

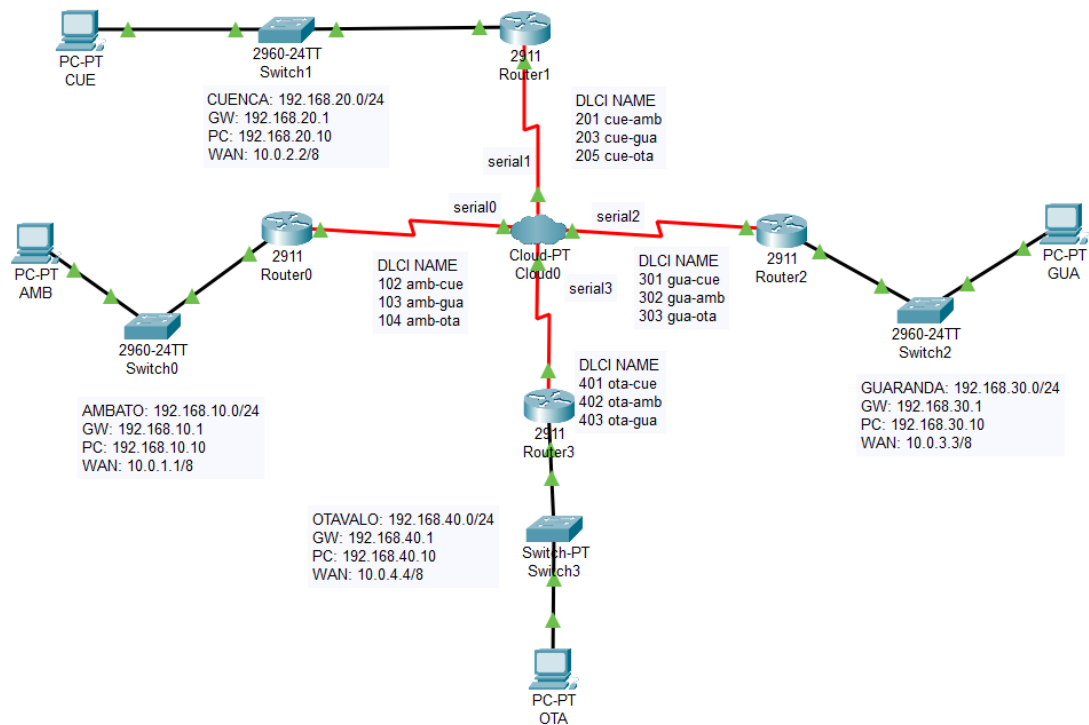


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Diseño Físico



Diseño Lógico



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UNIVERSIDAD DE LAS FUERZAS ARMADAS

INNOVACIÓN PARA LA EXCELENCIA

CUENCA

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.20.10

Subnet Mask 255.255.255.0

Default Gateway 192.168.20.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::20A:41FF:FE2D:C304

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password



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Router1

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings

ROUTING

- Static
- RIP

SWITCHING

- VLAN Database

INTERFACE

- GigabitEthernet0/0**
- GigabitEthernet0/1
- GigabitEthernet0/2
- Serial0/0/0
- Serial0/0/1

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0000.0CEA.8201

IP Configuration

IPv4 Address 192.168.20.1

Subnet Mask 255.255.255.0

Tx Ring Limit 10

Router1

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings

ROUTING

- Static
- RIP

SWITCHING

- VLAN Database

INTERFACE

- GigabitEthernet0/0
- GigabitEthernet0/1
- GigabitEthernet0/2
- Serial0/0/0**
- Serial0/0/1

Serial0/0/0

Port Status ☒ On

Duplex ☒ Full Duplex

Clock Rate 2000000

IP Configuration

IPv4 Address 10.0.2.2

Subnet Mask 255.0.0.0

Tx Ring Limit 10



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AMBATO

Physical Config **Desktop** Programming Attributes

IP Configuration [X]

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.10.10

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.10.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::20C:CFFF:FE9C:18A3

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

Router0

Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/2

Serial0/0/0

Serial0/0/1

GigabitEthernet0/0

Port Status: ☒ On

Bandwidth: ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex: ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address: 0060.7092.7A01

IP Configuration

IPv4 Address: 192.168.10.1

Subnet Mask: 255.255.255.0

Tx Ring Limit: 10



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Router0

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings

ROUTING

- Static
- RIP

SWITCHING

- VLAN Database

INTERFACE

- GigabitEthernet0/0
- GigabitEthernet0/1
- GigabitEthernet0/2
- Serial0/0/0**
- Serial0/0/1

Serial0/0/0

Port Status ☒ On

Duplex ☐ Full Duplex

Clock Rate 2000000

IP Configuration

IPv4 Address 10.0.1.1

Subnet Mask 255.0.0.0

Tx Ring Limit 10

GUARANDA

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.30.10

Subnet Mask 255.255.255.0

Default Gateway 192.168.30.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::202:17FF:FE3A:4B36

Default Gateway

DNS Server



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INNOVACIÓN PARA LA EXCELENCIA

Router2

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings

ROUTING

- Static
- RIP

SWITCHING

- VLAN Database

INTERFACE

- GigabitEthernet0/0**
- GigabitEthernet0/1
- GigabitEthernet0/2
- Serial0/0/0
- Serial0/0/1

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0003.E4DE.1B01

IP Configuration

IPv4 Address 192.168.30.1

Subnet Mask 255.255.255.0

Tx Ring Limit 10

Router2

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings

ROUTING

- Static
- RIP

SWITCHING

- VLAN Database

INTERFACE

- GigabitEthernet0/0
- GigabitEthernet0/1
- GigabitEthernet0/2
- Serial0/0/0**
- Serial0/0/1

Serial0/0/0

Port Status ☒ On

Duplex ☒ Full Duplex

Clock Rate 2000000

IP Configuration

IPv4 Address 10.0.3.3

Subnet Mask 255.0.0.0

Tx Ring Limit 10



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OTAVALO

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP

☒ Static

IPv4 Address 192.168.40.10

Subnet Mask 255.255.255.0

Default Gateway 192.168.40.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic

☒ Static

IPv6 Address /

Link Local Address FE80::207:ECFF:FEA5:B730

Default Gateway

DNS Server

802.1X

Router3

Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/2

Serial0/0/0

Serial0/0/1

GigabitEthernet0/0

Port Status

Bandwidth

Duplex

MAC Address

0060.2F78.7401

IP Configuration

IPv4 Address 192.168.40.1

Subnet Mask 255.255.255.0

Tx Ring Limit

10

☒ On
☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto
☐ Half Duplex ☒ Full Duplex ☒ Auto



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Router3

Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/2

Serial0/0/0

Serial0/0/1

Serial0/0/0

Port Status ☒ On

Duplex ☐ Full Duplex

Clock Rate 2000000

IP Configuration

IPv4 Address 10.0.4.4

Subnet Mask 255.0.0.0

Tx Ring Limit 10

Configuración Frame Relay



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Cloud0

Physical **Config** Attributes

GLOBAL

- Settings
- TV Settings

CONNECTIONS

- Frame Relay
- DSL
- Cable

INTERFACE

- Serial0**
- Serial1
- Serial2
- Serial3
- Modem4
- Modem5
- Ethernet6
- Coaxial7

Frame Relay: Serial0

Port Status ☒ On

LMI Cisco

DLCI Add Name Remove

DLCI	Name
102	amb-cue
103	amb-gua
104	amb-ota

Cloud0

Physical **Config** Attributes

GLOBAL

- Settings
- TV Settings

CONNECTIONS

- Frame Relay
- DSL
- Cable

INTERFACE

- Serial0
- Serial1**
- Serial2
- Serial3
- Modem4
- Modem5
- Ethernet6
- Coaxial7

Frame Relay: Serial1

Port Status ☒ On

LMI Cisco

DLCI Add Name Remove

DLCI	Name
201	cue-amb
203	cue-gua
205	cue-ota



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INNOVACIÓN PARA LA EXCELENCIA

Cloud0

Physical **Config** Attributes

GLOBAL

- Settings
- TV Settings

CONNECTIONS

- Frame Relay
- DSL
- Cable

INTERFACE

- Serial0
- Serial1
- Serial2**
- Serial3
- Modem4
- Modem5
- Ethernet6
- Coaxial7

Frame Relay: Serial2

Port Status ☒ On

LMI Cisco

DLCI Add Name Remove

DLCI	Name
301	gua-cue
302	gua-amb
303	gua-ota

Cloud0

Physical **Config** Attributes

GLOBAL

- Settings
- TV Settings

CONNECTIONS

- Frame Relay
- DSL
- Cable

INTERFACE

- Serial0
- Serial1
- Serial2
- Serial3**
- Modem4
- Modem5
- Ethernet6
- Coaxial7

Frame Relay: Serial3

Port Status ☒ On

LMI Cisco

DLCI Add Name Remove

DLCI	Name
401	ota-cue
402	ota-amb
403	ota-gua



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Configuración Enrutamiento Estático

Router0

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/2

Serial0/0/0

Serial0/0/1

Static Routes

Network

Mask

Next Hop

Add

Network Address
192.168.20.0/24 via 10.0.2.2
192.168.30.0/24 via 10.0.3.3
192.168.40.0/24 via 10.0.4.4

Remove



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Router1

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings

ROUTING

- Static**
- RIP

SWITCHING

- VLAN Database

INTERFACE

- GigabitEthernet0/0
- GigabitEthernet0/1
- GigabitEthernet0/2
- Serial0/0/0
- Serial0/0/1

Static Routes

Network

Mask

Next Hop

Add

Network Address

192.168.10.0/24 via 10.0.1.1
192.168.30.0/24 via 10.0.3.3
192.168.40.0/24 via 10.0.4.4

Remove

Router2

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings

ROUTING

- Static**
- RIP

SWITCHING

- VLAN Database

INTERFACE

- GigabitEthernet0/0
- GigabitEthernet0/1
- GigabitEthernet0/2
- Serial0/0/0
- Serial0/0/1

Static Routes

Network

Mask

Next Hop

Add

Network Address

192.168.10.0/24 via 10.0.1.1
192.168.20.0/24 via 10.0.2.2
192.168.40.0/24 via 10.0.4.4

Remove



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Router3

Physical **Config** CLI Attributes

GLOBAL

- Settings
- Algorithm Settings
- ROUTING**
- Static
- RIP
- SWITCHING**
- VLAN Database
- INTERFACE**
- GigabitEthernet0/0
- GigabitEthernet0/1
- GigabitEthernet0/2
- Serial0/0/0
- Serial0/0/1

Static Routes

Network

Mask

Next Hop

Add

Network Address

192.168.10.0/24 via 10.0.1.1

192.168.20.0/24 via 10.0.2.2

192.168.30.0/24 via 10.0.3.3

Remove

Configuración Encapsulamiento Frame Relay

Cloud0

Physical **Config** Attributes

GLOBAL

- Settings
- TV Settings
- CONNECTIONS**
- Frame Relay
- DSL
- Cable
- INTERFACE**
- Serial0
- Serial1
- Serial2
- Serial3
- Modem4
- Modem5
- Ethernet6
- Coaxial7

Frame Relay

Serial0 amb-cue <-> Serial0 amb-cue

Port Sublink Port Sublink

	From Port	Sublink	To Port	Sublink
1	Serial0	amb-cue	Serial1	cue-amb
2	Serial0	amb-gua	Serial2	gua-amb
3	Serial0	amb-ota	Serial3	ota-amb
4	Serial1	cue-gua	Serial2	gua-cue
5	Serial1	cue-ota	Serial3	ota-cue
6	Serial2	gua-ota	Serial3	ota-gua



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Se entra a cada router y se habilita la configuración Frame-Relay con el siguiente comando:

```
Router(config)#interface serial 0/0/0
```

```
Router(config-if)#encapsulation frame-relay
```

Pruebas de Conectividad

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	AMBATO	CUENCA	ICMP		0.000	N	0	(edit)	
	Successful	AMBATO	GUARANDA	ICMP		0.000	N	1	(edit)	
	Successful	AMBATO	OTAVALO	ICMP		0.000	N	2	(edit)	

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	GUARANDA	CUENCA	ICMP		0.000	N	0	(edit)	
	Successful	GUARANDA	AMBATO	ICMP		0.000	N	1	(edit)	
	Successful	GUARANDA	OTAVALO	ICMP		0.000	N	2	(edit)	

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
	Successful	CUENCA	AMBATO	ICMP		0.000	N	0
	Successful	CUENCA	GUARANDA	ICMP		0.000	N	1
	Successful	CUENCA	OTAVALO	ICMP		0.000	N	2

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	OTAVALO	AMBATO	ICMP		0.000	N	0	(edit)	
	Successful	OTAVALO	CUENCA	ICMP		0.000	N	1	(edit)	
	Successful	OTAVALO	GUARANDA	ICMP		0.000	N	2	(edit)	