CISCO Server Setup and Configurations
Including Proxmox VM Connectivity

PLEASE READ BEFORE CONTINUING!

- This Document assumes you have similar or the same Hardware Specifications & Software listed.
    - ✓ Router: CISCO 1941
    - ✓ Switch: Catalyst 2960-X Series
    - ✓ Server: Dell R720
    - ✓ Peripherals: Keyboard, Mouse, Monitor
    - ✓ PC/Laptop: Putty
    - ✓ Cables: 3 Ethernets, 1 Console
    - ✓ USB: Ventoy (Proxmox)
    - ✓ ProxMox GUI: Windows Server 2019 (VM)
- Resets of bare metal:
  Routers, Switches and Servers maybe required.
- Remember to document your:
  Usernames, Passwords, Ips, Gateways, Subnets, etc.
  throughout this process, it will make your life easier.
- Creating Topology also helps.

Note:

All LAN IPs were manually created

Server Setup

Hardware Specifications & Software

Router: CISCO 1941

Switch: Catalyst 2960-X Series

Server: Dell R720

Peripherals: Keyboard, Mouse, Monitor

PC/Laptop: Putty

Cables: 3 Ethernets, 1 Console

USB: Ventoy (Proxmox)

ProxMox GUI: Windows Server 2019 (VM)

Router Configuration

Part 1: Setup

1. Plug console cord from PC to Router, make sure you plug into the console port on the back of Router.
2. Open Putty, click sessions, COM1 Speed 9600, Select Serial.
3. Click Open, this will bring you to the switch console.
4. Router> enable

Part 2: Configure Router Hostname

1. Router# config t
2. Router(config)# hostname *NAME*
3. Router(config)# exit

Part 3: Password

1. Router# secret *PASSWORD*

Part 4: Configuring Eth0/0 & Eth0/1 with Static IPs

If you do not know your WAN address, ask your instructor.

You will need to create a LAN address, remember it!

Example: 192.168.1.X

1. Router(config)# int GigabitEthernet0/0
2. Router(config-if)# ip address *YOUR WAN ADDRESS 255.255.255.0*
3. Router(config-if)# no shut
4. Router(config-if)# int GigabitEthernet0/1
5. Router(config-if)# ip address *YOUR LAN ADDRESS 255.255.255.0*
6. Router(config-if)# no shut

Now that Eth0/0 & Eth0/1 are configured

7. Look to the back of the physical router.
8. Find two ports labeled e0/0 and e0/1.
9. Connect an ethernet cable from e0/0 to your wall network port.
10. Connect an ethernet cable to e0/1 and leave it for now, **we will need it later!**

Part 5: NAT Setup

If you do not set this up correctly you will not be able to get connection to your network.

OUT: WAN address

IN: LAN address

1. Router>enable
2. Router# config t
3. Router(config)# access-list 1 permit 192.168.1.0 0.0.0.255
4. Router(config)# interface GigabitEthernet0/0
5. Router(config-if)# ip nat outside

6. Router(config)# interface GigabitEthernet0/1
7. Router(config-if)# ip nat inside
8. Router(config)# ip nat inside source list 1 interface GigabitEthernet0/0 overload
9. Router(config)# exit
10. Router# write memory

Part 6: Loopback Interfaces

1. Router(config-if)# int loopback 0
2. Router(config-if)# ip address *YOUR WAN ADDRESS 255.255.255.0*
3. Router(config-if)# int loopback 1
4. Router(config-if)# ip address *YOUR LAN ADDRESS 255.255.255.0*
5. Router(config-if)# end
6. Router# copy running-config startup-config

Your config now has been saved

Switch Configuration

Part 1: Setup

You will need your Routers LAN address.

5. Plug console cord from PC to Switch, make sure you plug into the console port on the front of the switch.
6. Open Putty, click sessions, COM1 Speed 9600, Select Serial.
7. Click Open, this will bring you to the switch console.
8. Switch> enable

Part 2: Initialize and Reload switch

1. Switch# show flash
2. If vlan.dat file is found, delete.
3. Switch# delete vlan.dat

   Press Enter to confirm
4. Switch# erase startup-config

   Press Enter to confirm.
5. Switch# reload

   If you're prompted to save config prior to reloading, type **no,** press Enter to confirm.

Part 3: Switch Name

1. Switch> enable
2. Switch# config t
3. Switch(config)# hostname *NAME*

Part 4: Password Encryption and Local Passwords

1. Switch(config)# service password-encryption
2. Switch(config)# enable secret *PASSWORD*
3. Switch(config)# line con 0
4. Switch(config)# password *PASSWORD*
5. Switch(config)# login
6. Switch(config)# exit
7. Switch(config)# line vty 0 4
8. Switch(config)# password *PASSWORD*
9. Switch(config)# login
10. Switch(config)# end

Part 5: Disable DNS Lookup

1. Switch(config)# no ip domain-lookup

Part 6: Create VLAN on the switch

1. Switch# config t
2. Switch(config)# int vlan 1
3. Switch(config-if)# ip address *YOUR LAN ADRESS 255.255.255.0*
4. Switch(config-if)# no shut
5. Switch(config-if)# exit

Part 7: Setting Default Gateway

1. Switch> enable
2. Switch# configure terminal
3. Switch(config)# interface vlan 1
4. Switch(config-if)# ip address *YOUR LAN ADRESS 255.255.255.0*
5. Switch(config-if)# no shutdown
6. Switch(config-if)# exit
7. Switch(config)# ip route 0.0.0.0 0.0.0.0 *YOUR LAN ADRESS*
8. Switch(config)# exit
9. Switch# write memory

Eth0/0 & Eth0/1

Part 1: Physical Connections

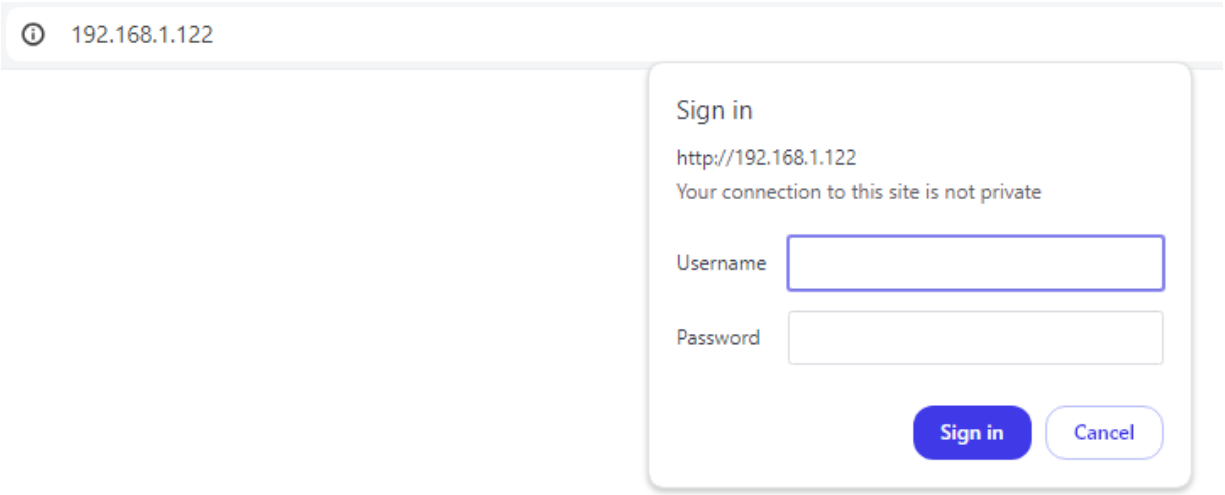
This section ties back to the router section:

"Part 4: Configuring Eth0/0 & Eth0/1 with Static Ips"

1. Now that our Router and Switch are setup, it is time to connect them via ethernet so they can talk.

2. Take your eth0/1 cord and plug it into port no.1 on the switch
3. Open the terminal of your switch via Putty.
4. Switch> enable
5. Now ping *YOUR LAN ADRESS* associated with your router.
   Switch# ping 192.168.1.X
6. If you get packets received you have successfully made a connection via LAN to the router.

If you have any issues getting feedback from your router, double check your gateways. You can access the switch GUI by typing the IP address of the switch into a browser. Make sure you have an ethernet cord plugged into your PC/Laptop going to the switch, the console cord does not act as an ethernet cord. Have your switch name and password on hand!



Ventoy & Server OS

Part 1: Ventoy Installation

Before installing ventoy make sure you have no files on your USB, they will be deleted during installation.

1. Open a web browser and go to **www.ventoy.net**
2. Head to downloads and download the latest version of ventoy via zip.
3. Unzip ventoy in a safe place. (Desktop)
4. Plug in your USB.
5. Double click and run “Ventoy2Disk.exe”.
6. Select your USB and click install.
7. Your USB will now be named “ventoy”.

Part 2: Proxmox to USB Installation

1. Open a web browser and go to **https://www.proxmox.com/en/**
2. Head to downloads and download the latest version of the Proxmox ISO installer.
3. Once downloaded copy the ISO file into your USB.
4. Eject your USB.

Part 3: Proxmox Server Installation

1. Make sure your bare metal server is off.
2. Plug in your USB to the front USB port of the server.
3. Turn on the server and watch your monitor connected to the physical server.
4. As the server turns on press the designated BIOS key (F11)
5. This will launch you into the BIOS, this may take some time.
6. Once into the BIOS, click “BIOS Boot Menu”.
7. Now use the arrows on the keyboard to select “Hard drive C:”.

8. This will give you a drop-down menu, select your USB device and hit enter.

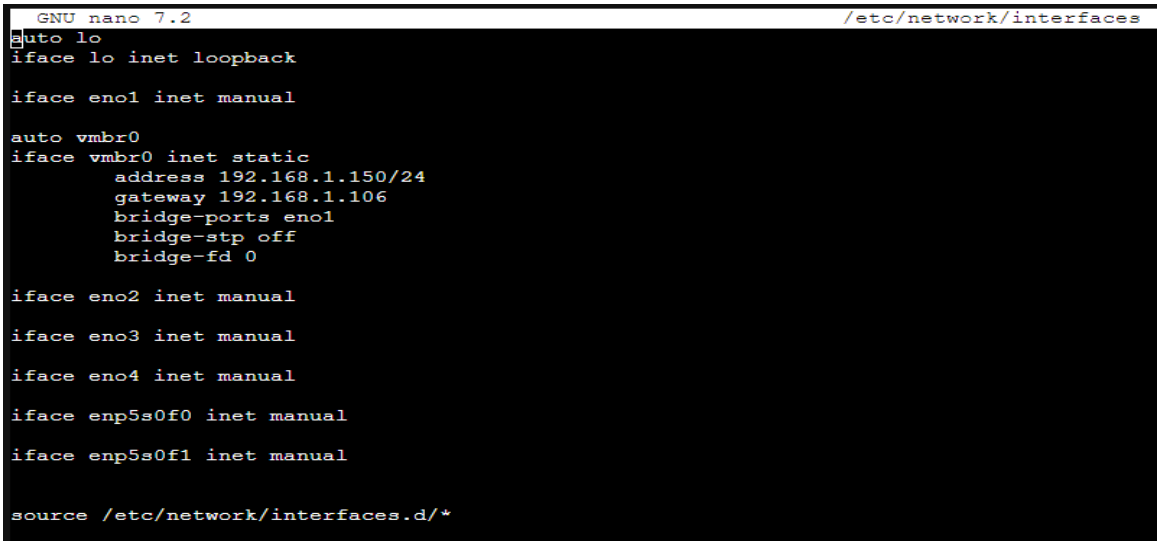
Part 4: Proxmox Setup

1. You should now see the proxmox splash screen with two options, install and advanced.
2. Choose “Install Proxmox VE”
3. Choose the defaults for PVE settings.
4. Change your country, time zone, etc.
5. Set the password of your proxmox server and write it down.
6. Set a temp email, example: **temp@proxmox.com** click next.
7. After, you should now see the “management network configuration” screen. Set your ip address for the server
   Example: 192.168.1.X
8. Leave the DNS default or blank. If you cannot leave it default or blank, simply use the IP address for your promox server as a temporary stopgap.
9. Select next and then install. This will take some time.
10. Once the proxmox server restarts remember to eject your USB or the system will boot from your USB again.

Proxmox Gateway Configuration

Part 1: Sign in

1. Sign in to your new proxmox server.
2. Login: *YOUR PASSWORD*
3. Set the gateway of proxmox and confirm your Ips.
4. root@yourserver:~# nano /etc/network/interfaces
   If you do not have the permissions type “sudo” before the command.



5. Use the arrow keys to move up and down the page, go to the gateway address.
6. Change the gateways address to *YOUR LAN ADRESS.*
7. Confirm the Ip address of your proxmox server and that it is correct.
8. Type “Crtl-X” this will prompt you to exit and also save.
9. Select the “Enter” key to save.

Server Connections

Part 1: Connectivity

1. Now that your proxmox gateway has been set, the proxmox server, switch and router should be ready to effectively talk to each other.
2. Take a new ethernet cable and connect it to the back of the physical server, while the other end goes to a port on the switch.
3. After some time, ping *YOUR LAN ADRESS* to confirm connectivity between the router and the server via lan.
4. root@yourserver:~# ping *YOUR LAN ADRESS*

5. Next ping Google to ensure that your proxmox server can connect to the internet and all traffic is being forwarded through our lan address.
6. root@yourserver:~# ping *8.8.8.8*

7. Congratulations! You now have a working CISCO server with promox internet connectivity, this can allow expansion for Windows Server / Ubuntu via the VMs.

   What we've built!

   Basic Network Topology Example: