

ACM India Winter School on "Full-stack Networking (FSN)"

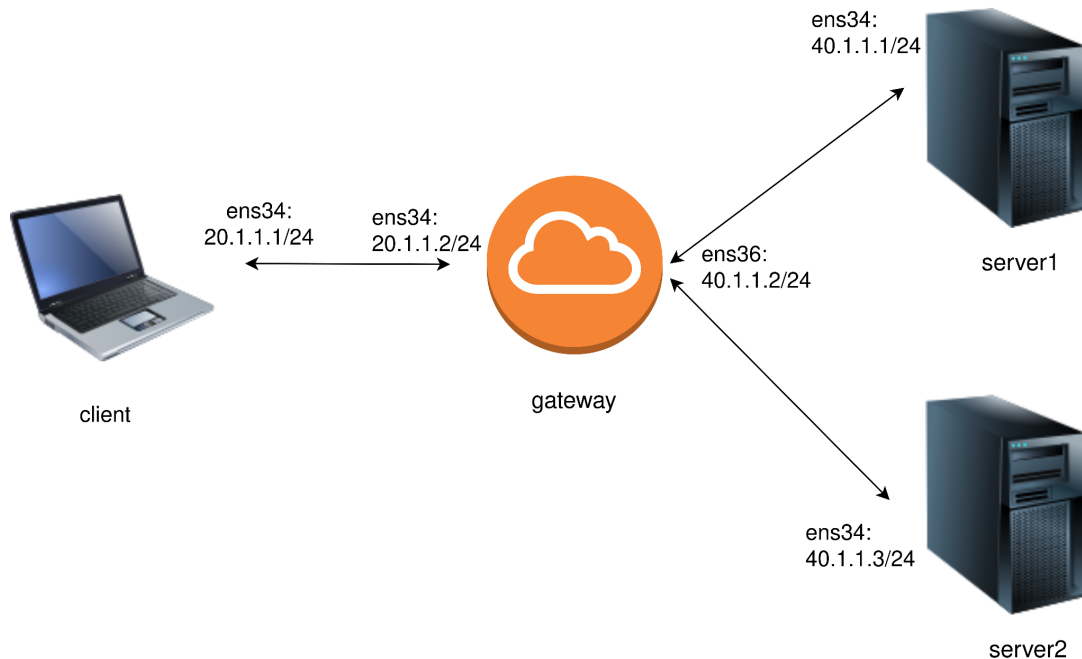
Day 1's hands-on session setup guidelines

Be ready with the following setup on your laptop before you arrive.

Recommended system requirements for installing VMware Workstation Player:

- i. Minimum 16 GB of RAM (2 GB per VM)
 - ii. Minimum 6 core processor (recommended 8 core processor)
 - iii. minimum free space should be 40 GB (10 GB per VM)
2. VMWare: Download from this [link](#)
 3. Steps to install the VMWare in Ubuntu:
 - a. Open a terminal (Ctrl+Alt+T) and use the command below:
 - i. **sudo apt install build-essential**
 - ii. **chmod +x ~/Downloads/VMware-Player***
 - iii. **sudo ~/Downloads/VMware-Player***
 - b. The GUI of VMWare will pop up, please follow the further steps on screen.
 4. Download Ubuntu server using [this link](#)
 5. Setup 4 virtual machine (ubuntu) in VMware:
 - a. Add VM: Open VMWare click on File→ create virtual machine →add the iso image from you disk→ click next
 - b. Add the full name/ virtual machine name of the VM according to the nomenclature and set the password as “root” to all the VMs.
 - i. VM1 as client
 - ii. VM2 as gateway
 - iii. VM3 as server1
 - iv. VM4 as server2
 - c. Set the VM requirements of all the VMs as follows:
 - i. disk space = 10GB
 - ii. Processor = 1 core
 - iii. RAM = 2GB
 - d. Add **extra** network interface as host-only as follows:
 - i. Client - 1
 - ii. Server1 - 1
 - iii. Server2 - 1
 - iv. Gateway - 3

6. Follow the steps for installing the VMs keeping all the settings as defaults.
(install the open SSH while installing the VMs)
7. We want the **final configuration** to look like the following.



To achieve this follow next steps with interface names as per the additional interfaces added to your VM. For example, your corresponding interfaces for newly added interfaces to “ens34” and “ens36” should be used for further configuration.

8. Stop the DHCP and assign the static IP address as follows:
 - a. Create a new config file inside of `/etc/netplan` for all the 4 VMs and follow the commands

`sudo nano /etc/netplan/02-netcfg.yaml`

- b. Type the following commands to assign the static IP address in respective VMs:

Note: Please add the interface name according to your machine.

- Client VM:

```
network:
  version: 2
  renderer: networkd
  ethernets:
    ens34:
      addresses: [20.1.1.1/24]
```

- dhcp4: no
 - gateway4: 20.1.1.2
- Server1 VM:
 - network:
 - version: 2
 - renderer: networkd
 - ethernets:
 - ens34:
 - addresses: [40.1.1.1/24]
 - dhcp4: no
 - gateway4: 40.1.1.2
- Server2 VM:
 - network:
 - version: 2
 - renderer: networkd
 - ethernets:
 - ens34:
 - addresses: [40.1.1.3/24]
 - dhcp4: no
 - gateway4: 40.1.1.2
- Gateway VM:
 - network:
 - version: 2
 - renderer: networkd
 - ethernets:
 - ens34:
 - addresses: [20.1.1.2/24]
 - dhcp4: no
 - ens36:
 - addresses: [40.1.1.2/24]
 - dhcp4: no

Note: run “sudo reboot” in all the VMs to reflect all these changes.