在CUBE路由器上配置高可用性(HA)

目錄

簡介

本文檔介紹如何使用所有必需的命令在兩台Cisco Unified Border Element (CUBE)路由器上配置高可用性(HA)。

必要條件

需求

思科建議您瞭解以下主題：

- 思科整合邊界元件(CUBE)
- Cisco交換機
- IP 路由

採用元件

運行版本「16.09.04」的Cisco ASR1001-X路由器

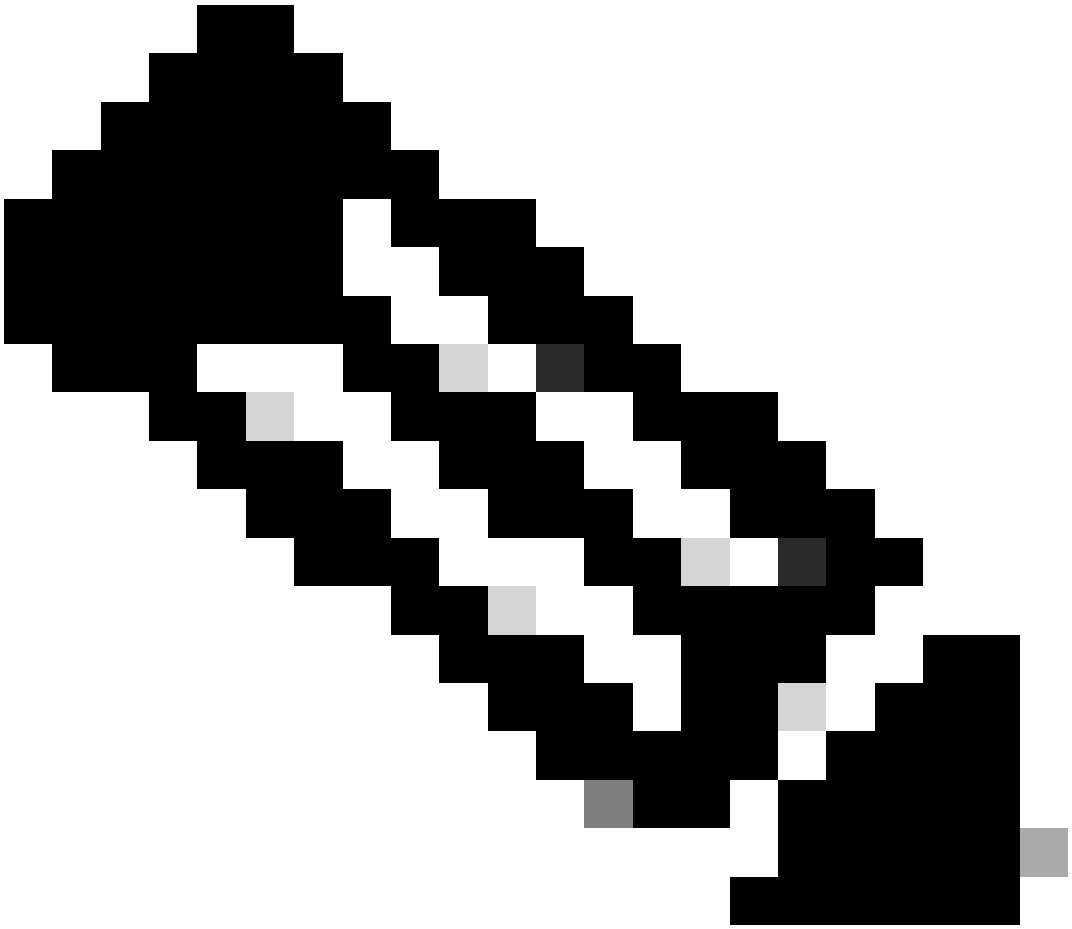
本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

設定

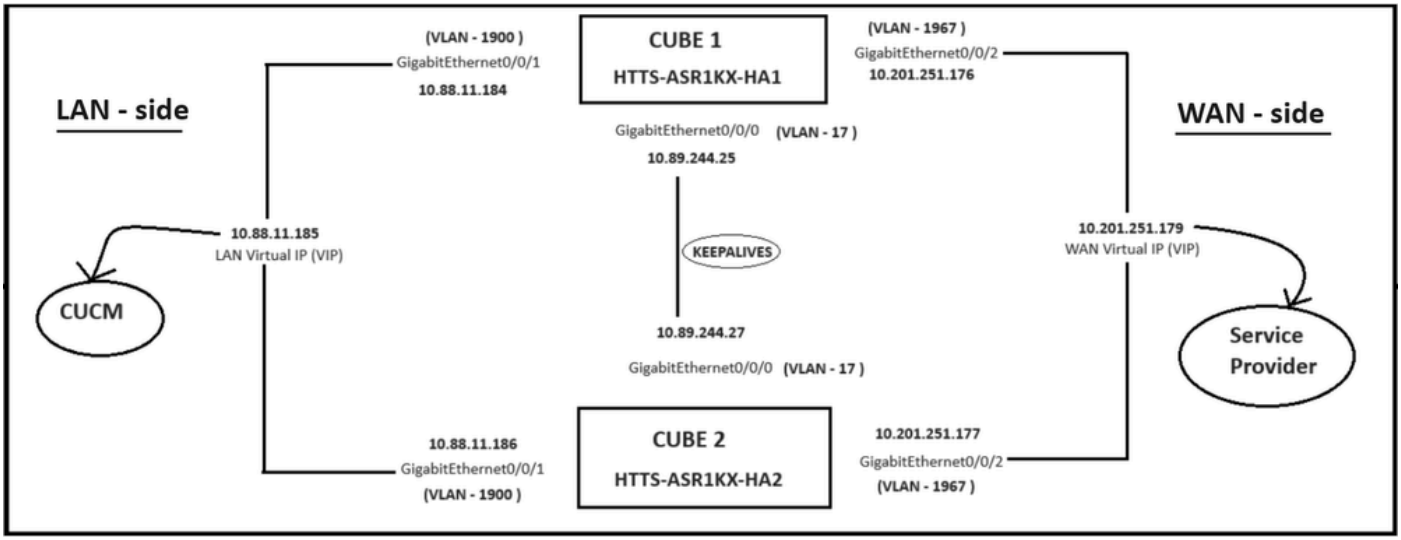
網路圖表

此網路連線圖顯示CUBE路由器如何連線到網路。

兩個CUBE的入口端（區域網- LAN）透過介面Gi 0/0/1連線到VLAN 1900
兩個CUBE的出口端（廣域網- WAN）透過介面Gi 0/0/2連線到VLAN 1967
兩個CUBE的Keepalive介面透過介面Gi 0/0/0連線到VLAN 17



注意：CUBE的介面連線到物理Cisco交換機，並且交換機埠配置為允許各自的VLAN。



網路圖表.

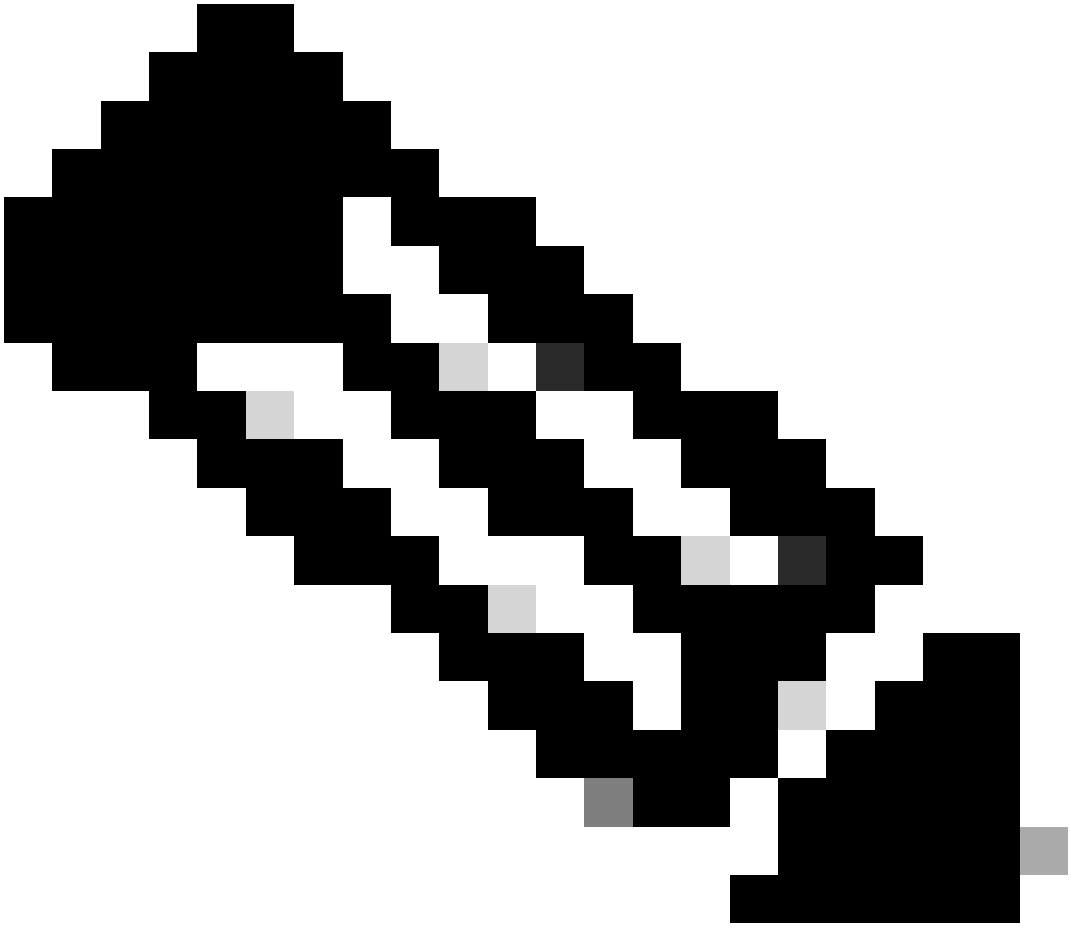
組態

配置CUBE HA的步驟。

1. 檢查點配置。
2. 用於跟蹤CUBE上LAN和WAN介面狀態的命令。
3. 將已配置的磁軌指派給冗餘群組
4. 在LAN端設定虛擬IP (VIP)。
5. 正在廣域網端配置虛擬IP (VIP)。
6. 啟用CUBE冗餘。
7. 儲存配置並重新啟動。

1. 檢查點配置。

對於檢查點，請在兩個CUBE上配置這些命令



注意：此處，兩個CUBE上的介面Gi 0/0/0用於檢查點。

```
#conf t
(config)#redundancy
(config-red)#
(config-red)#應用冗餘
(config-red-app)#group 1
(config-red-app-grp)#
(config-red-app-grp)#name cube-ha
(config-red-app-grp)#data gi 0/0/0
(config-red-app-grp)#control gi 0/0/0 protocol 1
(config-red-app-grp)#
```

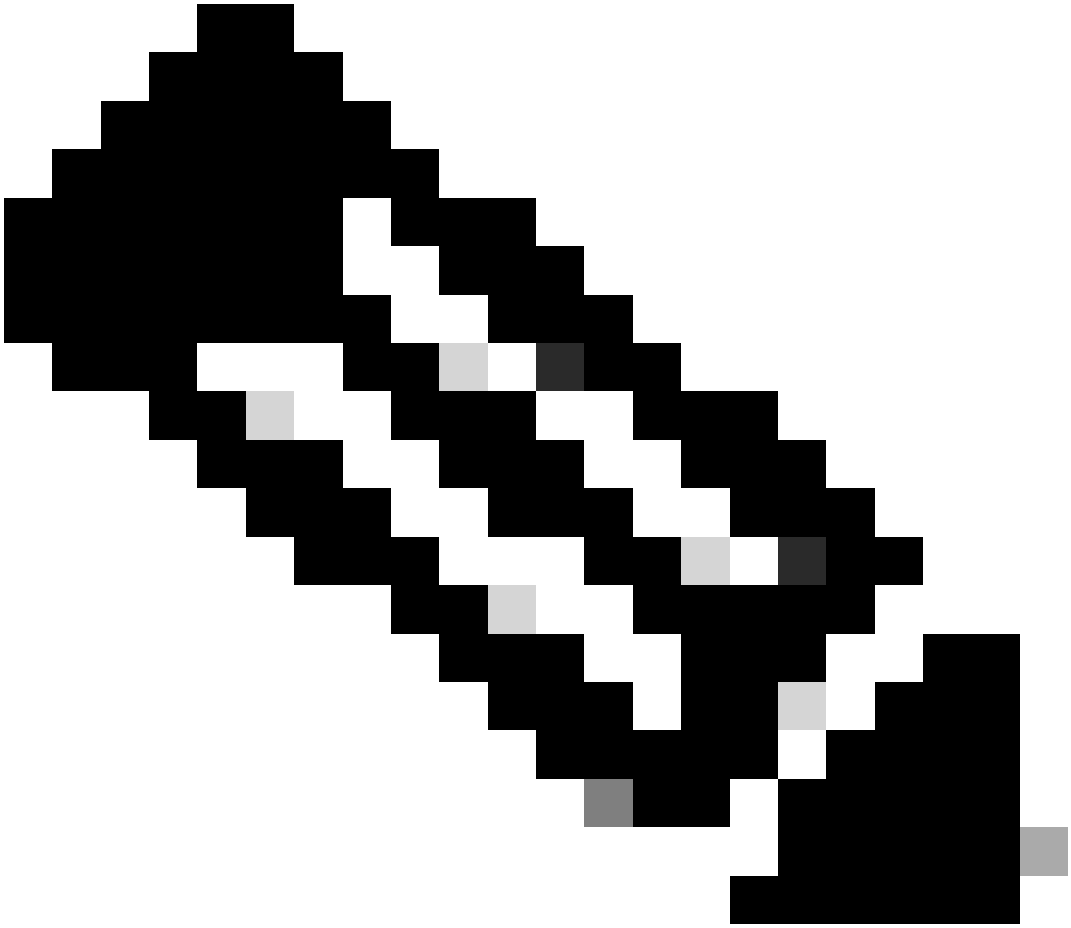
此螢幕截圖顯示了在CUBE-2路由器上運行的命令。您還需要在CUBE-1路由器上運行同一組命令。

```
HTTS-ASR1KX-HA2#
HTTS-ASR1KX-HA2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
HTTS-ASR1KX-HA2(config)#redundancy
HTTS-ASR1KX-HA2(config-red)#
HTTS-ASR1KX-HA2(config-red)#application redundancy
        Feature Name:fwnat_red

PLEASE  READ THE  FOLLOWING TERMS  CAREFULLY. INSTALLING THE LICENSE OR
LICENSE  KEY  PROVIDED FOR  ANY CISCO  PRODUCT  FEATURE  OR  USING SUCH
PRODUCT  FEATURE  CONSTITUTES  YOUR  FULL ACCEPTANCE  OF  THE FOLLOWING
TERMS. YOU MUST NOT PROCEED FURTHER IF YOU ARE NOT WILLING TO  BE BOUND
BY ALL THE TERMS SET FORTH HEREIN.

Use of this product feature requires  an additional license from Cisco,
together with an additional  payment.  You may use this product feature
on an evaluation basis, without payment to Cisco, for 60 days. Your use
of the  product,  including  during the 60 day  evaluation  period,  is
subject to the Cisco end user license agreement
http://www.cisco.com/en/US/docs/general/warranty/English/EU1KEN_.html
If you use the product feature beyond the 60 day evaluation period, you
must submit the appropriate payment to Cisco for the license. After the
60 day  evaluation  period,  your  use of the  product  feature will be
governed  solely by the Cisco  end user license agreement (link above),
together  with any supplements  relating to such product  feature.  The
above  applies  even if the evaluation  license  is  not  automatically
terminated  and you do  not receive any notice of the expiration of the
evaluation  period.  It is your  responsibility  to  determine when the
evaluation  period is complete and you are required to make  payment to
Cisco for your use of the product feature beyond the evaluation period.

Your  acceptance  of  this agreement  for the software  features on one
product  shall be deemed  your  acceptance  with  respect  to all  such
software  on all Cisco  products  you purchase  which includes the same
software.  (The foregoing  notwithstanding, you must purchase a license
for each software  feature you use past the 60 days evaluation  period,
so  that  if you enable a software  feature on  1000  devices, you must
purchase 1000 licenses for use past  the 60 day evaluation period.)

Activation  of the  software command line interface will be evidence of
your acceptance of this agreement.


ACCEPT? (yes/[no]): yes
HTTS-ASR1KX-HA2(config-red-app)#
HTTS-ASR1KX-HA2(config-red-app)#group 1
HTTS-ASR1KX-HA2(config-red-app-grp)#
HTTS-ASR1KX-HA2(config-red-app-grp)#name cube-ha
HTTS-ASR1KX-HA2(config-red-app-grp)#data gi 0/0/0
HTTS-ASR1KX-HA2(config-red-app-grp)#control gi 0/0/0 protocol 1
HTTS-ASR1KX-HA2(config-red-app-grp)#
```

檢查CUBE-2上的配置。

2. 跟蹤CUBE上LAN和WAN介面狀態的命令：-

配置這些命令以跟蹤LAN和WAN介面的狀態。您必須在兩台CUBE路由器上執行這些命令。



註：此處，兩個CUBE上的介面Gi 0/0/1連線到LAN網路，Gi 0/0/2連線到WAN網路。

```
#conf t
(config)#track 1 interface gi 0/0/1 line-protocol
(config-track)#track 2 interface gi 0/0/2 line-protocol
```

立方體-1

```
HTTS-ASR1K-HA1#
HTTS-ASR1K-HA1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
HTTS-ASR1K-HA1(config)#track 1 interface gi 0/0/1 line-protocol
HTTS-ASR1K-HA1(config-track)#track 2 interface gi 0/0/2 line-protocol
HTTS-ASR1K-HA1(config-track)#
```

CUBE-1上的介面狀態跟蹤命令。

立方體-2

```
HTTS-ASR1KX-HA2(config)#
HTTS-ASR1KX-HA2(config)#
HTTS-ASR1KX-HA2(config)#track 1 interface gi 0/0/1 line-protocol
HTTS-ASR1KX-HA2(config-track)#track 2 interface gi 0/0/2 line-protocol
HTTS-ASR1KX-HA2(config-track)#
```

CUBE-2上的介面狀態跟蹤命令。

3. 將已配置的磁軌指定給冗餘群組

透過在兩個CUBE路由器上運行這些命令，將已配置的磁軌分配給組1。

#conf t
(config)#redundancy
(config-red)#
(config-red)#應用冗餘
(config-red-app)#group 1
(config-red-app-grp)#track 1關閉
(config-red-app-grp)#track 2關閉

立方體-1

```
HTTS-ASR1K-HA1#
HTTS-ASR1K-HA1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
HTTS-ASR1K-HA1(config)#
HTTS-ASR1K-HA1(config)#redundancy
HTTS-ASR1K-HA1(config-red)#application redundancy
HTTS-ASR1K-HA1(config-red-app)#group 1
HTTS-ASR1K-HA1(config-red-app-grp)#
HTTS-ASR1K-HA1(config-red-app-grp)#track 1 shutdown
HTTS-ASR1K-HA1(config-red-app-grp)#track 2 shutdown
HTTS-ASR1K-HA1(config-red-app-grp)#
HTTS-ASR1K-HA1(config-red-app-grp)#
```

將跟蹤的介面分配給CUBE-1上的冗餘組。

立方體-2

```
HTTS-ASR1KX-HA2(config)#redundancy
HTTS-ASR1KX-HA2(config-red)#application redundancy
HTTS-ASR1KX-HA2(config-red-app)#group 1
HTTS-ASR1KX-HA2(config-red-app-grp)#
HTTS-ASR1KX-HA2(config-red-app-grp)#
HTTS-ASR1KX-HA2(config-red-app-grp)#track 1 shutdown
HTTS-ASR1KX-HA2(config-red-app-grp)#track 2 shutdown
HTTS-ASR1KX-HA2(config-red-app-grp)#
```

將跟蹤的介面分配給CUBE-2上的冗餘組。

4. 在兩個CUBE的LAN端配置虛擬IP (VIP)。

這些命令可幫助您為CUBE的LAN端配置VIP。

(config)#interface GigabitEthernet0/0/1
(config-if)#description VLAN-1900 LAN端
(config-if)#ip address 10.88.11.184 255.255.255.0
(config-if)#redundancy rii 1
(config-if)#redundancy group 1 ip 10.88.11.185 exclusive

立方體-1

```
HTTS-ASR1K-HA1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
HTTS-ASR1K-HA1(config)#
HTTS-ASR1K-HA1(config)#interface GigabitEthernet0/0/1
HTTS-ASR1K-HA1(config-if)#
HTTS-ASR1K-HA1(config-if)#description VLAN-1900 LAN side
HTTS-ASR1K-HA1(config-if)#
HTTS-ASR1K-HA1(config-if)#ip address 10.88.11.184 255.255.255.0
HTTS-ASR1K-HA1(config-if)#
HTTS-ASR1K-HA1(config-if)#redundancy rii 1
HTTS-ASR1K-HA1(config-if)#
HTTS-ASR1K-HA1(config-if)#redundancy group 1 ip 10.88.11.185 exclusive
HTTS-ASR1K-HA1(config-if)#
HTTS-ASR1K-HA1(config-if)#
HTTS-ASR1K-HA1(config-if)#exit
```

CUBE-1上的LAN端虛擬IP (VIP)配置。

立方體-2

```
HTTS-ASR1KX-HA2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
HTTS-ASR1KX-HA2(config)#
HTTS-ASR1KX-HA2(config)#interface GigabitEthernet0/0/1
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)# description VLAN-1900 LAN side
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)# ip address 10.88.11.186 255.255.255.0
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)#redundancy rii 1
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)#redundancy group 1 ip 10.88.11.185 exclusive
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)#exit
```

CUBE-2上的LAN端虛擬IP (VIP)配置。

5. 在兩個CUBE的WAN端配置虛擬IP (VIP)。

這些命令可幫助您為CUBE的WAN端配置VIP。

(config)#interface GigabitEthernet0/0/2
(config-if)#description VLAN-1967 WAN端
(config-if)#ip address 10.201.251.176 255.255.255.224
(config-if)#redundancy rii 2
(config-if)#redundancy group 1 ip 10.201.251.179 exclusive

立方體-1

```
HTTS-ASR1K-HA1#
HTTS-ASR1K-HA1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
HTTS-ASR1K-HA1(config)#
HTTS-ASR1K-HA1(config)#interface GigabitEthernet0/0/2
HTTS-ASR1K-HA1(config-if)#description VLAN-1967 WAN side
HTTS-ASR1K-HA1(config-if)#
HTTS-ASR1K-HA1(config-if)#
HTTS-ASR1K-HA1(config-if)#ip address 10.201.251.176 255.255.255.224
HTTS-ASR1K-HA1(config-if)#
HTTS-ASR1K-HA1(config-if)#redundancy rii 2
HTTS-ASR1K-HA1(config-if)#
HTTS-ASR1K-HA1(config-if)#redundancy group 1 ip 10.201.251.179 exclusive
HTTS-ASR1K-HA1(config-if)#
HTTS-ASR1K-HA1(config-if)#exit
HTTS-ASR1K-HA1(config)#
```

CUBE-1上的WAN端虛擬IP (VIP)配置。

立方體-2

```
HTTS-ASR1KX-HA2#
HTTS-ASR1KX-HA2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
HTTS-ASR1KX-HA2(config)#
HTTS-ASR1KX-HA2(config)#
HTTS-ASR1KX-HA2(config)#interface GigabitEthernet0/0/2
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)# description VLAN-1967 WAN side
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)#ip address 10.201.251.177 255.255.255.224
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)#redundancy rii 2
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)#redundancy group 1 ip 10.201.251.179 exclusive
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)#
HTTS-ASR1KX-HA2(config-if)#exit
HTTS-ASR1KX-HA2(config)#
```

CUBE-2上的WAN端虛擬IP (VIP)配置。

6. 啟用CUBE冗餘。

透過運行這些命令，在兩個路由器上啟用CUBE冗餘。

#conf t
輸入配置命令，每行一個。以CNTL/Z結束。
(config)#
(config)#voice service voip
(conf-voi-serv)#redundancy-group 1
(conf-voi-serv)#
(conf-voi-serv)#exit
(config)#
(config)#ip rtcp report interval 3000
(config)#
(config)#gateway
(config-gateway)#media-inactivity-criteria all
(config-gateway)#
(config-gateway)#timer receive-rtcp 5
(config-gateway)#
(config-gateway)#timer receive-rtp 86400
(config-gateway)#

立方體-1

```
HTTS-ASR1K-HA1#
HTTS-ASR1K-HA1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
HTTS-ASR1K-HA1(config)#
HTTS-ASR1K-HA1(config)#voice service voip
HTTS-ASR1K-HA1(conf-voi-serv)#redundancy-group 1
% Created RG 1 association with VOICE B2B HA; reload the router for new configuration to take effect

HTTS-ASR1K-HA1(conf-voi-serv)#
HTTS-ASR1K-HA1(conf-voi-serv)#
HTTS-ASR1K-HA1(conf-voi-serv)#
HTTS-ASR1K-HA1(conf-voi-serv)#
HTTS-ASR1K-HA1(conf-voi-serv)#
HTTS-ASR1K-HA1(conf-voi-serv)#exit
HTTS-ASR1K-HA1(config)#
HTTS-ASR1K-HA1(config)#
HTTS-ASR1K-HA1(config)#
HTTS-ASR1K-HA1(config)#ip rtcp report interval 3000
HTTS-ASR1K-HA1(config)#
HTTS-ASR1K-HA1(config)#gateway
HTTS-ASR1K-HA1(config-gateway)#media-inactivity-criteria all
HTTS-ASR1K-HA1(config-gateway)#
HTTS-ASR1K-HA1(config-gateway)#timer receive-rtcp 5
 non dsp based inactivity detection is set
HTTS-ASR1K-HA1(config-gateway)#
HTTS-ASR1K-HA1(config-gateway)#timer receive-rtp 86400
HTTS-ASR1K-HA1(config-gateway)#
```

在CUBE-1上啟用CUBE冗餘。

立方體-2

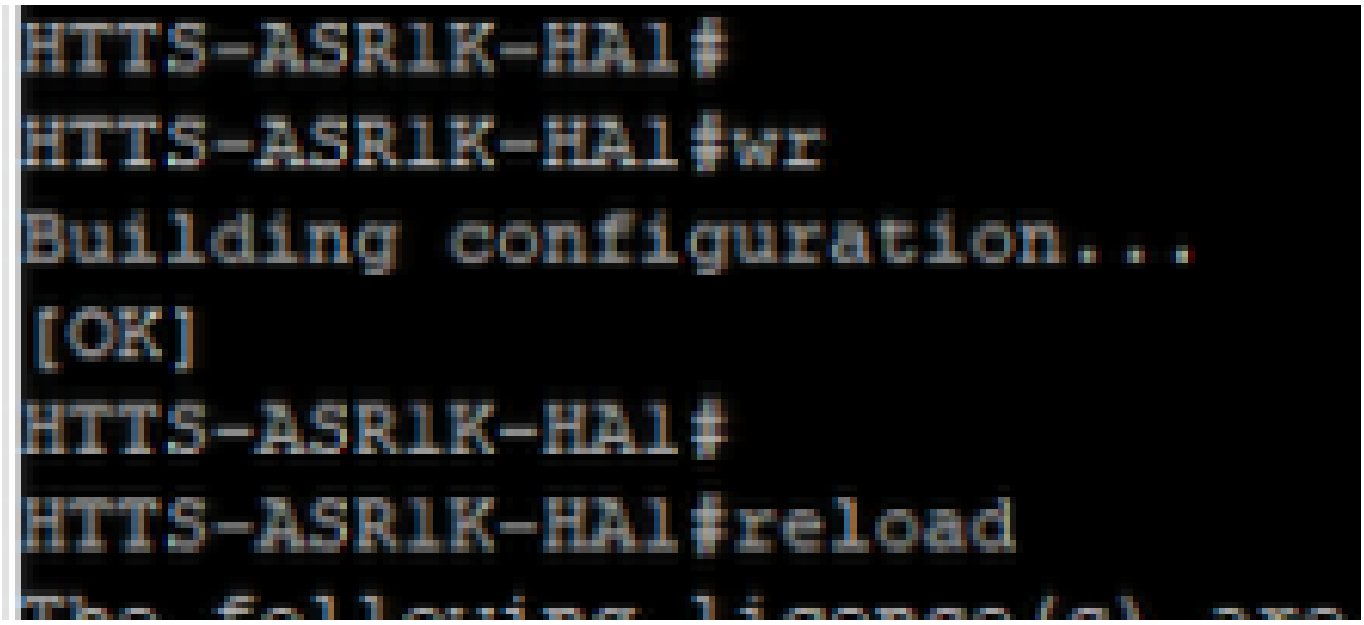
```
HTTS-ASR1KX-HA2(config)#
HTTS-ASR1KX-HA2(config)#voice service voip
HTTS-ASR1KX-HA2(conf-voi-serv)#redundancy-group 1
% Created RG 1 association with VOICE B2B HA; reload the router for new configuration to take effect

HTTS-ASR1KX-HA2(conf-voi-serv)#
HTTS-ASR1KX-HA2(conf-voi-serv)#
HTTS-ASR1KX-HA2(conf-voi-serv)#exit
HTTS-ASR1KX-HA2(config)#
HTTS-ASR1KX-HA2(config)#ip rtcp report interval 3000
HTTS-ASR1KX-HA2(config)#
HTTS-ASR1KX-HA2(config)#gateway
HTTS-ASR1KX-HA2(config-gateway)#
HTTS-ASR1KX-HA2(config-gateway)#media-inactivity-criteria all
HTTS-ASR1KX-HA2(config-gateway)#
HTTS-ASR1KX-HA2(config-gateway)#timer receive-rtcp 5
 non dsp based inactivity detection is set
HTTS-ASR1KX-HA2(config-gateway)#
HTTS-ASR1KX-HA2(config-gateway)#timer receive-rtp 86400
HTTS-ASR1KX-HA2(config-gateway)#
HTTS-ASR1KX-HA2(config-gateway)#
HTTS-ASR1KX-HA2(config-gateway)#exit
HTTS-ASR1KX-HA2(config)#
```

在CUBE-2上啟用CUBE冗餘。

7. 儲存組態並重新啟動兩個CUBE。

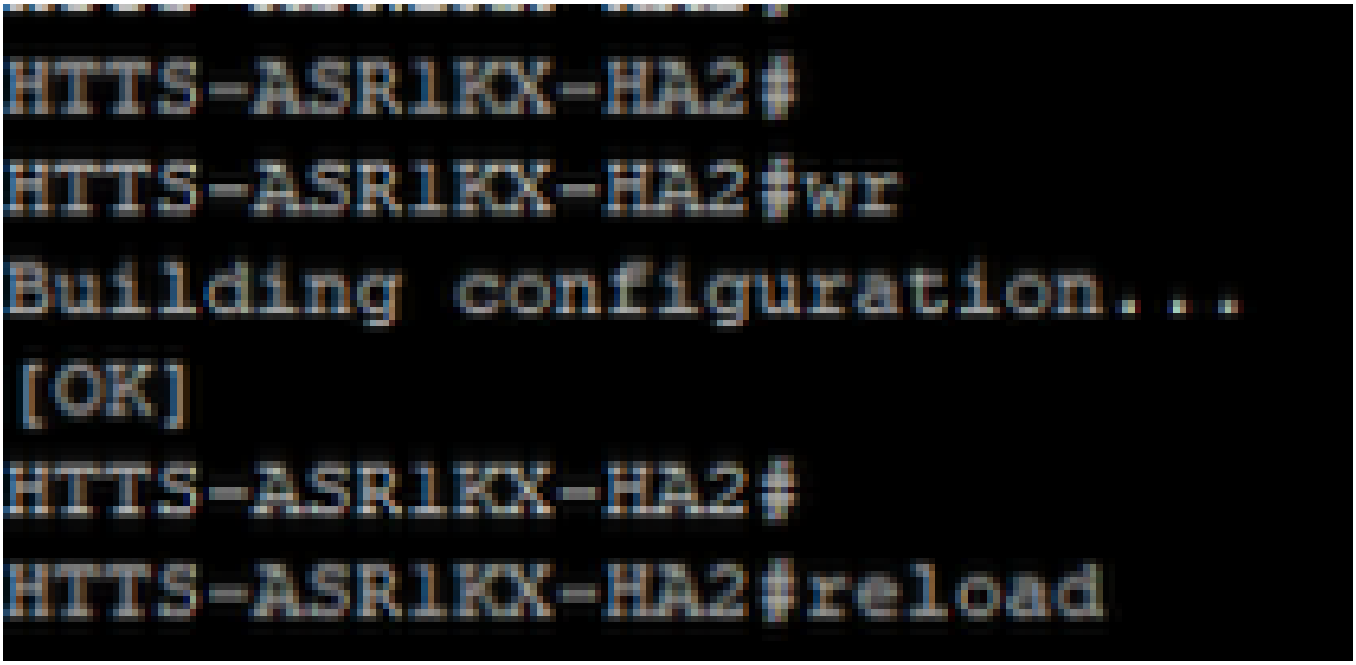
啟用冗餘後，您需要重新載入兩台路由器。
在重新載入之前，儲存配置。

立方體-1



儲存配置並重新啟動CUBE-1。

立方體-2



儲存配置並重新啟動CUBE-2。

驗證

您可以執行此show指令來驗證CUBE HA。

#show redundancy application group 1

立方體-1

```
HTTS-ASR1K-HA1#
HTTS-ASR1K-HA1#
HTTS-ASR1K-HA1#show redundancy application group 1
Group ID:1
Group Name:cube-ha

Administrative State: No Shutdown
Aggregate operational state : Up
My Role: ACTIVE
Peer Role: STANDBY
Peer Presence: Yes
Peer Comm: Yes
Peer Progression Started: Yes

RF Domain: btob-one
          RF state: ACTIVE
          Peer RF state: STANDBY HOT

HTTS-ASR1K-HA1#
```

CUBE-1的「show redundancy application group 1」命令輸出。

立方體-2

```
HTTS-ASR1KX-HA2#
HTTS-ASR1KX-HA2#show redundancy application group 1
Group ID:1
Group Name:cube-ha

Administrative State: No Shutdown
Aggregate operational state : Up
My Role: STANDBY
Peer Role: ACTIVE
Peer Presence: Yes
Peer Comm: Yes
Peer Progression Started: Yes

RF Domain: btob-one
         RF state: STANDBY HOT
         Peer RF state: ACTIVE

HTTS-ASR1KX-HA2#
```

CUBE-2的「show redundancy application group 1」命令輸出。

您可以執行此show指令來檢查虛擬IP (VIP)的狀態。

#show redundancy application if-mgr組1

對於主用CUBE，VIP狀態顯示為「no shut」；對於備用CUBE，VIP狀態顯示為「shut」。

立方體-1

```
HTTS-ASR1K-HA1#
HTTS-ASR1K-HA1#show redundancy application if-mgr group 1

 RG ID: 1
 ==========

 interface       GigabitEthernet0/0/2
 ----------------------------------------
 VMAC            0007.b421.0002
 VIP             10.201.251.179
 Shut            no shut
 Decrement       0

 interface       GigabitEthernet0/0/1
 ----------------------------------------
 VMAC            0007.b421.0001
 VIP             10.88.11.185
 Shut            no shut
 Decrement       0

HTTS-ASR1K-HA1#
```

CUBE-1的「show redundancy application if-mgr group 1」命令輸出。

立方體-2

```
HTTS-ASR1KX-HA2#
HTTS-ASR1KX-HA2#show redundancy application if-mgr group 1

 RG ID: 1
 ==========

 interface       GigabitEthernet0/0/2
 ------------------------------------
 VMAC            0007.b421.0002
 VIP             10.201.251.179
 Shut            shut
 Decrement       0

 interface       GigabitEthernet0/0/1
 ------------------------------------
 VMAC            0007.b421.0001
 VIP             10.88.11.185
 Shut            shut
 Decrement       0

HTTS-ASR1KX-HA2#
```

CUBE-2的「show redundancy application if-mgr group 1」命令輸出。

疑難排解

目前尚無適用於此組態的具體疑難排解資訊。

相關資訊

如需有關CUBE HA的詳細資訊，您可以參考這些連結。

- Cisco IOS® XE 17.5版思科統一邊界要素配置指南
- 視訊連結-設定CUBE的高可用性

希望這篇文章能有所幫助！

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）。