

WEEK 3

Linux Hands-on - Virtualization and IP Networking Basics

Prerequisite Modules: Computer Systems Refresher and Bash Kick-start, Bash Hands-on and Linux Internals Kick-start

Sr. No.	Topic	Difficulty Level (L, M, H)	Lab Outline	Comments	Completed (Y/N)
1	Remote Access Protocols	L	SSH login commands, copy files with SFTP		Y
2	Virtualization (part-I)	L → M	Create a new Ubuntu Linux Virtual Machine to run on KVM, create a raw virtual disk, and install OS on it. Use Virt-Manager GUI tool. Understand XML files that define Vms.		Y
3	Virtualization (part-II)	L → M	Create a new Ubuntu Linux Virtual Machine to run on KVM with an Ethernet interface, create a raw virtual disk, and install OS on it. Use python-vmbuilder and create Vms from command-line.		Y
4	TCP/IP Introduction	L	N/A	Introduction to TCP/IP Protocol Suite, Layers, End-to-end communication	Y
5	TCP/IP Layers 1 – 3 Introduction	L	N/A	Introduction to L1 for dummies; L2 MAC addressing for dummies; difference Between switch, bridge, and hub; L3 IPv4 Addressing	Y
6	TCP/IP Layer 3	L → M	Create subnets for a company with 10 departments using the allocated 192.168.5.0/24 and 192.168.6.0/24 IP Blocks. Optimize IP Subnets use.	IPv4 Addressing, CIDR/VLSM, bit level manipulation and addressing	Y
7	TCP/IP Layer 2	M	Create a virtual bridge using 'brctl' utility, add network interfaces to the virtual bridge.	Ethernet Interfaces, Bridged Interfaces, SDN basics	Y
8	Routing and Switching Hands-on	M → H	<ul style="list-style-type: none"> * Create 20 Low-memory Virtual Machines using Ubuntu Snappy core with 128MB RAM, each VM simulates a host in a Network (IP Subnet) devised in #11 above. * Create a Router VM using Ubuntu 14. * Create 10 Virtual L2 Switches from #12 above. * Assign two hosts (VM) to each Virtual Switch along with a Router Interface. 	Experiment with Ubuntu Snappy Core and TinyCore Linux distributions. Note: Continued for WEEK-4	Y
		L = 3 L → M = 3 M = 1 M → H = 1 H = 0			