

LAB No 6

Date:14/09/2023

Computer Network Design using SWITCH and ROUTERS in GNS3

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ROLL NUMBER 33

II.

## LAB EXERCISES

### 1. Switching Cisco IOS Command Modes

This exercise demonstrates how to log into a router and how to work with the different Cisco IOS command modes. It is important to understand the different modes so you know where you

are and what commands are accepted at any time.

i. Connect the Ethernet interfaces of the Linux PCs and the Cisco router as shown in Figure 6.7.

Do not turn on the Linux PCs yet.

ii. Right-click on Router1 and choose Start.

iii. Right-click on Router1 and choose Console. Wait a few seconds until the router is initialized.

If everything is fine, you should see the prompt shown below. This is the User EXEC mode.

If

the prompt does not appear, try to restart GNS3 and repeat the setup again.

Router1>

iv. To see which commands are available in this mode, type ?:

Router1>?

v. To view and change system parameters of a Cisco router, you must enter the Privileged EXEC

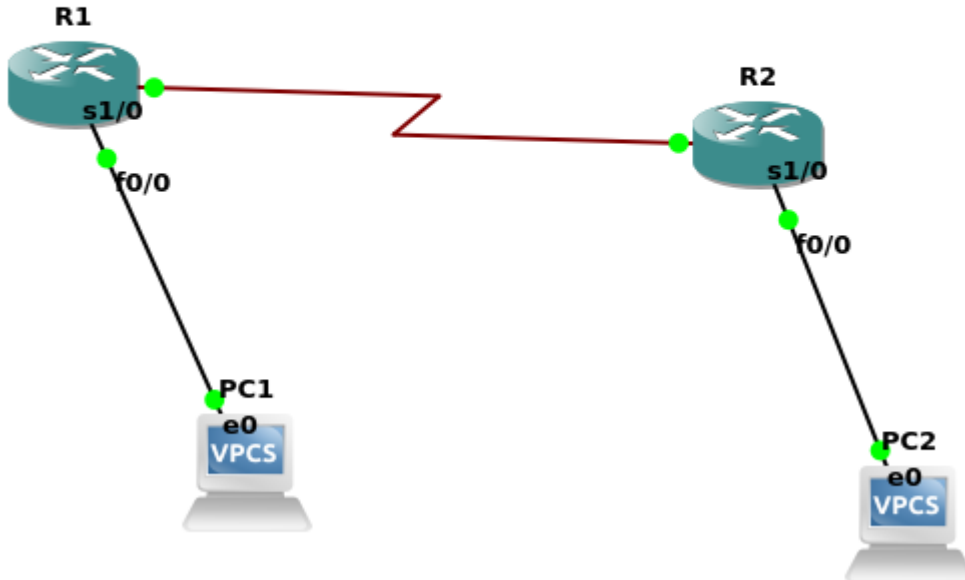
mode by typing:

Router1>enable

Router1#

vi. Type the following command to disable the Privileged EXEC mode

Router1# disable



```

Activities Terminal Sep 14 14:30
R1
*Mar 1 00:00:03.895: %SYS-5-CONFIG_I: Configured from memory by console
*Mar 1 00:00:04.063: %SYS-5-RESTART: System restarted --
Cisco IOS Software, 3700 Software (C3745-ADVIPSERVICESK9-M), Version 12.4(25d), RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2010 by Cisco Systems, Inc.
Compiled Wed 18-Aug-10 00:18 by prod_rel_team
*Mar 1 00:00:04.067: %SNMP-5-COLDSTART: SNMP agent on host R1 is undergoing a cold start
*Mar 1 00:00:04.079: %LINEPROTO-5-UPDOWN: Line protocol on Interface IPv6-npls, changed state to up
*Mar 1 00:00:04.707: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state to administratively down
*Mar 1 00:00:04.779: %LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down
*Mar 1 00:00:04.815: %LINK-5-CHANGED: Interface Serial1/0, changed state to administratively down
*Mar 1 00:00:04.815: %LINK-5-CHANGED: Interface Serial1/1, changed state to administratively down
*Mar 1 00:00:04.815: %LINK-5-CHANGED: Interface Serial1/2, changed state to administratively down
*Mar 1 00:00:04.819: %LINK-5-CHANGED: Interface Serial1/3, changed state to administratively down
*Mar 1 00:00:05.707: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down
*Mar 1 00:00:05.779: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
*Mar 1 00:00:05.815: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to down
*Mar 1 00:00:05.815: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, changed state to down
*Mar 1 00:00:05.815: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/2, changed state to down
*Mar 1 00:00:05.819: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/3, changed state to down
R1#
R1#
R1#
R1#
R1#
R1#diabla
Translating "diabla"
Translating "diabla"
% Unknown command or computer name, or unable to find computer address
R1#diabla
R1>configure terminal
^
% Invalid input detected at '^' marker.
R1>enable
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface FastEthernet0/0
R1(config-if)#end
R1#
*Mar 1 00:05:30.043: %SYS-5-CONFIG_I: Configured from console by console
R1#
  
```

vii. To modify system wide configuration parameters, you must enter the global configuration mode. This mode is entered by typing:

Router1#configure terminal

Router1(config)#

or

```
Router1#conf t
```

```
Router1(config)#
```

viii. To make changes to a network interface, enter the interface configuration mode, with the command:

```
Router1(config)#interface FastEthernet0/0
```

```
Router1(config-if)#
```

The name of the interface is provided as an argument. Here, the network interface that is configured is FastEthernet0/0.

ix. To return from the interface configuration to the global configuration mode, or from the global configuration mode to the Privileged EXEC mode, use the exit command:

```
Router1(config-if)#exit
```

```
Router1(config)#exit
```

```
Router1#
```

The exit command takes you one step up in the command hierarchy. To directly return to the Privileged EXEC mode from any configuration mode, use the end command:

```
Router1(config-if)#end
```

```
Router1#
```

x. To terminate the console session from the User EXEC mode, type logout or exit:

```
Router1>logout
```

Router con0 is now available

Press RETURN to get started

## 2. Configuring a Cisco Router via the console

The following exercises use basic commands from the Cisco IOS that are needed to configure a

Cisco router.

PAGE: 61i. Right-click on Router1 and choose Start.

ii. Right-click on Router1 and choose Console. Wait some seconds until the initial console window is set up. When the router is ready to receive commands, proceed to the next step.

iii. Configure Router1 and Router 2 with the IP addresses given in Figure 6.7.

In Router 1

Interface Fastethernet0/0 in global configuration mode

```
R1(config)#inter f 0/0
```

```
R1(config-if)#ip address 10.0.0.1 255.0.0.0
```

```
R1(config-if)#no shutdown
```

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

Interface Fastethernet 0/0

```
R2(config)#inter f0/0
```

```
R2(config-if)#ip address 30.0.0.1 255.0.0.0
```

```
R2(config-if)#no shutdown
```

```
R2(config-if)#exit
```

```
R1# show interfaces
```

```
R1#show running-config
```

```
R1(config)#ip route Destination Network| Destination N/W Subnet Mask |Next Hop  
Address
```

```
R1(config)#ip route 30.0.0.0 255.0.0.0 20.0.0.2
```

```
R2(config)#ip route 10.0.0.0 255.0.0.0 20.0.0.1
```

```
R1(config)#inter f0/0
R1(config-if)#ip address 30.0.0.1 255.0.0.0
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#
```

```
R1#show running-config
Building configuration...

Current configuration : 1168 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R1
!
boot-start-marker
boot-end-marker
!
!
no aaa new-model
memory-size iomem 5
no ip icmp rate-limit unreachable
ip cef
!
!
!
!
no ip domain lookup
ip auth-proxy max-nodata-conns 3
ip admission max-nodata-conns 3
!
!
!
!
--More--
```

```
Activities Terminal Sep 14 14:30 R1
*Mar 1 00:00:03.895: %SYS-5-CONFIG_I: Configured from memory by console
*Mar 1 00:00:04.063: %SYS-5-RESTART: System restarted --
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*Mar 1 00:00:04.067: %SNMP-5-COLDSTART: SNMP agent on host R1 is undergoing a cold start
*Mar 1 00:00:04.079: %LINEPROTO-5-UPDOWN: Line protocol on Interface IPv6-mpls, changed state to up
*Mar 1 00:00:04.707: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state to administratively down
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*Mar 1 00:00:04.815: %LINK-5-CHANGED: Interface Serial1/0, changed state to administratively down
*Mar 1 00:00:04.815: %LINK-5-CHANGED: Interface Serial1/1, changed state to administratively down
*Mar 1 00:00:04.815: %LINK-5-CHANGED: Interface Serial1/2, changed state to administratively down
*Mar 1 00:00:04.819: %LINK-5-CHANGED: Interface Serial1/3, changed state to administratively down
*Mar 1 00:00:05.707: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down
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*Mar 1 00:00:05.815: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to down
*Mar 1 00:00:05.815: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/1, changed state to down
*Mar 1 00:00:05.815: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/2, changed state to down
*Mar 1 00:00:05.819: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/3, changed state to down
R1#
R1#
R1#
R1#
R1#
R1#
R1#enable
R1#disable
Translating "diable"
>
Translating "diable"
% Unknown command or computer name, or unable to find computer address
R1#disable
R1>configure terminal
^
% Invalid input detected at '^' marker.
R1#enable
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface FastEthernet0/0
R1(config-if)#end
R1#
*Mar 1 00:05:30.043: %SYS-5-CONFIG_I: Configured from console by console
R1#
```

```
R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#inter f0/0
R2(config-if)#ip address 30.0.0.1 255.0.0.0
R2(config-if)#no shutdown
R2(config-if)#exit
```

```
R1#show running-config
Building configuration...

Current configuration : 1168 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R1
!
boot-start-marker
boot-end-marker
!
!
no aaa new-model
memory-size iomem 5
no ip icmp rate-limit unreachable
ip cef
!
!
!
!
no ip domain lookup
ip auth-proxy max-nodata-conns 3
ip admission max-nodata-conns 3
!
!
!
!
--More--
```

- i. Issue a ping command from PC1 to PC2, Router1 and PC4, respectively

```
R1#ping 10.0.0.10

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.10, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
R1#
```

```
PC1> ping 30.0.0.10
```

```
84 bytes from 30.0.0.10 icmp_seq=1 ttl=62 time=33.483 ms  
84 bytes from 30.0.0.10 icmp_seq=2 ttl=62 time=38.765 ms  
84 bytes from 30.0.0.10 icmp_seq=3 ttl=62 time=38.002 ms  
84 bytes from 30.0.0.10 icmp_seq=4 ttl=62 time=37.856 ms  
84 bytes from 30.0.0.10 icmp_seq=5 ttl=62 time=47.912 ms
```

```
PC1> ping 20.0.0.1
```

```
84 bytes from 20.0.0.1 icmp_seq=1 ttl=255 time=9.242 ms  
84 bytes from 20.0.0.1 icmp_seq=2 ttl=255 time=8.104 ms  
84 bytes from 20.0.0.1 icmp_seq=3 ttl=255 time=5.651 ms  
84 bytes from 20.0.0.1 icmp_seq=4 ttl=255 time=6.620 ms  
84 bytes from 20.0.0.1 icmp_seq=5 ttl=255 time=9.126 ms
```

```
PC1>
```