Esempio di configurazione di una connessione VPN tramite un router firewall basato su zona

Sommario

Introduzione

In questo documento viene fornito un esempio di configurazione che mostra come configurare un router con un firewall basato su zona che funziona anche come gateway VPN di accesso remoto.

Prerequisiti

Requisiti

Nessun requisito specifico previsto per questo documento.

Componenti usati

Le informazioni fornite in questo documento si basano sulle seguenti versioni software e hardware:

- Cisco IOS Router 1721
- Software Cisco IOS® versione 12.4T e successive

Le informazioni discusse in questo documento fanno riferimento a dispositivi usati in uno specifico ambiente di emulazione. Su tutti i dispositivi menzionati nel documento la configurazione è stata ripristinata ai valori predefiniti. Se la rete è operativa, valutare attentamente eventuali conseguenze derivanti dall'uso dei comandi.

Convenzioni

Fare riferimento a Cisco Technical Tips Conventions per ulteriori informazioni sulle convenzioni dei documenti.

Premesse

I firewall dei criteri basati sulle zone implementano criteri firewall unidirezionali tra gruppi di interfacce denominati zone. In questi casi vengono esaminate le zone di origine e di destinazione delle interfacce in entrata e in uscita per un criterio firewall.

Nello scenario corrente, il firewall basato su zona è configurato sul router VPN-Gateway. Consente il traffico VPN da Internet (zona esterna) alla zona autonoma. L'interfaccia del modello virtuale fa parte dell'area di protezione. La rete interna dispone di un server a cui gli utenti di Internet possono accedere una volta connessi tramite VPN ad accesso remoto che termina su router VPN-Gateway.

- Indirizzo IP del server interno—172.16.10.20
- Indirizzo IP del PC client remoto—192.168.100.10

A tutti gli utenti della rete interna è consentito un accesso illimitato a Internet. Tutto il traffico proveniente dagli utenti interni viene ispezionato al momento del passaggio dal router.

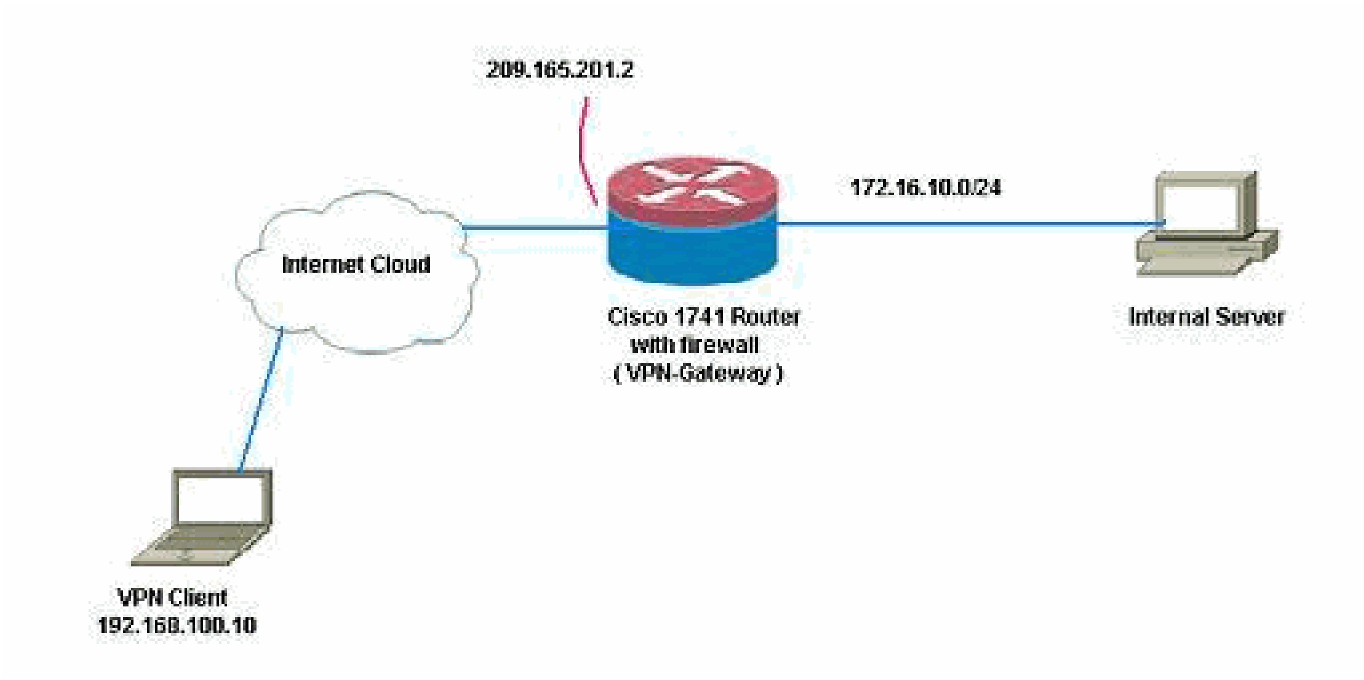
Configurazione

In questa sezione vengono presentate le informazioni necessarie per configurare le funzionalità descritte più avanti nel documento.

Nota: per ulteriori informazioni sui comandi menzionati in questa sezione, usare lo strumento di ricerca dei comandi (solo utenti registrati).

Esempio di rete

Nel documento viene usata questa impostazione di rete:



Configurazioni

Nel documento vengono usate queste configurazioni:

VPN-Gateway

```
VPN-Gateway#show run
Building configuration...

Current configuration : 3493 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname VPN-Gateway
!
boot-start-marker
boot-end-marker
!
!
aaa new-model
!
!
!--- Define local authentication aaa authentication
login default local
aaa authorization network default local
!
!!--- Output suppressed ! ! !--- Define the isakmp
policy parameters crypto isakmp policy 1
 encr 3des
 authentication pre-share
 group 2
!
crypto isakmp key cisco123 address 0.0.0.0 0.0.0.0
crypto isakmp keepalive 10
!
!!--- Define the group policy information crypto isakmp
```

```
client configuration group cisco
 key cisco
 dns 6.0.0.2
 wins 7.0.0.1
 domain cisco.com
 pool dpool
 acl 101
!!--- Define the ISAKMP profile crypto isakmp profile vi
   match identity group cisco
   isakmp authorization list default
   client configuration address respond
   virtual-template 1
!
!!--- Define the transform-set parameters crypto ipsec
transform-set set esp-3des esp-sha-hmac
!
!!--- Define the IPSec profile crypto ipsec profile vi
 set transform-set set
 set isakmp-profile vi
!
!
!
!
!
!!--- Define the local username and password username
cisco privilege 15 password 0 cisco
archive
 log config
  hidekeys
!
!
!!--- Define the Zone based firewall Class maps class-
map type inspect match-any Internet-cmap
 match protocol icmp
 match protocol tcp
 match protocol udp
 match protocol http
 match protocol https
 match protocol pop3
 match protocol pop3s
 match protocol smtp
class-map type inspect match-all ICMP-cmap
 match access-group name ICMP
class-map type inspect match-all IPSEC-cmap
 match access-group name ISAKMP_IPSEC
class-map type inspect match-all SSHaccess-cmap
 match access-group name SSHaccess
!
!!--- Define the Zone based firewall Policy maps policy-
map type inspect inside-outside-pmap
 class type inspect Internet-cmap
  inspect
 class type inspect ICMP-cmap
  inspect
 class class-default
  drop
policy-map type inspect outside-inside-pmap
 class type inspect ICMP-cmap
  inspect
 class class-default
  drop
policy-map type inspect Outside-Router-pmap
 class type inspect SSHaccess-cmap
  inspect
 class type inspect ICMP-cmap
  inspect
 class type inspect IPSEC-cmap
  pass
 class class-default
  drop
!
!!--- Define zones zone security inside
zone security outside
!
!!--- Define zone-pairs zone-pair security inside-to-
outside source inside destination outside
 service-policy type inspect inside-outside-pmap
zone-pair security outside-to-router source outside
destination self
 service-policy type inspect Outside-Router-pmap
zone-pair security outside-to-inside source outside
destination inside
 service-policy type inspect outside-inside-pmap
!
!
!
interface Ethernet0
 ip address 172.16.10.20 255.255.255.0
!!--- Define interface as part of inside zone zone-
member security inside
 half-duplex
!
interface FastEthernet0
 ip address 209.165.201.2 255.255.255.224
!!--- Define interface as part of outside zone zone-
member security outside
 speed auto
!
interface Virtual-Template1 type tunnel
 ip unnumbered FastEthernet0
!!--- Define interface as part of outside zone zone-
member security outside
 tunnel source FastEthernet0
 tunnel mode ipsec ipv4
 tunnel protection ipsec profile vi
!
!!--- Define the local pool range ip local pool dpool
5.0.0.1 5.0.0.3 ! ! !--- Output suppressed ! ip access-
list extended ICMP permit icmp any any echo permit icmp
any any echo-reply permit icmp any any traceroute ! ip
access-list extended ISAKMP_IPSEC permit udp any any eq
isakmp permit ahp any any permit esp any any permit udp
any any eq non500-isakmp ! ip access-list extended
SSHaccess permit tcp any any eq 22 ! access-list 101
permit ip 172.16.10.0 0.0.0.255 any ! ! ! control-plane
! ! line con 0 line aux 0 line vty 0 4 ! end
```

Verifica

Per verificare che la configurazione funzioni correttamente, consultare questa sezione.

Lo strumento Output Interpreter (solo utenti registrati) (OIT) supporta alcuni comandi **show**. Usare l'OIT per visualizzare un'analisi dell'output del comando **show**.

1. Per verificare lo stato dell'interfaccia, usare questo comando.

```
VPN-Gateway#show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
Ethernet0                  172.16.10.20    YES NVRAM  up                    up
FastEthernet0              209.165.201.2   YES NVRAM  up                    up
Virtual-Access1            unassigned      YES unset  down                  down
Virtual-Access2            209.165.201.2   YES TFTP   up                    up
Virtual-Template1          209.165.201.2   YES TFTP   down                  down
```

2. Utilizzare questo comando per verificare lo stato del tunnel ISAKMP.

```
VPN-Gateway#show crypto isakmp sa
IPv4 Crypto ISAKMP SA
dst             src             state          conn-id slot status
209.165.201.2   192.168.100.10  QM_IDLE           1001    0 ACTIVE

IPv6 Crypto ISAKMP SA
```

3. Utilizzare questo comando per verificare lo stato dei socket di crittografia.

```
VPN-Gateway#show crypto socket

Number of Crypto Socket connections 1

   Vi2 Peers (local/remote): 209.165.201.2/192.168.100.10
       Local Ident  (addr/mask/port/prot): (0.0.0.0/0.0.0.0/0/0)
       Remote Ident (addr/mask/port/prot): (5.0.0.1/255.255.255.255/0/0)
       IPSec Profile: "vi"
       Socket State: Open
       Client: "TUNNEL SEC" (Client State: Active)

Crypto Sockets in Listen state:
Client: "TUNNEL SEC" Profile: "vi" Map-name: "Virtual-Template1-head-0"
```

4. Verificare i gruppi attivi sul router.

```
VPN-Gateway#show crypto session summary detail
Crypto session current status

Code: C - IKE Configuration mode, D - Dead Peer Detection
K - Keepalives, N - NAT-traversal, X - IKE Extended Authentication

Interface: Virtual-Access2
Profile: vi
Group: cisco
Assigned address: 5.0.0.1
Uptime: 00:13:52
Session status: UP-ACTIVE
Peer: 192.168.100.10 port 1069 fvrf: (none) ivrf: (none)
      Phase1_id: cisco
      Desc: (none)
  IKE SA: local 209.165.201.2/500 remote 192.168.100.10/1069 Active
          Capabilities:CD connid:1001 lifetime:23:46:05
  IPSEC FLOW: permit ip 0.0.0.0/0.0.0.0 host 5.0.0.1
        Active SAs: 2, origin: crypto map
        Inbound:  #pkts dec'ed 10 drop 0 life (KB/Sec) 4520608/2767
        Outbound: #pkts enc'ed 10 drop 0 life (KB/Sec) 4520608/2767
```

5. Utilizzare questo comando per visualizzare le statistiche della mappa dei criteri del tipo di runtime inspect.

```
VPN-Gateway#show policy-map type inspect zone-pair
 Zone-pair: inside-to-outside

  Service-policy inspect : inside-outside-pmap

    Class-map: Internet-cmap (match-any)
```

```
     Match: protocol icmp
       0 packets, 0 bytes
       30 second rate 0 bps
     Match: protocol tcp
       0 packets, 0 bytes
       30 second rate 0 bps
     Match: protocol udp
       0 packets, 0 bytes
       30 second rate 0 bps
     Match: protocol http
       0 packets, 0 bytes
       30 second rate 0 bps
     Match: protocol https
       0 packets, 0 bytes
       30 second rate 0 bps
     Match: protocol pop3
       0 packets, 0 bytes
       30 second rate 0 bps
     Match: protocol pop3s
       0 packets, 0 bytes
       30 second rate 0 bps
     Match: protocol smtp
       0 packets, 0 bytes
       30 second rate 0 bps
     Inspect
       Session creations since subsystem startup or last reset 0
       Current session counts (estab/half-open/terminating) [0:0:0]
       Maxever session counts (estab/half-open/terminating) [0:0:0]
       Last session created never
       Last statistic reset never
       Last session creation rate 0
       Maxever session creation rate 0
       Last half-open session total 0

   Class-map: ICMP-cmap (match-all)
     Match: access-group name ICMP
     Inspect
       Session creations since subsystem startup or last reset 0
       Current session counts (estab/half-open/terminating) [0:0:0]
       Maxever session counts (estab/half-open/terminating) [0:0:0]
       Last session created never
       Last statistic reset never
       Last session creation rate 0
       Maxever session creation rate 0
       Last half-open session total 0

   Class-map: class-default (match-any)
     Match: any
     Drop
       0 packets, 0 bytes
Zone-pair: outside-to-router

 Service-policy inspect : Outside-Router-pmap

   Class-map: SSHaccess-cmap (match-all)
     Match: access-group name SSHaccess
     Inspect
       Session creations since subsystem startup or last reset 0
       Current session counts (estab/half-open/terminating) [0:0:0]
       Maxever session counts (estab/half-open/terminating) [0:0:0]
       Last session created never
       Last statistic reset never
       Last session creation rate 0
       Maxever session creation rate 0
```

```
        Last half-open session total 0

    Class-map: ICMP-cmap (match-all)
      Match: access-group name ICMP
      Inspect
        Packet inspection statistics [process switch:fast switch]
        icmp packets: [93:0]

        Session creations since subsystem startup or last reset 6
        Current session counts (estab/half-open/terminating) [0:0:0]
        Maxever session counts (estab/half-open/terminating) [0:2:0]
        Last session created 00:07:02
        Last statistic reset never
        Last session creation rate 0
        Maxever session creation rate 2
        Last half-open session total 0

    Class-map: IPSEC-cmap (match-all)
      Match: access-group name ISAKMP_IPSEC
      Pass
        57 packets, 7145 bytes

    Class-map: class-default (match-any)
      Match: any
      Drop
        2 packets, 44 bytes
 Zone-pair: outside-to-inside

  Service-policy inspect : outside-inside-pmap

    Class-map: ICMP-cmap (match-all)
      Match: access-group name ICMP
      Inspect
        Packet inspection statistics [process switch:fast switch]
        icmp packets: [1:14]

        Session creations since subsystem startup or last reset 2
        Current session counts (estab/half-open/terminating) [0:0:0]
        Maxever session counts (estab/half-open/terminating) [1:1:0]
        Last session created 00:09:15
        Last statistic reset never
        Last session creation rate 0
        Maxever session creation rate 1
        Last half-open session total 0

    Class-map: class-default (match-any)
      Match: any
      Drop
        0 packets, 0 bytes
```

6. Utilizzare il comando ping per verificare la connettività al server interno.

```
E:\Documents and Settings\Administrator>ping 172.16.10.20

Pinging 172.16.10.20 with 32 bytes of data:

Reply from 172.16.10.20: bytes=32 time=206ms TTL=254
Reply from 172.16.10.20: bytes=32 time=63ms TTL=254
Reply from 172.16.10.20: bytes=32 time=20ms TTL=254
Reply from 172.16.10.20: bytes=32 time=47ms TTL=254

Ping statistics for 172.16.10.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 20ms, Maximum = 206ms, Average = 84ms
```

Risoluzione dei problemi

Al momento non sono disponibili informazioni specifiche per la risoluzione dei problemi di questa configurazione.

Informazioni correlate

- Cisco IOS Firewall
- Documentazione e supporto tecnico – Cisco Systems