INSTITUTO POLITÉCNICO NACIONAL
ESCUELA SUPERIOR DE CÓMPUTO

Administración de Servicios en Red

ACL STD

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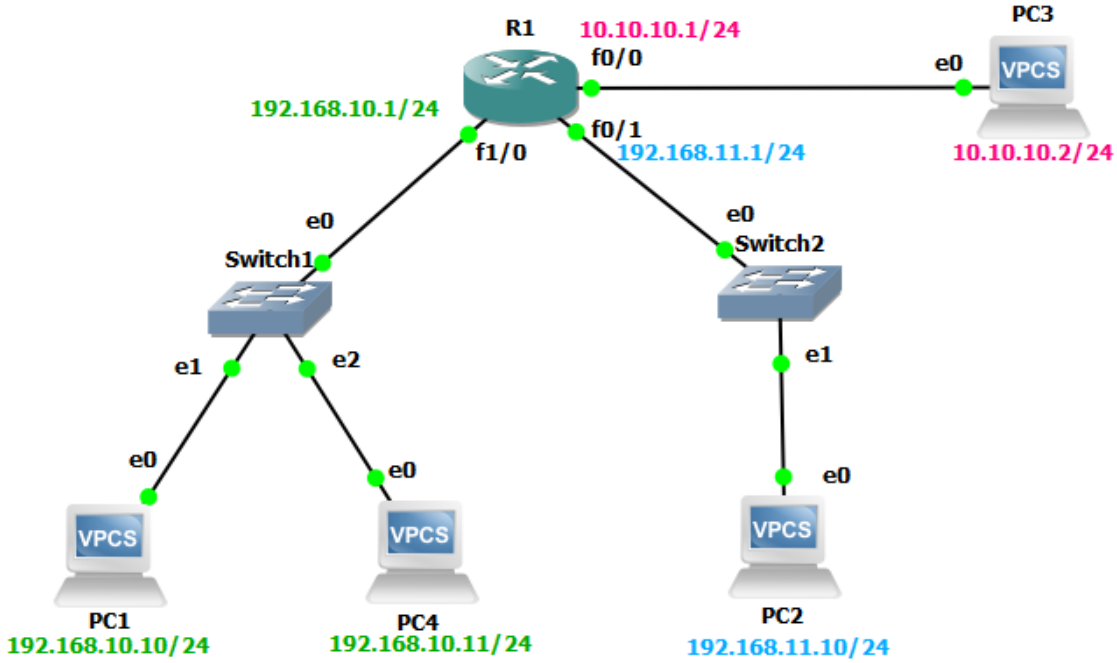

Tabla de direccionamiento

Dispositivo	Interfaces	Dirección IP	Máscara de subred	Gateway predeterminado
R1	Fa 0/0	10.10.10.1	255.255.255.0	N / A
	Fa 0/1	192.168.11.1	255.255.255.0	N / A
	Fa 1/0	192.168.10.1	255.255.255.0	N / A
PC1	E0	192.168.10.10	255.255.255.0	192.168.10.1
PC2	E0	192.168.11.10	255.255.255.0	192.168.11.1
PC3	E0	10.10.10.2	255.255.255.0	10.10.10.1
PC4	E0	192.168.10.11	255.255.255.0	192.168.10.1

Pruebas de ping antes de hacer las ACL's

Ping de PC1 a PC2:

```
PC1> ping 192.168.11.10
84 bytes from 192.168.11.10 icmp_seq=1 ttl=63 time=30.808 ms
84 bytes from 192.168.11.10 icmp_seq=2 ttl=63 time=30.329 ms
84 bytes from 192.168.11.10 icmp_seq=3 ttl=63 time=30.199 ms
84 bytes from 192.168.11.10 icmp_seq=4 ttl=63 time=30.188 ms
84 bytes from 192.168.11.10 icmp_seq=5 ttl=63 time=30.249 ms
```

Ping de PC1 a PC3:

```
PC1> ping 10.10.10.2
10.10.10.2 icmp_seq=1 timeout
10.10.10.2 icmp_seq=2 timeout
84 bytes from 10.10.10.2 icmp_seq=3 ttl=63 time=30.091 ms
84 bytes from 10.10.10.2 icmp_seq=4 ttl=63 time=30.219 ms
84 bytes from 10.10.10.2 icmp_seq=5 ttl=63 time=30.294 ms
```

Ping de PC1 a PC4:

```
PC1> ping 192.168.10.11
84 bytes from 192.168.10.11 icmp_seq=1 ttl=64 time=0.454 ms
84 bytes from 192.168.10.11 icmp_seq=2 ttl=64 time=0.614 ms
84 bytes from 192.168.10.11 icmp_seq=3 ttl=64 time=0.417 ms
84 bytes from 192.168.10.11 icmp_seq=4 ttl=64 time=0.399 ms
84 bytes from 192.168.10.11 icmp_seq=5 ttl=64 time=0.449 ms
```

Configuración de ACL's

a. Crear ACL STD con el número 10 en el R1 con una instrucción que deniegue al host 192.168.10.11 llegar a la PC2

```
R1(config)# access-list 10 deny 192.168.10.11 0.0.0.0
```

- De manera predeterminada, las listas de acceso deniegan todo el tráfico que no coincide con una regla. Para permitir el resto del tráfico, se debe configurar la siguiente instrucción:

  ```
  R1(config)# access-list 10 permit any
  ```

- Para que la ACL realmente filtre el tráfico, se debe aplicar a alguna operación del router. Para aplicar la ACL, en este caso se colocará en la interfaz serial 2/0 para el tráfico saliente.

  ```
  R1(config)# interface fa1/0
  R1(config-if)# ip access-group 10 in
  ```

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#access-list 10 deny 192.168.10.11 0.0.0.0
R1(config)#access-list 10 permit any
R1(config)#interface fa1/0
R1(config-if)#ip access-group 10 in
R1(config-if)#end
R1#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...

*Mar  1 00:00:33.639: %SYS-5-CONFIG_I: Configured from console by console[OK]
R1#
```

Prueba de ping de PC4 A PC2

```
PC4> ping 192.168.11.10
*192.168.10.1 icmp_seq=1 ttl=255 time=15.253 ms (ICMP type:3, code:13, Communication administratively prohibited)
*192.168.10.1 icmp_seq=2 ttl=255 time=15.413 ms (ICMP type:3, code:13, Communication administratively prohibited)
*192.168.10.1 icmp_seq=3 ttl=255 time=15.249 ms (ICMP type:3, code:13, Communication administratively prohibited)
*192.168.10.1 icmp_seq=4 ttl=255 time=15.276 ms (ICMP type:3, code:13, Communication administratively prohibited)
*192.168.10.1 icmp_seq=5 ttl=255 time=15.265 ms (ICMP type:3, code:13, Communication administratively prohibited)
```

Pruebas de ping de las demás PC a PC2

```
PC1>
PC1> ping 192.168.11.10
84 bytes from 192.168.11.10 icmp_seq=1 ttl=63 time=30.188 ms
84 bytes from 192.168.11.10 icmp_seq=2 ttl=63 time=30.221 ms
84 bytes from 192.168.11.10 icmp_seq=3 ttl=63 time=30.626 ms
84 bytes from 192.168.11.10 icmp_seq=4 ttl=63 time=30.205 ms
84 bytes from 192.168.11.10 icmp_seq=5 ttl=63 time=30.209 ms
```

```
PC3> ping 192.168.11.10
84 bytes from 192.168.11.10 icmp_seq=1 ttl=63 time=30.370 ms
84 bytes from 192.168.11.10 icmp_seq=2 ttl=63 time=30.305 ms
84 bytes from 192.168.11.10 icmp_seq=3 ttl=63 time=30.162 ms
84 bytes from 192.168.11.10 icmp_seq=4 ttl=63 time=30.145 ms
84 bytes from 192.168.11.10 icmp_seq=5 ttl=63 time=30.142 ms
```

Nótese que todos funcionan excepto el ping de PC4 a PC2

b. Crear una ACL con el número 20 en el R1 con una instrucción que deniegue al SEGMENTO 10.10.10.0 llegar al resto de las subredes

```
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#access-list 20 deny 10.10.10.0 0.0.0.255
R1(config)#access-list 20 permit any
R1(config)#interface fa0/1
R1(config-if)#ip access-group 20 out
R1(config-if)#exit
R1(config)#interface fa1/0
R1(config-if)#ip access-group 20 out
R1(config-if)#end
R1#copy running-config startup-config
*Mar  1 00:00:54.583: %SYS-5-CONFIG_I: Configured from console by console
R1#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
R1#
```

Pruebas finales

Una vez hechas las ACL los ping de cada PC son los siguientes:

- PC1 puede hacer ping con todas las maquinas excepto con la PC3 que esta en el segmento 10.10.10.0/24

```
PC1> ping 10.10.10.2
10.10.10.2 icmp_seq=1 timeout
10.10.10.2 icmp_seq=2 timeout
10.10.10.2 icmp_seq=3 timeout
10.10.10.2 icmp_seq=4 timeout
10.10.10.2 icmp_seq=5 timeout

PC1> ping 192.168.11.10
192.168.11.10 icmp_seq=1 timeout
192.168.11.10 icmp_seq=2 timeout
84 bytes from 192.168.11.10 icmp_seq=3 ttl=63 time=30.253 ms
84 bytes from 192.168.11.10 icmp_seq=4 ttl=63 time=30.191 ms
84 bytes from 192.168.11.10 icmp_seq=5 ttl=63 time=30.151 ms

PC1> ping 192.168.10.11
84 bytes from 192.168.10.11 icmp_seq=1 ttl=64 time=1.337 ms
84 bytes from 192.168.10.11 icmp_seq=2 ttl=64 time=0.523 ms
84 bytes from 192.168.10.11 icmp_seq=3 ttl=64 time=0.429 ms
84 bytes from 192.168.10.11 icmp_seq=4 ttl=64 time=0.466 ms
84 bytes from 192.168.10.11 icmp_seq=5 ttl=64 time=0.402 ms

PC1>
```

- PC2 puede hacer ping solo a la PC1

```
PC2> ping 10.10.10.2
10.10.10.2 icmp_seq=1 timeout
10.10.10.2 icmp_seq=2 timeout
10.10.10.2 icmp_seq=3 timeout
10.10.10.2 icmp_seq=4 timeout
10.10.10.2 icmp_seq=5 timeout

PC2> ping 192.168.10.11
192.168.10.11 icmp_seq=1 timeout
192.168.10.11 icmp_seq=2 timeout
192.168.10.11 icmp_seq=3 timeout
192.168.10.11 icmp_seq=4 timeout
192.168.10.11 icmp_seq=5 timeout

PC2> ping 192.168.10.10
84 bytes from 192.168.10.10 icmp_seq=1 ttl=63 time=30.183 ms
84 bytes from 192.168.10.10 icmp_seq=2 ttl=63 time=30.240 ms
84 bytes from 192.168.10.10 icmp_seq=3 ttl=63 time=30.227 ms
84 bytes from 192.168.10.10 icmp_seq=4 ttl=63 time=30.184 ms
84 bytes from 192.168.10.10 icmp_seq=5 ttl=63 time=30.261 ms

PC2>
```

- PC3 solo puede hacer ping dentro de su misma red, en este caso, solo al router

```
PC3>
PC3> ping 10.10.10.1
84 bytes from 10.10.10.1 icmp_seq=1 ttl=255 time=15.232 ms
84 bytes from 10.10.10.1 icmp_seq=2 ttl=255 time=15.203 ms
84 bytes from 10.10.10.1 icmp_seq=3 ttl=255 time=15.216 ms
84 bytes from 10.10.10.1 icmp_seq=4 ttl=255 time=15.174 ms
84 bytes from 10.10.10.1 icmp_seq=5 ttl=255 time=15.229 ms

PC3> ping 192.168.11.10
*10.10.10.1 icmp_seq=1 ttl=255 time=15.036 ms (ICMP type:3, code:13, Communication administratively prohibited)
*10.10.10.1 icmp_seq=2 ttl=255 time=15.189 ms (ICMP type:3, code:13, Communication administratively prohibited)
*10.10.10.1 icmp_seq=3 ttl=255 time=15.128 ms (ICMP type:3, code:13, Communication administratively prohibited)
*10.10.10.1 icmp_seq=4 ttl=255 time=15.241 ms (ICMP type:3, code:13, Communication administratively prohibited)
*10.10.10.1 icmp_seq=5 ttl=255 time=15.230 ms (ICMP type:3, code:13, Communication administratively prohibited)

PC3> ping 192.168.10.11
*10.10.10.1 icmp_seq=1 ttl=255 time=15.164 ms (ICMP type:3, code:13, Communication administratively prohibited)
*10.10.10.1 icmp_seq=2 ttl=255 time=15.167 ms (ICMP type:3, code:13, Communication administratively prohibited)
*10.10.10.1 icmp_seq=3 ttl=255 time=15.385 ms (ICMP type:3, code:13, Communication administratively prohibited)
*10.10.10.1 icmp_seq=4 ttl=255 time=15.255 ms (ICMP type:3, code:13, Communication administratively prohibited)
*10.10.10.1 icmp_seq=5 ttl=255 time=15.149 ms (ICMP type:3, code:13, Communication administratively prohibited)

PC3> ping 192.168.10.10
*10.10.10.1 icmp_seq=1 ttl=255 time=15.115 ms (ICMP type:3, code:13, Communication administratively prohibited)
*10.10.10.1 icmp_seq=2 ttl=255 time=15.700 ms (ICMP type:3, code:13, Communication administratively prohibited)
*10.10.10.1 icmp_seq=3 ttl=255 time=15.142 ms (ICMP type:3, code:13, Communication administratively prohibited)
*10.10.10.1 icmp_seq=4 ttl=255 time=15.164 ms (ICMP type:3, code:13, Communication administratively prohibited)
*10.10.10.1 icmp_seq=5 ttl=255 time=15.345 ms (ICMP type:3, code:13, Communication administratively prohibited)

PC3>
```

- PC4 puedes hacer solo ping a la PC1

```
PC4> ping 10.10.10.2
*192.168.10.1 icmp_seq=1 ttl=255 time=15.482 ms (ICMP type:3, code:13, Communication administratively prohibited)
*192.168.10.1 icmp_seq=2 ttl=255 time=15.298 ms (ICMP type:3, code:13, Communication administratively prohibited)
*192.168.10.1 icmp_seq=3 ttl=255 time=15.250 ms (ICMP type:3, code:13, Communication administratively prohibited)
*192.168.10.1 icmp_seq=4 ttl=255 time=15.271 ms (ICMP type:3, code:13, Communication administratively prohibited)
*192.168.10.1 icmp_seq=5 ttl=255 time=15.198 ms (ICMP type:3, code:13, Communication administratively prohibited)

PC4> ping 192.168.11.10
*192.168.10.1 icmp_seq=1 ttl=255 time=15.188 ms (ICMP type:3, code:13, Communication administratively prohibited)
*192.168.10.1 icmp_seq=2 ttl=255 time=15.220 ms (ICMP type:3, code:13, Communication administratively prohibited)
*192.168.10.1 icmp_seq=3 ttl=255 time=15.226 ms (ICMP type:3, code:13, Communication administratively prohibited)
*192.168.10.1 icmp_seq=4 ttl=255 time=15.267 ms (ICMP type:3, code:13, Communication administratively prohibited)
*192.168.10.1 icmp_seq=5 ttl=255 time=14.898 ms (ICMP type:3, code:13, Communication administratively prohibited)

PC4> ping 192.168.10.10
84 bytes from 192.168.10.10 icmp_seq=1 ttl=64 time=0.437 ms
84 bytes from 192.168.10.10 icmp_seq=2 ttl=64 time=0.452 ms
84 bytes from 192.168.10.10 icmp_seq=3 ttl=64 time=0.458 ms
84 bytes from 192.168.10.10 icmp_seq=4 ttl=64 time=0.538 ms
84 bytes from 192.168.10.10 icmp_seq=5 ttl=64 time=0.440 ms

PC4>
```