Configurazione di PBR con SLA IP per doppio ISP su FTD Gestito da FMC

Sommario

Introduzione

In questo documento viene descritto come configurare PBR e SLA IP su un FTD gestito da (FMC).

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Prerequisiti

Requisiti

Cisco raccomanda la conoscenza dei seguenti argomenti:

- Configurazione PBR attivata **Cisco Adaptive Security Appliance (ASA)**
- FlexConfig attivato **Firepower**
- SLA IP

Componenti usati

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

- Cisco FTD versione 7.0.0 (Build 94)
- Cisco FMC versione 7.0.0 (Build 94)

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.

Premesse

Questo documento descrive come configurare **Policy Based Routing (PBR)** insieme a **Internet Protocol Service Level Agreement (IP SLA)** su Cisco **Firepower Threat Defense (FTD)** gestito da Cisco Firepower Management Center (FMC).

Il routing tradizionale prende le decisioni di inoltro solo in base agli indirizzi IP di destinazione. Il PBR è un'alternativa ai protocolli di routing e al routing statico.

Offre un controllo più granulare sul routing in quanto consente l'uso di parametri quali gli indirizzi IP di origine o le porte di origine e di destinazione come criteri di routing oltre all'indirizzo IP di destinazione.

Gli scenari possibili per PBR includono applicazioni sensibili all'origine o traffico su collegamenti dedicati.

Insieme al PBR, è possibile implementare gli SLA IP per garantire la disponibilità dell'hop successivo. Uno SLA IP è un meccanismo che monitora la connettività end-to-end attraverso lo scambio di pacchetti regolari.

Al momento della pubblicazione, il PBR non è direttamente supportato tramite FMC **Graphical User Interface (GUI)** , la configurazione della funzionalità richiede l'utilizzo di criteri FlexConfig.

D'altra parte, solo **Internet Control Message Protocol (ICMP)** Gli SLA sono supportati dal FTD.

Nell'esempio, il PBR viene usato per instradare i pacchetti su un router **Internet Service Provider (ISP)** basato sull'indirizzo IP di origine.

Nel frattempo, uno SLA IP controlla la connettività e forza un fallback al circuito di backup in caso di guasto.

Configurazione

Esempio di rete

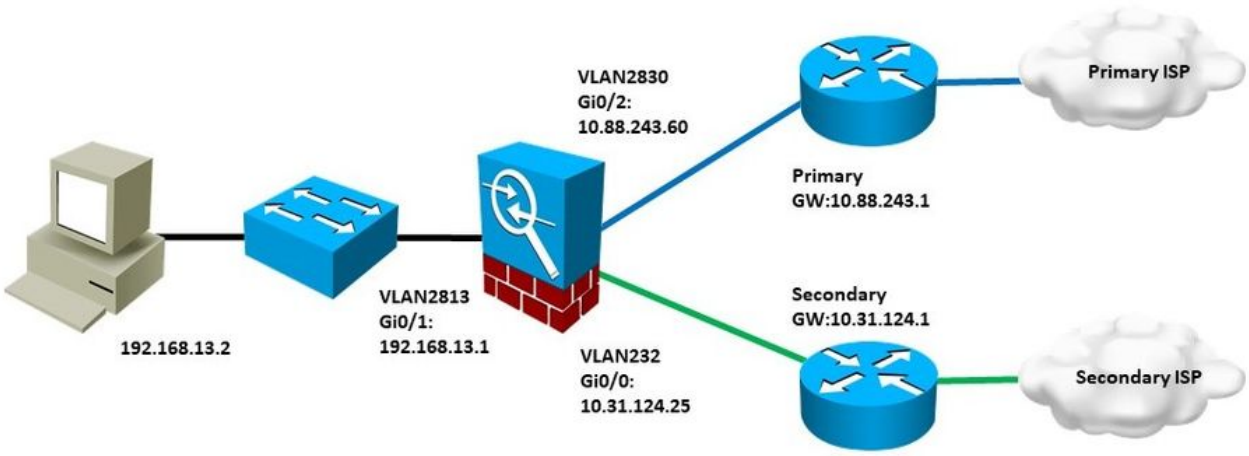
In questo esempio, il Cisco FTD ha due interfacce esterne: VLAN230 e VLAN232. Ognuno si connette a un ISP diverso.

Il traffico proveniente dalla rete interna VLAN2813 viene instradato attraverso l'ISP primario che utilizza il PBR.

La mappa del percorso PBR prende decisioni di inoltro solo in base all'indirizzo IP di origine (tutto ciò che viene ricevuto dalla VLAN2813 deve essere indirizzato a 10.88.243.1 nella VLAN230) e viene applicata all'interfaccia Gigabit Ethernet 0/1 di FTD.

Nel frattempo, FTD usa gli SLA IP per monitorare la connettività a ciascun gateway ISP. In caso di

guasto sulla VLAN230, il failover del FTD sul circuito di backup sulla VLAN232.

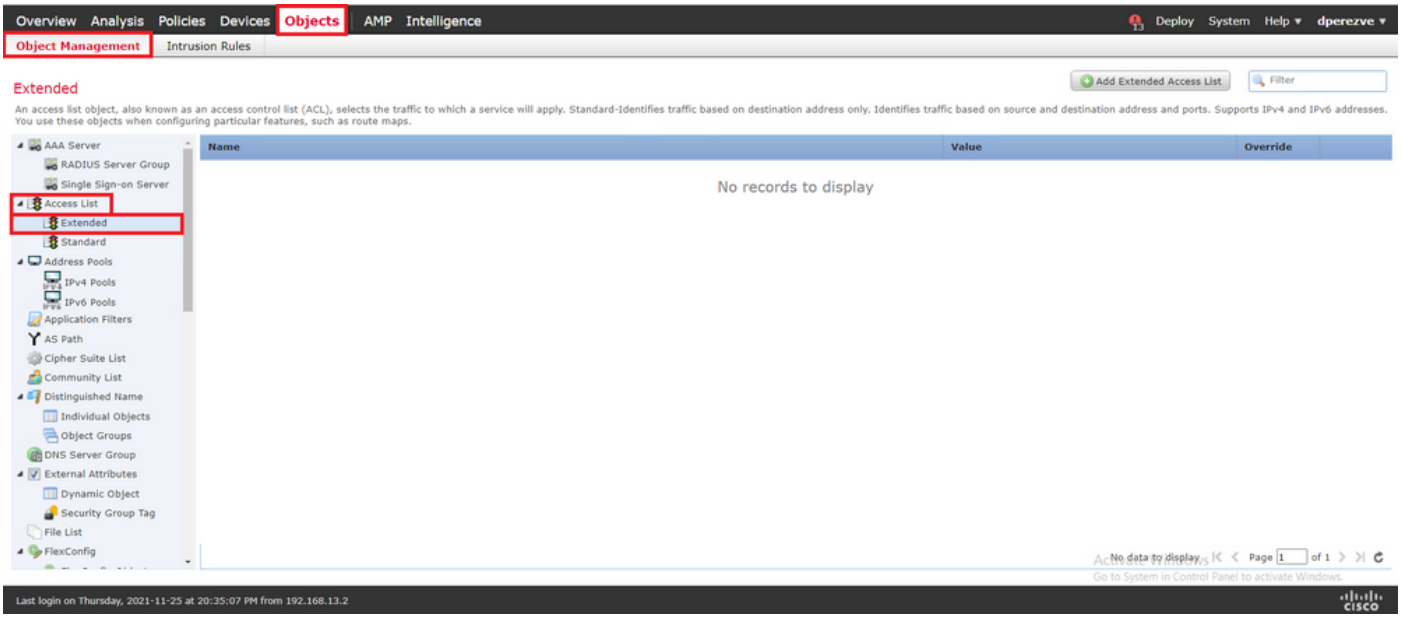


Configurazioni

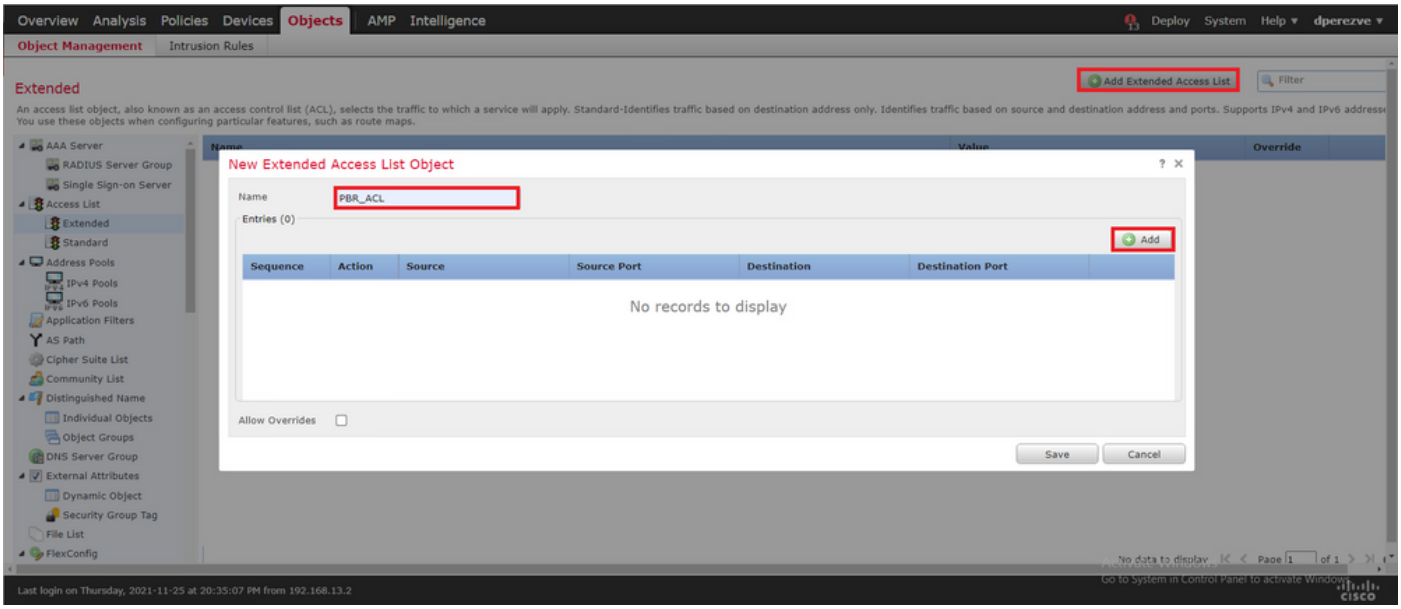
Passaggio 1. Configura elenco accessi PBR

Nel primo passaggio della configurazione PBR, definire i pacchetti che devono essere soggetti al criterio di routing. PBR utilizza le mappe di percorso e l'elenco degli accessi per identificare il traffico.

Per definire un elenco degli accessi per i criteri di corrispondenza, passare a **Objects > Object Management** e selezionare **Extended** sotto la **Access List** nel sommario.



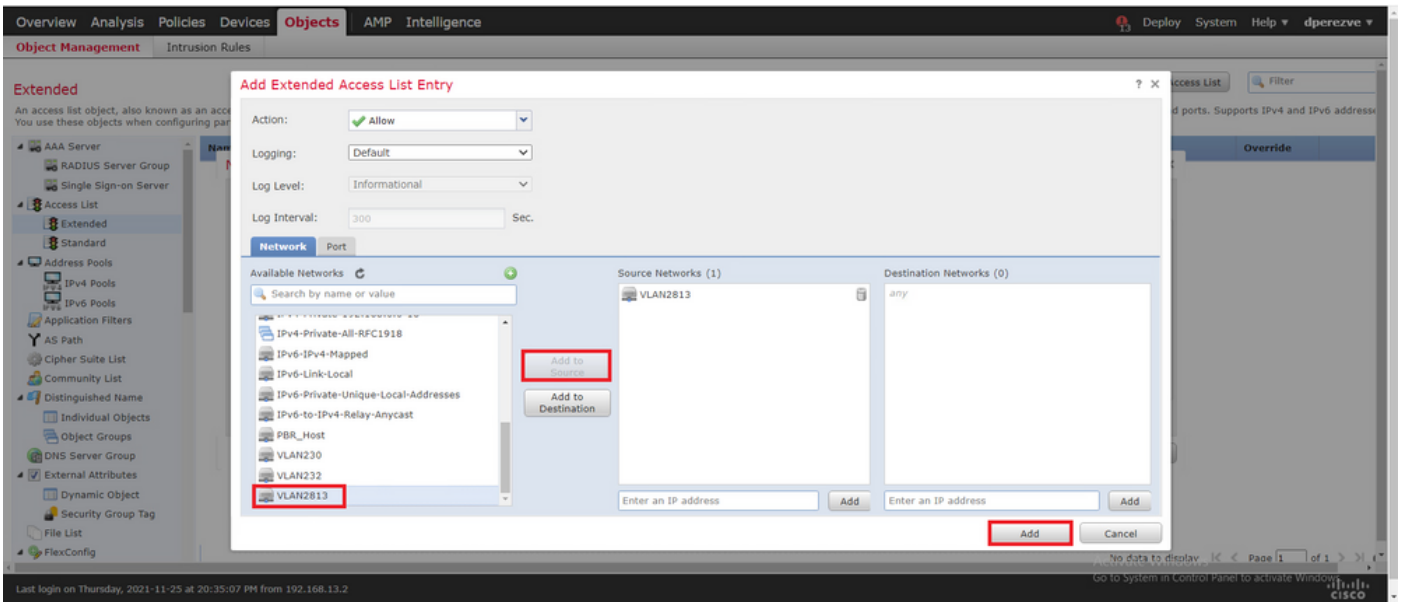
Clic **Add Extended Access List** . Nella scheda **New Extended Access List Object** , assegnare un nome all'oggetto, quindi selezionare la **Add** per iniziare con la configurazione dell'elenco degli accessi.



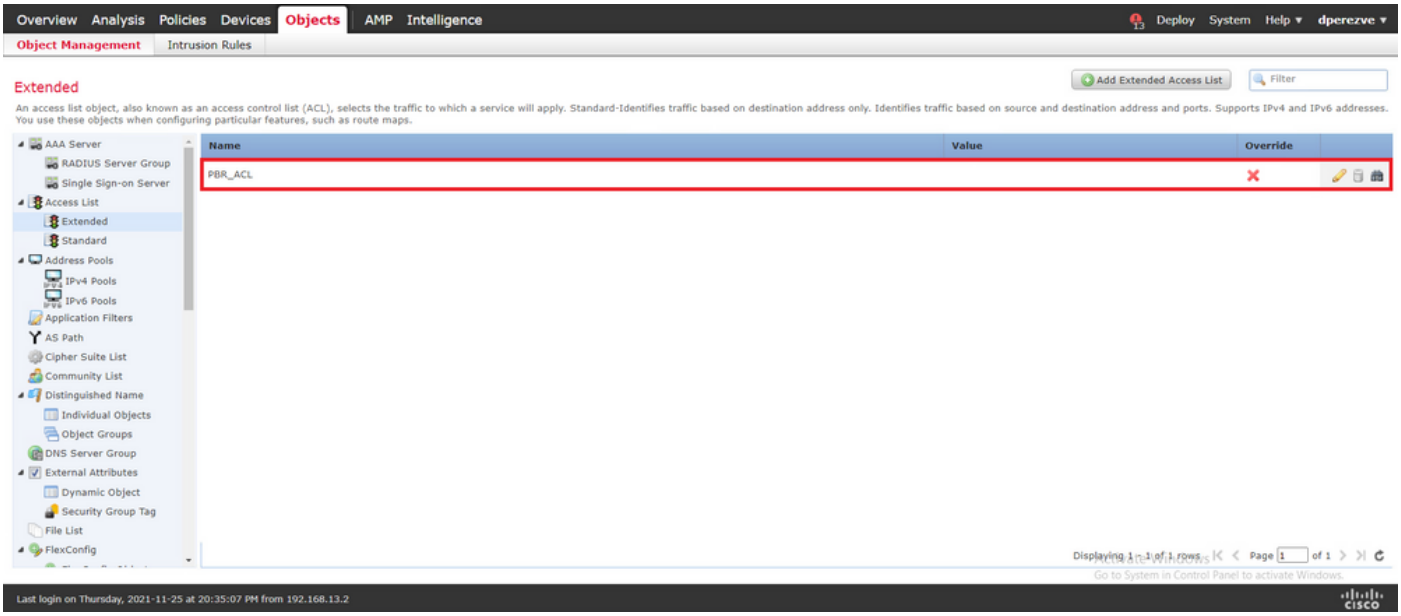
Nella scheda **Add Extended Access List Entry** selezionare l'oggetto che rappresenta la rete interna, in questo caso VLAN2813.

Clic **Add to Source** per definirla come origine dell'elenco degli accessi.

Clic **Add** per creare la voce.



Clic **Save** . L'oggetto deve essere aggiunto all'elenco degli oggetti.

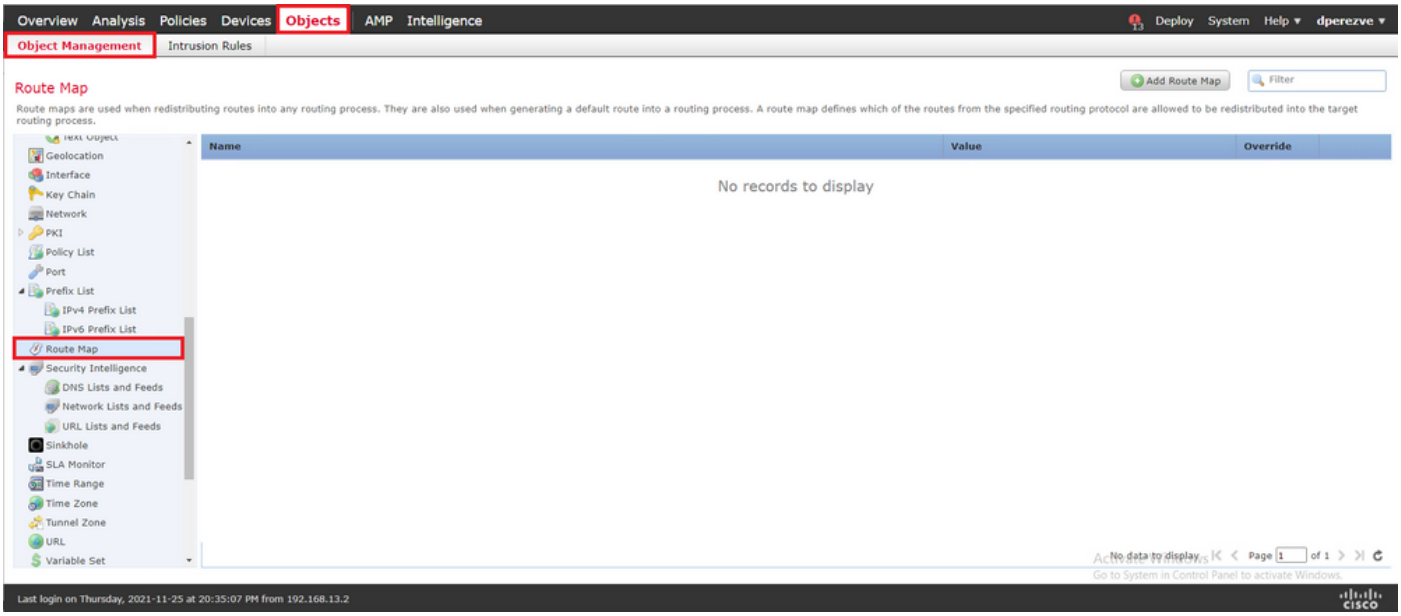


Passaggio 2. Configura mappa route PBR

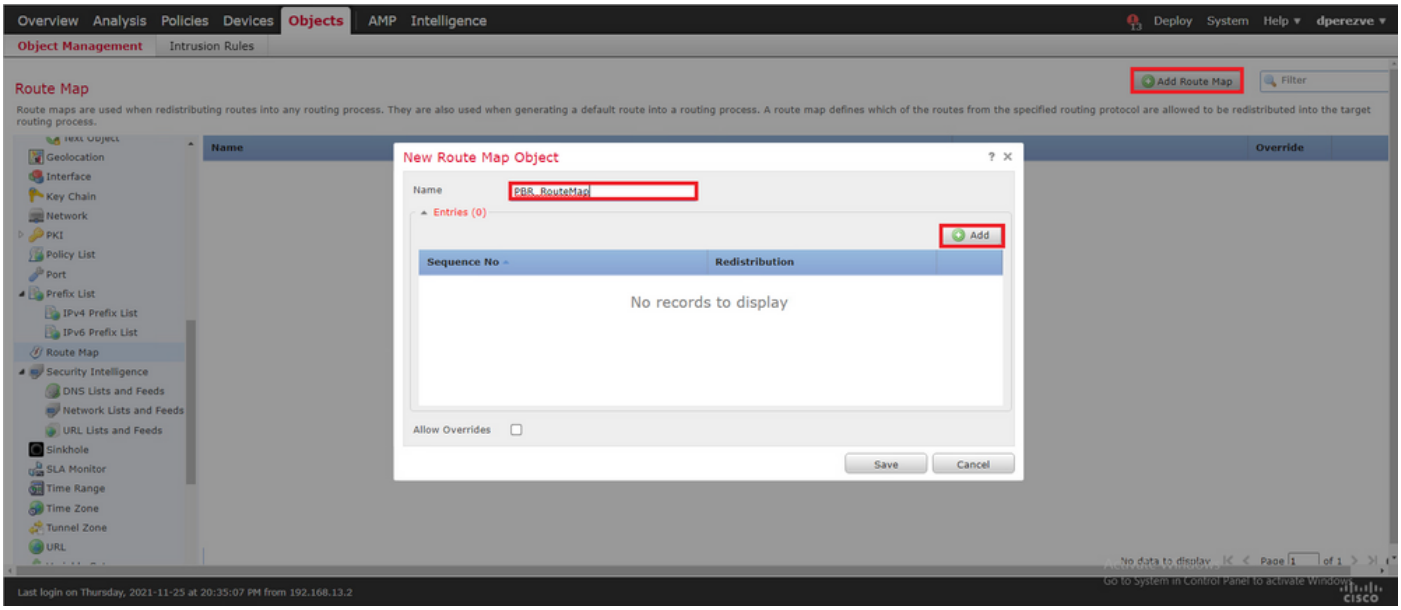
Dopo aver configurato l'elenco degli accessi PBR, assegnarlo a una mappa dei percorsi. La mappa dei percorsi valuta il traffico in base alle clausole di corrispondenza definite nell'elenco degli accessi.

Dopo una corrispondenza, la mappa route esegue le azioni definite nel criterio di routing.

Per definire la mappa del ciclo di lavorazione, passare a **Objects > Object Management** e selezionare **Route Map** nel sommario.



Clic **Add Route Map** >. Nella scheda **New Route Map Object** assegnare un nome all'oggetto, quindi fare clic su **Add** per creare una nuova voce mappa ciclo di lavorazione.



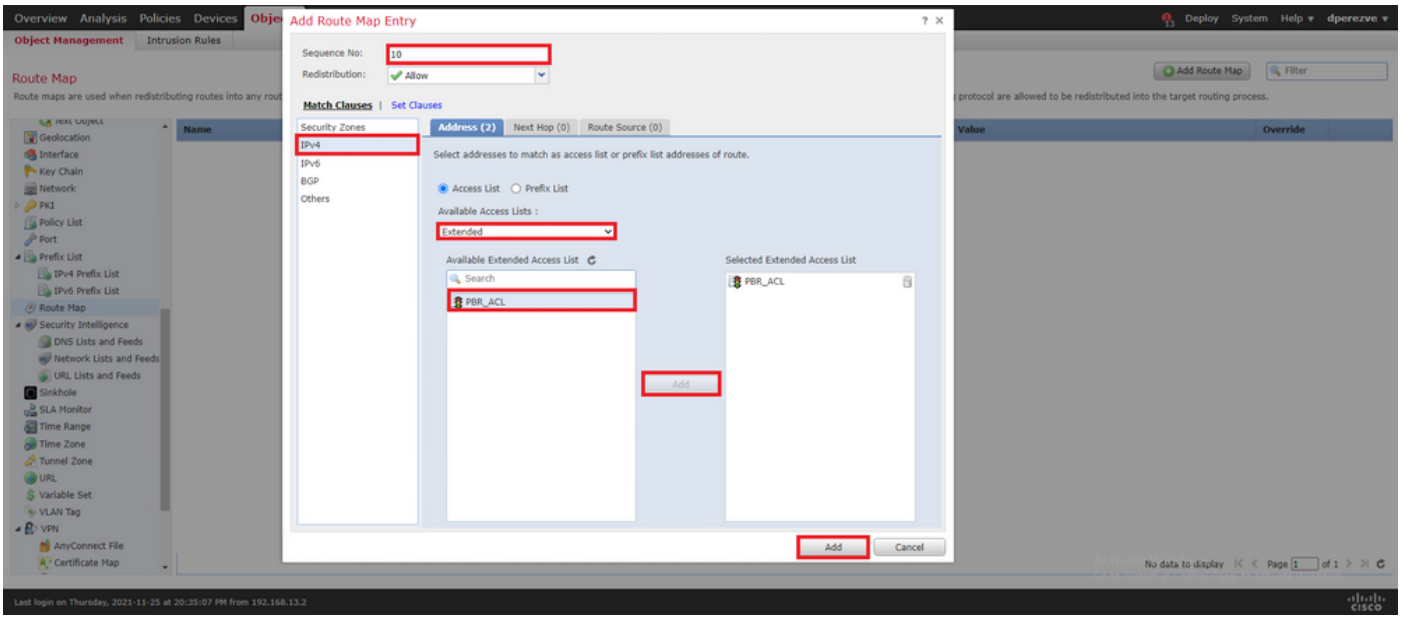
Nella scheda **Add Route Map Entry** definire un numero di sequenza per la posizione della nuova voce.

Passa a **IPv4 > Match Clauses** e selezionare **Esteso** (Extended) nel campo **Available Access List** menu a discesa.

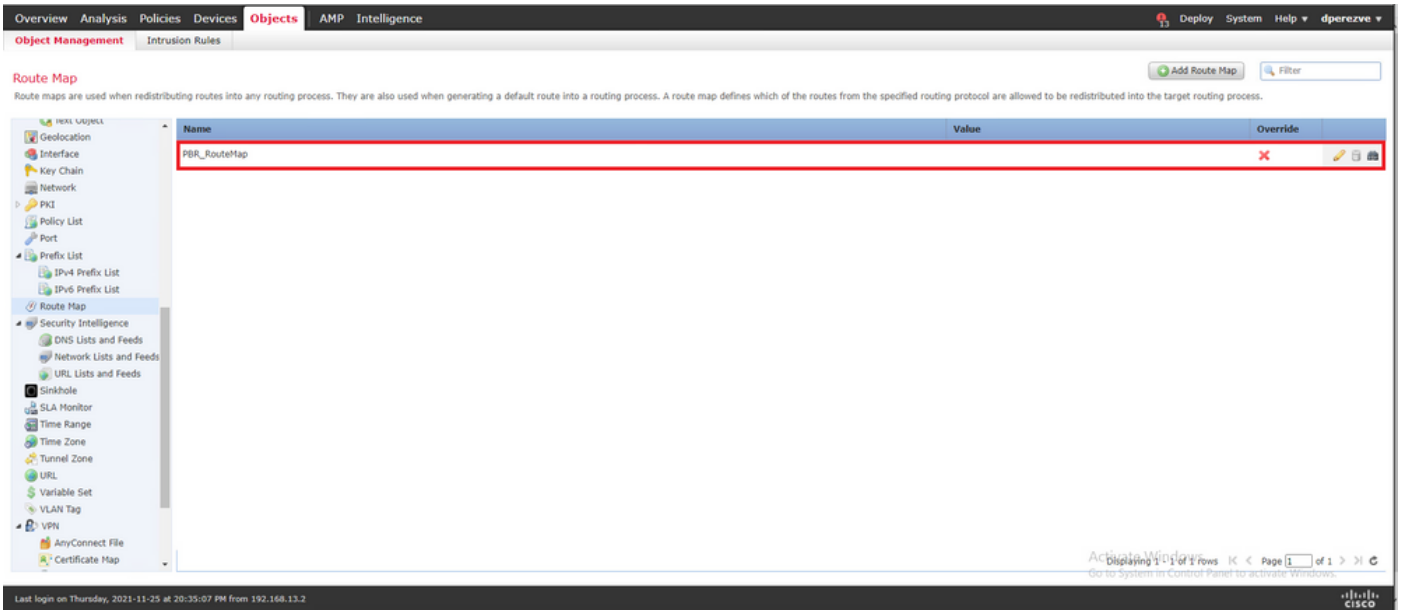
Selezionare l'oggetto dell'elenco degli accessi creato nel passaggio 1.

Clic **Add** per creare la voce.

> **Nota**: FTD supporta fino a 65536 voci diverse (da 0 a 65535). Più basso è il numero, più alta è la valutazione della priorità.



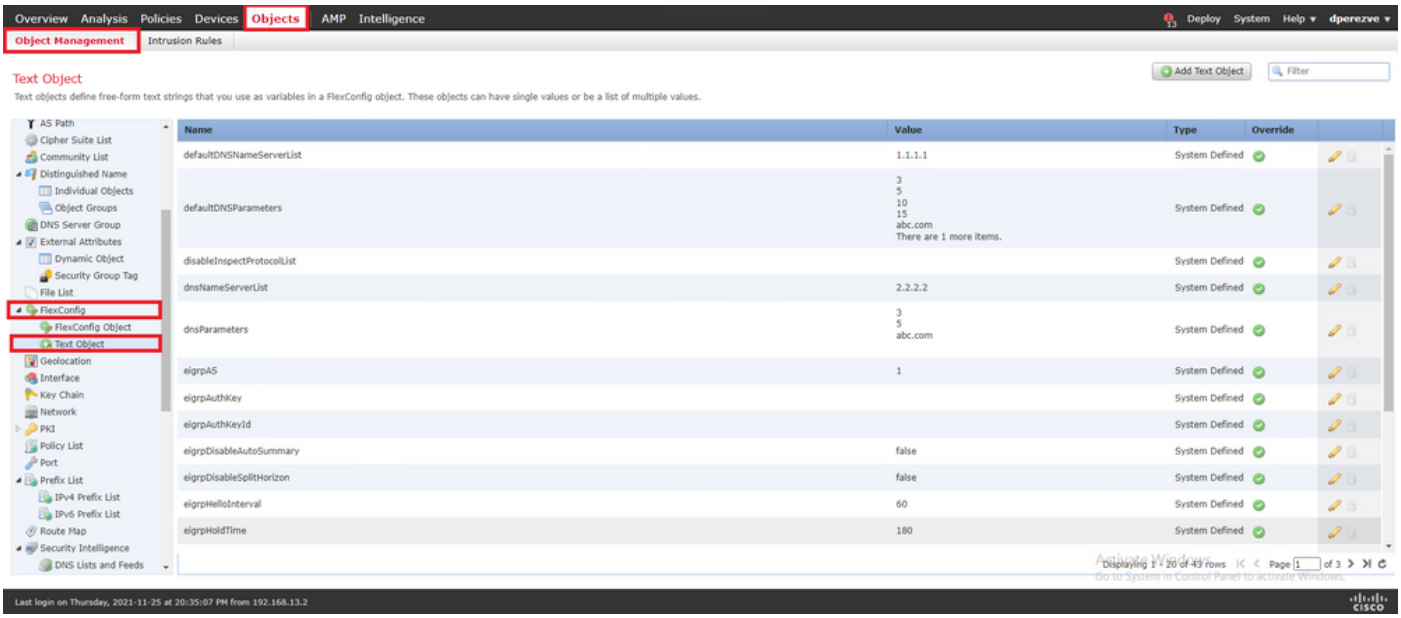
Clic **Save** . Aggiungere l'oggetto all'elenco degli oggetti.



Passaggio 3. Configura oggetti testo FlexConfig

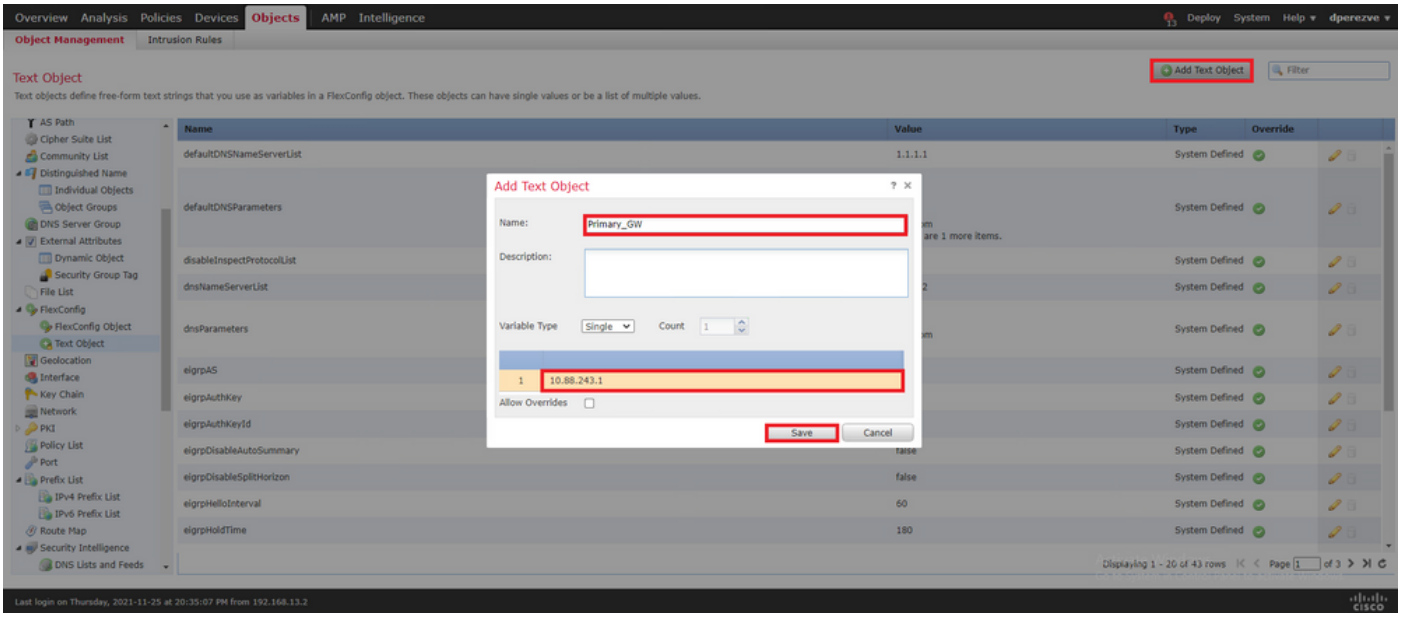
Il passo successivo prevede la definizione di oggetti di testo FlexConfig che rappresentano i gateway predefiniti per ogni circuito. Questi oggetti di testo vengono utilizzati in seguito nella configurazione dell'oggetto FlexConfig che associa PBR agli SLA.

Per definire un oggetto di testo FlexConfig, passare a **Objects > Object Management** e selezionare **Text Object** sotto la **FlexConfig** nel sommario.



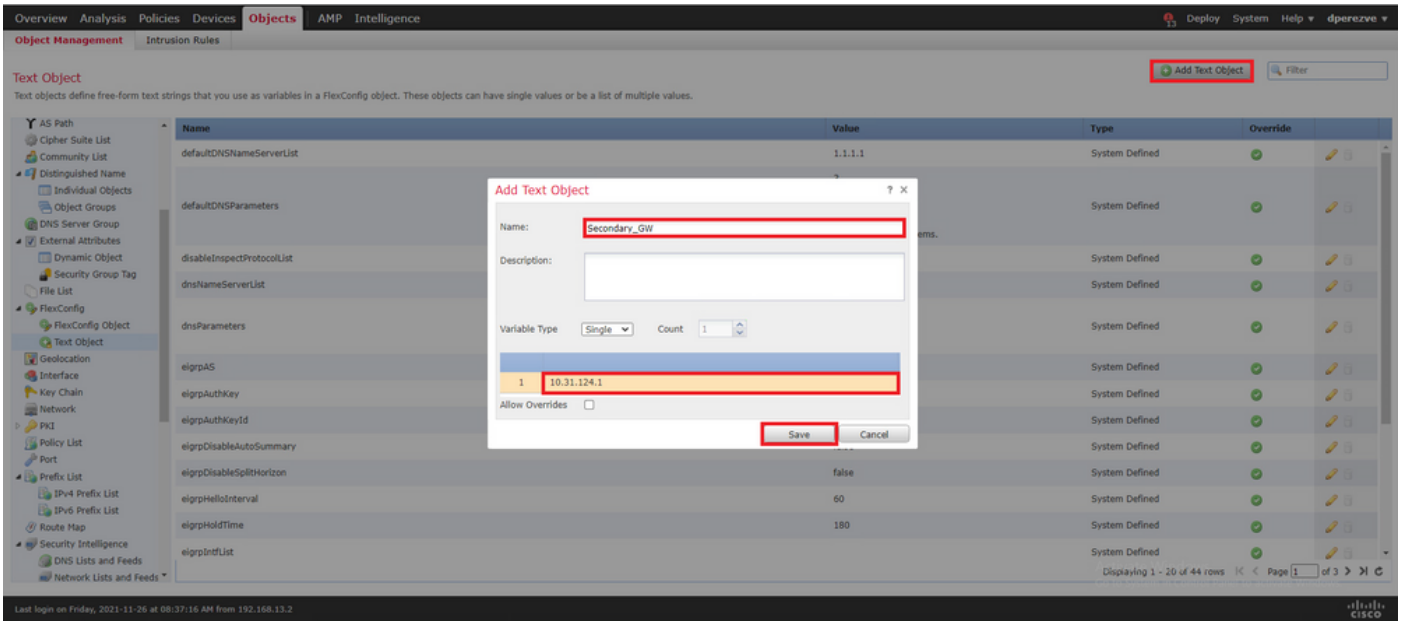
Clic **Add Text Object** . Nella scheda **Add Text Object** assegnare un nome all'oggetto che rappresenta il gateway primario e specificare l'indirizzo IPv4 per il dispositivo.

Clic **Save** per aggiungere il nuovo oggetto.

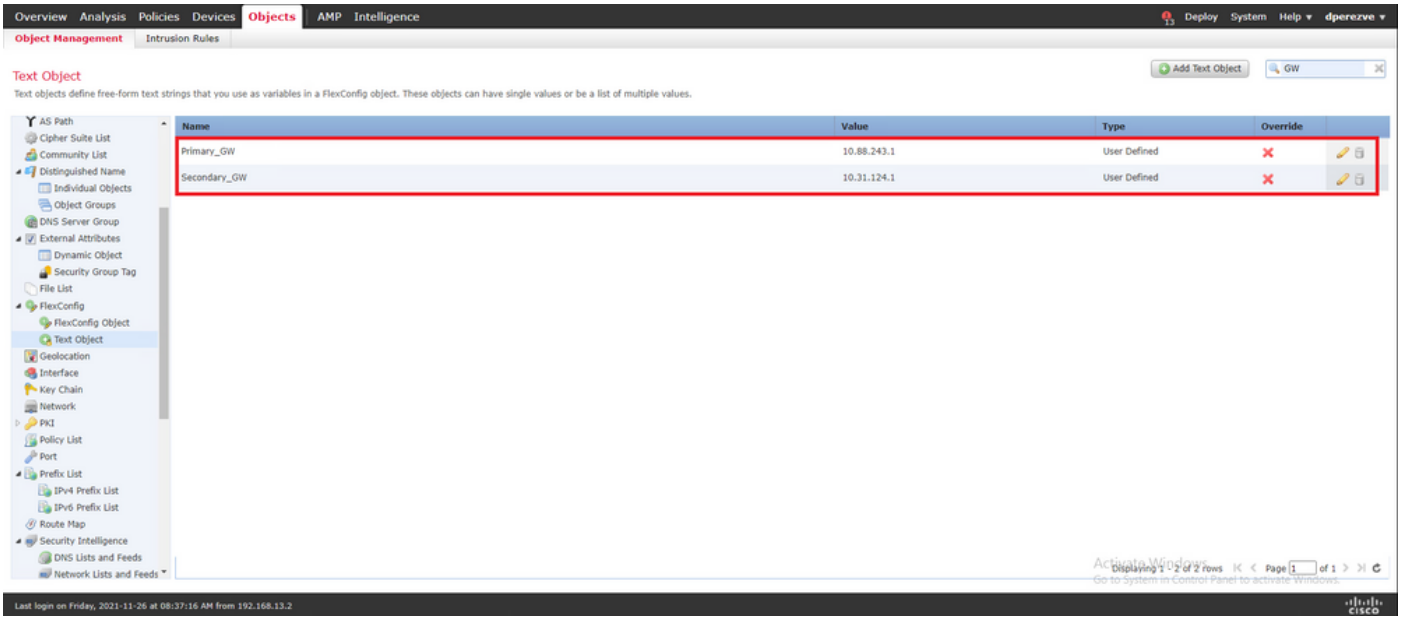


Clic **Add Text Object** per creare un secondo oggetto, questa volta per il gateway sul circuito di backup.

Inserire il nome e l'indirizzo IP appropriati nel nuovo oggetto e fare clic su **Save** .

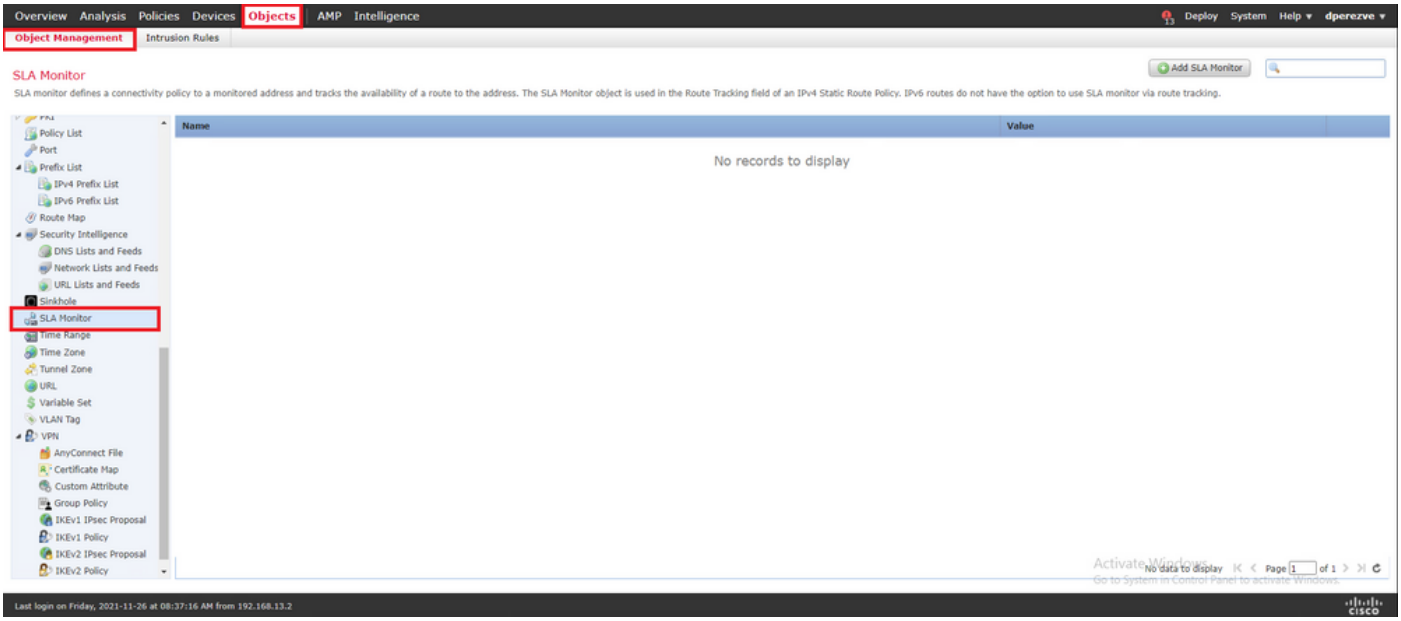


I due oggetti devono essere aggiunti all'elenco insieme agli oggetti di default.



Passaggio 4. Configura monitoraggio contratto di servizio

Per definire gli oggetti SLA utilizzati per monitorare la connettività a ciascun gateway, passare a **Objects > Object Management** e selezionare **SLA Monitor** nel sommario.



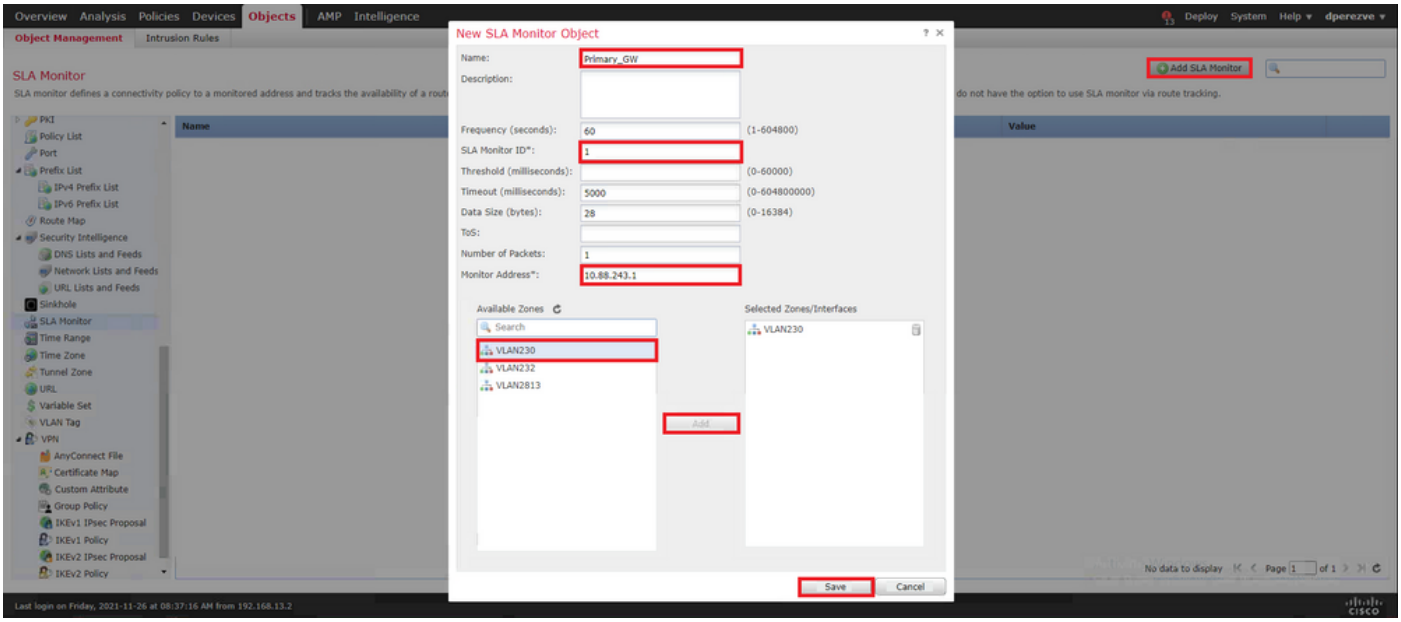
Selezionare il **Add SLA Monitor** oggetto.

Nella scheda **New SLA Monitor** definire un nome insieme a un identificativo per l'operazione del contratto di servizio, l'indirizzo IP del dispositivo da monitorare (in questo caso il gateway primario) e l'interfaccia o la zona attraverso cui il dispositivo è raggiungibile.

Inoltre, è possibile regolare il timeout e la soglia. Clic **Save** .

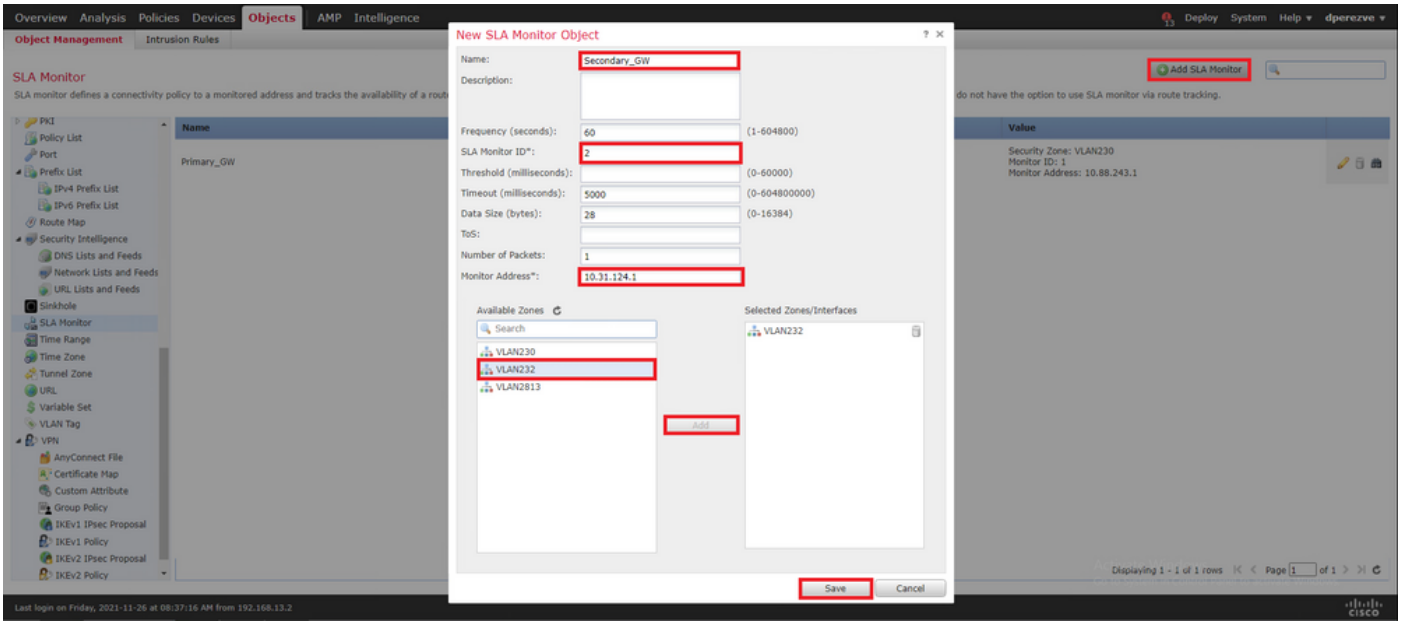
> **Nota**: FTD supporta fino a 2000 operazioni SLA. I valori per l'ID SLA sono compresi tra 1 e 2147483647.

> **Nota**: se i valori di timeout e soglia non sono specificati, FTD utilizza i timer predefiniti: 5000 millisecondi in ciascun caso.

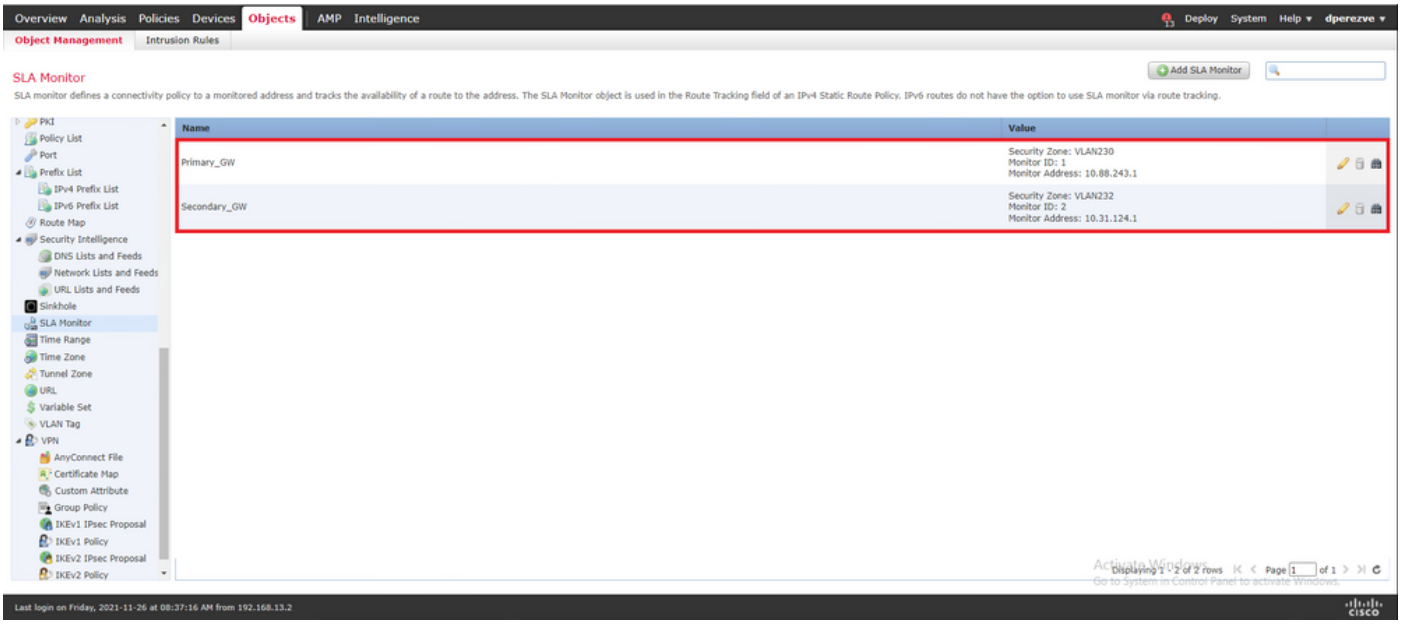


Selezionare il **Add SLA Monitor** per creare un secondo oggetto, questa volta per il gateway sul circuito di backup.

Inserire nel nuovo oggetto le informazioni appropriate, verificare che l'ID SLA sia diverso da quello definito per il gateway principale e salvare le modifiche.



I due oggetti devono essere aggiunti all'elenco.

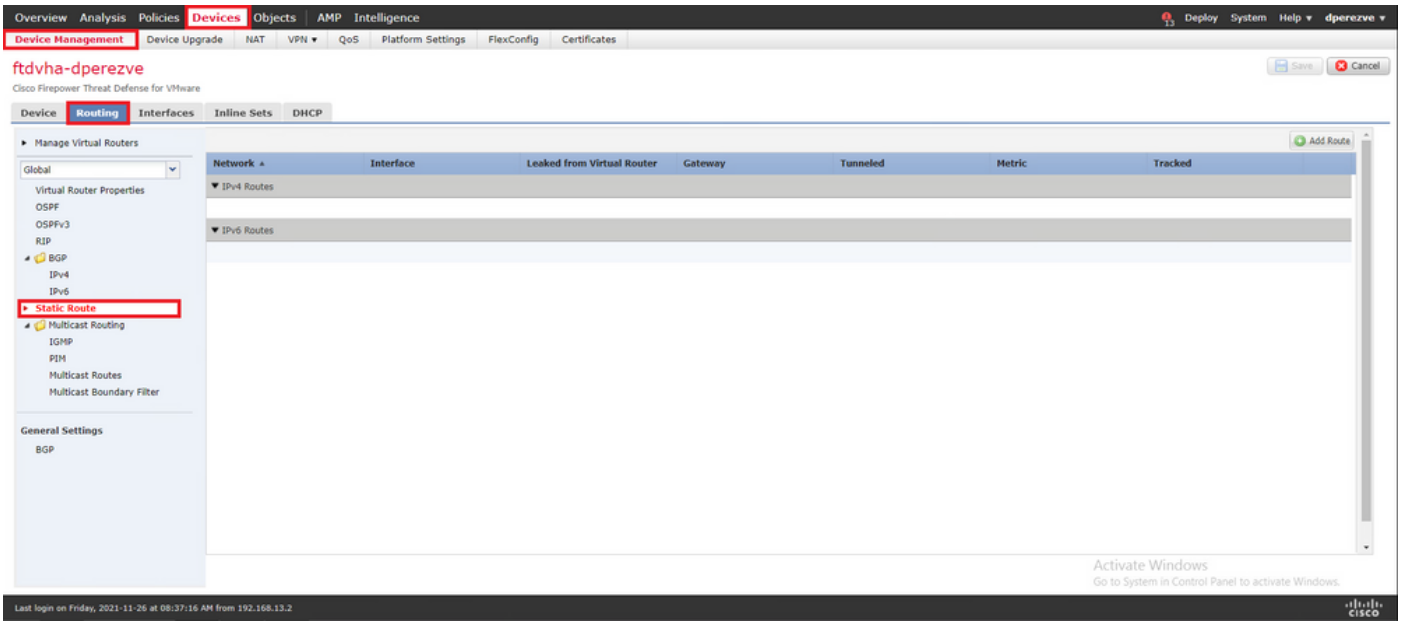


Passaggio 4. Configura route statiche con route

Una volta creati gli oggetti SLA IP, definire un percorso per ciascun gateway e associarli agli SLA.

Questi percorsi non forniscono in realtà la connettività dall'interno all'esterno (tutto il routing viene eseguito tramite PBR), ma sono necessari per tenere traccia della connettività ai gateway tramite gli SLA.

Per configurare le route statiche, passare a **Devices > Device Management** , modificare l'FTD e selezionare **Static Route** nel sommario all'interno del **Routing** scheda.

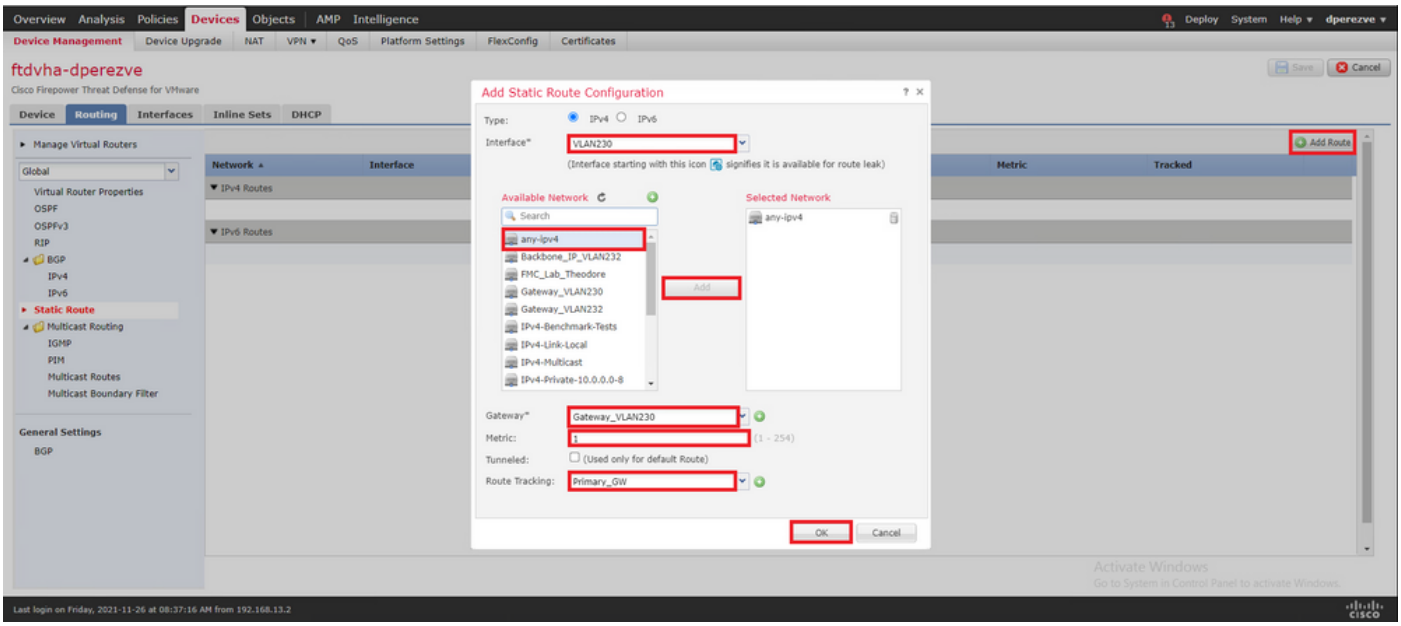


Nella scheda **Add Static Route Configuration** nell'elenco a discesa **Interface**, specificare il nome dell'interfaccia attraverso la quale il gateway primario deve essere raggiungibile.

Selezionare quindi la rete di destinazione e il gateway primario nel **Gateway** a discesa.

Specificare una metrica per la route e nel **Route Track** e selezionare l'oggetto SLA per il gateway principale creato nel passaggio 3.

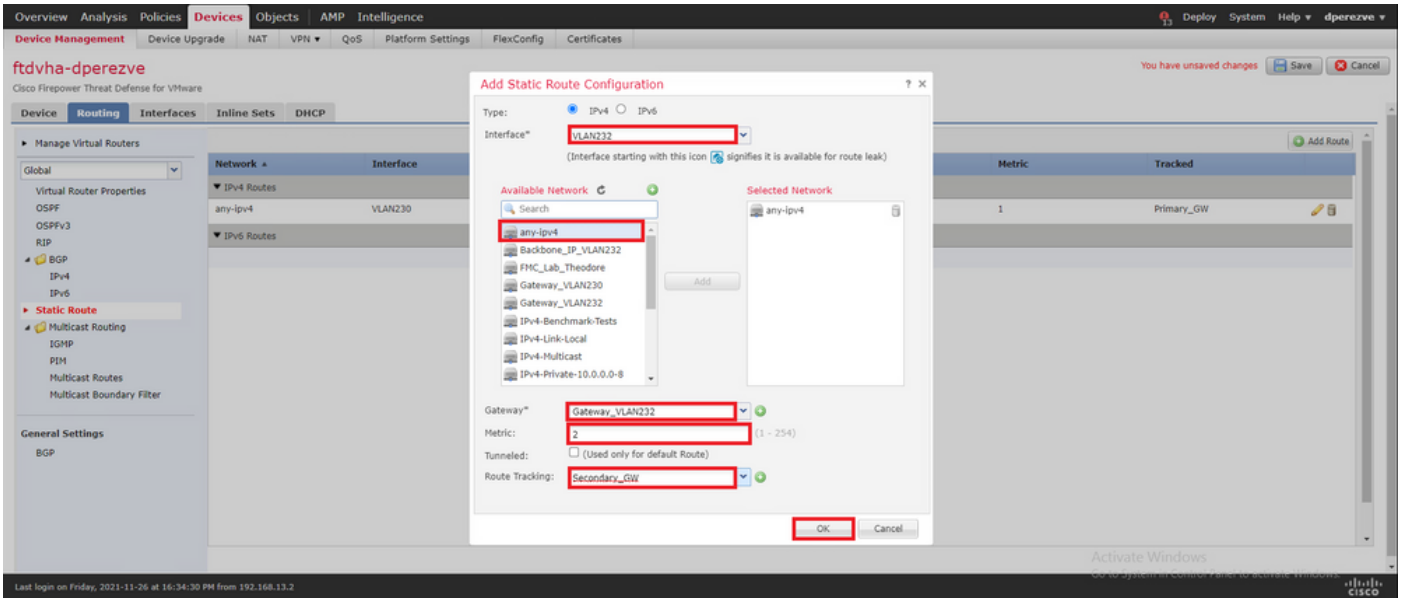
Fare clic su **OK** per aggiungere la nuova route.



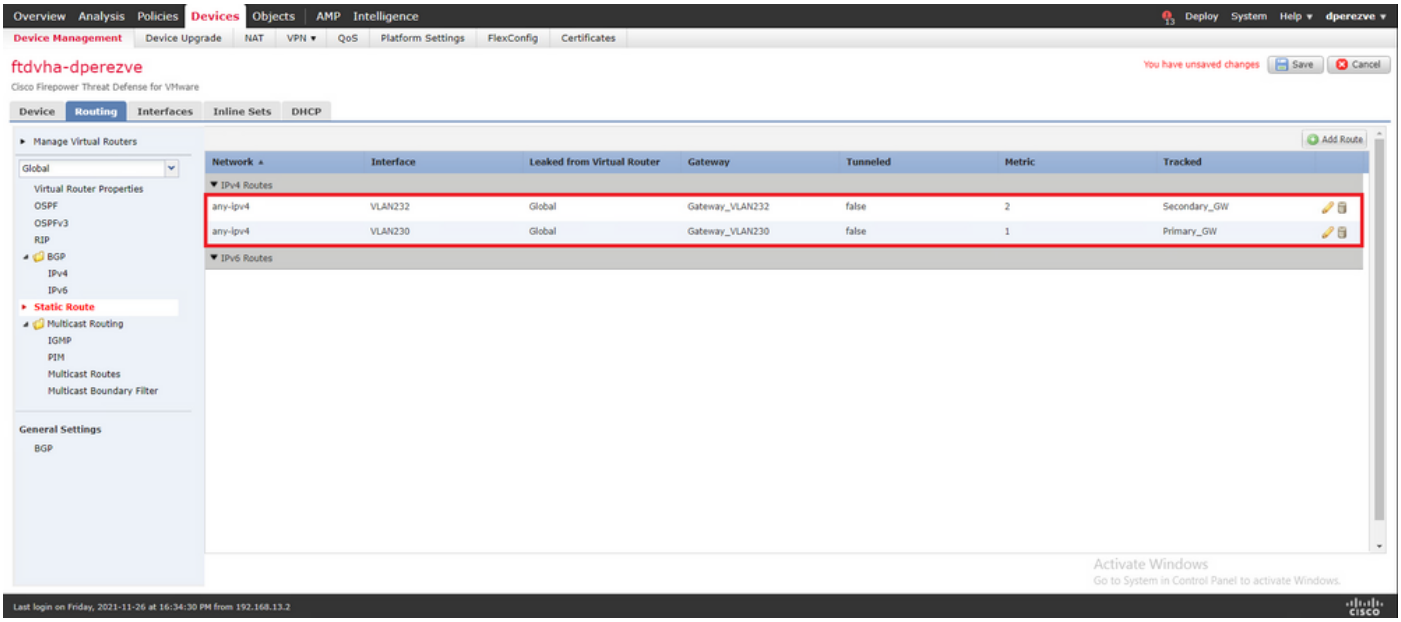
Ènecessario configurare una seconda route statica per il gateway di backup.

Clic **Add Route** per definire una nuova route statica.

Riempire il **Add Static Route Configuration** con le informazioni per il gateway di backup e assicurarsi che la metrica per questa route sia superiore a quella configurata nella prima route.



Le due route devono essere aggiunte all'elenco.

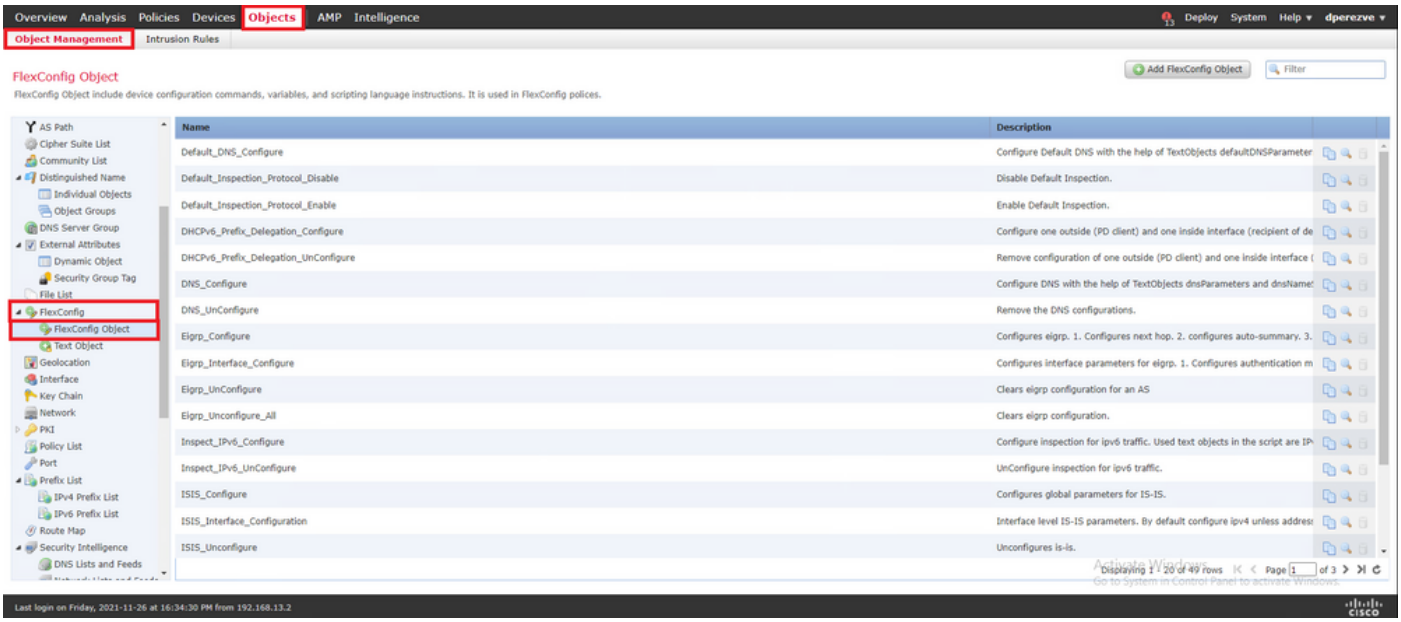


Passaggio 5. Configura oggetto PBR FlexConfig

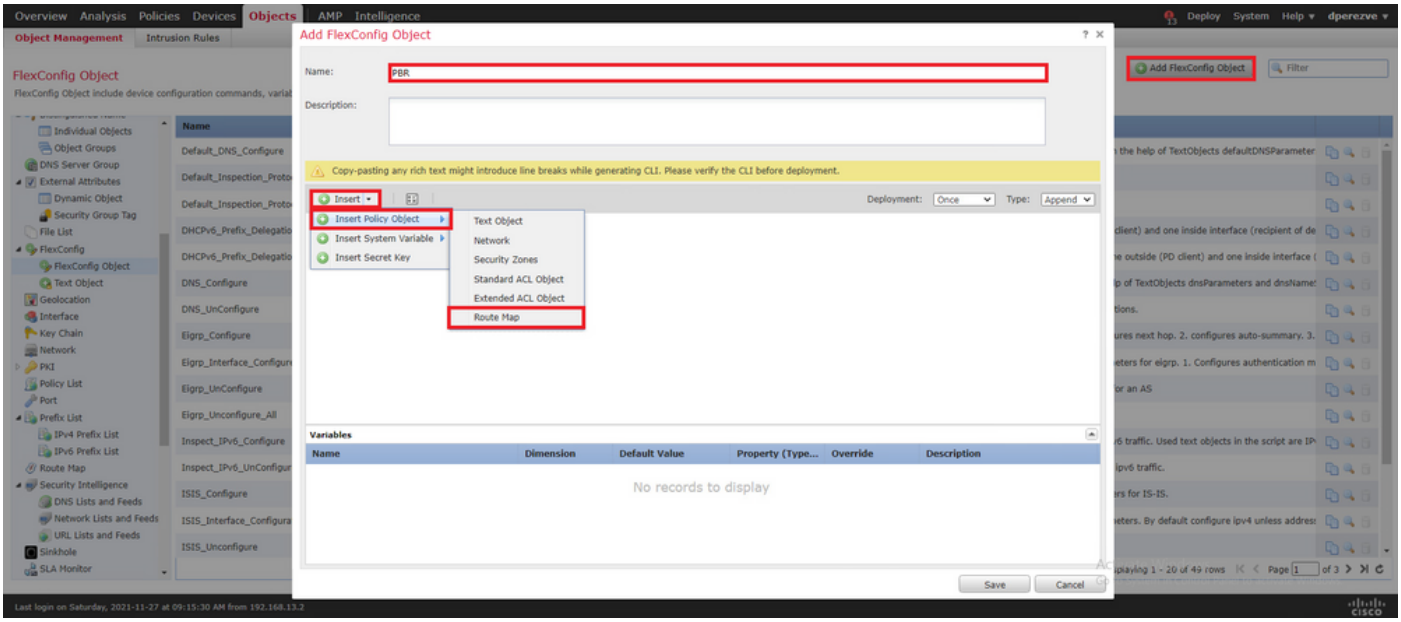
Abilitare gli SLA nella mappa dei percorsi utilizzata per il PBR e applicare questa mappa dei percorsi in un'interfaccia dell'FTD.

Finora la mappa dei percorsi è stata associata solo all'elenco degli accessi che definisce i criteri di corrispondenza. Tuttavia, poiché le ultime regolazioni non sono supportate dall'interfaccia grafica di FMC, è necessario un oggetto FlexConfig.

Per definire l'oggetto PBR FlexConfig, passare a **Objects > Object Management** e selezionare **FlexConfig Object** sotto la **FlexConfig** nel sommario.

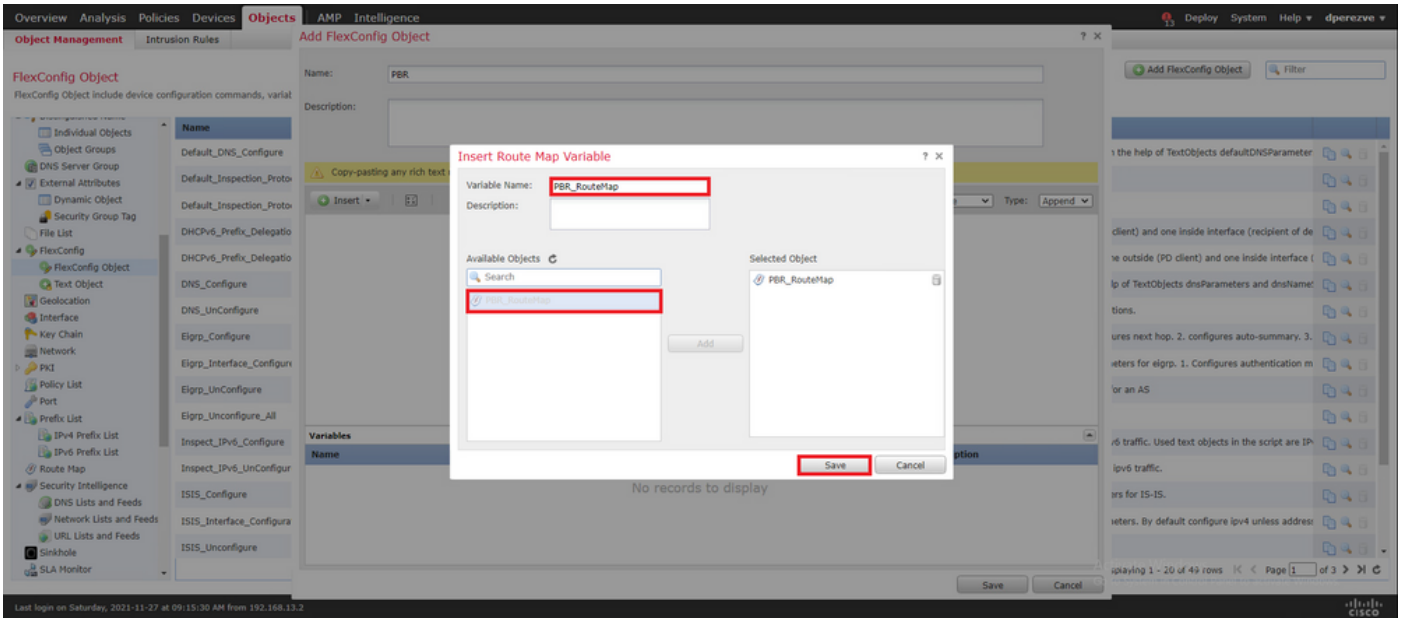


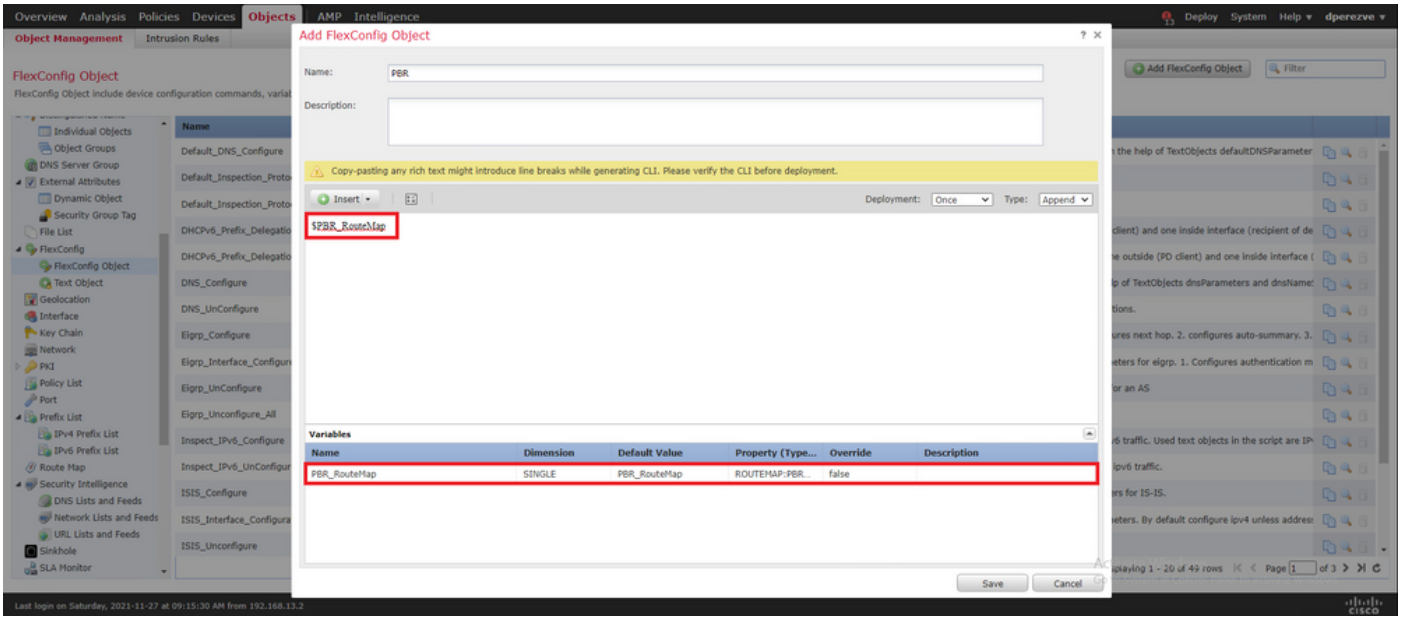
Selezionare il **Add FlexConfig Object** pulsante. Nella scheda **Add FlexConfig Object** finestra assegnare un nome e passare a **Insert > Insert Policy Object > Route Map** .



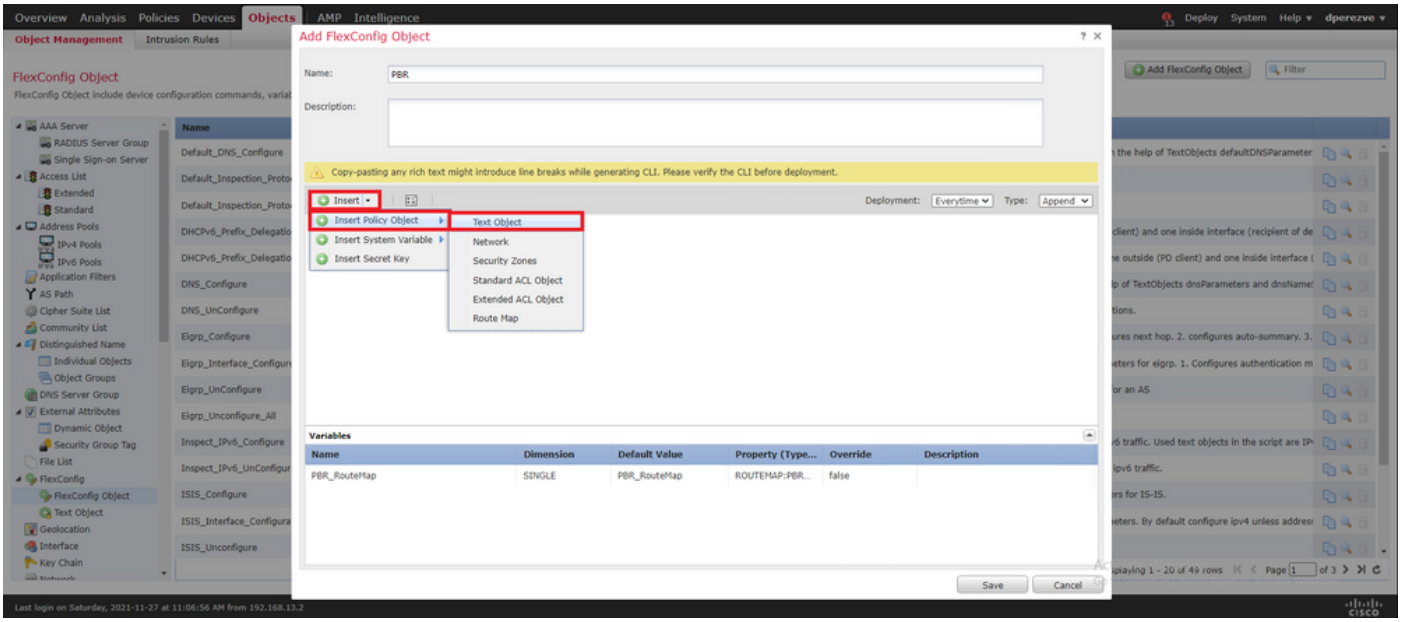
Nella scheda **Insert Route Map Variable** assegnare un nome per la variabile e selezionare l'oggetto PBR creato al punto 2.

Clic **Save** per aggiungere la mappa route come parte dell'oggetto FlexConfig.



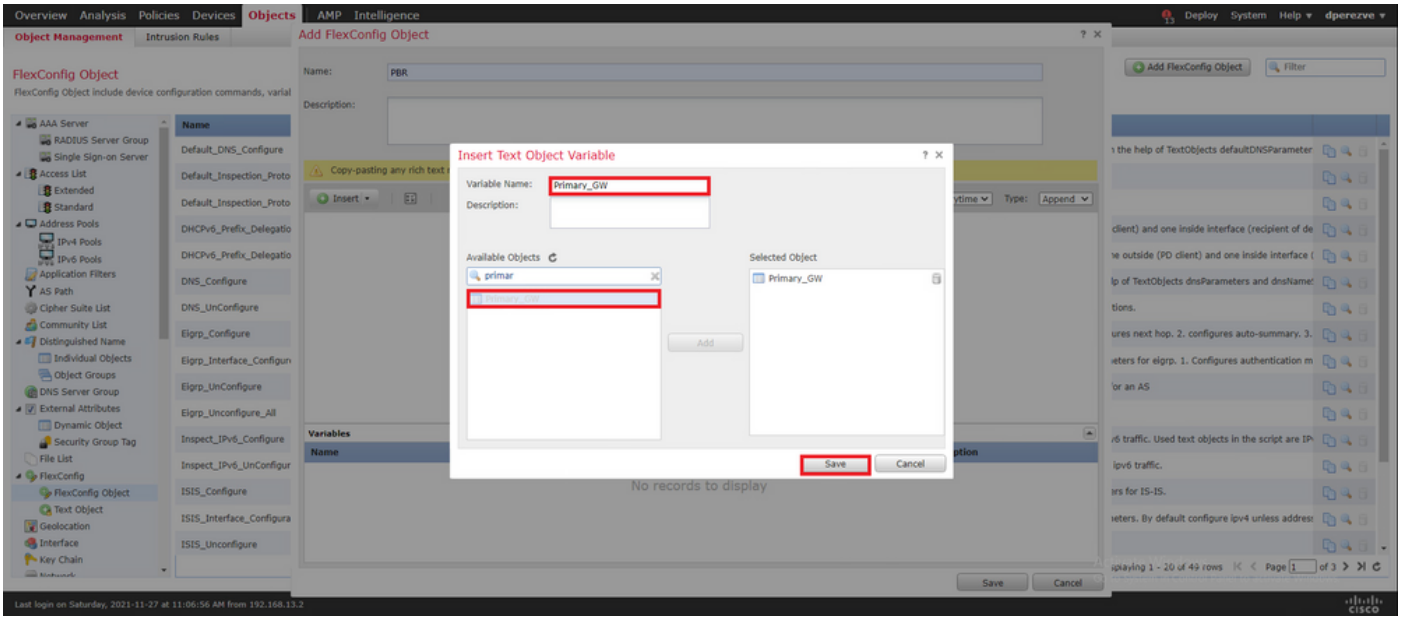


Oltre alla variabile route map, è necessario aggiungere gli oggetti di testo FlexConfig che rappresentano ciascun gateway (definito al passaggio 3). Nella scheda **Add FlexConfig Object** finestra passa a **Insert > Insert Policy Object > Text Object** .

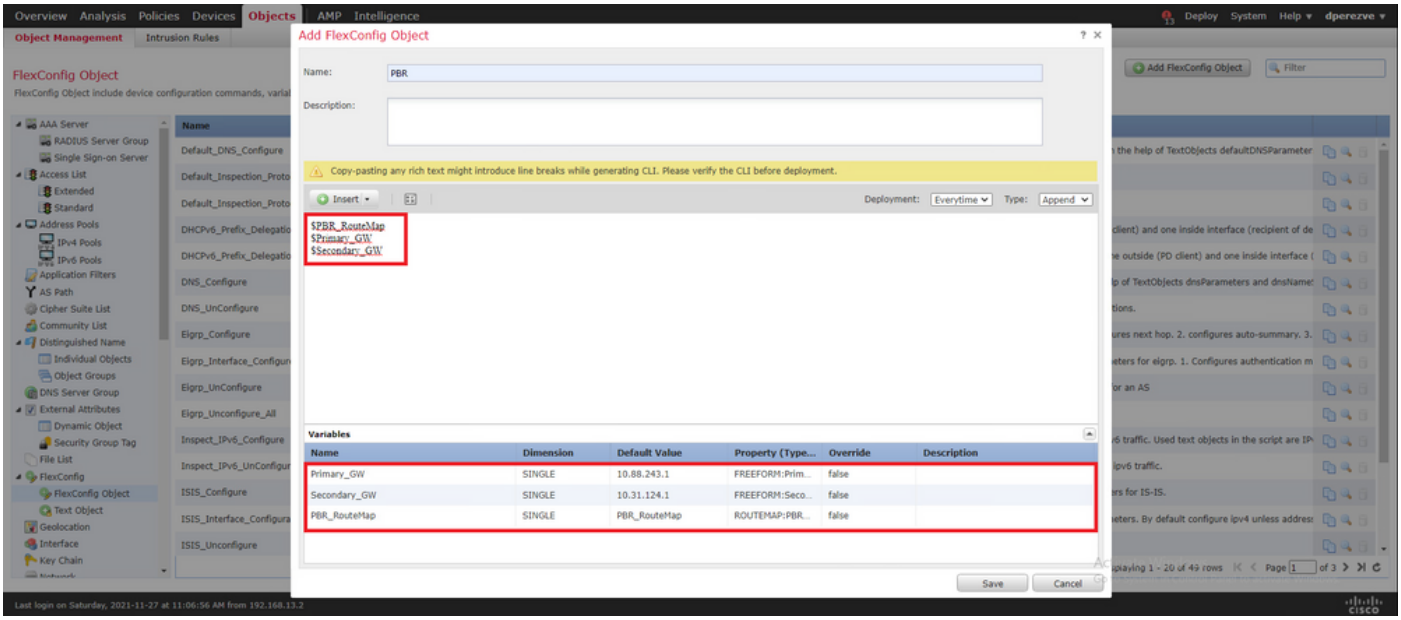


Nella scheda **Insert Text Object Variable** Assegnare un nome alla variabile e selezionare l'oggetto di testo che rappresenta il gateway principale definito nel passaggio 3.

Clic **Save** per aggiungerlo all'oggetto FlexConfig.



Ripetere questi ultimi passaggi per il gateway di backup. Al termine del processo, le due variabili devono essere aggiunte all'oggetto FlexConfig.

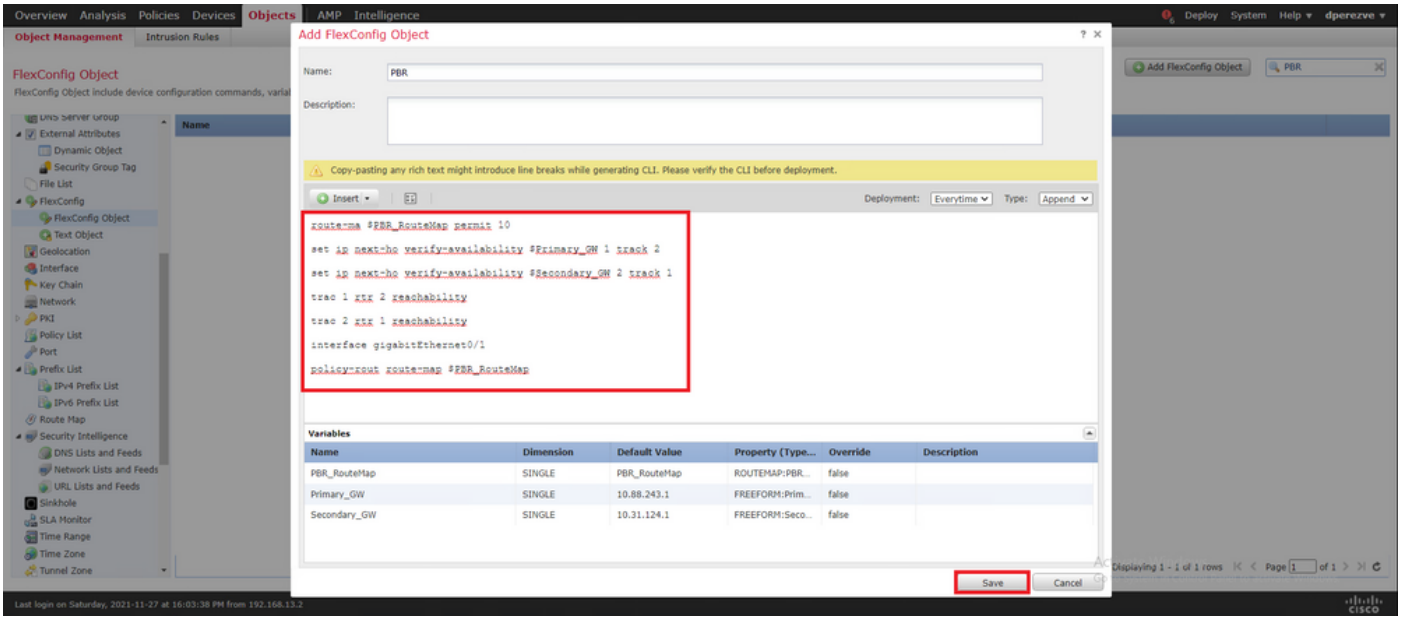


La sintassi della configurazione PBR deve essere la stessa di Cisco ASA. Il numero di sequenza per la mappa del percorso deve corrispondere a quello configurato nel passaggio 2 (in questo caso 10), nonché agli ID degli SLA.

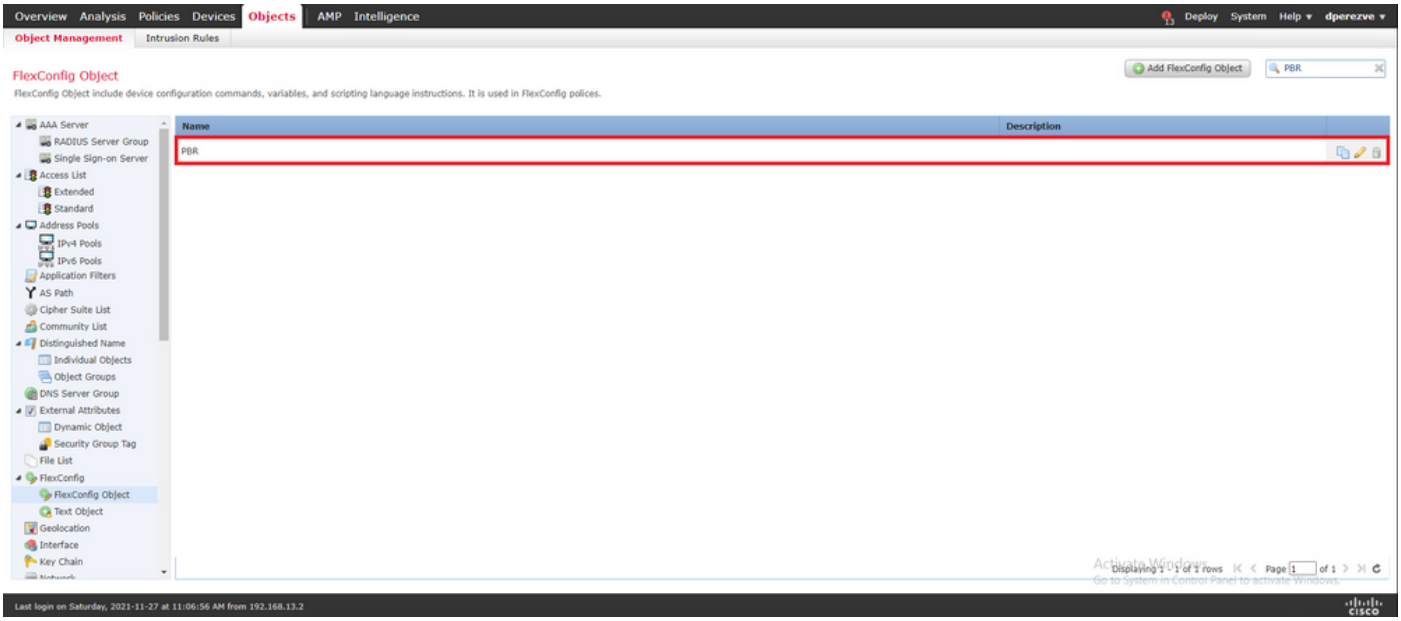
Per configurare PBR in modo da controllare la disponibilità per l'hop successivo, **set ip next-hop verify-availability** deve essere utilizzato.

La mappa del percorso deve essere applicata all'interfaccia interna, in questo caso VLAN2813. Utilizzo **policy-route route-map** nella configurazione interfaccia.

Clic **Save** al termine della configurazione.



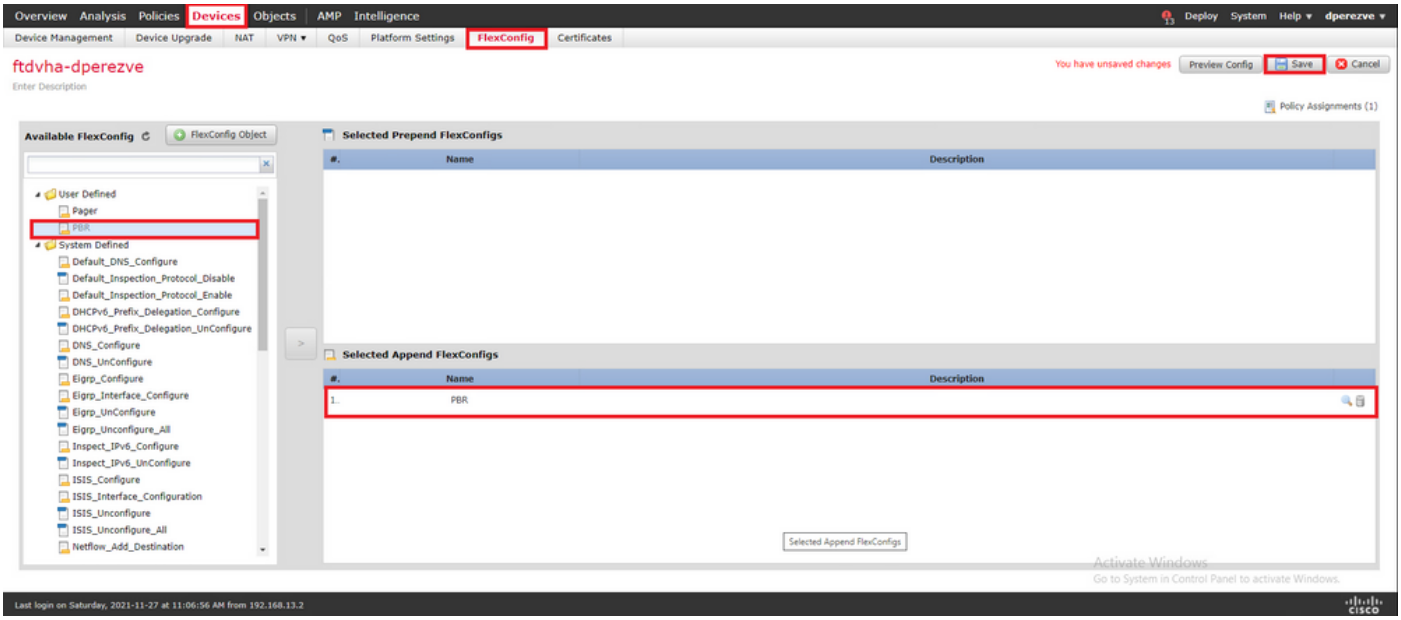
Ènecessario aggiungere l'oggetto FlexConfig all'elenco.



Passaggio 6. Assegna oggetto PBR FlexConfig ai criteri FlexConfig

Passa a **Devices > FlexConfig** e modificare il criterio FlexConfig.

Selezionare l'oggetto PBR FlexConfig in **Available FlexConfig** sommario, salva le modifiche e distribuisci le modifiche a FTD.



Verifica

Al termine dell'implementazione, l'FTD deve inviare una richiesta echo ICMP regolare ai dispositivi monitorati per assicurare la raggiungibilità. Nel frattempo, è necessario aggiungere alla tabella di routing una route registrata al gateway primario.

```
firepower# show route-map route-map PBR_RouteMap, permit, sequence 10 Match clauses: ip address (access-lists): PBR_ACL Set clauses: ip next-hop verify-availability 10.88.243.1 1 track 2 [up] ip next-hop verify-availability 10.31.124.1 2 track 1 [up] firepower# show route Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2 E1 - OSPF external type 1, E2 - OSPF external type 2, V - VPN i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2 ia - IS-IS inter area, * - candidate default, U - per-user static route o - ODR, P - periodic downloaded static route, + - replicated route SI - Static InterVRF Gateway of last resort is 10.88.243.1 to network 0.0.0.0 S* 0.0.0.0 0.0.0.0 [1/0] via 10.88.243.1, VLAN230 C 10.31.124.0 255.255.255.0 is directly connected, VLAN232 L 10.31.124.25 255.255.255.255 is directly connected, VLAN232 C 10.88.243.0 255.255.255.0 is directly connected, VLAN230 L 10.88.243.60 255.255.255.255 is directly connected, VLAN230 C 192.168.13.0 255.255.255.0 is directly connected, VLAN2813 L 192.168.13.1 255.255.255.255 is directly connected, VLAN2813
```

Poiché la connettività al gateway primario è attiva, il traffico proveniente dalla subnet interna (VLAN2813) deve essere inoltrato tramite il circuito dell'ISP primario.

```
firepower# packet-tracer input vlan2813 icmp 192.168.13.2 8 0 8.8.8.8 detailed Phase: 1 Type: PBR-LOOKUP Subtype: policy-route Result: ALLOW Config: route-map PBR_RouteMap permit 10 match ip address PBR_ACL set ip next-hop verify-availability 10.88.243.1 1 track 2 set ip next-hop verify-availability 10.31.124.1 2 track 1 Additional Information: Matched route-map PBR_RouteMap, sequence 10, permit Found next-hop 10.88.243.1 using egress ifc VLAN230 Phase: 2 Type: ACCESS-LIST Subtype: log Result: ALLOW Config: access-group CSM_FW_ACL_ global access-list CSM_FW_ACL_ advanced trust ip ifc VLAN2813 object VLAN2813 any rule-id 268437505 event-log flow-end access-list CSM_FW_ACL_ remark rule-id 268437505: PREFILTER POLICY: ftdvha-dperezve access-list CSM_FW_ACL_ remark rule-id 268437505: RULE: Internet_Traffic Additional Information: Forward Flow based lookup yields rule: in id=0x1461708f7a90, priority=12, domain=permit, trust hits=172250, user_data=0x146183cf8380, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any, ifc=VLAN2813(vrfid:0) dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, ifc=any, vlan=0, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 3 Type: CONN-SETTINGS Subtype: Result: ALLOW Config: class-map class-default match any policy-map global_policy class class-default set connection
```

advanced-options UM_STATIC_TCP_MAP service-policy global_policy global Additional Information: Forward Flow based lookup yields rule: in id=0x146170d472a0, priority=7, domain=conn-set, deny=false hits=176701, user_data=0x146170d413f0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 4 Type: NAT Subtype: Result: ALLOW Config: nat (VLAN2813,VLAN230) after-auto source dynamic VLAN2813 interface Additional Information: Forward Flow based lookup yields rule: in id=0x146170013860, priority=6, domain=nat, deny=false hits=168893, user_data=0x1461af306540, cs_id=0x0, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=VLAN230(vrfid:0) Phase: 5 Type: NAT Subtype: per-session Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461af9c3320, priority=0, domain=nat-per-session, deny=true hits=188129, user_data=0x0, cs_id=0x0, reverse, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 6 Type: IP-OPTIONS Subtype: Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461aff02da0, priority=0, domain=inspect-ip-options, deny=true hits=176710, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 7 Type: ACCESS-LIST Subtype: log Result: ALLOW Config: access-group CSM_FW_ACL_ global access-list CSM_FW_ACL_ advanced trust ip ifc VLAN2813 object VLAN2813 any rule-id 268437505 event-log flow-end access-list CSM_FW_ACL_ remark rule-id 268437505: PREFILTER POLICY: ftdvha-dperezve access-list CSM_FW_ACL_ remark rule-id 268437505: RULE: Internet_Traffic Additional Information: Forward Flow based lookup yields rule: in id=0x1461708f7a90, priority=12, domain=permit, trust hits=172250, user_data=0x146183cf8380, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any, ifc=VLAN2813(vrfid:0) dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, ifc=any, vlan=0, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 8 Type: CONN-SETTINGS Subtype: Result: ALLOW Config: class-map class-default match any policy-map global_policy class class-default set connection advanced-options UM_STATIC_TCP_MAP service-policy global_policy global Additional Information: Forward Flow based lookup yields rule: in id=0x146170d472a0, priority=7, domain=conn-set, deny=false hits=176702, user_data=0x146170d413f0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 9 Type: NAT Subtype: Result: ALLOW Config: nat (VLAN2813,VLAN230) after-auto source dynamic VLAN2813 interface Additional Information: Forward Flow based lookup yields rule: in id=0x146170013860, priority=6, domain=nat, deny=false hits=168893, user_data=0x1461af306540, cs_id=0x0, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=VLAN230(vrfid:0) Phase: 10 Type: NAT Subtype: per-session Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461af9c3320, priority=0, domain=nat-per-session, deny=true hits=188129, user_data=0x0, cs_id=0x0, reverse, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 11 Type: IP-OPTIONS Subtype: Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461aff02da0, priority=0, domain=inspect-ip-options, deny=true hits=176710, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 12 Type: ACCESS-LIST Subtype: log Result: ALLOW Config: access-group CSM_FW_ACL_ global access-list CSM_FW_ACL_ advanced trust ip ifc VLAN2813 object VLAN2813 any rule-id 268437505 event-log flow-end access-list CSM_FW_ACL_ remark rule-id 268437505: PREFILTER POLICY: ftdvha-dperezve access-list CSM_FW_ACL_ remark rule-id 268437505: RULE: Internet_Traffic Additional Information: Forward Flow based lookup yields rule: in id=0x1461708f7a90, priority=12, domain=permit, trust hits=172250, user_data=0x146183cf8380, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any, ifc=VLAN2813(vrfid:0) dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, ifc=any, vlan=0, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 13 Type: CONN-SETTINGS Subtype: Result: ALLOW Config: class-map class-default match any policy-map global_policy class class-default set connection advanced-options UM_STATIC_TCP_MAP service-policy global_policy global Additional Information: Forward Flow based lookup yields rule: in id=0x146170d472a0, priority=7, domain=conn-set, deny=false hits=176702, user_data=0x146170d413f0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0,

port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 14 Type: NAT Subtype: Result: ALLOW Config: nat (VLAN2813,VLAN230) after-auto source dynamic VLAN2813 interface Additional Information: Forward Flow based lookup yields rule: in id=0x146170013860, priority=6, domain=nat, deny=false hits=168894, user_data=0x1461af306540, cs_id=0x0, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=VLAN230(vrfid:0) Phase: 15 Type: NAT Subtype: per-session Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461af9c3320, priority=0, domain=nat-per-session, deny=true hits=188129, user_data=0x0, cs_id=0x0, reverse, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 16 Type: IP-OPTIONS Subtype: Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461aff02da0, priority=0, domain=inspect-ip-options, deny=true hits=176710, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 17 Type: ACCESS-LIST Subtype: log Result: ALLOW Config: access-group CSM_FW_ACL_ global access-list CSM_FW_ACL_ advanced trust ip ifc VLAN2813 object VLAN2813 any rule-id 268437505 event-log flow-end access-list CSM_FW_ACL_ remark rule-id 268437505: PREFILTER POLICY: ftdvha-dperezve access-list CSM_FW_ACL_ remark rule-id 268437505: RULE: Internet_Traffic Additional Information: Forward Flow based lookup yields rule: in id=0x1461708f7a90, priority=12, domain=permit, trust hits=172250, user_data=0x146183cf8380, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any, ifc=VLAN2813(vrfid:0) dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, ifc=any, vlan=0, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 18 Type: CONN-SETTINGS Subtype: Result: ALLOW Config: class-map class-default match any policy-map global_policy class class-default set connection advanced-options UM_STATIC_TCP_MAP service-policy global_policy global Additional Information: Forward Flow based lookup yields rule: in id=0x146170d472a0, priority=7, domain=conn-set, deny=false hits=176702, user_data=0x146170d413f0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 19 Type: NAT Subtype: Result: ALLOW Config: nat (VLAN2813,VLAN230) after-auto source dynamic VLAN2813 interface Additional Information: Forward Flow based lookup yields rule: in id=0x146170013860, priority=6, domain=nat, deny=false hits=168894, user_data=0x1461af306540, cs_id=0x0, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=VLAN230(vrfid:0) Phase: 20 Type: NAT Subtype: per-session Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461af9c3320, priority=0, domain=nat-per-session, deny=true hits=188130, user_data=0x0, cs_id=0x0, reverse, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 21 Type: IP-OPTIONS Subtype: Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461aff02da0, priority=0, domain=inspect-ip-options, deny=true hits=176710, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 22 Type: ACCESS-LIST Subtype: log Result: ALLOW Config: access-group CSM_FW_ACL_ global access-list CSM_FW_ACL_ advanced trust ip ifc VLAN2813 object VLAN2813 any rule-id 268437505 event-log flow-end access-list CSM_FW_ACL_ remark rule-id 268437505: PREFILTER POLICY: ftdvha-dperezve access-list CSM_FW_ACL_ remark rule-id 268437505: RULE: Internet_Traffic Additional Information: Forward Flow based lookup yields rule: in id=0x1461708f7a90, priority=12, domain=permit, trust hits=172250, user_data=0x146183cf8380, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any, ifc=VLAN2813(vrfid:0) dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, ifc=any, vlan=0, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 23 Type: CONN-SETTINGS Subtype: Result: ALLOW Config: class-map class-default match any policy-map global_policy class class-default set connection advanced-options UM_STATIC_TCP_MAP service-policy global_policy global Additional Information: Forward Flow based lookup yields rule: in id=0x146170d472a0, priority=7, domain=conn-set, deny=false hits=176702, user_data=0x146170d413f0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 24 Type: NAT Subtype: Result: ALLOW Config: nat (VLAN2813,VLAN230) after-auto source dynamic VLAN2813 interface Additional Information: Forward Flow based lookup yields rule: in id=0x146170013860, priority=6, domain=nat, deny=false hits=168894, user_data=0x1461af306540,

```
cs_id=0x0, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any dst
ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0),
output_ifc=VLAN230(vrfid:0) Phase: 25 Type: NAT Subtype: per-session Result: ALLOW Config:
Additional Information: Forward Flow based lookup yields rule: in id=0x1461af9c3320, priority=0,
domain=nat-per-session, deny=true hits=188130, user_data=0x0, cs_id=0x0, reverse, use_real_addr,
flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0,
mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 26
Type: IP-OPTIONS Subtype: Result: ALLOW Config: Additional Information: Forward Flow based
lookup yields rule: in id=0x1461aff02da0, priority=0, domain=inspect-ip-options, deny=true
hits=176711, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=0 src ip/id=0.0.0.0,
mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=anyError: not enough
buffer space to print ASP rule Result: input-interface: VLAN2813(vrfid:0) input-status: up
input-line-status: up output-interface: VLAN230(vrfid:0) output-status: up output-line-status:
up Action: allow
```

Se l'FTD non riceve una risposta echo dal gateway primario entro il timer di soglia specificato nell'oggetto di monitoraggio dello SLA, l'host viene considerato non raggiungibile e contrassegnato come non attivo. Il percorso tracciato verso il gateway primario viene inoltre sostituito dal percorso tracciato verso il peer di backup.

```
firepower# show route-map route-map PBR_RouteMap, permit, sequence 10 Match clauses: ip address
(access-lists): PBR_ACL Set clauses: ip next-hop verify-availability 10.88.243.1 1 track 2
[down] ip next-hop verify-availability 10.31.124.1 2 track 1 [up] firepower# show route Codes: L
- local, C - connected, S - static, R - RIP, M - mobile, B - BGP D - EIGRP, EX - EIGRP external,
O - OSPF, IA - OSPF inter area N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2 E1
- OSPF external type 1, E2 - OSPF external type 2, V - VPN i - IS-IS, su - IS-IS summary, L1 -
IS-IS level-1, L2 - IS-IS level-2 ia - IS-IS inter area, * - candidate default, U - per-user
static route o - ODR, P - periodic downloaded static route, + - replicated route SI - Static
InterVRF Gateway of last resort is 10.31.124.1 to network 0.0.0.0 S* 0.0.0.0 0.0.0.0 [2/0] via
10.31.124.1, VLAN232 C 10.31.124.0 255.255.255.0 is directly connected, VLAN232 L 10.31.124.25
255.255.255.255 is directly connected, VLAN232 C 192.168.13.0 255.255.255.0 is directly
connected, VLAN2813 L 192.168.13.1 255.255.255.255 is directly connected, VLAN2813
```

Il messaggio informativo 62001 viene generato ogni volta che FTD aggiunge o rimuove una route rilevata dalla tabella di routing.

```
firepower# show logg | i 622001 %FTD-6-622001: Removing tracked route 0.0.0.0 0.0.0.0
10.31.124.1, distance 2, table default, on interface VLAN232%FTD-6-305012: Teardown dynamic UDP
translation from VLAN2813:192.168.13.5/49641 to VLAN230:10.88.243.60/49641 duration 0:02:10
```

A questo punto, tutto il traffico proveniente dalla VLAN2813 deve essere inoltrato tramite il circuito ISP di backup.

```
firepower# packet-tracer input vlan2813 icmp 192.168.13.2 8 0 8.8.8.8 detailed Phase: 1 Type:
PBR-LOOKUP Subtype: policy-route Result: ALLOW Config: route-map PBR_RouteMap permit 10 match ip
address PBR_ACL set ip next-hop verify-availability 10.88.243.1 1 track 2 set ip next-hop
verify-availability 10.31.124.1 2 track 1 Additional Information: Matched route-map
PBR_RouteMap, sequence 10, permit Found next-hop 10.31.124.1 using egress ifc VLAN232 Phase: 2
Type: ACCESS-LIST Subtype: log Result: ALLOW Config: access-group CSM_FW_ACL_ global access-list
CSM_FW_ACL_ advanced trust ip ifc VLAN2813 object VLAN2813 any rule-id 268437505 event-log flow-
end access-list CSM_FW_ACL_ remark rule-id 268437505: PREFILTER POLICY: ftdvha-dperezve access-
list CSM_FW_ACL_ remark rule-id 268437505: RULE: Internet_Traffic Additional Information:
Forward Flow based lookup yields rule: in id=0x1461708f7a90, priority=12, domain=permit, trust
hits=172729, user_data=0x146183cf8380, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src
ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any, ifc=VLAN2813(vrfid:0) dst
ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, ifc=any, vlan=0, dscp=0x0, nsg_id=none
input_ifc=any, output_ifc=any Phase: 3 Type: CONN-SETTINGS Subtype: Result: ALLOW Config: class-
map class-default match any policy-map global_policy class class-default set connection
advanced-options UM_STATIC_TCP_MAP service-policy global_policy global Additional Information:
Forward Flow based lookup yields rule: in id=0x146170d472a0, priority=7, domain=conn-set,
```

deny=false hits=177180, user_data=0x146170d413f0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 4 Type: NAT Subtype: Result: ALLOW Config: nat (VLAN2813,VLAN232) after-auto source dynamic VLAN2813 interface Additional Information: Forward Flow based lookup yields rule: in id=0x146170032540, priority=6, domain=nat, deny=false hits=8251, user_data=0x1461af306740, cs_id=0x0, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=VLAN232(vrfid:0) Phase: 5 Type: NAT Subtype: per-session Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461af9c3320, priority=0, domain=nat-per-session, deny=true hits=188612, user_data=0x0, cs_id=0x0, reverse, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 6 Type: IP-OPTIONS Subtype: Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461aff02da0, priority=0, domain=inspect-ip-options, deny=true hits=177189, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 7 Type: ACCESS-LIST Subtype: log Result: ALLOW Config: access-group CSM_FW_ACL_ global access-list CSM_FW_ACL_ advanced trust ip ifc VLAN2813 object VLAN2813 any rule-id 268437505 event-log flow-end access-list CSM_FW_ACL_ remark rule-id 268437505: PREFILTER POLICY: ftdvha-dperezve access-list CSM_FW_ACL_ remark rule-id 268437505: RULE: Internet_Traffic Additional Information: Forward Flow based lookup yields rule: in id=0x1461708f7a90, priority=12, domain=permit, trust hits=172729, user_data=0x146183cf8380, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any, ifc=VLAN2813(vrfid:0) dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, ifc=any, vlan=0, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 8 Type: CONN-SETTINGS Subtype: Result: ALLOW Config: class-map class-default match any policy-map global_policy class class-default set connection advanced-options UM_STATIC_TCP_MAP service-policy global_policy global Additional Information: Forward Flow based lookup yields rule: in id=0x146170d472a0, priority=7, domain=conn-set, deny=false hits=177181, user_data=0x146170d413f0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 9 Type: NAT Subtype: Result: ALLOW Config: nat (VLAN2813,VLAN232) after-auto source dynamic VLAN2813 interface Additional Information: Forward Flow based lookup yields rule: in id=0x146170032540, priority=6, domain=nat, deny=false hits=8251, user_data=0x1461af306740, cs_id=0x0, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=VLAN232(vrfid:0) Phase: 10 Type: NAT Subtype: per-session Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461af9c3320, priority=0, domain=nat-per-session, deny=true hits=188612, user_data=0x0, cs_id=0x0, reverse, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 11 Type: IP-OPTIONS Subtype: Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461aff02da0, priority=0, domain=inspect-ip-options, deny=true hits=177189, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 12 Type: ACCESS-LIST Subtype: log Result: ALLOW Config: access-group CSM_FW_ACL_ global access-list CSM_FW_ACL_ advanced trust ip ifc VLAN2813 object VLAN2813 any rule-id 268437505 event-log flow-end access-list CSM_FW_ACL_ remark rule-id 268437505: PREFILTER POLICY: ftdvha-dperezve access-list CSM_FW_ACL_ remark rule-id 268437505: RULE: Internet_Traffic Additional Information: Forward Flow based lookup yields rule: in id=0x1461708f7a90, priority=12, domain=permit, trust hits=172729, user_data=0x146183cf8380, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any, ifc=VLAN2813(vrfid:0) dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, ifc=any, vlan=0, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 13 Type: CONN-SETTINGS Subtype: Result: ALLOW Config: class-map class-default match any policy-map global_policy class class-default set connection advanced-options UM_STATIC_TCP_MAP service-policy global_policy global Additional Information: Forward Flow based lookup yields rule: in id=0x146170d472a0, priority=7, domain=conn-set, deny=false hits=177181, user_data=0x146170d413f0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 14 Type: NAT Subtype: Result: ALLOW Config: nat (VLAN2813,VLAN232) after-auto source dynamic

VLAN2813 interface Additional Information: Forward Flow based lookup yields rule: in id=0x146170032540, priority=6, domain=nat, deny=false hits=8252, user_data=0x1461af306740, cs_id=0x0, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=VLAN232(vrfid:0) Phase: 15 Type: NAT Subtype: per-session Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461af9c3320, priority=0, domain=nat-per-session, deny=true hits=188612, user_data=0x0, cs_id=0x0, reverse, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 16 Type: IP-OPTIONS Subtype: Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461aff02da0, priority=0, domain=inspect-ip-options, deny=true hits=177189, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 17 Type: ACCESS-LIST Subtype: log Result: ALLOW Config: access-group CSM_FW_ACL_ global access-list CSM_FW_ACL_ advanced trust ip ifc VLAN2813 object VLAN2813 any rule-id 268437505 event-log flow-end access-list CSM_FW_ACL_ remark rule-id 268437505: PREFILTER POLICY: ftdvha-dperezve access-list CSM_FW_ACL_ remark rule-id 268437505: RULE: Internet_Traffic Additional Information: Forward Flow based lookup yields rule: in id=0x1461708f7a90, priority=12, domain=permit, trust hits=172729, user_data=0x146183cf8380, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any, ifc=VLAN2813(vrfid:0) dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, ifc=any, vlan=0, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 18 Type: CONN-SETTINGS Subtype: Result: ALLOW Config: class-map class-default match any policy-map global_policy class class-default set connection advanced-options UM_STATIC_TCP_MAP service-policy global_policy global Additional Information: Forward Flow based lookup yields rule: in id=0x146170d472a0, priority=7, domain=conn-set, deny=false hits=177181, user_data=0x146170d413f0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 19 Type: NAT Subtype: Result: ALLOW Config: nat (VLAN2813,VLAN232) after-auto source dynamic VLAN2813 interface Additional Information: Forward Flow based lookup yields rule: in id=0x146170032540, priority=6, domain=nat, deny=false hits=8252, user_data=0x1461af306740, cs_id=0x0, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=VLAN232(vrfid:0) Phase: 20 Type: NAT Subtype: per-session Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461af9c3320, priority=0, domain=nat-per-session, deny=true hits=188613, user_data=0x0, cs_id=0x0, reverse, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 21 Type: IP-OPTIONS Subtype: Result: ALLOW Config: Additional Information: Forward Flow based lookup yields rule: in id=0x1461aff02da0, priority=0, domain=inspect-ip-options, deny=true hits=177189, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 22 Type: ACCESS-LIST Subtype: log Result: ALLOW Config: access-group CSM_FW_ACL_ global access-list CSM_FW_ACL_ advanced trust ip ifc VLAN2813 object VLAN2813 any rule-id 268437505 event-log flow-end access-list CSM_FW_ACL_ remark rule-id 268437505: PREFILTER POLICY: ftdvha-dperezve access-list CSM_FW_ACL_ remark rule-id 268437505: RULE: Internet_Traffic Additional Information: Forward Flow based lookup yields rule: in id=0x1461708f7a90, priority=12, domain=permit, trust hits=172729, user_data=0x146183cf8380, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any, ifc=VLAN2813(vrfid:0) dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, ifc=any, vlan=0, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 23 Type: CONN-SETTINGS Subtype: Result: ALLOW Config: class-map class-default match any policy-map global_policy class class-default set connection advanced-options UM_STATIC_TCP_MAP service-policy global_policy global Additional Information: Forward Flow based lookup yields rule: in id=0x146170d472a0, priority=7, domain=conn-set, deny=false hits=177181, user_data=0x146170d413f0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Phase: 24 Type: NAT Subtype: Result: ALLOW Config: nat (VLAN2813,VLAN232) after-auto source dynamic VLAN2813 interface Additional Information: Forward Flow based lookup yields rule: in id=0x146170032540, priority=6, domain=nat, deny=false hits=8252, user_data=0x1461af306740, cs_id=0x0, flags=0x0, protocol=0 src ip/id=192.168.13.0, mask=255.255.255.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=VLAN2813(vrfid:0),

```
output_ifc=VLAN232(vrfid:0) Phase: 25 Type: NAT Subtype: per-session Result: ALLOW Config:
Additional Information: Forward Flow based lookup yields rule: in id=0x1461af9c3320, priority=0,
domain=nat-per-session, deny=true hits=188613, user_data=0x0, cs_id=0x0, reverse, use_real_addr,
flags=0x0, protocol=0 src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0,
mask=0.0.0.0, port=0, tag=any, dscp=0x0, nsg_id=none input_ifc=any, output_ifc=any Phase: 26
Type: IP-OPTIONS Subtype: Result: ALLOW Config: Additional Information: Forward Flow based
lookup yields rule: in id=0x1461aff02da0, priority=0, domain=inspect-ip-options, deny=true
hits=177190, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=0 src ip/id=0.0.0.0,
mask=0.0.0.0, port=0, tag=any dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0,
nsg_id=none input_ifc=VLAN2813(vrfid:0), output_ifc=any Result: input-interface:
VLAN2813(vrfid:0) input-status: up input-line-status: up output-interface: VLAN232(vrfid:0)
output-status: up output-line-status: up Action: allow
```

Risoluzione dei problemi

Per verificare quale voce PBR è applicata in **interesting traffic** , eseguire il comando **debug policy-route**.

```
firepower# debug policy-route debug policy-route enabled at level 1 firepower# pbr: policy based
route lookup called for 192.168.13.5/45951 to 208.67.220.220/53 proto 17 sub_proto 0 received on
interface VLAN2813, NSGs, nsg_id=none pbr: First matching rule from ACL(2) pbr: route map
PBR_RouteMap, sequence 10, permit; proceed with policy routing pbr: evaluating verified next-hop
10.88.243.1 pbr: policy based routing applied; egress_ifc = VLAN230 : next_hop = 10.88.243.1
pbr: policy based route lookup called for 192.168.13.5/56099 to 208.67.220.220/53 proto 17
sub_proto 0 received on interface VLAN2813, NSGs, nsg_id=none pbr: First matching rule from
ACL(2) pbr: route map PBR_RouteMap, sequence 10, permit; proceed with policy routing pbr:
evaluating verified next-hop 10.88.243.1 pbr: policy based routing applied; egress_ifc = VLAN230
: next_hop = 10.88.243.1 pbr: policy based route lookup called for 192.168.13.2/24 to 8.8.8.8/0
proto 1 sub_proto 8 received on interface VLAN2813, NSGs, nsg_id=none pbr: First matching rule
from ACL(2) pbr: route map PBR_RouteMap, sequence 10, permit; proceed with policy routing pbr:
evaluating verified next-hop 10.88.243.1 pbr: policy based routing applied; egress_ifc = VLAN230
: next_hop = 10.88.243.1 pbr: policy based route lookup called for 192.168.13.5/40669 to
208.67.220.220/53 proto 17 sub_proto 0 received on interface VLAN2813, NSGs, nsg_id=none
```

Informazioni su questa traduzione

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