在FMC管理的FTD上為雙ISP配置PBR的IP SLA

目錄

簡介

本檔案介紹如何在由(FMC)管理的FTD上設定PBR以及IP SLA。

作者：Daniel Perez Vertti Vazquez，思科TAC工程師。

必要條件

需求

思科建議您瞭解以下主題：

- 上的PBR配置 **Cisco Adaptive Security Appliance (ASA)**
- FlexConfig on **Firepower**
- IP SLA

採用元件

本文中的資訊係根據以下軟體和硬體版本：

- Cisco FTD版本7.0.0（內部版本94）
- Cisco FMC 7.0.0版（內部版本94）

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

背景資訊

本檔案將說明如何設定 **Policy Based Routing (PBR)** 以及 **Internet Protocol Service Level Agreement (IP SLA)** 在 Cisco **Firepower Threat Defense (FTD)** 由思科Firepower管理中心(FMC)管理。

傳統路由僅基於目的IP地址做出轉發決策。PBR是路由協定和靜態路由的替代方案。

它提供對路由的更精細控制，因為它允許將來源IP位址或來源和目的地連線埠等引數用作除目的地IP位址之外的路由條件。

PBR的可能方案包括源敏感應用或專用鏈路上的流量。

可以與PBR一起實施IP SLA以確保下一跳的可用性。IP SLA是一種通過交換常規資料包來監控端到端連線的機制。

發佈時，PBR不直接通過FMC支援 **Graphical User Interface (GUI)** 中，該功能的配置要求使用FlexConfig策略。

另一方面，只有 **Internet Control Message Protocol (ICMP)** FTD支援SLA。

在此範例中，PBR用於透過主要路由器路由封包 **Internet Service Provider (ISP)** 基於源IP地址的電路。

同時，IP SLA會監控連通性，並在發生任何故障時強制回退到備用電路。

設定

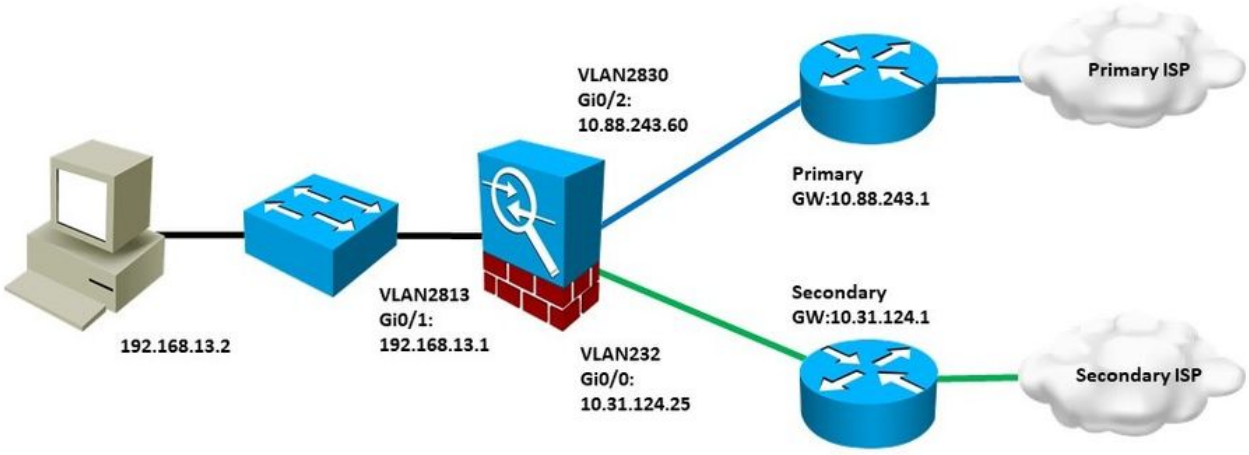
網路圖表

在本例中，Cisco FTD有兩個外部介面：VLAN230和VLAN232。每個交換機都連線到不同的ISP。

來自內部網路VLAN2813的流量通過使用PBR的主要ISP路由。

PBR路由對映僅基於源IP地址作出轉發決策（從VLAN2813接收的所有內容都必須路由到VLAN230中的10.88.243.1），並且應用於FTD的介面GigabitEthernet 0/1。

同時，FTD使用IP SLA來監控與每個ISP閘道的連線。在VLAN230中發生任何故障時，FTD會故障切換到VLAN232上的備份電路。

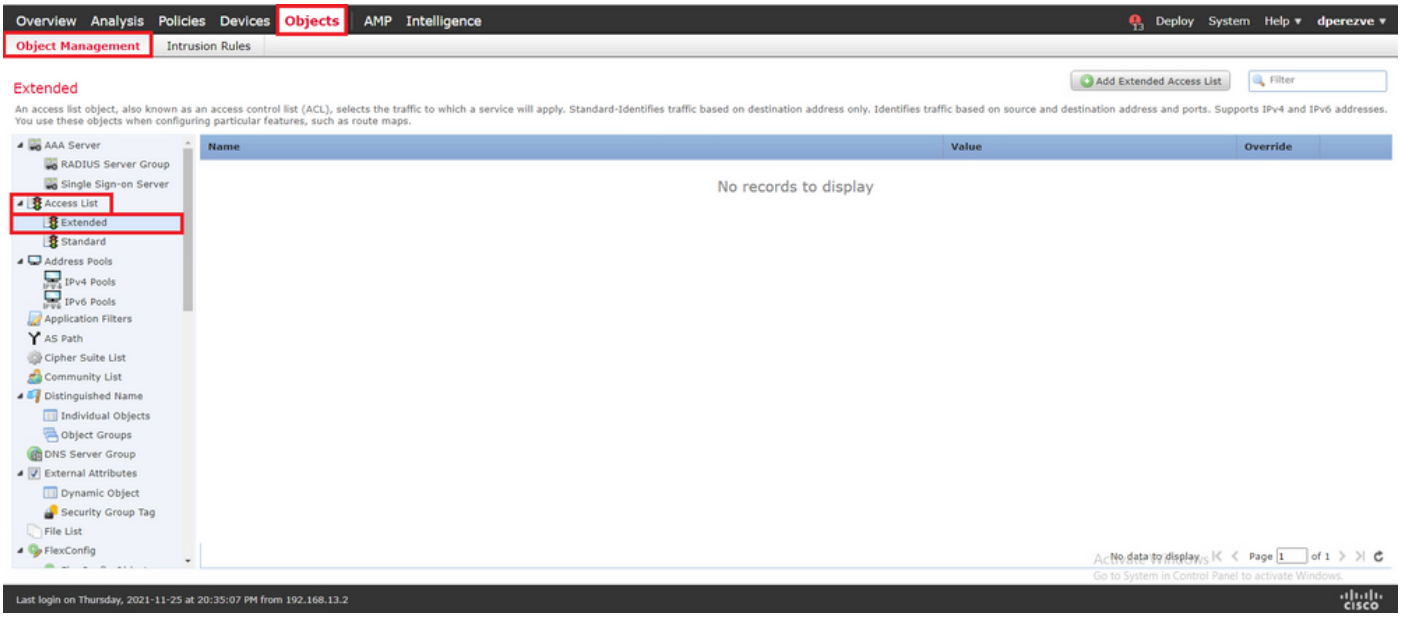


組態

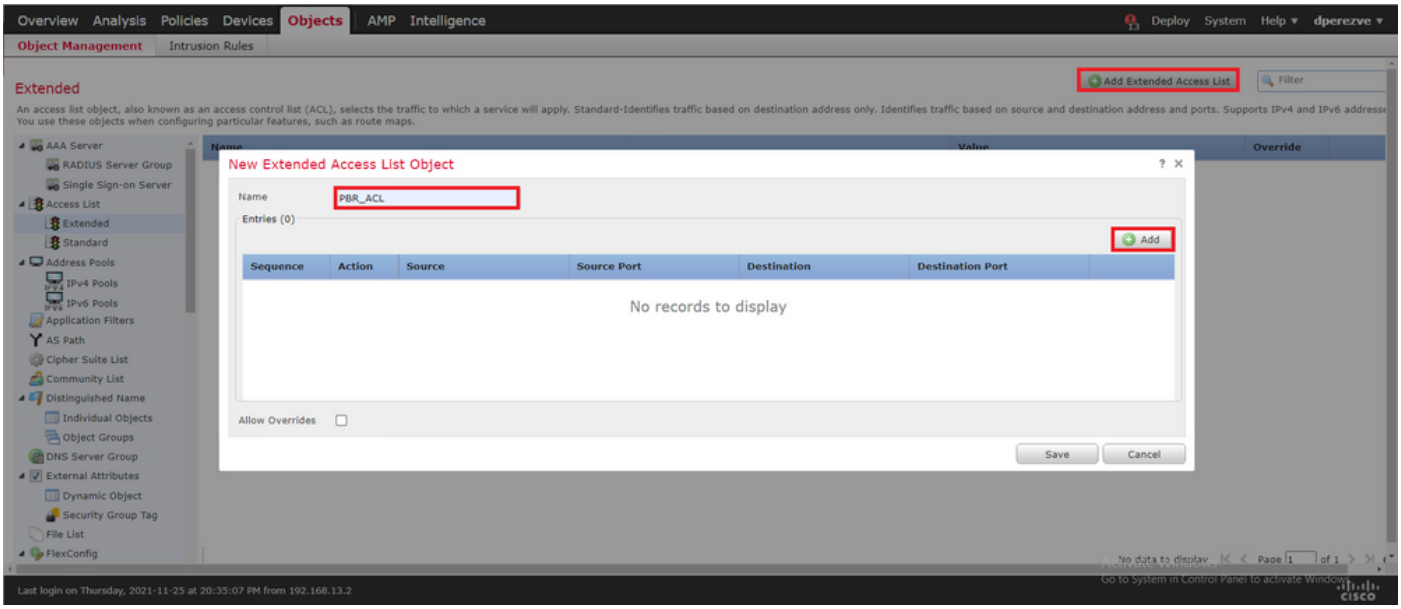
步驟1.配置PBR訪問清單

在PBR配置的第一步中，定義哪些資料包必須遵循路由策略。PBR利用路由對映和訪問清單來識別流量。

要定義匹配條件的訪問清單，請導航至 **Objects > Object Management** 並選取 **Extended** 在 **Access List** 目錄中的類別。



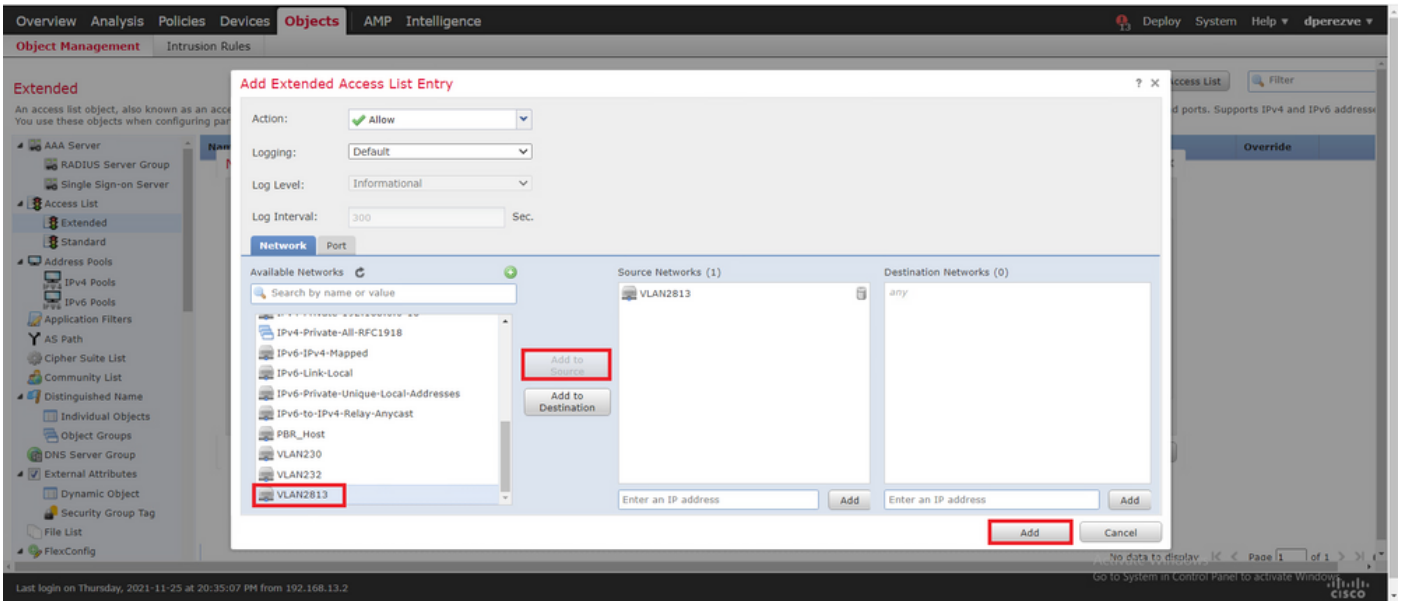
按一下 **Add Extended Access List** .在 **New Extended Access List Object** 視窗，為對象指定名稱，然後選擇 **Add** 按鈕以從訪問清單配置開始。



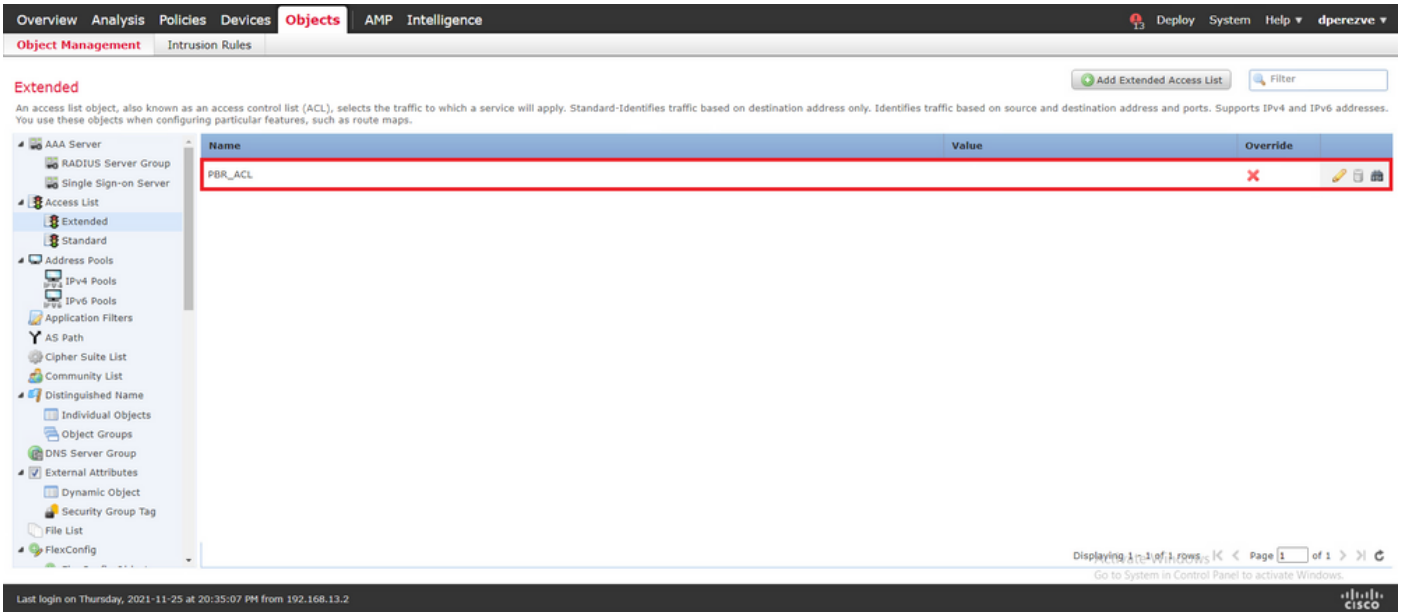
在 **Add Extended Access List Entry** 視窗中，選擇代表內部網路的對象，本例中為VLAN2813。

按一下 **Add to Source** 將其定義為訪問清單的源。

按一下 **Add** 建立條目。



按一下 **Save** .必須將對象新增到對象清單中。

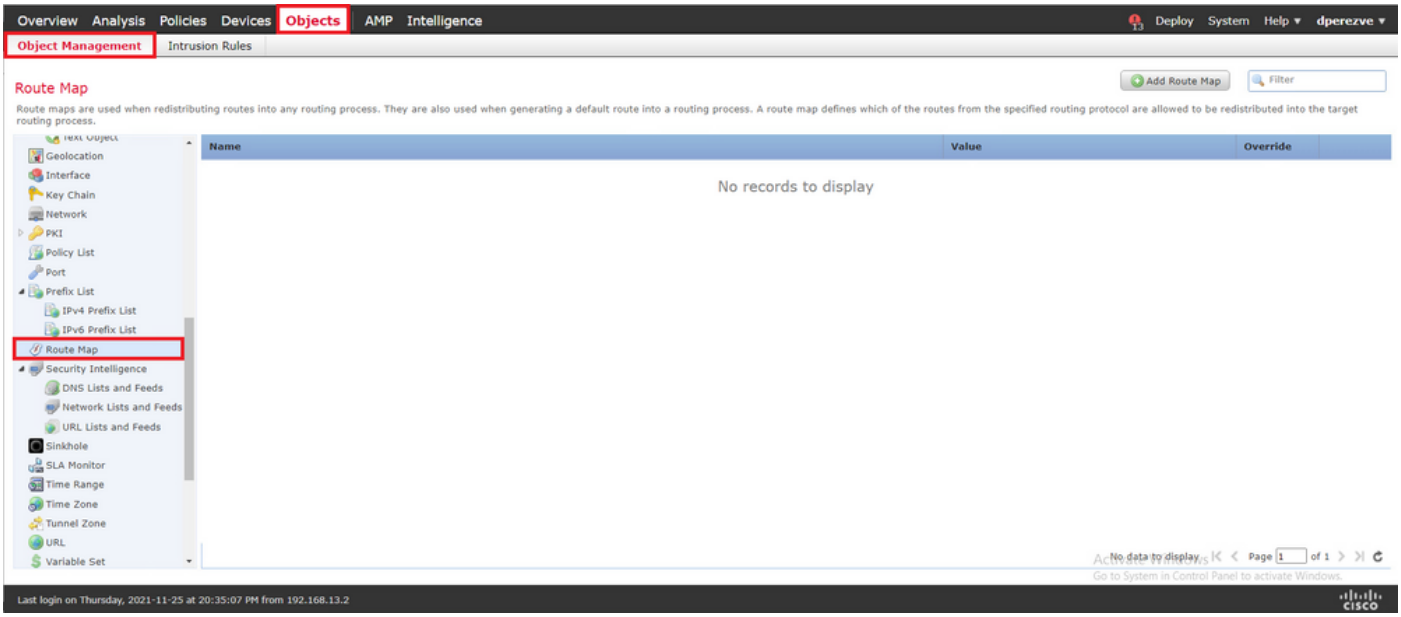


步驟2.配置PBR路由對映

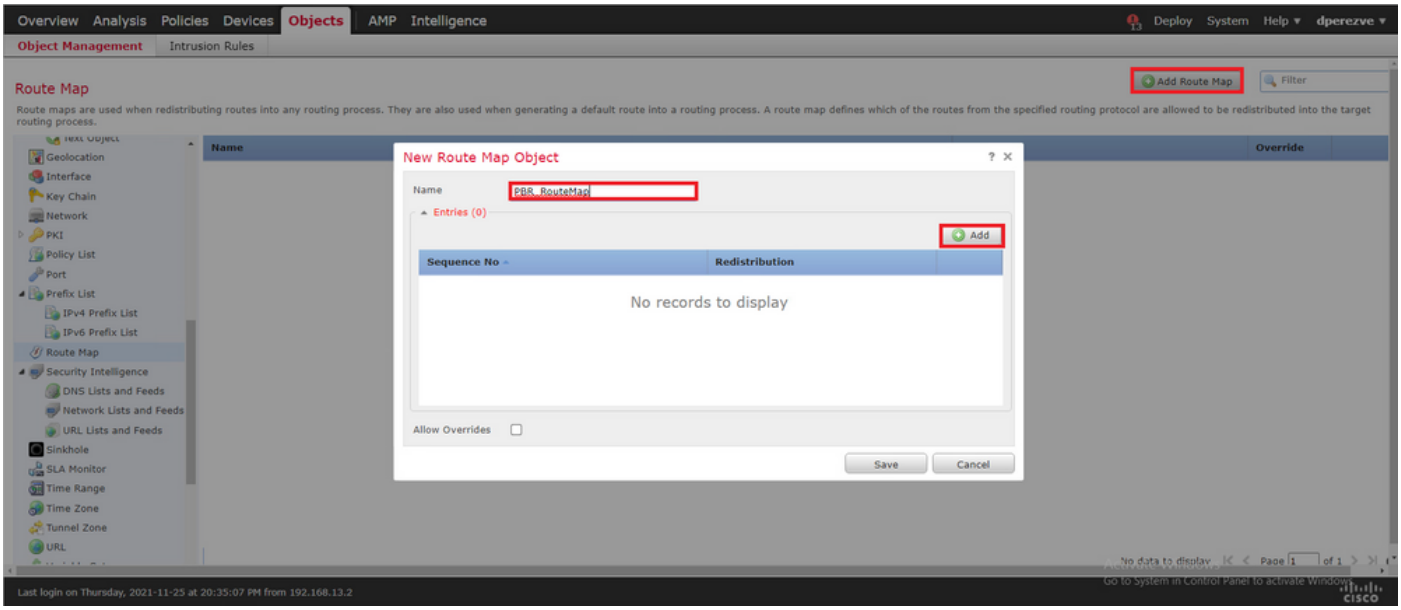
配置PBR訪問清單後，將其分配給路由對映。路由對映根據訪問清單中定義的match子句評估流量。

發生匹配後，路由對映會執行路由策略中定義的操作。

要定義路由對映，請導航至 **Objects > Object Management** 並選取 **Route Map** 目錄中的URL。



按一下 **Add Route Map >**。在 **New Route Map Object** 為對象指定名稱，然後按一下 **Add** 以建立新的路由對映條目。



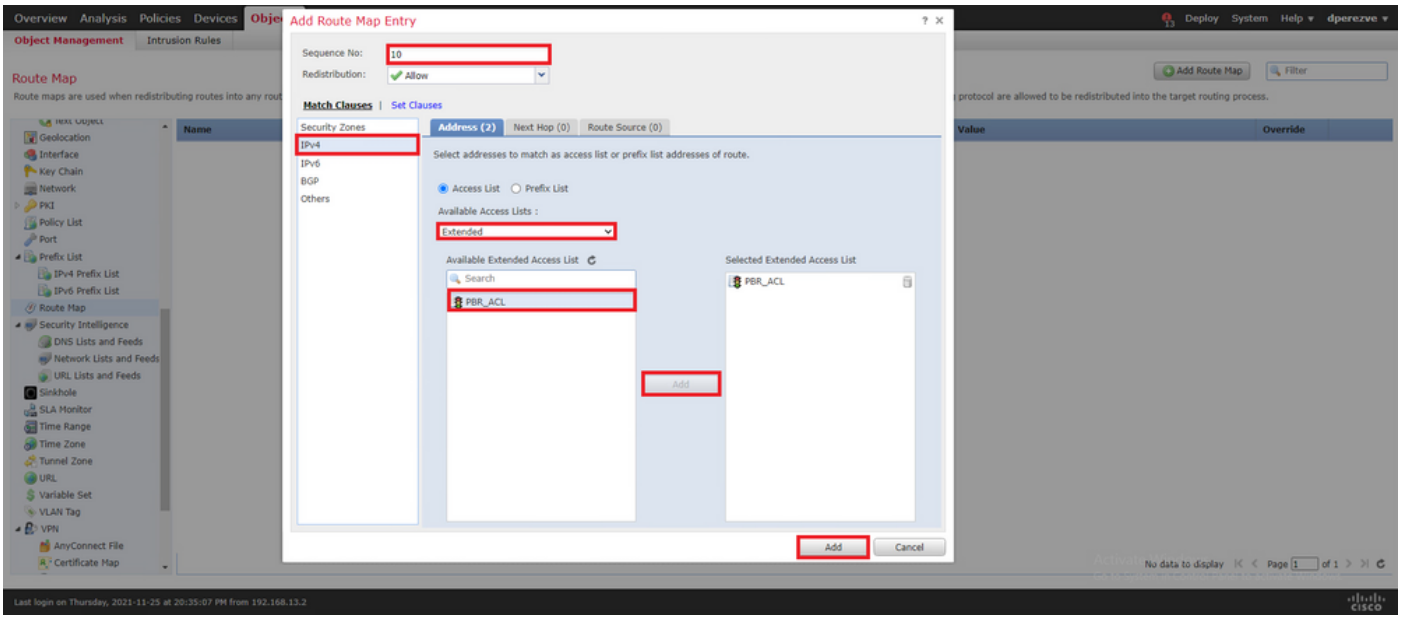
在 **Add Route Map Entry** 視窗中，定義新條目的位置的序號。

導航至 **IPv4 > Match Clauses** 並在中選擇**Extended Available Access List** 下拉選單。

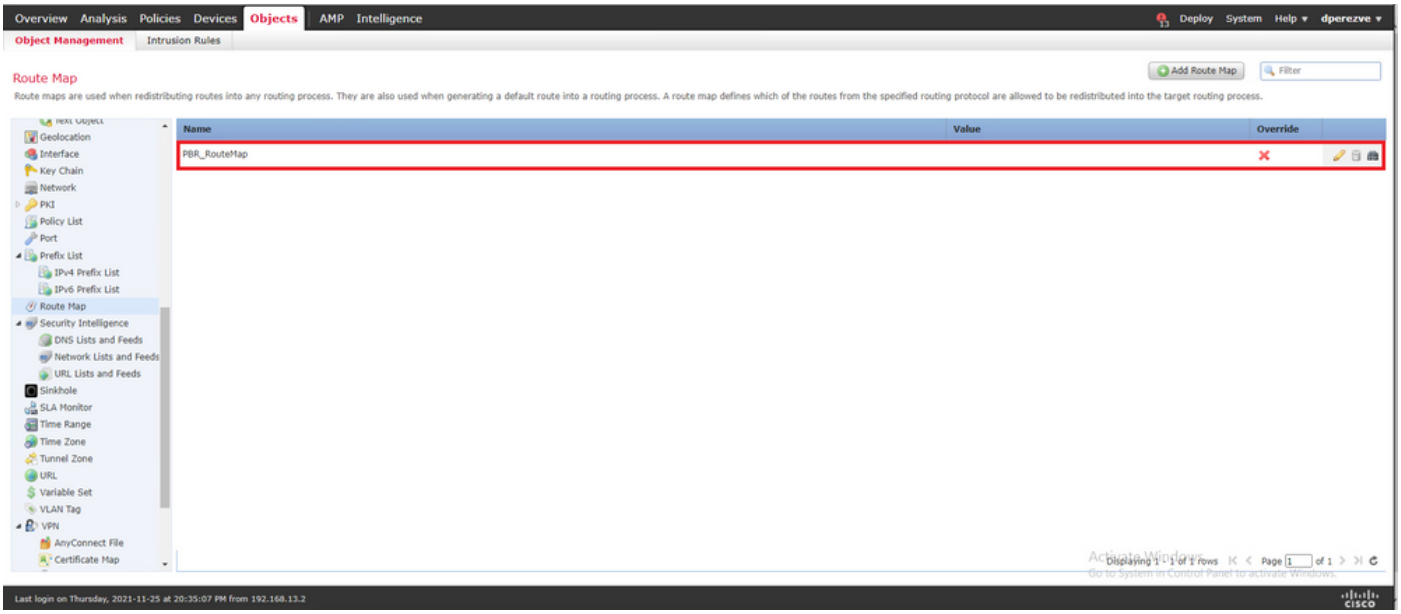
選擇在步驟1中建立的訪問清單對象。

按一下 **Add** 建立條目。

註:FTD支援最多65536(從0到65535)個不同的專案。數字越小，優先順序評估就越高。



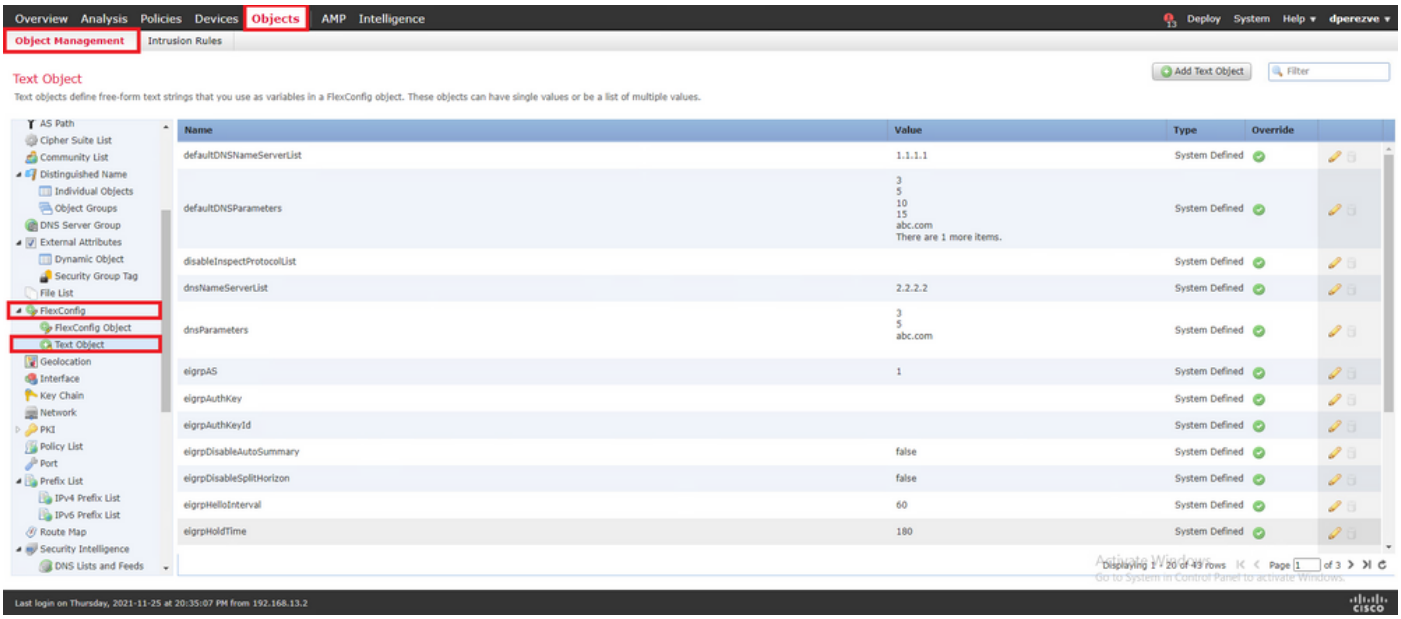
按一下 **Save** . 將對象新增到對象清單。



步驟3.配置FlexConfig文本對象

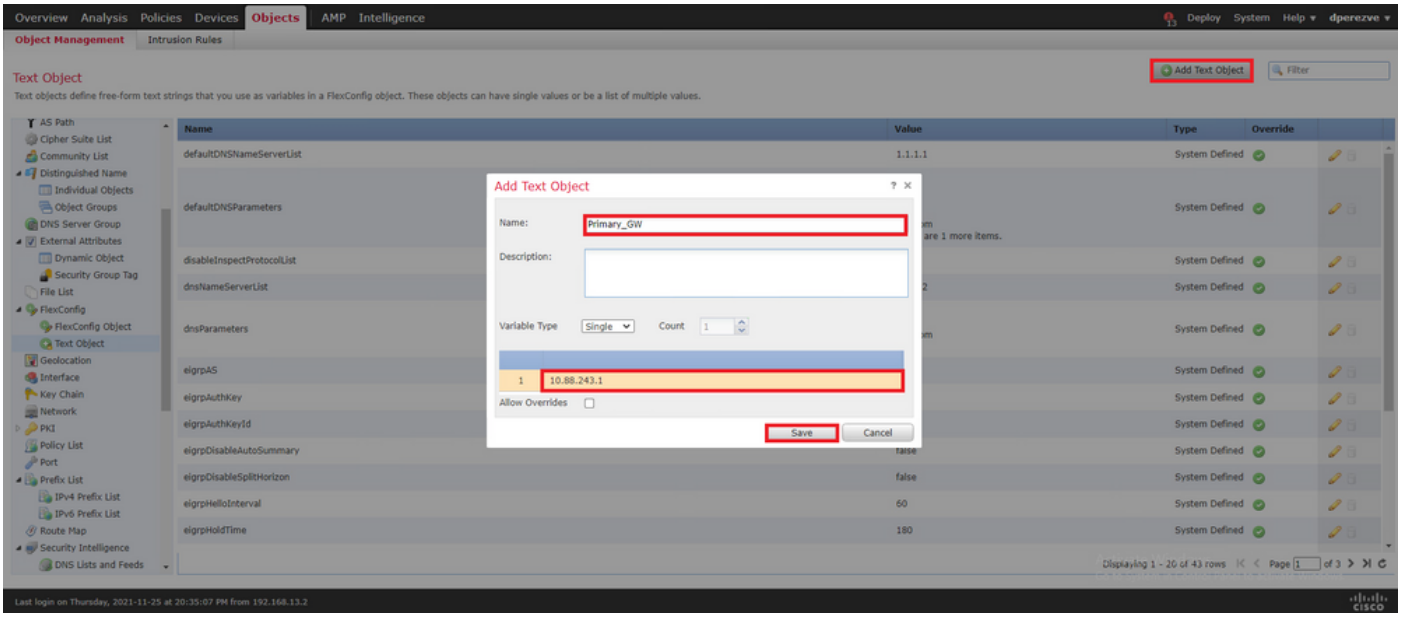
下一步涉及定義代表每個電路的預設網關的FlexConfig文本對象。這些文本對象稍後將用於將PBR與SLA關聯的FlexConfig對象的配置中。

要定義FlexConfig文本對象，請導航至 **Objects > Object Management** 並選取 **Text Object** 在 **FlexConfig** 目錄中的類別。



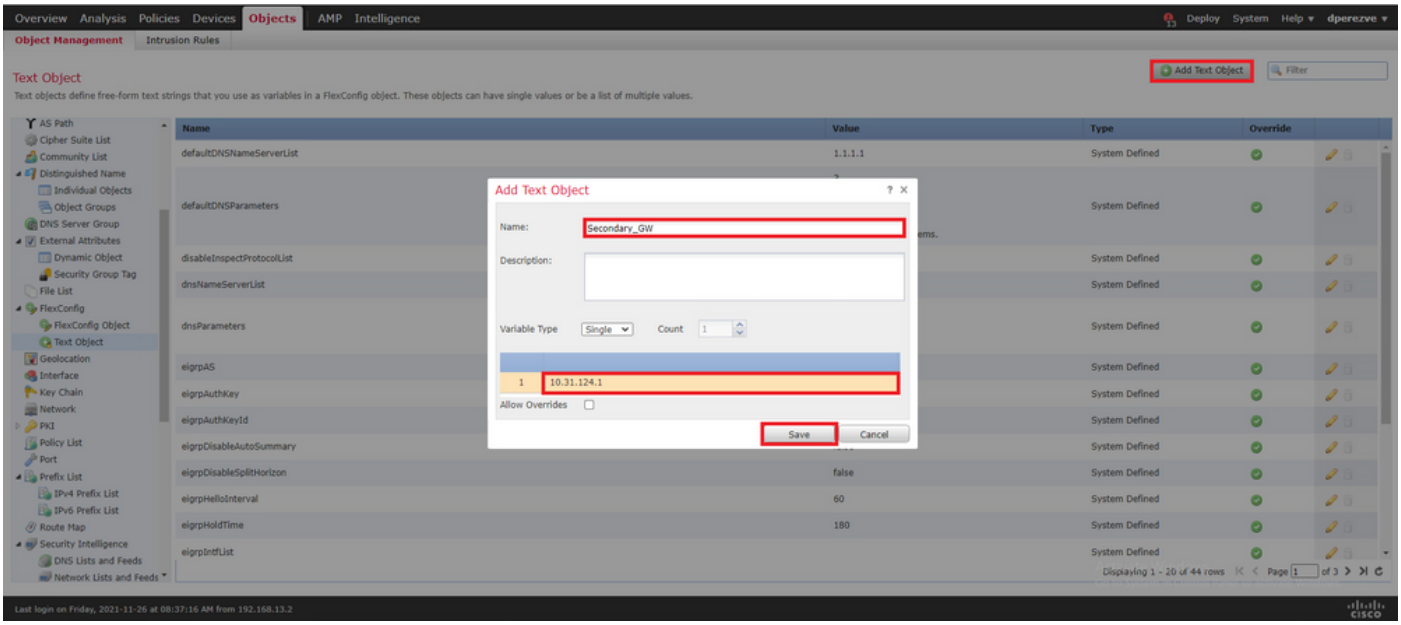
按一下 **Add Text Object** .在 **Add Text Object** 視窗中，為代表主網關的對象分配名稱，並指定此裝置的IPv4地址。

按一下 **Save** 以新增新對象。

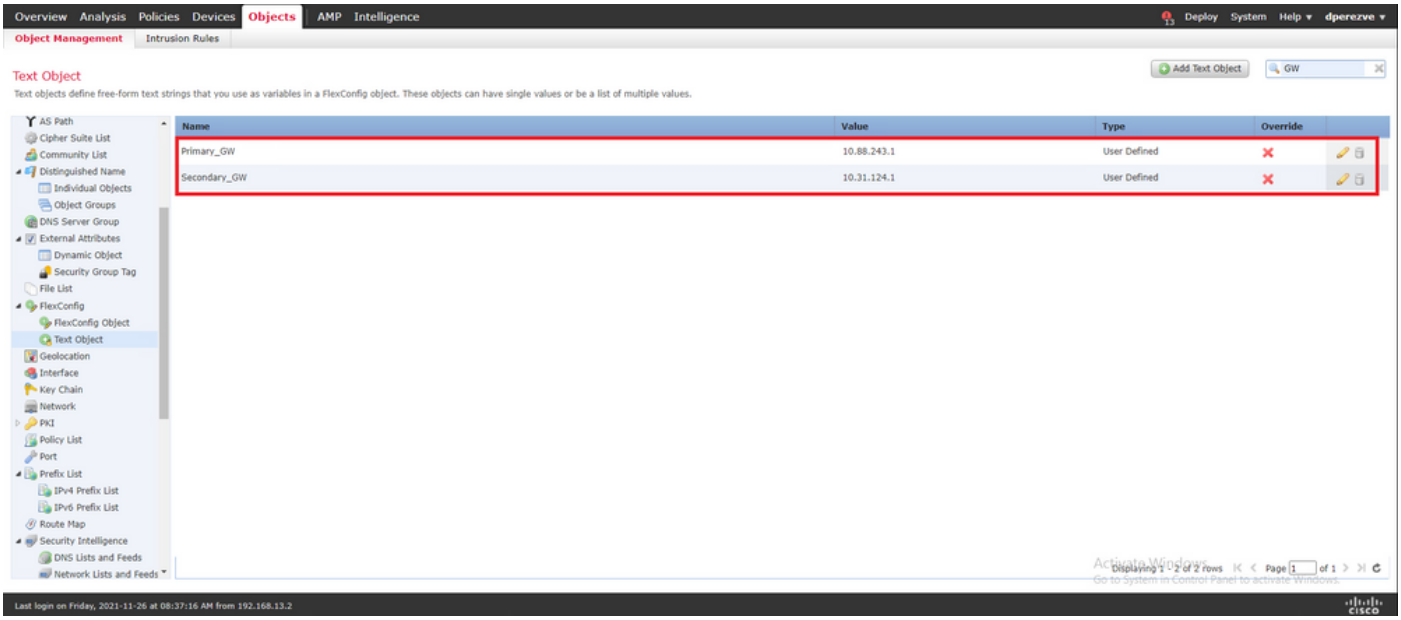


按一下 **Add Text Object** 再次建立第二個對象，這次是備份電路上的Gateway。

使用適當的名稱和IP地址填充新對象，然後按一下 **Save** .

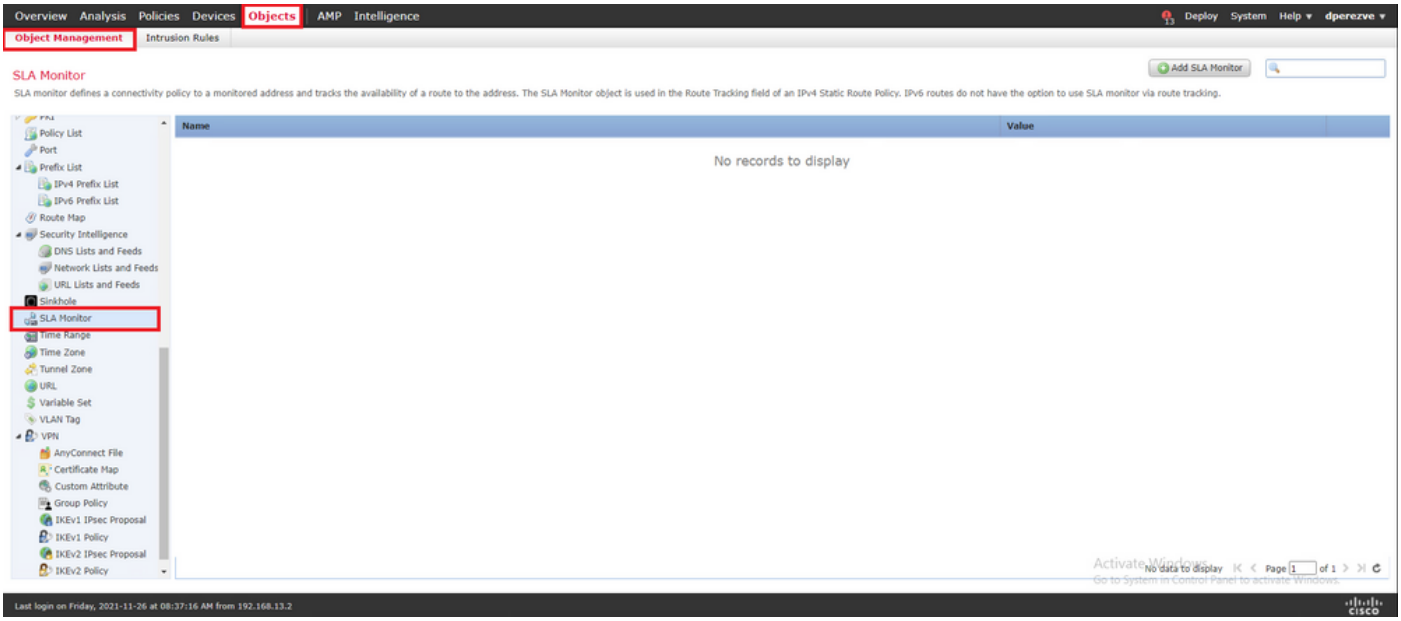


必須將兩個對象和預設對象一起新增到清單中。



步驟4.配置SLA監控器

要定義用於監控到每個網關連線的SLA對象，請導航至 **Objects > Object Management** 並選取 **SLA Monitor** 目錄中的URL。



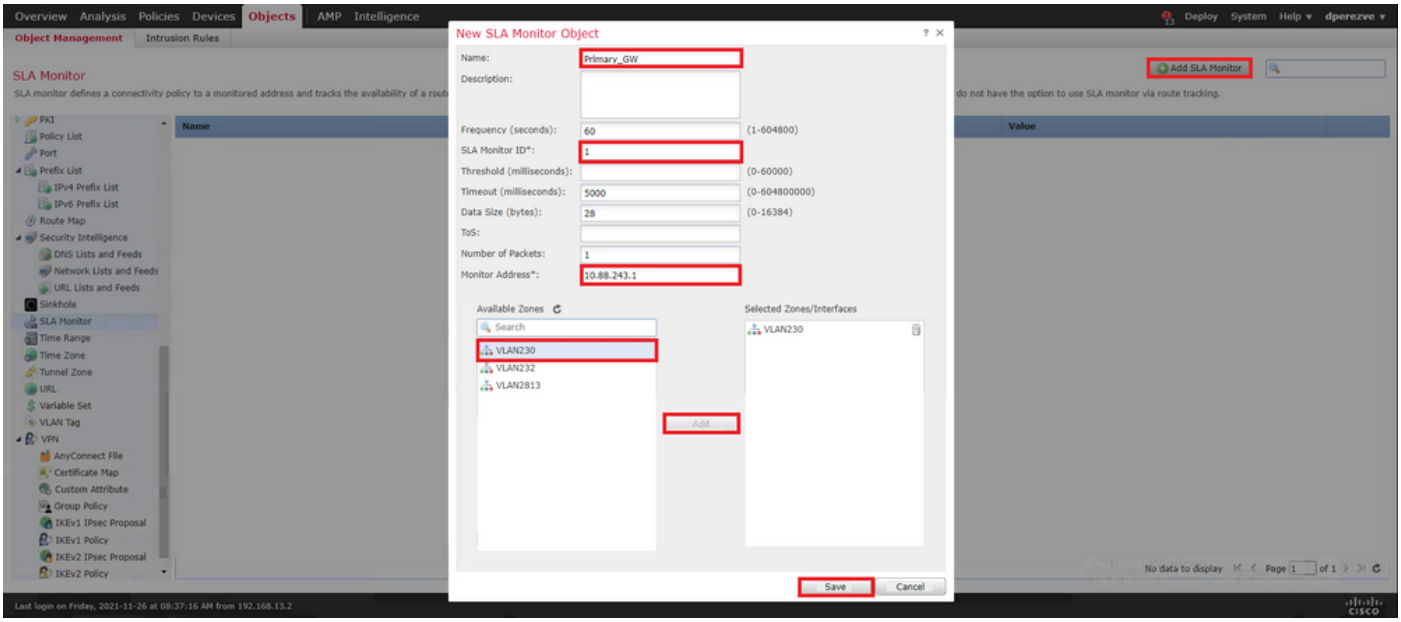
選擇 **Add SLA Monitor** 對象。

在 **New SLA Monitor** 視窗中，定義名稱以及SLA操作的識別符號、必須監控的裝置的IP地址（在本例中為主網關），以及裝置可訪問的介面或區域。

此外，還可以調整超時和閾值。按一下 **Save** .

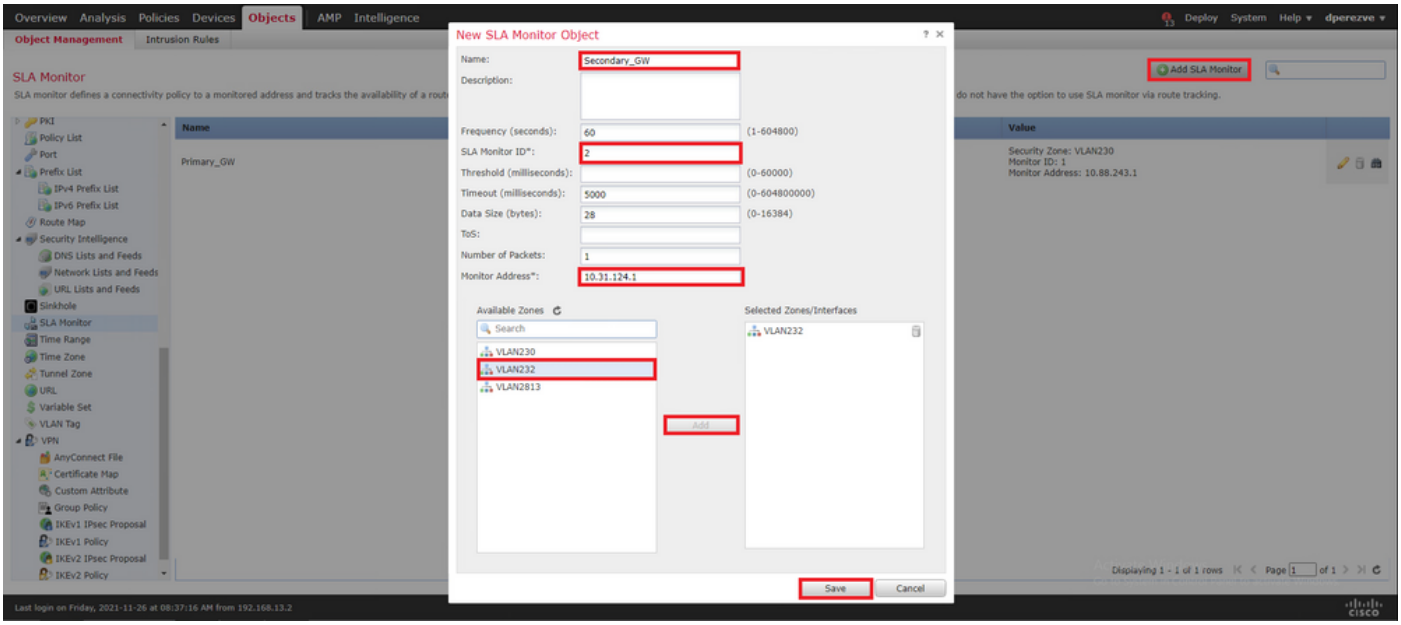
注意:FTD最多支援2000個SLA操作。SLA ID的值範圍為1到2147483647。

注意：如果未指定超時和閾值，則FTD將使用預設計時器：每種情況下為5000毫秒。

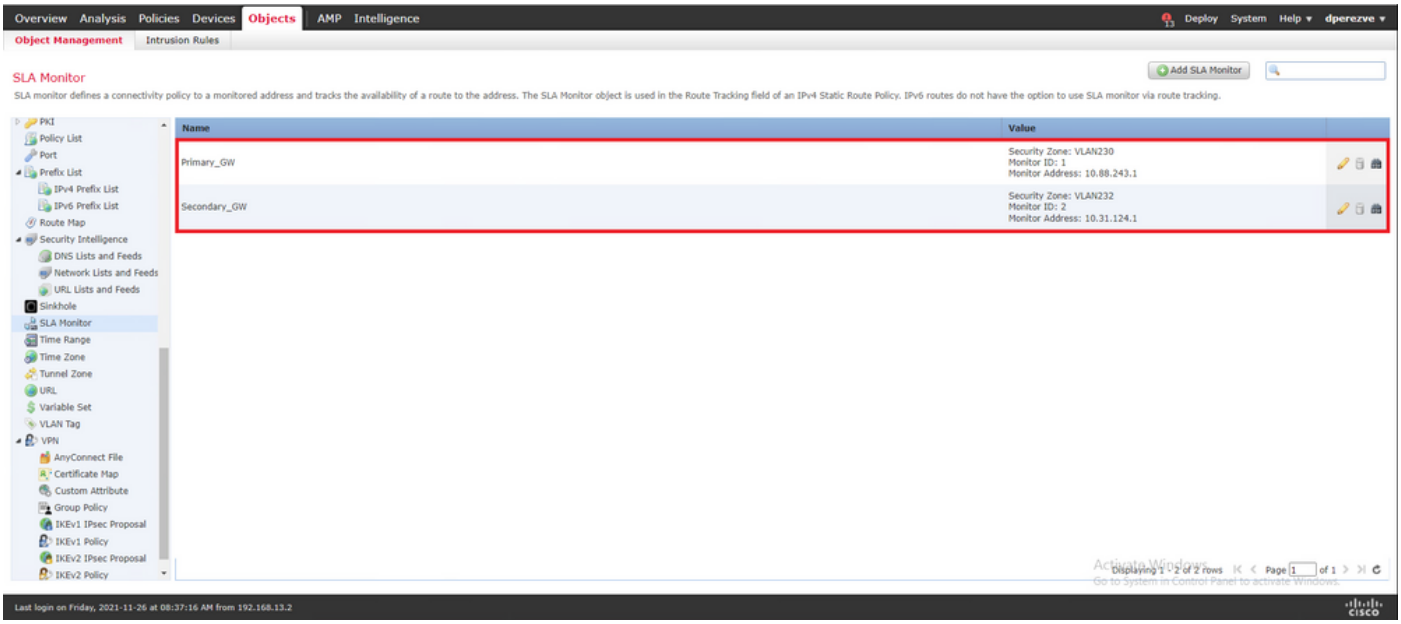


選擇 **Add SLA Monitor** 按鈕再次出現，以建立第二個對象，這次為網關上的備份電路。

使用適當資訊填充新對象，確保SLA ID與為主網關定義的不同，並儲存更改。



必須將兩個對象新增到清單中。

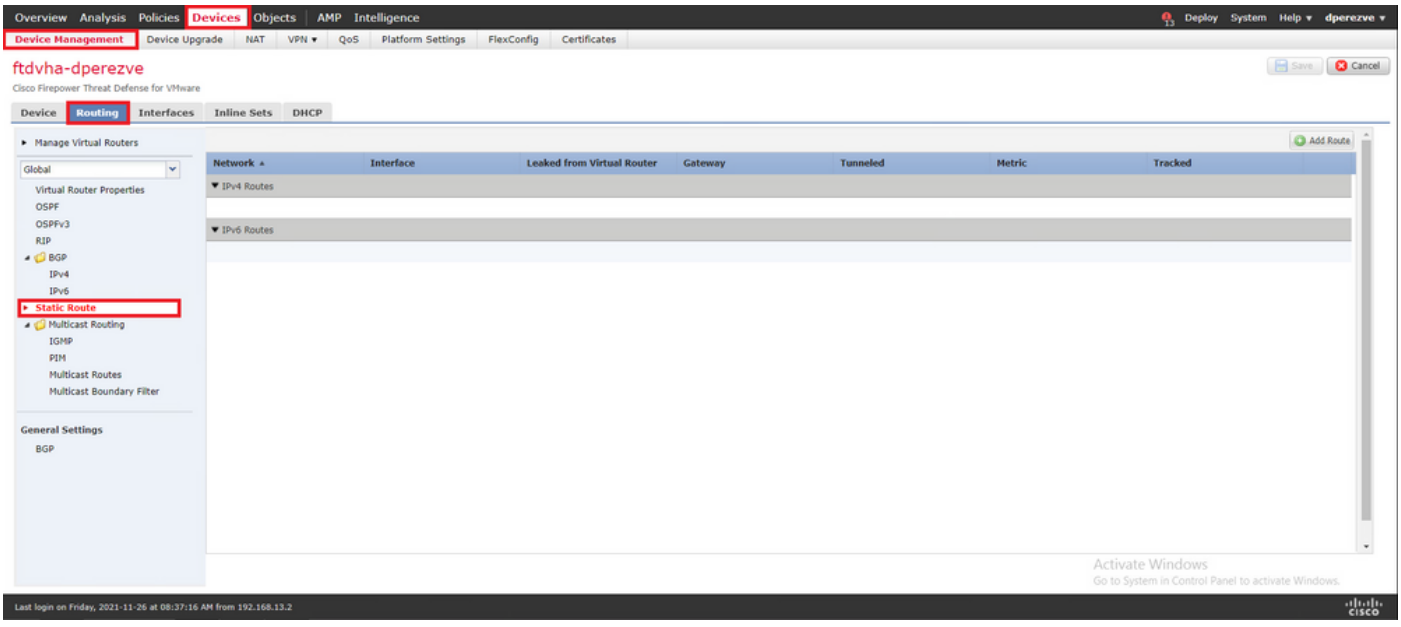


步驟4.使用路由跟蹤配置靜態路由

建立IP SLA對象後，為每個網關定義路由並將其與SLA關聯。

這些路由實際上並不提供從內部到外部的連線（所有路由都是通過PBR執行的），相反，它們需要通過SLA跟蹤到網關的連線。

要配置靜態路由，請導航至 **Devices > Device Management** 中，編輯手頭的FTD並選擇 **Static Route** 在目錄內 **Routing** 頁籤。

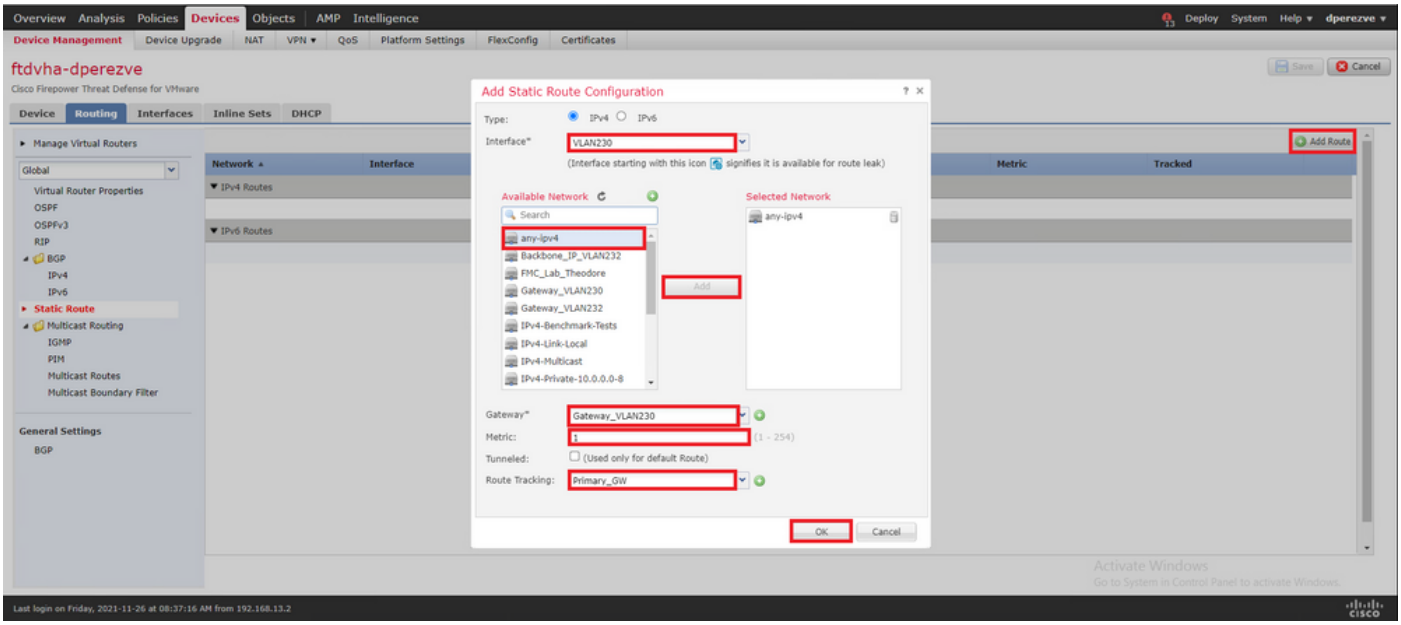


在 **Add Static Route Configuration** 視窗，在Interface下拉選單中，指定必須能夠訪問主網關的介面的名稱。

然後在中選擇目標網路和主網關 **Gateway** 下拉選單。

指定路由的度量並在 **Route Track** 下拉選單，並為步驟3中建立的主網關選擇SLA對象。

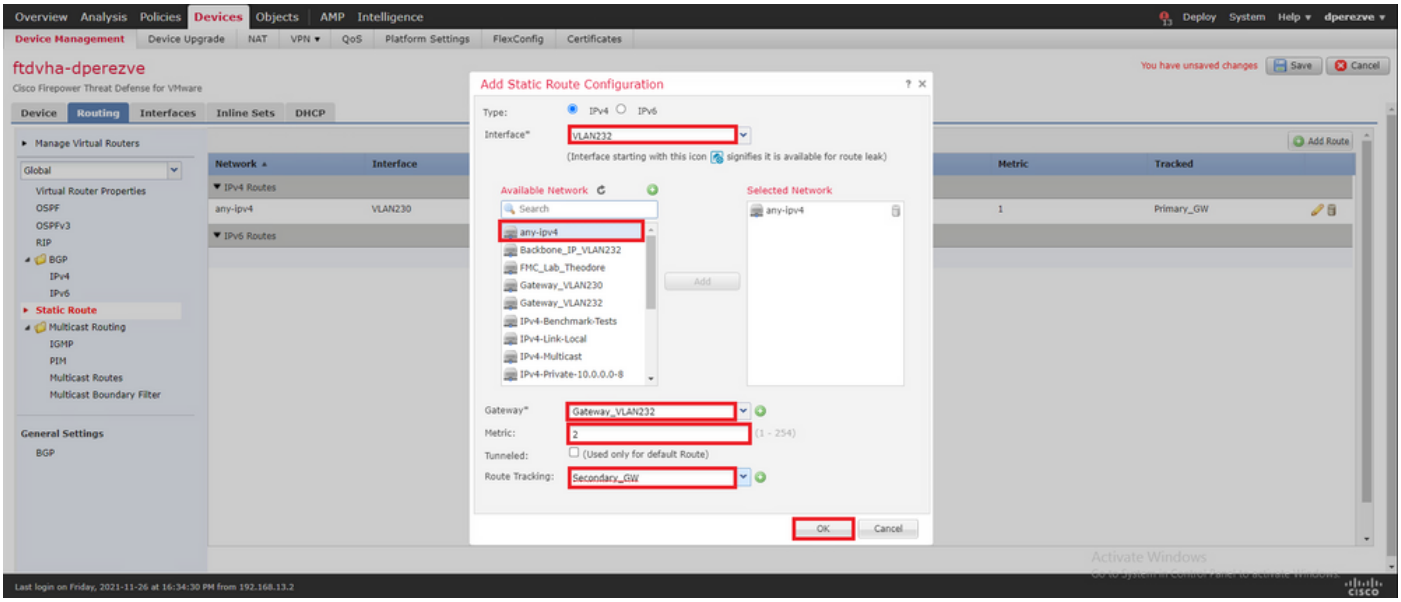
按一下OK新增新路由。



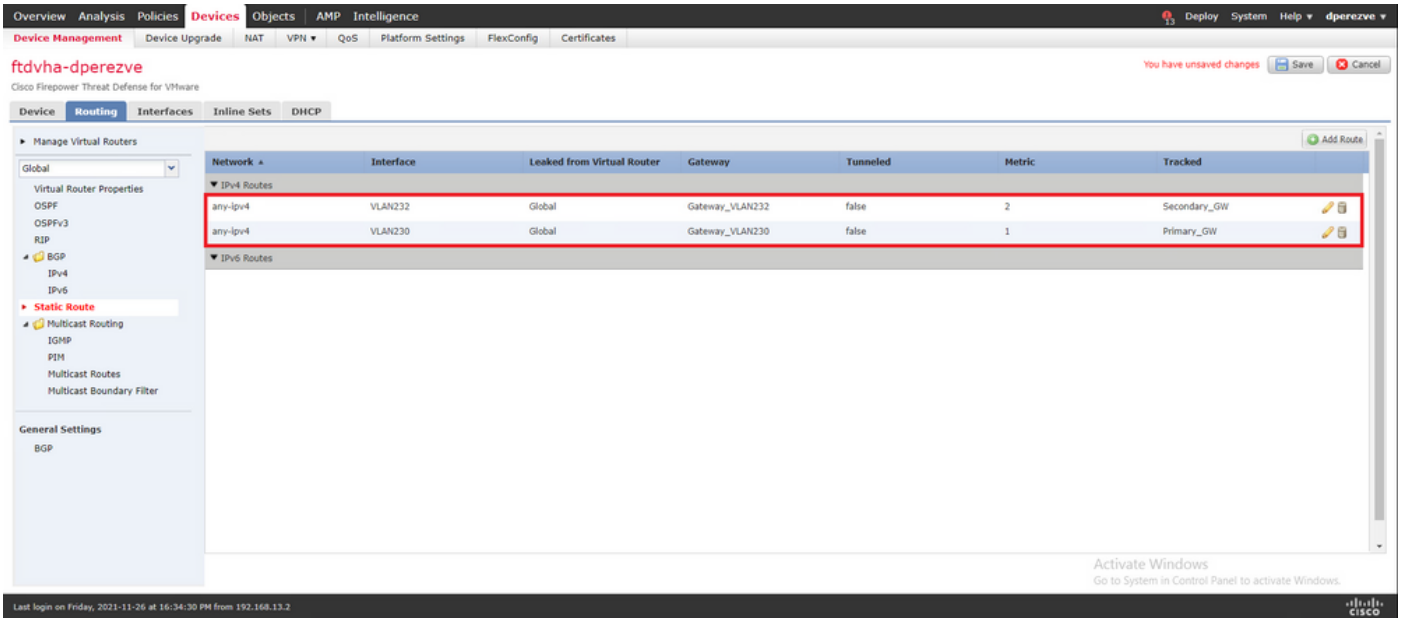
必須為備份網關配置第二個靜態路由。

按一下 **Add Route** 定義新的靜態路由。

填寫 **Add Static Route Configuration** 與備份網關的資訊匹配，並確保此路由的度量高於第一個路由中配置的度量。



必須將兩條路由新增到清單中。

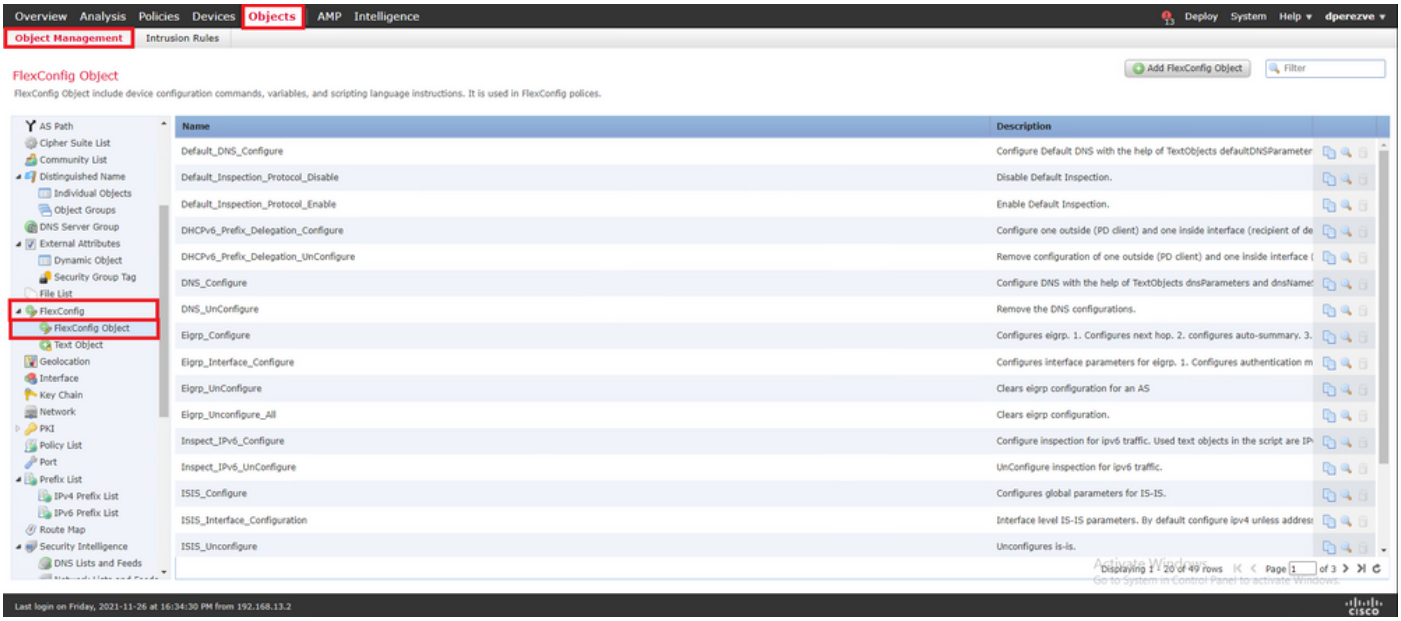


步驟5.配置PBR FlexConfig對象

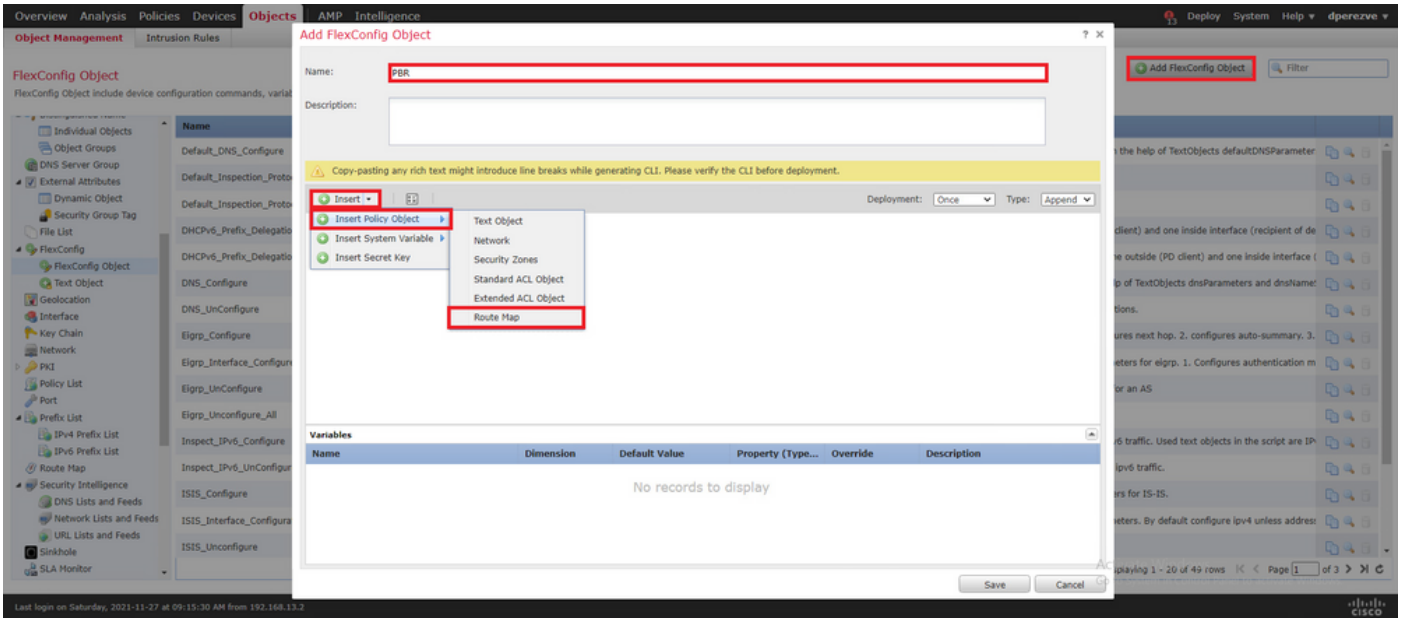
在用於PBR的路由對映下啟用SLA，並在FTD的介面中應用此路由對映。

到目前為止，路由對映只與定義匹配條件的訪問清單相關聯。但是，FMC GUI不支援最後的調整，因此需要FlexConfig對象。

要定義PBR FlexConfig對象，請導航至 **Objects > Object Management** 並選取 **FlexConfig Object** 在 **FlexConfig** 目錄中的類別。

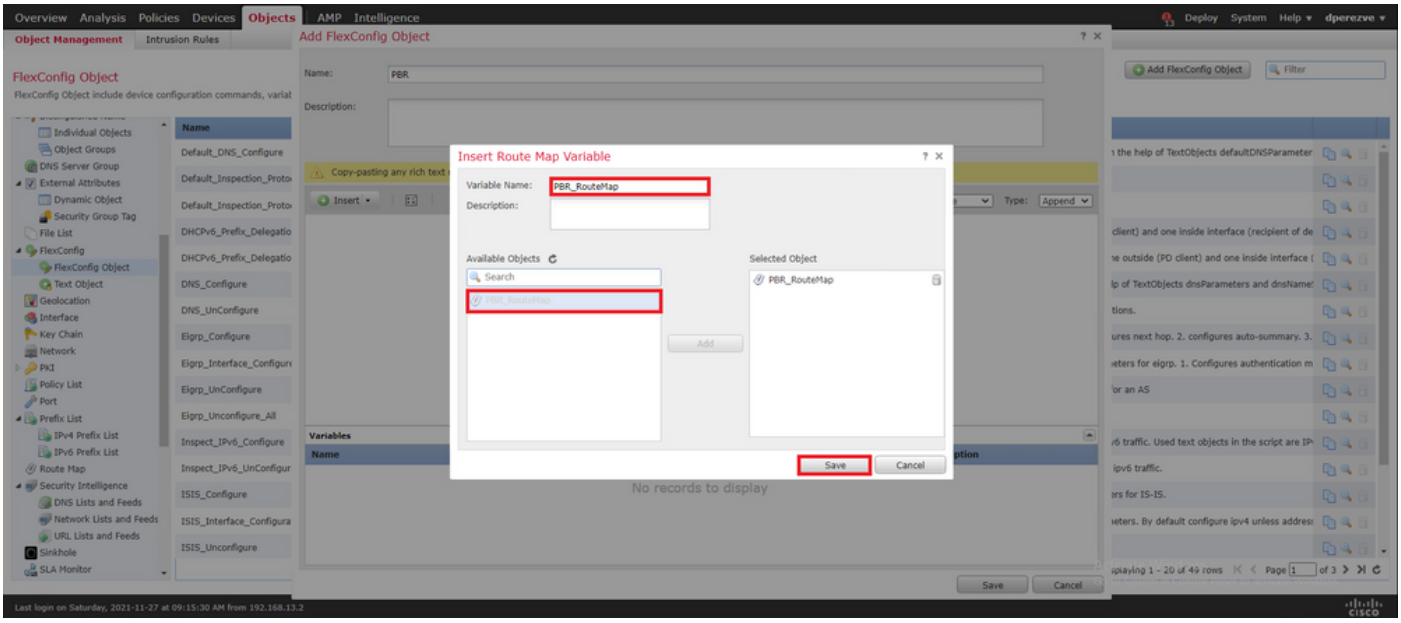


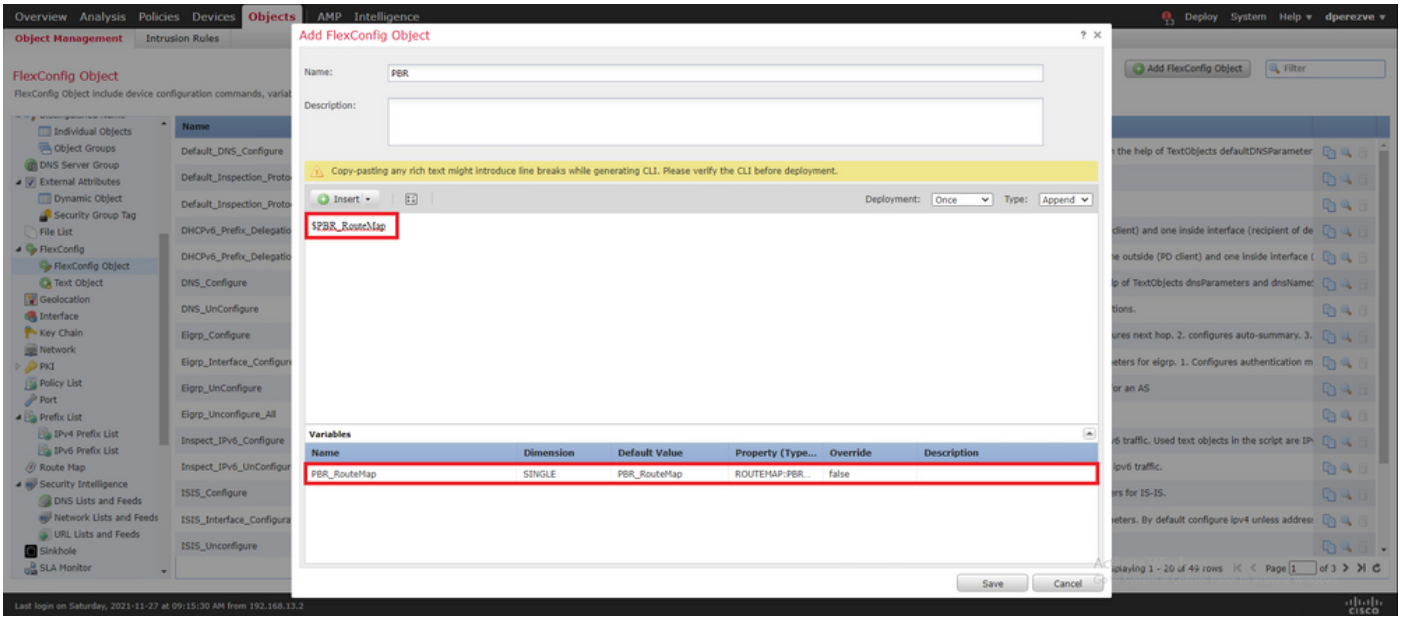
選擇 **Add FlexConfig Object** 按鈕。在 **Add FlexConfig Object** 視窗分配名稱並導航至 **Insert > Insert Policy Object > Route Map** .



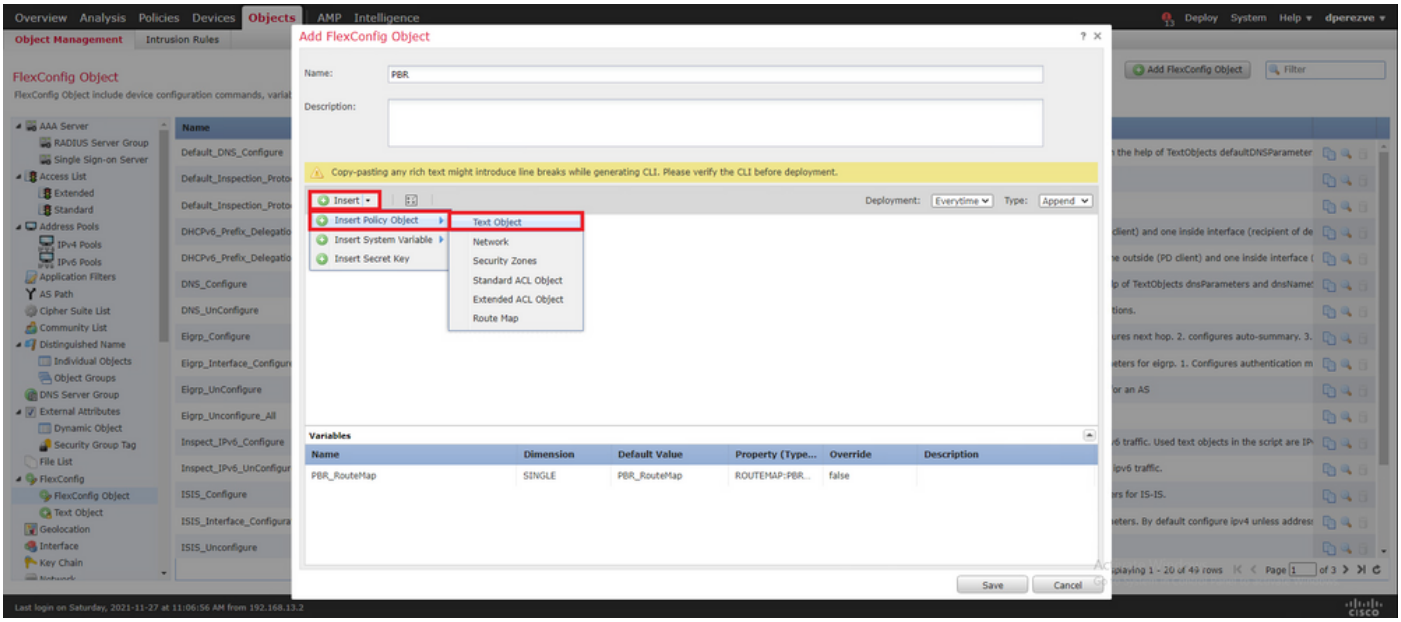
在 **Insert Route Map Variable** 視窗中，為變數指定一個名稱，並選擇在步驟2中建立的PBR對象。

按一下 **Save** 將路由對映新增為FlexConfig對象的一部分。



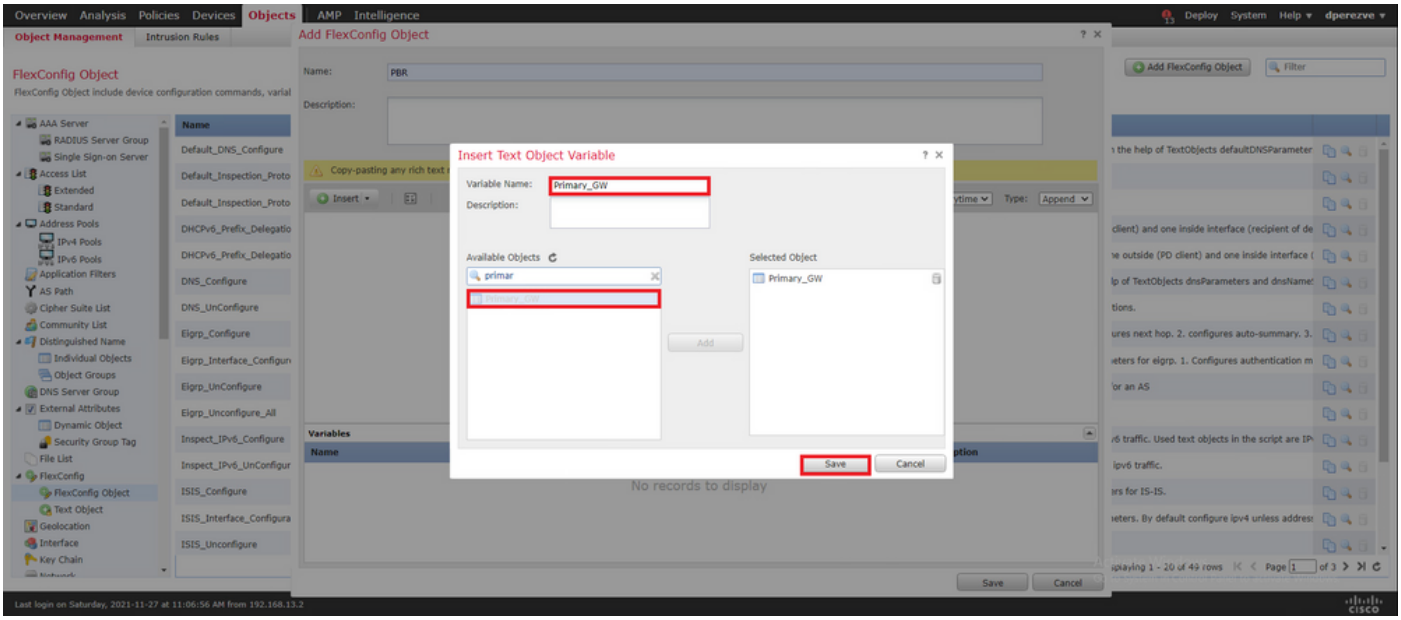


除了路由對映變數之外，我們還必須新增代表每個網關（在步驟3中定義）的FlexConfig文本對象。在 **Add FlexConfig Object** 視窗導航至 **Insert > Insert Policy Object > Text Object** .

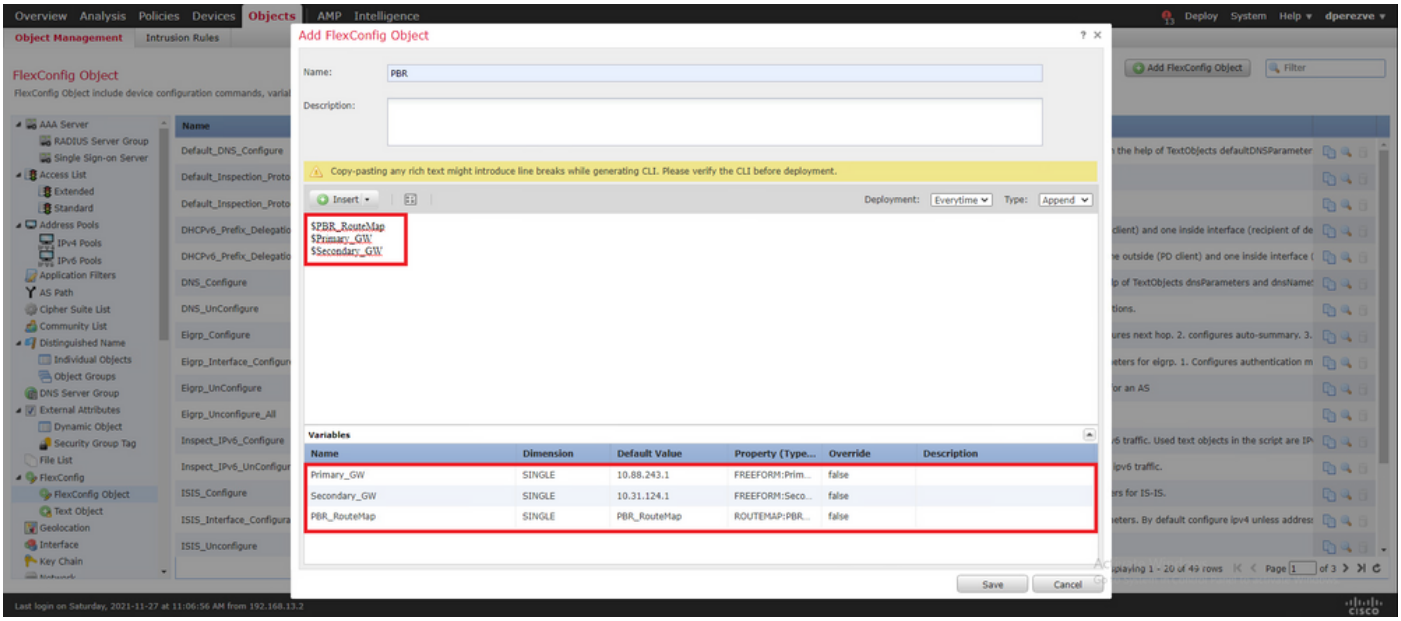


在 **Insert Text Object Variable** 視窗為變數指定名稱，並選擇代表步驟3中定義的主網關的文本對象。

按一下 **Save** 按鈕將其新增到FlexConfig對象。



對備份網關重複上述最後步驟。在過程結束時，必須將這兩個變數附加到FlexConfig對象。

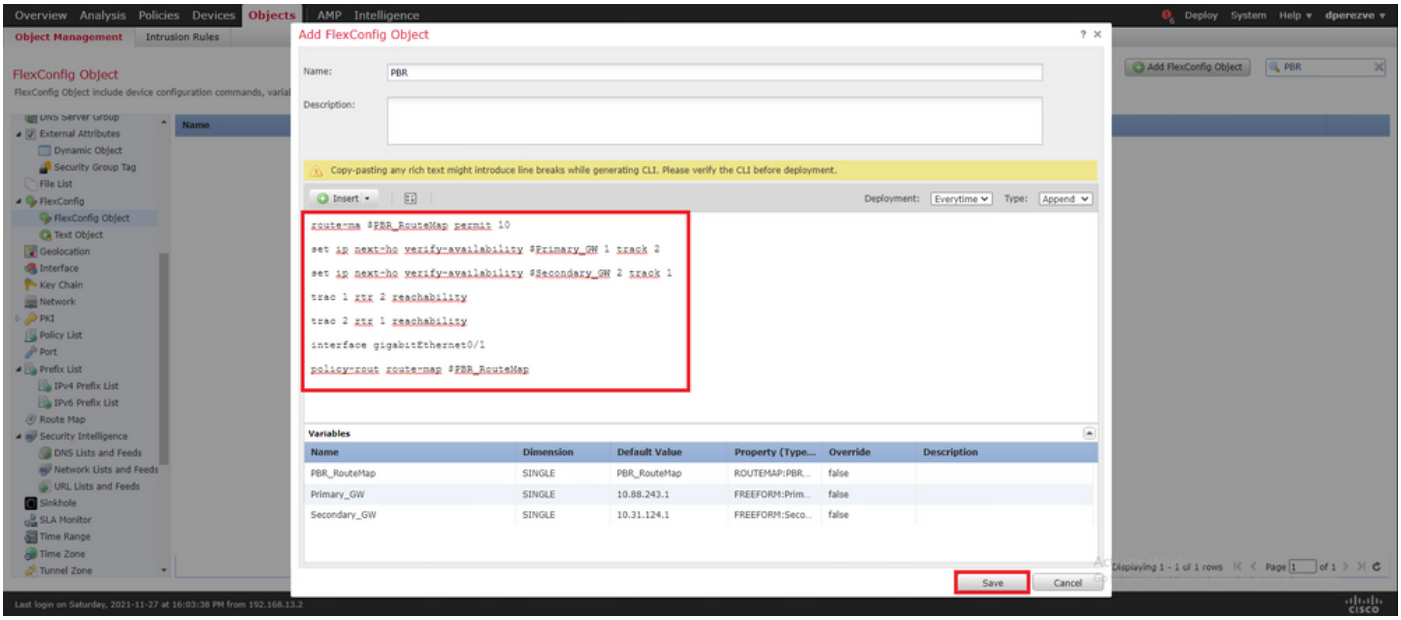


PBR配置的語法必須與Cisco ASA中的語法相同。路由對映的序列號必須與步驟2中配置的序列號（本例中為10）以及SLA ID匹配。

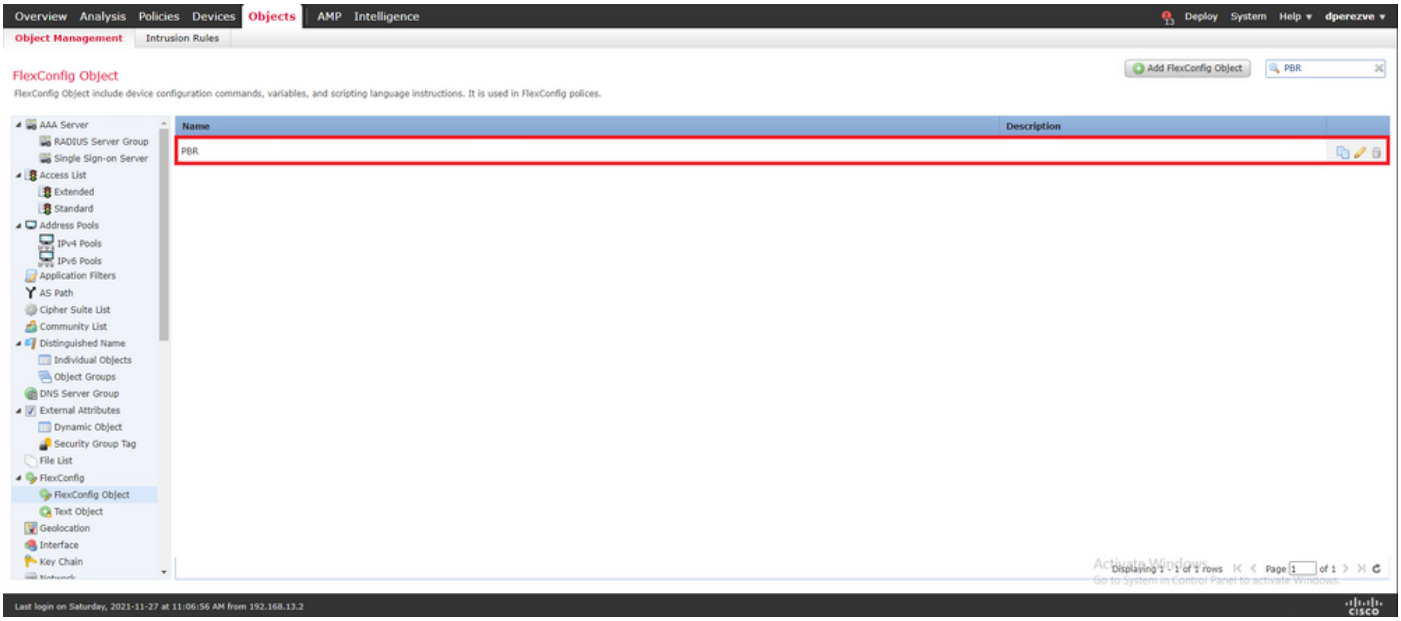
要配置PBR以檢查下一跳的可用性，請 **set ip next-hop verify-availability** 必須使用command。

必須將路由對映應用於內部介面，本例中為VLAN2813。使用 **policy-route route-map** 命令。

按一下 **Save** 配置完成後。



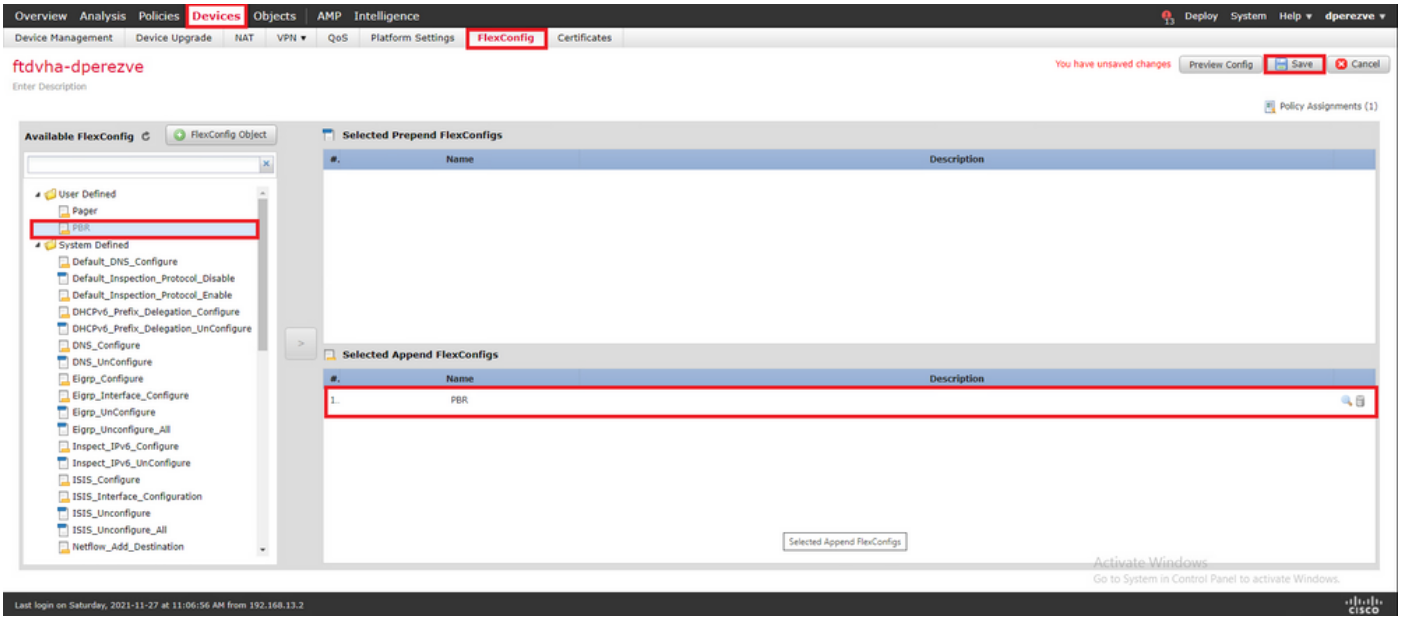
必須將FlexConfig對象新增到清單中。



步驟6.將PBR FlexConfig對象分配到FlexConfig策略

導航至 **Devices > FlexConfig** 並編輯手頭的FlexConfig策略。

選擇中的PBR FlexConfig對象 **Available FlexConfig** 目錄、儲存變更和部署變更至FTD。



驗證

部署完成後，FTD必須定期向受監控裝置傳送ICMP回應請求，以確保連線能力。同時，必須將到達主網關的跟蹤路由新增到路由表中。

```
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
```

由於與主網關的連線已開啟，因此來自內部子網(VLAN2813)的流量必須通過主ISP電路轉發。

```
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
```

如果FTD在SLA監控器對象中指定的閾值計時器內沒有收到來自主閘道的回應回覆，則認為主機無法連線且被標籤為關閉。指向主網關的跟蹤路由也將被指向備份對等體的跟蹤路由取代。

```
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
```

每次FTD都會產生資訊性訊息622001，從路由表中新增或移除追蹤的路由。

```
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
```

現在，所有來自VLAN2813的流量都必須通過備用ISP電路轉發。

```
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
```

疑難排解

為了驗證在中強制執行哪個PBR條目 **interesting traffic** ，運行命令**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
```

關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。