Informe de configuración de DMZ con Cisco Packet Tracer

Bootcamp de ciberseguridad (4Geeks Academy)

1. Objetivo del laboratorio

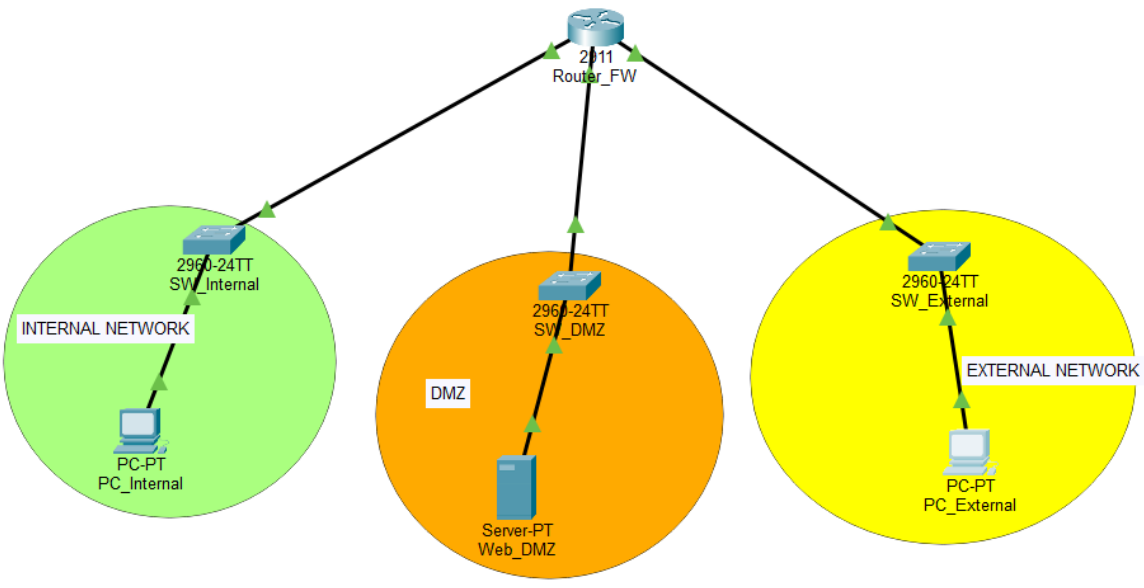
Configurar una DMZ segura y funcional en Cisco Packet Tracer utilizando un router Cisco ISR como firewall central. Se aplicó NAT estático para exponer un servidor web desde la DMZ a Internet, y ACLs extendidas para controlar estrictamente el tráfico: permitir solo HTTP desde red externa a DMZ, y bloquear completamente cualquier comunicación iniciada desde DMZ hacia LAN interna.

2. Topología implementada

Cantidad de redes: 3 subredes (/24 cada una).

Dispositivos usados: 1 Router Cisco 2911 (Router_FW), 3 Switches 2960 (Internal, DMZ, External), 1 PC_Internal, 1 Server-PT Web_DMZ, 1 PC_External.

- LAN Interna (verde, 192.168.1.0/24): Red privada segura (PC_Internal).
- DMZ (naranja, 192.168.2.0/24): Zona expuesta con servidor web público (Server_DMZ).
- Red Externa/Internet (amarillo, 192.168.3.0/24): Simulación de Internet (PC_External).

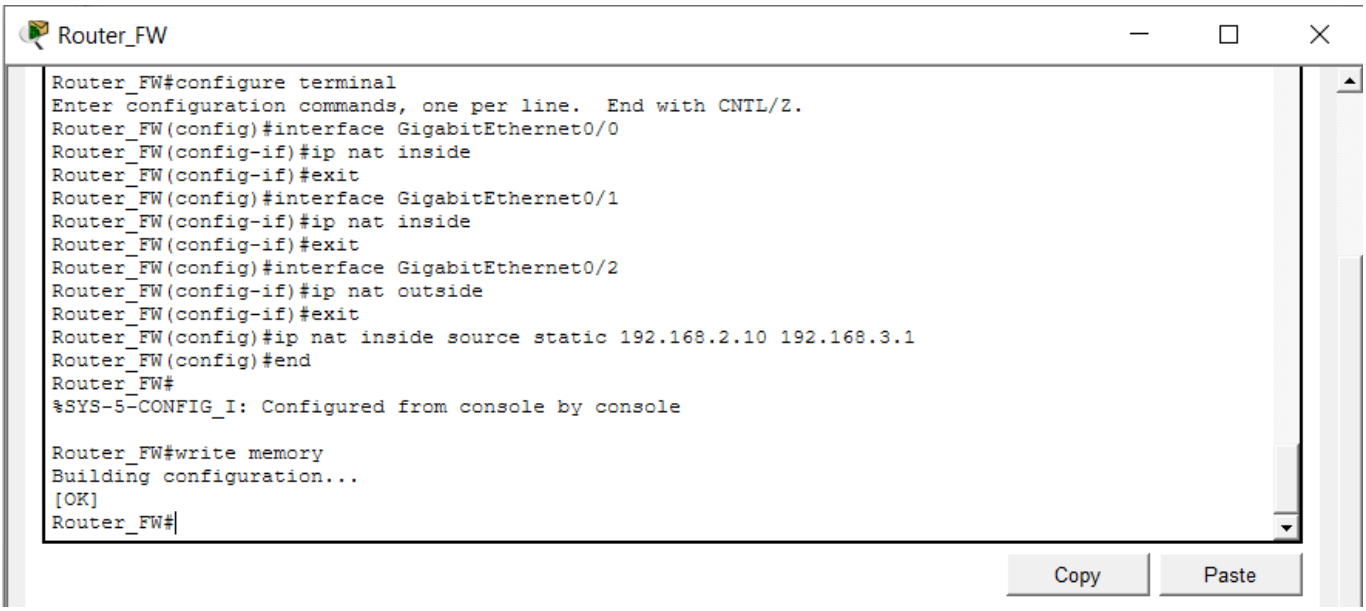


3. Plan de direccionamiento IP

Dispositivo	IP	Máscara	Gateway
PC_Internal	192.168.1.10	255.255.255.0	192.168.1.1
Server_DMZ	192.168.2.10	255.255.255.0	192.168.2.1
PC_External	192.168.3.10	255.255.255.0	192.168.3.1
Router_FW Gi0/0 (LAN)	192.168.1.1	255.255.255.0	--
Router_FW Gi0/1 (DMZ)	192.168.2.1	255.255.255.0	--
Router_FW Gi0/2 (Ext)	192.168.3.1	255.255.255.0	--

4. Configuración aplicada (resumen)

Interfaces:



interface GigabitEthernet0/0
 ip address 192.168.1.1 255.255.255.0
 ip nat inside

interface GigabitEthernet0/1
 ip address 192.168.2.1 255.255.255.0
 ip nat inside
 ip access-group DMZ_INBOUND in

interface GigabitEthernet0/2
 ip address 192.168.3.1 255.255.255.0
 ip nat outside
 ip access-group WAN_INBOUND in

NAT Estático:

ip nat inside source static 192.168.2.10 192.168.3.1

Mapeo 1:1 del servidor DMZ (privado) a IP pública del router.

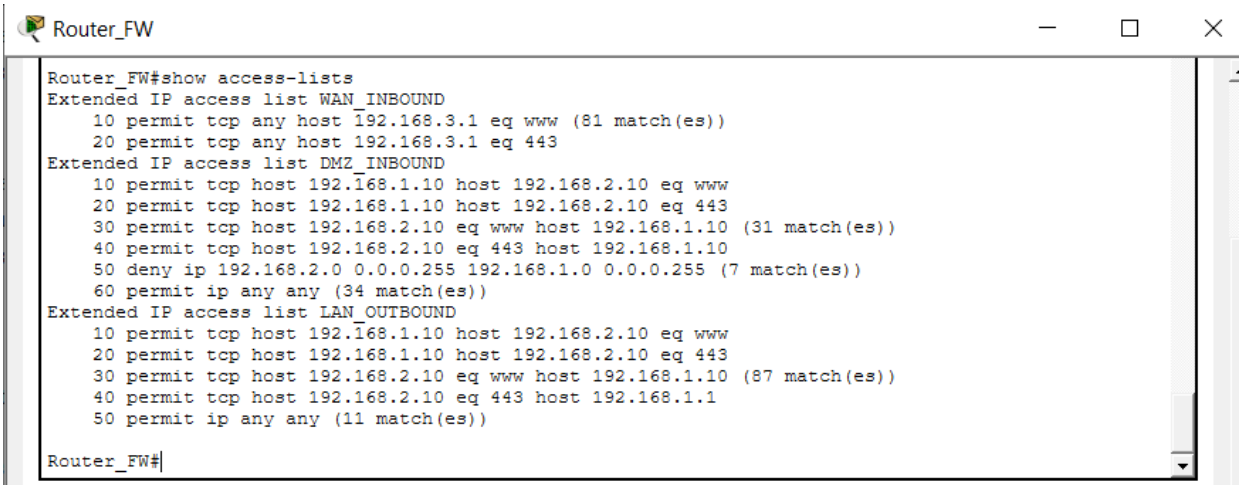
ACLs de Seguridad:

ip access-list extended WAN_INBOUND
 permit tcp any host 192.168.3.1 eq www
 permit tcp any host 192.168.3.1 eq 443

(Aplicada inbound Gi0/2: solo HTTP/HTTPS desde Internet a servidor publicado).

ip access-list extended DMZ_INBOUND
 permit tcp host 192.168.2.10 eq www host 192.168.1.10
 permit tcp host 192.168.2.10 eq 443 host 192.168.1.10
 deny ip 192.168.2.0 0.0.0.255 192.168.1.0 0.0.0.255
 permit ip any any

(Aplicada inbound Gi0/1: permite return TCP web LAN↔DMZ, bloquea TODO DMZ→LAN).



5. Verificaciones realizadas

Prueba	Resultado esperado	Resultado real
PC_Internal ping 192.168.1.1	Replies	✅ Replies
Server_DMZ ping 192.168.2.1	Replies	✅ Replies
PC_External ping 192.168.3.1	Replies	✅ Replies
PC_External web → 192.168.3.1	Página web carga	✅ Carga
PC_Internal web → 192.168.2.10	Página web carga	✅ Carga
PC_External ping 192.168.3.1	Timeout (ACL)	✅ Timeout
Server_DMZ ping 192.168.1.10	Timeout (ACL)	✅ Timeout

6. Conclusiones y recomendaciones

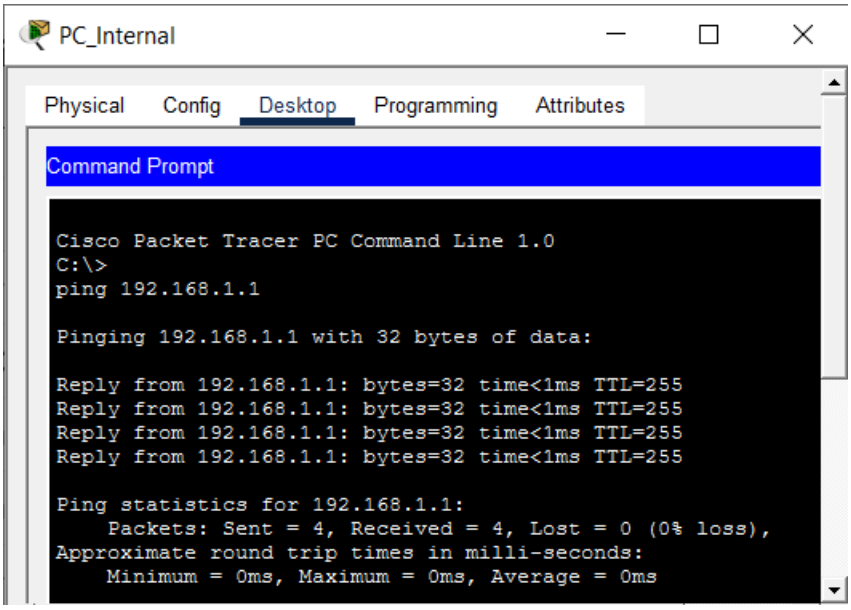
En esta práctica aprendimos que el orden de las ACLs es crítico: el deny DMZ→LAN debe ir antes de permits genéricos para bloquear ICMP. También, en Packet Tracer se necesita permitir explícitamente el tráfico de respuesta TCP desde DMZ a LAN (SYN-ACK), porque no maneja conexiones stateful automáticamente.

Este ejercicio reforzó mi comprensión de DMZ como "zona de sacrificio" en Blue Team: expone servicios públicos sin comprometer LAN interna.

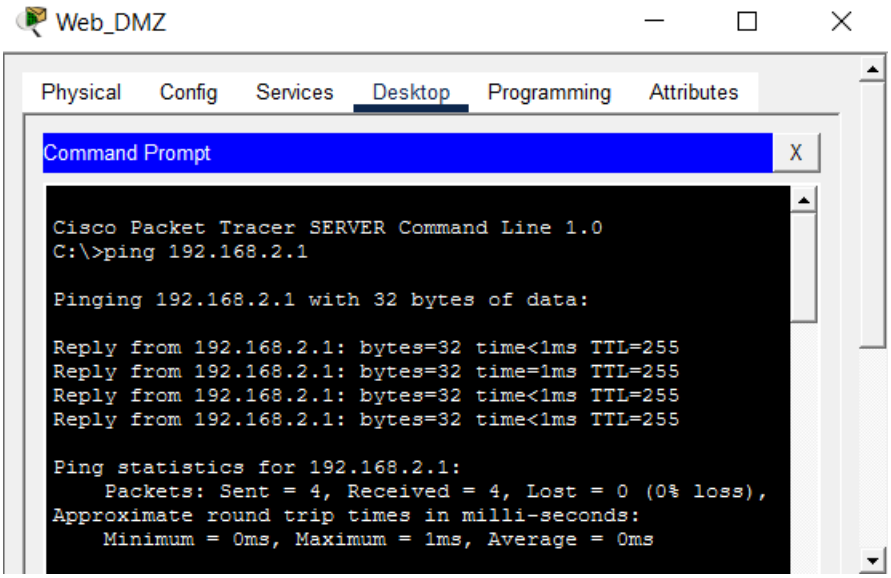
7. Capturas de evidencia

Verificaciones realizadas:

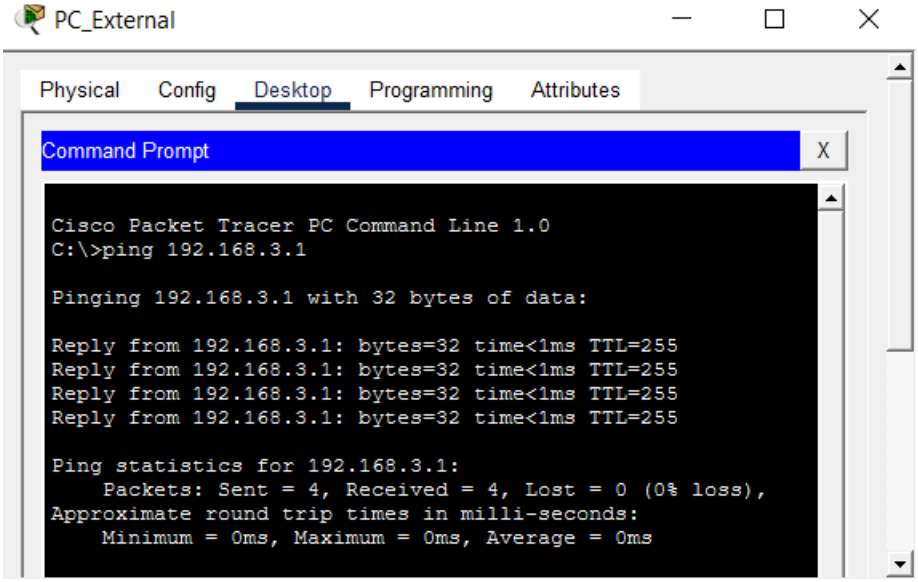
- **PC_Internal ping 192.168.1.1 (Replies)**



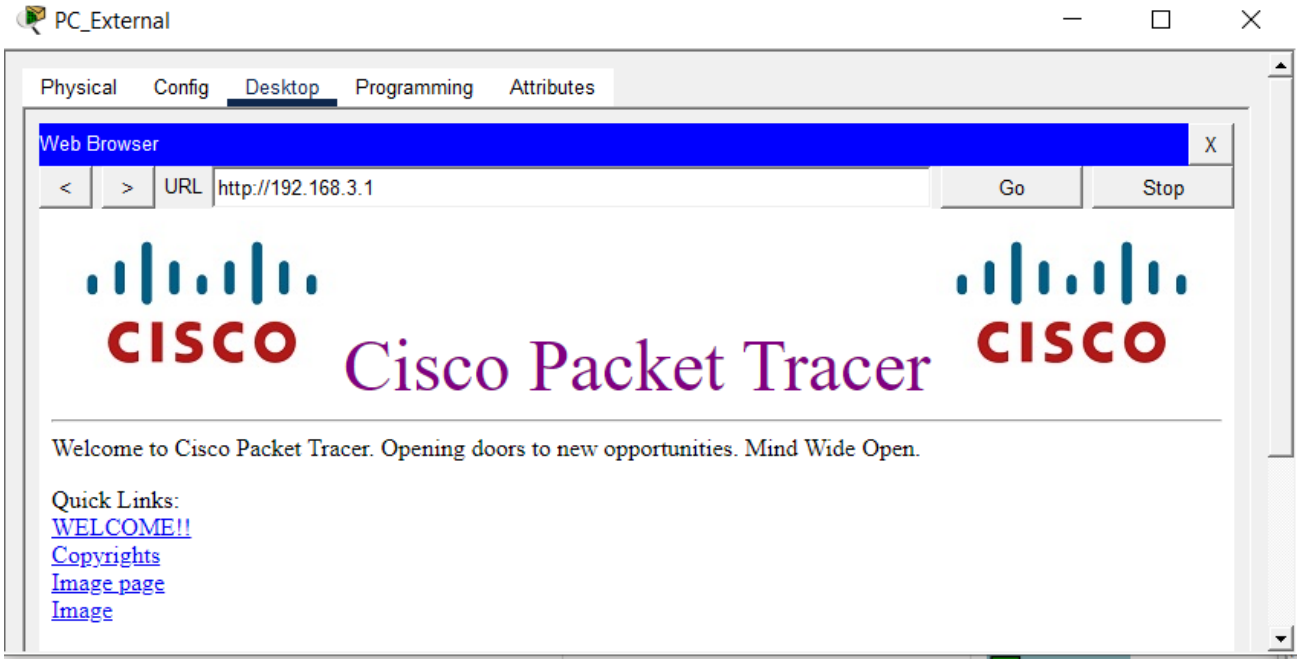
- **Server_DMZ ping 192.168.2.1 (Replies)**



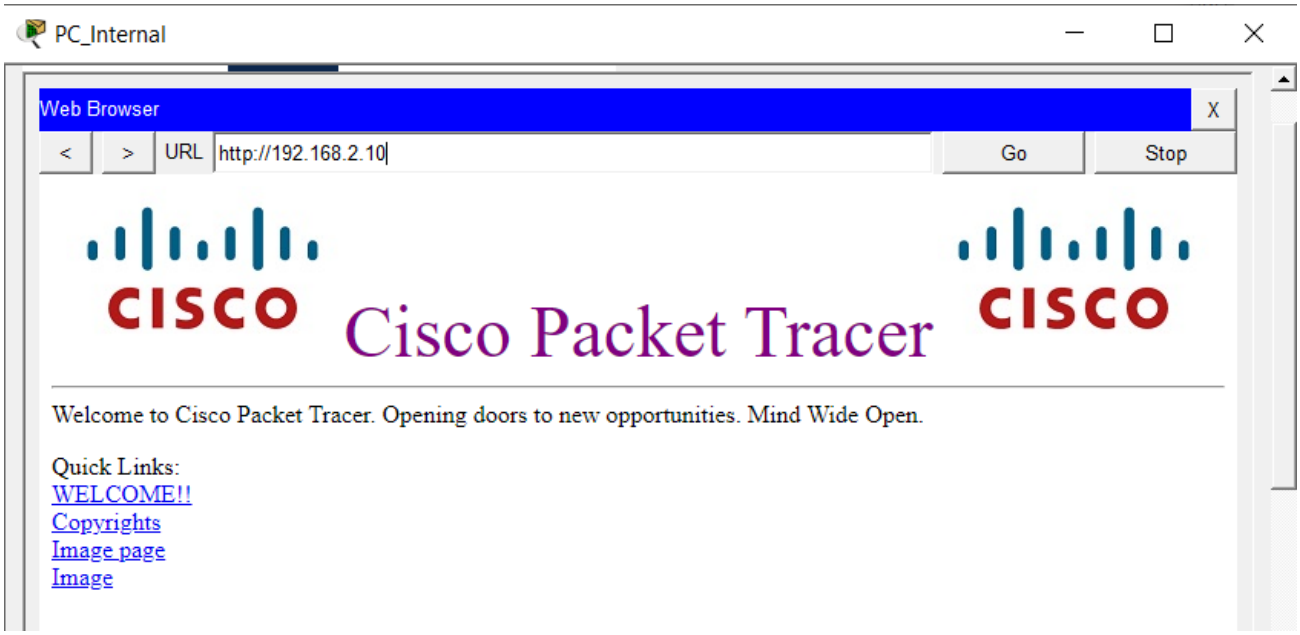
- **PC_External ping 192.168.3.1 (Replies)**



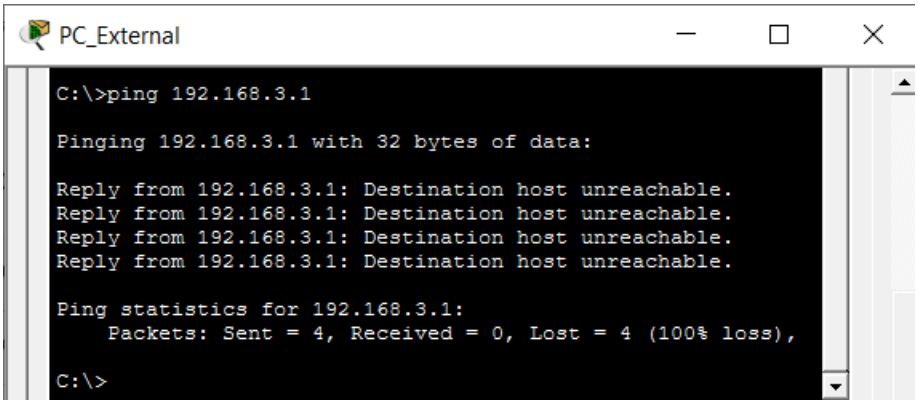
- **PC_External web → 192.168.3.1 (Página web carga)**



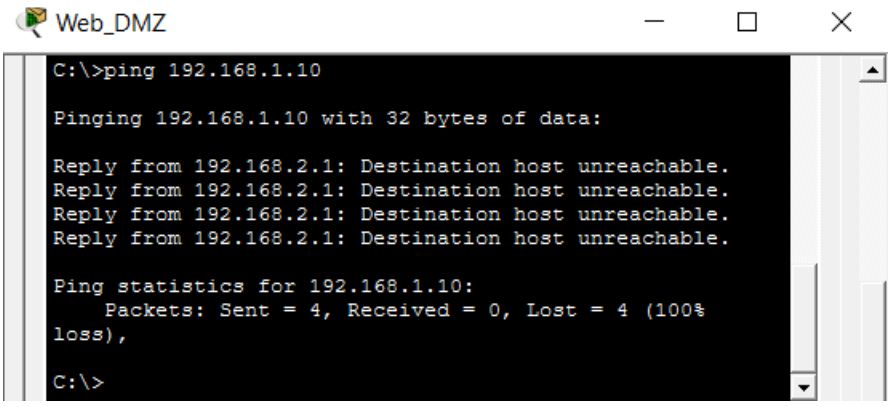
- **PC_Internal web → 192.168.2.10 (Página web carga)**



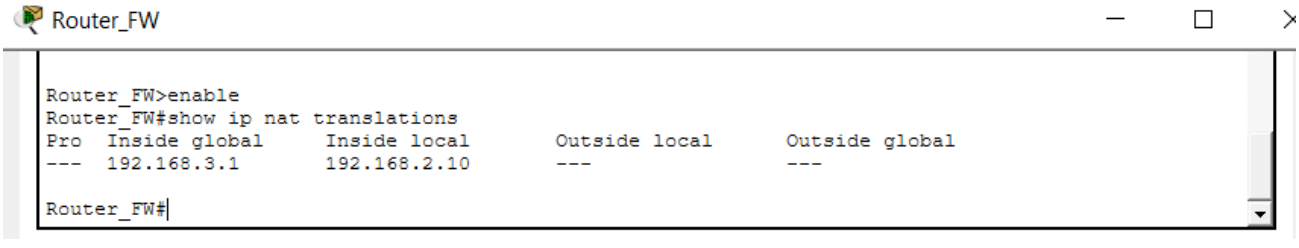
- **PC_External ping 192.168.3.1 (Timeout (ACL))**



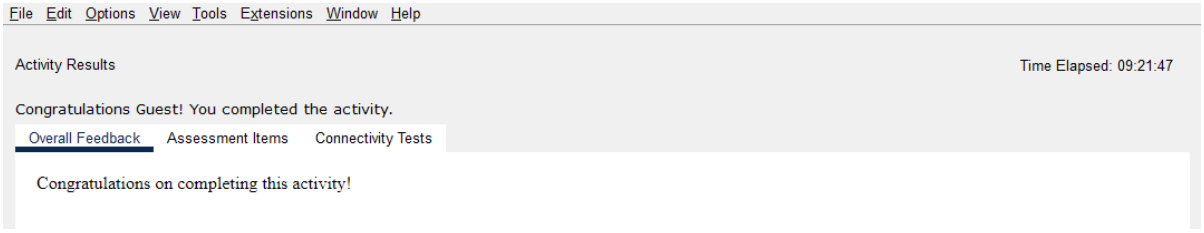
- **Server_DMZ ping 192.168.1.10 (Timeout (ACL))**

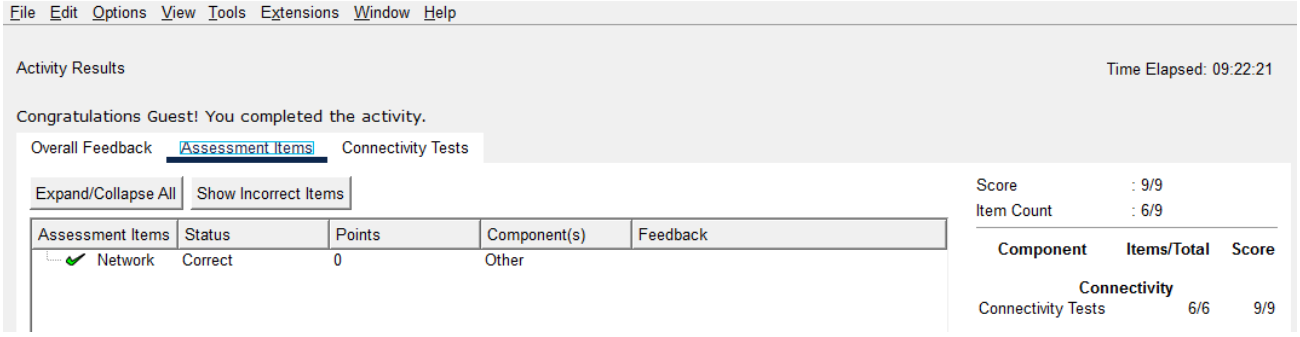


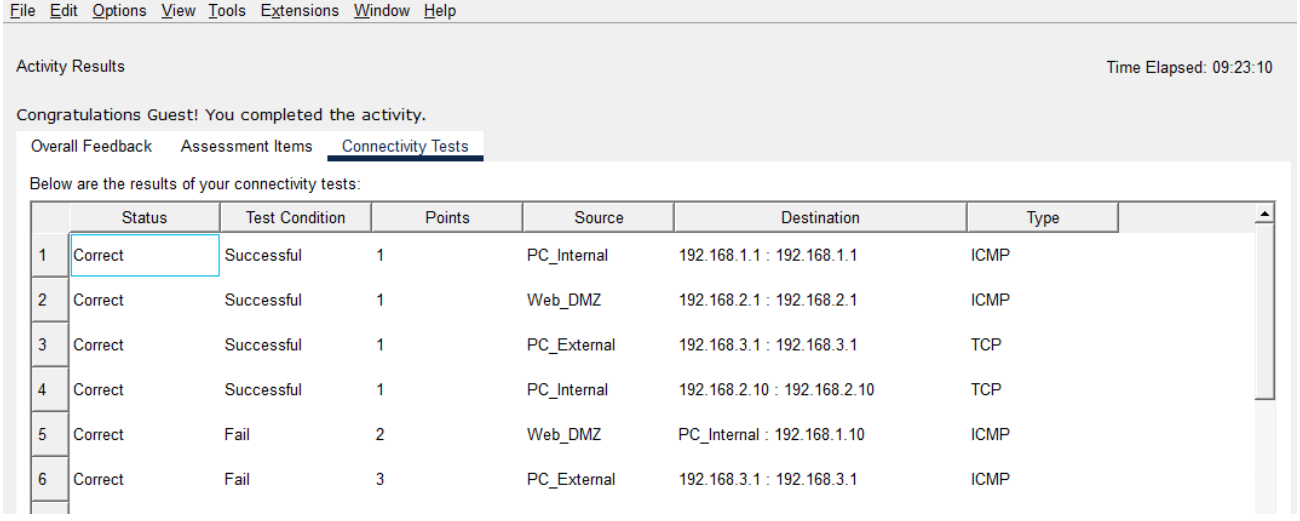
- **Confirmar que la NAT funcional**



- **Resultado de Check Results**


File Edit Options View Tools Extensions Window Help
Activity Results
Time Elapsed: 09:21:47
Congratulations Guest! You completed the activity.
Overall Feedback
Assessment Items
Connectivity Tests
Congratulations on completing this activity!


File Edit Options View Tools Extensions Window Help
Activity Results
Time Elapsed: 09:22:21
Congratulations Guest! You completed the activity.
Overall Feedback
Assessment Items
Connectivity Tests
Expand/Collapse All
Show Incorrect Items
Assessment Items
Status
Points
Component(s)
Feedback
Network
Correct
0
Other
Score : 9/9
Item Count : 6/9
Component
Items/Total
Score
Connectivity
Connectivity Tests
6/6
9/9


File Edit Options View Tools Extensions Window Help
Activity Results
Time Elapsed: 09:23:10
Congratulations Guest! You completed the activity.
Overall Feedback
Assessment Items
Connectivity Tests
Below are the results of your connectivity tests:
Status
Test Condition
Points
Source
Destination
Type
1 Correct Successful 1 PC_Internal 192.168.1.1 : 192.168.1.1 ICMP
2 Correct Successful 1 Web_DMZ 192.168.2.1 : 192.168.2.1 ICMP
3 Correct Successful 1 PC_External 192.168.3.1 : 192.168.3.1 TCP
4 Correct Successful 1 PC_Internal 192.168.2.10 : 192.168.2.10 TCP
5 Correct Fail 2 Web_DMZ PC_Internal : 192.168.1.10 ICMP
6 Correct Fail 3 PC_External 192.168.3.1 : 192.168.3.1 ICMP