configuration guide, you can set up a comprehensive network testing and virtualization environment using GNS3, Kali Linux, and VirtualBox. These tools offer a wide range of possibilities for network simulation, penetration testing, and cybersecurity training, providing users with an effective platform to enhance their skills and knowledge in the field.

#Lab Report : Day Two

Title: Configuring GNS3 with KVM Extension and Network Topology Setup

Introduction:  
GNS3 is a powerful network simulation tool that allows users to create complex network topologies for testing and learning purposes. This lab report provides a concise overview of configuring GNS3 with the KVM extension and setting up a basic network topology.

1. Configuring GNS3 with KVM Extension:  
   The KVM extension allows GNS3 to interact with Kernel-based Virtual Machine (KVM) hypervisor, enabling users to run virtual machines (VMs) within GNS3. Here's a brief description of the configuration process:

Install KVM: Ensure that KVM is installed on the host machine. Refer to the KVM documentation for installation instructions specific to your operating system.

Enable KVM in GNS3: Launch GNS3 and go to "Edit" -> "Preferences" -> "Virtualization" tab.

Enable the "Enable KVM support (Linux only)" option and provide the path to the KVM binary.

Test KVM Support: Click on the "Test Settings" button to verify if GNS3 successfully detects KVM support on the host machine.

1. Setting up a Basic Network Topology:  
   Creating a basic network topology in GNS3 allows users to simulate network scenarios and test configurations. Here is a simplified explanation of the setup process:

Launch GNS3 and click on the "New Blank Project" button to create a new project.

Drag and drop network devices (routers, switches) from the Device Palette onto the workspace.

Connect devices: Click on a device and select a network adapter type (e.g., EtherSwitch 16, Cloud).

Connect devices by clicking on one device's interface and dragging the connection to another device's interface.

Configure device properties: Right-click on a device and select "Configure." Set device-specific parameters such as hostname, IP address, and routing protocols.

Start simulation: Click on the "Play" button to start the simulation and observe the network topology in action.

Conclusion:  
Configuring GNS3 with the KVM extension and setting up a basic network topology provides users with a platform to simulate and test network scenarios effectively. By leveraging the capabilities of GNS3 and KVM, users can gain hands-on experience in networking and enhance their skills in a virtual environment.