

UNIVERSIDAD DE COSTA RICA

FACULTAD DE INGENIERÍA

ESCUELA DE CIENCIAS DE LA COMPUTACIÓN E INFORMÁTICA

CI-0121 Redes de Comunicación de Datos

Grupo 2

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Proyecto Práctico Etapa III

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II Semestre 2024

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Dump Configuración

Switch del Centro de Datos del Edificio Anexo

Switch8#sh r

Building configuration...

Current configuration : 1646 bytes

!

version 15.0

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Switch8

!

!

!

!

!

!

spanning-tree mode pvst

spanning-tree extend system-id

!

interface FastEthernet0/1

switchport access vlan 101

switchport mode access

!

interface FastEthernet0/2

switchport access vlan 102

switchport mode access

!

```
interface FastEthernet0/3
switchport access vlan 103
switchport mode access
```

!

```
interface FastEthernet0/4
description VLAN 104 siendo transportada por puerto fa0/4
switchport access vlan 104
switchport mode access
```

!

```
interface FastEthernet0/5
switchport access vlan 105
switchport mode access
```

!

```
interface FastEthernet0/6
```

!

```
interface FastEthernet0/7
```

!

```
interface FastEthernet0/8
```

!

```
interface FastEthernet0/9
```

!

```
interface FastEthernet0/10
```

!

```
interface FastEthernet0/11
```

!

```
interface FastEthernet0/12
```

!

```
interface FastEthernet0/13
```

```
!  
interface FastEthernet0/14  
!  
interface FastEthernet0/15  
!  
interface FastEthernet0/16  
!  
interface FastEthernet0/17  
!  
interface FastEthernet0/18  
!  
interface FastEthernet0/19  
!  
interface FastEthernet0/20  
!  
interface FastEthernet0/21  
!  
interface FastEthernet0/22  
switchport trunk native vlan 999  
switchport trunk allowed vlan 101-105,201  
switchport mode trunk  
!  
interface FastEthernet0/23  
!  
interface FastEthernet0/24  
description conexion a servidor DNS_ECCL  
switchport access vlan 105  
switchport mode access  
!
```

```
interface GigabitEthernet0/1
```

```
switchport access vlan 201
```

```
switchport mode access
```

```
!
```

```
interface GigabitEthernet0/2
```

```
!
```

```
interface Vlan1
```

```
no ip address
```

```
shutdown
```

```
!
```

```
!
```

```
!
```

```
!
```

```
line con 0
```

```
!
```

```
line vty 0 4
```

```
login
```

```
line vty 5 15
```

```
login
```

```
!
```

```
!
```

```
!
```

```
!
```

```
end
```

[Router que tiene las "Access-list"](#)

```
Router0#sh r
```

```
Building configuration...
```

```
Current configuration : 4376 bytes
```

!

version 15.1

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router0

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

username admin privilege 15 secret 5 \$1\$mERr\$GvDaTJK9lhdXRUPWKA7400

!

!

license udi pid CISCO2911/K9 sn FTX15240RQP-

!

!

!

!

!

```
!  
!  
!  
!  
ip ssh version 2  
ip domain-name ecci.com  
!  
!  
spanning-tree mode pvst  
!  
!  
!  
!  
!  
!  
!  
interface GigabitEthernet0/0  
description hacia R1  
ip address 163.178.10.18 255.255.255.252  
ip nat outside  
duplex auto  
speed auto  
!  
interface GigabitEthernet0/1  
no ip address  
duplex auto  
speed auto  
!  
interface GigabitEthernet0/1.101  
description Interfaz conectada a la VLAN 101
```



```
encapsulation dot1Q 101
ip address 10.1.101.1 255.255.255.0
ip access-group 101 in
ip nat inside
!
interface GigabitEthernet0/1.102
description Definiendo NAT
encapsulation dot1Q 102
ip address 10.1.102.1 255.255.255.0
ip access-group 101 in
ip nat inside
!
interface GigabitEthernet0/1.103
description Definiendo NAT .103
encapsulation dot1Q 103
ip address 10.1.103.1 255.255.255.0
ip access-group 101 in
ip nat inside
!
interface GigabitEthernet0/1.104
description Definiendo NAT .104
encapsulation dot1Q 104
ip address 10.1.104.1 255.255.255.0
ip access-group 101 in
ip nat inside
!
interface GigabitEthernet0/1.105
description Interfaz conectada a VLAN 105
encapsulation dot1Q 105
```

```
ip address 163.178.104.73 255.255.255.248
```

```
ip access-group 105 in
```

```
!
```

```
interface GigabitEthernet0/1.201
```

```
description Interfaz conectada a la VLAN 201
```

```
encapsulation dot1Q 201
```

```
ip address 10.1.201.1 255.255.255.0
```

```
ip access-group 101 in
```

```
ip nat inside
```

```
!
```

```
interface GigabitEthernet0/2
```

```
no ip address
```

```
duplex auto
```

```
speed auto
```

```
shutdown
```

```
!
```

```
interface Vlan1
```

```
no ip address
```

```
shutdown
```

```
!
```

```
ip nat pool ECCI_NAT 163.178.104.65 163.178.104.70 netmask 255.255.255.248
```

```
ip nat inside source list 1 pool ECCI_NAT
```

```
ip classless
```

```
ip route 0.0.0.0 0.0.0.0 163.178.10.17
```

```
!
```

```
ip flow-export version 9
```

```
!
```

```
!
```

```
access-list 1 permit 10.1.101.0 0.0.0.255
```

```
access-list 1 permit 10.1.102.0 0.0.0.255
access-list 1 permit 10.1.103.0 0.0.0.255
access-list 1 permit 10.1.104.0 0.0.0.255
access-list 1 permit 10.1.201.0 0.0.0.255
access-list 1 permit any
access-list 101 deny ip 10.1.101.0 0.0.0.255 10.1.201.0 0.0.0.255
access-list 101 deny ip 10.1.101.0 0.0.0.255 10.1.102.0 0.0.0.255
access-list 101 deny ip 10.1.101.0 0.0.0.255 10.1.103.0 0.0.0.255
access-list 101 deny ip 10.1.101.0 0.0.0.255 10.1.104.0 0.0.0.255
access-list 101 deny ip 10.1.102.0 0.0.0.255 10.1.101.0 0.0.0.255
access-list 101 deny ip 10.1.102.0 0.0.0.255 10.1.103.0 0.0.0.255
access-list 101 deny ip 10.1.102.0 0.0.0.255 10.1.104.0 0.0.0.255
access-list 101 deny ip 10.1.102.0 0.0.0.255 10.1.201.0 0.0.0.255
access-list 101 deny ip 10.1.103.0 0.0.0.255 10.1.101.0 0.0.0.255
access-list 101 deny ip 10.1.103.0 0.0.0.255 10.1.102.0 0.0.0.255
access-list 101 deny ip 10.1.103.0 0.0.0.255 10.1.104.0 0.0.0.255
access-list 101 deny ip 10.1.103.0 0.0.0.255 10.1.201.0 0.0.0.255
access-list 101 deny ip 10.1.104.0 0.0.0.255 10.1.101.0 0.0.0.255
access-list 101 deny ip 10.1.104.0 0.0.0.255 10.1.102.0 0.0.0.255
access-list 101 deny ip 10.1.104.0 0.0.0.255 10.1.103.0 0.0.0.255
access-list 101 deny ip 10.1.104.0 0.0.0.255 10.1.201.0 0.0.0.255
access-list 101 deny ip 10.1.201.0 0.0.0.255 10.1.101.0 0.0.0.255
access-list 101 deny ip 10.1.201.0 0.0.0.255 10.1.102.0 0.0.0.255
access-list 101 deny ip 10.1.201.0 0.0.0.255 10.1.103.0 0.0.0.255
access-list 101 deny ip 10.1.201.0 0.0.0.255 10.1.104.0 0.0.0.255
access-list 101 permit ip any any
access-list 105 permit tcp any host 163.178.104.74 eq www
access-list 105 remark trafico SSH puerto 22
access-list 105 permit tcp host 10.1.106.2 any eq 22
```

```
access-list 105 remark [access-list] [number] [permit tcp]
access-list 105 permit tcp host 163.178.104.74 any established
access-list 105 remark bloqueo de ICMP
access-list 105 deny icmp any host 163.178.104.74
access-list 105 permit tcp host 163.178.104.74 any eq www
access-list 105 permit ip any host 163.178.104.75
access-list 105 permit ip host 163.178.104.75 any
ip access-list standard SSH_ACCESS
permit host 163.178.104.77
deny any
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0
access-class SSH_ACCESS in
login local
transport input ssh
line vty 1 4
access-class SSH_ACCESS in
login
line vty 5 15
access-class SSH_ACCESS in
login
```

!

Imagen del .pkt etapa3



Building configuration...

!

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Router3

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

license udi pid CISCO2911/K9 sn FTX15244631-

!

!

!

!

!

!

!

!

!

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface GigabitEthernet0/0

description Interfaz que conecta con Router2

ip address 163.178.10.29 255.255.255.252

duplex auto

speed auto

!

interface GigabitEthernet0/1

description conexion a ISP1

ip address 163.15.0.2 255.255.255.0

duplex auto

speed auto

!

interface GigabitEthernet0/2

description Interfaz que conecta con Router1

ip address 163.178.10.34 255.255.255.252

duplex auto

speed auto

!

interface GigabitEthernet0/3/0

description conexion a ISP2

ip address 163.50.0.2 255.255.255.0

!

interface Vlan1

no ip address

shutdown

!

router ospf 100

log-adjacency-changes

redistribute bgp 300 subnets

network 163.178.10.32 0.0.0.3 area 0

network 163.178.10.28 0.0.0.3 area 0

network 200.0.0.0 0.0.0.3 area 0

default-information originate

!

router bgp 300

bgp log-neighbor-changes

no synchronization

neighbor 163.15.0.1 remote-as 100

neighbor 163.50.0.1 remote-as 200

network 163.178.0.0

redistribute ospf 100 match external 1 external 2

redistribute static

!

ip classless

ip route 0.0.0.0 0.0.0.0 163.50.0.1

!

ip flow-export version 9

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

End

[Router_ISP1](#)

ISP1#sh r

Building configuration...

Current configuration : 975 bytes

!

version 15.1

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname ISP1

!

!

!

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

!

license udi pid CISCO2911/K9 sn FTX15249PF1-

!

!

!

!

!

!

!

!

!

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface GigabitEthernet0/0

no ip address

duplex auto

speed auto

shutdown

!

interface GigabitEthernet0/1

description conexion a enrutador borde UCR

ip address 163.15.0.1 255.255.255.0

duplex auto

speed auto

!

interface GigabitEthernet0/2

description conexion a redes LAN de ISP1

ip address 200.0.0.2 255.255.255.252

duplex auto

speed auto

!

interface Vlan1

no ip address

shutdown

!

router bgp 100

bgp log-neighbor-changes

no synchronization

neighbor 163.15.0.2 remote-as 300

network 200.0.0.0 mask 255.255.255.252

network 163.15.0.0 mask 255.255.255.0

!

ip classless

!
ip flow-export version 9

!

!

!

!

!

!

!

line con 0

!

line aux 0

!

line vty 0 4

login

!

!

!

End

[Router_ISP2](#)

ISP2#sh r

Building configuration...

Current configuration : 991 bytes

!

version 15.1

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname ISP2

!

!

!

!

!

!

!

!

no ip cef

no ipv6 cef

!

!

!

!

license udi pid CISCO2911/K9 sn FTX1524732S-

!

!

!

!

!

!

!

!

!

!

!

spanning-tree mode pvst

!

!

!

!

!

!

interface GigabitEthernet0/0

no ip address

duplex auto

speed auto

shutdown

!

interface GigabitEthernet0/1

no ip address

duplex auto

speed auto

shutdown

!

interface GigabitEthernet0/2

description conexion a red LAN ISP2

ip address 200.0.0.6 255.255.255.252

duplex auto

speed auto

!

interface GigabitEthernet0/3/0

description conexion a enrutador borde UCR

ip address 163.50.0.1 255.255.255.0

!

interface Vlan1

```
no ip address
shutdown
!
router bgp 200
  bgp log-neighbor-changes
  no synchronization
  neighbor 163.50.0.2 remote-as 300
  network 163.50.0.0 mask 255.255.255.0
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
!
!
end
```

Comandos

Para guardar un respaldo de la información, por ejemplo, un enrutador:

- Router3>en
- Router3#copy running-config startup-config

Para realizar BGP

Pasos:

1. Ubicarse en el router a configurar
2. enable
3. conf t
4. router bgp [número definido]

router bgp 300

bgp log-neighbor-changes

neighbor 163.15.0.1 remote-as 100

- El Sistema automática que estoy usando para el ISP1 es 100

neighbor 163.50.0.1 remote-as 200

- El Sistema automática que estoy usando para el ISP2 es 200

network 163.178.0.0

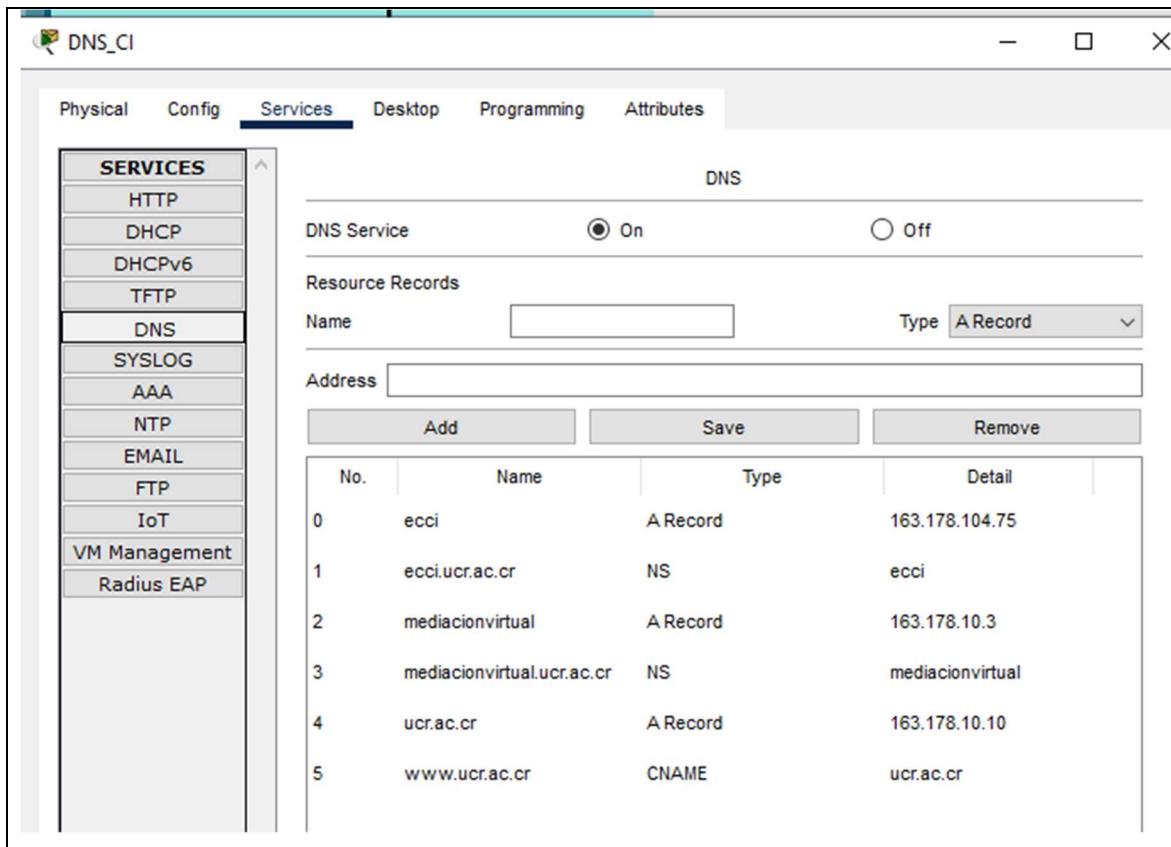
redistribute ospf 100 match external 1 external 2

redistribute static

Un aspecto a destacar es que se debe tener cuidado en escribir bien las direcciones de los vecinos. Y en este caso se realiza lo de ospf 100, porque ese router lo tiene configurado, es por ello que ante los cambios de BGP se realiza ese comando.

Para configurar DNS

A continuación, un ejemplo, se trabaja por niveles.

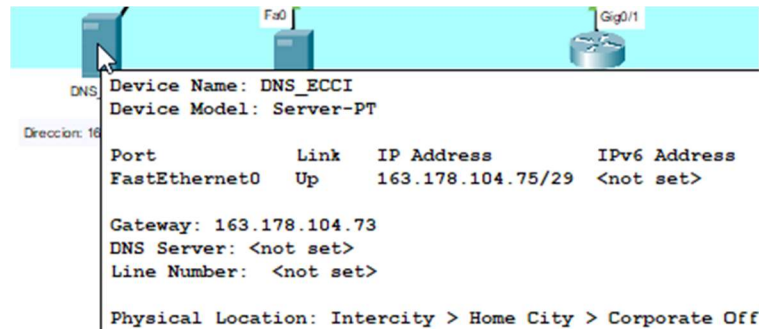


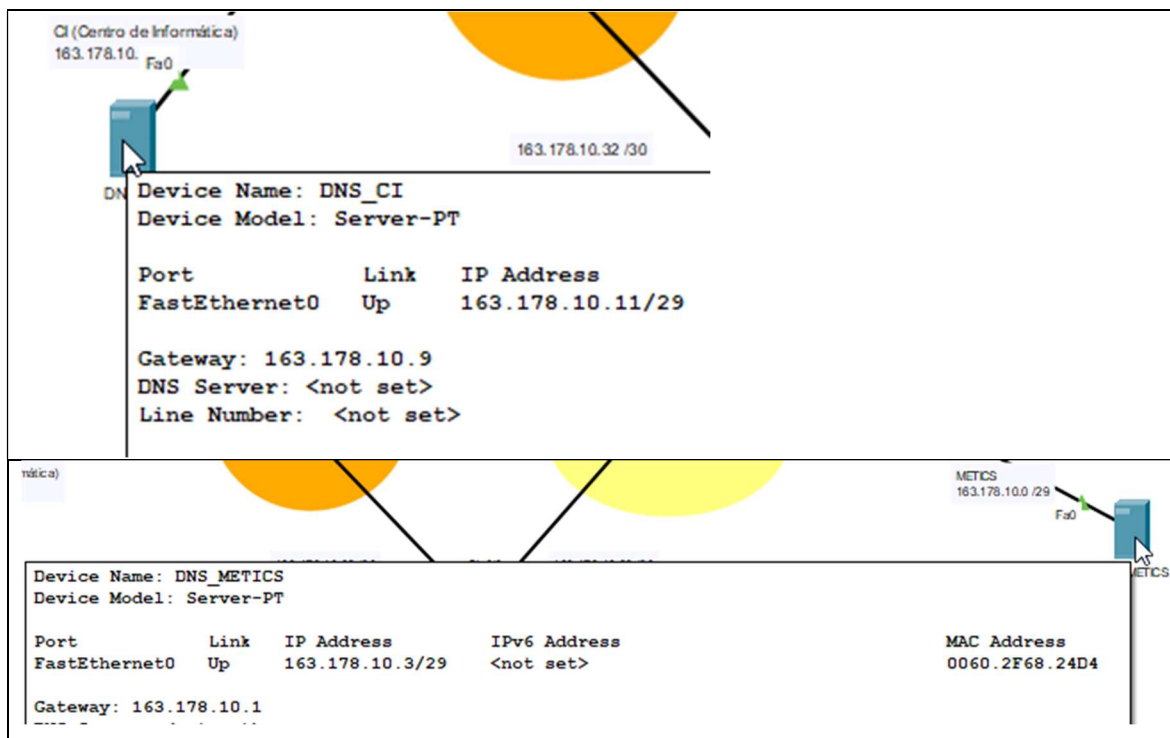
Capturas de pantalla

Uso correcto de direcciones IP

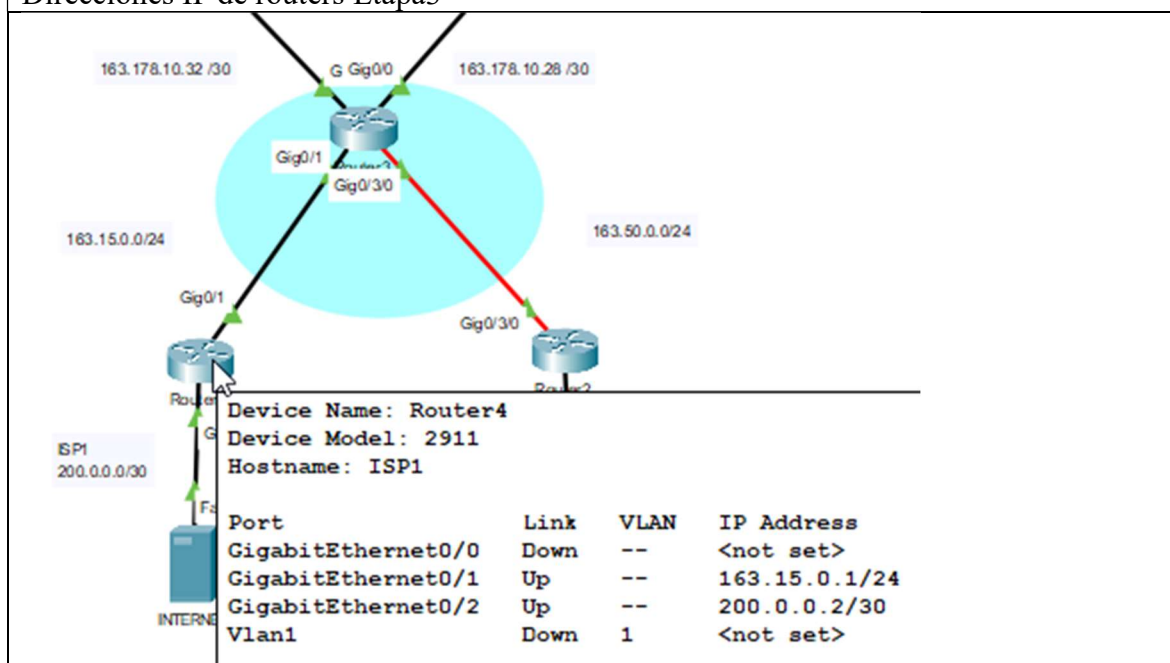
Direcciones IP de Servidores

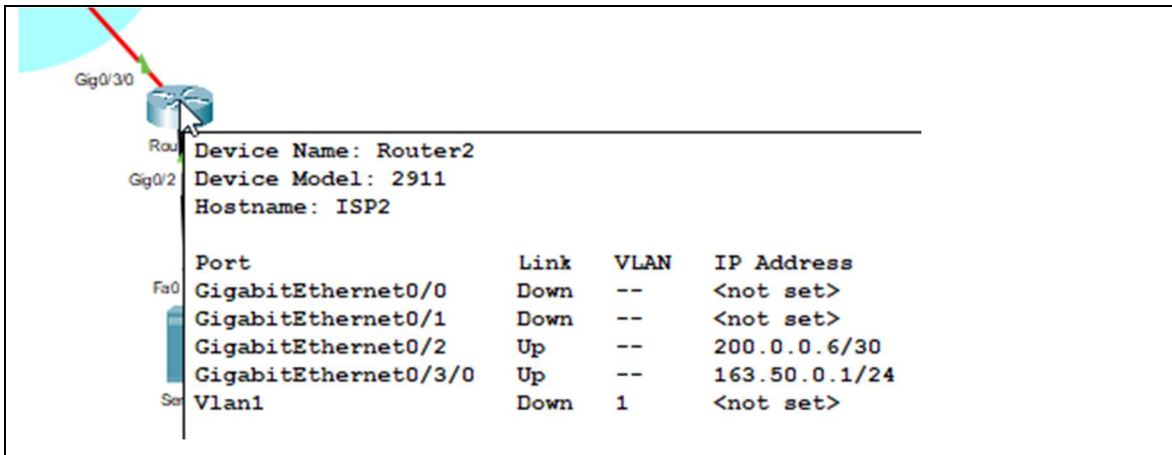
Servidor de DNS en el Centro de Datos





Direcciones IP de routers Etapa3





Dirección IP de la PC implementada en el MDF

IP Configuration	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
IPv4 Address	163.178.104.77
Subnet Mask	255.255.255.248
Gateway/DNS IPv4	
<input type="radio"/> DHCP	
<input checked="" type="radio"/> Static	
Default Gateway	163.178.104.76
DNS Server	

Conectividad exitosa

Conexión a Internet Visualización del URL

Pasos:









1. Seleccione un Server, por ejemplo, el de CI
2. En el margen superior, seleccione Desktop
3. Posteriormente Web Browser

Ahora como se realizó en esta etapa el dominio, por ello ahora acepta www, y ya no exclusivamente la dirección, ambos formatos son válidos en la presente versión



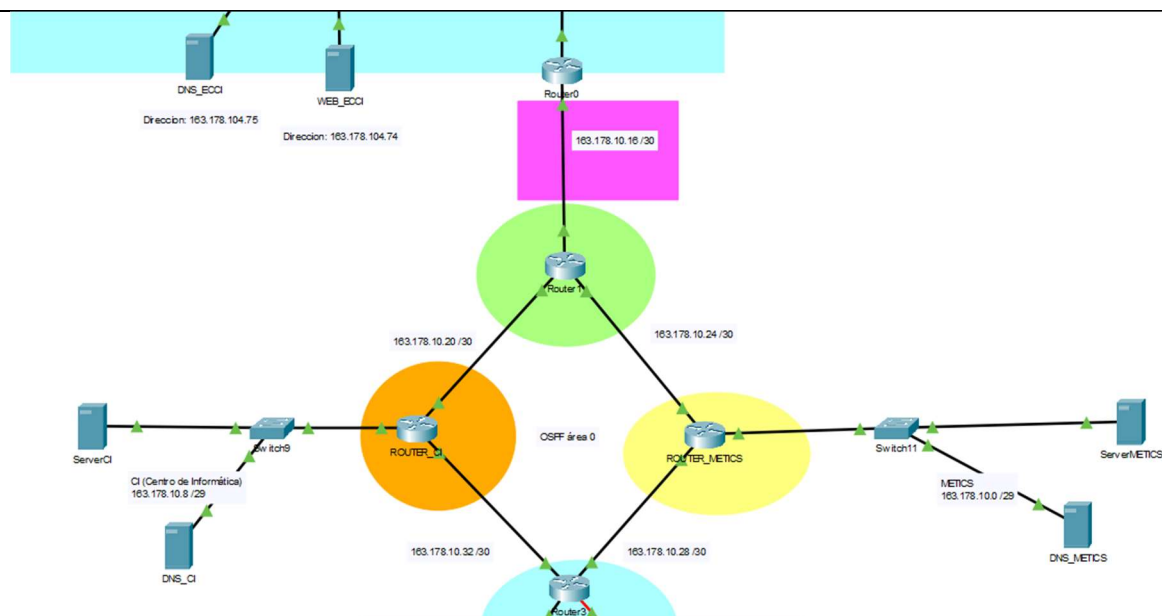
The screenshot shows a network simulation environment. On the left, a PC icon labeled 'PC0' is connected to a switch labeled 'Fa0'. The switch is connected to a server labeled 'Servidor Web METICS'. The server is also connected to another server labeled 'Servidor Web ECCI'. The browser window shows the URL 'http://www.mediacionvirtual.ucr.ac.cr' and the text 'Servidor Web METICS'. Below this, the URL 'http://www.ecci.ucr.ac.cr' is shown, and the text 'Este es el servidor web de la ECCI.' is displayed.







Conexión entre PC de los edificios y Servidores DNS

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	DNS_CI	ICMP		0.000	N	0	(edit)	
	Successful	PC0	DNS_METICS	ICMP		0.000	N	1	(edit)	
	Successful	PC2	Server0	ICMP		0.000	N	2	(edit)	
	Successful	PC3	INTERNET	ICMP		0.000	N	3	(edit)	

Comunicación infructuosa

Entre el servidor Web ECCI y los otros servidores



Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Failed	WEB_ECCI	DNS_CI	ICMP		0.000	N	0	(edit)	
	Failed	WEB_ECCI	DNS_METICS	ICMP		0.000	N	1	(edit)	
	Failed	WEB_ECCI	Server0	ICMP		0.000	N	2	(edit)	