TREBALL DE RECERCA
LABORATORI CORE NETWORK

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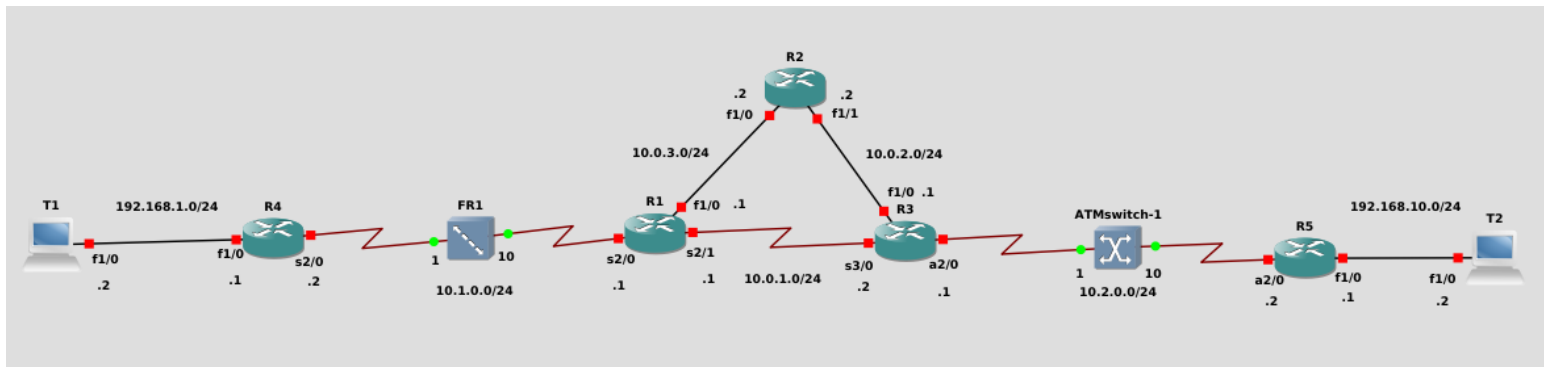
UPC – FIB   TXC – Grupo 5

Contenido

Esquema de la red desarrollada

Resultados

De T1 a T2

```
T1#traceroute 192.168.10.2

Type escape sequence to abort.
Tracing the route to 192.168.10.2

  1 192.168.1.1 12 msec 8 msec 12 msec
  2 10.1.0.1 20 msec 32 msec 28 msec
  3 10.0.1.2 52 msec 28 msec 32 msec
  4 10.2.0.2 52 msec 60 msec 60 msec
  5 192.168.10.2 72 msec 60 msec 52 msec
T1#
```

De T2 a T1

```
T2#traceroute 192.168.1.2

Type escape sequence to abort.
Tracing the route to 192.168.1.2

  1 192.168.10.1 12 msec 4 msec 8 msec
  2 10.2.0.1 20 msec 20 msec 20 msec
  3 10.0.2.2 [MPLS: Label 17 Exp 0] 60 msec 60 msec 48 msec
  4 10.0.3.1 [MPLS: Label 20 Exp 0] 40 msec 32 msec 32 msec
  5 10.1.0.2 48 msec 52 msec 48 msec
  6 192.168.1.2 60 msec 60 msec 60 msec
T2#
```

Comentarios

En general nos ha ido bastante bien, la mayoría de cuestiones que no sabía uno las sabia el otro, no hemos tenido ningún problema en realizar el trabajo y que funcionara bien. Como dato respecto a este, tuvimos un problema de entendimiento del ejercicio a la hora de realizar mpls ya que consideramos que mpls solo se debía de realizar por R3 y R1, y resulto que se tenia que hacer en los 3 routers del core network

Referencias

Ciertos comandos han sido buscados en la pagina oficial de cisco donde podíamos ver bastantes comandos sobre todo los de comprobación, algunas dudas no resueltas que preguntamos al profesor de la asignatura y nos las resolvió y dado que nos acordábamos bastante de PI no nos hemos visto comprometidos a la hora de realizar ospf.

Configuración Routers

T1
```
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname T1
!
boot-start-marker
boot-end-marker
!
no aaa new-model
no ip icmp rate-limit unreachable
!
ip cef
no ip domain lookup
!
ip tcp synwait-time 5
!
interface FastEthernet0/0
 no ip address
 shutdown
 duplex half
!
interface FastEthernet1/0
 ip address 192.168.1.2 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
!
```

```
router ospf 1
 log-adjacency-changes
 network 192.168.1.0 0.0.0.255 area 0
!
ip forward-protocol nd
ip route 0.0.0.0 0.0.0.0 192.168.1.1
!
no ip http server
no ip http secure-server
!
no cdp log mismatch duplex
!
control-plane
!
gatekeeper
 shutdown
!
line con 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line aux 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line vty 0 4
 login
!
End
```

R4

```
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R4
!
boot-start-marker
boot-end-marker
!
no aaa new-model
no ip icmp rate-limit unreachable
!
!
```

```
ip cef
no ip domain lookup
!
ip tcp synwait-time 5
!
interface Loopback0
 ip address 128.0.0.4 255.255.255.255
!
interface FastEthernet0/0
 no ip address
 shutdown
 duplex half
!
interface FastEthernet1/0
 ip address 192.168.1.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial2/0
 no ip address
 encapsulation frame-relay
 serial restart-delay 0
!
interface Serial2/0.1 point-to-point
 ip address 10.1.0.2 255.255.255.0
 frame-relay interface-dlci 100
!
interface Serial2/1
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial2/2
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial2/3
 no ip address
 shutdown
 serial restart-delay 0
!
```

```
!
router ospf 1
 log-adjacency-changes
 network 10.1.0.0 0.0.0.255 area 0
 network 128.0.0.4 0.0.0.0 area 0
 network 192.168.1.0 0.0.0.255 area 0
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
no cdp log mismatch duplex
!
control-plane
!
gatekeeper
 shutdown
!
line con 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line aux 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line vty 0 4
 login
!
End
```

R1

```
!
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
no ip icmp rate-limit unreachable
```

```
!
ip cef
no ip domain lookup
!
mpls label protocol ldp
mpls traffic-eng tunnels
!
ip tcp synwait-time 5
!
interface Loopback0
 ip address 128.0.0.1 255.255.255.255
!
interface Tunnel10
 ip unnumbered Loopback0
 tunnel destination 128.0.0.3
 tunnel mode mpls traffic-eng
 tunnel mpls traffic-eng autoroute announce
 tunnel mpls traffic-eng priority 7 7
 tunnel mpls traffic-eng bandwidth  50
 tunnel mpls traffic-eng path-option 1 explicit name LP1
 no routing dynamic
!
interface FastEthernet0/0
 no ip address
 shutdown
 duplex half
!
interface FastEthernet1/0
 ip address 10.0.3.1 255.255.255.0
 duplex auto
 speed auto
 mpls ip
 mpls traffic-eng tunnels
!
interface FastEthernet1/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial2/0
 no ip address
 encapsulation frame-relay
 serial restart-delay 0
!
interface Serial2/0.1 point-to-point
 ip address 10.1.0.1 255.255.255.0
 frame-relay interface-dlci 200
```

```
!
interface Serial2/1
 ip address 10.0.1.1 255.255.255.0
 mpls ip
 mpls traffic-eng tunnels
 serial restart-delay 0
 ip rsvp bandwidth 50
!
interface Serial2/2
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial2/3
 no ip address
 shutdown
 serial restart-delay 0
!
router ospf 1
 mpls traffic-eng router-id Loopback0
 mpls traffic-eng area 0
 log-adjacency-changes
 network 10.0.1.0 0.0.0.255 area 0
 network 10.0.3.0 0.0.0.255 area 0
 network 10.1.0.0 0.0.0.255 area 0
 network 128.0.0.1 0.0.0.0 area 0
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
ip explicit-path name LP1 enable
 next-address 10.0.1.2
 next-address 128.0.0.3
!
no cdp log mismatch duplex
!
control-plane
!
gatekeeper
 shutdown
!
!
!
!
!
!
```

```
line con 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line aux 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line vty 0 4
 login
!
End
```

R2

```
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R2
!
boot-start-marker
boot-end-marker
!
no aaa new-model
no ip icmp rate-limit unreachable
!
ip cef
no ip domain lookup
!
mpls label protocol ldp
mpls traffic-eng tunnels
!
ip tcp synwait-time 5
!
interface Loopback0
 ip address 128.0.0.2 255.255.255.255
!
!
!
!
!
!
!
!
```

```
interface FastEthernet0/0
 no ip address
 shutdown
 duplex half
!
interface FastEthernet1/0
 ip address 10.0.3.2 255.255.255.0
 duplex auto
 speed auto
 mpls ip
 mpls traffic-eng tunnels
!
interface FastEthernet1/1
 ip address 10.0.2.2 255.255.255.0
 duplex auto
 speed auto
 mpls ip
 mpls traffic-eng tunnels
!
router ospf 1
 mpls traffic-eng router-id Loopback0
 mpls traffic-eng area 0
 log-adjacency-changes
 network 10.0.2.0 0.0.0.255 area 0
 network 10.0.3.0 0.0.0.255 area 0
 network 128.0.0.2 0.0.0.0 area 0
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
no cdp log mismatch duplex
!
control-plane
!
gatekeeper
 shutdown
!
line con 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line aux 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
```

```
 stopbits 1
line vty 0 4
 login
!
end
```

R3

```
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R3
!
boot-start-marker
boot-end-marker
!
no aaa new-model
no ip icmp rate-limit unreachable
!
ip cef
no ip domain lookup
!
mpls label protocol ldp
mpls traffic-eng tunnels
!
ip tcp synwait-time 5
!
interface Loopback0
 ip address 128.0.0.3 255.255.255.255
!
interface FastEthernet0/0
 no ip address
 shutdown
 duplex half
!
interface FastEthernet1/0
 ip address 10.0.2.1 255.255.255.0
 duplex auto
 speed auto
 mpls ip
 mpls traffic-eng tunnels
!
interface FastEthernet1/1
 no ip address
 shutdown
 duplex auto
```

```
 speed auto
!
interface ATM2/0
 no ip address
 no atm ilmi-keepalive
!
interface ATM2/0.1 point-to-point
 ip address 10.2.0.1 255.255.255.0
 pvc 10/100
  protocol ip 10.2.0.2 broadcast
  encapsulation aal5snap
 !
interface Serial3/0
 ip address 10.0.1.2 255.255.255.0
 mpls ip
 mpls traffic-eng tunnels
 serial restart-delay 0
 ip rsvp bandwidth 50
!
interface Serial3/1
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial3/2
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial3/3
 no ip address
 shutdown
 serial restart-delay 0
!
router ospf 1
 mpls traffic-eng router-id Loopback0
 mpls traffic-eng area 0
 log-adjacency-changes
 network 10.0.1.0 0.0.0.255 area 0
 network 10.0.2.0 0.0.0.255 area 0
 network 10.2.0.0 0.0.0.255 area 0
 network 128.0.0.3 0.0.0.0 area 0
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
```

```
!
no cdp log mismatch duplex
!
control-plane
!
gatekeeper
 shutdown
!
line con 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line aux 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line vty 0 4
 login
!
end
```

R5

```
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R5
!
boot-start-marker
boot-end-marker
!
no aaa new-model
no ip icmp rate-limit unreachable
!
ip cef
no ip domain lookup
!
ip tcp synwait-time 5
!
interface Loopback0
 ip address 128.0.0.5 255.255.255.255
!
interface FastEthernet0/0
 no ip address
```

```
 shutdown
 duplex half
!
interface FastEthernet1/0
 ip address 192.168.10.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface ATM2/0
 no ip address
 no atm ilmi-keepalive
!
interface ATM2/0.1 point-to-point
 ip address 10.2.0.2 255.255.255.0
 pvc 10/200
  protocol ip 10.2.0.1 broadcast
  encapsulation aal5snap
 !
router ospf 1
 log-adjacency-changes
 network 10.2.0.0 0.0.0.255 area 0
 network 128.0.0.5 0.0.0.0 area 0
 network 192.168.10.0 0.0.0.255 area 0
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
no cdp log mismatch duplex
!
control-plane
!
gatekeeper
 shutdown
!
line con 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line aux 0
```

```
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line vty 0 4
 login
!
End
```

T2

```
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname T2
!
boot-start-marker
boot-end-marker
!
no aaa new-model
no ip icmp rate-limit unreachable
!
ip cef
no ip domain lookup
!
ip tcp synwait-time 5
!
interface FastEthernet0/0
 no ip address
 shutdown
 duplex half
!
interface FastEthernet1/0
 ip address 192.168.10.2 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
```

```
router ospf 1
 log-adjacency-changes
 network 192.168.10.0 0.0.0.255 area 0
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
no cdp log mismatch duplex
!

control-plane
!
gatekeeper
 shutdown
!
line con 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line aux 0
 exec-timeout 0 0
 privilege level 15
 logging synchronous
 stopbits 1
line vty 0 4
 login
!
end
```

Configuración Frame Relay

FR1 configuration

General

Name: FR1

Source

Port: 1

DLCI: 101

Destination

Port: 10

DLCI: 202

[Add] [Delete]

Mapping

Port:DLCI	Port:DLCI
1:100	10:200

[Reset] [OK] [Cancel] [Apply] [Help]

Configuración ATM

ATMswitch-1 configuration

General

Name: ATMswitch-1

☐ Use VPI only (VP tunnel)

Source

Port: 1

VPI: 0

VCI: 100

Destination

Port: 10

VPI: 0

VCI: 200

[Add] [Delete]

Mapping

Port:VPI:VCI	Port:VPI:VCI
1:10:100	10:10:200

[Reset] [OK] [Cancel] [Apply] [Help]