

在Cisco IOS XE Catalyst SD-WAN邊緣上配置服務端VRRP

目錄

[簡介](#)

[必要條件](#)

[需求](#)

[採用元件](#)

[背景資訊](#)

[設定](#)

[網路圖表](#)

[組態](#)

[驗證](#)

簡介

本文說明如何通過功能模板、配置組和CLI在Cisco IOS® XE Catalyst SD-WAN邊緣上配置服務端VRRP。

必要條件

需求

思科建議您瞭解以下主題：

- Cisco Catalyst軟體定義廣域網路(SD-WAN)
- 虛擬路由器備援通訊協定(VRRP)基本運作
- 管理員圖形使用者介面(GUI)
- 配置組

採用元件

- Cisco IOS® XE Catalyst SD-WAN邊緣17.9.4a
- Cisco Catalyst SD-WAN管理員20.12.4

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

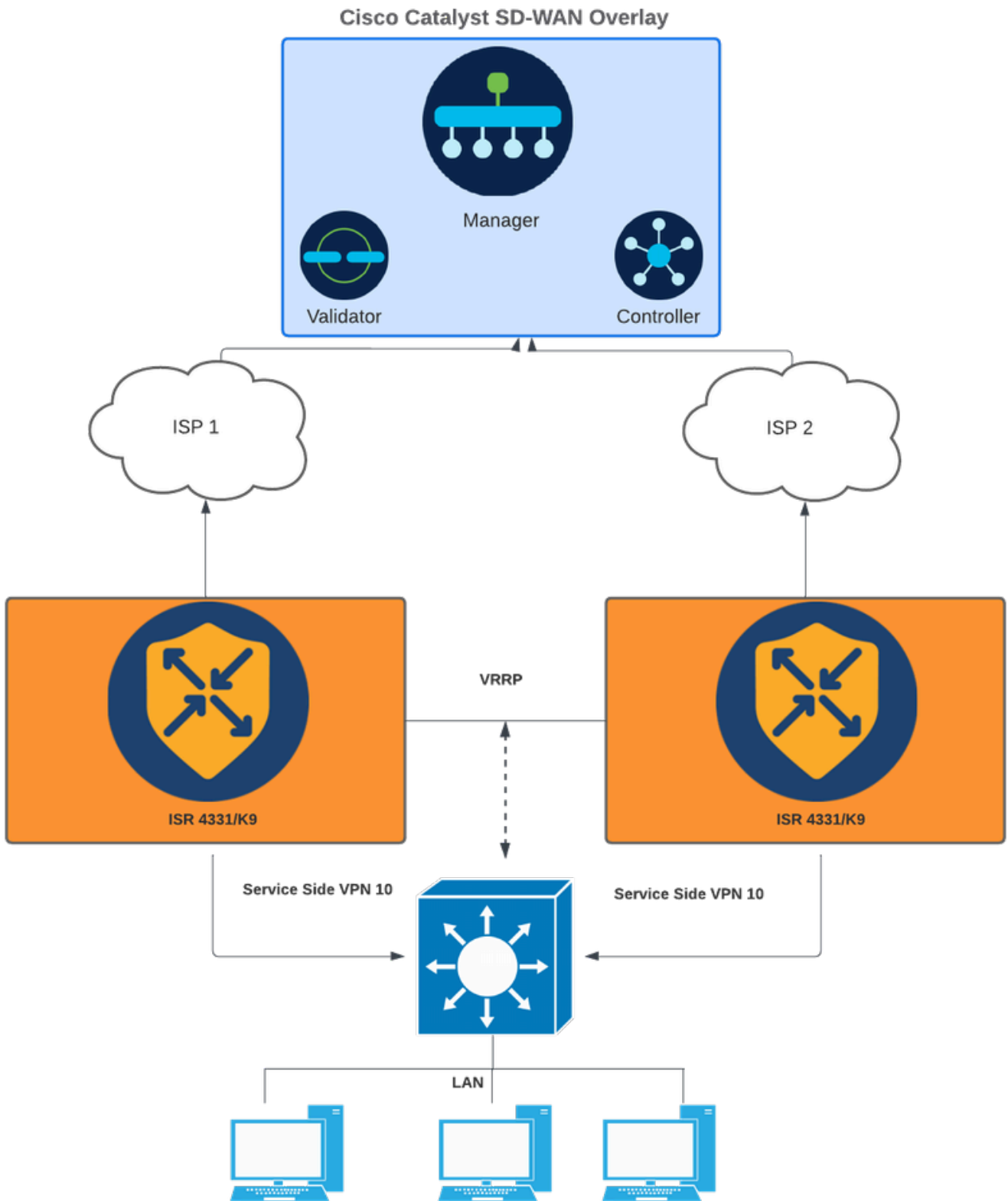
虛擬路由器備援通訊協定(VRRP)是一種LAN端通訊協定，可為交換器及其他IP終端站提供備援閘道

服務。在Cisco SD-WAN軟體中，您可以在虛擬專用網路(VPN)內的介面（通常在子介面）上配置VRRP。

只有服務端VPN支援VRRP（VPN 0和512不支援VRRP）。

設定

網路圖表



網路圖表

組態

這可以通過三種方式實現：

1 — 通過裝置功能模板：

在SD-WAN Manager中，導航到Configuration > Templates > Feature templates。

如果已為服務端介面建立功能模板，請搜尋模板名稱，然後按一下Edit。

如果沒有為服務端介面建立功能模板，請按一下Add template，搜尋裝置型號，然後選擇Cisco VPN Interface Ethernet。

按一下VRRP頁籤和新建VRRP。

Feature Template > Add Template > Cisco VPN Interface Ethernet

Tunnel Interface On Off

NAT On Off

VRRP On Off

New VRRP

Optional	Group ID	Priority	Timer	Track OMP	Track Prefix List	IP Address	Secondary IP Address	TLOC Preference Change	TLOC Value	Tracker C	Action
No data available											

VRRP頁籤

配置VRRP引數：

組ID:範圍1到255。


優先順序機制:範圍：1 - 254。路由器的優先順序級別。具有最高優先順序的路由器被選為主VRRP路由器。如果兩台路由器的優先順序相同，則具有較高IP地址的路由器被選為主VRRP路由器。

計時器（毫秒）：範圍100到40950毫秒。指定主VRRP路由器傳送VRRP通告消息的頻率。如果從屬路由器丟失三個連續的VRRP通告，它們會選擇新的主VRRP路由器。建議使用1000ms作為預設值。

跟蹤OMP（可選）

跟蹤字首清單（可選）

IP 位址:虛擬IP地址必須與兩個路由器介面不同，但位於同一子網（本地和對等）中。

 附註：當Cisco IOS® XE Catalyst SD-WAN裝置上的VRRP功能模板的計時器為100毫秒時，如果LAN介面上的流量高，則VRRP將失敗。建議設定預設計時器1000ms或更高。

New VRRP

 Mark as Optional Row ⓘ

Group ID	<input type="text" value="1"/>
Priority	<input type="text" value="200"/>
Timer (milliseconds)	<input type="text" value="1000"/>
Track OMP	<input type="radio"/> On <input checked="" type="radio"/> Off
Track Prefix List	<input type="text"/>
IP Address	<input type="text" value="192.168.23.1"/>
VRRP Secondary IP Address (Maximum: 4)	Add
TLOC Preference Change	<input type="radio"/> On <input checked="" type="radio"/> Off
Object Tracker	Add Tracking Object

Add Cancel

VRRP配置示例主裝置

按一下「Add」，然後「Save」。

對VRRP對等體/備用體繼續相同處理（除VRRP優先順序外，所有值都必須匹配）。

New VRRP

 Mark as Optional Row ⓘ

Group ID	<input type="text" value="1"/>
Priority	<input type="text" value="150"/>
Timer (milliseconds)	<input type="text" value="1000"/>
Track OMP	<input type="radio"/> On <input checked="" type="radio"/> Off
Track Prefix List	<input type="text"/>
IP Address	<input type="text" value="192.168.23.1"/>
VRRP Secondary IP Address (Maximum: 4)	Add
TLOC Preference Change	<input type="radio"/> On <input checked="" type="radio"/> Off
Object Tracker	Add Tracking Object

Add Cancel

VRRP配置示例備用裝置

將VPN介面乙太網功能模板新增到所需服務VPN下的裝置模板中，然後按一下儲存。

螢幕顯示將更改推送到裝置以完成此過程。

等效的CLI

主要：

```
interface GigabitEthernet0/0/1
<snipped>
  vrf forwarding 10
```

```
ip address 192.168.23.2 255.255.255.0
no ip redirects
ip mtu 1496
vrrp 1 address-family ipv4
  timers advertise 1000
  priority 200
  vrrpv2
  address 192.168.23.1 primary
exit-vrrp
arp timeout 1200
end
```

待機：

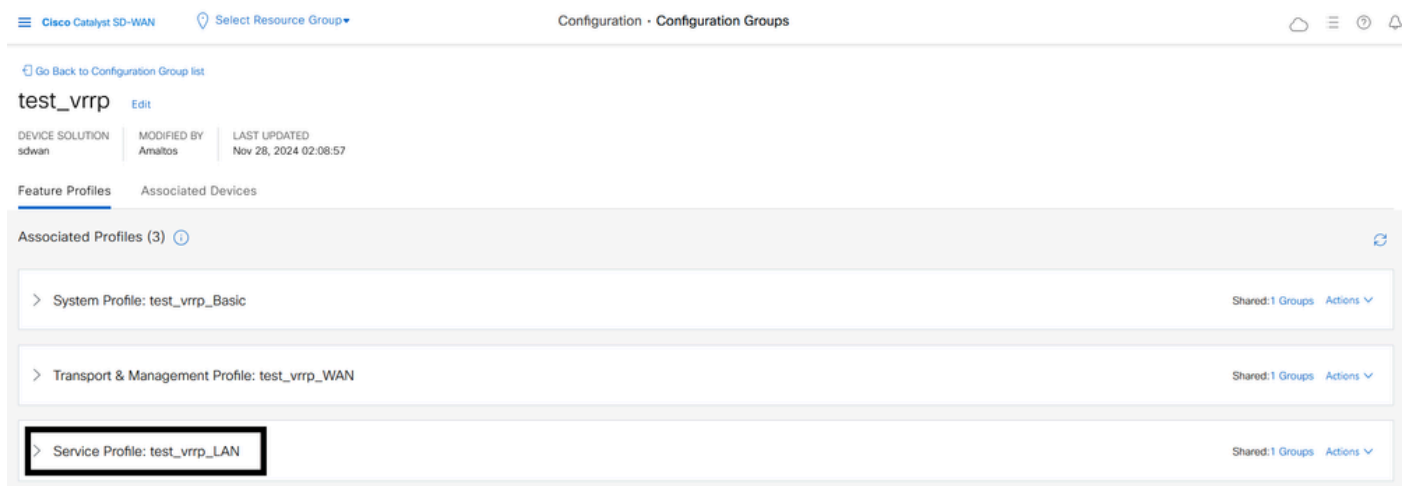
```
interface GigabitEthernet0/0/1
<snipped>
  vrf forwarding 10
  ip address 192.168.23.3 255.255.255.0
  no ip redirects
  ip mtu 1496
  vrrp 1 address-family ipv4
    timers advertise 1000
    priority 150
    vrrpv2
    address 192.168.23.1 primary
  exit-vrrp
arp timeout 1200
end
```

2 — 通過配置組：

導覽至Configuration > Configuration Groups。

導航到現有配置組，然後選擇編輯。

導覽至服務設定檔區段，並尋找功能LAN介面。



The screenshot shows the Cisco Catalyst SD-WAN Configuration Groups page. The page title is "test_vrrp" and it includes an "Edit" link. Below the title, there are three columns: "DEVICE SOLUTION" (sdwan), "MODIFIED BY" (Amalios), and "LAST UPDATED" (Nov 28, 2024 02:08:57). There are two tabs: "Feature Profiles" and "Associated Devices". The "Associated Profiles" section shows three profiles:

Profile Name	Shared	Groups	Actions
> System Profile: test_vrrp_Basic	Shared	1 Groups	Actions
> Transport & Management Profile: test_vrrp_WAN	Shared	1 Groups	Actions
> Service Profile: test_vrrp_LAN	Shared	1 Groups	Actions

按一下Edit Feature。

Service Profile: test_vrrp_LAN Shared: 1 Groups Actions

Search Table

Add Feature

Type	Feature Name	Description	Sub-Feature	Actions
VPN				
	Local_Internet_for_Guests	LAN VPN	-	...
	VPN_Local_Internet_for_Guests_99_Interface	LAN Interface	-	...
	Corporate_Users	LAN VPN	-	...
	VPN_Corporate_Users_10_Interface	LAN Interface	-	...
	Payment_Processing_Network	LAN VPN	-	...
	VPN_Payment_Processing_Network_12_Interface	LAN Interface	-	...
	Physical_Security_Devices	LAN VPN	-	...
	VPN_Physical_Security_Devices_13_Interface	LAN Interface	-	...

1 Record Items per page: 25 1 - 1 of 1

[View Details](#)
[Associate Sub Feature](#)
[Add Sub-Feature](#)
[Edit Feature](#)
[Delete Feature](#)

編輯功能部分

在新頁籤中，按一下VRRP部分，然後按一下Add VRRP IPv4。

Edit Ethernet Interface Feature

LAN / Service VPN / Ethernet Interface

Name	Description
VPN_Corporate_Users_10_Interface	LAN Interface

Associated VPN
Corporate_Users

Basic Configuration NAT **VRRP** ARP ACL/QoS Advanced

IPv4 Settings

VRRP IPv4 (Maximum: 1)

Add VRRP IPv4

Group ID	Priority	Timer	Track OMP	IP Address	VRRP Secondary	Tloc Prefix Change	Tloc Prefix Change Value	Tracking	Action
There is no data.									

IPv6 Settings

VRRP部分配置組

配置VRRP引數：

組ID:範圍1到255。

優先順序機制:範圍：1 - 254。路由器的優先順序級別。具有最高優先順序的路由器被選為主VRRP路由器。如果兩台路由器的優先順序相同，則具有較高IP地址的路由器被選為主VRRP路由器


。

計時器 (毫秒) : 範圍100到40950毫秒。指定主VRRP路由器傳送VRRP通告消息的頻率。如果從屬路由器丟失三個連續的VRRP通告，它們會選擇新的主VRRP路由器。建議使用1000ms作為預設值。

跟蹤OMP (可選)

跟蹤字首清單 (可選)

IP 位址: 虛擬IP地址必須與兩個路由器介面不同，但位於同一子網 (本地和對等) 中。

 附註：當Cisco IOS XE Catalyst SD-WAN裝置上VRRP功能模板的計時器為100毫秒時，如果LAN介面上的流量高，則VRRP將失敗。建議設定預設計時器1000ms或更高。

Add VRRP IPv4 ×

Group ID*



1

Priority*



200

Timer*



1000

Track OMP*



IP Address*



192.168.23.1

Tloc Prefix Change*



VRRP IP Address Secondary

[Add VRRP IP Address Secondary](#)

VRRP Tracking Object

[Add VRRP Tracking Object](#)

Cancel

Add

VRRP配置示例主要

然後，按一下Add按鈕。

驗證配置是否已新增，然後按一下Save。

Edit Ethernet Interface Feature



LAN / Service VPN / Ethernet Interface

Name* VPN_Corporate_Users_10_Interface Description LAN Interface

Associated VPN Corporate_Users

Basic Configuration NAT **VRRP** ARP ACL/QoS Advanced

IPv4 Settings

VRRP IPv4 (1) (Maximum: 1)

Add VRRP IPv4

Group ID	Priority	Timer	Track OMP	IP Address	VRRP Secondary	Tloc Prefix Change	Tloc Prefix Change Value	Tracking	Action
1	200	1000	false	192.168.23.1		false			

IPv6 Settings

Cancel

Save

儲存VRRP配置

然後，在主裝置中部署更改。

對VRRP對等體/備用體繼續相同處理（除VRRP優先順序外，所有值都必須匹配）。

Add VRRP IPv4

Group ID*

1

Priority*

150

Timer*

1000

Track OMP*

IP Address*

192.168.23.1

Tloc Prefix Change*

VRRP IP Address Secondary

[Add VRRP IP Address Secondary](#)

VRRP Tracking Object

[Add VRRP Tracking Object](#)

Cancel

Add

VRRP配置示例待命

3 — 通過CLI:

CLI配置示例。

主要

```
<#root>
```

```
Device#
```

```
config-transaction
```

```
Device (config)#
```

```
interface GigabitEthernet0/0/1
```

```
Device (config-if)#
```

```
vrrp 1 address-family ipv4
```

```
Device (config-if-vrrp)#
```

```
timers advertise 1000
```

```
Device (config-if-vrrp)#
```

```
priority 200
```

```
Device (config-if-vrrp)#
```

```
vrrpv2
```

```
Device (config-if-vrrp)#
```

```
address 192.168.23.1 primary
```

```
Device (config-if-vrrp)#
```

```
commit
```

待機 :

```
<#root>
```

```
Device#
```

```
config-transaction
```

```
Device (config)#
```

```
interface GigabitEthernet0/0/1
```

```
Device (config-if)#
```

```
vrrp 1 address-family ipv4
```

```
Device (config-if-vrrp)#
```

```
timers advertise 1000
```

```
Device (config-if-vrrp)#
```

```
priority 150
```

```
Device (config-if-vrrp)#
```

```
vrrpv2
```

```
Device (config-if-vrrp)#
```

```
address 192.168.23.1 primary
```

```
Device (config-if-vrrp)#
```

commit

驗證

<#root>

Device#

show vrrp all

Vlan10 - Group 1 - Address-Family IPv4

State is MASTER

State duration 2 hours 0 mins 49 secs

Virtual IP address is 192.168.23.1

Virtual MAC address is 0000.5E00.0164

Advertisement interval is 1000 msec

Preemption enabled

Priority is 200

Master Router is 192.168.23.2 (local), priority is 200

Master Advertisement interval is 1000 msec (expires in 256 msec)

Master Down interval is unknown

FLAGS: 1/1

<#root>

Device#

show vrrp detail

Vlan10 - Group 1 - Address-Family IPv4

State is MASTER

State duration 2 hours 0 mins 55 secs

Virtual IP address is 192.168.23.1

Virtual MAC address is 0000.5E00.0164

Advertisement interval is 1000 msec

Preemption enabled

Priority is 200

Master Router is 192.168.23.2 (local), priority is 200

Master Advertisement interval is 1000 msec (expires in 717 msec)
Master Down interval is unknown
FLAGS: 1/1
VRRPv3 Advertisements: sent 27392 (errors 0) - rcvd 1220
VRRPv2 Advertisements: sent 27392 (errors 0) - rcvd 4
Group Discarded Packets: 0
VRRPv2 incompatibility: 0
IP Address Owner conflicts: 0
Invalid address count: 0
IP address configuration mismatch : 0
Invalid Advert Interval: 0
Adverts received in Init state: 0
Invalid group other reason: 0
Group State transition:
Init to master: 1 (Last change Mon Nov 27 11:04:00.406)
Init to backup: 3 (Last change Mon Nov 27 15:29:29.265)
Backup to master: 5 (Last change Mon Nov 27 15:29:32.914)
Master to backup: 3 (Last change Mon Nov 27 10:38:15.722)
Master to init: 2 (Last change Mon Nov 27 15:25:12.248)
Backup to init: 1 (Last change Mon Nov 27 10:35:32.215)

<#root>

Device#

show vrrp internal

GroupId:100 AF:IPv4 Interface:Vlan10
ref_cnt:3 flags:0 vrrs_hdl:1
mac_programmed:1 vrrp_mcast_join_v4:1
if_ctx_:0x7F43DE017178
if_oper_state:1
system_ctx_:0x7F43DE029FA0

primary address: 192.168.23.1

operational:1 is_active:1 match_addr:1 compatv2:1

shutdown:0 cfg_shutdown:0 priority:200 cfg_priority:200

state_ctx_:0x7F43DE02A040
hybernation:0 preempt:enabled state_time:2 hours 0 mins 59 secs
preempt_delay:0 secs master_priority:0
ready_to_preempt:90 master_reason:0
timer_ctx_:0x7F43DE02A0B8
master_down_timer:0 msec use_learned_timer:0
master_adv_interval:1000 cfg_adv_interval:1000 master_down_interval:0
comms_ctx_:0x7F43DE02A0F8
v2rtr_valid:1 listen:1
track_ctx_:0x7F43DE02A178
track_count:0 decrement:0 force_shutdown:0

<#root>

Device#

show vrrp statistics

VRRP Global Statistics:

Dropped Packets : 0

VRRP Statistics for Vlan10

Header Discarded Packets: 0

Invalid TTL/Hop Limit: 0

Invalid Checksum: 0

Invalid Version: 0

Invalid Msg Type: 0

Invalid length/Incomplete packet: 0

Invalid group no: 0

Invalid packet other reason: 0

VRRP Statistics for Vlan10 - Group 1 - Address-Family IPv4

State is MASTER

State duration 2 hours 1 mins 3 secs

VRRPv3 Advertisements: sent 27401 (errors 0) - rcvd 1220

VRRPv2 Advertisements: sent 27401 (errors 0) - rcvd 4

Group Discarded Packets: 0

VRRPv2 incompatibility: 0

IP Address Owner conflicts: 0

Invalid address count: 0

IP address configuration mismatch : 0

Invalid Advert Interval: 0

Adverts received in Init state: 0

Invalid group other reason: 0

Group State transition:

Init to master: 1 (Last change Mon Nov 27 11:04:00.406)

Init to backup: 3 (Last change Mon Nov 27 15:29:29.265)

Backup to master: 5 (Last change Mon Nov 27 15:29:32.914)

Master to backup: 3 (Last change Mon Nov 27 10:38:15.722)

Master to init: 2 (Last change Mon Nov 27 15:25:12.248)

Backup to init: 1 (Last change Mon Nov 27 10:35:32.215)

有用的調試 :

<#root>

debug vrrp all detail

<#root>

debug vrrp error

<#root>

debug vrrp packet

<#root>

debug vrrp process

<#root>

debug vrrp state

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）。