

Lab Notes

This workshop is intended to be run on emulated virtual environment next generation with the appropriate lab topologies set up. The routers in the virtual environment are using service provider IOS. The configurations and configuration principles discussed below will work on all Cisco IOS Release 15.2 onwards.

The purpose of this module is to construct the workshop lab and introduce everyone to the basic principles of constructing and configuring a network. An important point to remember, and one that will be emphasized time and again throughout this workshop, is that there is a distinct sequence to the lab group segments:

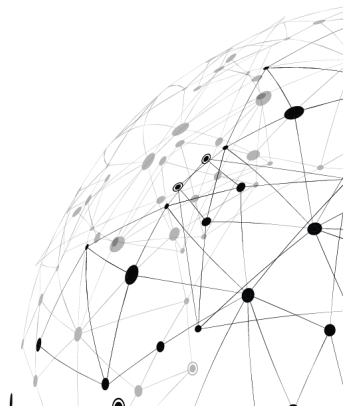
- After the **physical design** is established, the connections between the hardware should be built and verified.
- Next, the routers and switches should have the **base configuration** installed, and basic but sufficient security should be set up.
- Next the **basic IP connectivity** be tested and proven. This means assigning IP addresses on all links which are to be used, and testing the links to the neighboring devices.

Finally, **documentation**. Documentation is often overlooked or forgotten. It is an ongoing process

in this workshop. If the instructor asks you to document something, either on the whiteboard in the

class, or at the back of this booklet, it is in your best interests to do so. There can never be too much documentation, and documentation at the time of network design and construction usually

saves much frustration at a future date or event.



Lab Address IP Plan

The following diagram shows the layout of our network for the workshop.

[Overall lab topology to be inserted here]

For the lab exercises, each group has been allocated the following address space for their group lab.

Group #	Point IPv4 Address Plan	Local Area Networks IPv4 Plan
1	10.1.1.0/28	LAN A: 172.x.y.0/24 LAN B: 173.x.y.0/24
2	10.2.2.0/28	LAN A: 172.x.y.0/24 LAN B: 173.x.y.0/24
3	10.3.3.0/28	LAN A: 172.x.y.0/24 LAN B: 173.x.y.0/24



Layer 2 lab guide

Step : Enter global configuration mode

Switch# configure terminal

Switch(config)#

Display Cisco IOS information. Examine the following version information that the switch reports.

Switch#show version

Configure a banner to provide legal notification of unauthorized access

Switch(config)# banner motd \$ Authorized Access Only! \$

Step : Examine the current running configuration file.

Switch#show running-config

Examine the current contents of NVRAM:

Switch#show startup-config

Step :Changing the hostname of a switch

switch(config)#hostname SOMNOG5

SOMNOG5(config)#

Apply password protection (enable password, secret password, console password and vty password) :

Enable password : The enable password is used for securing privilege mode.

Switch(config)#enable password SOMNOG

Enable secret password : Is also used for securing privilege mode but the difference is that it will be displayed as ciphertext(*) on the configuration file.**

Switch(config)#enable secret SOMNOG

Line console password : When a person will take access through the console port then this password will be asked.

Switch(config)#line console 0



```
Switch(config-line)#password SOMNOG
```

```
Switch(config-line)#login
```

Line VTY password :

When a person wants to access a router through VTY lines (telnet or ssh) then this password will be asked.

```
Switch(config)#line VTY 0 2
```

```
Switch(config-line)#password SOMNOG
```

```
Switch(config-line)#exit
```

Configure the port speed and duplex settings for a Fast Ethernet interface.

```
Switch(config)#interface fastethernet 0/18
```

```
Switch(config-if)#speed 100
```

```
Switch(config-if)#duplex full
```

```
Switch(config-if)#end
```

Save the configuration. The changes made will not be lost if the system is rebooted or loses power.

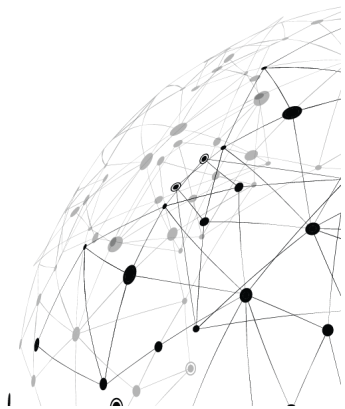
```
S1#copy running-config startup-config
```

```
Destination filename [startup-config]?[Enter]
```

```
Building configuration... [OK]
```

Determine the MAC addresses that the switch has learned.

```
S1#show mac-address-table
```



Set the switch default gateway.

```
S1(config)#ip default-gateway 172.17.99.1
```

```
S1(config)#exit
```

Give the switch interface a description

```
Switch(config)#interface fastethernet 0/1  
Switch(config-if)#description Development VLAN
```

Enable Telnet and SSH

First create a domain and user name.

```
R1>enable
```

```
R1>configure terminal
```

```
R1(config)#ip domain-name renu.ws
```

```
R1(config)#username cisco Password cisco
```

generate the encryption keys for securing the ssh session.

```
R1(config)#crypto key generate rsa
```

```
How many bits in the modulus [512]: 1024
```

```
% Generating 1024 bit RSA keys, keys will be non-exportableâ€¦[OK]
```

```
R1(config)#
```

Enable SSH version 2, set timeout duration and login attempt time on the Switch/router

```
R1(config)#ip ssh version 2
```

```
R1(config)#ip ssh time-out 50
```



```
R1(config)#ip ssh authentication-retries 4
```

Enable vty lines and configure access protocols.

```
R1(config)#line vty 0
```

```
R1(config-line)#transport input ssh
```

```
R1(config-line)#password cisco
```

```
R1(config-line)#logging synchronous
```

```
R1(config-line)#exit
```

```
R1(config)#
```

VLANs are created by number. The two ranges of VLANs are as follows: 1) The standard range consists of VLANs 1 to 1000. 2) The extended range consists of VLANs 1025 to 4096

Create a VLAN:

```
switch#configure terminal
```

```
switch(config)# vlan 15
```

```
switch(config-vlan)# name accounting
```

Assign an Ethernet interface to a VLAN 15:

```
switch#configure terminal
```

```
switch(config)# interface FastEthernet 0/1
```

```
switch(config-if)# switchport access vlan 15
```

Router Interface Configuration

```
R1(config)# interface gigabitethernet 0/0/0
```

```
R1(config-if)# ip address 192.168.10.1 255.255.255.0
```



```
R1(config-if)# description Link to LAN 1  
R1(config-if)# no shutdown  
R1(config-if)# exit
```



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