

SSM现场8.X高可用性集群工作正常

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简介

本文档介绍在故障转移和回退方案时，智能软件管理器(SSM)内部帐户同步和产品实例注册如何在部署为高可用性(HA)群集的SSM内部服务器上工作。

先决条件

要求

Cisco 建议您了解以下主题：

- SSM现场
- HA

使用的组件

本文档中的信息基于SSM On-Prem 8及更高版本。

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。

背景信息

这些是提供HA信息的参考文档。

- https://www.cisco.com/web/software/286285517/151968/Smart_Software_Manager_On-Prem_8_Console_Guide.pdf
- https://www.cisco.com/web/software/286285517/152313/Smart_Software_Manager_On-Prem_8-202006_Installation_Guide.pdf

故障切换和回退期间的SSM内部帐户同步

应在本指南的帮助下配置两台SSM本地服务器之间的HA:

部署HA群集

: https://www.cisco.com/web/software/286285517/152313/Smart_Software_Manager_On-Prem_8-202006_Installation_Guide.pdf

在本演示中，使用：

.5 — 主服务器的IP地址

.10 — 辅助服务器的IP地址

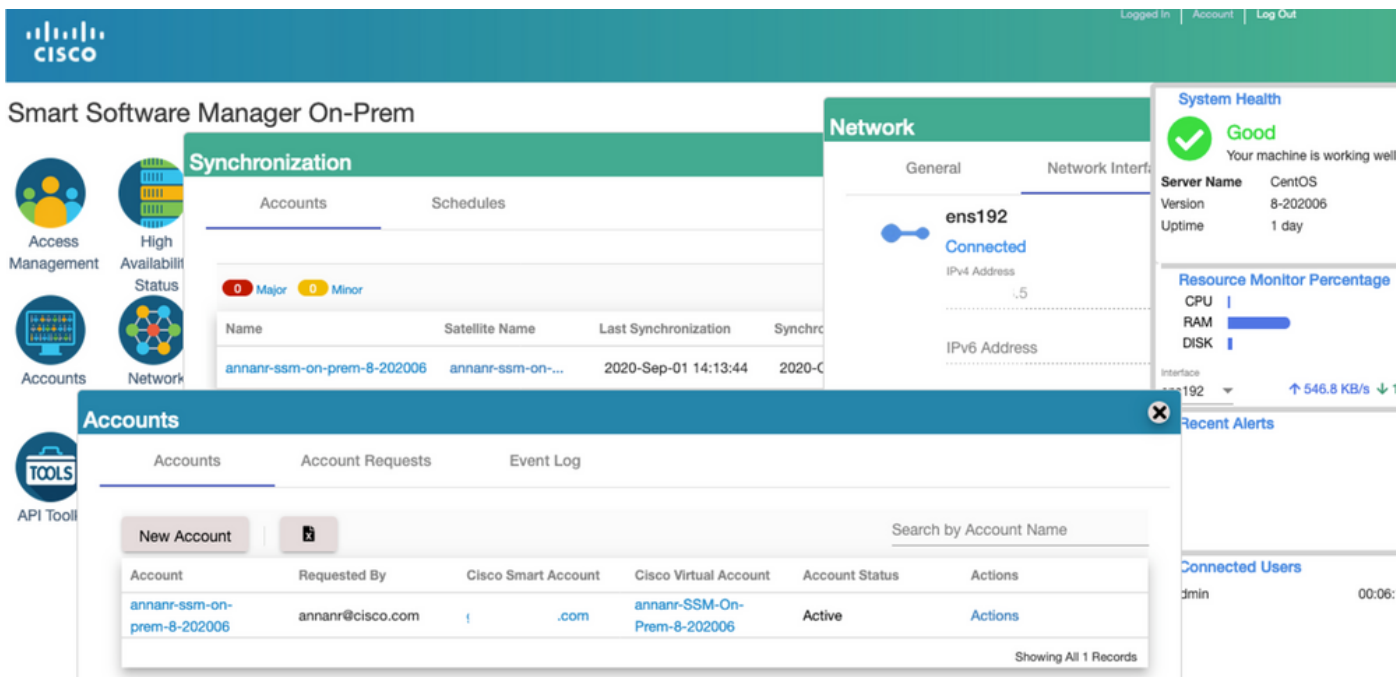
.12 — 虚拟IP地址

高可用性

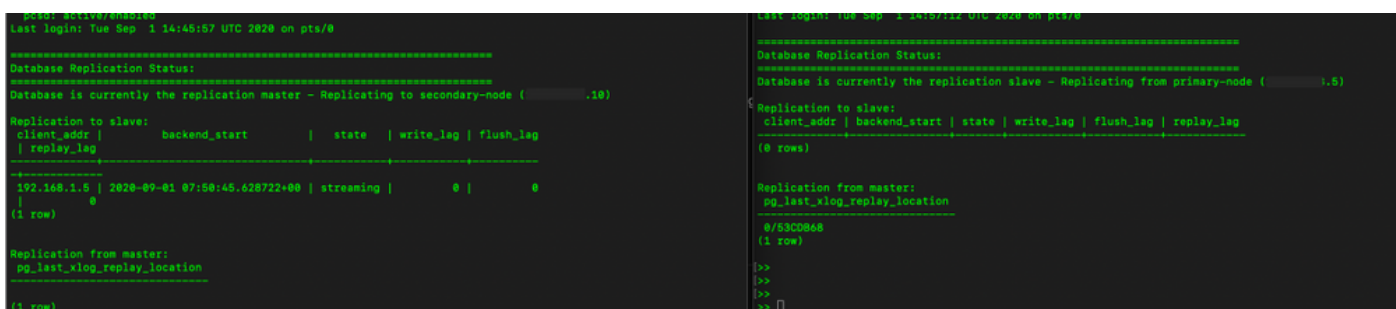
1. HA的成功配置显示主服务器(.5)为主用服务器，辅助服务器(.10)为备用服务器，VIP(.12)为映像所示。

The screenshot displays the 'High Availability' configuration page. At the top, there are tabs for 'Host' and 'Event Logs'. Below the tabs, a green checkmark icon is followed by the word 'Normal' in green, with the text 'The status of the high availability cluster is normal.' underneath. To the right, the 'Heartbeat' section shows 'Connection status: Connected' in green. Below this, a diagram illustrates the HA setup. It features two server icons connected by a heartbeat line. The left server is labeled 'Active Server' and shows 'public address (.5)' and 'primary-node (192.168.1.4)'. Below it is a green 'Active' button. The right server is labeled 'Standby Server' and shows 'public address (.10)' and 'secondary-node (192.168.1.5)'. Below it is a blue 'Standby' button. Above the servers, the text 'VIP .12' is displayed.

2. 已从主/主服务器成功完成SSM内部与思科软件中心的同步，如图所示。

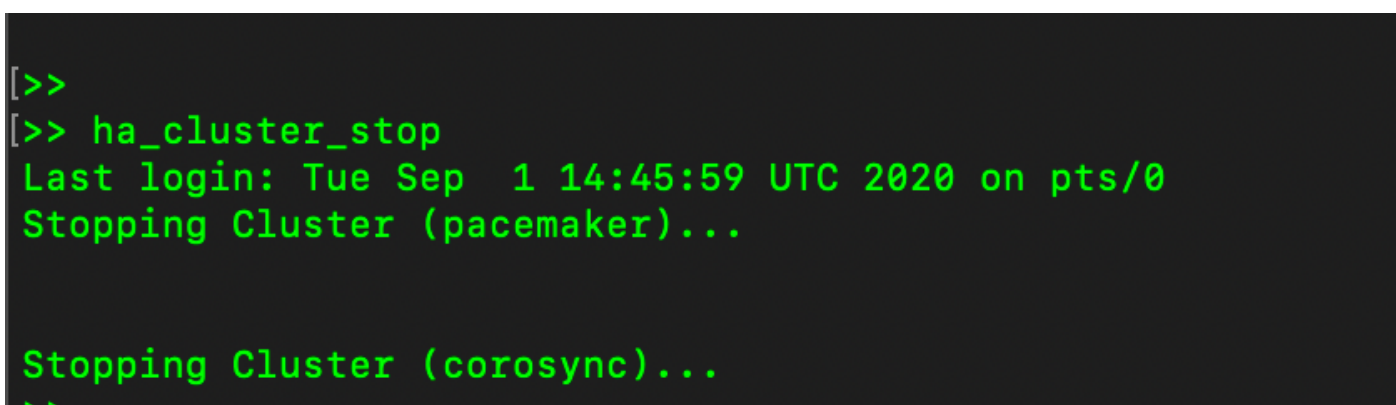


3. 群集HA状态显示，主服务器左侧的数据库（复制主服务器）按照映像所示复制到右侧的辅助服务器数据库（复制从服务器）。



故障转移

1. 停止主服务器上的HA群集，如图所示。



2. 主|次，如图所示。

```

pcsd: active/enabled
Last login: Tue Sep 1 14:45:57 UTC 2020 on pts/0

Database Replication Status:
=====
Database is currently the replication master - Replicating to secondary-node (.10)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag | replay_lag
-----
192.168.1.5 | 2020-09-01 07:58:45.628722+00 | streaming | 0 | 0 | 0
(1 row)

Replication from master:
pg_last_xlog_replay_location
-----
(1 row)
>>
>> he_cluster_stop
Last login: Tue Sep 1 14:45:59 UTC 2020 on pts/0
Stopping Cluster (pacemaker)...

Stopping Cluster (corosync)...
>>

Failed Actions:
* db_monitor_20000 on secondary-node 'not running' (7): call=60, status=complete, exitreason='',
last-rc-change='Tue Sep 1 08:01:46 2020', queued=8ms, exec=8ms

PCSD Status:
secondary-node: Online
primary-node: Online

Daemon Status:
corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
Last login: Tue Sep 1 15:10:40 UTC 2020 on pts/0

Database Replication Status:
=====
Database is currently the replication slave - Replicating from primary-node (.5)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag | replay_lag
-----
(0 rows)

Replication from master:
pg_last_xlog_replay_location
-----
#/530C0e
(1 row)

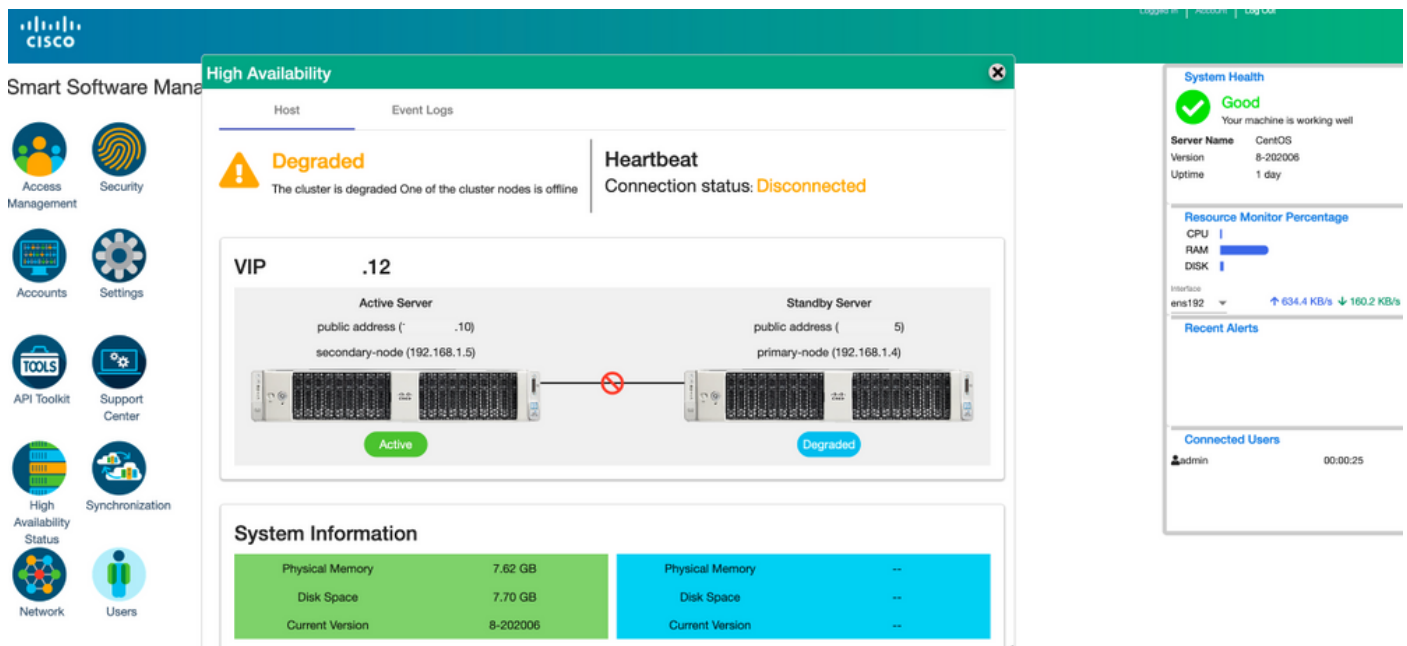
```

3.使用VIP登录SSM内部GUI，主GUI关闭。

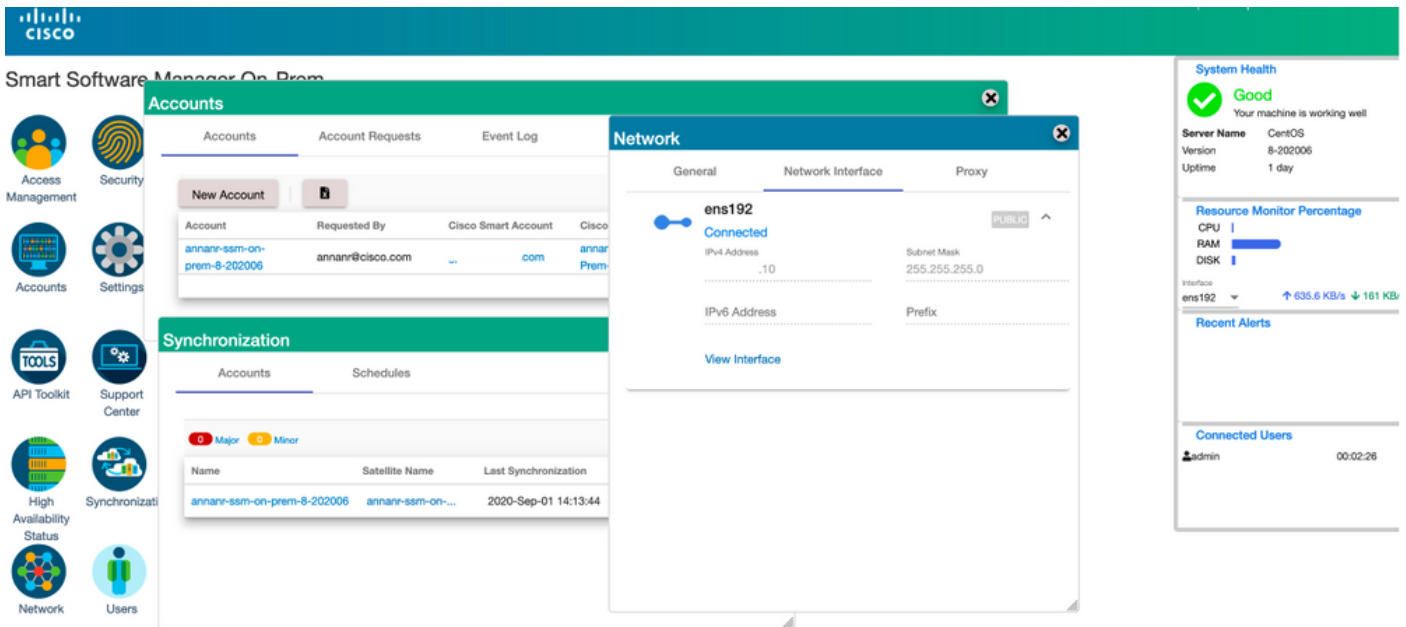
4.辅助服务器(.10)显示为活动服务器。

5.心跳已断开。

6.主服务器(.5)已移至备用状态。



7.如图所示，从辅助/主用服务器GUI中可以成功看到SSM内部帐户与思科软件中心的同步。



8.在主服务器上启动HA群集，如图所示。

```
>> ha_cluster_start
Last login: Tue Sep  1 15:24:25 UTC 2020 on pts/0
Starting Cluster (corosync)...
Starting Cluster (pacemaker)...
```

9. HA群集状态显示主数据库是从辅助数据库复制的。

10.主次，如图所示。

```
PCSD Status:
primary-node: Online
secondary-node: Online

Daemon Status:
corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
Last login: Wed Sep  2 00:52:24 UTC 2020 on pts/0

Database Replication Status:
Database is currently the replication slave - Replicating from secondary-node (192.168.1.10)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag | replay_lag
(0 rows)

Replication from master:
pg_last_xlog_replay_location
8/7079718
(1 row)

secondary-node: Online
primary-node: Online

Daemon Status:
corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
Last login: Wed Sep  2 09:03:23 UTC 2020 on pts/0

Database Replication Status:
Database is currently the replication master - Replicating to primary-node (192.168.1.10)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag | replay_lag
(1 row)

Replication from master:
pg_last_xlog_replay_location
8/53D0C08
(1 row)
```

11. GUI显示心跳已连接，辅助处于活动状态，主要处于备用状态，如图所示。

Smart Software Manager On-Prem

- Access Management
- Security
- Accounts
- Settings
- API Toolkit
- Support Center
- High Availability Status
- Synchronization
- Network
- Users

High Availability

Host Event Logs

✔ Normal
The status of the high availability cluster is normal.

Heartbeat
Connection status: Connected

VIP .12

Active Server	Standby Server
public address (.10)	public address (.15)
secondary-node (192.168.1.5)	primary-node (192.168.1.4)

System Information

Physical Memory	7.62 GB	Physical Memory	--
Disk Space	7.70 GB	Disk Space	--
Current Version	8-202006	Current Version	--

12. 创建新的TEST帐户，并在主用备用模式下将其激活。(.10)服务器。

13. 此阶段无法访问主(.5)GUI。

Accounts

Accounts
Account Requests
Event Log

New Account
🔍
Search by Account Name

Account	Requested By	Cisco Smart Account	Cisco Virtual Account	Account Status	Actions
annanr-ssm-on-prem-8-202006	annanr@cisco.com	.com	annanr-SSM-On-Prem-8-202006	Active	Actions
TEST	annanr@cisco.com	--	TEST123	Active	Actions

Showing All 2 Records

VIP .12

Active Server	Standby Server
public address (.10)	public address (.15)
secondary-node (192.168.1.5)	primary-node (192.168.1.4)

回退

1.停止辅助中的Ha_cluster，如图所示。

```
[>> ha_cluster_stop
Last login: Wed Sep  2 09:03:25 UTC 2020 on pts/0
Stopping Cluster (pacemaker)...
Stopping Cluster (corosync)...
[>>
```

2.此处可以看到主服务器数据库和辅助服务器数据库的当前状态。

```
Database Replication Status:
Database is currently the replication slave - Replicating from secondary-node (.10)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag | replay_lag
(0 rows)

Replication from master:
pg_last_xlog_replay_location
0/7079818
(1 row)

ha_cluster_start  ha_deploy  ha_provision_standby  ha_teardown
ha_cluster_stop  ha_generatekeys  ha_status
[>> ha_cluster_stop
Last login: Wed Sep  2 09:03:25 UTC 2020 on pts/0
Stopping Cluster (pacemaker)...
Stopping Cluster (corosync)...
[>>
[>> ha_status
Last login: Wed Sep  2 09:04:44 UTC 2020 on pts/0
Error: cluster is not currently running on this node
Last login: Wed Sep  2 09:10:52 UTC 2020 on pts/0

Database Replication Status:
Database service not currently running.
[>>
```

3.使用VIP登录SSM内部GUI，辅助GUI关闭。

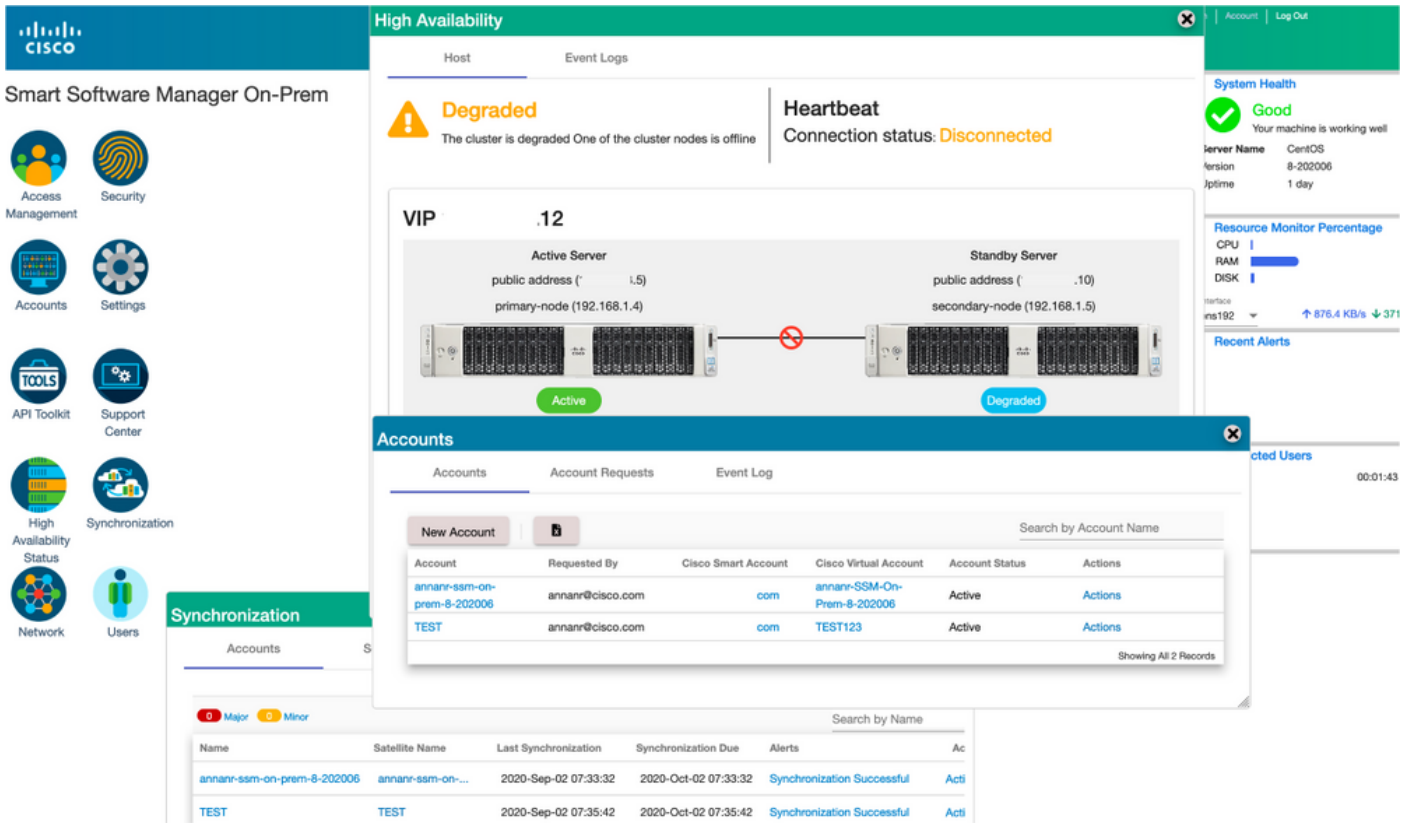
4.主服务器(.5)显示为活动服务器。

5.心跳已断开。

6.辅助服务器(.5)已移至备用状态。

The screenshot shows the High Availability (HA) management interface. At the top, a blue header reads "High Availability" with a close button. Below the header, there are two tabs: "Host" and "Event Logs". The "Host" tab is active, displaying a warning icon (a yellow triangle with an exclamation mark) and the text "Degraded". Below this, it says "The cluster is degraded One of the cluster nodes is offline". To the right, under the "Heartbeat" section, it shows "Connection status: Disconnected". The main part of the interface shows a diagram of two servers connected by a line. The left server is labeled "Active Server" and "primary-node (192.168.1.4)", with a green "Active" button below it. The right server is labeled "Standby Server" and "secondary-node (192.168.1.5)", with a blue "Degraded" button below it. A red circle with a diagonal slash is placed over the connection line between the two servers, indicating a broken heartbeat.

7.新创建的TEST帐户可以在同步状态下看到，因为复制从辅助数据库复制到主数据库，如图所示。



8.在此阶段，可以从VIP地址(.12)访问GUI，而不是从辅助IP地址。

9.在辅助服务器上启动HA群集，如图所示。

```
>> ha_cluster_start
Last login: Wed Sep  2 09:10:52 UTC 2020 on pts/0
Starting Cluster (corosync)...
Starting Cluster (pacemaker)...
```

10.群集HA状态显示，主服务器的数据库（复制主服务器）正在复制到右侧的辅助服务器的数据库（复制从服务器），如图所示。

```
PCSD Status:
secondary-node: Online
primary-node: Online

Daemon Status:
corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
Last login: Wed Sep  2 09:09:35 UTC 2020 on pts/0

=====
Database Replication Status:
=====
Database is currently the replication master - Replicating to secondary-node (.10)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag
| replay_lag
-----
192.168.1.5 | 2020-09-02 09:08:39.358586+00 | streaming | 0 | 0
(1 row)

Replication from master:
pg_last_xlog_replay_location
8/707981e
(1 row)

PCSD Status:
secondary-node: Online
primary-node: Online

Daemon Status:
corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
Last login: Wed Sep  2 09:20:43 UTC 2020 on pts/0

=====
Database Replication Status:
=====
Database is currently the replication slave - Replicating from primary-node (.15)

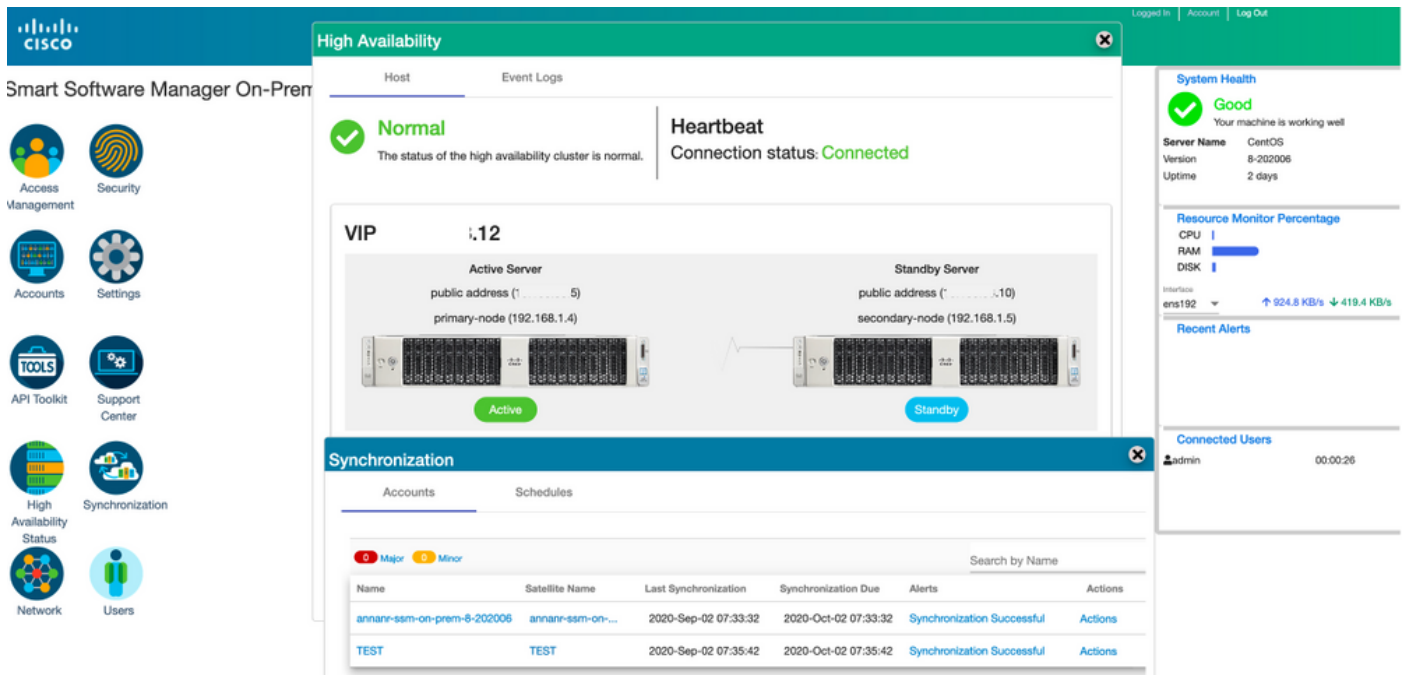
Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag | replay_lag
-----
(0 rows)

Replication from master:
pg_last_xlog_replay_location
8/708080e
(1 row)

[>>]
[>>]
[>>]
[>>]
```

11. GUI显示主用主服务器和备用辅助服务器之间连接的心跳。

12. TEST帐户已成功与思科软件中心同步。



在故障切换和回退期间向SSM现场VIP注册产品实例

应使用本指南配置两个SSM内部服务器之间的高可用性：

部署HA群集

：https://www.cisco.com/web/software/286285517/152313/Smart_Software_Manager_On-Prem_8-202006_Installation_Guide.pdf

在本演示中，使用：

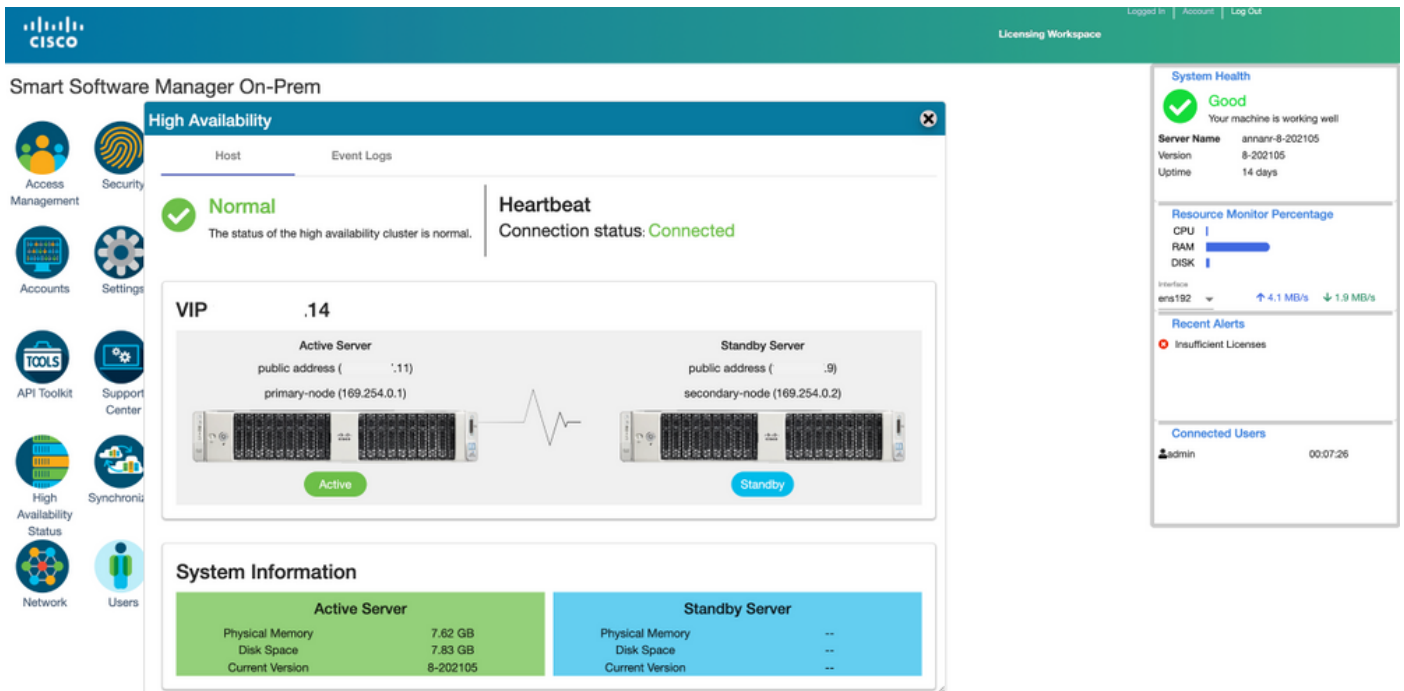
.11 — 主服务器的IP地址

.9 — 辅助服务器的IP地址

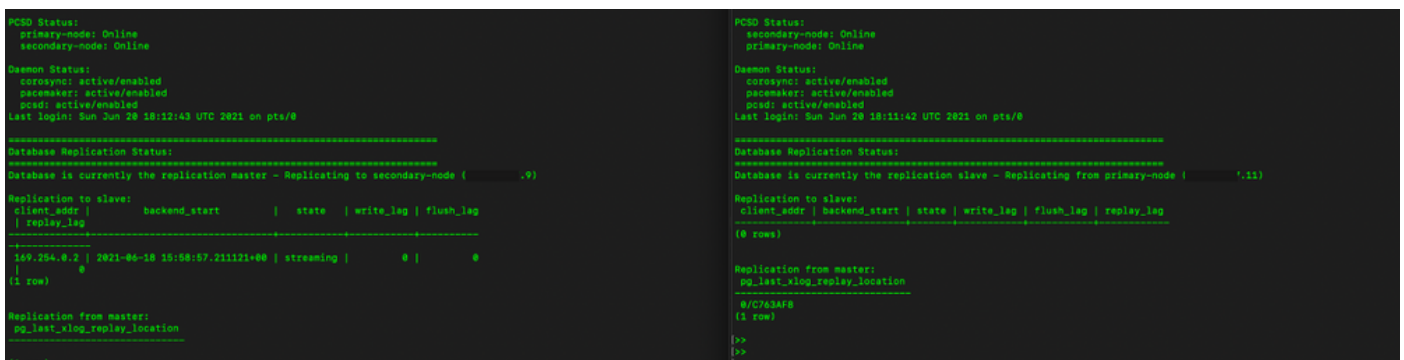
.14 — 虚拟IP地址

高可用性

1.成功配置HA，将主服务器(.11)显示为主用服务器，将辅助服务器(.9)显示为备用服务器，将VIP(.14)显示为主服务器。



2. 群集HA状态显示，主服务器左侧的数据库（复制主服务器）按照映像所示复制到右侧的辅助服务器数据库（复制从服务器）。



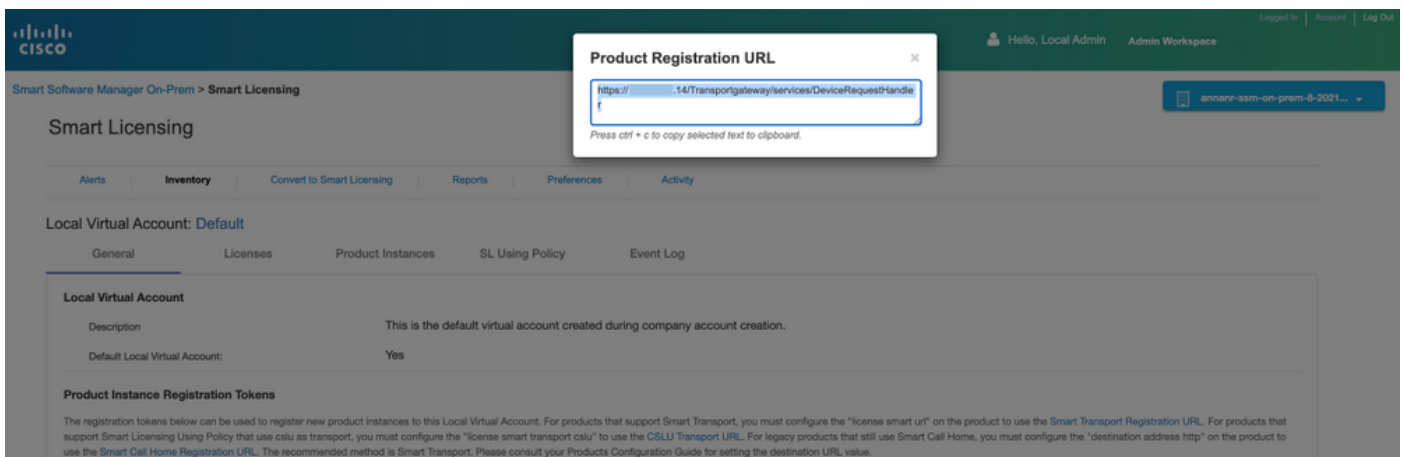
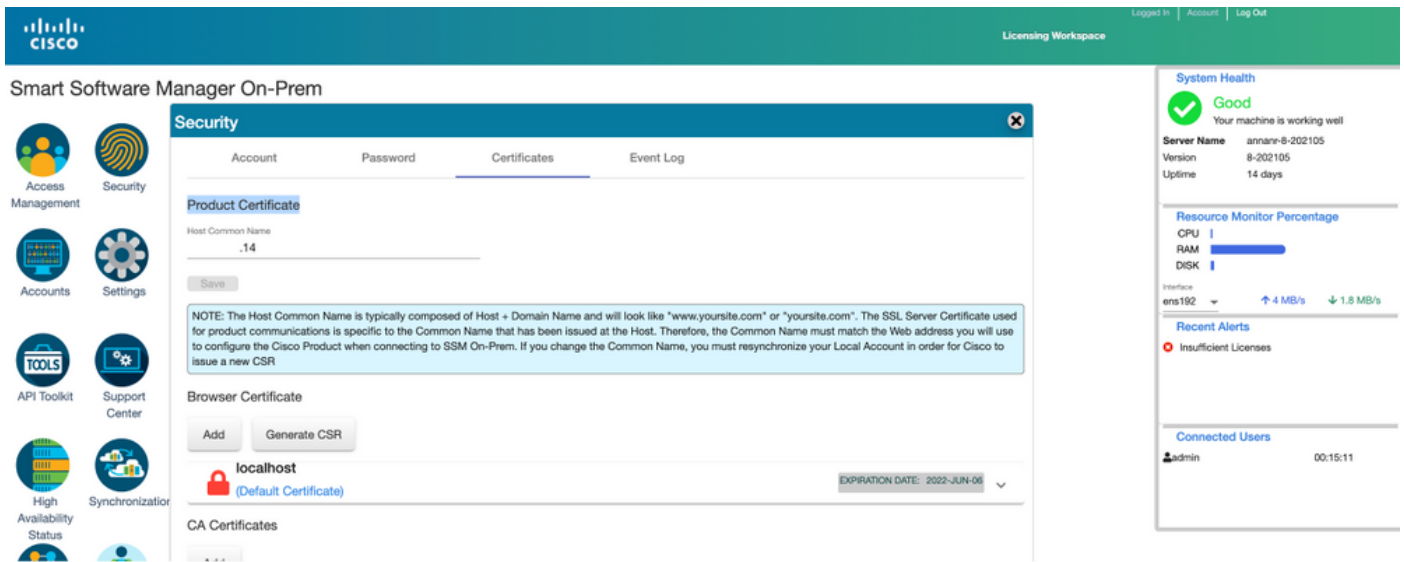
3. 当SSM本地部署为HA群集时，请登录SSM本地管理工作空间，导航到安全 > 证书，然后使用主机公用名上的虚拟IP地址。

4. 此值必须与您计划用于产品目标URL的值匹配。如果部署双堆栈（IPv4和IPv6），此值必须是FQDN，而不是IP地址。

5. 更新主机公用名后，请通过将本地帐户与思科智能软件管理器同步，确保用新公用名重新生成证书。

6. 在尝试使用目标URL配置中的新公用名重新注册产品之前，必须进行同步。

7. 不同步可能导致产品无法注册到新的主机公用名。



8.两个产品实例(annar-39)和(cucmpub)注册到SSM On-Prem的VIP地址，如“产品实例”(Product Instances)选项卡所示。

9.这些产品实例使用/请求的许可证反映在“许可证”选项卡上。

Smart Software Manager On-Prem > Smart Licensing

Smart Licensing

Alerts | Inventory | Convert to Smart Licensing | Reports | Preferences | Activity

Local Virtual Account: Default

General | Licenses | Product Instances | SL Using Policy | Event Log

Name	Product Type	Last Contact	Alerts	Actions
UDI_PID-PI-SOFTWARE;UDI_SN:annan-39	SDNMGMT	2021-Jun-20 18:39:00		Actions
cucompub	UCL	2021-Jun-20 18:36:56		Actions

Showing Page 1 of 12 Records

Smart Software Manager On-Prem > Smart Licensing

Smart Licensing

Alerts | Inventory | Convert to Smart Licensing | Reports | Preferences | Activity

Local Virtual Account: Default

General | Licenses | Product Instances | SL Using Policy | Event Log

License	Billing	Purchased	In Use	Substitution	Balance	Alerts	Actions
Prime Infrastructure 3.x, BASE Lic.	Prepaid	0	1		-1	Insufficient Licenses	Actions
Prime Infrastructure 3.x, Lifecycle Lic.	Prepaid	0	34		-34	Insufficient Licenses	Actions
UC Manager Enhanced License (12.x)	Prepaid	0	3		-3	Insufficient Licenses	Actions
UC Manager Enhanced Plus License (12.x)	Prepaid	0	1		-1	Insufficient Licenses	Actions
UC Manager Telepresence Room License (12.x)	Prepaid	0	1		-1	Insufficient Licenses	Actions

Showing All 6 Records

故障转移

1. 停止主服务器上的HA群集，如图所示。

```

PCSD Status:
primary-node: Online
secondary-node: Online

Daemon Status:
corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
Last login: Sun Jun 20 18:12:43 UTC 2021 on pts/0

Database Replication Status:
Database is currently the replication master - Replicating to secondary-node (.9)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag | replay_lag
-----
169.254.0.2 | 2021-06-18 15:58:57.211121+00 | streaming | 0 | 0
(1 row)

Replication from master:
pg_last_xlog_replay_location

(1 row)

>> ha_cluster_stop
Last login: Sun Jun 20 18:12:45 UTC 2021 on pts/0
Stopping Cluster (pacemaker)...

Stopping Cluster (corosync)...

```

```

PCSD Status:
secondary-node: Online
primary-node: Online

Daemon Status:
corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
Last login: Sun Jun 20 18:11:42 UTC 2021 on pts/0

Database Replication Status:
Database is currently the replication slave - Replicating from primary-node (.11)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag | replay_lag
-----
(0 rows)

Replication from master:
pg_last_xlog_replay_location

0/C763AF8
(1 row)

>>
>>
>>
>>
>>
>>
>>
>>
>>
>>

```

2. 使用VIP(.14)登录SSM内部GUI，主GUI关闭。

3. 辅助服务器(.9)显示为活动服务器。

4. 心跳已断开。

5. 主服务器(.11)将移至备用状态。

High Availability

Host | Event Logs

Degraded
The cluster is degraded One of the cluster nodes is offline

Heartbeat
Connection status: **Disconnected**

VIP .14

Active Server	Standby Server
public address (.9)	public address (.11)
secondary-node (169.254.0.2)	primary-node (169.254.0.1)
Active	Degraded

System Information

Active Server		Standby Server	
Physical Memory	7.62 GB	Physical Memory	--
Disk Space	7.56 GB	Disk Space	--
Current Version	8-202105	Current Version	--

System Health
Good
Your machine is working well

Server Name: annan-7-20-8-05
Version: 8-202105
Uptime: 11 days

Resource Monitor Percentage
CPU |
RAM |
DISK |

Interface: ens192 | ↑ 5.8 MB/s | ↓ 3.9 MB/s

Recent Alerts
Insufficient Licenses

Connected Users
admin | 00:00:18

6.使用SSM On-Prem VIP在产品注册URL的传输网关设置中注册产品实例，如图所示。

Prime Infrastructure | Application Search | root - ROOT-DOMAIN

Administration / Settings / System Settings

System Settings | Search All

General | Account Settings

Cisco.com Credentials | Proxy | Support Request | **Smart Licensing Transport**

Please read the below instructions

- *On Clicking HTTP/HTTPS Proxy, traverse to Proxy tab for configuring proxy settings.*
- *In Transport Gateway Mode, usage information will be sent over the Internet via Smart Call Home Transport Gateway. For the setup details, please click Transport Gateway and satellite.*

Transport Mode: Direct Transport Gateway HTTP/HTTPS Proxy

* Enter a valid URL:

Save | Reset | Test Connectivity

Smart Software Licensing

7.产品实例名称：pi37已使用VIP地址成功注册到SSM现场，如图所示。

Prime Infrastructure Administration / Licenses and Software Updates / Smart Software Licensing

Licensing Settings License Dashboard Settings

Smart Software Licensing

To view and manage Smart Licenses for your Cisco Smart Account, go to [Smart Software Manager](#)

Smart Software Licensing Status

Licensing Mode: Smart Software Licensing
 Product Name: Prime Infrastructure
 Registration Status: ✔ Registered (Jun 20, 2021)
 License Authorization Status: ✘ Out of Compliance (Jun 20, 2021)
 Smart Account: annanr-sam-on-prem-8-202105
 Virtual Account: Default
 Product Instance Name: p37
 Transport Settings: Transport Gateway [View / Edit](#)

Smart License Usage

License	Description	Count	Status
Prime Infrastructure 3.x, Assurance Lic.	The Assurance license	2	✘ Out of Compliance
Prime Infrastructure 3.x, BASE Lic.	The Base license	1	✘ Out of Compliance
Prime Infrastructure 3.x, Lifecycle Lic.	The Lifecycle license	14	✘ Out of Compliance
Prime Infrastructure 3.x, UCS Server MGMT Lic.	The Data Center license	0	✔ No Licenses In Use
Prime Infrastructure 3.x, UCS VM	The Data Center Hypervisor license	0	✔ No Licenses In Use

Success
Smart agent registered successfully

8.在“传输网关”设置的产品注册URL中使用SSM现场VIP注册其他产品实例。

Status

i Transport settings saved successfully.

Configure how the product instance will communicate with Cisco.

Direct - product communicates directly with Cisco licensing servers.
 URL : <https://tools.cisco.com/its/service/oddce/services/DDCEService>

Transport Gateway - proxy data via Transport Gateway or Smart Software Manager satellite.
 URL :

HTTP/HTTPS Proxy - send data via an intermediate HTTP or HTTPS Proxy.

Authentication needed on HTTP or HTTPS proxy

IP Address/Host Name :
 Port :
 User Name :
 Password :

Do not share my hostname or IP address with Cisco.

9.使用VIP地址 (如图所示) 通过SSM现场部署成功完成产品注册。

Status

i Registration completed successfully

Smart Software Licensing Product Registration

To register the product for Smart Software Licensing:

Paste the Product Instance Registration Token you generated from [Smart Software Manager](#) or your Smart Software Manager satellite

十、产品实例名称：cucm-pub-30已使用VIP地址成功注册到SSM On-Prem，如图所示。

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User Management ▾ Bulk Administration ▾ Help ▾

License Management

Status

Smart Software Licensing: The system is operating with an insufficient number of licenses. Configure additional licenses in [Smart Software Manager](#) within 72 days to avoid losing the ability to provision users and devices.

Smart Software Licensing

Registration Status	Registered
License Authorization Status	Out of Compliance (Sunday, June 20, 2021 10:29:53 PM EEST)
Smart Account	annmr-ssm-on-prem-8-202105
Virtual Account	Default
Product Instance Name	cucm-pub-30
Export-Controlled Functionality	Allowed
Transport Settings	Transport Gateway View/Edit the Licensing Smart Call Home settings
Licensing Mode	Enterprise

License Usage Report

Below is a summary of current license usage on the system. Current usage details for each type are available by pressing "Update Usage Details". Note that collecting these data is a resource intensive process and may take several deployment.

[View All License Type Descriptions And Device Classifications](#)

Update Usage Details Usage Details Last Updated: 2021-06-20 22:30:09

License Requirements by Type

License Type	Current Usage	Status	Report
CUWL	0	No Licenses in Use	Users(0) Unassigned Devices(0)
Enhanced Plus	0	No Licenses in Use	Users(0)
Enhanced	44	Out of Compliance	Users(8) Unassigned Devices(36)
Basic	2	Out of Compliance	Users(1) Unassigned Devices(1)
Essential	4	Out of Compliance	Users(0) Unassigned Devices(4)
TelePresence Room	0	No Licenses in Use	Users(0) Unassigned Devices(0)

Users and Unassigned devices

Users	9	View Usage Report
Unassigned Devices	41	View Usage Report

11.两个新产品实例(pi37)和(cucm-pub-30)注册到SSM On-Prem的VIP地址，如“产品实例”(Product Instances)选项卡所示。

12.这些产品实例已使用/请求的许可证反映在“许可证”选项卡上。

Smart Software Manager On-Prem > Smart Licensing

Smart Licensing

Alerts | **Inventory** | Convert to Smart Licensing | Reports | Preferences | Activity

Local Virtual Account: Default

General | **Licenses** | Product Instances | SL Using Policy | Event Log

Name	Product Type	Last Contact	Alerts	Actions
UDI_PID-PI-SOFTWARE:UDI_SN:annmr-39	SDNMGMT	2021-Jun-20 18:39:00		Actions
UDI_PID-PI-SOFTWARE:UDI_SN:pi37-	SDNMGMT	2021-Jun-20 19:26:47		Actions
cucmpub	UCL	2021-Jun-20 18:36:56		Actions
cucm-pub-30	UCL	2021-Jun-20 19:28:51		Actions

Showing Page 1 of 14 Records

Smart Software Manager On-Prem > Smart Licensing

Smart Licensing

Alerts | Inventory | Convert to Smart Licensing | Reports | Preferences | Activity

Local Virtual Account: Default

General | Licenses | Product Instances | SL Using Policy | Event Log

Available Actions | Manage License Tags... | Search by License

License	Billing	Purchased	In Use	Substitution	Balance	Alerts	Actions
<input type="checkbox"/> Prime Infrastructure 3.x, Assurance Lic.	Prepaid	0	2		-2	Insufficient Licenses	Actions
<input type="checkbox"/> Prime Infrastructure 3.x, BASE Lic.	Prepaid	0	2		-2	Insufficient Licenses	Actions
<input type="checkbox"/> Prime Infrastructure 3.x, Lifecycle Lic.	Prepaid	0	48		-48	Insufficient Licenses	Actions
<input type="checkbox"/> UC Manager Basic License (12.x)	Prepaid	0	2		-2	Insufficient Licenses	Actions
<input type="checkbox"/> UC Manager Enhanced License (12.x)	Prepaid	0	47		-47	Insufficient Licenses	Actions
<input type="checkbox"/> UC Manager Enhanced Plus License (12.x)	Prepaid	0	1		-1	Insufficient Licenses	Actions
<input type="checkbox"/> UC Manager Essential License (12.x)	Prepaid	0	4		-4	Insufficient Licenses	Actions
<input type="checkbox"/> UC Manager Telepresence Room License (12.x)	Prepaid	0	1		-1	Insufficient Licenses	Actions

Showing All 8 Records

13. 在主服务器上启动HA群集。

```
>> ha_cluster_start
Last login: Sun Jun 20 19:36:49 UTC 2021 on pts/0
Starting Cluster (corosync)...
Starting Cluster (pacemaker)...
```

14. HA集群状态显示主数据库是从辅助数据库复制的。

15. 主|次，如图所示。

```
PCSD Status:
primary-node: Online
secondary-node: Online

Daemon Status:
corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
Last login: Sun Jun 20 18:44:08 UTC 2021 on pts/0

Database Replication Status:
Database is currently the replication slave - Replicating from secondary-node (.....9)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag | replay_lag
(0 rows)

Replication from master:
pg_last_xlog_replay_location
(1 row)

PCSD Status:
secondary-node: Online
primary-node: Online

Daemon Status:
corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
Last login: Sun Jun 20 18:42:18 UTC 2021 on pts/0

Database Replication Status:
Database is currently the replication slave - Replicating from primary-node (.....13)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag | replay_lag
(0 rows)

Replication from master:
pg_last_xlog_replay_location
8/0743028
(1 row)
```

16. GUI显示心跳已连接，辅助处于活动状态，主要处于备用状态，如图所示。

High Availability

Host | Event Logs

Normal
The status of the high availability cluster is normal.

Heartbeat
Connection status: **Connected**

VIP .14

Active Server
public address (.9)
secondary-node (169.254.0.2)
Active

Standby Server
public address (.11)
primary-node (169.254.0.1)
Standby

System Information

Active Server		Standby Server	
Physical Memory	7.62 GB	Physical Memory	--
Disk Space	7.54 GB	Disk Space	--
Current Version	8-202105	Current Version	--

System Health
Good
Your machine is working well

Server Name: annan-7-20-8-05
Version: 8-202105
Uptime: 11 days

Resource Monitor Percentage
CPU |
RAM |
DISK |

Interface: ens192 | ↑ 5.8 MB/s | ↓ 4 MB/s

Recent Alerts
Insufficient Licenses

Connected Users
admin | 00:15:26

回退

1. 停止辅助中的Ha_cluster。
2. 可以看到主服务器数据库和辅助服务器数据库的当前状态。

```

Last login: Sun Jun 20 18:58:34 UTC 2021 on pts/0
=====
Database Replication Status:
=====
Database is currently the replication slave - Replicating from secondary-node (.9)

Replication to slave:
 client_addr | backend_start | state | write_lag | flush_lag | replay_lag
-----
(0 rows)

Replication from master:
 pg_last_xlog_replay_location
-----
 0/E012F30
(1 row)
--

[>>
[>>
[>> ha_cluster_stop
Last login: Sun Jun 20 18:45:56 UTC 2021
Stopping Cluster (pacemaker)...

Stopping Cluster (corosync)...
>>
>>
[>> ha_status
Last login: Sun Jun 20 18:47:20 UTC 2021 on pts/0
Error: cluster is not currently running on this node
Last login: Sun Jun 20 18:57:24 UTC 2021 on pts/0
=====
Database Replication Status:
=====
DB service not currently running.
--

```

3. 使用VIP(.14)登录SSM内部GUI，辅助GUI关闭。
4. 主服务器(.11)显示为活动服务器。
5. 心跳已断开。
6. 辅助服务器(.9)已移至备用状态。

High Availability

Host | Event Logs

Degraded
The cluster is degraded One of the cluster nodes is offline

Heartbeat
Connection status: **Disconnected**

VIP .14

Active Server
public address (.11)
primary-node (169.254.0.1) **Active**

Standby Server
public address (.9)
secondary-node (169.254.0.2) **Degraded**

System Information

Active Server		Standby Server	
Physical Memory	7.62 GB	Physical Memory	--
Disk Space	7.83 GB	Disk Space	--
Current Version	8-202105	Current Version	--

7.在此阶段，可以从VIP地址(.14)访问GUI，而不是从辅助IP地址。

8.在辅助服务器上启动HA群集。

```
>> ha_cluster_start
Last login: Sun Jun 20 18:57:24 UTC 2021 on pts/0
Starting Cluster (corosync)...
Starting Cluster (pacemaker)...
>>
```

9.群集HA状态显示，左侧主服务器的数据库（复制主服务器）按照预期复制到右侧辅助服务器的数据库（复制从服务器）。

```
PCSD Status:
primary-node: Online
secondary-node: Online

Daemon Status:
corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
Last login: Sun Jun 20 19:05:59 UTC 2021 on pts/0

Database Replication Status:
Database is currently the replication master - Replicating to secondary-node (.9)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag | replay_lag
-----|-----|-----|-----|-----|-----
169.254.0.2 | 2021-06-20 19:01:56.616211+00 | streaming | 0 | 0 | 0
(1 row)

Replication from master:
pg_last_xlog_replay_location
-----
0/10000000
(1 row)
>>

PCSD Status:
secondary-node: Online
primary-node: Online

Daemon Status:
corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
Last login: Sun Jun 20 19:04:47 UTC 2021 on pts/0

Database Replication Status:
Database is currently the replication slave - Replicating from primary-node (.11)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag | replay_lag
-----|-----|-----|-----|-----|-----
(0 rows)

Replication from master:
pg_last_xlog_replay_location
-----
0/10000000
(1 row)
>>
```

10. GUI显示主用主服务器和备用辅助服务器之间连接的心跳。

High Availability

Host | Event Logs

Normal
The status of the high availability cluster is normal.

Heartbeat
Connection status: **Connected**

VIP .14

Active Server
public address (.11)
primary-node (169.254.0.1)
Active

Standby Server
public address (.9)
secondary-node (169.254.0.2)
Standby

System Information

Active Server		Standby Server	
Physical Memory	7.62 GB	Physical Memory	--
Disk Space	7.63 GB	Disk Space	--
Current Version	8-202105	Current Version	--

System Health
Good
Your machine is working well

Server Name: annan-8-202105
Version: 8-202105
Uptime: 14 days

Resource Monitor Percentage
CPU |
RAM |
DISK |

Interface: ens192 | 4.1 MB/s | 1.9 MB/s

Recent Alerts
Insufficient Licenses

Connected Users
Admin | 00:07:26

11.注册到SSM现场的VIP地址的所有四个产品实例，如“产品实例”选项卡所示。

12.这些产品实例已使用/请求的许可证反映在“许可证”选项卡上。

Smart Software Manager On-Prem > Smart Licensing

annan-ssm-on-prem-8-2021...

Smart Licensing

Alerts | **Inventory** | Convert to Smart Licensing | Reports | Preferences | Activity

Local Virtual Account: Default

General | **Licenses** | Product Instances | SL Using Policy | Event Log

Name	Product Type	Last Contact	Alerts	Actions
UDI_PID-PI-SOFTWARE:UDI_SN:annan-39	SDNMGMT	2021-Jun-20 18:39:00		Actions
UDI_PID-PI-SOFTWARE:UDI_SN:p37:	SDNMGMT	2021-Jun-20 19:26:47		Actions
cucompub	UCL	2021-Jun-20 18:36:56		Actions
cuom-pub-30	UCL	2021-Jun-20 19:28:51		Actions

Showing Page 1 of 1 (4 Records)

Smart Software Manager On-Prem > Smart Licensing

annan-ssm-on-prem-8-2021...

Smart Licensing

Alerts | **Inventory** | Convert to Smart Licensing | Reports | Preferences | Activity

Local Virtual Account: Default

General | **Licenses** | Product Instances | SL Using Policy | Event Log

Available Actions | Manage License Tags...

License	Billing	Purchased	In Use	Substitution	Balance	Alerts	Actions
Prime Infrastructure 3.x, Assurance Lic.	Prepaid	0	2		-2	Insufficient Licenses	Actions
Prime Infrastructure 3.x, BASE Lic.	Prepaid	0	2		-9	Insufficient Licenses	Actions
Prime Infrastructure 3.x, Lifecycle Lic.	Prepaid	0	48		-48	Insufficient Licenses	Actions
UC Manager Basic License (12.x)	Prepaid	0	2		-2	Insufficient Licenses	Actions
UC Manager Enhanced License (12.x)	Prepaid	0	47		-47	Insufficient Licenses	Actions
UC Manager Enhanced Plus License (12.x)	Prepaid	0	1		-1	Insufficient Licenses	Actions
UC Manager Essential License (12.x)	Prepaid	0	4		-4	Insufficient Licenses	Actions
UC Manager Telepresence Room License (12.x)	Prepaid	0	1		-1	Insufficient Licenses	Actions

Showing All 8 Records

降级高可用性集群

1. Cisco Smart Manager On-Prem集群可以直接降级为单个独立节点。
2. 使用<ha_takedown>命令，使用现场控制台连接到主/主用SSM现场。
3. 在验证SSM On-Prem的操作后，必须丢弃辅助/备用服务器，且不能重用。
4. 您现在将拥有独立系统，而不是集群。
5. 已启动拆卸，如图所示。

```
Database Replication Status:
=====
Database is currently the replication master - Replicating to secondary-node (18)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag |
+-----+-----+-----+-----+-----+
192.168.1.5 | 2020-09-02 09:08:39.388506+00 | streaming | 0 | 0
(1 row)

Replication from master:
pg_last_xlog_replay_location
-----
8/7878018
(1 row)

[>> ha_takedown
Last login: Wed Sep 2 11:03:55 UTC 2020

WARNING: You are about to destroy the HA cluster configuration
and convert this service node into stand-alone mode without a cluster.

This script operates on the local service node and will not
affect the remote service node.

Destroy HA cluster and convert to stand-alone? Enter 'yes' to continue: yes
success
Adjusting firewall...
success
The interface is under control of NetworkManager, setting zone to default.
success
Destroying HA cluster...
Stopping Cluster (pacemaker)...
Stopping Cluster (corosync)...
Shutting down pacemaker/corosync services...
Killing any remaining services...
Removing all cluster configuration files...
Disabling HA services...
Removed symlink /etc/systemd/system/multi-user.target.wants/pcsd.service.
Stopping SSM tunnel...
ssh tunnel service
adms activating auto-restart SSH tunnel device forwarding service
Removed symlink /etc/systemd/system/multi-user.target.wants/ssh tunnel service.
Cleaning up...
atlantis_default
Enabling SSM stand-alone mode...
Created symlink from /etc/systemd/system/multi-user.target.wants/satellite.service to /etc/systemd/system/satellite.service.
Deleting SSH tunnel user...

HA cluster has been destroyed. SSM is now in stand-alone mode.

[>>
[>> ha_status
Last login: Wed Sep 2 11:11:39 UTC 2020
Error: cluster is not currently running on this node
Last login: Wed Sep 2 11:19:21 UTC 2020 on pts/0
HA is not enabled.

=====
pcsd: active/enabled
Last login: Wed Sep 2 11:12:48 UTC 2020 on pts/0

Database Replication Status:
=====
Database is currently the replication slave - Replicating from primary-node (5)

Replication to slave:
client_addr | backend_start | state | write_lag | flush_lag |
+-----+-----+-----+-----+-----+
(0 rows)

Replication from master:
pg_last_xlog_replay_location
-----
8/9980038
(1 row)

[>> ha_takedown
Last login: Wed Sep 2 11:12:42 UTC 2020 on pts/0

WARNING: You are about to destroy the HA cluster configuration
and convert this service node into stand-alone mode without a cluster.

This script operates on the local service node and will not
affect the remote service node.

Destroy HA cluster and convert to stand-alone? Enter 'yes' to continue: yes
Adjusting firewall...
success
The interface is under control of NetworkManager, setting zone to default.
success
Destroying HA Cluster...
Stopping Cluster (pacemaker)...
Stopping Cluster (corosync)...
Shutting down pacemaker/corosync services...
Killing any remaining services...
Removing all cluster configuration files...
Disabling HA services...
Removed symlink /etc/systemd/system/multi-user.target.wants/pcsd.service.
Stopping SSM tunnel...
Removed symlink /etc/systemd/system/multi-user.target.wants/tunha.service.
Cleaning up...
atlantis_default
Enabling SSM stand-alone mode...
Removed symlink from /etc/systemd/system/multi-user.target.wants/satellite.service to /etc/systemd/system/satellite.service.
Deleting SSH tunnel user...

HA cluster has been destroyed. SSM is now in stand-alone mode.

[>> ha_status
Last login: Wed Sep 2 11:18:33 UTC 2020
Error: cluster is not currently running on this node
Last login: Wed Sep 2 11:19:02 UTC 2020 on pts/0
HA is not enabled.

[>>
[>>
[>>
[>>
```

6. 触发从属服务器拆卸，如图所示。

```

=====
Database Replication Status:
=====
Database is currently the replication slave - Replicating from primary-node (10.10.10.5)

Replication to slave:
 client_addr | backend_start | state | write_lag | flush_lag | replay_lag
-----+-----+-----+-----+-----+-----
(0 rows)

Replication from master:
 pg_last_xlog_replay_location
-----
 0/9000D30
(1 row)

[>> ha_teardown
Last login: Wed Sep  2 11:12:42 UTC 2020 on pts/0

WARNING: You are about to destroy the HA cluster configuration
and convert this service node into stand-alone mode without a cluster.

This script operates on the local service node and will not
affect the remote service node.

[Destroy HA cluster and convert to stand-alone? Enter 'yes' to continue: yes
Adjusting firewall...
success
success
The interface is under control of NetworkManager, setting zone to default.
success
success
Destroying HA cluster...
Stopping Cluster (pacemaker)...
Stopping Cluster (corosync)...
Shutting down pacemaker/corosync services...
Killing any remaining services...
Removing all cluster configuration files...
Disabling HA services...
Removed symlink /etc/systemd/system/multi-user.target.wants/pcsd.service.
Stopping SSH tunnel...
Removed symlink /etc/systemd/system/multi-user.target.wants/tunha.service.
Cleaning up...
atlantis_default
Enabling SSMS stand-alone mode...
Created symlink from /etc/systemd/system/multi-user.target.wants/satellite.service to /etc/systemd/system/satellite.service.
Deleting SSH tunnel user...

HA cluster has been destroyed.  SSMS is now in stand-alone mode.

>> ]

```

7. HA群集已销毁。SSMS现在处于独立模式。

```

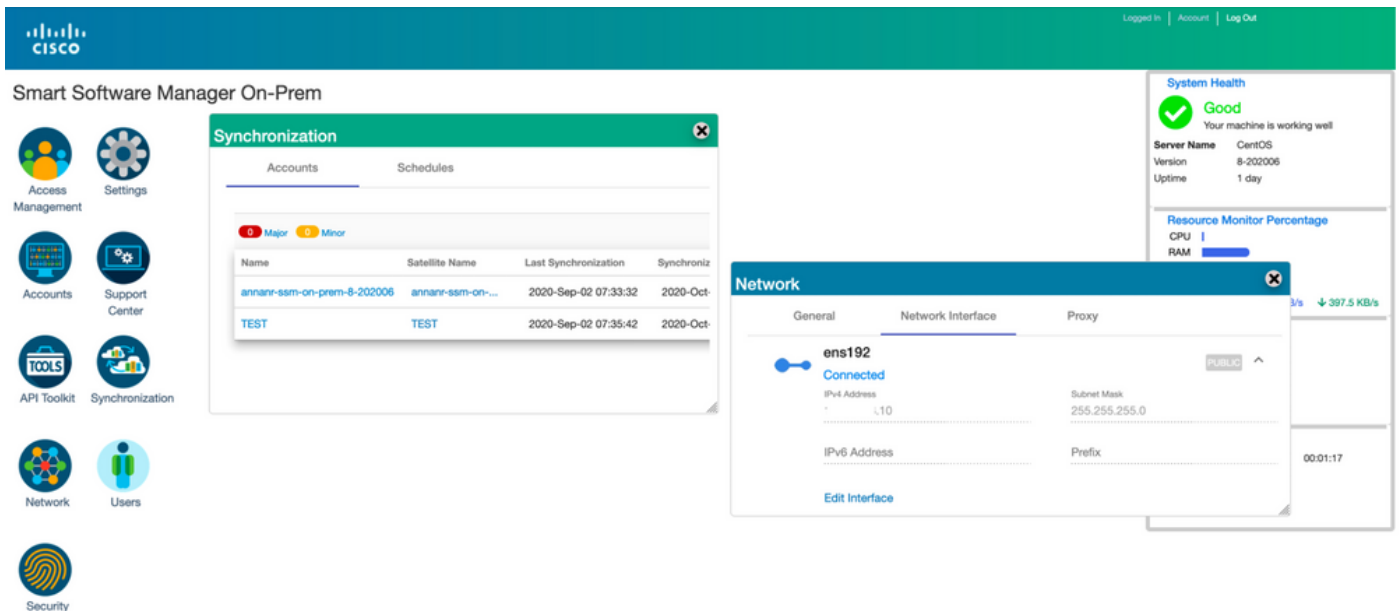
HA cluster has been destroyed.  SSMS is now in stand-alone mode.

[>> ha_status
Last login: Wed Sep  2 11:18:33 UTC 2020
Error: cluster is not currently running on this node
Last login: Wed Sep  2 11:19:02 UTC 2020 on pts/0
HA is not enabled.

>> ]

```

8.使用辅助服务器IP地址访问的GUI不再存放高可用性构件。



9.触发主服务器拆卸，如图所示。

```
[>> ha_takedown
Last login: Wed Sep  2 11:03:55 UTC 2020

WARNING: You are about to destroy the HA cluster configuration
and convert this service node into stand-alone mode without a cluster.

This script operates on the local service node and will not
affect the remote service node.

[Destroy HA cluster and convert to stand-alone? Enter 'yes' to continue: yes
Adjusting firewall...
success
success
The interface is under control of NetworkManager, setting zone to default.
success
success
Destroying HA cluster...

Stopping Cluster (pacemaker)...
Stopping Cluster (corosync)...
Shutting down pacemaker/corosync services...
Killing any remaining services...
Removing all cluster configuration files...
Disabling HA services...
Removed symlink /etc/systemd/system/multi-user.target.wants/pcsd.service.
Stopping SSH tunnel...
  sshtunha.service
aded  activating auto-restart SSH tunnel device forwarding service
Removed symlink /etc/systemd/system/multi-user.target.wants/sshtunha.service.
Removed symlink /etc/systemd/system/multi-user.target.wants/tunha.service.
Cleaning up...
atlantis_default
Enabling SSMS stand-alone mode...
Created symlink from /etc/systemd/system/multi-user.target.wants/satellite.service to /etc/systemd/system/satellite
.service.
Deleting SSH tunnel user...

HA cluster has been destroyed.  SSMS is now in stand-alone mode. 10
```

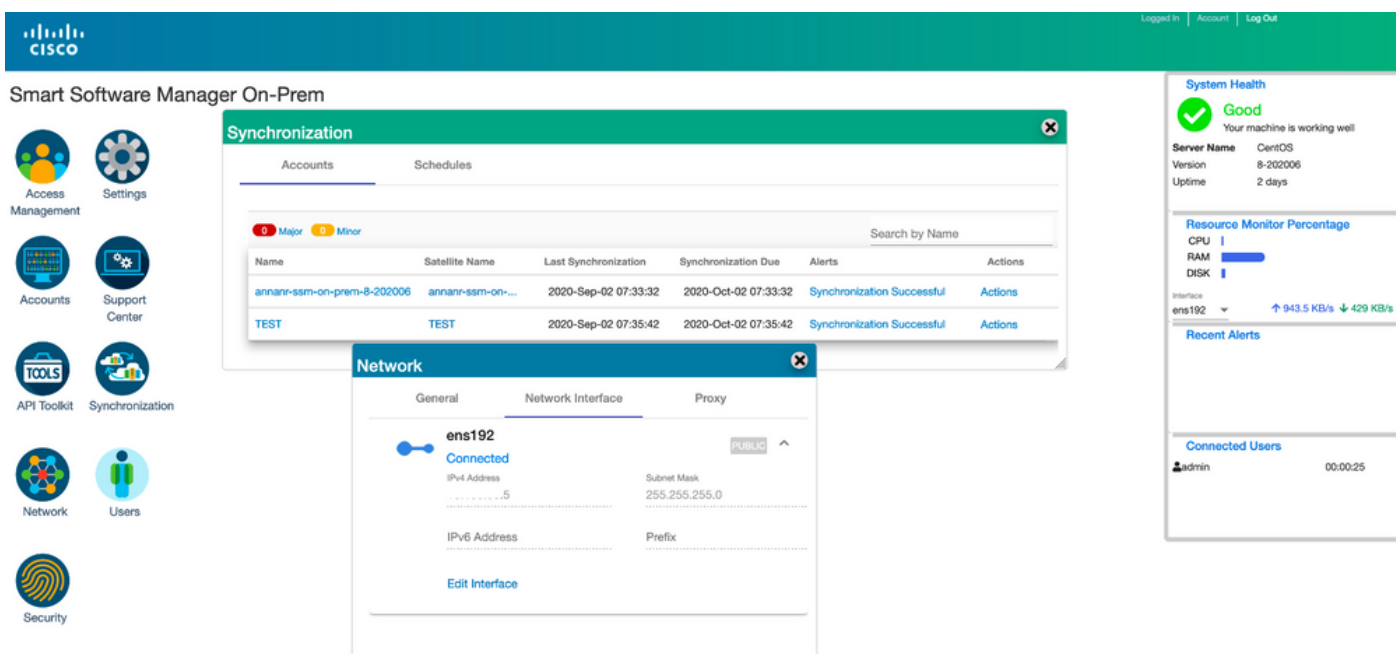
10.已成功禁用HA。

```

>>
>> ha_status
Last login: Wed Sep  2 11:11:39 UTC 2020
Error: cluster is not currently running on this node
Last login: Wed Sep  2 11:15:21 UTC 2020 on pts/0
HA is not enabled.
>> █

```

11.使用主服务器IP地址访问的GUI不再存放高可用性构件。



接下来呢？！

- 1.登录到SSM本地主管理工作区，导航到**安全> 证书**，并在主机公用名上使用主服务器的（IP地址/主机名/FQDN）。
- 2.更新主机公用名后，请通过将本地帐户与Cisco SSM同步，确保用新公用名重新生成证书。
- 3.在尝试使用目标URL配置中的新公用名重新注册产品之前，必须进行同步。
- 4.不同步可能导致产品无法注册到新的主机公用名。

相关信息

- 控制台指南
: https://www.cisco.com/web/software/286285517/151968/Smart_Software_Manager_On-Prem_8_Console_Guide.pdf
- 用户指南
: https://www.cisco.com/web/software/286285517/151968/Smart_Software_Manager_On-Prem_8_User_Guide.pdf
- 安装指南
: https://www.cisco.com/web/software/286285517/152313/Smart_Software_Manager_On-

[Prem 8-202006 Installation Guide.pdf](#)

- [技术支持和文档 - Cisco Systems](#)