在 IOS-XE 16.12 环境中配置 Catalyst 9800 无线 控制器,以实现高可用性 (HA) 客户端状态切换 (SSO)

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简介

本文档介绍如何在Cisco IOS® XE 16.10到16.12中配置高可用性(HA)SSO中的Catalyst 9800无线控制器。

背景信息

适用于Catalyst 9800的Cisco IOS XE® 17.x及更高版本。本文档重点介绍16.x版的高可用性SSO。

冗余管理接口的概念增加了许多差异,这些差异在专用指南中有所涉及,

<u>Cisco Catalyst 9800系列无线控制器的高可用性SSO部署指南,Cisco IOS XE Amsterdam 17</u>。

本文中说明的冗余为1:1,这意味着其中一个单元运行在活动状态,而另一个单元运行在热备用状态 。

如果检测到主用设备无法访问,热备用设备将变为主用状态,所有AP和客户端将通过新的主用设备 维护其服务。

一旦两台设备同步,备用9800 WLC就会模拟主设备的配置。

在主用设备上执行的任何配置更改都会通过冗余端口(RP)在备用设备上复制。

系统不再允许在备用 9800 WLC 上进行配置更改。

除了同步框之间的配置外,它们还同步以下内容:

- 处于UP状态的AP(不是处于下载状态的AP或处于DTLS握手的AP)
- 客户端处于RUN状态(如果客户端处于Web Authentication required状态且发生切换,则该客 户端必须重新启动其关联进程),
- ・ RRM配置
- (其他设置)

限制

在启用两个9800 WLC之间的HA之前,请执行以下验证:

- 两台设备必须具有相同的 PID。如果是9800-CL,请确保主机环境(ESXi或KVM或ENCS)对 于两个实例都相同。
- 两台设备必须运行相同版本的软件。
- 两台设备必须在相同的安装模式(捆绑包或安装)下运行。我们建议使用WLC的安装模式。
- 两台设备必须在同一子网中拥有冗余IP。用于冗余的IP地址必须在子网中不存在网关的情况下 不可路由。
- 两台设备都必须具有唯一的无线管理接口。
- 两台设备的无线管理接口必须属于同一 VLAN /子网。
- 在9800-CL中,
 - 。验证是否向两个实例分配了相同的CPU、内存和存储资源。
 - 验证两个实例的虚拟机快照是否已禁用。
 - ◎ 两台设备必须使用相同的接口编号(例如:GigabitEthernet3)才能实现HA

先决条件

要求

Cisco建议了解9800 WLC的基本操作。

使用的组件

本文档中的信息基于以下软件和硬件版本:

- 虚拟 9800-CL WLC v16.10 至 16.12 版本
- ・ 9800-40 WLC v16.10 至 16.12 版本

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。

在基于硬件的 9800 WLC 上配置高可用性 (HA)

网络图

本文档基于以下拓扑:



冗余SSO默认启用,但设备之间的通信配置仍然需要。

在配置任何步骤之前,请确保两个框运行相同的版本。

步骤1:将9800 WLC连接到网络,并确保它们可以相互访问。

两台设备的无线管理接口必须属于同 一 VLAN 和子网。

第二步:如网络拓扑所示连接RP。连接9800 WLCs RP有两个选项:

- RP RJ45 10/100/1000 以太网冗余端口
- RP-10 GE SFP 端口



注:在Cisco IOS® XE 16.10到16.12中,建议将9800冗余端口连接到连接9800管理连接的同 一台交换机(请参阅网络拓扑)。这是因为在这些版本中没有网关可达性验证。背靠背连接可 以工作,但这样连接时,9800控制器变为主用状态的几率更高。请注意,RP端口不使用 vlan标记。

第三步:为两个9800 WLC分配冗余IP地址

GUI:

导航到Administration > Device > Redundancy. 取消选Clear Redundancy Config 中并输入所需的IP地址。

两台设备都具有唯一的IP地址,并且都属于同一子网。

该子网无法路由到网络中的任何位置。

9800 WLC-1

Q. Search Menu Items	Device		
Dashboard	General	Clear Redundancy Config	
Monitoring >	FTP/TFTP	Local IP*	203.0.113.1
🔧 Configuration 🔷	Wireless	Netmask*	255.255.255.0
() Administration >	Redundancy	Remote IP*	203.0.113.2
X Troubleshooting		Peer Timeout State*	Default v
		Redundancy Mode	None SSO
		Active Chassis Priority*	1
			Apply to Device

9800 WLC-2

Q. Search Menu Items	Device			
Dashboard	General	Clear Redundancy Config		
Monitoring >	FTP/TFTP	Local IP*	203.0.113.2	
🔾 Configuration 🛛 🔸	Wireless	Netmask*	255.255.255.0	
ⓒ Administration >	Redundancy	Remote IP*	203.0.113.1	
		Peer Timeout State*	Default v	
Troubleshooting		Redundancy Mode	○ None OSSO	
		Active Chassis Priority*	1	
				Apply to Device

CLI :

16.10

```
9800 WLC-1# chassis ha-interface local-ip <!--IP address--> remote-ip <!--IP address-->
9800 WLC-2# chassis ha-interface local-ip <!--IP address--> remote-ip <!--IP address-->
16.11
9800 WLC-1# chassis redundancy ha-interface local-ip <!--IP address--> remote-ip <!--IP address-->
9800 WLC-2# chassis redundancy ha-interface local-ip <!--IP address--> remote-ip <!--IP address-->
```

要指定哪个设备必须是活动的9800 WLC,请通过GUI或CLI设置机箱优先级。具有更高优先级的设备被选为主设备。

GUI:

Q. Search Menu Items	Device		
Dashboard	General	Clear Redundancy Config	
	> FTP/TFTP	Local IP*	203.0.113.2
🔨 Configuration	Wireless	Netmask*	255.255.255.0
C Administration	Redundancy	Remote IP*	203.0.113.1
		Peer Timeout State*	Default 👻
and includies nooung		Redundancy Mode	○ None OSSO
		Active Chassis Priority*	1
		L	

CLI :

16.10
chassis 1 priority <1-15>
16.11
chassis 1 priority <1-2>

如果未选择特定设备处于活动状态,则设备会根据最低MAC地址选择Active

使用以下命令验证当前配置:

```
# show chassis ha-status local
             My state = ACTIVE
            Peer state = DISABLED
     Last switchover reason = none
      Last switchover time = none
          Image Version = ...
Chassis-HA Local-IP
                  Remote-IP MASK
                                        HA-Interface
_____
This Boot:
Next Boot: 203.0.113.2 <!--IP address--> <!--IP address-->
Chassis-HA Chassis# Priority IFMac Address Peer Timeout
_____
This Boot: 1
                                           0
Next Boot: 1
                                           0
```

第四步:在两台9800 WLC上保存配置

GUI:

Welcome admin 🛛 🏠 😨 B 🌣 🖾 🛛 •

CLI :

write

第五步:同时重新启动两台设备

GUI:

导航至 Administration > Management > Backup & Restore > Reload

Q, Search Menu Items	Backup & Restore	
Dashboard	Config File Management Reload	
Monitoring >	 Save Configuration and Reload. 	
🔾 Configuration 💦 🔿	 Reload without Saving Configuration. 	
() Administration →	 Reset to Factory Default and Reload. 	
X Troubleshooting	 Apply to Device 	

CLI :

reload

在虚拟的 9800 WLC 上配置 HA

本文档基于以下拓扑:



配置

设置虚拟冗余网络

步骤1: 打开您的vCenter客户端并导航至 Host > Configuration > Networking > Add Networking...



第二步:选择Virtual Machine 并单击 Next.

🕗 Add Network Wizard	- 0	×
Connection Type Networking hardware	can be partitioned to accommodate each service that requires connectivity.	
Connection Type Network Access Connection Settings Summary	Connection Types	
Help	< Back Next > Co	ncel

第三步:选择Create a vSphere standard switch 并单击 Next.

Add Network Wizard Virtual Machines - Netwo Virtual machines reach n	rk Access etworks through uplink adapters attached to vSphe	re standard swi	- D	×
Connection Type Network Access	Select which vSphere standard switch will handle vSphere standard switch using the unclaimed net	the network tra twork adapters	affic for this connection. You may also create a new listed below.	
Connection Settings Summary	Create a vSphere standard switch	Speed	Networks	^
	O Use vSwitch0	Speed	Networks	
	Intel Corporation 82599EB 10-Gigal	10000 Full	Vetwork Connection →172.16.0.202-172.16.0.202 (VLAN 2601)	
	🖂 📟 vmnic2	10000 Full	. 172.16.40.130-172.16.40.130 (VLAN 2641)	
	C Use vSwitch1	Speed	Networks	
	Intel Corporation I350 Gigabit Netw	ork Connecti 1000 Full	None	
	vmnic0	1000 Full	0.0.0.1-255.255.255.254 (VI AN 210)	~
	Preview:			
	Virtual Machine Port Group VM Network	Physical Adapters No adapters		
Help			< Back Next > Cance	e

第四步:或者,自定义参Network Label 数。点击之后 Next.

🔗 Add Network Wizard				-		Х
Virtual Machines - Conne Use network labels to id	ction Settings entify migration compatible connect	tions common to two or more hosts.				
Connection Type Network Access Connection Settings	Port Group Properties	Redundancy Network				
Summary	VLAN ID (Optional):	None (0)	-			
	Preview:	Physical Advances				
	Redundancy Network	9 - No adapters				
						. 1
Help			< Back	Next >	Can	cel //

第五步:完成向导。

Add Network Wizard Ready to Complete Verify that all new and mo	odified vSphere standard switches are configured appropriately.	-		×
Connection Type Network Access Connection Settings Summary	Host networking will include the following new and modified standard switches: Preview: Virtual Machine Port Group Physical Adapters Redundancy Network Redundancy Network			
Help	< Back Fin	iish	Cano	e

第六步:将接口从两个虚拟9800 WLC(每个虚拟9800 WLC之一)链接到冗余网络。

右键单击虚拟9800 WLC,然后单击 Edit Settings...

		e\	MLC-2		
	B	e١		Power	Þ
	Ð	v-		Guest	Þ
			i	Snapshot	Þ
5				Open Console	
	,		₿	Edit Settings	
				Migrato	

选择一个可用的网络适配器并将其分配到,然Redundancy Network, 后单击确定。

🚱 eWLC-2 - Virtual Machine Prop	oerties	- 🗆 X
Hardware Options Resources		Virtual Machine Version: vmx-10
Show All Devices	Add Remove	Device Status Connected
Hardware	Summary	Connect at power on
 Memory CPUs Video card VMCI device SCSI controller 0 CD/DVD drive 1 CD/DVD drive 2 Hard disk 1 Network adapter 1 Network adapter 2 Network adapter 3 	8192 MB 4 Video card Restricted Paravirtual [datastore1] eWLC-karlc [datastore1] eWLC-karlc Virtual Disk Trunk vlan2601 Redundancy Network	Adapter Type Current adapter: VMXNET 3 MAC Address 00:0c:29:41:1c:9c Automatic C Manual DirectPath I/O Status: Inactive To activate DirectPath I/O, go to the Resources tab and select Memory Settings to reserve all guest memory. Network Connection Network Connection Network label: Redundancy Network Port: N/A Switch to advanced settings

对两台设备执行相同的操作。



设置 HA 配置

执行进一步配置之前,请确保来自两个设备的无线管理接口属于同一个VLAN和子网,并且可相互 访问。

验证两个框运行的版本是否相同。

步骤1:为两个9800 WLC分配冗余IP地址

GUI:

导航到Administration > Device > Redundancy. 取消选Clear Redundancy Config 中并输入所需的IP地址。

检验两台设备是否都具有唯一的IP地址,并且两台设备属于同一子网。

9800 WLC-1

Q. Search Menu Items	Device		
Dashboard	General	Clear Redundancy Config	
Monitoring >	FTP/TFTP	Local IP*	203.0.113.1
🔧 Configuration 💦 👌	Wireless	Netmask*	255.255.255.0
(文) Administration >	Redundancy	HA Interface	GigabitE GigabitEthernet1
* Troubleshooting		Remote IP*	GigabitEthernet2
		Peer Timeout State*	
		Redundancy Mode	1
		Proble of Book Privily	E Apply to Device
9800 WLC-2			
Dashboard	General	Clear Redundancy Config	
(2) Monitoring >	FTP/TFTP	Local IP*	203.0.113.2
Configuration >	Wireless	Netmask*	255.255.255.0
Administration	Redundancy	HA Interface	GigabitE •
Y Troubleshooting		Remote IP*	203.0.113.1
00		Peer Timeout State*	Default •
		Redundancy Mode	○ None O SSO
		Active Chassis Priority*	1
			Apply to Device
	1		

注:注意GigabitEthernet3已为HA接口选择。这是因为虚拟机的第三个接口是与冗余网络关联的接口。此接口用于在Cisco IOS启动前实现两个机箱之间的通信,传输HA控制消息(如角色选择、保持活动等),并为两个机箱之间的进程间通信(IPC)提供传输。

16.10 CLI :

9800 WLC-1# chassis ha-interface gigabitEthernet 3 local-ip <!--IP address--> remote-ip <!--IP address-9800 WLC-2# chassis ha-interface gigabitEthernet 3 local-ip <!--IP address--> remote-ip <!--IP address-

```
9800WLC1# chassis redundancy ha-interface g3 local-ip <!--IP address--> remote-ip <!--IP address--> 9800WLC2# chassis redundancy ha-interface g3 local-ip <!--IP address--> remote-ip <!--IP address-->
```

✎ 注意:选择GigabitEthernet 3接口用作HA并重新启动设备后(即使两个9800 WLC之间未构建 HA),您也不会再看到此接口在 show ip interface brief or any other command that shows the 9800 WLC's interfaces,

this is because that interface is now marked for HA only.

步骤2.(可选)要手动指定哪个框必须是活动的9800 WLC,请通过Active Chassis PriorityGUI或CLI设置。

具有较高优先级的机箱会被选为主用设备。

GUI:

Dashboard	General	Clear Redundancy Config		de la
Monitoring >	FTP/TFTP	Local IP*	203.0.113.2	
الالم Configuration ک	Wireless	Netmask*	255.255.255.0	
رُنَ Administration ،	Redundancy	HA Interface	GigabitE	
A C		Remote IP*	203.0.113.1	
* Troubleshooting		Peer Timeout State*	Default	
		Redundancy Mode	None OSSO	
		Active Chassis Priority*	1	
			Apply to Det	vice

CLI :

chassis 1 priority <1-15>

如果未指定要激活的特定设备,则框会选择哪个是主用活动9800 WLC。

第三步:在两台9800 WLC上保存配置

GUI:

Welcome admin





CLI :

write

第四步:同时重新启动这两个框。

GUI:

导航至 Administration > Management > Backup & Restore > Reload

Q. Search Menu Items	Backup & Restore	
Dashboard	Config File Management Reload	
Monitoring >	 Save Configuration and Reload. 	
$\langle \rangle$ Configuration \rightarrow	 Reload without Saving Configuration. 	
() Administration →	Reset to Factory Default and Reload.	
X Troubleshooting	 Apply to Device 	

CLI :

reload

启用对备用 9800 WLC 的控制台访问

启用HA且其中一个框分配为活动框且另一个框分配为备用热时,默认情况下不允许它进入备用框上的exec模式(启用)。

若要启用此模式,请通过 SSH /控制台登录到主用 9800 WLC 并输入以下命令:

config t
redundancy
main-cpu
standby console enable
end

强制切换

要强制在框之间切换,请手动重新启动活动的9800 WLC或运行此命令:

redundancy force-switchover

中断 HA

清除两种 9800 WLC 中的 HA 配置

若要中断两台设备上的 HA,您可以执行以下步骤。

步骤1:清除当前主用9800 WLC的HA配置并强制进行冗余切换(它会重新启动当前主用9800 WLC,并在清除HA配置的情况下引导备份)

16.10: Active-9800 WLC# chassis clear WARNING: Clearing the chassis HA configuration results in the chassis coming up in Stand Alone mode aft

Active-9800 WLC# redundancy force-switchover

16.11 Active-9800 WLC# clear chassis redundancy

第二步: 待机9800 WLC变为主用后,登录并清除冗余配置。

new-Acitve-9800 WLC# chassis clear WARNING: Clearing the chassis HA configuration will resultin the chassis coming up in Stand Alone mode a

第三步:更新新的活动9800 WLC的IP地址。或者,更新其主机名。

new-Acitve-9800 WLC# config t
new-Acitve-9800 WLC# hostname <new-hostname>

new-Acitve-9800 WLC# interface <wireless-mgmt-int-id> new-Acitve-9800 WLC# ip address <a.b.c.d> <a.b.c.d> new-Acitve-9800 WLC# exit

第四步:保存配置并重新加载新的活动9800 WLC

new-Acitve-9800 WLC# write
new-Acitve-9800 WLC# reload

之后,第二个框重新启动并返回新的IP地址配置(以避免与之前的HA 9800 WLC重复)并清除 HA配置。原先的主用 9800 WLC 保留其原始 IP 地址。

对等体超时配置

主用和备用机箱相互发送保持连接消息,以确保两者仍然可用。

如果对等机箱在配置的对等超时中没有收到来自对等机箱的任何保持连接消息,则使用对等超时来 确定对等机箱是否丢失。

默认超时为 500 毫秒,但可通过 CLI 配置。配置的超时值会同步到备用 9800 WLC。

使用此命令可自定义此计时器:

chassis timer peer-timeout <500-16000 msec>

使用此命令可清除配置的计时器(如果需要):

chassis timer peer-timeout default

升级

标准(非AP或ISSU)升级可从Web UI完成。一旦 WLC 成为 HA 对,它们将在相同模式(最好是 安装模式)下运行相同版本。

Web UI升级页面处理对中两个控制器的软件分发,并同时安装和重新启动两个设备。

这会导致两台设备出现相同的停机时间。有关可缩短停机时间的其他技术,请参阅<u>修补和安装指南</u> 。

验证

在两个9800 WLC单元重新启动并彼此同步后,您可以通过控制台访问它们,并使用以下命令验证 它们的当前状态:

<#root>

9800 WLC-1# show chassis

<#root>

9800 WLC-1-stby# show chassis

Chassis/Stack Mac Address : <!--IP address--> - Local Mac Address Mac persistency wait time: Indefinite Local Redundancy Port Type: Twisted Pair

Chassis#	Role	Mac Address	Priorit	H/W ty Versio	Current n State	IP
1	Active	address	1	V02	Ready	IP address
*2	Standby	address	1	V02	Ready	IP address



"*"指向您运行命令的机箱。

```
<#root>
```

```
9800 WLC-1# show redundancy
Redundant System Information :
_____
      Available system uptime = 1 hour, 35 minutes
Switchovers system experienced = 0
             Standby failures = 0
       Last switchover reason = none
                Hardware Mode = Duplex
   Configured Redundancy Mode = sso
    Operating Redundancy Mode = sso
             Maintenance Mode = Disabled
               Communications = Up
Current Processor Information :
_____
             Active Location = slot 1
       Current Software state = ACTIVE
      Uptime in current state = 1 hour, 35 minutes
                Image Version = Cisco IOS Software [Fuji], WLC9500 Software (WLC9500_IOSXE), Experimen
Copyright (c) 1986-2018 by Cisco Systems, Inc.
Compiled Thu 20-Sep-18 03:07 by mcpre
                        BOOT = bootflash:packages.conf,12;
                  CONFIG_FILE =
       Configuration register = 0x2102
Peer Processor Information :
-----
             Standby Location = slot 2
       Current Software state = STANDBY HOT
      Uptime in current state = 1 hour, 33 minutes
                Image Version = Cisco IOS Software [Fuji], WLC9500 Software (WLC9500_IOSXE), Experimen
Copyright (c) 1986-2018 by Cisco Systems, Inc.
Compiled Thu 20-Sep-18 03:07 by mcpre
                        BOOT = bootflash:packages.conf,12;
                  CONFIG_FILE =
       Configuration register = 0x2102
```

您可以验证主用和备用 9800 WLC 的当前数据,以确保两者相同。

示例:

<#root>

9800 WLC-1# show ap summary chassis active r0

Number of APs: 2

AP Name	Slots	AP Model	Ethernet MAC	Radio MAC	Location
AP Name AP Name	2 2	3702I 3702I 3702I	MAC MAC	MAC MAC	CALO abcde123456789012345

Number of APs: 2

AP Name	Slots	AP Model	Ethernet MAC Radio MA	AC Location
AP Name	2	3702I	MAC MAC	CALO
AP Name	2	37021	MAC MAC	abcde123456789012345

故障排除

两个硬件 9800 WLC 之间的 HA 对成功同步的控制台输出示例:

9800 WLC-1

<#root>

9800 WLC-1# chassis ha-interface local-ip

remote-ip

9800 WLC-1# show chassis

Chassis/Stack Mac Address : <!--MAC address --> - Local Mac Address Mac persistency wait time: Indefinite Local Redundancy Port Type: Twisted Pair H/W Current Chassis# Role Mac Address Priority Version State IP *1 Active <!--MAC address--> 1 V02 Ready

9800 WLC-1# wr

Building configuration...
[OK]

9800 WLC-1# reload

Reload command is issued on Active unit, this will reload the whole stack Proceed with reload? [confirm]

MMM DD HH:MM:SS.XXX: %SYS-5-RELOAD: Reload requested by console. Reload Reason: Reload Command. Chassis 1 reloading, reason - Reload command

- •
- .
- .

*MMM DD HH:MM:SS.XXX: %IOSXE REDUNDANCY-6-PEER: Active detected chassis 2 as standby. *MMM DD HH:MM:SS.XXX: %STACKMGR-6-STANDBY_ELECTED: Chassis 1 R0/0: stack_mgr: Chassis 2 has been elected *MMM DD HH:MM:SS.XXX: %PMAN-3-PROC_EMPTY_EXEC_FILE: Chassis 2 R0/0: pvp: Empty executable used for proc *MMM DD HH:MM:SS.XXX: %PMAN-3-PROC_EMPTY_EXEC_FILE: Chassis 2 R0/0: pvp: Empty executable used for proc *MMM DD HH:MM:SS.XXX: %CMRP-5-PRERELEASE_HARDWARE: Chassis 2 R0/0: cmand: 0 is pre-release hardware *MMM DD HH:MM:SS.XXX: %REDUNDANCY-5-PEER_MONITOR_EVENT: Active detected a standby insertion (raw-event=1 *MMM DD HH:MM:SS.XXX: %REDUNDANCY-5-PEER_MONITOR_EVENT: Active detected a standby insertion (raw-event=1 *MMM DD HH:MM:SS.XXX: %IOSXE_PEM-6-INSPEM_FM: PEM/FM Chassis 2 slot PO inserted *MMM DD HH:MM:SS.XXX: %IOSXE_PEM-6-INSPEM_FM: PEM/FM Chassis 2 slot P2 inserted *MMM DD HH:MM:SS.XXX: % Redundancy mode change to SSO *MMM DD HH:MM:SS.XXX: %VOICE_HA-7-STATUS: NONE->SSO; SSO mode will not take effect until after a platfo *MMM DD HH:MM:SS.XXX: Syncing vlan database *MMM DD HH:MM:SS.XXX: Vlan Database sync done from bootflash:vlan.dat to stby-bootflash:vlan.dat (616 b MMM DD HH:MM:SS.XXX: %PKI-6-AUTHORITATIVE_CLOCK: The system clock has been set. MMM DD HH:MM:SS.XXX: %PKI-6-CS_ENABLED: Certificate server now enabled. MMM DD HH:MM:SS.XXX: %HA_CONFIG_SYNC-6-BULK_CFGSYNC_SUCCEED: Bulk Sync succeeded MMM DD HH:MM:SS.XXX: %VOICE_HA-7-STATUS: VOICE HA bulk sync done.

MMM DD HH:MM:SS.XXX: %RF-5-RF_TERMINAL_STATE: Terminal state reached for (SSO)

9800 WLC-2

<#root>

9800 WLC-2# chassis ha-interface local-ip

remote-ip

9800 WLC-2# show chassis

Chassis/Stack Mac Address : <!--MAC address--> - Local Mac Address Mac persistency wait time: Indefinite Local Redundancy Port Type: Twisted Pair H/W Current Chassis# Role Mac Address Priority Version State IP ------*1 Active <!--MAC address--> 1 V02 Ready

9800 WLC-2# wr

Building configuration...

```
9800 WLC-2# reload
Reload command is issued on Active unit, this will reload the whole stack
Proceed with reload? [confirm]
MMM DD HH:MM:SS.XXX: %SYS-5-RELOAD: Reload requested by console. Reload Reason: Reload Command.
Chassis 1 reloading, reason - Reload command
Press RETURN to get started!
*MMM DD HH:MM:SS.XXX: %IOSXE_PLATFORM-3-WDC_NOT_FOUND: WDC returned length: OAdding registry invocation
*MMM DD HH:MM:SS.XXX: %REDUNDANCY-3-PEER MONITOR: PEER FOUND event on standby
*MMM DD HH:MM:SS.XXX: %SMART_LIC-6-AGENT_READY: Smart Agent for Licensing is initialized
*MMM DD HH:MM:SS.XXX: %SMART_LIC-6-AGENT_ENABLED: Smart Agent for Licensing is enabled
*MMM DD HH:MM:SS.XXX: %SMART_LIC-6-EXPORT_CONTROLLED: Usage of export controlled features is not allowe
*MMM DD HH:MM:SS.XXX: %SMART_LIC-6-HA_ROLE_CHANGED: Smart Agent HA role changed to Standby.
*MMM DD HH:MM:SS.XXX: dev_pluggable_optics_selftest attribute table internally inconsistent @ 0x1ED
*MMM DD HH:MM:SS.XXX: mcp_pm_subsys_init : Init done sucessfullySID Manager, starting initialization ..
*MMM DD HH:MM:SS.XXX: Notifications initializedSID Manager, completed initialization ...
*MMM DD HH:MM:SS.XXX: %SPANTREE-5-EXTENDED_SYSID: Extended SysId enabled for type vlan
*MMM DD HH:MM:SS.XXX: %SMART_LIC-6-AGENT_READY: Smart Agent for Licensing is initialized
*MMM DD HH:MM:SS.XXX: %SMART_LIC-6-AGENT_ENABLED: Smart Agent for Licensing is enabled
*MMM DD HH:MM:SS.XXX: %SMART_LIC-6-EXPORT_CONTROLLED: Usage of export controlled features is not allowe
*MMM DD HH:MM:SS.XXX: %CRYPTO-4-AUDITWARN: Encryption audit check could not be performed
*MMM DD HH:MM:SS.XXX: %VOICE_HA-7-STATUS: CUBE HA-supported platform detected.
*MMM DD HH:MM:SS.XXX: %IOSXE_VMAN-3-MSGINITFAIL: Failed to initialize required Virt-manager resource: I
*MMM DD HH:MM:SS.XXX: mcp_pm_init_done : Called
*MMM DD HH:MM:SS.XXX: %ONEP_BASE-6-SS_ENABLED: ONEP: Service set Base was enabled by Default
*MMM DD HH:MM:SS.XXX: cwan_pseudo_oir_insert_one: [0/0] ctrlr[16506] already analyzed
*MMM DD HH:MM:SS.XXX: %CRYPTO_ENGINE-5-KEY_ADDITION: A key named TP-self-signed-1598997203 has been gen
*MMM DD HH:MM:SS.XXX: %CRYPTO_ENGINE-5-KEY_ADDITION: A key named ca has been generated or imported by c
*MMM DD HH:MM:SS.XXX: %CRYPTO_ENGINE-5-KEY_ADDITION: A key named ewlc-tp1 has been generated or importe
*MMM DD HH:MM:SS.XXX: %AAA-5-USER_RESET: User admin failed attempts reset by console
*MMM DD HH:MM:SS.XXX: %CRYPTO_ENGINE-5-KEY_REPLACE: A key named TP-self-signed-1598997203 has been repl
*MMM DD HH:MM:SS.XXX: %SSH-5-DISABLED: SSH 1.99 has been disabled
*MMM DD HH:MM:SS.XXX: %CRYPTO_ENGINE-5-KEY_REPLACE: A key named ca has been replaced by crypto config w
*MMM DD HH:MM:SS.XXX: %CRYPTO_ENGINE-5-KEY_REPLACE: A key named ewlc-tp1 has been replaced by crypto co
MMM DD HH:MM:SS.XXX: %SPA_OIR-6-OFFLINECARD: SPA (BUILT-IN-4X10G/1G) offline in subslot 0/0
MMM DD HH:MM:SS.XXX: %IOSXE_OIR-6-INSCARD: Card (fp) inserted in slot F0
MMM DD HH:MM:SS.XXX: %IOSXE_OIR-6-ONLINECARD: Card (fp) online in slot F0
MMM DD HH:MM:SS.XXX: %IOSXE_OIR-6-INSCARD: Card (cc) inserted in slot 0
MMM DD HH:MM:SS.XXX: %IOSXE_OIR-6-ONLINECARD: Card (cc) online in slot 0
MMM DD HH:MM:SS.XXX: %IOSXE_OIR-6-INSSPA: SPA inserted in subslot 0/0
MMM DD HH:MM:SS.XXX: %IOSXE_OIR-3-SPA_INTF_ID_ALLOC_FAILED: Failed to allocate interface identifiers fo
MMM DD HH:MM:SS.XXX: %SYS-5-RESTART: System restarted --
Cisco IOS Software [Fuji], WLC9500 Software (WLC9500_IOSXE), Experimental Version 16.10.20180920:011848
Copyright (c) 1986-2018 by Cisco Systems, Inc.
Compiled Thu 20-Sep-18 03:07 by mcpre
MMM DD HH:MM:SS.XXX: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0, changed state to
MMM DD HH:MM:SS.XXX: %SSH-5-ENABLED: SSH 1.99 has been enabled
MMM DD HH:MM:SS.XXX: %CRYPTO_ENGINE-5-KEY_ADDITION: A key named TP-self-signed-1598997203.server has be
```

ГОК]

MMM DD HH:MM:SS.XXX: %SYS-6-BOOTTIME: Time taken to reboot after reload = 328 seconds MMM DD HH:MM:SS.XXX: %SMART_LIC-3-HOT_STANDBY_OUT_OF_SYNC: Smart Licensing agent on hot standby is out MMM DD HH:MM:SS.XXX: %SPA_OIR-6-ONLINECARD: SPA (BUILT-IN-4X10G/1G) online in subslot 0/0 MMM DD HH:MM:SS.XXX: %IOSXE_SPA-6-UPDOWN: Interface TenGigabitEthernet0/0/2, link down due to local fau MMM DD HH:MM:SS.XXX: %IOSXE_SPA-6-UPDOWN: Interface TenGigabitEthernet0/0/3, link down due to local fau MMM DD HH:MM:SS.XXX: %IOSXE_SPA-6-UPDOWN: Interface TenGigabitEthernet0/0/3, link down due to local fau MMM DD HH:MM:SS.XXX: BUILT-IN-4X10G/1G[0/0] : Unsupported rate(0) for the XCVR inserted inport 0 xcvr_t MMM DD HH:MM:SS.XXX: BUILT-IN-4X10G/1G[0/0] : Unsupported rate(0) for the XCVR inserted inport 1 xcvr_t MMM DD HH:MM:SS.XXX: %PKI-3-KEY_CMP_MISMATCH: Key in the certificate and stored key does not match for MMM DD HH:MM:SS.XXX: %PKI-4-NOAUTOSAVE: Configuration was modified. Issue "write memory" to save new c MMM DD HH:MM:SS.XXX: %TRANSCEIVER-3-INIT_FAILURE: SIP0/0: Detected for transceiver module in TenGigabit MMM DD HH:MM:SS.XXX: %LINK-3-UPDOWN: SIP0/0: Interface TenGigabitEthernet0/0/0, changed state to up

MMM DD HH:MM:SS.XXX: %PLATFORM-6-RF_PROG_SUCCESS: RF state STANDBY HOT

在任意设备上运行此命令,默认情况下,每5秒您会看到HA同步更新:

<#root>

show redundancy history monitor [interval <5-3600 seconds >]

Sep 21 15:24:24.727 RF_EVENT_CLIENT_PROGRESSION(503) RP Platform RF(1340) op=8 rc=0 Sep 21 15:24:24.727 RF_EVENT_CLIENT_PROGRESSION(503) RP Platform RF(1340) op=8 rc=11 Sep 21 15:24:24.740 RF_EVENT_CLIENT_PROGRESSION(503) CWAN Interface Events(1504) op=8 rc=0 Sep 21 15:24:24.741 RF_EVENT_CLIENT_PROGRESSION(503) CWAN Interface Events(1504) op=8 rc=0 Sep 21 15:24:24.741 RF_EVENT_CLIENT_PROGRESSION(503) CWAN Interface Events(1504) op=8 rc=11 Sep 21 15:24:24.741 RF_EVENT_CLIENT_PROGRESSION(503) NAT HA(401) op=8 rc=0 Sep 21 15:24:24.741 RF_EVENT_CLIENT_PROGRESSION(503) NAT HA(401) op=8 rc=0 Sep 21 15:24:24.741 RF_EVENT_CLIENT_PROGRESSION(503) NAT HA(401) op=8 rc=11 Sep 21 15:24:24.741 RF_EVENT_CLIENT_PROGRESSION(503) NAT64 HA(404) op=8 rc=0 Sep 21 15:24:24.741 RF_EVENT_CLIENT_PROGRESSION(503) NAT64 HA(404) op=8 rc=0 Sep 21 15:24:24.741 RF_EVENT_CLIENT_PROGRESSION(503) NAT64 HA(404) op=8 rc=11 Sep 21 15:24:24.743 RF_EVENT_CLIENT_PROGRESSION(503) DHCPv6 Relay(148) op=8 rc=0 Sep 21 15:24:24.743 RF_EVENT_CLIENT_PROGRESSION(503) DHCPv6 Relay(148) op=8 rc=0 Sep 21 15:24:24.743 RF_EVENT_CLIENT_PROGRESSION(503) DHCPv6 Relay(148) op=8 rc=11 Sep 21 15:24:24.782 RF_EVENT_CLIENT_PROGRESSION(503) DHCPv6 Server(149) op=8 rc=0 Sep 21 15:24:24.782 RF_EVENT_CLIENT_PROGRESSION(503) DHCPv6 Server(149) op=8 rc=0 Sep 21 15:24:24.782 RF_EVENT_CLIENT_PROGRESSION(503) DHCPv6 Server(149) op=8 rc=11 Sep 21 15:24:24.783 RF_EVENT_CLIENT_PROGRESSION(503) Last Slave(65000) op=8 rc=0 Sep 21 15:24:25.783 RF_PROG_STANDBY_HOT(105) Last Slave(65000) op=8 rc=0 Sep 21 15:24:25.783 RF_EVENT_CLIENT_PROGRESSION(503) Last Slave(65000) op=8 rc=0

End = e Freeze = f

Enter Command: e

要获得有关HA同步进程的更详细视图,请运行以下命令:

```
# show logging process stack_mgr internal
```

关于此翻译

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