MSE软件8.0版高可用性配置和部署指南

目录

简介

本文档介绍配置和部署指南，以及将移动服务引擎(MSE)高可用性(HA)和运行情景感知服务和/或自适应无线入侵防御系统(AwIPS)添加到思科统一无线局域网(WLAN)的故障排除提示。 本文档旨在说明MSE HA的准则，并为MSE提供HA部署方案。

> **注意**：本文档不提供与MSE HA无关的MSE和关联组件的配置详细信息。这些信息将在其他文档中提供（同时提供参考材料）。本文档也不涉及 Adaptive wIPS 配置。

背景信息

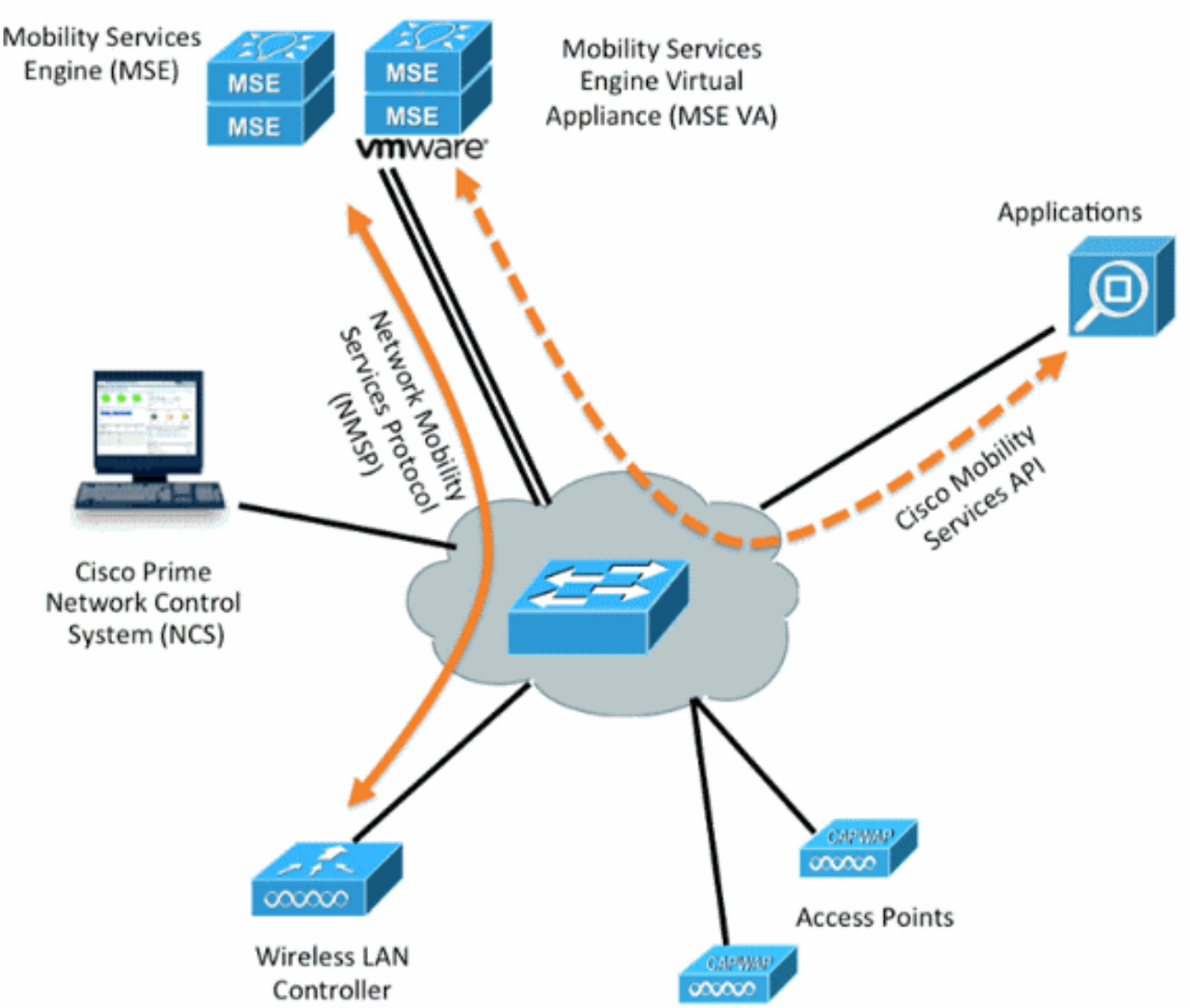
MSE是能够运行多个相关服务的平台。这些服务提供高级服务功能。因此，考虑HA对于保持最高的服务信心至关重要。

启用HA后，每个活动MSE都由另一个非活动实例备份。MSE HA引入了运行状况监控器，可在其中配置、管理和监控高可用性设置。主MSE和辅助MSE之间维护心跳。运行状况监视器负责设置数据库、文件复制和监控应用程序。当主MSE发生故障，辅助接管时，主MSE的虚拟地址将透明地交换。

此设置（见图1）演示了典型的思科WLAN部署，包括为高可用性启用的思科MSE。

MSE-3310、MSE-3350/3355、3365和ESXi上的虚拟设备均提供高可用性支持。

图1.高可用性中的MSE部署



准则和限制

以下是有关MSE HA架构的信息：

- MSE虚拟设备仅支持1:1高可用性
- 一个辅助MSE最多可支持两个主MSE。请参阅HA配对矩阵（图2和图3）
- HA支持网络连接和直连
- 仅支持MSE第2层冗余。运行状况监控器IP和虚拟IP必须位于同一子网上，并且不支持从网络控制系统(NCS)第3层冗余访问
- 运行状况监控器IP和虚拟IP必须不同
- 可以使用手动或自动故障切换
- 您可以使用手动或自动回切
- 主MSE和辅助MSE必须位于同一软件版本上
- 每个活动主MSE都由另一个非活动实例备份。辅助MSE仅在启动故障切换过程后才变为活动状态。
- 故障切换过程可以是手动的或自动的

- 每个已注册的主MSE有一个软件和数据库实例。

图2. MSE高可用性支持配对表

	Secondary Server Type					
Primary Server Type	3310	3350	3355	VA-Low	VA-Standard	VA-High
3310	Y	Y	Y	N	N	N
3350	N	Y	Y	N	N	N
3355	N	Y	Y	N	N	N
VA-Low	N	N	N	Y	Y	Y
VA-Standard	N	N	N	N	Y	Y
VA-High	N	N	N	N	N	Y

此矩阵的基准是，无论辅助实例是设备还是虚拟机，其规格必须始终与主实例相同或高。

MSE-3365只能与另一个MSE-3365配对。不测试/支持其他组合。

图3. MSE高可用性N:1配对矩阵

Secondary Server	Primary Server
3310	N:1 not supported
3350	Two 3310 servers are supported
3355	Two 3310 servers are supported
3355	Two 3350 servers are supported
3355	One 3310 and one 3350 are supported

MSE虚拟设备（已网络连接）的高可用性配置方案

此示例显示MSE虚拟设备(VA)的HA配置(请参见图4)。 对于此场景，配置了以下设置：

- 主MSE VA:

```
Virtual IP – [10.10.10.11]

Health Monitor interface (Eth0) – [10.10.10.12]
```

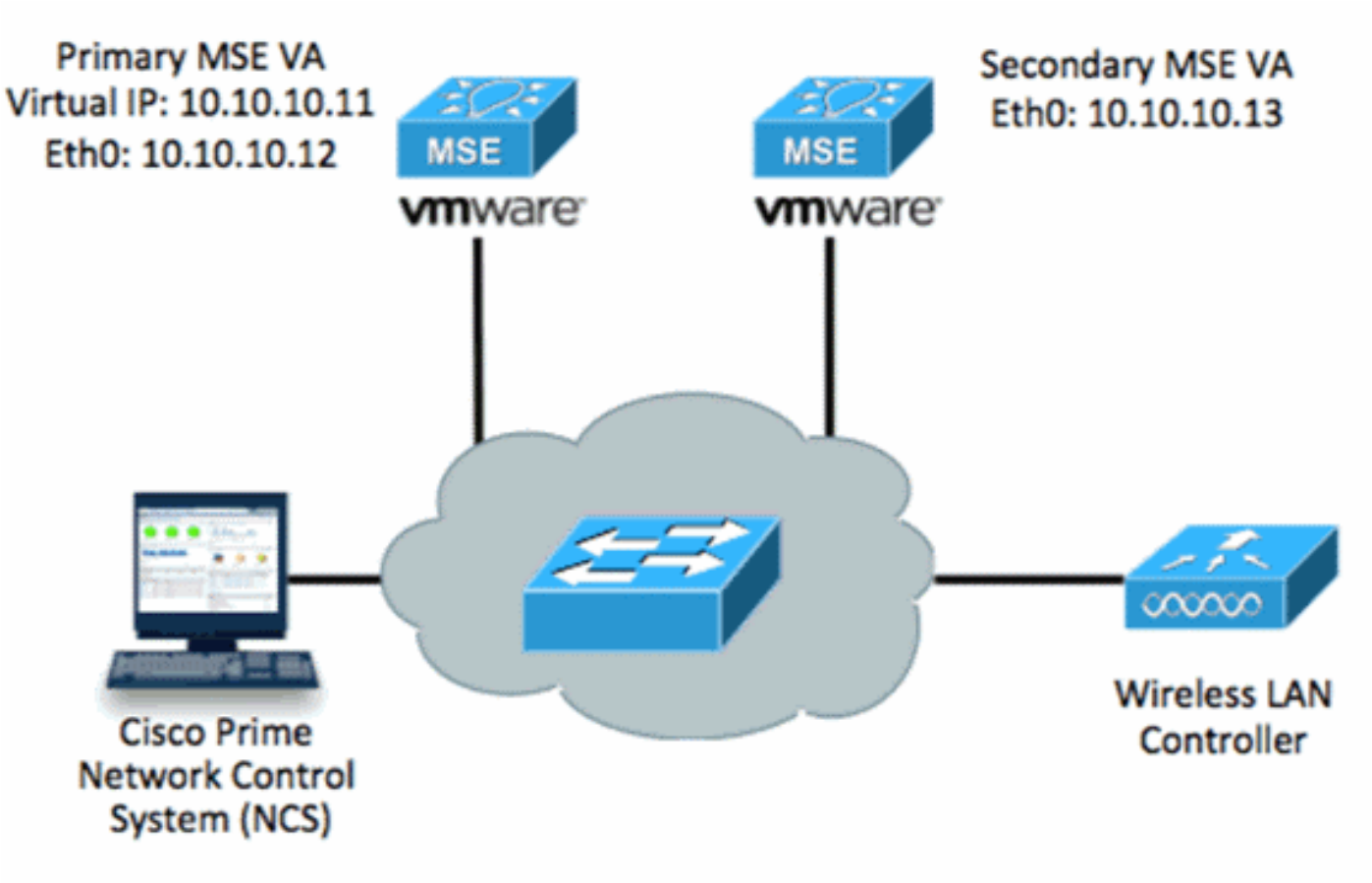
- 辅助MSE VA:

```
Virtual IP – [None]
```

```
Health Monitor interface (Eth0) – [10.10.10.13]
```

注意：每个VA需要激活许可证(L-MSE-7.0-K9)。这是VA的HA配置所必需的。

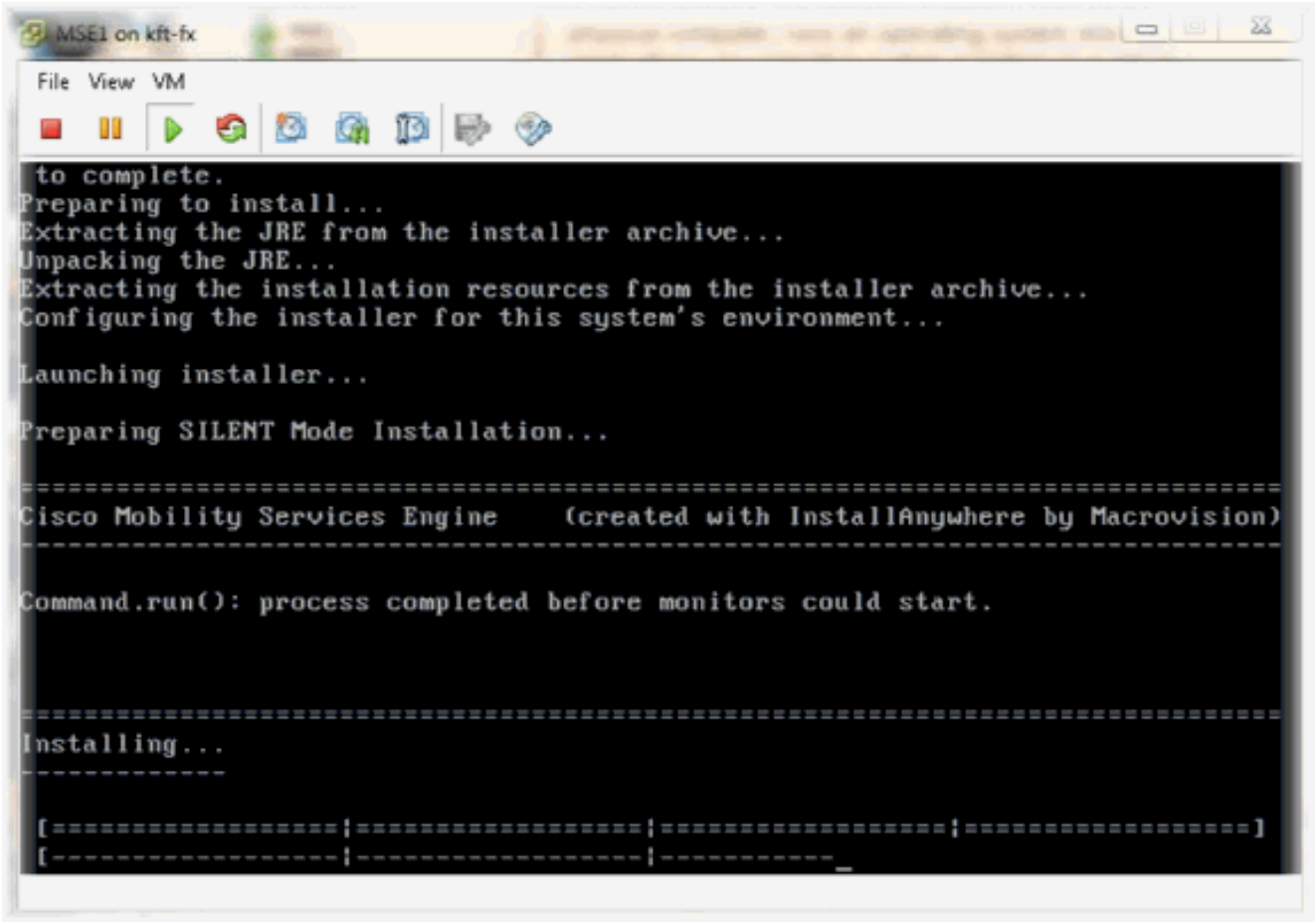
图4.高可用性中的MSE虚拟设备



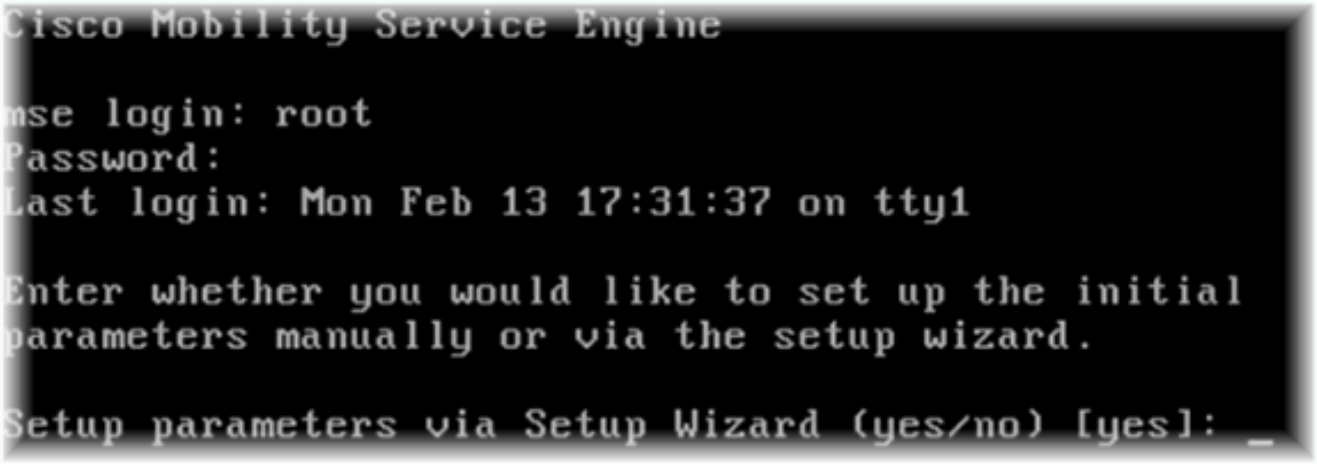
有关详细信息，请参阅MSE虚拟设备上的Cisco文档。

以下是一般步骤：

1. 完成MSE的VA安装，并验证是否满足图中所示的所有网络设置。



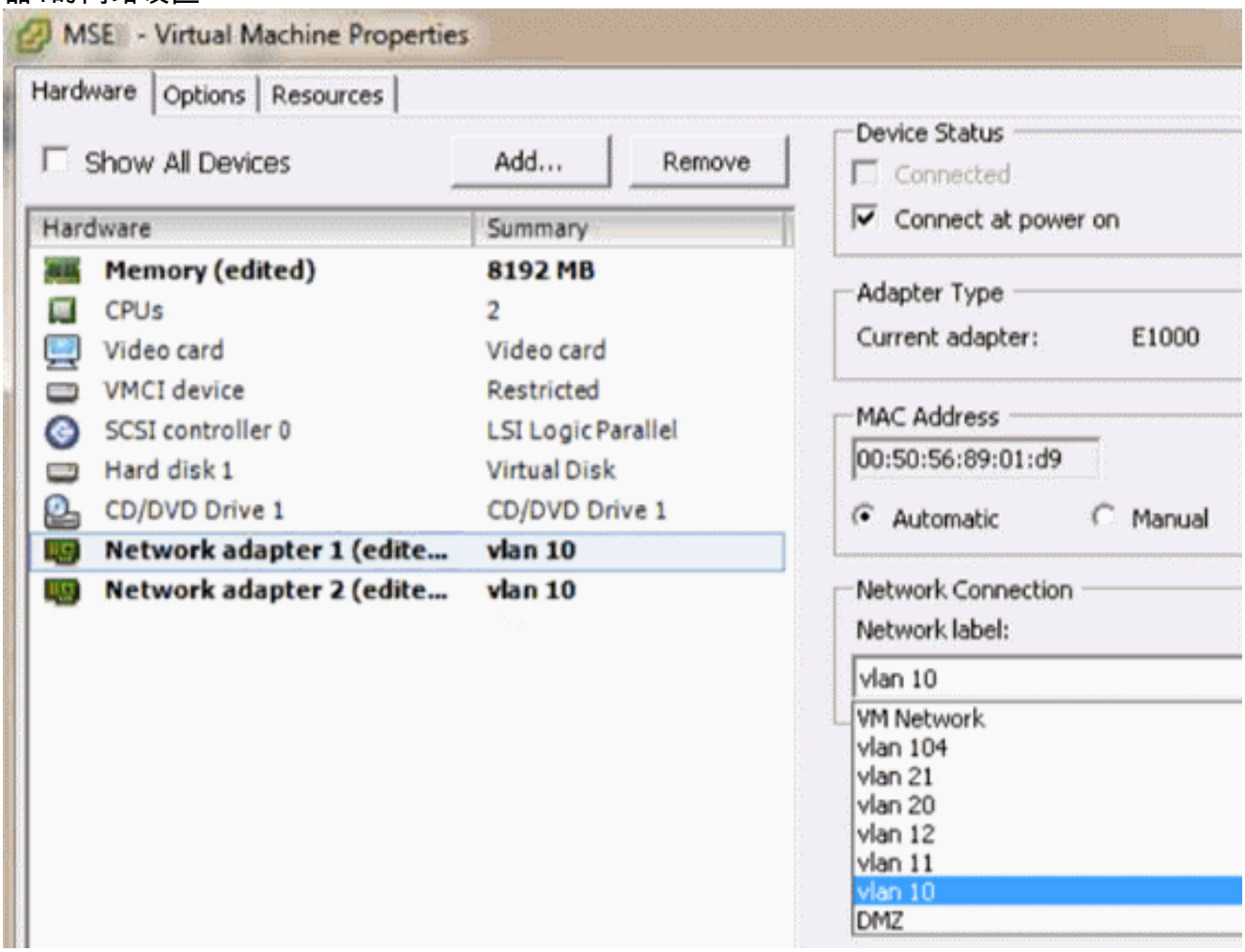
2. 首次登录时通过安装向导设置参数，如图所示。



3. 输入所需的条目（主机名、域等）。 在“Configure High Availability”（配置高可用性）的步骤中输入**YES**。

```
Current hostname=[mse]
Configure hostname?  (Y)es/(S)kip/(U)se default [Yes]:

The host name should be a unique name that can identify
the device on the network. The hostname should start with
a letter, end with a letter or number, and contain only
letters, numbers, and dashes.

Enter a host name [mse]: mse1

Current domain=[]
Configure domain name? (Y)es/(S)kip/(U)se default [Yes]: s

Current role=[Primary]
Configure High Availability?  (Y)es/(S)kip/(U)se default [Yes]:
```

4. 输入此信息，如图所示。选择角色 — [主要]。运行状况监控器接口 — [eth0]**映射到网络适配器1的网络设置



```
Enter a host name [mse]: mse1

Current domain=[]
Configure domain name? (Y)es/(S)kip/(U)se default [Yes]: s

Current role=[Primary]
Configure High Availability?  (Y)es/(S)kip/(U)se default [Yes]:

High availability role for this MSE (Primary/Secondary)

Select role [1 for Primary, 2 for Secondary] [1]:

Health monitor interface holds physical IP address of this MSE server.
This IP address is used by Secondary, Primary MSE servers and WCS to communicate
 among themselves

Select Health Monitor Interface [eth0/eth1] [eth0]: _
```

5. 选择直接连接**接口**[none]，如图所示。

```
Health monitor interface holds physical IP address of this MSE server.
This IP address is used by Secondary, Primary MSE servers and WCS to communicate
 among themselves

Select Health Monitor Interface [eth0/eth1] [eth0]:

----------------------------------------------------------------


Direct connect configuration facilitates use of a direct cable connection betwee
n the primary and secondary MSE servers.
This can help reduce latencies in heartbeat response times, data replication and
 failure detection times.
Please choose a network interface that you wish to use for direct connect. You s
hould appropriately configure the respective interfaces.
\"none\" implies you do not wish to use direct connect configuration.

----------------------------------------------------------------

Select direct connect interface [eth0/eth1/none] [none]: _
```

6. 输入以下信息，如图所示：虚拟IP地址 — [10.10.10.11]网络掩码 — [255.255.255.0]在恢复模式下启动MSE - [否
]

```
Select direct connect interface [eth0/eth1/none] [none]:

Enter a Virtual IP address for first this primary MSE server

Enter Virtual IP address [1.1.1.1]: 10.10.10.11

Enter the network mask for IP address 10.10.10.11.

Enter network mask [1.1.1.1]: 255.255.255.0

Choose to start the server in recovery mode.
You should choose yes only if this primary was paired earlier and you have now l
ost the configuration from this box.
And, now you want to restore the configuration from Secondary via NCS
Do you wish to start this MSE in HA recovery mode ?: (yes/no): no_
```

7. 输入以下信息，如图所示：配置Eth0 - [是]输入Eth0 IP地址 — [10.10.10.12]网络掩码 — [255.255.255.0]默认网关 —
[10.10.10.1]

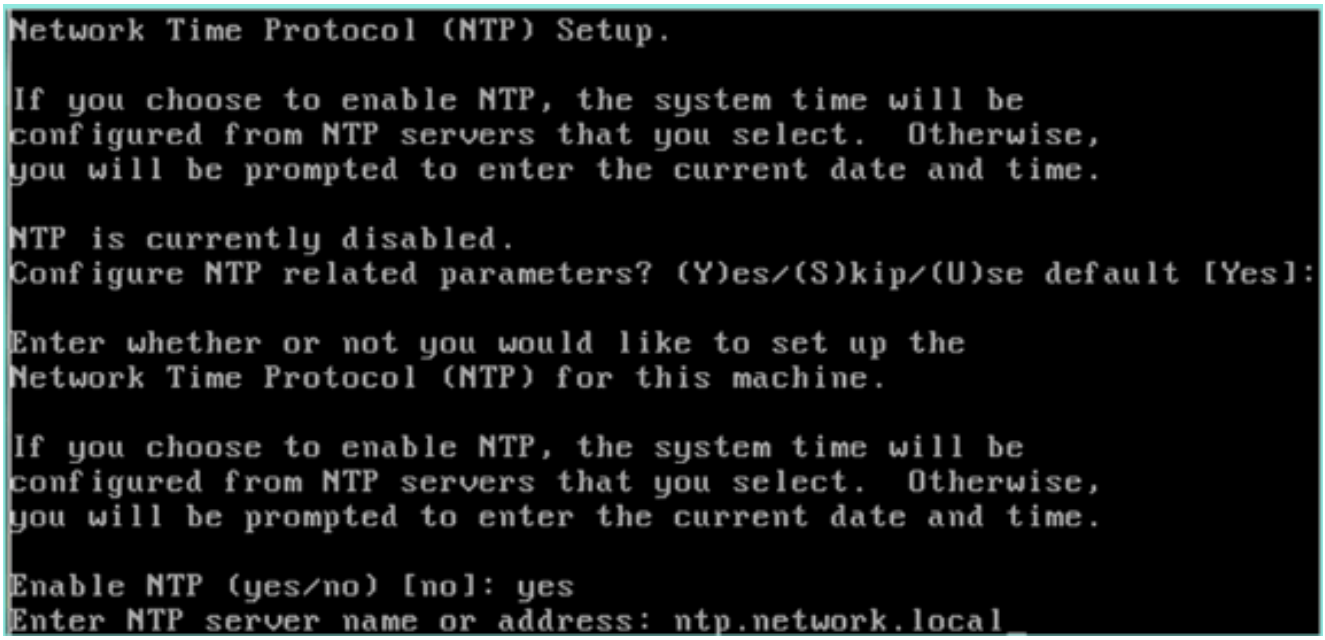
```
Current IP address=[1.1.1.10]
Current eth0 netmask=[255.255.255.0]
Current gateway address=[1.1.1.1]
Configure eth0 interface parameters? (Y)es/(S)kip/(U)se default [Yes]

Enter an IP address for first ethernet interface of this machine.

Enter eth0 IP address [1.1.1.10]: 10.10.10.12

Enter the network mask for IP address 10.10.10.12.

Enter network mask [255.255.255.0]:

Enter an default gateway address for this machine.

Note that the default gateway must be reachable from
the first ethernet interface.

Enter default gateway address [1.1.1.1]: 10.10.10.1_
```

8. 不使用第二个以太网接口(Eth1)。如图所示配置eth1接口 — [skip]。

```
The second ethernet interface is currently disabled for this machine.
Configure eth1 interface parameters? (Y)es/(S)kip/(U)se default [Yes]: s
```

9. 继续完成安装向导，如图所示。启用NTP服务器以同步时钟至关重要。首选时区是UTC。

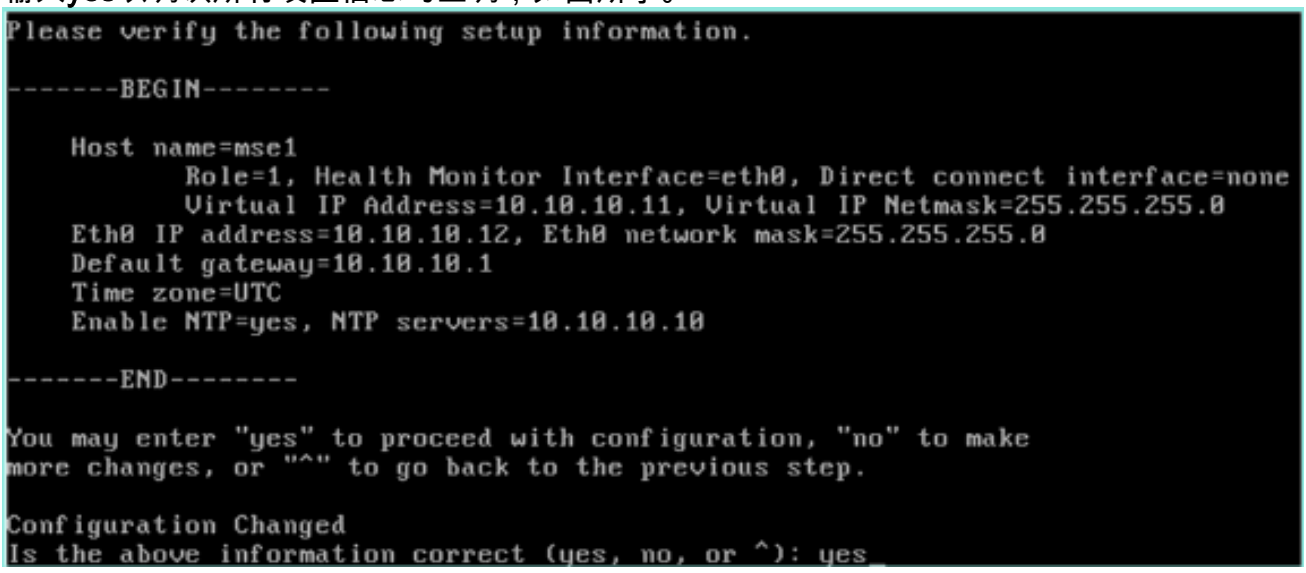
```
Domain Name Service (DNS) Setup
DNS is currently enabled.
No DNS servers currently defined
Configure DNS related parameters? (Y)es/(S)kip/(U)se default [Yes]: s

Current timezone=[America/New_York]
Configure timezone? (Y)es/(S)kip/(U)se default [Yes]:

Enter the current date and time.

Please identify a location so that time zone rules can be set correctly.
Please select a continent or ocean.
 1) Africa
 2) Americas
 3) Antarctica
 4) Arctic Ocean
 5) Asia
 6) Atlantic Ocean
 7) Australia
 8) Europe
 9) Indian Ocean
10) Pacific Ocean
11) UTC - I want to use Coordinated Universal Time.
12) Return to previous setup step (^).
#? 11_
```



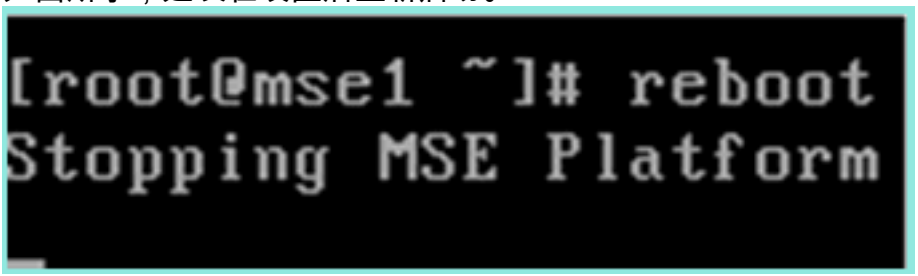
这汇总了MSE VA主设置：

```
-------BEGIN--------
Role=1, Health Monitor Interface=eth0, Direct connect interface=none
Virtual IP Address=10.10.10.11, Virtual IP Netmask=255.255.255.0
Eth0 IP address=10.10.10.12, Eth0 network mask=255.0.0.0
Default Gateway=10.10.10.1
-------END--------
```

10. 输入**yes**以确认所有设置信息均正确，如图所示。



11. 如图所示，建议在设置后重新启动。



12. 重新启动后，使用/etc/init.d/msed start或**service msed start**命令启**动MSE服**务，如图所示。

```
[root@mse1 ~]# getserverinfo
Health Monitor is not running
[root@mse1 ~]# /etc/init.d/msed start
Starting MSE Platform

ip_tables: (C) 2000-2006 Netfilter Core Team
Netfilter messages via NETLINK v0.30.
ip_conntrack version 2.4 (8192 buckets, 65536 max) - 304 bytes per conntrack
Starting Health Monitor, Waiting to check the status.
Starting Health Monitor, Waiting to check the status.
Health Monitor successfully started
Starting Admin process...
Started Admin process.
Starting database ......
Database started successfully. Starting framework and services ..............
Framework and services successfully started


[root@mse1 ~]#
```

13. 启动所有服务后，使用getserverinfo命令确认MSE服务是否正常工作。操作状态必须显示为Up，如图所示。

```
Active Wired Clients: 0
Active Elements(Wireless Clients, Rogue APs, Rogue Clients, Interferers, Wired C
lients, Tags) Limit: 100
Active Sessions: 0
Wireless Clients Not Tracked due to the limiting: 0
Tags Not Tracked due to the limiting: 0
Rogue APs Not Tracked due to the limiting: 0
Rogue Clients Not Tracked due to the limiting: 0
Interferers Not Tracked due to the limiting: 0
Wired Clients Not Tracked due to the limiting: 0
Total Elements(Wireless Clients, Rogue APs, Rogue Clients, Interferers, Wired Cl
ients) Not Tracked due to the limiting: 0

------------------------
Context Aware Sub Services
------------------------

Subservice Name: Aeroscout Tag Engine
Admin Status: Disabled
Operation Status: Down

Subservice Name: Cisco Tag Engine
Admin Status: Enabled
Operation Status: Up
[root@mse1 ~]#
```

设置辅助MSE

以下步骤是辅助MSE VA设置的一部分：

1. 新安装后，初始登录将启动安装向导。输入以下信息，如图所示：配置高可用性- [是]选择角色 — [2],表示辅助运行状况监控器接口 — [eth0]与主接口相同

```
Current hostname=[mse]
Configure hostname?  (Y)es/(S)kip/(U)se default [Yes]: yes

The host name should be a unique name that can identify
the device on the network. The hostname should start with
a letter, end with a letter or number, and contain only
letters, numbers, and dashes.

Enter a host name [mse]: mse2

Current domain=[]
Configure domain name? (Y)es/(S)kip/(U)se default [Yes]: s

Current role=[Primary]
Configure High Availability?  (Y)es/(S)kip/(U)se default [Yes]:

High availability role for this MSE (Primary/Secondary)

Select role [1 for Primary, 2 for Secondary] [1]: 2

Health monitor interface holds physical IP address of this MSE server.
This IP address is used by Secondary, Primary MSE servers and WCS to communicate
 among themselves

Select Health Monitor Interface [eth0/eth1] [eth0]:
```

2. 输入图中所示的信息：直接连接 — **[无]**IP地址eth0 - **[10.10.10.13]**网络掩码 — **[255.255.255.0]**默认网关-
[10.10.10.1]

```
------------------------------------------------------------------

Select direct connect interface [eth0/eth1/none] [none]:

Current IP address=[1.1.1.10]
Current eth0 netmask=[255.255.255.0]
Current gateway address=[1.1.1.1]
Configure eth0 interface parameters? (Y)es/(S)kip/(U)se default [Yes]:

Enter an IP address for first ethernet interface of this machine.

Enter eth0 IP address [1.1.1.10]: 10.10.10.13

Enter the network mask for IP address 10.10.10.13.

Enter network mask [255.255.255.0]:

Enter an default gateway address for this machine.

Note that the default gateway must be reachable from
the first ethernet interface.

Enter default gateway address [1.1.1.1]: 10.10.10.1_
```

3. 如图所示，配置eth1接口 — **[Skip]**。

```
Configure eth0 interface parameters? (Y)es/(S)kip/(U)se default [Yes]:

Enter an IP address for first ethernet interface of this machine.

Enter eth0 IP address [1.1.1.10]: 10.10.10.13

Enter the network mask for IP address 10.10.10.13.

Enter network mask [255.255.255.0]:

Enter an default gateway address for this machine.

Note that the default gateway must be reachable from
the first ethernet interface.

Enter default gateway address [1.1.1.1]: 10.10.10.1

The second ethernet interface is currently disabled for this machine.
Configure eth1 interface parameters? (Y)es/(S)kip/(U)se default [Yes]: s
```

4. 设置时区 — [UTC]，如图所示。

```
Current timezone=[America/New_York]
Configure timezone? (Y)es/(S)kip/(U)se default [Yes]:

Enter the current date and time.

Please identify a location so that time zone rules can be set correctly.
Please select a continent or ocean.
 1) Africa
 2) Americas
 3) Antarctica
 4) Arctic Ocean
 5) Asia
 6) Atlantic Ocean
 7) Australia
 8) Europe
 9) Indian Ocean
10) Pacific Ocean
11) UTC - I want to use Coordinated Universal Time.
12) Return to previous setup step (^).
#? 11
```

5. 如图所示启用NTP服务器。

```
Network Time Protocol (NTP) Setup.

If you choose to enable NTP, the system time will be
configured from NTP servers that you select.  Otherwise,
you will be prompted to enter the current date and time.

NTP is currently disabled.
Configure NTP related parameters? (Y)es/(S)kip/(U)se default [Yes]:

Enter whether or not you would like to set up the
Network Time Protocol (NTP) for this machine.

If you choose to enable NTP, the system time will be
configured from NTP servers that you select.  Otherwise,
you will be prompted to enter the current date and time.

Enable NTP (yes/no) [no]: yes
Enter NTP server name or address: ntp.network.local
```

6. 完成设置向导的其余步骤并确认设置信息以保存配置，如图所示。

```
Please verify the following setup information.

-------BEGIN--------

    Host name=mse2
           Role=2, Health Monitor Interface=eth0, Direct connect interface=none

    Eth0 IP address=10.10.10.13, Eth0 network mask=255.255.255.0
    Default gateway=10.10.10.1
    Time zone=UTC
    Enable NTP=yes, NTP servers=10.10.10.10

-------END--------

You may enter "yes" to proceed with configuration, "no" to make
more changes, or "^" to go back to the previous step.

Configuration Changed
Is the above information correct (yes, no, or ^): yes_
```

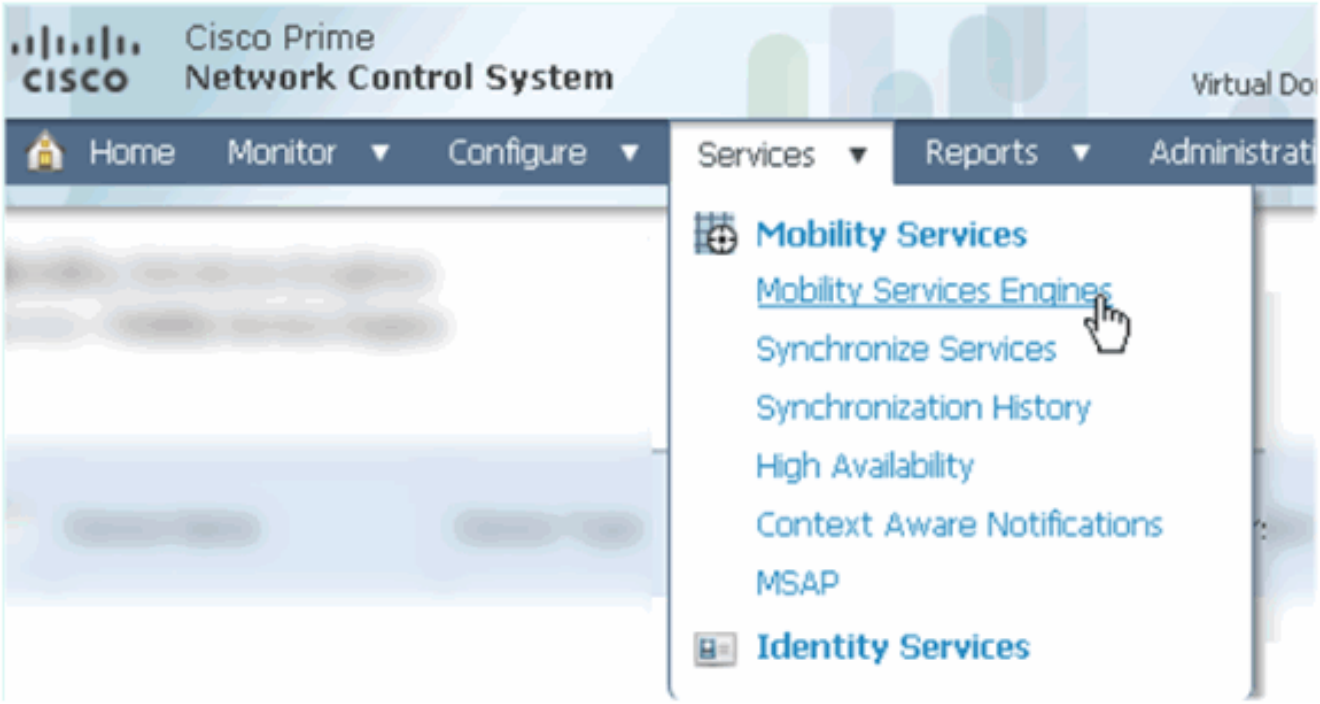
7. 重新启动并启动服务，与上述主MSE步骤相同，如图所示。

```
[root@mse2 ~]# /etc/init.d/msed start
Starting MSE Platform

ip_tables: (C) 2000-2006 Netfilter Core Team
Netfilter messages via NETLINK v0.30.
ip_conntrack version 2.4 (8192 buckets, 65536 max) - 304 bytes per conntrack
Starting Health Monitor, Waiting to check the status.
Starting Health Monitor, Waiting to check the status.
Health Monitor successfully started
Starting Admin process...
Started Admin process.
Starting database ......
Database started successfully. Starting framework and services .............
Framework and services successfully started


[root@mse2 ~]# _
```

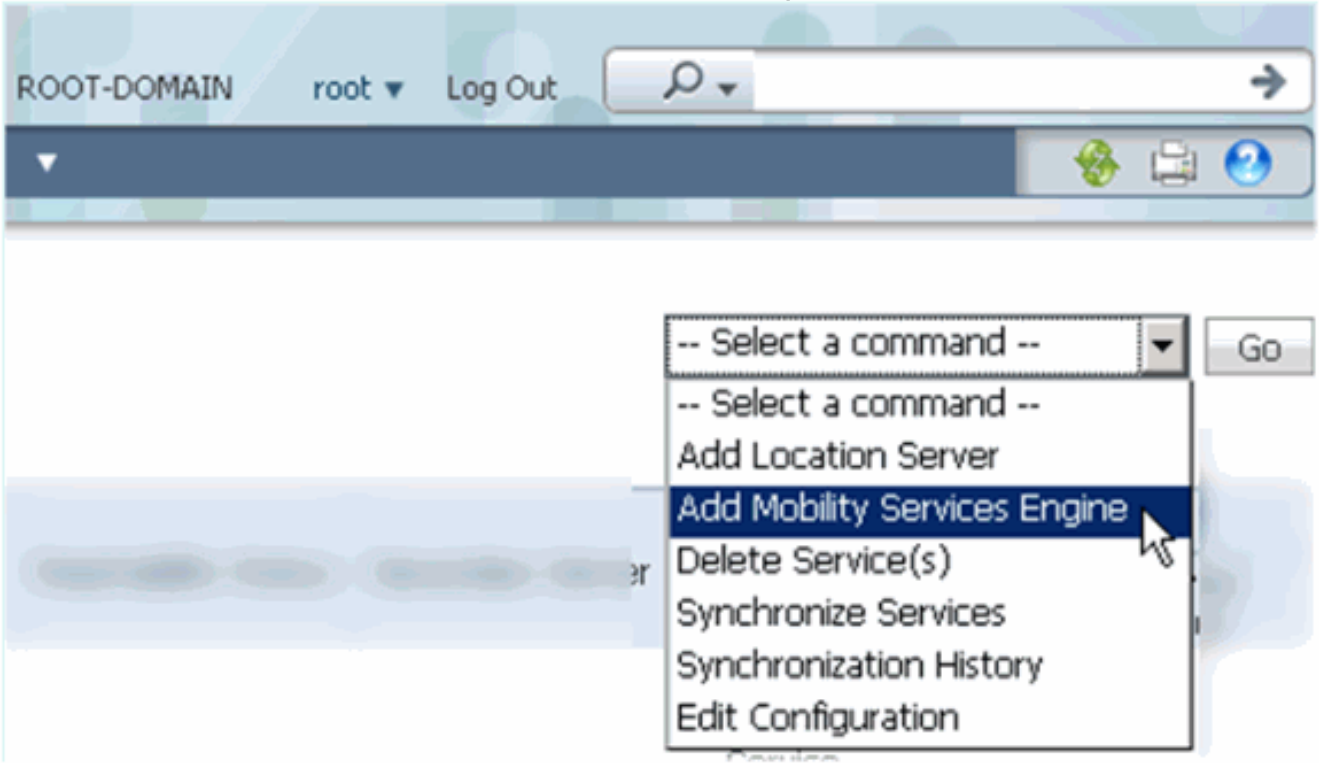
从思科Prime NCS（或Prime基础设施）管理这些设备

后续步骤显示如何将主MSE VA和辅助MSE VA添加到NCS。执行向NCS添加MSE的正常过程。有关帮助，请参阅配置指南。

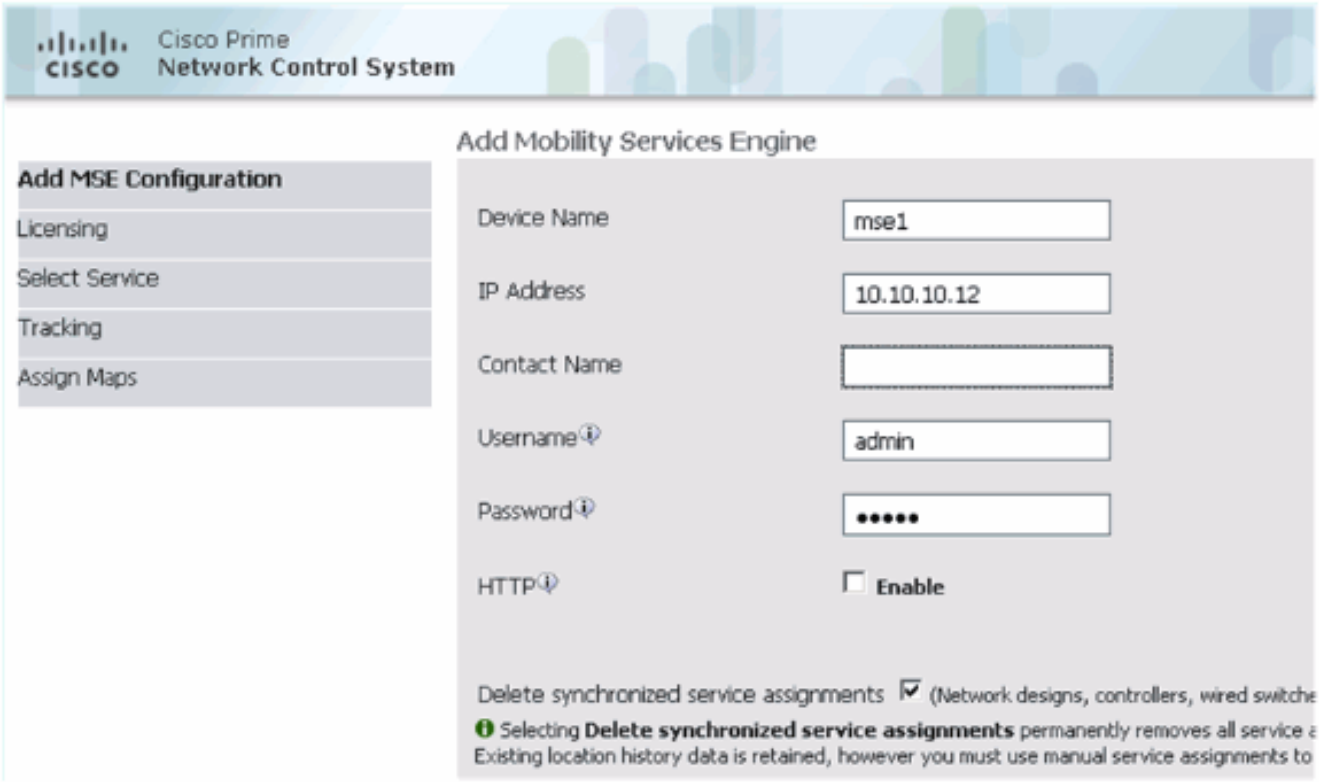
1. 从NCS中，导航至Systems **> Mobility Services**，然后**选择Mobility Services Engine**，如图所示。



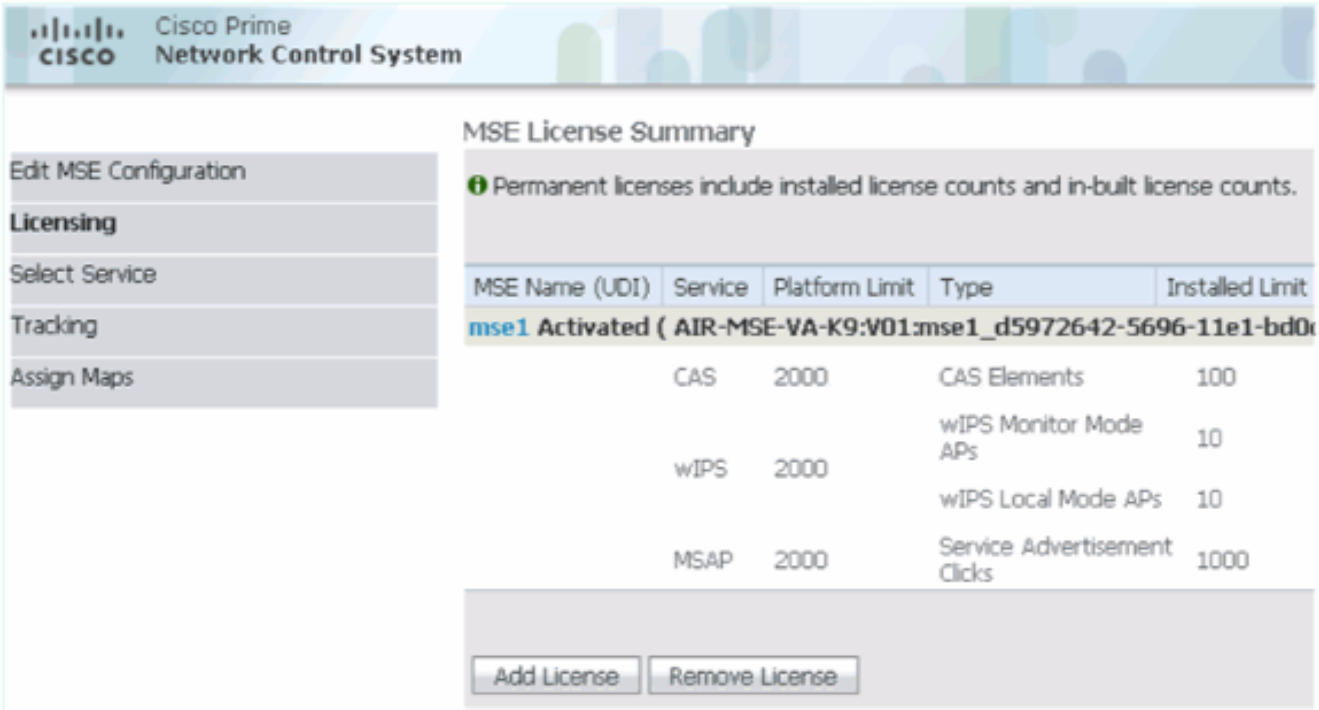
2. 从下拉菜单中，选择添**加移动服务引擎**。然后，单击**Go(**如图所示)。



3. 按照MSE的NCS配置向导操作。在本文档的场景中，值为：输入设备名称 — 例如**[MSE1]**IP地址**- [10.10.10.12]**用户名和密码（按初始设置）单击**Next**，如图所示。



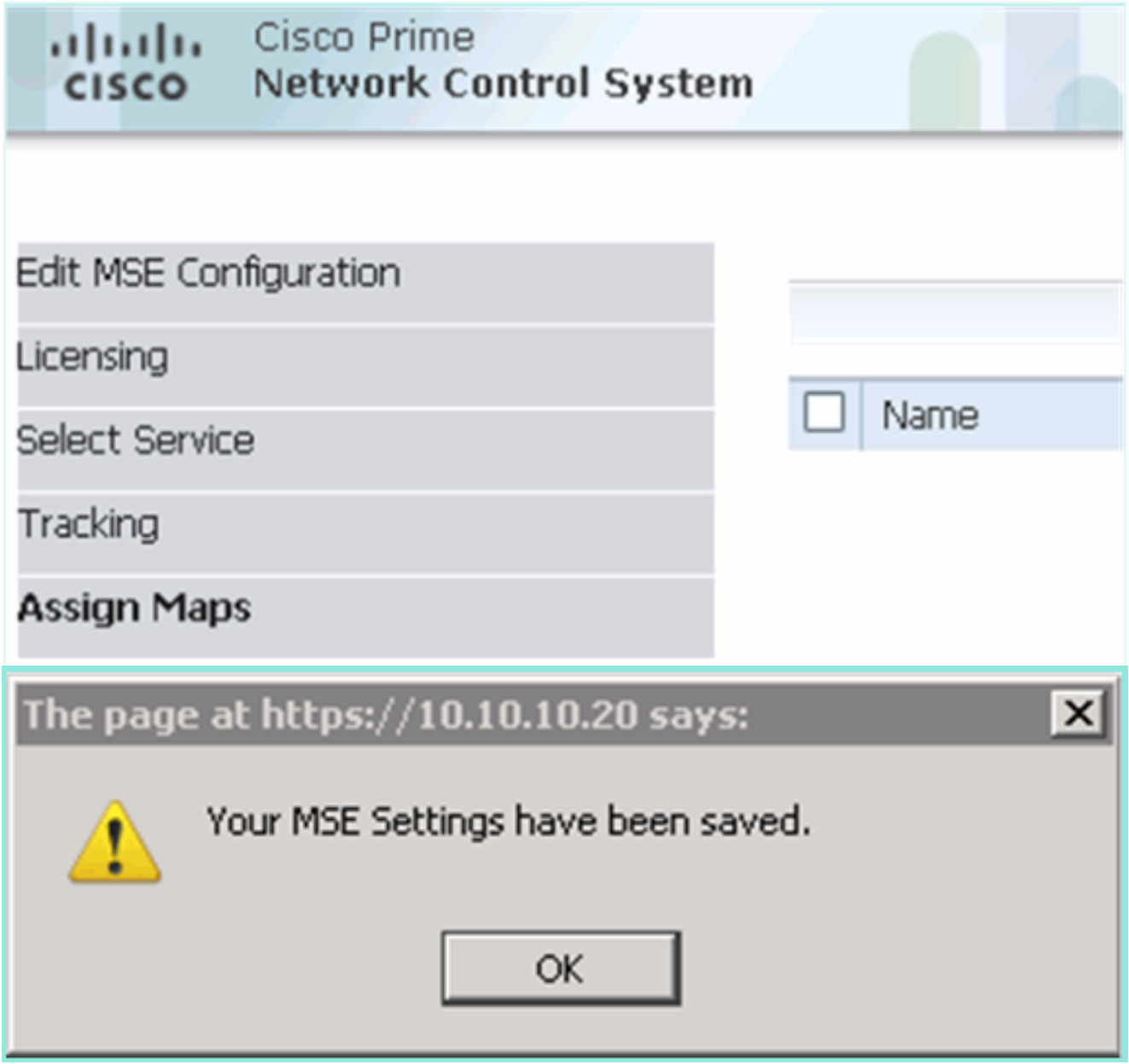
4. 添加所有可用许可证，然后单击**下一步**，如图所示。



5. 选择MSE服务，然后单击**Next**(如图所示)。

6. 启用跟踪参数，然后单击**下一步**，如图所示。

7. 分配映射和同步MSE服务是可选操作。单击**Done**以完成将MSE添加到NCS的过程，如图所示。

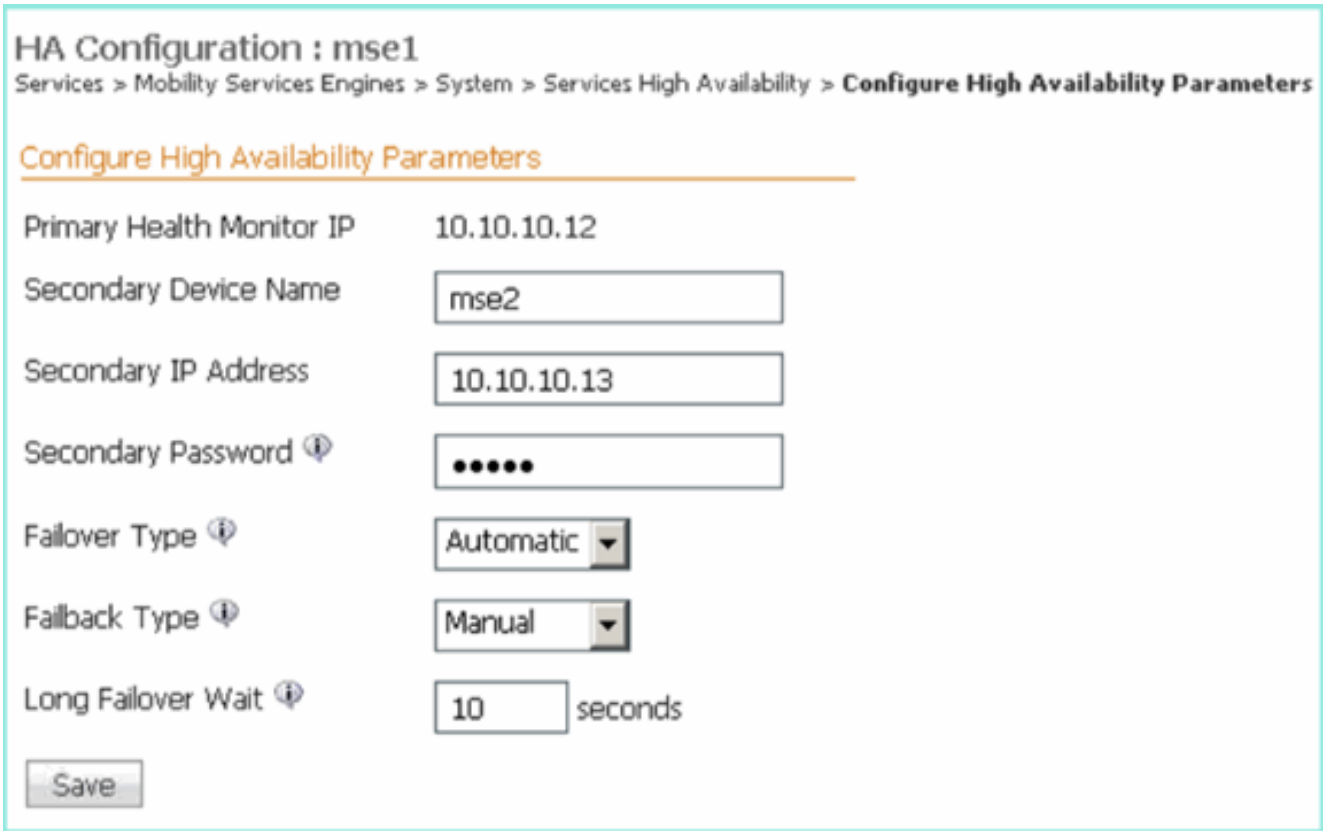


将辅助MSE添加到Cisco Prime NCS

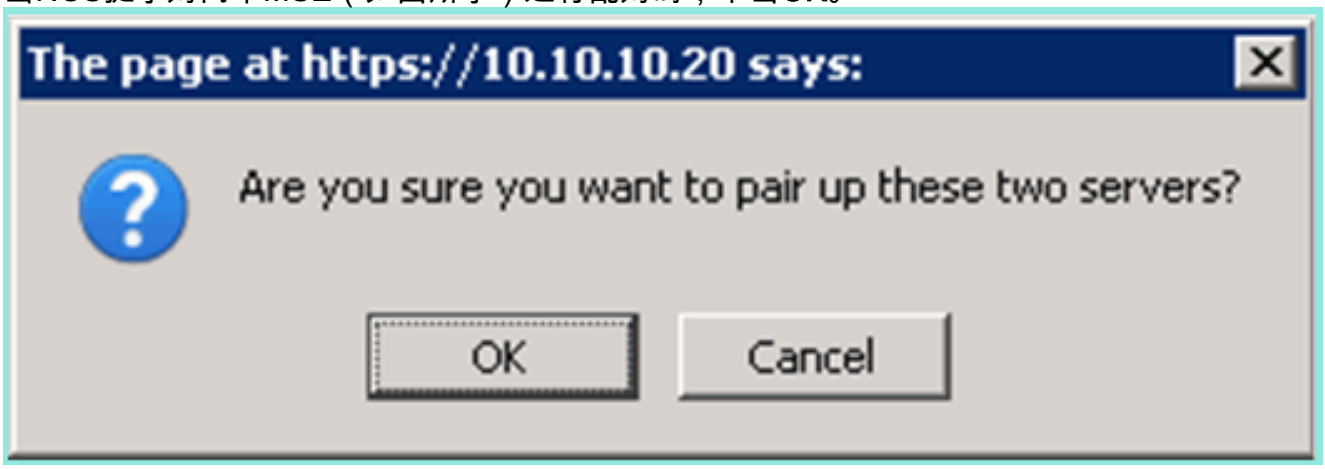
下一个屏幕截图显示主MSE VA已添加。现在，请完成以下步骤以添加辅助MSE VA:

1. 找到“辅助服务器”列，然后点击链接进行配置，如图所示。

2. 使用此场景中的配置添加辅助MSE VA:辅助设备名**称 — [mse2]**辅助IP地**址 — [10.10.10.13]**辅助密码* - **[默认或来自设置脚本]**故障切换类型* **- [自动或手动]**回退类型*长故障切换等待*Click **Save**.*如果需要，请点击信息图标或参考MSE文档。

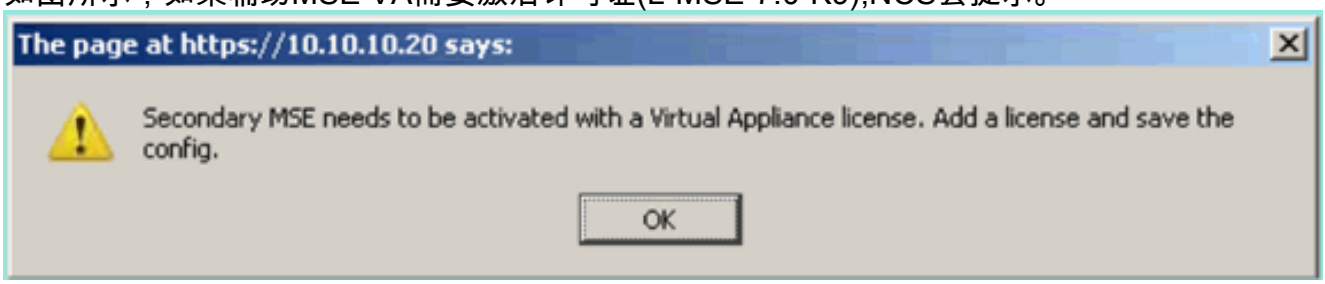


3. 当NCS提示对两个MSE（如图所示）进行配对时，单击**OK**。

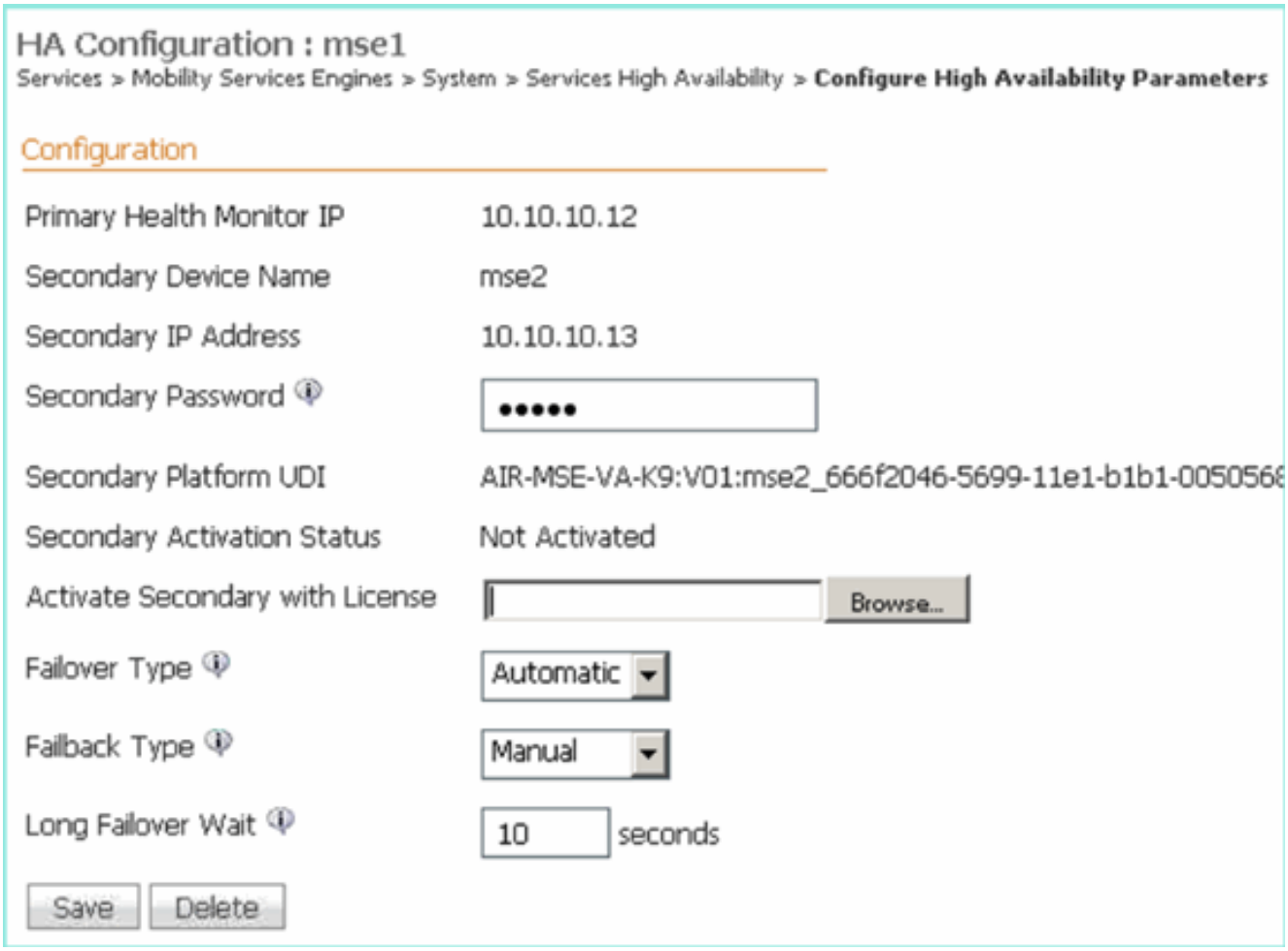


NCS创建配置需要几秒钟，如图所示。

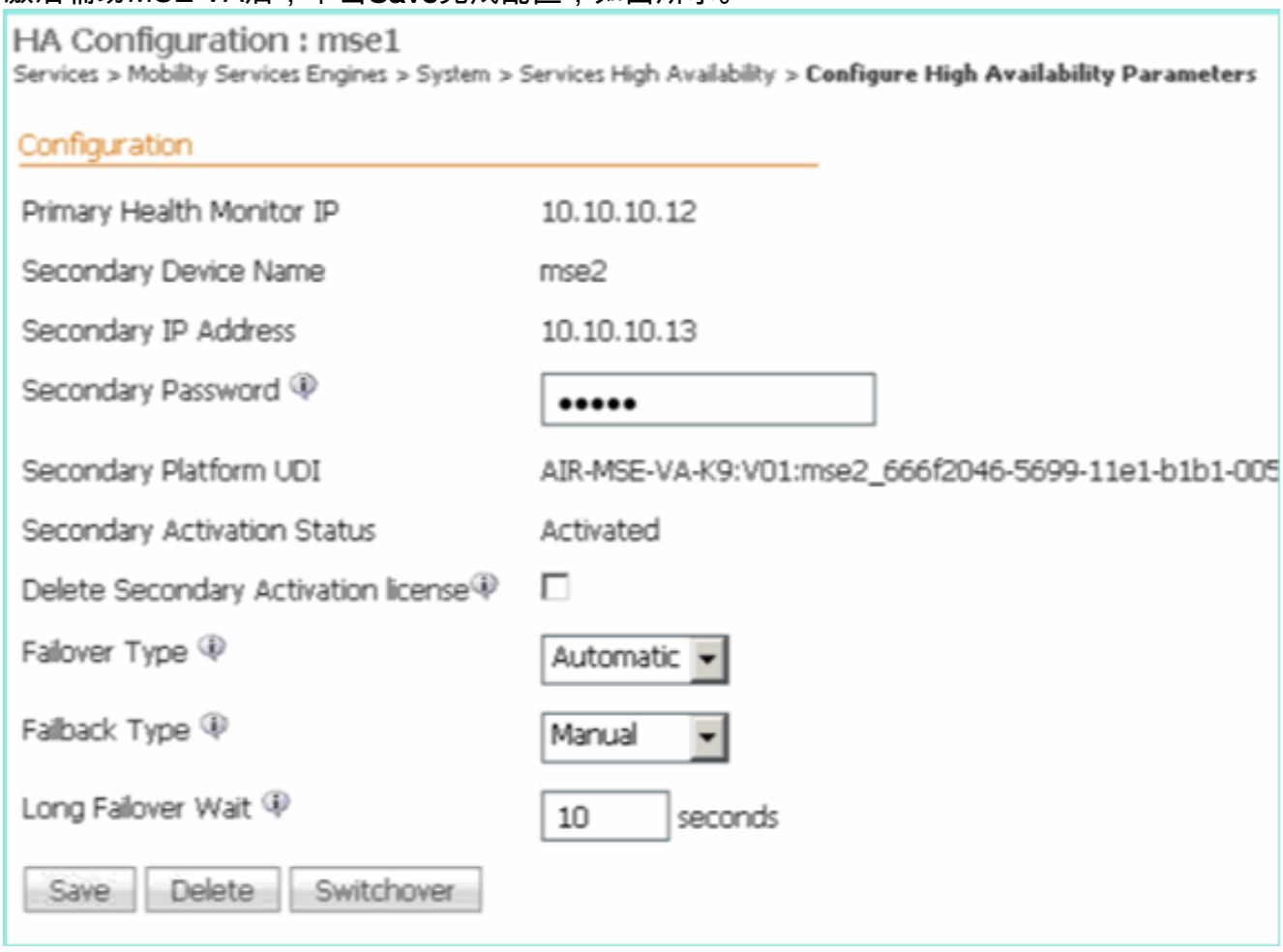
如图所示，如果辅助MSE VA需要激活许可证(L-MSE-7.0-K9),NCS会提示。



4. 单击**OK**并找到许可证文件以激活辅助，如图所示。

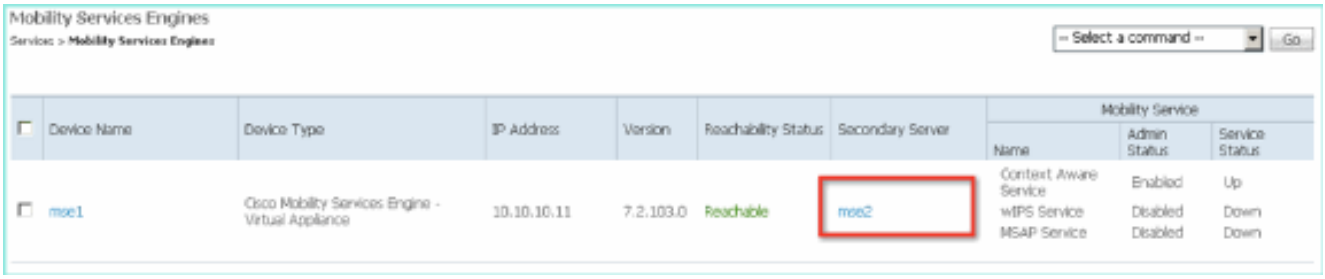


5. 激活辅助MSE VA后，单击**Save**完成配置，如图所示。

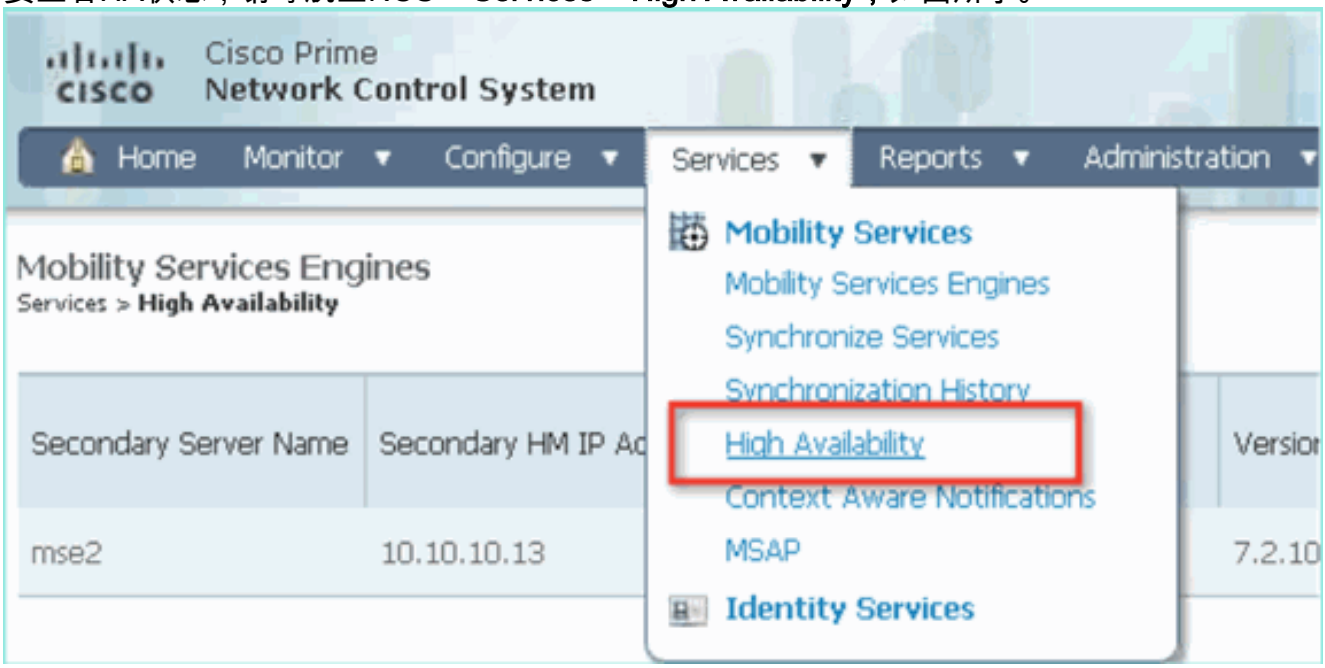


6. 导航至**NCS > Mobility Services > Mobility Services Engine**。NCS显示此屏幕，其中辅助

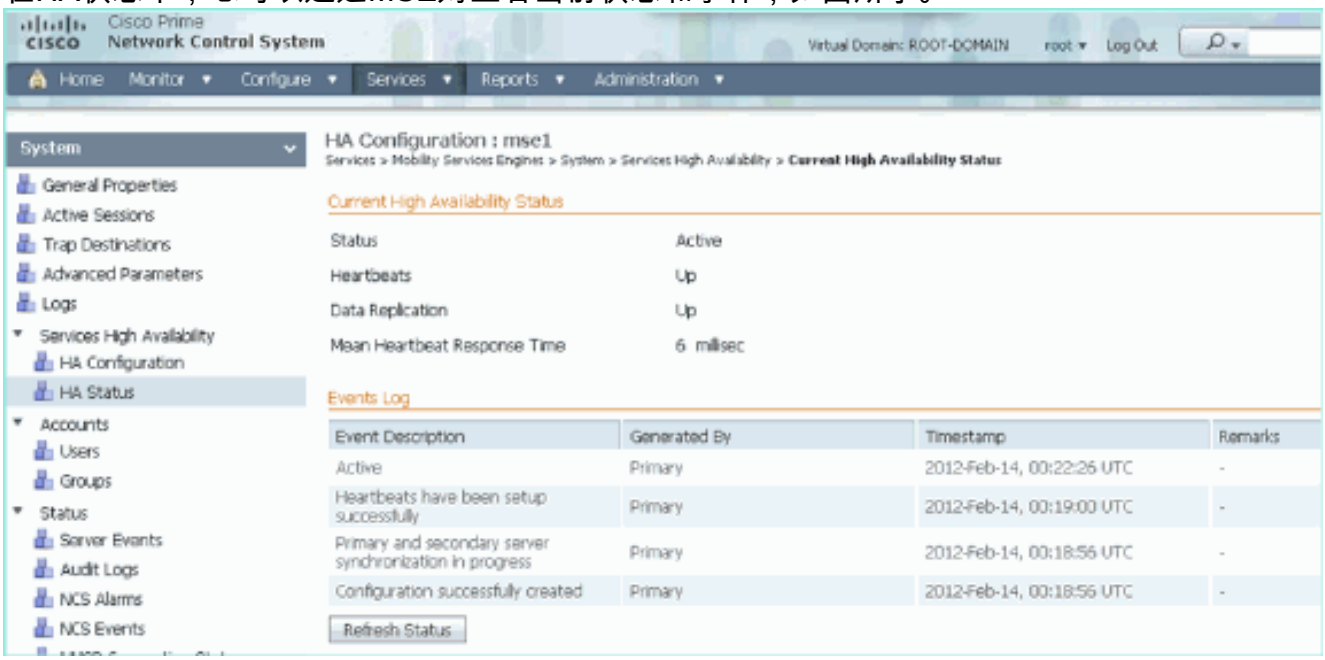
MSE显示在辅助服务器的列中
：



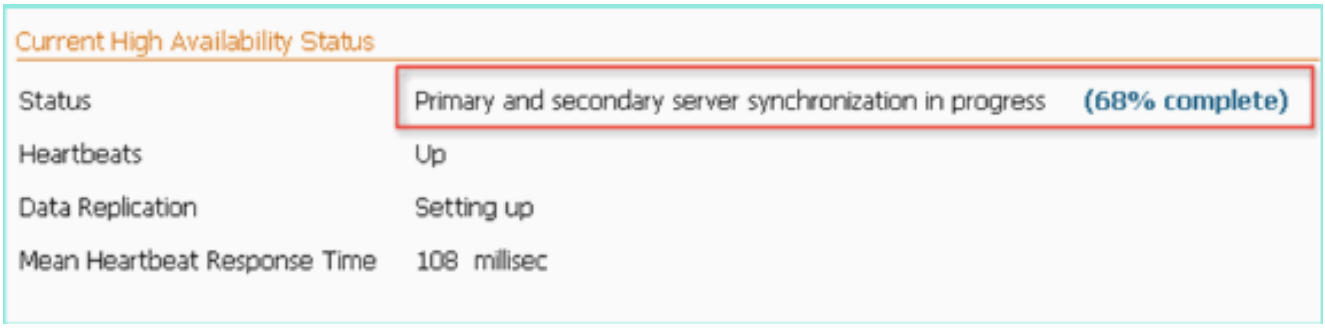
7. 要查看HA状态，请导航至NCS **> Services > High Availability**，如图所示。



在HA状态中，您可以通过MSE对查看当前状态和事件，如图所示。



初始同步和数据复制设置可能需要几分钟时间。NCS提供进度%指示，直到HA对完全处于活动状态，如前面所示，如图所示。



MSE软件版本7.2引入的与HA相关的新命令是**gethainfo**。此输出显示主和辅助：

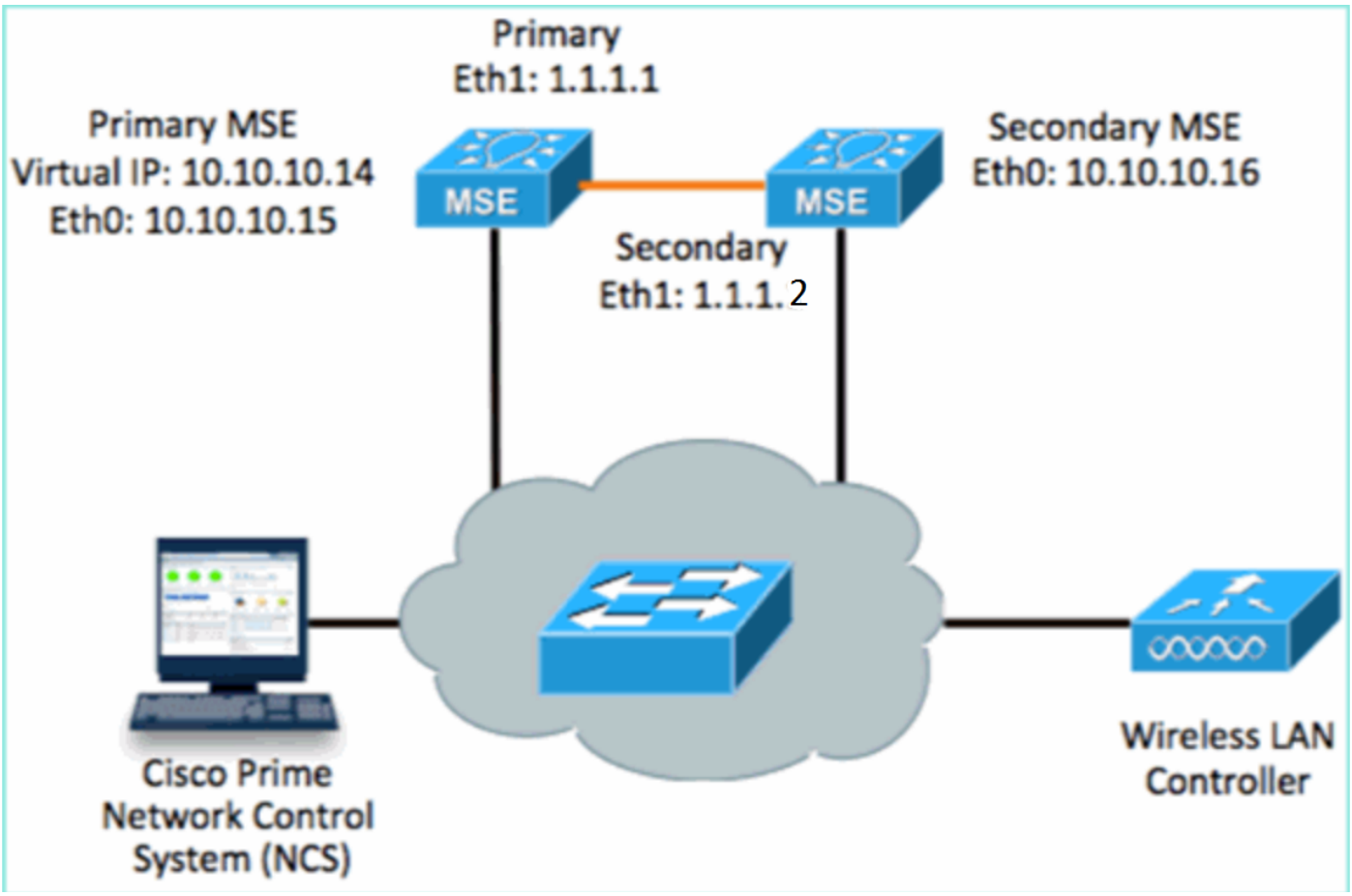
```
[root@mse1 ~]#gethainfo

Health Monitor is running. Retrieving HA related information

------------------------------------------------
Base high availability configuration for this server
------------------------------------------------

Server role: Primary
Health Monitor IP Address: 10.10.10.12
Virtual IP Address: 10.10.10.11
Version: 7.2.103.0
UDI: AIR-MSE-VA-K9:V01:mse1
Number of paired peers: 1

---------------------------
Peer configuration#: 1
---------------------------

Health Monitor IP Address 10.10.10.13
Virtual IP Address: 10.10.10.11
Version: 7.2.103.0
UDI: AIR-MSE-VA-K9:V01:mse2_666f2046-5699-11e1-b1b1-0050568901d9
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3s
Instance database port: 1624
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Up
Current state: PRIMARY_ACTIVE


[root@mse2 ~]#gethainfo

Health Monitor is running. Retrieving HA related information

------------------------------------------------
Base high availability configuration for this server
------------------------------------------------

Server role: Secondary
Health Monitor IP Address: 10.10.10.13
Virtual IP Address: Not Applicable for a secondary
Version: 7.2.103.0
UDI: AIR-MSE-VA-K9:V01:mse2
Number of paired peers: 1
```

```
---------------------------
Peer configuration#: 1
---------------------------

Health Monitor IP Address 10.10.10.12
Virtual IP Address: 10.10.10.11
Version: 7.2.103.0
UDI: AIR-MSE-VA-K9:V01:mse1_d5972642-5696-11e1-bd0c-0050568901d6
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3
Instance database port: 1524
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Up
Current state: SECONDARY_ACTIVE
```

直接连接的HA配置

网络连接MSE HA使用网络，而直接连接配置则便于在主MSE服务器和辅助MSE服务器之间使用直接电缆连接。这有助于减少心跳响应时间、数据复制和故障检测时间的延迟。在此场景中，主物理MSE连接到接口eth1上的辅助MSE，如图5所示。请注意，Eth1用于直接连接。每个接口都需要一个IP地址。

图 5：带直接连接的MSE高可用性



1. 设置主MSE。从设置脚本进行配置的摘要：

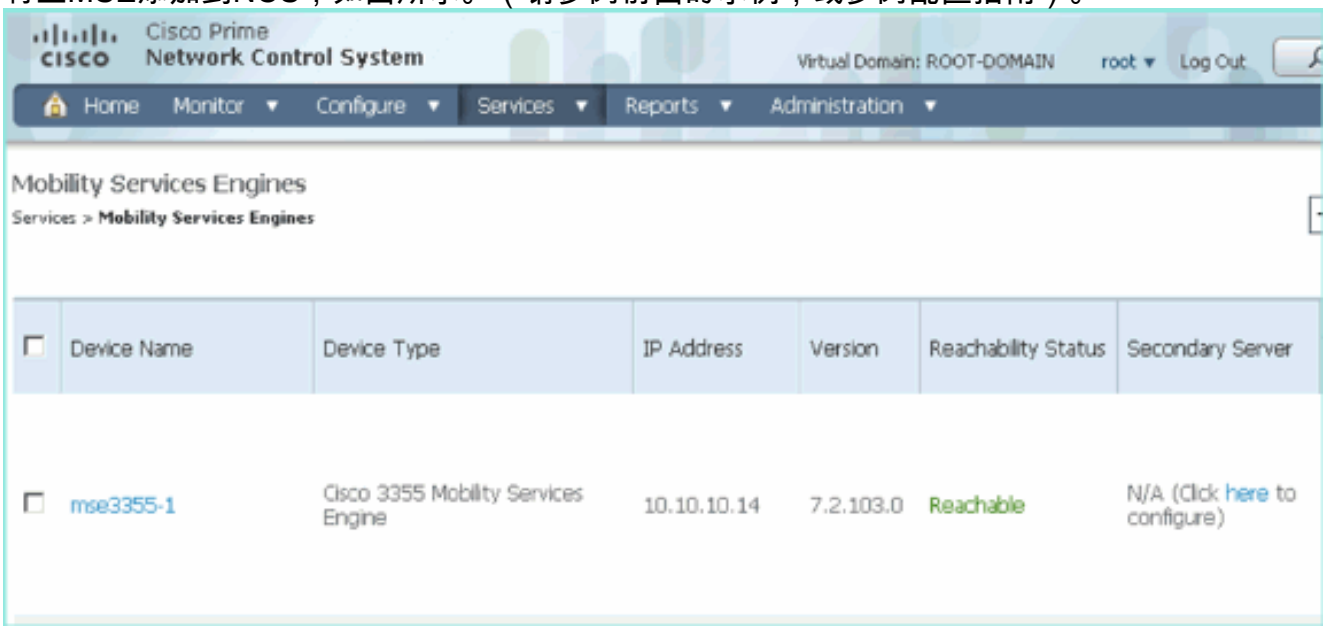
```
-------BEGIN--------
Host name=mse3355-1
Role=1 [Primary]
```

```
Health Monitor Interface=eth0
Direct connect interface=eth1
Virtual IP Address=10.10.10.14
Virtual IP Netmask=255.255.255.0
Eth1 IP address=1.1.1.1
Eth1 network mask=255.0.0.0
Default Gateway =10.10.10.1
-------END--------
```

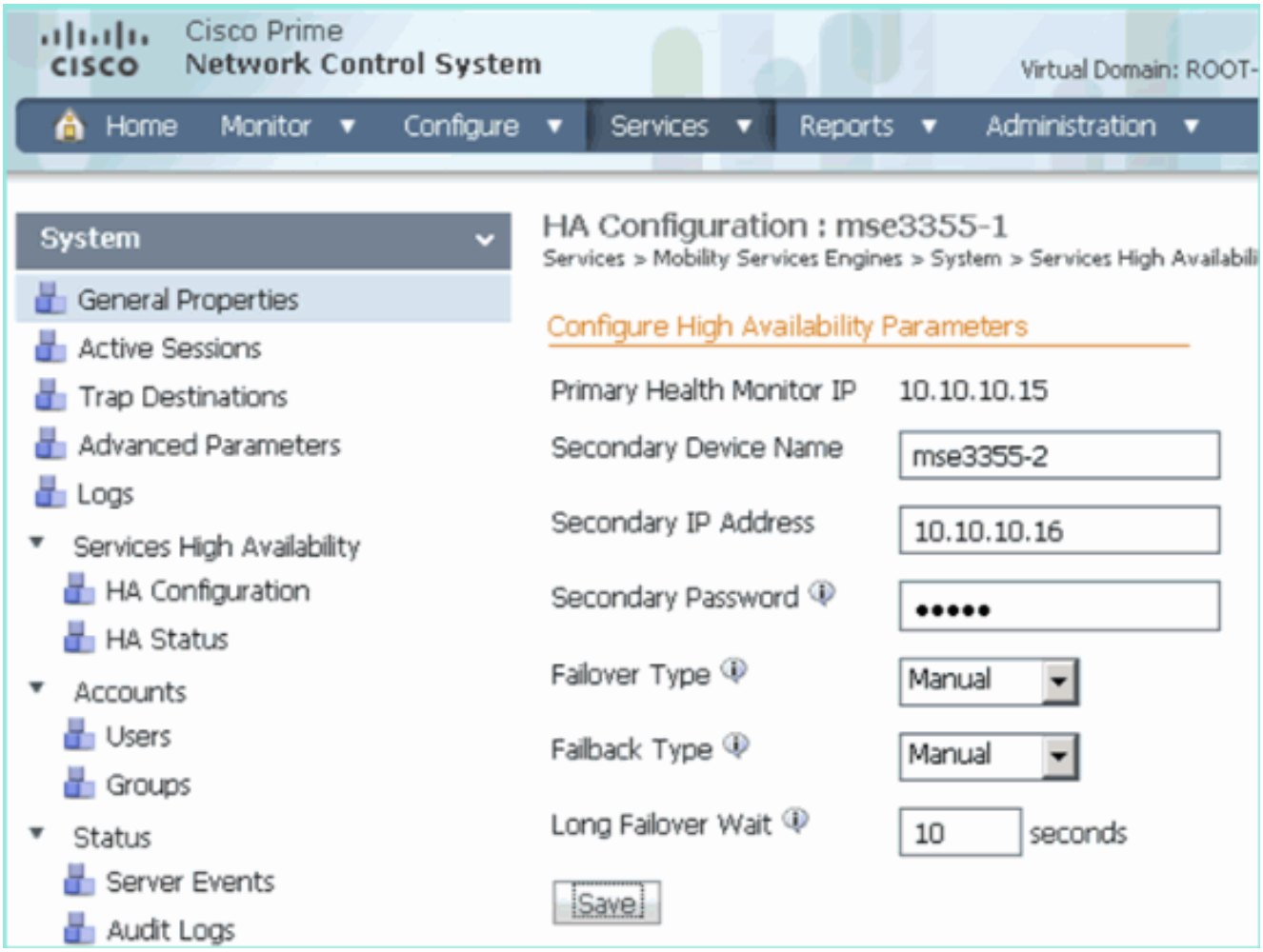
2. 设置辅助MSE。从设置脚本进行配置的摘要：

```
-------BEGIN--------
Host name=mse3355-2
Role=2 [Secondary]
Health Monitor Interface=eth0
Direct connect interface=eth1
Eth0 IP Address 10.10.10.16
Eth0 network mask=255.255.255.0
Default Gateway=10.10.10.1
Eth1 IP address=1.1.1.2,
Eth1 network mask=255.0.0.0
-------END--------
```

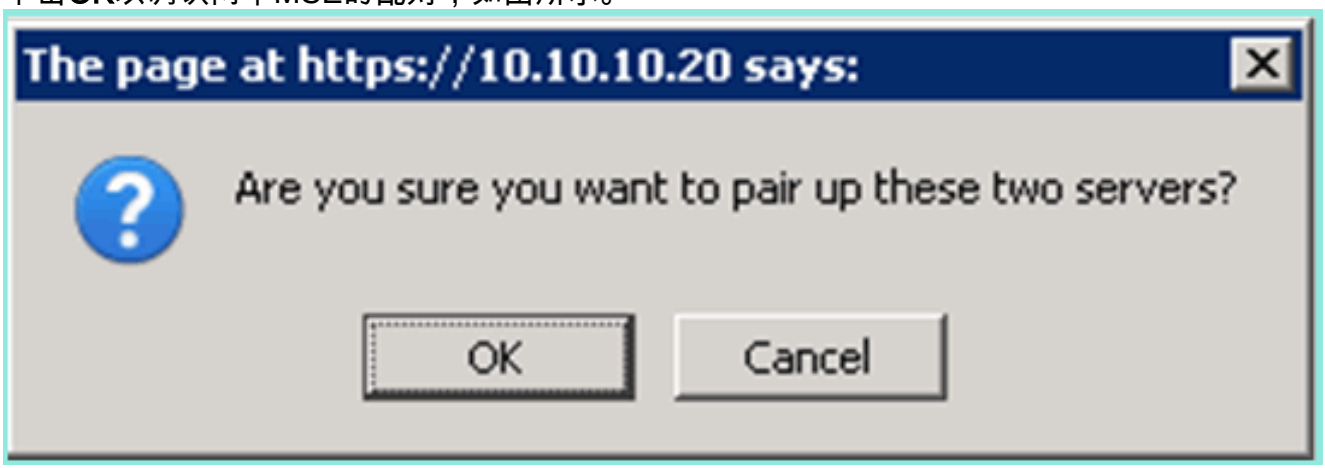
3. 将主MSE添加到NCS，如图所示。（请参阅前面的示例，或参阅配置指南）。



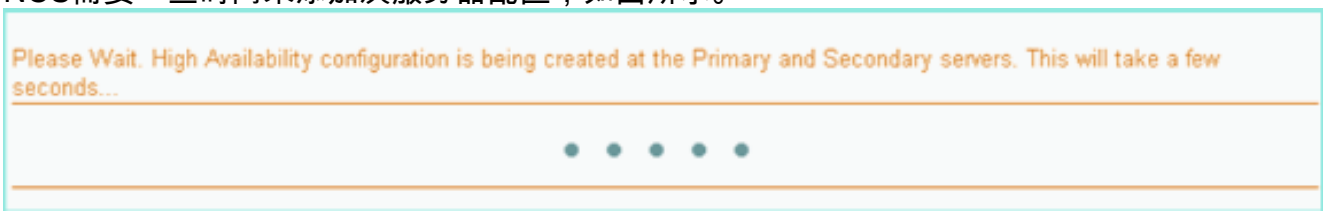
4. 要设置辅助MSE，请导航至NCS **>配置辅助服务器**。输入辅助设备名**称 — [mse3355-2]**辅助IP地**址 — [10.10.10.16]**完成其余参数，然后单**击**"保存"，如图所示。



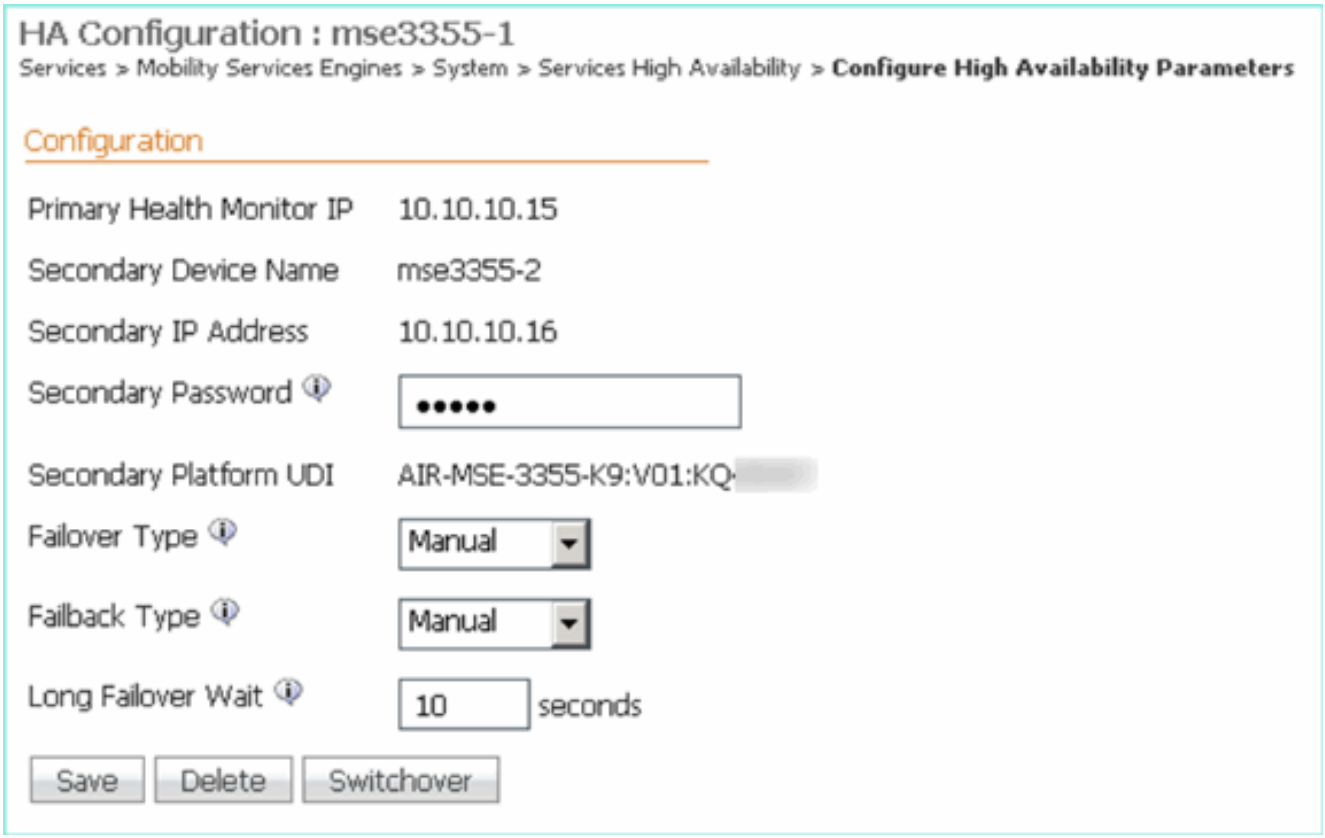
5. 单击**OK**以确认两个MSE的配对，如图所示。



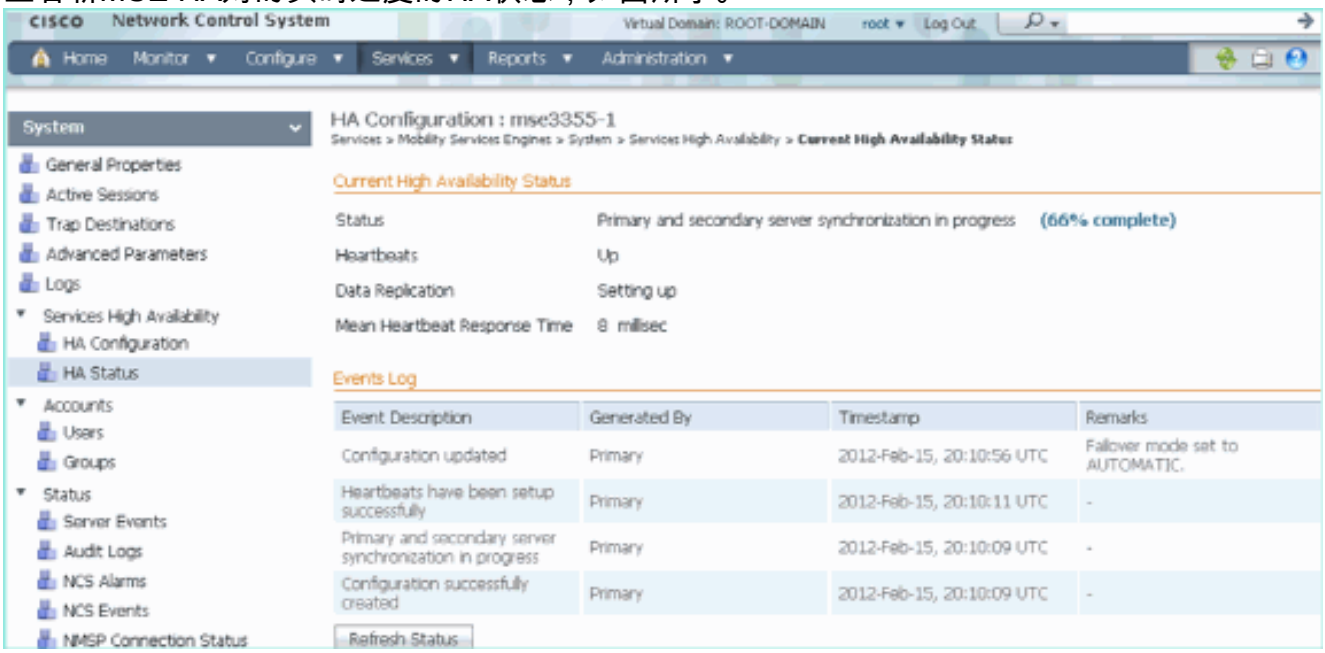
NCS需要一些时间来添加次服务器配置，如图所示。



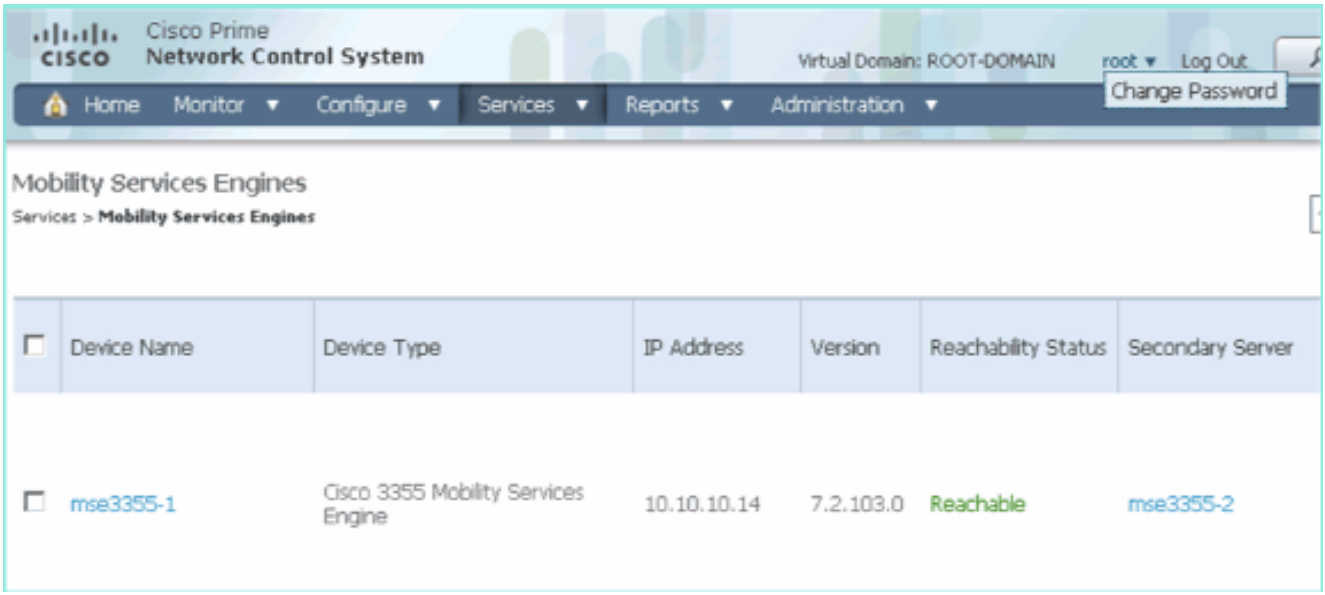
6. 完成后，对HA参数进行任何更改。点击**保存**（如图所示）。



7. 查看新MSE HA对的实时进度的HA状态，如图所示。



8. 导航至**NCS > Services > Mobility Services > Mobility Services Engines**，确认MSE（直接连接）HA已添加到NCS，如图所示。



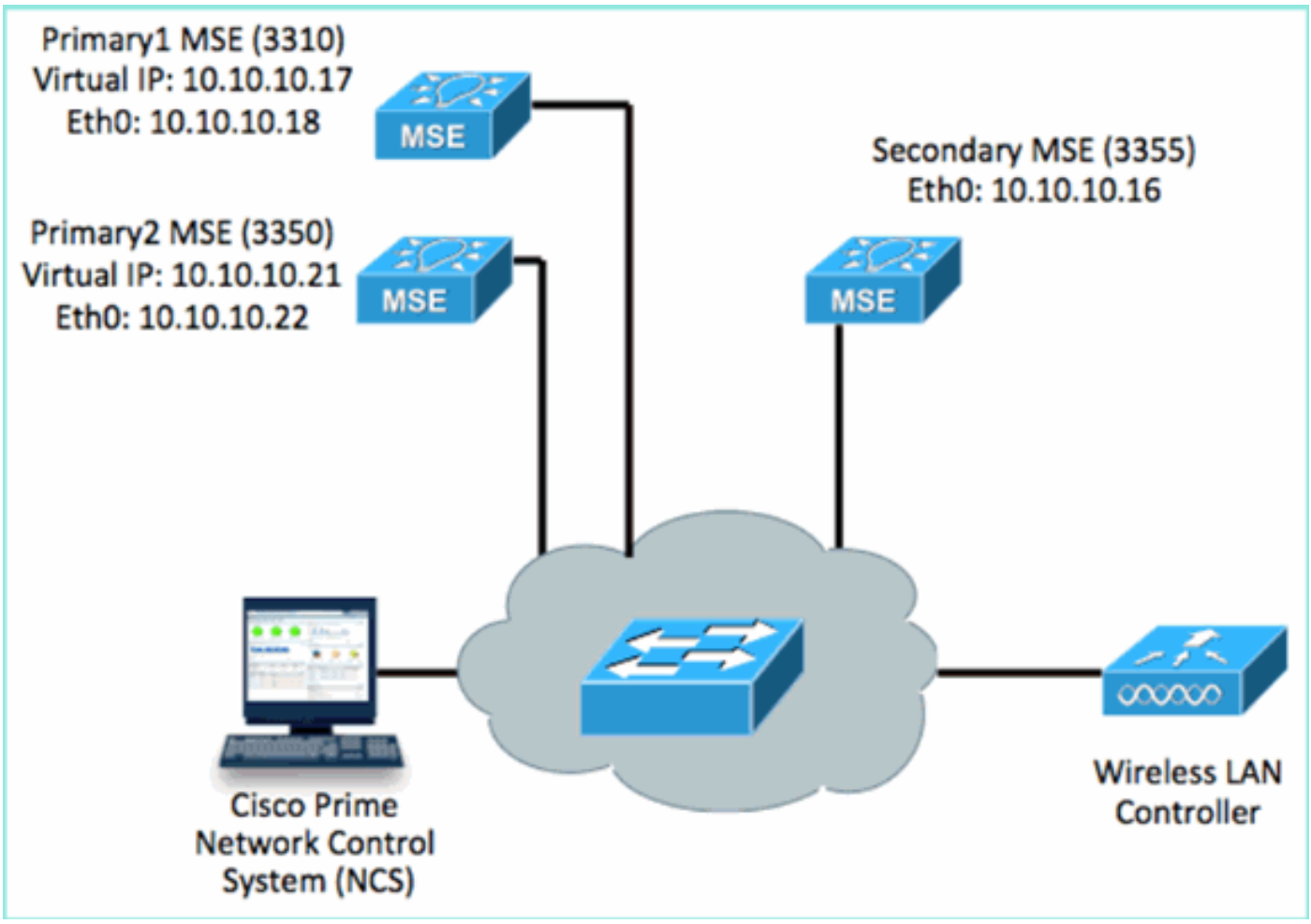
9. 从控制台，也可以使用gethainfo命令查看确认。以下是主输出和辅助输出：

```
[root@mse3355-1 ~]#gethainfo

Health Monitor is running. Retrieving HA related information

-----------------------------------------------------
Base high availability configuration for this server
-----------------------------------------------------

Server role: Primary
Health Monitor IP Address: 10.10.10.15
Virtual IP Address: 10.10.10.14
Version: 7.2.103.0
UDI: AIR-MSE-3355-K9:V01:KQ37xx
Number of paired peers: 1

----------------------------
Peer configuration#: 1
----------------------------

Health Monitor IP Address 10.10.10.16
Virtual IP Address: 10.10.10.14
Version: 7.2.103.0
UDI: AIR-MSE-3355-K9:V01:KQ45xx
Failover type: Automatic
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3s
Instance database port: 1624
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: Yes
Heartbeat status: Up
Current state: PRIMARY_ACTIVE

[root@mse3355-2 ~]#gethainfo

Health Monitor is running. Retrieving HA related information

-----------------------------------------------------
Base high availability configuration for this server
-----------------------------------------------------

Server role: Secondary
Health Monitor IP Address: 10.10.10.16
```

```
Virtual IP Address: Not Applicable for a secondary
Version: 7.2.103.0
UDI: AIR-MSE-3355-K9:V01:KQ45xx
Number of paired peers: 1

----------------------------
Peer configuration#: 1
----------------------------

Health Monitor IP Address 10.10.10.15
Virtual IP Address: 10.10.10.14
Version: 7.2.103.0
UDI: AIR-MSE-3355-K9:V01:KQ37xx
Failover type: Automatic
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3
Instance database port: 1524
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: Yes
Heartbeat status: Up
Current state: SECONDARY_ACTIVE
```

MSE物理设备的高可用性配置方案

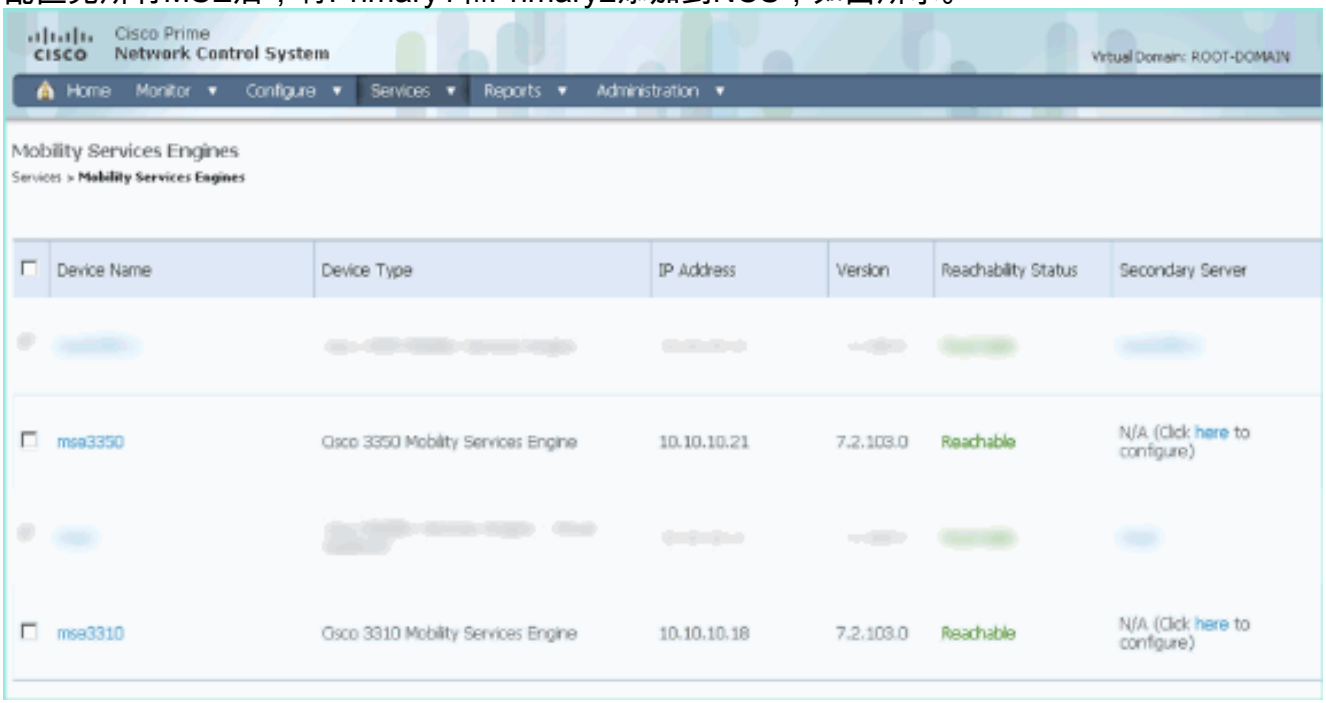
根据配对矩阵，HA配置中的最大值为2:1。这保留给MSE-3355，在辅助模式下，MSE-3310和MSE-3350可支持。直接连接在此场景中不适用。



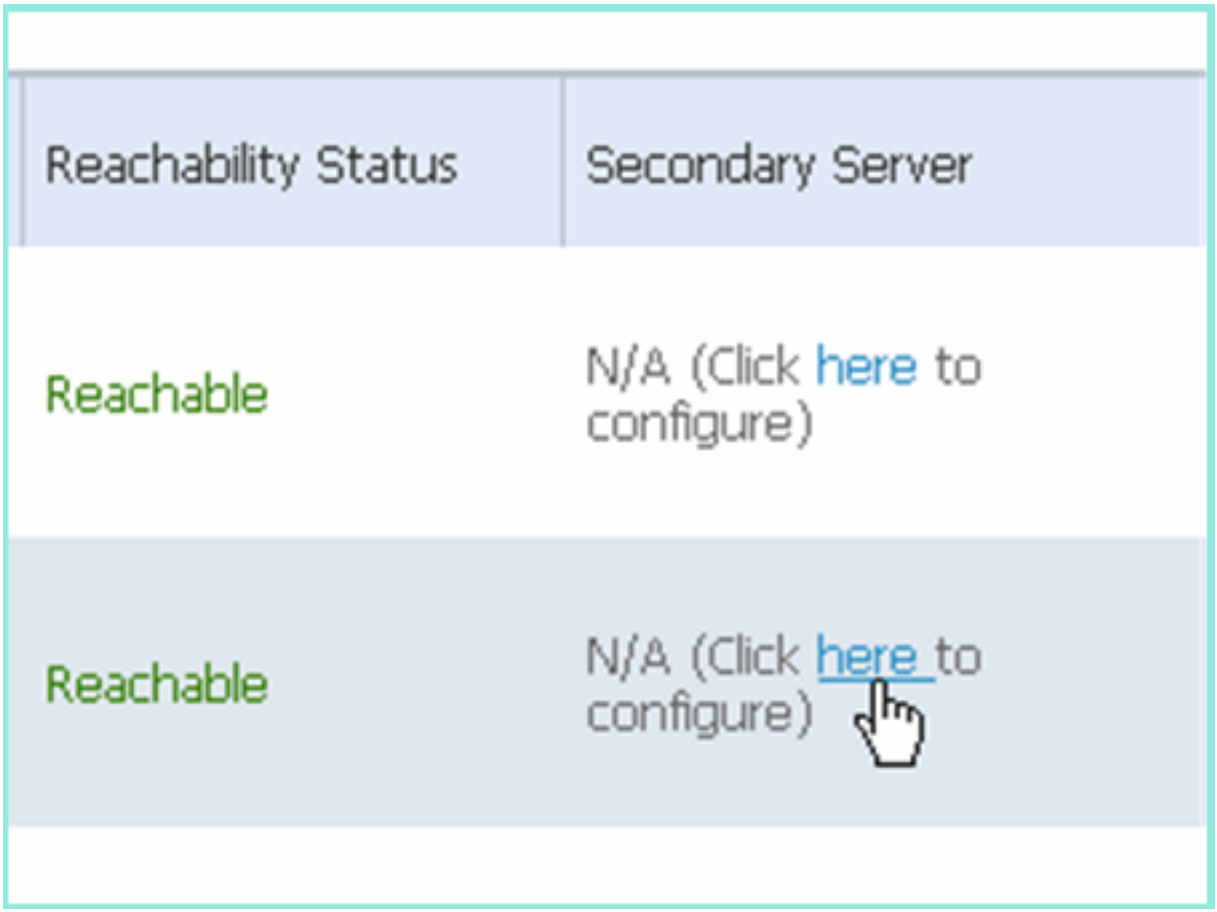
1. 配置每个MSE以演示2:1的高可用性场景：

```
MSE-3310 (Primary1)
Server role: Primary
Health Monitor IP Address (Eth0): 10.10.10.17
Virtual IP Address: 10.10.10.18
Eth1 – Not Applicable

MSE-3350 (Primary2)
Server role: Primary
Health Monitor IP Address: 10.10.10.22
Virtual IP Address: 10.10.10.21
Eth1 – Not Applicable

MSE-3355 (Secondary)
Server role: Secondary
Health Monitor IP Address: 10.10.10.16
Virtual IP Address: Not Applicable for a secondary
```

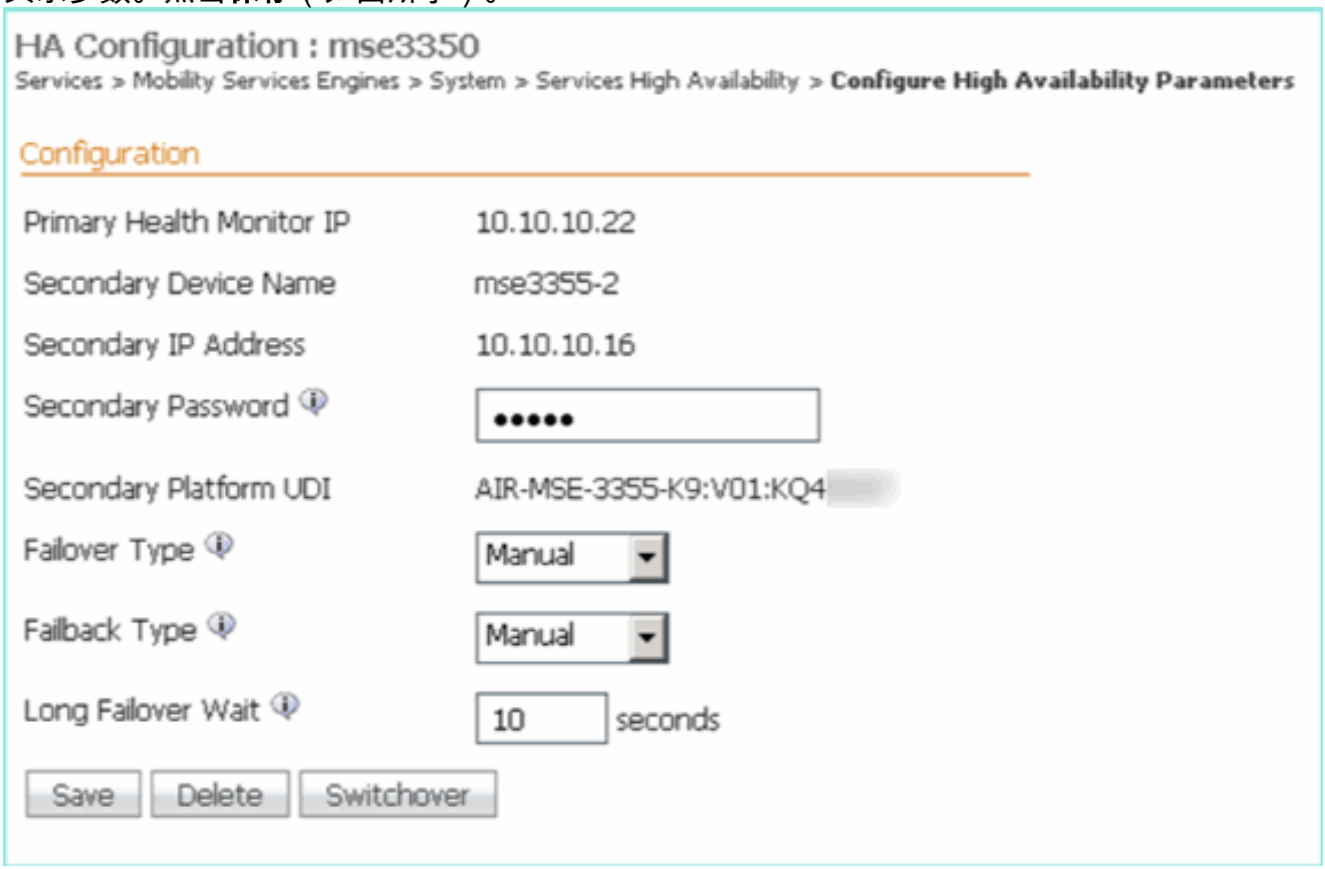
2. 配置完所有MSE后，将Primary1和Primary2添加到NCS，如图所示。



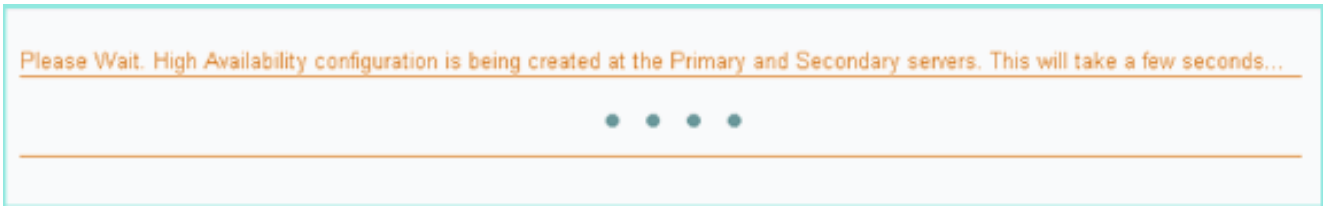
3. 单击以配置辅助服务器（如前面的示例所示）。 从任一主MSE开始，如图所示。



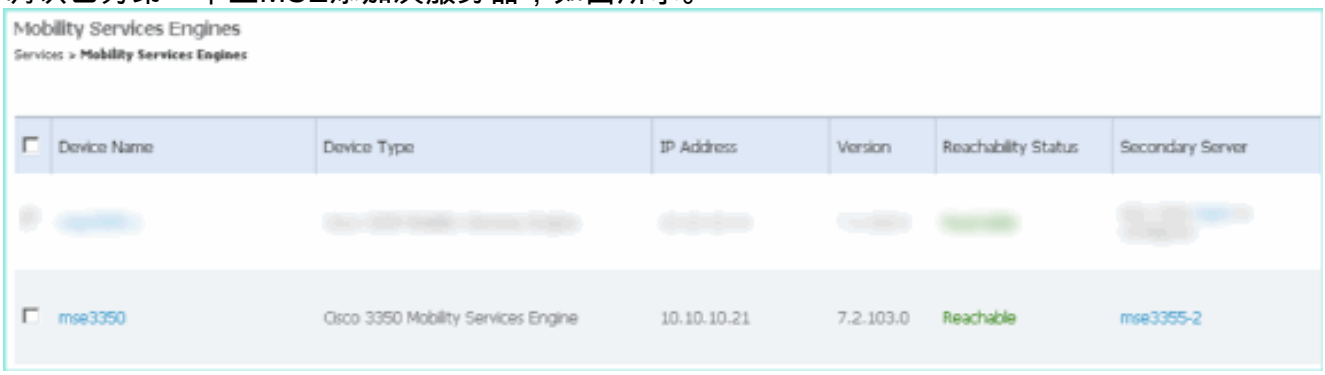
4. 输入辅助MSE的参数：辅助设备名称：例如，**[mse-3355-2]**辅助IP地**址 — [10.10.10.16]**完成其余参数。点击**保存**（如图所示）。



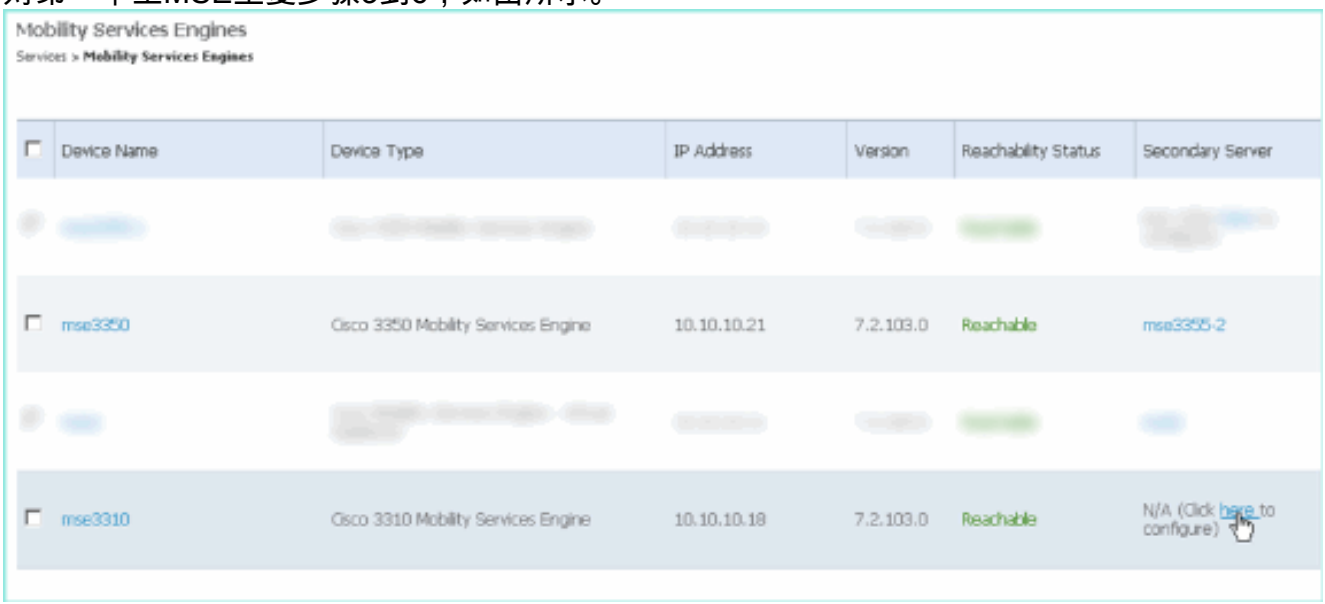
5. 请稍等片刻，让第一个辅助条目配置如图所示。



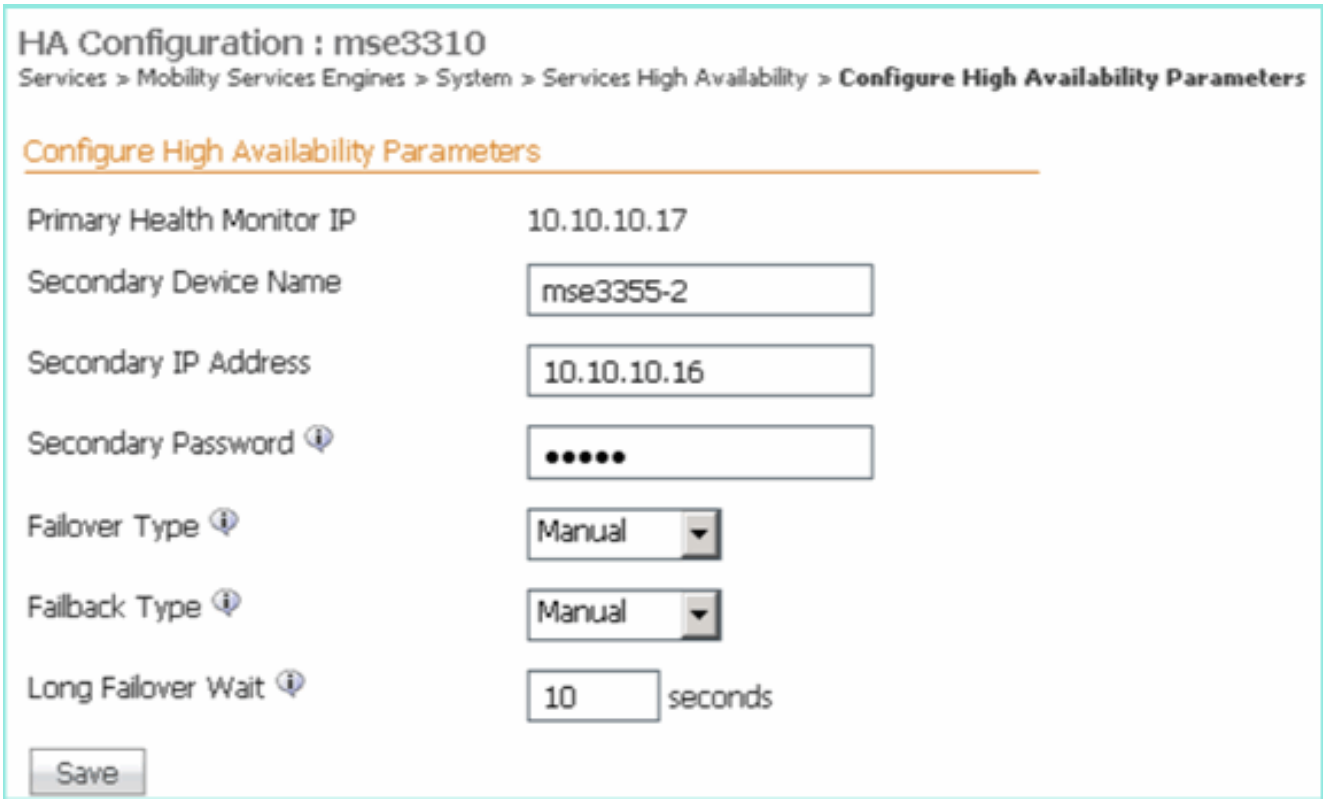
6. 确认已为第一个主MSE添加次服务器，如图所示。



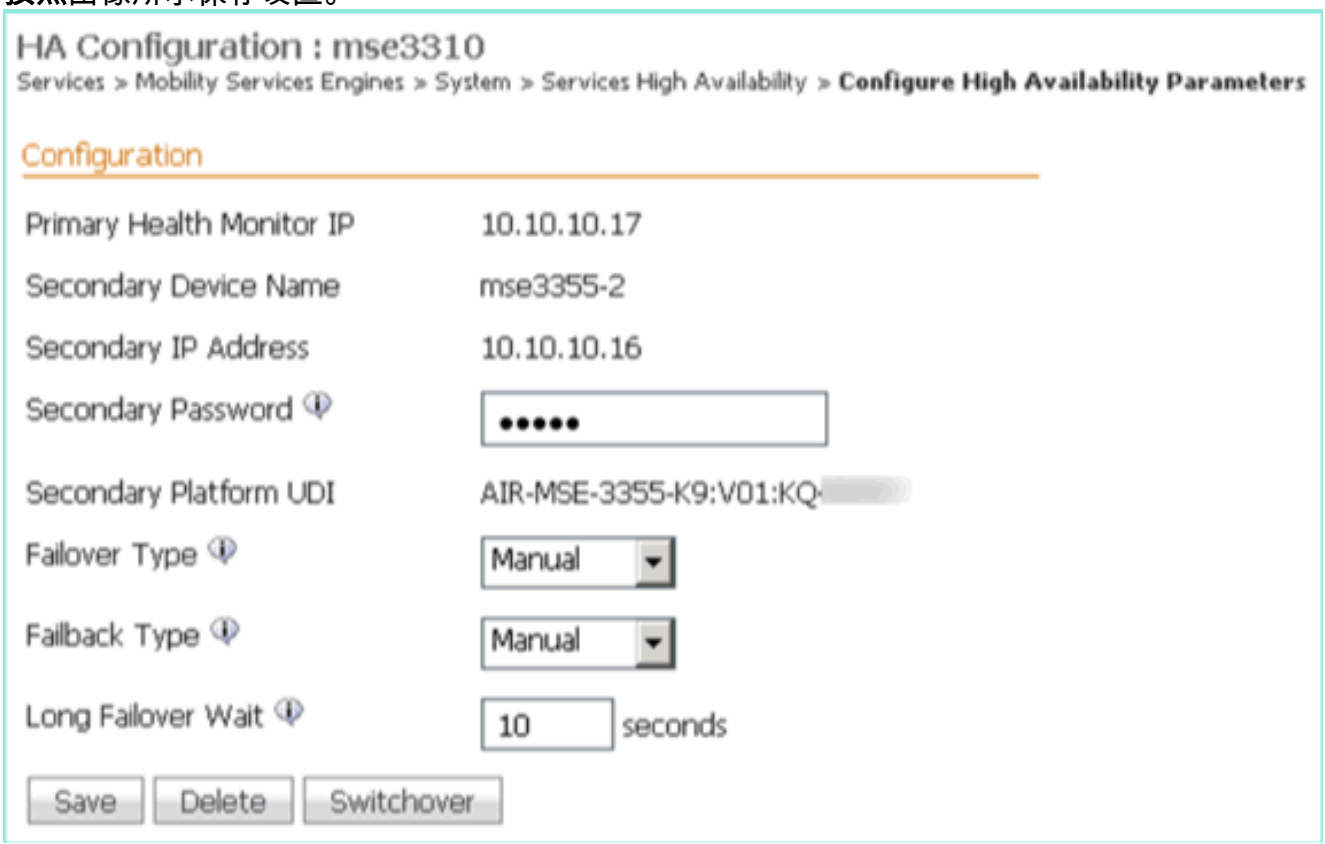
7. 对第二个主MSE重复步骤3到6，如图所示。



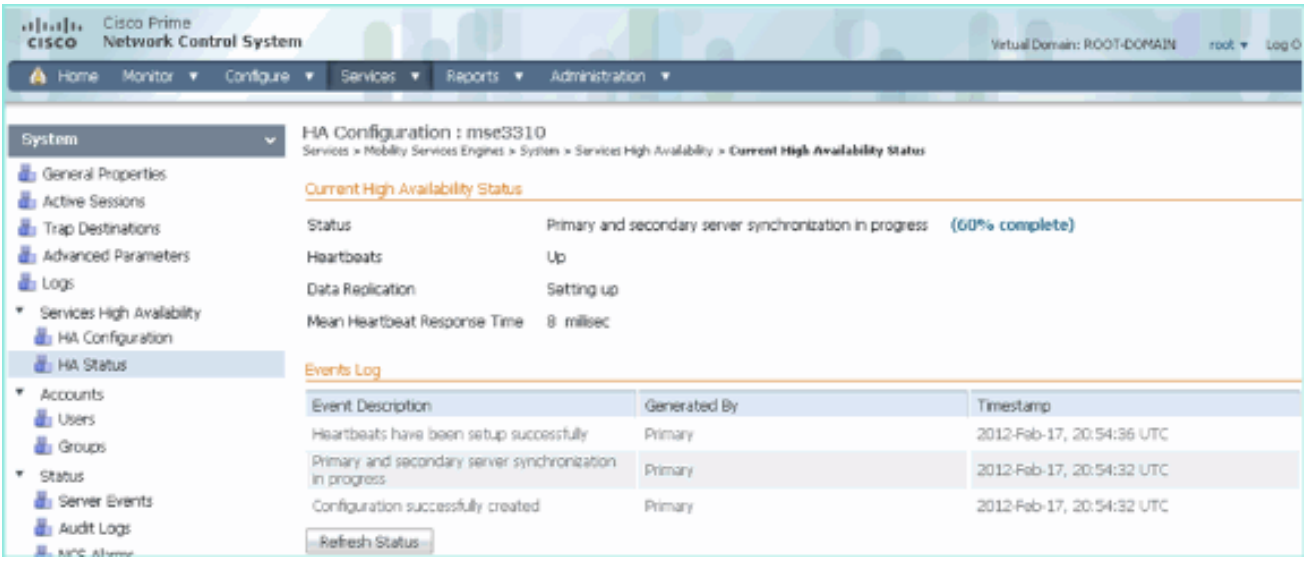
8. 使用第二个主MSE的HA参数完成，如图所示。



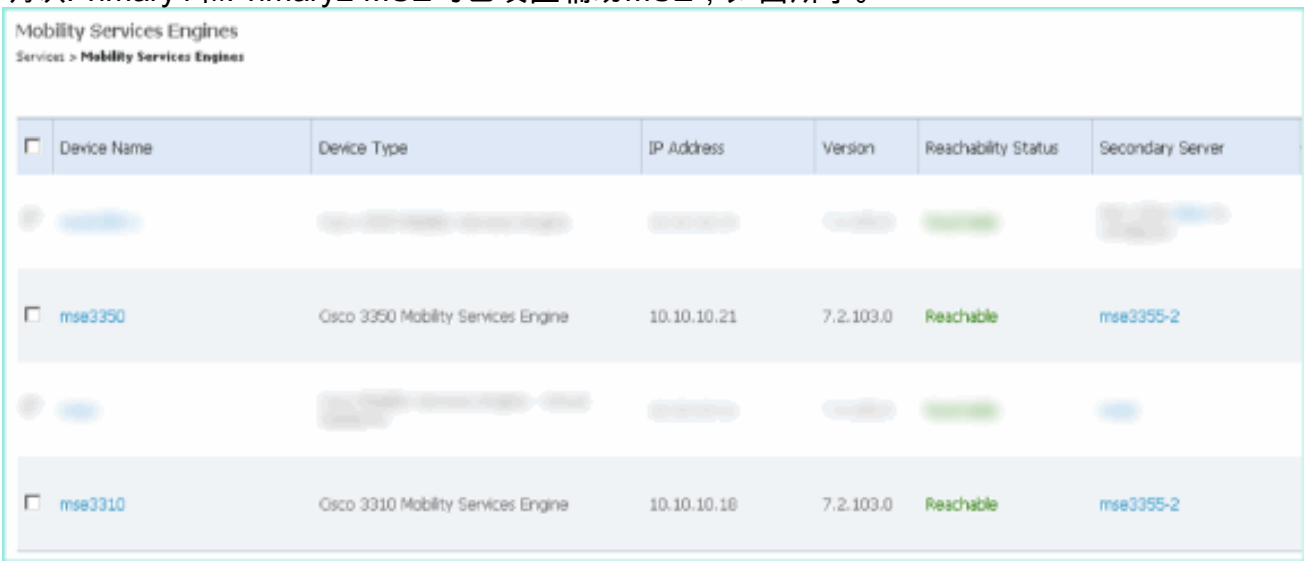
9. **按照**图像所示保存设置。



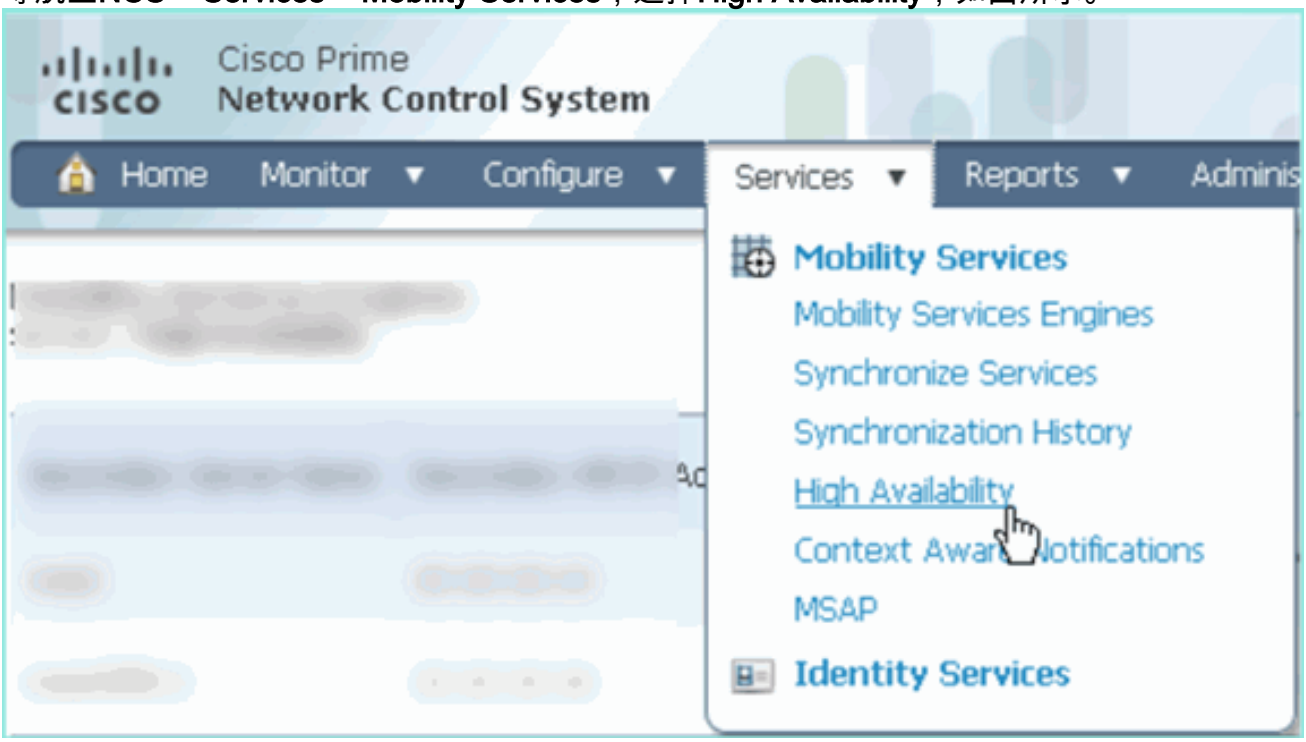
10. 检查每个主MSE的进度状态，如图所示。



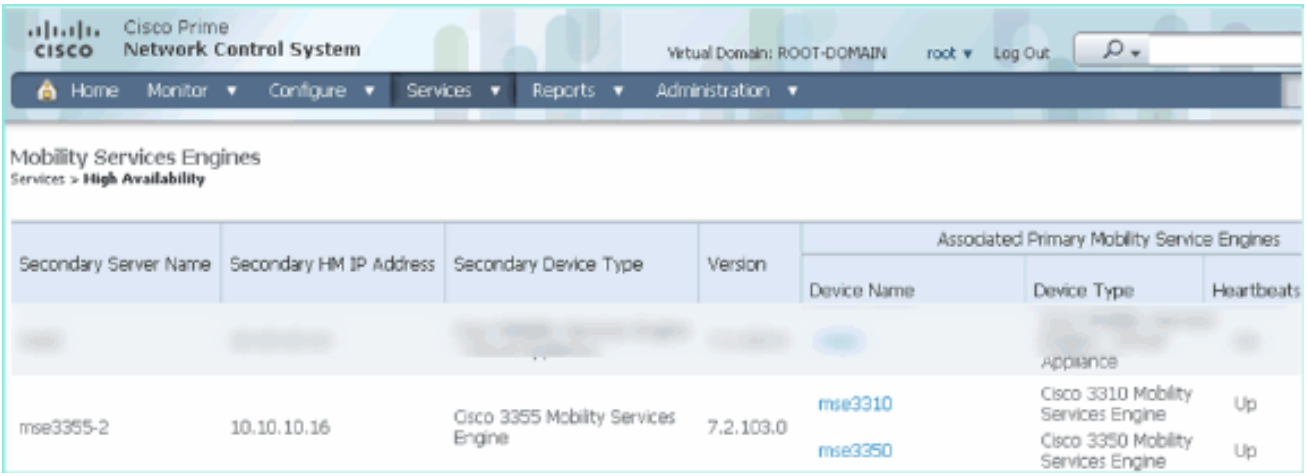
11. 确认Primary1和Primary2 MSE均已设置辅助MSE，如图所示。



12. 导航至**NCS > Services > Mobility Services**，选择**High Availability**，如图所示。



请注意，MSE-3355已确认为MSE-3310和MSE-3350的辅助设备为2:1，如图所示。

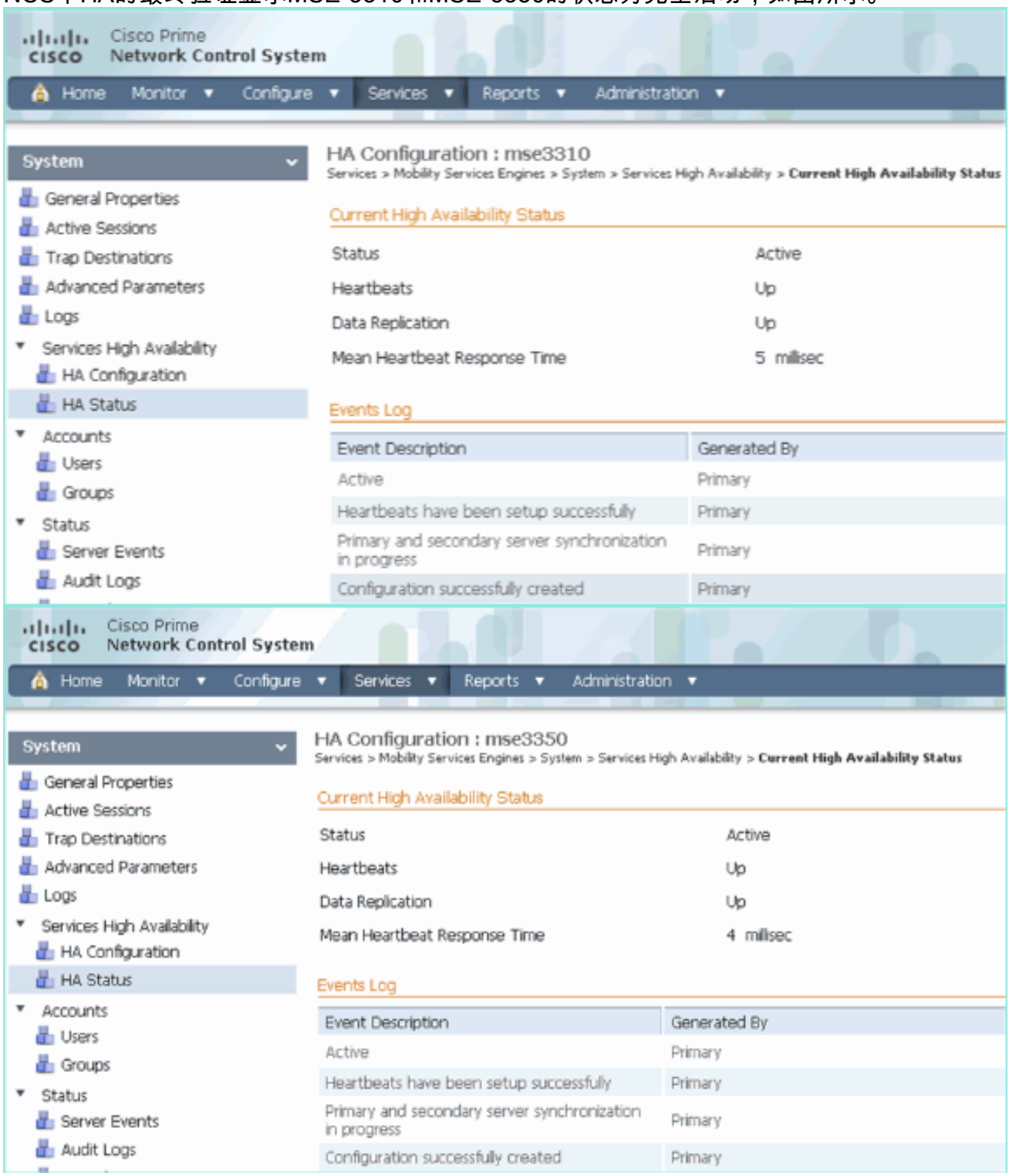


以下是使用gethainfo命令时，所有三个MSE的控制台中HA设置的输出示例：

```
[root@mse3355-2 ~]#gethainfo

Health Monitor is running. Retrieving HA related information

-----------------------------------------------------
Base high availability configuration for this server
-----------------------------------------------------

Server role: Secondary
Health Monitor IP Address: 10.10.10.16
Virtual IP Address: Not Applicable for a secondary
Version: 7.2.103.0
UDI: AIR-MSE-3355-K9:V01:KQ45xx
Number of paired peers: 2

----------------------------
Peer configuration#: 1
----------------------------

Health Monitor IP Address 10.10.10.22
Virtual IP Address: 10.10.10.21
Version: 7.2.103.0
UDI: AIR-MSE-3350-K9:V01:MXQ839xx
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3
Instance database port: 1524
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Up
Current state: SECONDARY_ACTIVE


----------------------------
Peer configuration#: 2
----------------------------

Health Monitor IP Address 10.10.10.17
Virtual IP Address: 10.10.10.18
Version: 7.2.103.0
UDI: AIR-MSE-3310-K9:V01:FTX140xx
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos4
Instance database port: 1525
```

```
Dataguard configuration name: dg_mse4
Primary database alias: mseop4s
Direct connect used: No
Heartbeat status: Up
Current state: SECONDARY_ACTIVE
```

NCS中HA的最终验证显示MSE-3310和MSE-3350的状态为完全活动，如图所示。



验证

当前没有可用于此配置的验证过程。

MSE HA的基本故障排除

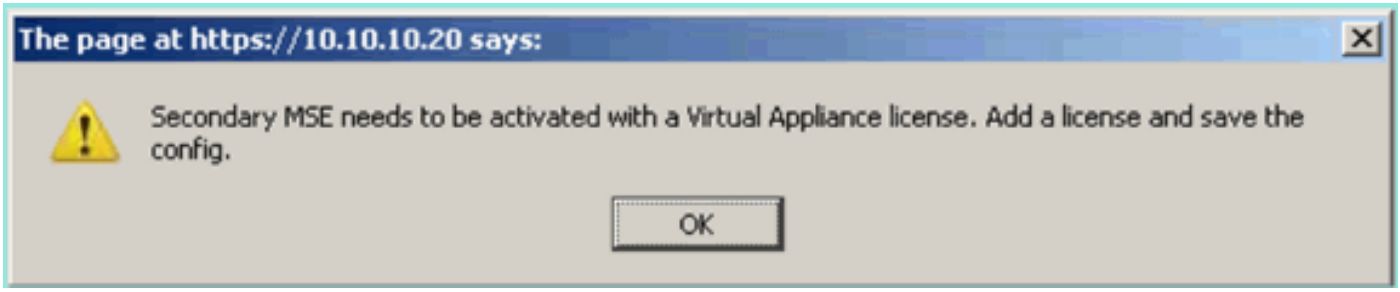
本部分提供了可用于对配置进行故障排除的信息。

添加辅助MSE时，您会看到如图所示的提示。

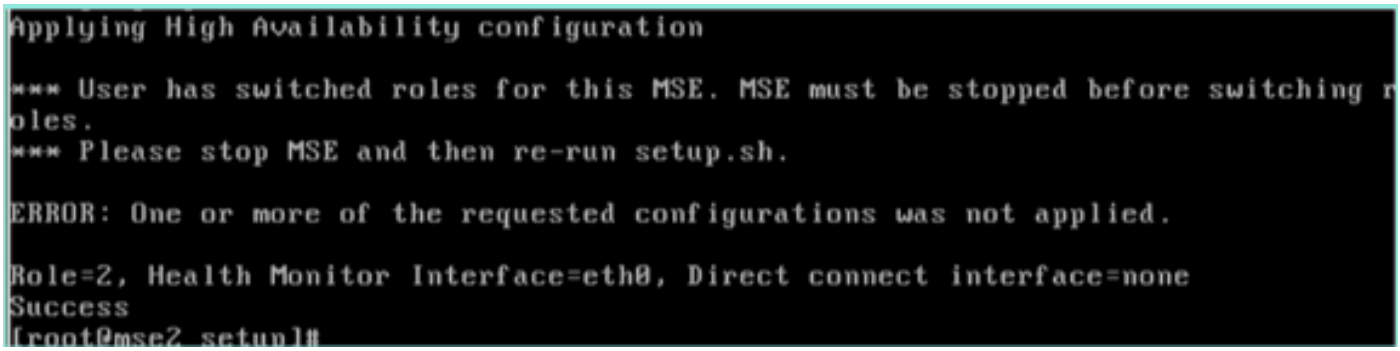
可能是，在设置脚本期间出现问题。

- 运行**getserverinfo**命令以检查网络设置是否正确。
- 服务也可能尚未启动。运行**/init.d/msed start命**令。
- 如果需要，请再次运行安装脚本(**/mse/setup/setup.sh**)，并在末尾保存。

MSE的VA还需要激活许可证(L-MSE-7.0-K9)。 否则，当您添加辅助MSE VA时，NCS会提示。获取并添加MSE VA的激活许可证，如图所示。



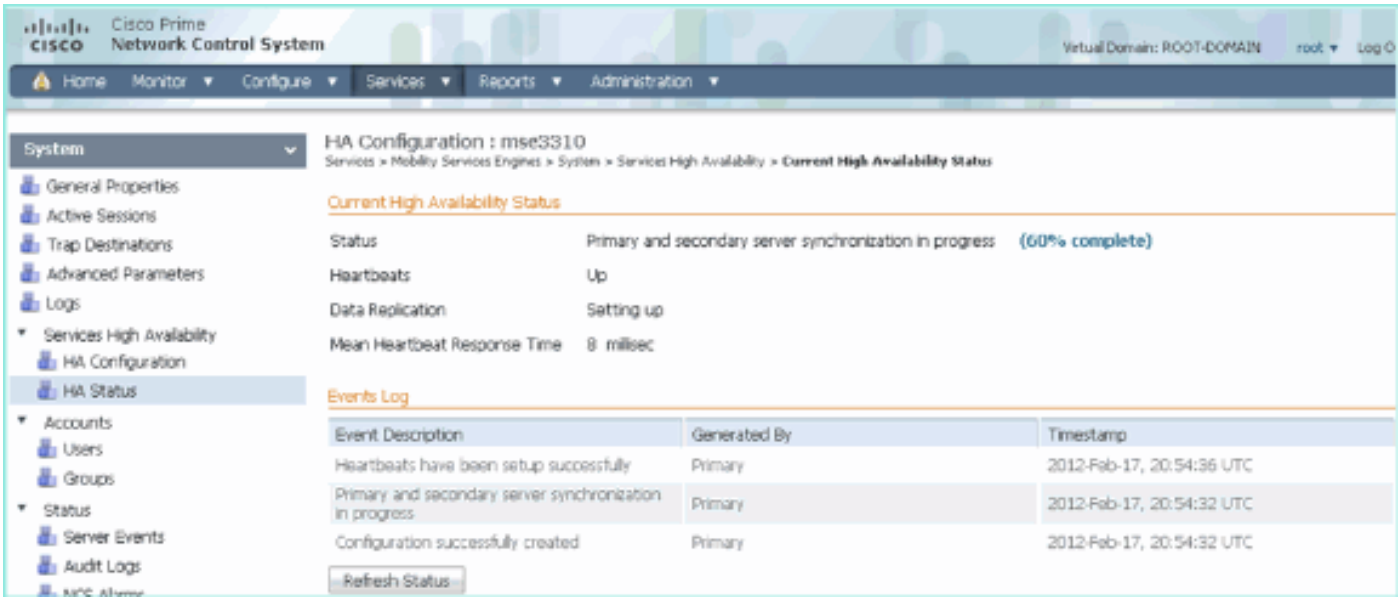
如果在MSE上交换HA角色，请确保服务完全停止。因此，请使用/init.d/msed **stop命令停**止服务，然后再次运行设置脚本(**/mse/setup/setup.sh**)，如图所示。



运行**gethainfo**命令以获取MSE上的HA信息。这为排除故障或监控HA状态和更改提供了有用的信息。

```
[root@mse3355-2 ~]#gethainfo

Health Monitor is running. Retrieving HA related information

-----------------------------------------------------
Base high availability configuration for this server
-----------------------------------------------------

Server role: Secondary
Health Monitor IP Address: 10.10.10.16
Virtual IP Address: Not Applicable for a secondary
Version: 7.2.103.0
UDI: AIR-MSE-3355-K9:V01:KQ45xx
Number of paired peers: 2

----------------------------
Peer configuration#: 1
----------------------------

Health Monitor IP Address 10.10.10.22
Virtual IP Address: 10.10.10.21
Version: 7.2.103.0
UDI: AIR-MSE-3350-K9:V01:MXQ839xx
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3
Instance database port: 1524
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Up
Current state: SECONDARY_ACTIVE


----------------------------
Peer configuration#: 2
----------------------------

Health Monitor IP Address 10.10.10.17
Virtual IP Address: 10.10.10.18
Version: 7.2.103.0
UDI: AIR-MSE-3310-K9:V01:FTX140xx
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos4
Instance database port: 1525
Dataguard configuration name: dg_mse4
Primary database alias: mseop4s
Direct connect used: No
Heartbeat status: Up
Current state: SECONDARY_ACTIVE
```

此外，NCS HA View是一个非常好的管理工具，可以查看MSE的HA设置，如图所示。



故障切换/故障恢复场景

仅在手动故障切换/故障恢复的情况下，以便更好地控制。

主设备已启动，辅助设备已准备好接管

配置MSE HA并启动并运行后，Prime上的状态如图所示:

Current High Availability Status

Status	Active
Heartbeats	Up
Data Replication	Up
Mean Heartbeat Response Time	12 millisec

Events Log

Event Description	Generated By	Timestamp
Active	Primary	2015-Mar-08, 12:50:17 CET
Heartbeats have been setup successfully	Primary	2015-Mar-08, 12:39:17 CET
Primary and secondary server synchronization in progress	Primary	2015-Mar-08, 12:39:13 CET
Configuration successfully created	Primary	2015-Mar-08, 12:39:11 CET

以下是主**MSE的**getserverinfo**和**gethainfo:

```
[root@NicoMSE ~]# getserverinfo
Health Monitor is running
Retrieving MSE Services status.
MSE services are up, getting the status
```

```
-------------
Server Config
-------------

Product name: Cisco Mobility Service Engine
Version: 8.0.110.0
Health Monitor Ip Address: 10.48.39.238
High Availability Role: 1
Hw Version: V01
Hw Product Identifier: AIR-MSE-VA-K9
Hw Serial Number: NicoMSE_b950a7c0-b68c-11e4-99d9-005056993b63
HTTPS: null
Legacy Port: 8001
Log Modules: -1
Log Level: INFO
Days to keep events: 2
Session timeout in mins: 30
DB backup in days: 2

-------------
Services
-------------

Service Name: Context Aware Service
Service Version: 8.0.1.79
Admin Status: Disabled
Operation Status: Down

Service Name: WIPS
Service Version: 3.0.8155.0
Admin Status: Enabled
Operation Status: Up

Service Name: Mobile Concierge Service
Service Version: 5.0.1.23
Admin Status: Disabled
Operation Status: Down

Service Name: CMX Analytics
Service Version: 3.0.1.68
Admin Status: Disabled
Operation Status: Down

Service Name: CMX Connect & Engage
Service Version: 1.0.0.29
Admin Status: Disabled
Operation Status: Down

Service Name: HTTP Proxy Service
Service Version: 1.0.0.1
Admin Status: Disabled
Operation Status: Down

--------------
Server Monitor
--------------


Server start time: Sun Mar 08 12:40:32 CET 2015
Server current time: Sun Mar 08 14:04:30 CET 2015
Server timezone: Europe/Brussels
Server timezone offset (mins): 60
Restarts: 1
Used Memory (MB): 197
```

```
Allocated Memory (MB): 989
Max Memory (MB): 989
DB disk size (MB): 17191

---------------
Active Sessions
---------------

Session ID: 5672
Session User ID: 1
Session IP Address: 10.48.39.238
Session start time: Sun Mar 08 12:44:54 CET 2015
Session last access time: Sun Mar 08 14:03:46 CET 2015

----------------------------
Default Trap Destinations
----------------------------

Trap Destination - 1
-----------------
IP Address: 10.48.39.225
Last Updated: Sun Mar 08 12:34:12 CET 2015


[root@NicoMSE ~]# gethainfo

Health Monitor is running. Retrieving HA related information

-----------------------------------------------------
Base high availability configuration for this server
-----------------------------------------------------

Server role: Primary
Health Monitor IP Address: 10.48.39.238
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE_b950a7c0-b68c-11e4-99d9-005056993b63
Number of paired peers: 1

----------------------------
Peer configuration#: 1
----------------------------

Health Monitor IP Address 10.48.39.240
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE2_1c6b1940-b6a5-11e4-b017-005056993b66
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3s
Instance database port: 1624
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Up
Current state: PRIMARY_ACTIVE
```

辅助MSE的情况相同：

```
[root@NicoMSE2 ~]# getserverinfo
Health Monitor is running
Retrieving MSE Services status.
```

MSE services are up and in DORMANT mode, getting the status

Server Config

Product name: Cisco Mobility Service Engine
Version: 8.0.110.0
Health Monitor Ip Address: 10.48.39.240
High Availability Role: 2
Hw Version: V01
Hw Product Identifier: AIR-MSE-VA-K9
Hw Serial Number: NicoMSE2_1c6b1940-b6a5-11e4-b017-005056993b66
HTTPS: null
Legacy Port: 8001
Log Modules: -1
Log Level: INFO
Days to keep events: 2
Session timeout in mins: 30
DB backup in days: 2

Services

Service Name: Context Aware Service
Service Version: 8.0.1.79
Admin Status: Disabled
Operation Status: Down

Service Name: WIPS
Service Version: 3.0.8155.0
Admin Status: Enabled
Operation Status: Up

Service Name: Mobile Concierge Service
Service Version: 5.0.1.23
Admin Status: Disabled
Operation Status: Down

Service Name: CMX Analytics
Service Version: 3.0.1.68
Admin Status: Disabled
Operation Status: Down

Service Name: CMX Connect & Engage
Service Version: 1.0.0.29
Admin Status: Disabled
Operation Status: Down

Service Name: HTTP Proxy Service
Service Version: 1.0.0.1
Admin Status: Disabled
Operation Status: Down

Server Monitor

Server start time: Sun Mar 08 12:50:04 CET 2015
Server current time: Sun Mar 08 14:04:32 CET 2015
Server timezone: Europe/Brussels

```
Server timezone offset (mins): 60
Restarts: null
Used Memory (MB): 188
Allocated Memory (MB): 989
Max Memory (MB): 989
DB disk size (MB): 17191
[root@NicoMSE2 ~]# gethainfo

Health Monitor is running. Retrieving HA related information

------------------------------------------------
Base high availability configuration for this server
------------------------------------------------

Server role: Secondary
Health Monitor IP Address: 10.48.39.240
Virtual IP Address: Not Applicable for a secondary
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE2_1c6b1940-b6a5-11e4-b017-005056993b66
Number of paired peers: 1

---------------------------
Peer configuration#: 1
---------------------------

Health Monitor IP Address 10.48.39.238
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE_b950a7c0-b68c-11e4-99d9-005056993b63
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3
Instance database port: 1524
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Up
Current state: SECONDARY_ACTIVE
```

故障切换到辅助

要手动触发，请在Prime基础设施中进入MSE HA配置，然后单击“切换”(Switchover)。

很快，两台服务器上的gethainfo将转为FAILOVER_INVOKED

主要gethainfo:

```
[root@NicoMSE ~]# gethainfo

Health Monitor is running. Retrieving HA related information

------------------------------------------------
Base high availability configuration for this server
------------------------------------------------

Server role: Primary
Health Monitor IP Address: 10.48.39.238
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
```

```
UDI: AIR-MSE-VA-K9:V01:NicoMSE_b950a7c0-b68c-11e4-99d9-005056993b63
Number of paired peers: 1

----------------------------
Peer configuration#: 1
----------------------------

Health Monitor IP Address 10.48.39.240
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE2_1c6b1940-b6a5-11e4-b017-005056993b66
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3s
Instance database port: 1624
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Down
Current state: FAILOVER_INVOKED
```

辅助gethainfo:

```
[root@NicoMSE2 ~]# gethainfo

Health Monitor is running. Retrieving HA related information

-----------------------------------------------------
Base high availability configuration for this server
-----------------------------------------------------

Server role: Secondary
Health Monitor IP Address: 10.48.39.240
Virtual IP Address: Not Applicable for a secondary
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE2_1c6b1940-b6a5-11e4-b017-005056993b66
Number of paired peers: 1

----------------------------
Peer configuration#: 1
----------------------------

Health Monitor IP Address 10.48.39.238
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE_b950a7c0-b68c-11e4-99d9-005056993b63
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3
Instance database port: 1524
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Down
Current state: FAILOVER_INVOKED
```

故障切换完成后，您将在Prime上看到此映像：

Status	Instance is in failover active state

Events Log

Event Description	Generated By
Instance is in failover active state	Secondary
Failover invoked; starting application instance	Secondary
Failover has been invoked. Reconfiguring instance database	Secondary
Failover invoked; shutting down primary instance	Secondary

主要gethainfo:

```
[root@NicoMSE ~]# gethainfo

Health Monitor is not running. Following information is from the last saved configuration

--------------------------------------------------
Base high availability configuration for this server
--------------------------------------------------

Server role: Primary
Health Monitor IP Address: 10.48.39.238
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE_b950a7c0-b68c-11e4-99d9-005056993b63
Number of paired peers: 1

----------------------------
Peer configuration#: 1
----------------------------

Health Monitor IP Address 10.48.39.240
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE2_1c6b1940-b6a5-11e4-b017-005056993b66
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3s
Instance database port: 1624
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Last shutdown state: FAILOVER_ACTIVE
```

辅助：

```
[root@NicoMSE2 ~]# gethainfo
```

```
Health Monitor is running. Retrieving HA related information

--------------------------------------------------
Base high availability configuration for this server
--------------------------------------------------

Server role: Secondary
Health Monitor IP Address: 10.48.39.240
Virtual IP Address: Not Applicable for a secondary
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE2_1c6b1940-b6a5-11e4-b017-005056993b66
Number of paired peers: 1

---------------------------
Peer configuration#: 1
---------------------------

Health Monitor IP Address 10.48.39.238
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE_b950a7c0-b68c-11e4-99d9-005056993b63
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3
Instance database port: 1524
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Down
Current state: FAILOVER_ACTIVE
```

在此阶段，故障切换完成，辅助MSE完全负责。

需要注意的是，当您执行手动切换时，主MSE上的服务会停止（以模拟主MSE断开的真实事件）

如果将主恢复，则其状态将为“TERMINATED”。 它是正常的，辅助仍是负责的，并显示“FAILOVER_ACTIVE”

无法返回主

在恢复失败之前，必须将主备份打开。

状态随后为“终止”：

```
[root@NicoMSE ~]# gethainfo

Health Monitor is running. Retrieving HA related information

--------------------------------------------------
Base high availability configuration for this server
--------------------------------------------------

Server role: Primary
Health Monitor IP Address: 10.48.39.238
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE_b950a7c0-b68c-11e4-99d9-005056993b63
Number of paired peers: 1
```

```
---------------------------
Peer configuration#: 1
---------------------------

Health Monitor IP Address 10.48.39.240
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE2_1c6b1940-b6a5-11e4-b017-005056993b66
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3s
Instance database port: 1624
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Down
Current state: TERMINATED
```

当您从Prime调用故障恢复时，两个节点都进入“故障恢复活动”状态，该状态不是最终状态（与“故障切换活动”相反）。

主要gethainfo:

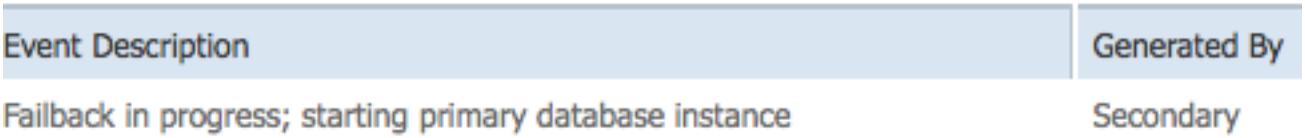
```
[root@NicoMSE ~]# gethainfo

Health Monitor is running. Retrieving HA related information

-----------------------------------------------------
Base high availability configuration for this server
-----------------------------------------------------

Server role: Primary
Health Monitor IP Address: 10.48.39.238
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE_b950a7c0-b68c-11e4-99d9-005056993b63
Number of paired peers: 1

---------------------------
Peer configuration#: 1
---------------------------

Health Monitor IP Address 10.48.39.240
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE2_1c6b1940-b6a5-11e4-b017-005056993b66
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3s
Instance database port: 1624
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Down
Current state: FAILBACK_ACTIVE
```

辅助gethainfo:

```
[root@NicoMSE2 ~]# gethainfo
```

```
Health Monitor is running. Retrieving HA related information

--------------------------------------------------
Base high availability configuration for this server
--------------------------------------------------

Server role: Secondary
Health Monitor IP Address: 10.48.39.240
Virtual IP Address: Not Applicable for a secondary
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE2_1c6b1940-b6a5-11e4-b017-005056993b66
Number of paired peers: 1

---------------------------
Peer configuration#: 1
---------------------------

Health Monitor IP Address 10.48.39.238
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE_b950a7c0-b68c-11e4-99d9-005056993b63
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3
Instance database port: 1524
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Down
Current state: FAILBACK_ACTIVE
```

Prime显示此图像：



当故障恢复完成但辅助仍忙于将数据传回主设备时，主设备显示：

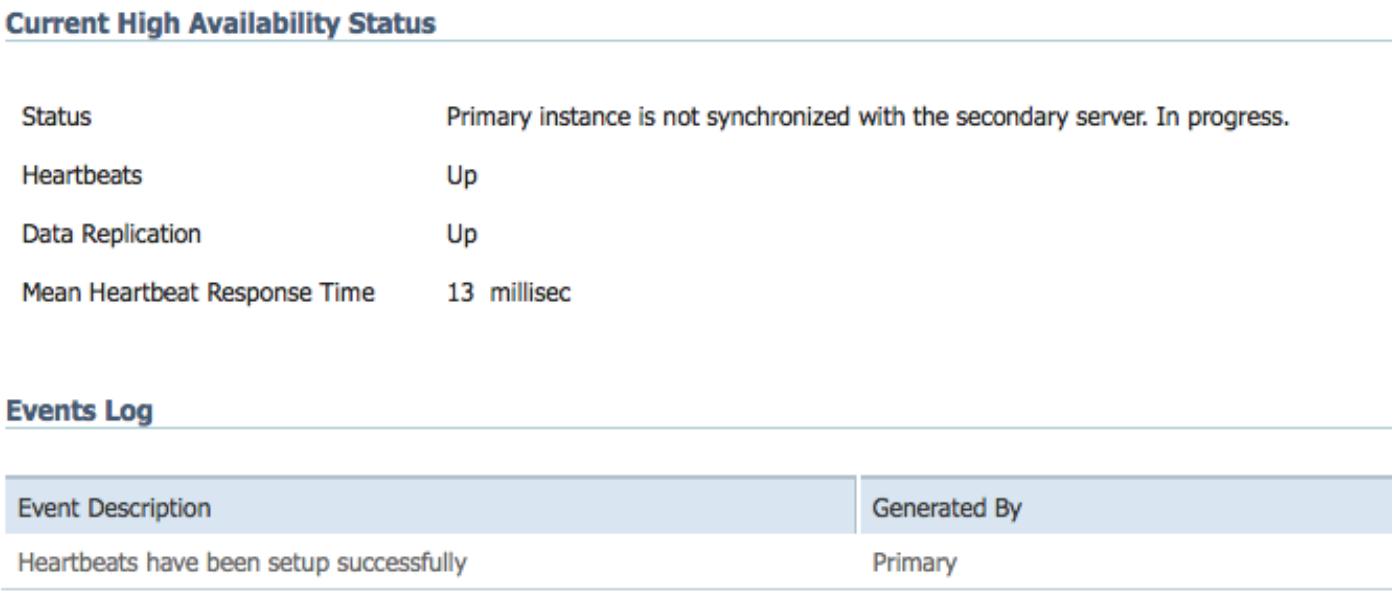
```
 gethainfo

Health Monitor is running. Retrieving HA related information

--------------------------------------------------
Base high availability configuration for this server
--------------------------------------------------

Server role: Primary
Health Monitor IP Address: 10.48.39.238
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE_b950a7c0-b68c-11e4-99d9-005056993b63
Number of paired peers: 1

---------------------------
Peer configuration#: 1
---------------------------

Health Monitor IP Address 10.48.39.240
```

```
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE2_1c6b1940-b6a5-11e4-b017-005056993b66
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3s
Instance database port: 1624
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Up
Current state: FAILBACK_COMPLETE
```

辅助显示：

```
[root@NicoMSE2 ~]# gethainfo

Health Monitor is running. Retrieving HA related information

-----------------------------------------------------
Base high availability configuration for this server
-----------------------------------------------------

Server role: Secondary
Health Monitor IP Address: 10.48.39.240
Virtual IP Address: Not Applicable for a secondary
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE2_1c6b1940-b6a5-11e4-b017-005056993b66
Number of paired peers: 1

----------------------------
Peer configuration#: 1
----------------------------

Health Monitor IP Address 10.48.39.238
Virtual IP Address: 10.48.39.224
Version: 8.0.110.0
UDI: AIR-MSE-VA-K9:V01:NicoMSE_b950a7c0-b68c-11e4-99d9-005056993b63
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3
Instance database port: 1524
Dataguard configuration name: dg_mse3
Primary database alias: mseop3s
Direct connect used: No
Heartbeat status: Up
Current state: SECONDARY_ALONE
```

此阶段的Prime如图所示：



完成此操作后，所有状态都恢复为原始状态：PRIMARY_ACTIVE、SECONDARY_ACTIVE和Prime HA状态再次显示为新部署。

HA状态矩阵

PRIMARY_ACTIVE	主MSE处于主MSE状态时，主MSE负责，且所有状态均正常
SECONDARY_ACTIVE	辅助MSE在启动时的状态，但不负责（主MSE仍在），可在需要时接管
FAILOVER_INVOKED	在发生故障切换时，在两个节点上显示，即辅助MSE启动其服务加载主MSE的
FAILOVER_ACTIVE	故障转移的最终状态。辅助MSE被视为“启动并运行”，而主MSE关闭
TERMINATED（已终止）	MSE节点的状态，在服务关闭后，当它不是负责的节点时，该节点会重新启动 这也意味着HA链路可能未启动（例如，如果其中一个MSE正在重新启动或只是
FAILBACK_ACTIVE	与故障切换相反，这不是故障恢复的最后阶段。这意味着已调用故障恢复，且主
FAILBACK_COMPLETE	当主节点重新负责但仍忙于从辅助MSE加载数据库时，主节点的状态
SECONDARY_ALONE	回切完成且主MSE负责但仍在加载数据时辅助MSE的状态
GRACEFUL_SHUTDOWN	如果在自动故障切换/回切的情况下手动重新启动或停止其他MSE上的服务，则

关于高可用性的重要论述和事实

- 切勿在故障切换完成后立即触发故障恢复，反之亦然。数据库需要30分钟时间才能稳定
- HA配置文件在/opt/mse/health-monitor/resources/config/中是**base-ha-config.properties，但是它不是手动编辑的（请改用setup.sh）。** 但是，您可以在有疑问时查看它
- HA不意味着手动中断。唯一干净的方法是从Prime Infra中删除辅助MSE。任何其他方法（在辅助上运行setup.sh使其成为主要方法、卸载、更改ip ...）都会中断数据库和状态机，您可能必须重新安装两个MSE

排除HA故障

HA相关日志保存在/opt**/mse/logs/hm目录下，其中health-monitor*.log**是主日志文件。

问题：主辅两者都处于活动状态（脑分裂状态）

1.关闭辅助设备上的虚拟IP接口(VIP)。eth0:1 **ifconfig eth0:1 down**

2.在辅助MSE上重新启动服务

服务MSED停止
服务MSED启动

3.验证辅助是否已开始从Prime基础设施与主基础设施同步。

问题：辅助与主HA的同步在X%处停滞很长时间

1.在辅助上停止服务

服务MSED停止

2.删除 /opt/mse/health-monitor/resources/config/advance-config-<IP-address-of-Primary>.properties 文件。

3.如果在建立高可用性时仍然存在问题，则可能已进入不一致状态，我们必须使用**rm -rf /opt/data/*删除辅助上"data"目录下的所有内容**

4.重新启动辅助。将其从Prime基础设施添加到主基础设施以再次启动HA。

问题：无法从PI中删除辅助服务器，因为它无法访问

1.在主设备上停止服务。

2.删除 /opt/mse/health-monitor/resources/config/advance-config-<IP-address-of-Primary>.properties 文件。

3.在主设备上重新启动服务。

4.从PI中删除主MSE并重新添加。