

KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Coimbatore-641021. (For the candidates admitted from 2017 onwards)

DEPARTMENT OF CS,CA & IT

Semester-II

17CSP211 ROUTER CONFIGURATION - PRACTICAL 4H - 2C Instruction Hours / week: L: 0 T: 0 P: 4 Marks: Int : 40 Ext : 60 Total: 100

SCOPE

This course enables to learn the principles of networking, build own network topology, and can practice different scenarios.

OBJECTIVES

- Understand the behavior of a network in real-time mode and simulation mode.
- Gain practical networking technology skills in a rapidly changing environment.
- Perform basic configuration on routers and Ethernet switches.
- Design a small or medium sized computer network including media types, end devices and interconnecting devices.

LIST OF PROGRAMS

- 1. Simple router configuration.
- 2. Access and utilize the router to set basic parameters.
- 3. Connect configure and verify operation status of a device interface.
- Implement static and dynamic addressing services for hosts in a LAN Environment.
- 5. Identify and correct common problems associated with IP addressing and host configurations.
- 6. Configure verify and troubleshoot RIPv2.
- 7. Perform and verify routing configuration tasks for a static or default route given.

- 8. Configure verify and troubleshoot NAT operation on a router.
- 9. Configure and verify a PPP connection between routers.

EX.NO :1 ROUTER CONFIGURATION

DATE : 05-12-2017

AIM:

To create a simple router configuration in cisco packet tracer.

ALGORITHM:

- Step 1: Start the configuration.
- Step 2: Click Start-> All programs->cisco packet tracer.
- Step 3: Create topology with router 1841.
- Step 4: CLT will normally appear in user mode (router).
- Step 5: From the user mode to move to privileged mode enter "enable" command privilege.
- Step 6: Mode to global configuration mode to use "configuration terminal" command.
- Step 7: Use the command interface fastethernet0/0 to access Ethernet0/0.
- Step 8: Use IP address command to assign an IP address and subnet mark to the interface.

Step9: Fastethernet0/1 is same as fastethernet0/0

Step10: Show IP interface command.

Step11: Use the exit command foe exiting all process.

Step12: Stop the configuration.

CODING:

Continue with configuration dialog? [yes/no]: n

Press RETURN to get started! Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#hostname Router0 Router0(config)#enable secret class Router0(config)#line console 0 Router0(config-line)#password msc3 Router0(config-line)#login Router0(config-line)#exit Router0(config)#line vty 0 4 Router0(config-line)#password msc3 Router0(config-line)#login Router0(config-line)#exit Router0(config)#interface Fastethernet0/0 Router0(config-if)#ip address 192.168.1.1 255.255.255.0 Router0(config-if)#no shutdown Router0(config-if)#exit Router0(config)#interface FastEthernet0/1 Router0(config-if)#ip address 192.168.2.1 255.255.255.0 Router0(config-if)#no shutdown Router0(config-if)#exit Router0(config)#exit

Router0#show ip interface brief Interface IP-Address OK? Method Status Protocol FastEthernet0/0 192.168.1.1 YES manual up down FastEthernet0/1 192.168.2.1 YES manual up down Vlan1 unassigned YES unset administratively down down Router0#

Router0#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router0(config)#interface FastEthernet0/0 Router0(config-if)# Router0(config)#interface FastEthernet0/1 Router0(config)#interface FastEthernet0/1 Router0(config-if)# Router0(config-if)#

Router0(config)#interface FastEthernet0/1 Router0(config-if)#

OUTPUT:

V Cisco Packet Tracer				and the second se		
File Edit Options View Tools	Extensions Help					
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Logical	Back	[Root]	New Cluster Move Object	Set Tiled Background	Viewport	Environment: 00:30:00
	Back	[Root] 1841 Router0	New Cluster Nove Object	Set Tiled Bardground	Wexport	
Time: 01:00:56 Power Cycle Devic	11 Fast Forward Time 2001 2013 2013 015		1941 25200H 26220H 28			Realtime
r 🖉 🖉 🔝 📾 🖾 🔶						,
				819HGW		

GLOBAL	1	Pastt;themet0/1
Settings	Port Status	(v)
Algorithm Settings	Bandwidth	(ii) 100 Mbps () 10 Mbps () A
ROUTING	Duplex	🛞 Half Duplex 🗇 Full Duplex 📝 🗛
SWITCHING	MAC Address	0001.C78A.4102
VLAN Database	IP Configuration	
INTERFACE	TD Address	100.100.0
Fastil themet0/0	P Address	192.105.2.1
FastEthernet0/1	Subnet Mask	255.255.255.0
	Tx Ring Limit	10
guivalent 105 Comm	v mds I: Configured from con	sole by console
guivalent IOS Comm NSTS-5-CONFIG_ RouterOI abov 5	v mds I: Configured from con	sole by console
guivalent IOS Comm #SYS-5-CONFIG_ Router0@show i Interface	v ands I: Configured from con p interface brief IP-Address	sole by console OK7 Method Status Protocol
guvalent IOS Comm \$575-5-CONFIG_ Router0≢show i Interface PatItbernet0/	w ands I: Configured from com p interface brief IP-Address 0 192.168.1.1	sole by console OK7 Method Status Protocol YES manual up down
guvaient IOS Comm 4575-5-CONFIG_ Router0#show i Interface TestEtbernet0/ Vaci	wids I: Configured from com p interface brief IP-Address 0 192.168.1.1 1 192.168.2.1 unaction1	sole by console OK7 Method Status Protocol YES manual up down YES manual up down
guivalent IOS Comm SSYS-S-CONFIG Router04show 1 Interface FastEthernet0/ Viani Router04	<pre>mds I: Configured from con p interface briaf IP-Address 0 192.168.1.1 1 192.168.2.1 unassigned</pre>	sole by console OK? Method Status Protocol YES manual up down YES unset administratively down
quivalent IOS Comm %SYS-S-CONFIG Router0#show 1 Interface FastEthernet0/ Viani Router0#config Router0#config	v rds I: Configured from con p interface brief IP-Address 0 192.168.2.1 unassigned ure terminal	ole by console OK? Method Status Protocol YES manual up down YES manual up down YES unset administratively down down
guvalent IOS Comm %5YS-5-CONFIG_ Router0#show 1 Interface FastEthernet0/ Vian1 Router0# Router0#config Enter configur	v ands I: Configured from com p interface brief IP-Address 0 192.168.2.1 unassigned ure terminal ation commands, one pe	sole by console OK? Method Status Protocol YES manual up down YES manual up down YES unset administratively down down r line. End with CNTL/2.
quivalent IOS Comm \$378-5-CONFIG Router08abow i Interface FastEthernet0/ Viani Router08 R	<pre>mds I: Configured from con p interface brief IP-Address 0 190.168.1.1 unassigned ure terminal ation commands, one pe leinerface FastEthern interface FastEthern</pre>	cole by console OK7 Method Status Protocol YES manual up down YES manual up down YES unset administratively down down r line. End with CNTL/2. st0/0
guivalent IOS Comm #SYS-5-CONFIG_ Router0@show i Interface FastEthernet0/ Viani Router0@ Router0@config Router0@config Router0(config Router0(config Router0(config	<pre>v srds I: Configured from con p interface brief IP-Address 0 192.168.1.1 1 192.168.2.1 unassigned ure terminal ation commands, one pe binterface FastEthern -if) # -if) # -if) # </pre>	cole by console OK? Method Status Protocol YES manual up down YES unset administratively down down r line. End with CNTL/2. et0/0
quivalent IOS Comm %SYS-S-CONFIG Router0#show i Interface FastEthernet0/ Viani Router0#config Router0#config Router0(config Router0(config Router0(config Router0(config Router0(config Router0(config Router0(config	<pre>mds I: Configured from con p interface brief IP-Address 0 192.160.2.1 unassigned ure terminal ation commands, one pe 00000000000000000000000000000000000</pre>	sole by console OK? Method Status Protocol YES manual up down YES manual up down YES unset administratively down down r line. End with CNTL/2. st0//1
quivalent IOS Comm \$575-5-CONFIG Router0#shornet0/ FastEthernet0/ FastEthernet0/ FastEthernet0/ Router0# Router0#config Router0(config Router0(config Router0(config Router0(config Router0(config Router0(config Router0(config Router0(config Router0(config	<pre>v v v v v v v v v v v v v v v v v v v</pre>	sole by console OK? Method Status Protocol YES manual up down YES manual up down YES unset administratively down down r line. End with CNTL/2. st0/0 et0/1

3

inyoneen eening	CLI Attributes	
GLOBAL		FastE thernet0/0
Settings	Port Status	
Algorithm Settings	Bandwidth	🎯 100 Mbps 💮 10 Mbps 📝 Auto
ROUTING	Duplex	(ii) Half Duplex (iii) Full Duplex III Auto
Static	MAC Address	0006.2AC0.3601
RIP	IP Configuration	
SWITCHING	IP Address	
VLAN Database	Subpet Mask	
INTERFACE	Subirectriask	
FastEthernet0/0		
FastEthernet0/1	Tx Ring Limit	10
Equivalent IOS Comman	nds	
Heer Access Ver	ification	
0501 110005 001		
Password:		
Password: sindhu>enable Password:		
Password: sindhu>enable Password: sindhu‡configur	e terminal	
Password: sindhu>enable Password: sindhu‡configura	e terminal tion commands, one per l	ine. End with CNTL/Z.

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RESULT:

The router configuration has successfully implemented.

EX.NO:2 ACCESSING THE PARAMETER OF THE ROUTER

DATE: 14-12-2017

AIM:

To access and utilize the router to set basic parameter.

<u>ALGORITHM:</u>

Step1: Start the configuration.

Step2: Click start-> All programs->cisco packet tracer.

Step3: Create topology with router 1841.

Step4: CLT will normally appear in user mode (router).

Step5: From the user mode to move to privileged mode enter "enable" command privilege.

Step6: Mode to global configuration mode to use "configuration terminal" command.

Step7: Use the command clock set to set the clock.

Step8: To protect the user mode create the enable password.

Step9: Use the command line console 0 to display the text line by line.

Step10: Use the command history size to view no. of bytes.

Step11: To display minutes and seconds use exec timeout command.

Step12: Use the command show running config for display current

configuration size, timestamps and password.

Step13: Stop the configuration.

CODING:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started!

Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#hostname sindhu sindhu(config)#exit sindhu# %SYS-5-CONFIG_I: Configured from console by console

sindhu#clock set ? hh:mm:ss Current Time sindhu#clock set 02:20:40 jan 2 2018 sindhu#conf t Enter configuration commands, one per line. End with CNTL/Z..

sindhu(config)#enable password msc3 sindhu(config)#line console 0 sindhu(config-line)#login % Login disabled on line 0, until 'password' is set sindhu(config-line)#password mcs3 sindhu(config-line)#exit sindhu(config)#exit sindhu# %SYS-5-CONFIG_I: Configured from console by console

sindhu#en sindhu#conf t Enter configuration commands, one per line. End with CNTL/Z. sindhu(config)#exit sindhu# %SYS-5-CONFIG_I: Configured from console by console

Show run:

sindhu#show run Building configuration... Current configuration : 596 bytes ! version 12.4 no service timestamps log datetimemsec

```
no service timestamps debug datetimemsec
no service password-encryption
!
hostname sindhu
enable password msc3
ipcef
no ipv6 cef
sindhu#conf t
Enter configuration commands, one per line. End with CNTL/Z.
sindhu(config)#line console 0
sindhu(config-line)#history size 10
sindhu(config-line)#exec-timeout?
<0-35791> Timeout in minutes
sindhu(config-line)#exec-timeout 15 45
sindhu(config)#exit
sindhu#
%SYS-5-CONFIG_I: Configured from console by console
sindhu#show running-config
Building configuration...
Current configuration : 635 bytes
١
version 12.4
no service timestamps log datetimemsec
no service timestamps debug datetimemsec
no service password-encryption
!
hostname sindhu
١
```

```
!
!
enable password msc3
!
!
!
!
!
!
ipcef
no ipv6 cef
!
!
!
```

-more-

OUTPUT:



RESULT:

The router has been successfully implemented and the basic parameters are utilized.

EX.NO:3 CONFIGURE THE OPERATION STATUS OF A DEVICE INTERFACE

DATE : 19-12-2017

AIM:

To connect configure and verify operation status of a device interface.

ALGORITHM:

Step1: Start the configuration.

- Step2: Click start-> All programs-> cisco packet tracer.
- Step3: Create topology with router 1841, PC-PTPC0, PC-PTPC1.

Step4: CLT will normally appear in user mode (router).

- Step5: Use the command enable" and "conf t" to privileged mode and configuration mode.
- Step6: Use the command interface fastethernet0/0 and 0/1 to assign an IP address and subnet mask to connect the device interface.
- Step7: Click PC-PTPC0 -> desktop-> IP configuration assign IP address and default gateway.
- Step8: Click add simple PDU(P) to send the packet from one system to another through router.

Step9: Click PDU list window to check the status about the packets. Step10: Stop the configuration.

CODING:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started!

Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface Fastethernet0/0 Router(config-if)#ip address 192.168.1.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit

Router(config)#interface Fastethernet0/1 Router(config-if)#ip address 192.168.2.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit

Router(config)#interface FastEthernet0/0 Router(config-if)#exit Router(config)#interface FastEthernet0/1 Router(config-if)#exit

OUTPUT:



Visco Packet Tracer			-	-					- 0 <u>- x</u>
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Logical Back		[Root]	New Cluster Move Object	Set Tiled Background		Viewport		Environment: 0	2:30:00
- A									
		1841 Router0							×
		$ \land $							9
									• •
	PC-PT		PC-PT						- C.,
	100		PC1						.
									2
Time: 00:25:12 Power Cycle Devices Fast For	ward Time							R	ealtime
⋗⋼⋿⋛⋷⋑∊	~ / / .	× > > >		i) Scenario 0 ▼ F New Delete	re Last Status So Successful Ro Successful I	urce Destination outer0 PC1 PC0 PC1	Type Color ICMP	Time(sec) Perio 0.000 N 0.000 N	dic Num E ▲ 1 (e 1 2 (e ⊟
×	Сор	per Cross-Over	Þ	Toggle PDU List Window	Successful	PC0 PC1	ICMP	0.000 N	3 (e
🚳 💪 🚞 🛛	o 🕅 🖾	your Chai	r, Mouse an	d Keyboard pro	perly			- 🔯 🖬 🐠	1:34 PM 1/6/2018

							Rea	altim	e	
Fire	Last Status	Source	Destination	Туре	Color	Time(sec)	Periodic	Num	Edi	•
•	Successful	Router0	PC1	ICMP		0.000	N	1	(e	_
•	Successful	PC0	PC1	ICMP		0.000	N	2	(e ;	
•	Successful	PC0	PC1	ICMP		0.000	Ν	3	(e	÷
•									Þ	

ysical Config Desktop	Attributes Sof	iftware/services
Configuration		se de la constante de la const
IP Configuration		
DHCP		Static
IP Address		192.168.1.4
Subnet Mask		255.255.255.0
Default Gateway		192.168.1.1
DNS Server		
Pv6 Configuration		
DHCP	O Auto Co	onfig 💿 Static
IPv6 Address		1
Link Local Address		FE80::203:E4FF:FE84:89CD
IPv6 Gateway		
IPv6 DNS Server		

P Configuration							X
IP Configuration							
O DHCP		Static					
IP Address		192.168.2.3					
Subnet Mask		255.255.255.0	D				
Default Gateway		192.168.2.1					
DNS Server							
IPv6 Configuration							
O DHCP	O Auto Co	nfig	S	tatic			
IPv6 Address						1	
Link Local Address		FE80::2D0:58	FF:FEB1:CB	8			
IPv6 Gateway							
IPv6 DNS Server							

RESULT:

The device interfaces are connected, configured and verified successfully.

EX.NO:4 STATIC & DYNAMIC ADDRESSING SERVICES

DATE : 02-01-2018

AIM:

To implement static and dynamic addressing services for post in a LAN environment.

ALGORITHM:

Step 1: Start the configuration.

- Step 2: Click start-> All programs-> cisco packet tracer.
- Step 3: Create topology with router generic, switch 2960 and PC and connection using copper straight through.

Step 4: CLT will normally appear in user mode (router).

Step 5: Use the command enable" and "conf t" to privileged mode and global configuration mode.

Step 6: Use the command enable" and "conf t" to privileged mode And interface fastethernet0/0 to assign an IP address and submit mask to connect the switch.

- Step 7: Use the commend IP DHCP(Dynamic Host Control Protocol) pool cisco for network and default router.
- Step 8: Use the command IP DHCP excluded address for excluding different address.
- Step 9: Click add simple PDU(P) to send the packet one system to another through router and switch and check PDU list window.
- Step 10: Stop the configuration.

CODING:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started!

Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface Fastethernet0/0 Router(config-if)#ip address 192.168.1.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit

Router(config)#ipdhcp pool cisco Router(dhcp-config)#network 192.168.1.0 255.255.255.0 Router(dhcp-config)#default-router 192.168.1.1 Router(dhcp-config)#exit

Router(config)#ipdhcp excluded-address 192.168.1.4 192.168.1.7 Router(config)#exit

OUTPUT:



PC0										, 🗆	<u> </u>
Physical Config Desktop	Attributes So	ftware/Services									
IP Configuration											x
IP Configuration											
OHCP		Static									
IP Address		192.168.1.2									
Subnet Mask		255.255.255.0									
Default Gateway		192.168.1.1									
DNS Server											
IPv6 Configuration											
O DHCP	Auto C	onfig	۲	Static							
IPv6 Address									·		
Link Local Address		FE80::240:BFF	:FE97:B0	96							
IPv6 Gateway											
IPv6 DNS Server											
Тор											
									Poz	altim	
	Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	De
		cust status	PC1	PC2	TCMP	COIO	0.000	N	1	(e	600
i) Scenario 0	- Inc	Successful			2.00 m		0.000		-	(c	. (OE
i) Scenario 0		Successful Successful	PC2	PC5	TCMP		0.000	N	2	(e	(de (de
Scenario 0 New Delete		Successful Successful Successful	PC2 PC3	PC5	ICMP		0.000	N	2	(e	(de (de
Scenario 0 New Delete Topolo DDI U int M ^a o dou:		Successful Successful Successful	PC2 PC3	PC5 PC6	ICMP ICMP		0.000	N N	2 3	(e (e	(de (de (de

RESULT:

Thus the static and dynamic addressing services for hosts in a LAN are successfully implemented.

EX.NO:5 IDENTIFY AND CORRECT THE PROBLEMS IN THE CONFIGURATON

DATE : 06-01-2018

<u>AIM:</u>

To identify and correct common problems associated with ip addressing and host configuration.

ALGORITHM:

Step 1: Start the configuration.

Step 2: Click start-> All programs-> cisco packet tracer.

Step3: Create topology with router 1841, PC-PTPC0, PC-PTPC1.

Step 4: CLT will normally appear in user mode (router).

- Step 5: Use the command "enable" and "conf t" to privileged mode and configuration mode.
- Step 6: Use the command interface fastethernet0/0 and 0/1 to assign an IP address and subnet mask to connect the device interface.
- Step 7: In command prompt give the ping command the data packets is received or lost.
- Step 8: Click PC-PTPC0 -> desktop-> IP configuration assign IP address and default gateway.
- Step 9: Click add simple PDU(P) to send the packet from one system to another through router.

Step 10: Click PDU list window to check the status about the packets.

Step 11: Stop the configuration.

CODING:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started!

Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface Fastethernet0/0 Router(config-if)#ip address 192.168.1.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit

Router(config)#interface Fastethernet0/1 Router(config-if)#ip address 192.168.2.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit

Router(config)#interface FastEthernet0/0 Router(config)#exit Router(config)#interface FastEthernet0/1 Router(config)#exit

OUTPUT:



ERROR:

PC1		X
Physical	Config Desktop Attributes Software,Services	
Comma	and Prompt	х
Packet	et Tracer PC Command Line 1.0	
C:\≻ig	pconfig	
FastEt	thernet0 Connection:(default port)	
Lin	nk-local IFv6 Address	
Sub Dei	bmet Mask	
C:∖≻pi	ing 192.168.1.1	
Pingir	ng 192.168.1.1 with 32 bytes of data:	
Reques	et timed out.	
Reques	st timed out.	
Reques Reques	st timed out. st timed out.	
Ping s Pa	statistics for 192.168.1.1: Mackets: Sent = 4, Received = 0, Lost = 4 (100% loss),	

ERROR RECTIFIED :





RESULT:

The common problems are identified and rectified.

EX.NO:6 RIPV2 TROUBLE SHOOT

DATE: 23-01-2018

<u>AIM:</u>

To configure verify and trouble shoot RIPV2.

ALGORITHM:

- Step 1: start the configuration.
- Step 2: Click start-> All programs-> cisco packet tracer.
- Step 3: Create topology with router generic switch 2960 and pc connections using copper cross wire.
- Step 4: CLI will normally appear in user mode.
- Step5: Use the command "enable" and "conf t" to privileged and global configuration mode.
- Step 6: Use the command "enable" and "conf t" to privileged and Interface FastEthernet0/0 to assign and IP address and subnet mask to connect the router. Type show ctrl serial 0/0/0.
- Step 7: Use a command interface serial 0/0/0 & 0/0/1 for ip address, clock rate band width and no shutdown.
- Step 8: Router1 and router1 as same as step7 process for interface serial 0 and 1.
- Step 9: Using a command router rip to declare the network address for router0,1 and 2.

Step 10: Using command prompt display the output.

Step 11: Stop the process.

CODING:

Router0:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface Fastethernet 0/0 Router(config-if)#ip address 10.0.0.1 255.0.0.0 Router(config-if)#no shutdown Router(config-if)#exit Router(config)#exit

Router#show controllers serial0/0/0 Interface Serial0/0/0 Hardware is PowerQUICC MPC860 DCE V.35, clock rate 2000000 idb at 0x81081AC4, driver data structure at 0x81084AC0 **SCC Registers:** General [GSMR]=0x2:0x00000000, Protocol-specific [PSMR]=0x8 Events [SCCE]=0x0000, Mask [SCCM]=0x0000, Status [SCCS]=0x00 Transmit on Demand [TODR]=0x0, Data Sync [DSR]=0x7E7E **Interrupt Registers:** Config [CICR]=0x00367F80, Pending [CIPR]=0x0000C000 Mask [CIMR]=0x00200000, In-srv [CISR]=0x00000000 Command register [CR]=0x580 Port A [PADIR]=0x1030, [PAPAR]=0xFFFF [PAODR]=0x0010, [PADAT]=0xCBFF Port B [PBDIR]=0x09C0F, [PBPAR]=0x0800E [PBODR]=0x00000, [PBDAT]=0x3FFFD Port C [PCDIR]=0x00C, [PCPAR]=0x200 [PCSO]=0xC20, [PCDAT]=0xDF2, [PCINT]=0x00F **Receive Ring** rmd(68012830): status 9000 length 60C address 3B6DAC4 rmd(68012838): status B000 length 60C address 3B6D444 **Transmit Ring** Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface serial0/0/0 Router(config-if)#ip address 192.168.1.249 255.255.255.252 Router(config-if)#clock rate 64000 Router(config-if)#bandwidth 64

Router(config-if)#balldwidth 04 Router(config-if)#no shutdown

Router(config-if)#no shute(Router(config-if)#exit

Router(config)#interface serial0/0/1

Router(config-if)#ip address 192.168.1.254 255.255.255.252

Router(config-if)#clock rate 64000 This command applies only to DCE interfaces Router(config-if)#no shutdown %LINK-5-CHANGED: Interface Serial0/0/1, changed state to down Router(config-if)#exit Router(config)#exit Router# %SYS-5-CONFIG_I: Configured from console by console

Router1:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface serial0/0/0 Router(config-if)#ip address 192.168.1.250 255.255.255.252 Router(config-if)#no shutdown Router(config-if)#exit

Router(config)#interface serial0/0/1 Router(config-if)#ip address 192.168.1.246 255.255.255.252 Router(config-if)#clock rate 64000 Router(config-if)#bandwidth 64 Router(config-if)#no shutdown Router(config-if)#exit

Router2:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface fastethernet0/0 Router(config-if)#ip address 20.0.0.1 255.0.0.0 Router(config-if)#no shutdown Router(config-if)#exit

Router(config)#interface serial0/0/0 Router(config-if)#ip address 192.168.1.245 255.255.255.252 Router(config-if)#no shutdown Router(config-if)#exit

Router(config)#interface serial0/0/1 Router(config-if)#ip address 192.168.1.253 255.255.255.252 Router(config-if)#no shutdown Router(config-if)#exit Router(config)#exit

Router rip:

Router0:

Router(config)#router rip Router(config-router)#network 10.0.0.0 Router(config-router)#network 192.168.1.252 Router(config-router)#network 192.168.1.248

Router1:

Router(config)#router rip Router(config-router)#network 192.168.1.244 Router(config-router)#network 192.168.1.248

Router2:

Router(config)#router rip Router(config-router)#network 20.0.00 Router(config-router)#network 192.168.1.252 Router(config-router)#network 192.168.1.244

C:\>tracert 10.0.0.2 Tracing route to 10.0.0.2 over a maximum of 30 hops: 1 1 ms 4 ms 4 ms 10.0.0.2 Trace complete.

OUTPUT:



Rest Cisco Packet Tracer			- door a generation of	and an extension of the second se		
Pile Edit Options View Tools						1 2
			New Charles Mana Object	ast Tied Parlins and	Wannak	U f
	BSU Set Royler0 PCC-PT PC0	poor 1841 Roouter2	PC-PT PC1		VERGUL	
Time: 00:34:09 Power Cycle Dev	III					
ŊJ U ♦	<u>× / / / / / / / / / / / / / / / / / / /</u>	\$ \$ \$ \$				Keatume
>		m		Serial DCE		Þ

PC0	
Physical Config Desktop Attributes Soft	tware/Services
IP Configuration	
IP Configuration	
O DHCP	Static
IP Address	10.0.0.2
Subnet Mask	255.0.0.0
Default Gateway	10.0.0.1
DNS Server	
IPv6 Configuration	
O DHCP O Auto Co	nfig
IPv6 Address	
Link Local Address	FE80::2E0:8FFF:FE57:9956
IPv6 Gateway	
IPv6 DNS Server	
П Тор	



RESULT:

Thus the configuration and troubleshooting of RIPv2 is successfully implemented.

EX.NO:7 VERIFY STATIC & DEFAULT ROUTE DATE : 05-02-2018

AIM:

To perform and verify routing configuration task for a static and default router given.

ALGORITHM:

Step 1: start the configuration.

- Step 2: Click start-> All programs-> cisco packet tracer.
- Step 3: Create topology with router generic switch 2960 and pc connections using copper cross wire.
- Step 4: CLI will normally appear in user mode. Use the command "enable" and "conf t" to privileged and global configuration mode.
- Step 5: Declare host name and use the command Banner not d*word* to display the word.
- Step 6: Using the cmd interface serial 0/0/0 and 0/0/1 and dsp the cmd show control serial 0/0/0.
- Step 7: To perform the routing operation static router-> set a ip routing. Default route->set the packet seta new ip routing no route->set a new ip routing

Step 8: Use ping command to view the results.

Step 9: Stop the process.

CODING

Router0:

Continue with configuration dialog? [yes/no]: n

press RETURN to get started!

Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface fastethernet0/0 Router(config-if)#ip address 10.0.0.2 255.0.0.0 Router(config-if)#no shutdown Router(config-if)#exit Router(config)#exit Router#show controllers serial0/0/0 Interface Serial0/0/0 Hardware is PowerQUICC MPC860 DTE V.35 TX and RX clocks detected idb at 0x81081AC4, driver data structure at 0x81084AC0 SCC Registers: General [GSMR]=0x2:0x00000000, Protocol-specific [PSMR]=0x8 Events [SCCE]=0x0000, Mask [SCCM]=0x0000, Status [SCCS]=0x00 Transmit on Demand [TODR]=0x0, Data Sync [DSR]=0x7E7E **Interrupt Registers:** Config [CICR]=0x00367F80, Pending [CIPR]=0x0000C000 Mask [CIMR]=0x00200000, In-srv [CISR]=0x00000000 Command register [CR]=0x580 Port A [PADIR]=0x1030, [PAPAR]=0xFFFF [PAODR]=0x0010, [PADAT]=0xCBFF Port B [PBDIR]=0x09C0F, [PBPAR]=0x0800E [PBODR]=0x00000, [PBDAT]=0x3FFFD Port C [PCDIR]=0x00C, [PCPAR]=0x200 [PCSO]=0xC20, [PCDAT]=0xDF2, [PCINT]=0x00F **Receive Ring** rmd(68012830): status 9000 length 60C address 3B6DAC4 rmd(68012838): status B000 length 60C address 3B6D444 **Transmit Ring** tmd(680128B0): status 0 length 0 address 0 tmd(680128B8): status 0 length 0 address 0 Router#conf t

Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface serial0/0/0 Router(config-if)#ip address 192.168.0.253 255.255.255.252 Router(config-if)#clock rate 64000 This command applies only to DCE interfaces Router(config-if)#bandwidth 64 Router(config-if)#no shutdown %LINK-5-CHANGED: Interface Serial0/0/0, changed state to down Router(config-if)#exit

Router1:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface serial0/0/0 Router(config-if)#ip address 192.168.0.254 255.255.255.252 Router(config-if)#no shutdown Router(config-if)#exit Router(config)#interface serial0/0/1 Router(config-if)#ip address 192.168.0.249 255.255.255.252 Router(config-if)#clock rate 64000 This command applies only to DCE interfaces Router(config-if)#bandwidth 64 Router(config-if)#no shutdown %LINK-5-CHANGED: Interface Serial0/0/1, changed state to down Router(config-if)#exit

Router2:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface serial0/0/0 Router(config-if)#ip address 192.168.0.250 255.255.255.252 Router(config-if)#no shutdown Router(config-if)#exit Router(config)#interface serial0/0/1 Router(config-if)#ip address 192.168.0.245 255.255.255.252 Router(config-if)#clock rate 64000 This command applies only to DCE interfaces Router(config-if)#bandwidth 64 Router(config-if)#no shutdown Router(config-if)#exit

Router(config)#

Router3:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface fastethernet0/0 Router(config-if)#ip address 20.0.0.1 255.0.0.0 Router(config-if)#no shutdown Router(config-if)#no shutdown Router(config)#interface serial0/0/0 Router(config)#interface serial0/0/0 Router(config-if)#ip address 192.168.0.246 255.255.255.252 Router(config-if)#no shutdown Router(config-if)#no shutdown Router(config-if)#no shutdown Router(config-if)#exit

Static route

Router0:

Router(config)#ip route 20.0.0.0 255.0.0.0 192.168.0.254

Router1:

Router(config)#ip route 10.0.0.0 255.0.0.0 192.168.0.253 Router(config)#ip route 20.0.0.0 255.0.0.0 192.168.0.250

Router2:

Router(config)#ip route 10.0.0.0 255.0.0.0 192.168.0.249 Router(config)#ip route 20.0.0.0 255.0.0.0 192.168.0.246

Router3:

Router(config)#ip route 10.0.0.0 255.0.0.0 192.168.0.245

No route:

Router0:

Router(config)#no ip route 20.0.0.0 255.0.0.0 192.168.0.254

Router1:

Router(config)#no ip route 10.0.0.0 255.0.0.0 192.168.0.253 Router(config)#no ip route 20.0.0.0 255.0.0.0 192.168.0.250

Router2:

Router(config)#no ip route 10.0.0.0 255.0.0.0 192.168.0.249 Router(config)# no ip route 20.0.0.0 255.0.0.0 192.168.0.246

Router3:

Router(config)#no ip route 10.0.0.0 255.0.0.0 192.168.0.245

Default route:

Router0:

Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.0.254

Router1:

Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.0.253 Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.0.250

Router2:

Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.0.249 Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.0.246

Router3:

Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.0.245

Command prompt:

Packet Tracer PC Command Line 1.0

C:\>ipconfig

FastEthernet0 Connection:(default port)

Link-local IPv6 Address.....: FE80::20C:85FF:FE3D:DA76 IP Address.....: 20.0.0.2 Subnet Mask.....: 255.0.0.0 Default Gateway.....: 10.0.0.1

C:\>ipconfig

FastEthernet0 Connection:(default port)

Link-local IPv6 Address.....: FE80::20C:85FF:FE3D:DA76 IP Address.....: 20.0.0.2

Subnet Mask	: 255.0.0.0
Default Gateway	: 20.0.0.1

Static route:

C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time=4ms TTL=252 Reply from 10.0.0.2: bytes=32 time=6ms TTL=252 Reply from 10.0.0.2: bytes=32 time=3ms TTL=252 Reply from 10.0.0.2: bytes=32 time=3ms TTL=252

Ping statistics for 10.0.0.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 3ms, Maximum = 6ms, Average = 4ms

Default route:

C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time=4ms TTL=252 Reply from 10.0.0.2: bytes=32 time=5ms TTL=252 Reply from 10.0.0.2: bytes=32 time=5ms TTL=252 Reply from 10.0.0.2: bytes=32 time=5ms TTL=252

Ping statistics for 10.0.0.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 4ms, Maximum = 5ms, Average = 4ms

OUTPUT:





RESULT:

Thus the static and default routing has been successfully done.

EX.NO:8 VERIFY AND TROUBLESHOOT NAT OPERATION

DATE: 13-02-2018

AIM:

To configure verify and trouble shoot NAT operation for data router.

ALGORITHM:

Step 1: start the configuration.

- Step 2: Click start-> All programs-> cisco packet tracer.
- Step 3: Create topology with router generic switch 2960 and pc connections using copper cross wire.
- Step 4: CLI will normally appear in user mode. Use the command "enable" and "conf t" to privileged and global configuration mode.

Step 5: Connect the router using wire and local and global network connection.

Step 6: Declare the ip address for the router and end it.

Step 7: Set no ip routing for default gateway and then debug IPICNP.

Step 8: Declare the Nat function connection and then view result in ping.

Step 9: Stop the process.

CODING:

Router0:

Continue with configuration dialog? [yes/no]: n

Press RETURN to get started!

Router>en

Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface fastethernet0/0 Router(config-if)#ip address 10.0.0.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#end Router#copy running-config startup-config Destination filename [startup-config]? Building configuration... [OK]

Router1:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface fastethernet0/0 Router(config-if)#ip address 10.0.0.2 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#exit Router(config)#interface fastethernet0/1 Router(config-if)#ip address 212.100.100.2 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#end Router#copy running-config startup-config Destination filename [startup-config]? Building configuration... [OK]

Router2:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface fastethernet0/0 Router(config-if)#ip address 212.100.100.1 255.255.255.0 Router(config-if)#no shutdown Router(config-if)#end Router(config-if)#end Router#copy running-config startup-config Destination filename [startup-config]? Building configuration... [OK]

No ip routing:

Router0:

Router>en

Router#config t

Enter configuration commands, one per line. End with CNTL/Z. Router(config)#no ip routing Router(config)#ip default-gateway 10.0.0.2

Router2:

Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#no ip routing Router(config)#ip default-gateway 212.100.100.2

Debug ipicmp:

Router0:

Router#debugipicmp ICMP packet debugging is on Router#ping 212.100.100.1 Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 212.100.100.1, timeout is 2 seconds: ...! ICMP: echo reply rcvd, src 212.100.100.1, dst 10.0.0.1 ! Success rate is 40 percent (2/5), round-trip min/avg/max = 0/0/0 ms Router# ICMP: echo reply rcvd, src 212.100.100.1, dst 10.0.0.1

2. Ping after NAT function:

Router#ping 212.100.100.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 212.100.100.1, timeout is 2 seconds: ! ICMP: echo reply rcvd, src 212.100.100.1, dst 10.0.0.1 ! ICMP: echo reply rcvd, src 212.100.100.1, dst 10.0.0.1 ! ICMP: echo reply rcvd, src 212.100.100.1, dst 10.0.0.1 ! Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/0 ms Router# ICMP: echo reply rcvd, src 212.100.100.1, dst 10.0.0.1

Router2:

Router#debugipicmp ICMP packet debugging is on Router#ping 212.100.100.1 Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 212.100.100.1, timeout is 2 seconds: ! ICMP: echo reply sent, src 212.100.100.1, dst 212.100.100.1 ICMP: echo reply rcvd, src 212.100.100.1, dst 212.100.100.1 ! ICMP: echo reply sent, src 212.100.100.1, dst 212.100.100.1 ! ICMP: echo reply rcvd, src 212.100.100.1, dst 212.100.100.1 ! ICMP: echo reply sent, src 212.100.100.1, dst 212.100.100.1 ! ICMP: echo reply rcvd, src 212.100.100.1, dst 212.100.100.1 ! !
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/4/12 ms
Router#
ICMP: echo reply sent, src 212.100.100.1, dst 212.100.100.1
ICMP: echo reply rcvd, src 212.100.100.1, dst 212.100.100.1

NAT Function:

Router>en

Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface fastethernet0/0 Router(config-if)#ipnat inside Router(config)#interface fastethernet0/1 Router(config)#interface fastethernet0/1 Router(config-if)#ipnat outside Router(config)#ipnat inside source static 10.0.0.1 212.100.100.10 Router(config)#ipnat inside source static 10.0.0.1 212.100.100.10 Router(config)#end Router#copy running-config startup-config Destination filename [startup-config]? Building configuration... [OK] Router#

NAT Result:

Router#showipnat translationsProInside globalInside localOutside localOutside global---212.100.100.1010.0.0.1------

OUTPUT:





RESULT:

Thus the verification and troubleshooting of NAT operation on a router has been successfully done.

EX.NO:9 PPP CONNECTION BETWEEN ROUTERS DATE : 13-03-2018

<u>AIM:</u>

To configure and verify a PPP connection between routers.

ALGORITHM:

- Step 1: start the configuration.
- Step 2: Click start-> All programs-> cisco packet tracer.
- Step 3: Create topology with router generic switch 2960 and pc connections using copper cross wire.
- Step 4: CLI will normally appear in user mode. Use the command "enable" and "conf t" to privileged and global configuration mode.
- Step 5: Declare host name and use the command Banner not d*word* to display the word.
- Step 6: Use a command interface serial 0/0/0 to declare IP address.

Step 7: Use a command encapsulation ppp and clock rate and no shutdown.

Step 8: Use a command copy run start and show run to display output.

Step9: Router 1 is as same as router 0 for process

Step10: Stop the process

CODING

Router 0:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router#clock set 02:21:24 23 jan 2018 Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#hostname ro1 ro1(config)#banner motd *hai* ro1(config)#enable password cisco ro1(config)#enable secret msc ro1(config)#line console 0 ro1(config-line)#login % Login disabled on line 0, until 'password' is set ro1(config-line)#password sindhu ro1(config-line)#exit ro1(config)#interface serial0/0/0 ro1(config-if)#ip address 10.0.0.1 255.0.0.0 ro1(config-if)#encapsulation ppp ro1(config-if)#clock rate 9600 This command applies only to DCE interfaces ro1(config-if)#no shutdown %LINK-5-CHANGED: Interface Serial0/0/0, changed state to down ro1(config-if)#exit ro1(config)#exit ro1# %SYS-5-CONFIG_I: Configured from console by console

Router1:

Continue with configuration dialog? [yes/no]: n Press RETURN to get started! Router>en Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#hostname ro2 ro2(config)#banner motd *hello* ro2(config)#interface serial 0/0/0 ro2(config-if)#ip address 10.0.0.5 255.0.0.0 ro2(config-if)#encapsulation ppp ro2(config-if)#encapsulation ppp ro2(config-if)#clock rate 1200 ro2(config-if)#no shutdown ro2(config-if)# %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up ro2(config-if)#exit ro2(config)#exit ro2(config)#exit ro2# %SYS-5-CONFIG_I: Configured from console by console

copy run start: Router0:

ro1#copy run start Destination filename [startup-config]? Building configuration... [OK] **Router1:** ro2#copy run start Destination filename [startup.config]?

Destination filename [startup-config]? Building configuration... [OK]

show run: Router0:

```
ro1#show run
Building configuration...
Current configuration : 807 bytes
version 12.4
no service timestamps log datetimemsec
no service timestamps debug datetimemsec
no service password-encryption
!
hostname rol
١
enable secret 5 $1$mERr$A1hH/m/xInQUEVJndVBxy/
enable password cisco
1
١
```

```
!
!
no ipcef
--More—
```

Router1:

```
ro2#show run
Building configuration...
Current configuration : 731 bytes
!
version 12.4
no service timestamps log datetimemsec
no service timestamps debug datetimemsec
no service password-encryption
!
hostname ro2
!
١
no ipcef
no ipv6 cef
!
1
```

--More—

OUTPUT:

R Cisco Packet Tracer			and the state			- 0 - X
File Edit Options View Tools	Extensions Help					() ?
Logical	Back	[Root]	New Cluster Move Object	Set Tiled Background	Viewport	Environment: 08:30:00
1841 Router0	•5	1841 Router1				
Time: 00:46:29 Power Cycle Dev 29 29 20 21 21 22	iii fast Forward Time	//:5%5				Realtime
<	•	m				
				Serial DTF		

R Cisco Packet Tracer			and the state			
File Edit Options View Tools	Extensions Help	• R • 📰 🗮				() 2
	Back	[Root]	New Cluster Move Object	Set Tiled Background	Viewport	Environment: 06:30:00
1941 RouterO		1841 Router1				
 Time: 00:44:47 Power Cyde Devi Power Cyde Devi 	cess Fast Forward Time					, Paltime
_						4
×	•	m		Serial DTE		b l

RESULT:

Thus the configuration and verification of a PPP connection between the routers has been successfully done.