# 在CUBE路由器上配置高可用性(HA)

## 目录



## 简介

本文档介绍如何使用所有必需的命令在两台思科统一边界元素(CUBE)路由器上配置高可用性(HA)。

## 先决条件

### 要求

Cisco 建议您了解以下主题：

- 思科统一边界要素(CUBE)
- Cisco 交换机
- IP 路由

### 使用的组件

运行版本“16.09.04”的Cisco ASR1001-X路由器

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

## 配置

## 网络图

此网络连接图显示CUBE路由器如何连接到网络。

两个CUBE的入口端（局域网- LAN）通过接口Gi 0/0/1连接到VLAN 1900
两个CUBE的出口端（广域网- WAN）通过接口Gi 0/0/2连接到VLAN 1967
两个CUBE的Keepalive接口通过接口Gi 0/0/0连接到VLAN 17

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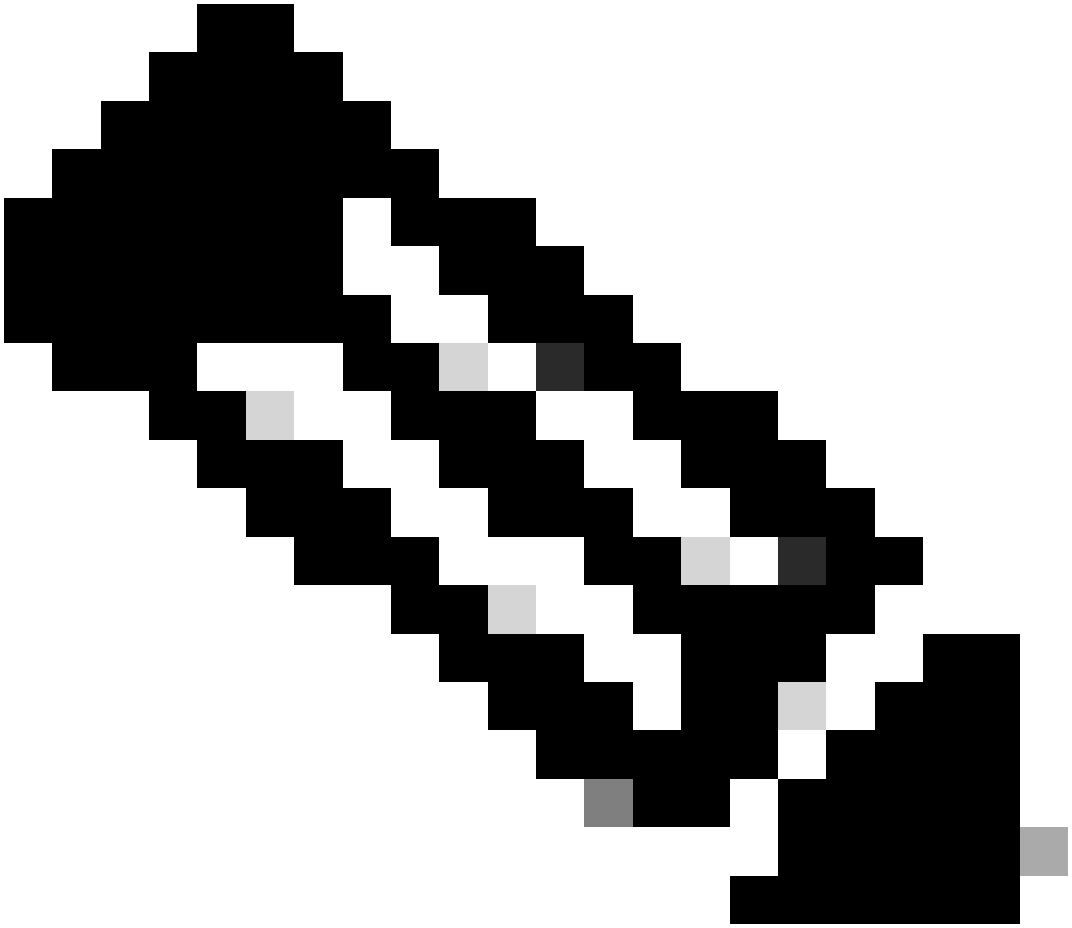

注意：CUBE的接口连接到物理思科交换机，并且交换机端口配置为允许各自的VLAN。

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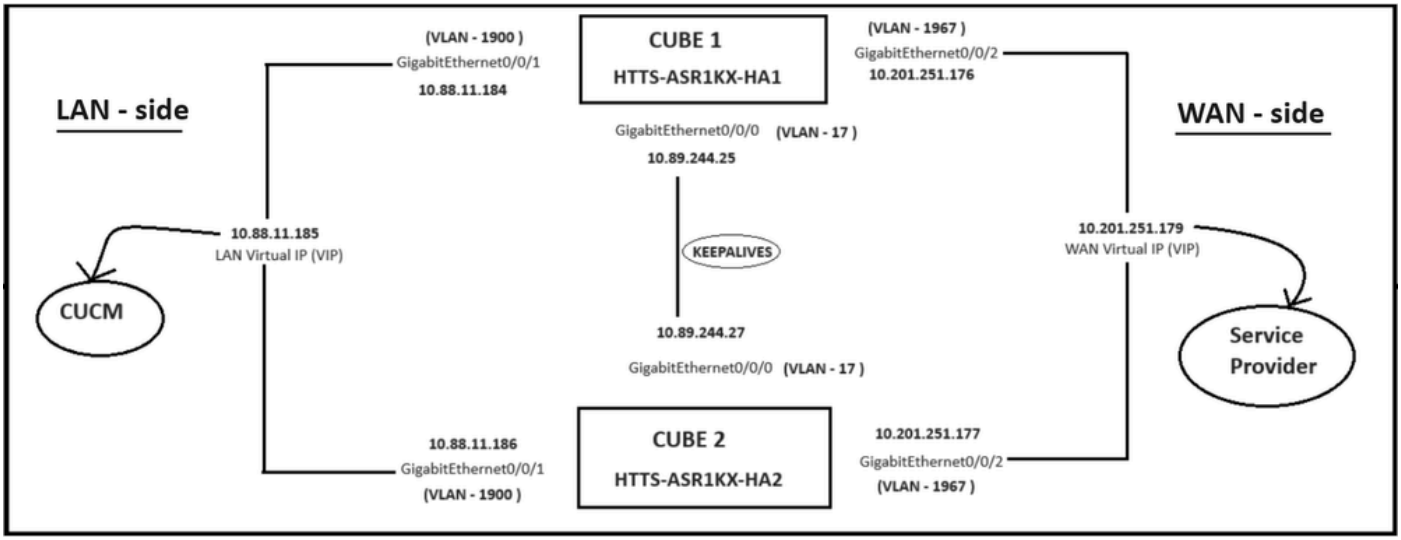



网络图.

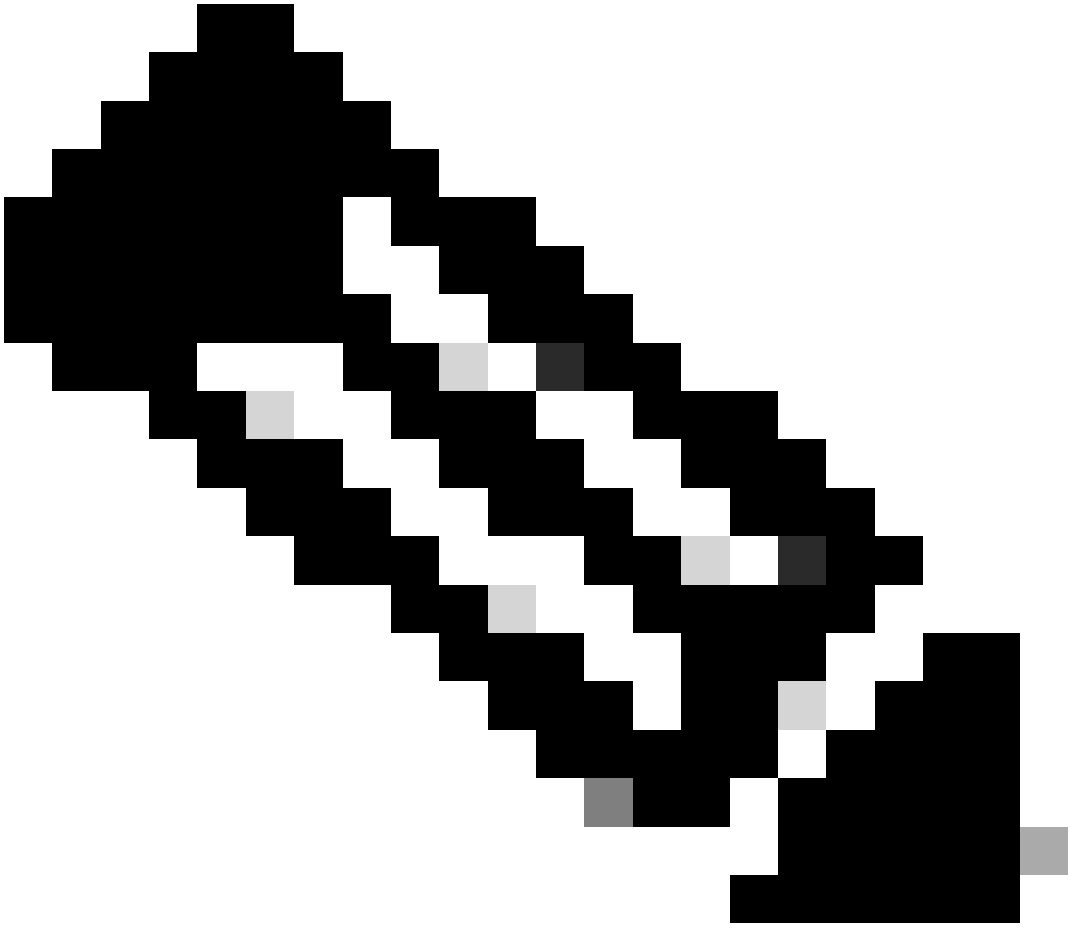
## 配置

配置CUBE HA的步骤。

1. 检查点配置。
2. 用于跟踪CUBE上LAN和WAN接口状态的命令。
3. 将已配置的磁道分配给冗余组
4. 在LAN端配置虚拟IP (VIP)。
5. 在WAN端配置虚拟IP (VIP)。
6. 启用CUBE冗余。
7. 保存配置并重新启动。

1. 检查点配置。

对于检查点，请在两个CUBE上配置这些命令



注意：此处两个CUBE上的接口Gi 0/0/0用于检查点。

---

```
#conf t
(config)#redundancy
(config-red)#
(config-red)#application redundancy
(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)#
```

此屏幕截图显示了在CUBE-2路由器上运行的命令。您还需要在CUBE-1路由器上运行同一组命令。

```
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
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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)#
```
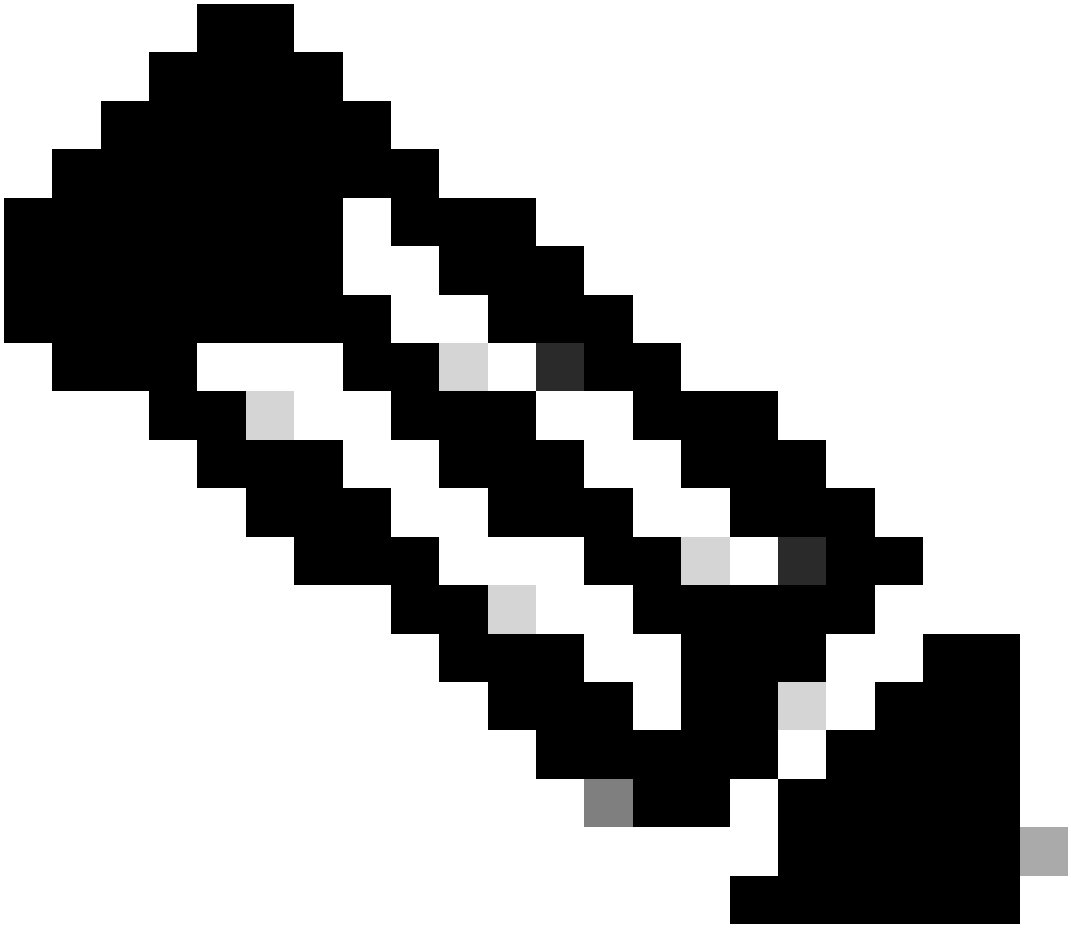

检查CUBE-2上的指针配置。

2. 用于跟踪CUBE上LAN和WAN接口状态的命令：-

配置这些命令以跟踪LAN和WAN接口的状态。必须在两个CUBE路由器上执行这些命令。

---



注意：此处，两个CUBE上的接口Gi 0/0/1连接到LAN网络，Gi 0/0/2连接到WAN网络。

---

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

CUBE-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上的接口状态跟踪命令。

CUBE-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上的接口状态跟踪命令。

3. 将已配置的磁道分配给冗余组

通过在两个CUBE路由器上运行这些命令，将已配置的磁道分配给组1。

#conf t
(config)#redundancy
(config-red)#
(config-red)#application redundancy
(config-red-app)#group 1
(config-red-app-grp)#track 1 shutdown
(config-red-app-grp)#track 2 shutdown

CUBE-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)#
```

将跟踪的接口分配给CUBE-1上的冗余组。

CUBE-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)#
```

将跟踪的接口分配给CUBE-2上的冗余组。

4. 在两个CUBE的LAN端配置虚拟IP (VIP)。

这些命令可帮助您为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

CUBE-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上的局域网端虚拟IP (VIP)配置。

CUBE-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上的局域网端虚拟IP (VIP)配置。

5. 在两个CUBE的WAN端配置虚拟IP (VIP)。

这些命令可帮助您为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

CUBE-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上的广域网端虚拟IP (VIP)配置。

CUBE-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
```

CUBE-2上的广域网端虚拟IP (VIP)配置。

6. 启用CUBE冗余。

通过运行这些命令，在两台路由器上启用CUBE冗余。

#conf t
输入配置命令，每行一条。以 CNTL/Z 结束。
(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
（配置网关）#
(config-gateway)#timer receive-rtcp 5
（配置网关）#
(config-gateway)#timer receive-rtp 86400
（配置网关）#

CUBE-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上启用CUBE冗余。

CUBE-2

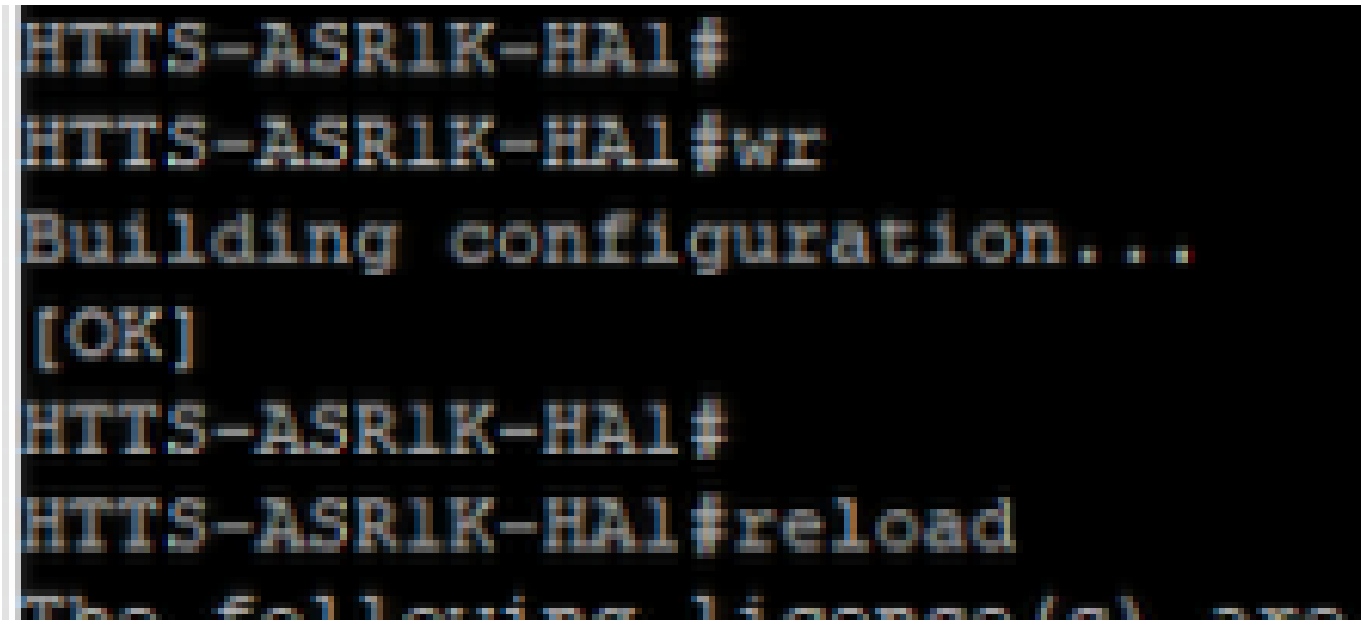
```
HTTS-ASR1KX-HA2(config)#
HTTS-ASR1KX-HA2(config)#voice service voip
HTTS-ASR1KX-HA2(conf-voi-serv)#redundancy-group 1
% Created RG 1 association with VOICE B2B HA; reload the router for new configuration to take effect

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上启用CUBE冗余。

7. 保存配置并重新启动两个CUBE。

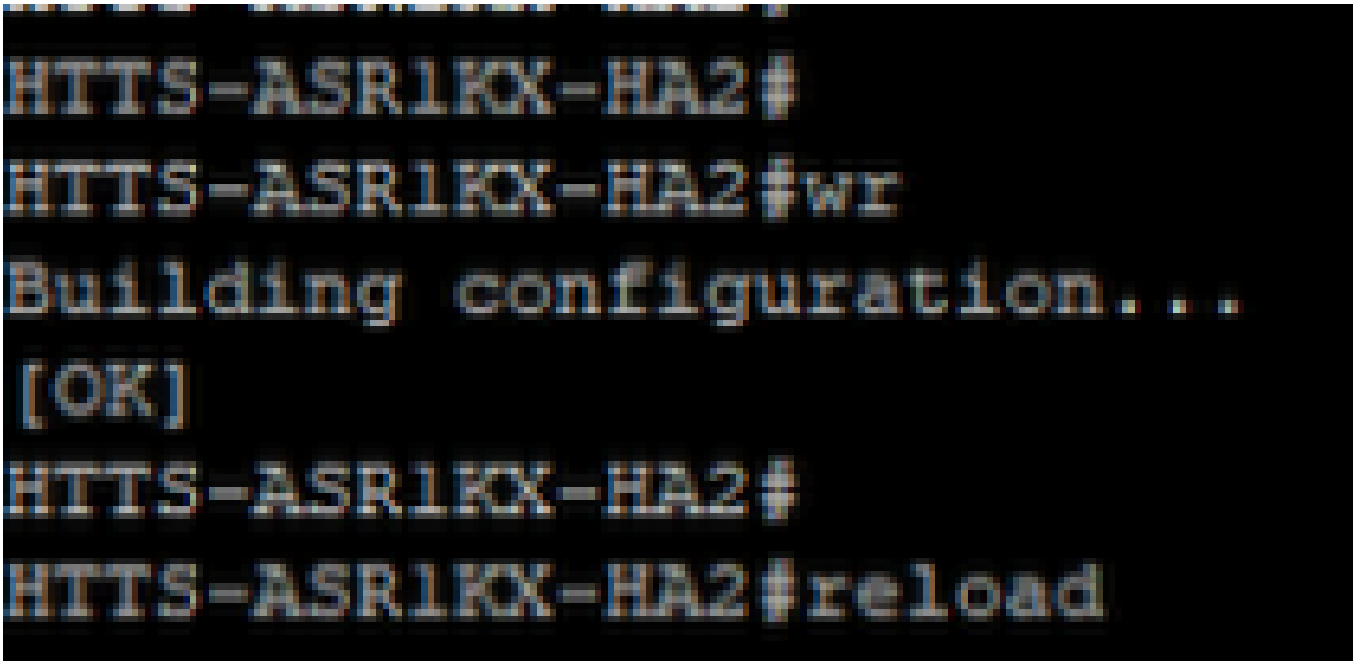
启用冗余后，您需要重新加载两台路由器。
在重新加载之前，请保存配置。

CUBE-1




保存配置并重新启动CUBE-1。

CUBE-2




保存配置并重新启动CUBE-2。

# 验证

您可以通过运行此show命令验证CUBE HA。

#show redundancy application group 1

CUBE-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”命令输出。

CUBE-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”命令输出。

您可以通过运行此show命令检查虚拟IP (VIP)的状态。

#show redundancy application if-mgr group 1

对于主用CUBE，VIP状态显示为“no shut”；对于备用CUBE，VIP状态显示为“shut”。

CUBE-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#
```

从CUBE-1输出命令“show redundancy application if-mgr group 1”。

CUBE-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中命令“show redundancy application if-mgr group 1”的输出。

## 故障排除

目前没有针对此配置的故障排除信息。

## 相关信息

有关CUBE HA的详细信息，您可以参考以下链接。

- 贯穿思科IOS® XE 17.5的思科统一边界元素配置指南
- 视频链路-配置CUBE的高可用性

希望本文有所帮助！

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