

配置和部署MSE软件版本7.2 HA

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简介

思科移动服务引擎(MSE)软件版本7.2为物理和虚拟设备增加了高可用性(HA)支持。本文档提供配置和部署指南，以及向思科统一WLAN添加MSE高可用性和运行情景感知服务和/或自适应wIPS的设备的故障排除提示。本文档旨在说明MSE高可用性的指导原则，并为MSE提供高可用性部署方案。

注意：本文档不提供与MSE高可用性无关的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）。有关环境[感知移动](#)服务的配置和设计的文档列表，请参阅“相关信息”部分。本文档也不涉及 Adaptive wIPS 配置。

先决条件

要求

本文档没有任何特定的要求。

使用的组件

本文档不限于特定的软件和硬件版本。

规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

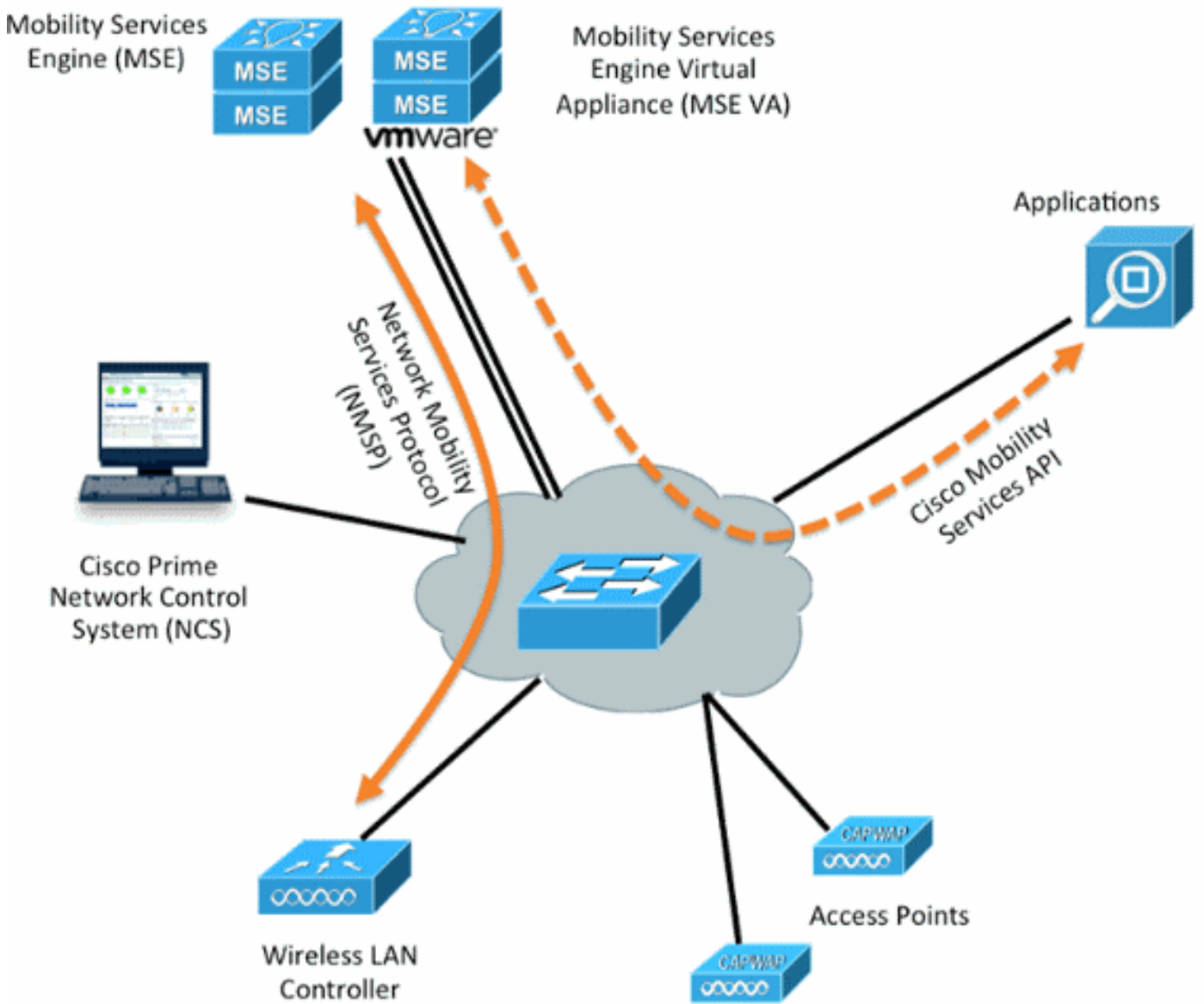
背景信息

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，考虑高可用性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(参见图1)演示了典型的Cisco WLAN部署，包括为高可用性启用的思科移动服务引擎(MSE)。MSE-3310、MSE-3350/3355和ESXi上的虚拟设备均提供高可用性支持。

图1.在高可用性中部署MSE



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 HA。
- 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支持网络连接和直接连接。
- 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，并且可从网络控制系统(NCS)访问。不支持第3层冗余。
- 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应位于同一软件版本。
- 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

Primary Server Type	Secondary 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

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

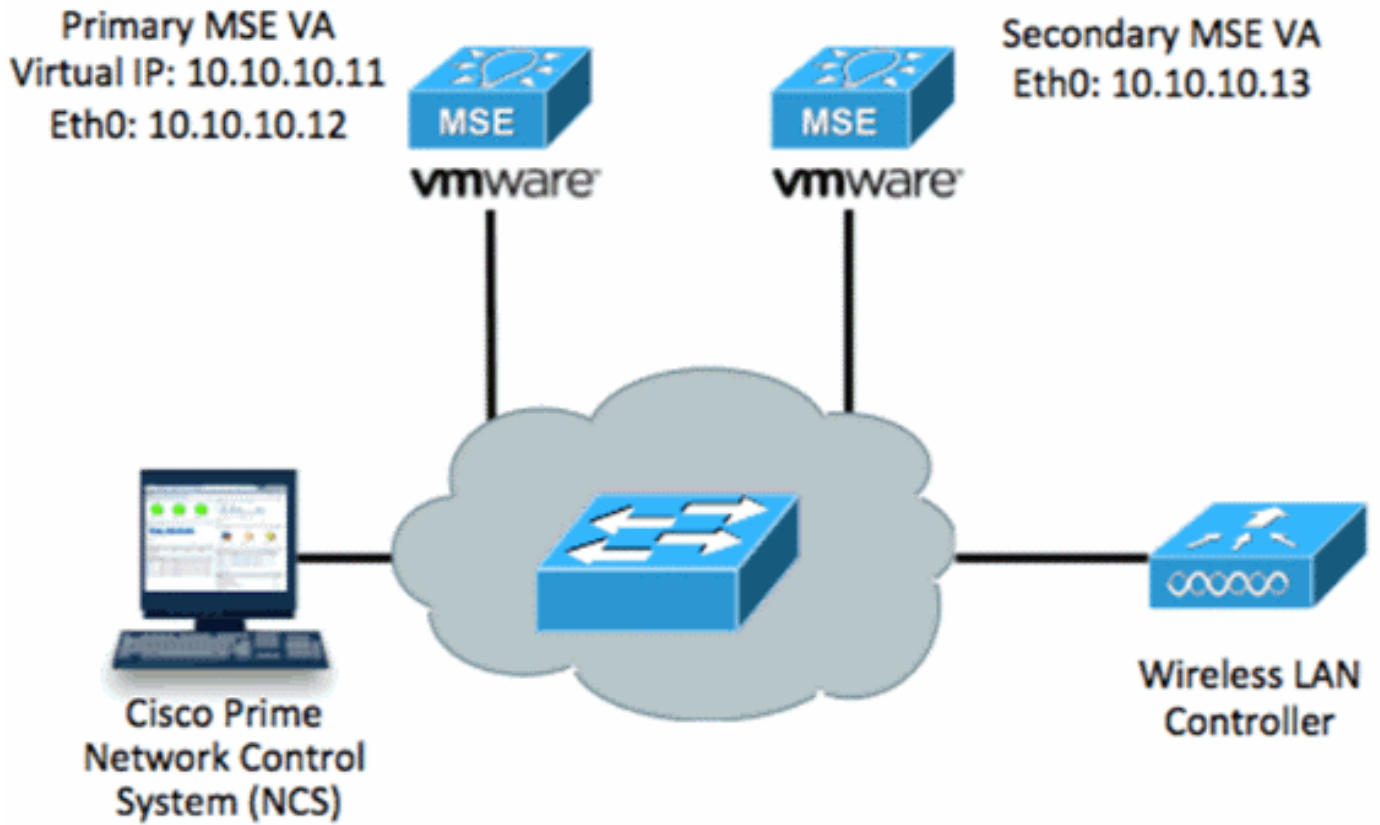
MSE虚拟设备 (已网络连接) 的高可用性配置方案

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:虚拟IP - [10.10.10.11]运行状况监控器接口(Eth0)- [10.10.10.12]
- 辅助MSE VA:虚拟IP - [无]运行状况监控器接口(Eth0)- [10.10.10.13]

注意：每个VA都需要激活许可证(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安装并检验是否满足所有网络设置。

```
MSE1 on kft-fx
File View VM
to complete.
Preparing to install...
Extracting the JRE from the installer archive...
Unpacking the JRE...
Extracting the installation resources from the installer archive...
Configuring the installer for this system's environment...

Launching installer...

Preparing SILENT Mode Installation...

=====
Cisco Mobility Services Engine      (created with InstallAnywhere by Macrovision)
=====

Command.run(): process completed before monitors could start.

=====
Installing...
=====

[=====|=====|=====|=====]
[-----|-----|-----|-----]
_
```

2. 首次登录时初始化安装向导。

```
Cisco Mobility Service Engine

mse login: root
Password:
Last login: Mon Feb 13 17:31:37 on tty1

Enter whether you would like to set up the initial
parameters manually or via the setup wizard.

Setup parameters via Setup Wizard (yes/no) [yes]: _
```

3. 输入所需的条目（主机名、域等）。在配置高可用性(Configure High Availability)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.

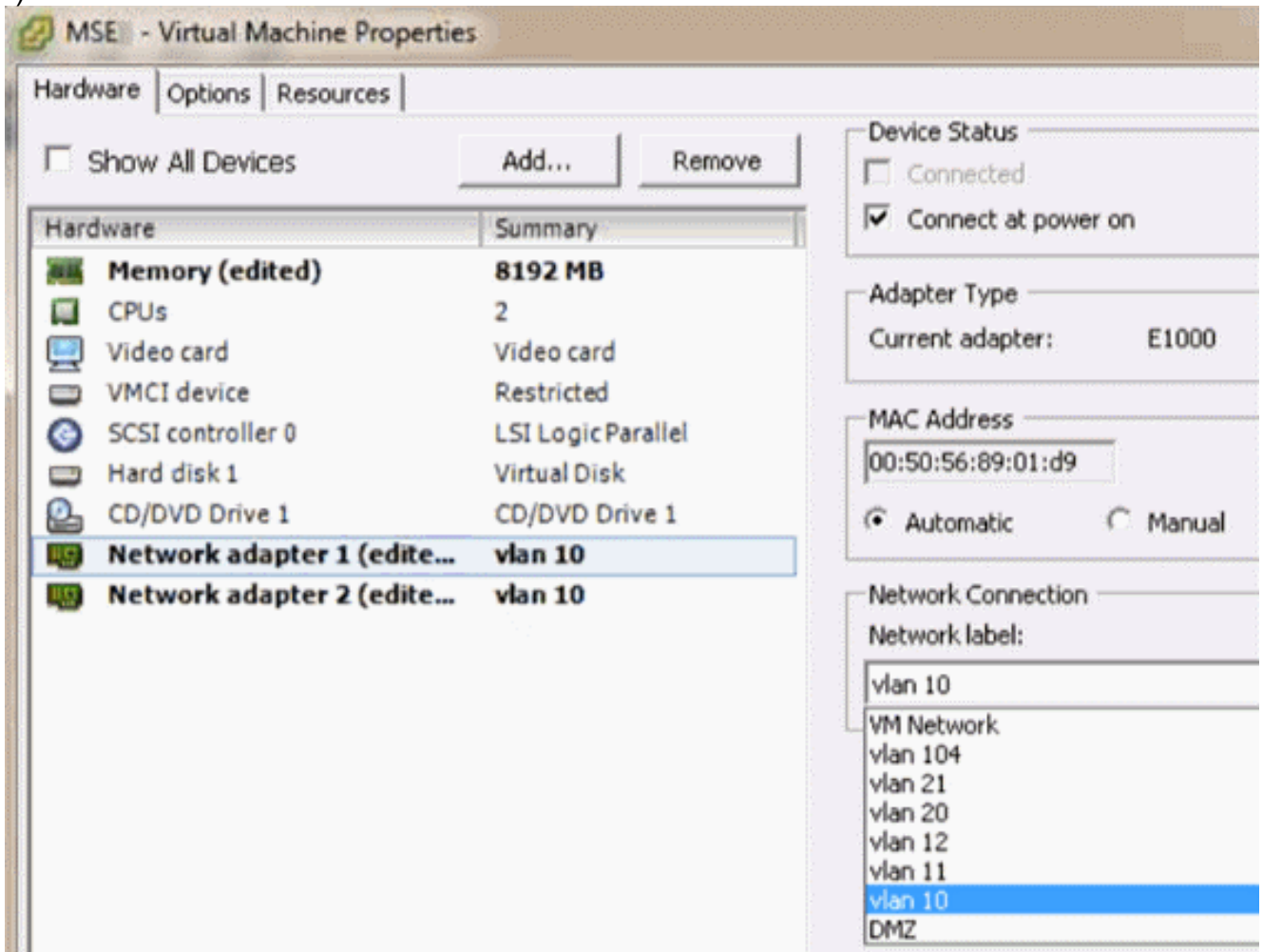
Enter a host name [mse]: mse1

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. 输入以下内容：选择角色 — [主要]。运行状况监控器接口 — [eth0]**映到网络适配器1的网络设置（请参阅示例屏幕截图）



```

Enter a host name [mse1]: 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]。

```

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 between
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 should
choose 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. 输入以下内容：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 lost
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. 输入以下内容：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)。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。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
```



```

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

```

这汇总了MSE虚拟设备主设置：

```

-----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]确认所有设置信息都正确。

```

Please verify the following setup information.

-----BEGIN-----

Host name=mse1
    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=255.255.255.0
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

```

```

[root@mse1 ~]# reboot
Stopping MSE Platform

```

11. 建议在设置后重新启动。

12. 重新启动后，使用/etc/init.d/mseed start或服务service mseed start命令启动MSE服务。

```

[root@mse1 ~]# getserverinfo
Health Monitor is not running
[root@mse1 ~]# /etc/init.d/mse 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服务正常工作。操作状态必须显示为Up。

```

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 ~]#

```

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。输入以下内容：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. 输入以下内容：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. 配置eth1接口 — [跳过]

```
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]

```
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. 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. 完成安装向导的其余步骤并确认设置信息以保存配置。

```
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，与主MSE的前面步骤相同。

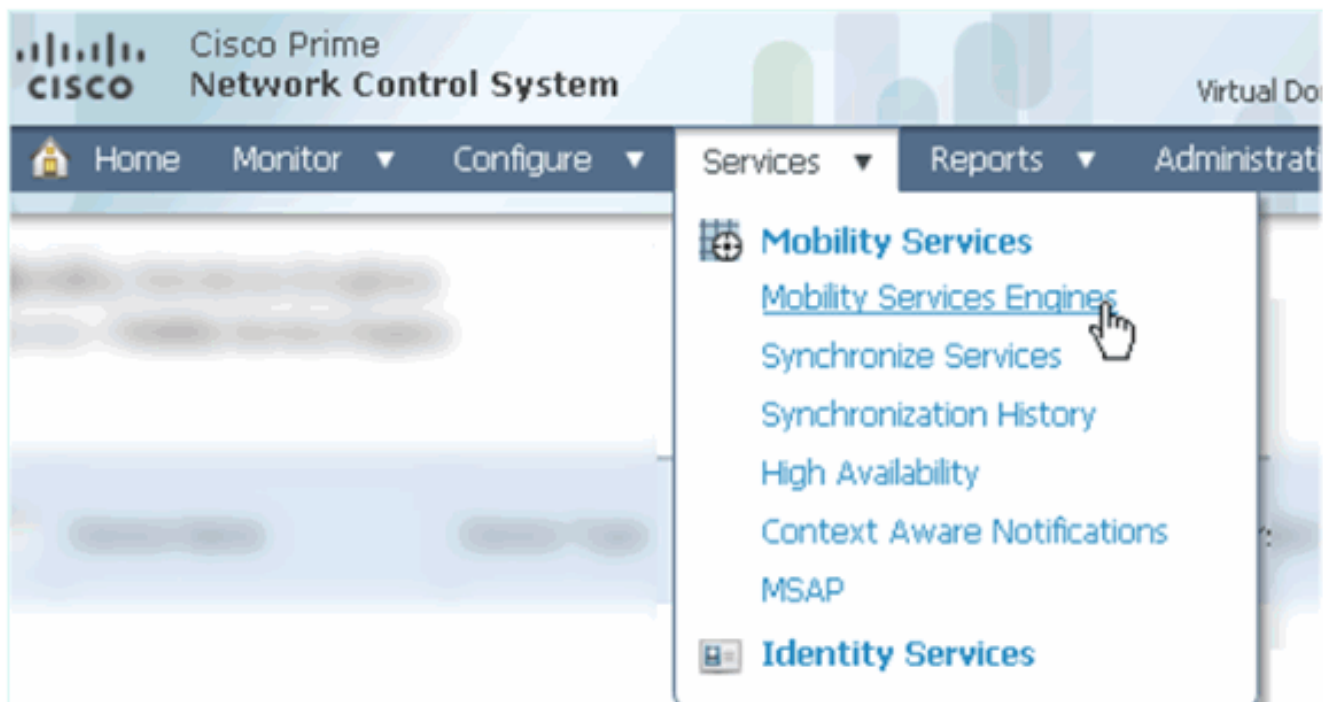
```
[root@mse2 ~]# /etc/init.d/msed start
Starting MSE Platform

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

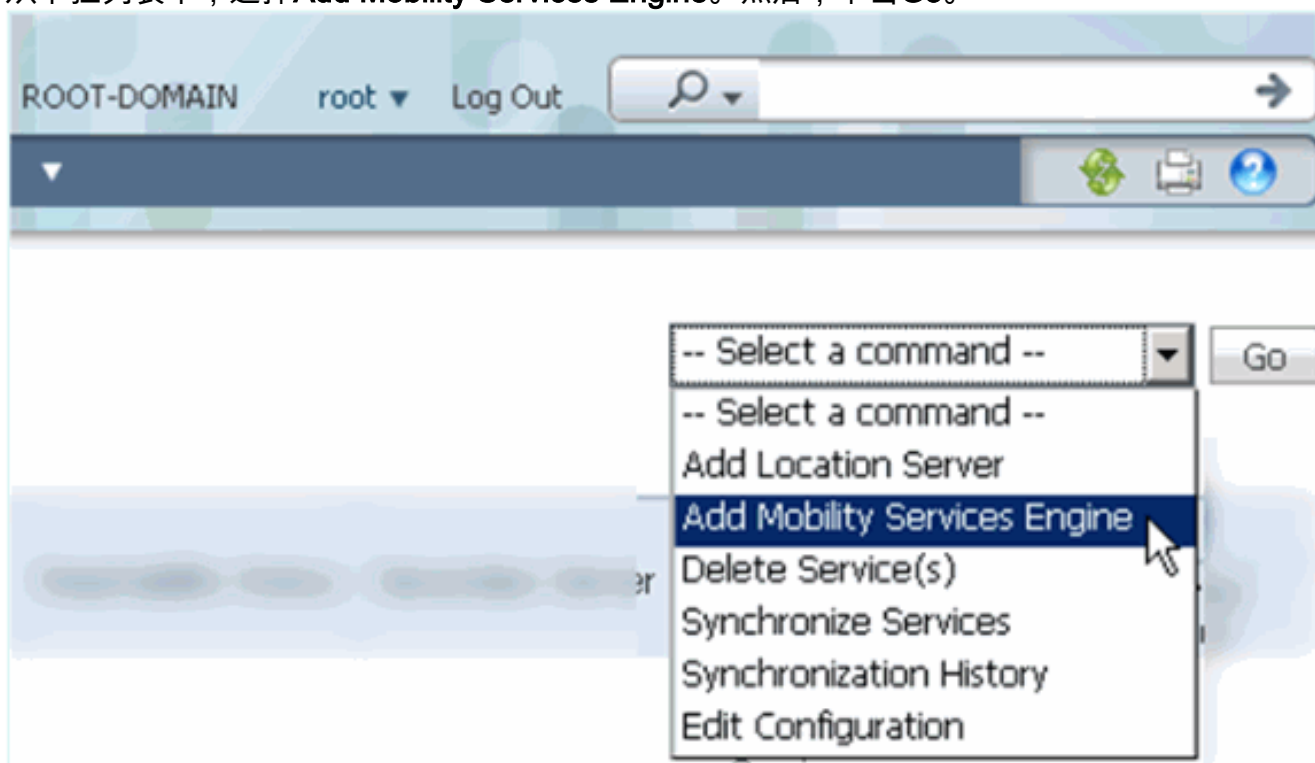
[root@mse2 ~]# _
```

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，转到Systems > Mobility Services，然后选择Mobility Services Engines。



2. 从下拉列表中，选择Add Mobility Services Engine。然后，单击Go。



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**。

Cisco Prime Network Control System

Add Mobility Services Engine

Add MSE Configuration

Licensing

Select Service

Tracking

Assign Maps

Device Name:

IP Address:

Contact Name:

Username:

Password:

HTTP: Enable

Delete synchronized service assignments (Network designs, controllers, wired switches)

! Selecting **Delete synchronized service assignments** permanently removes all service assignments. Existing location history data is retained, however you must use manual service assignments to

4. 添加所有可用许可证，然后单击Next。

Cisco Prime Network Control System

MSE License Summary

! Permanent licenses include installed license counts and in-built license counts.

MSE Name (UDI)	Service	Platform Limit	Type	Installed Limit
mse1 Activated (AIR-MSE-VA-K9:V01:mse1_d5972642-5696-11e1-bd0c				
	CAS	2000	CAS Elements	100
			wIPS Monitor Mode APs	10
	wIPS	2000	wIPS Local Mode APs	10
	MSAP	2000	Service Advertisement Clicks	1000

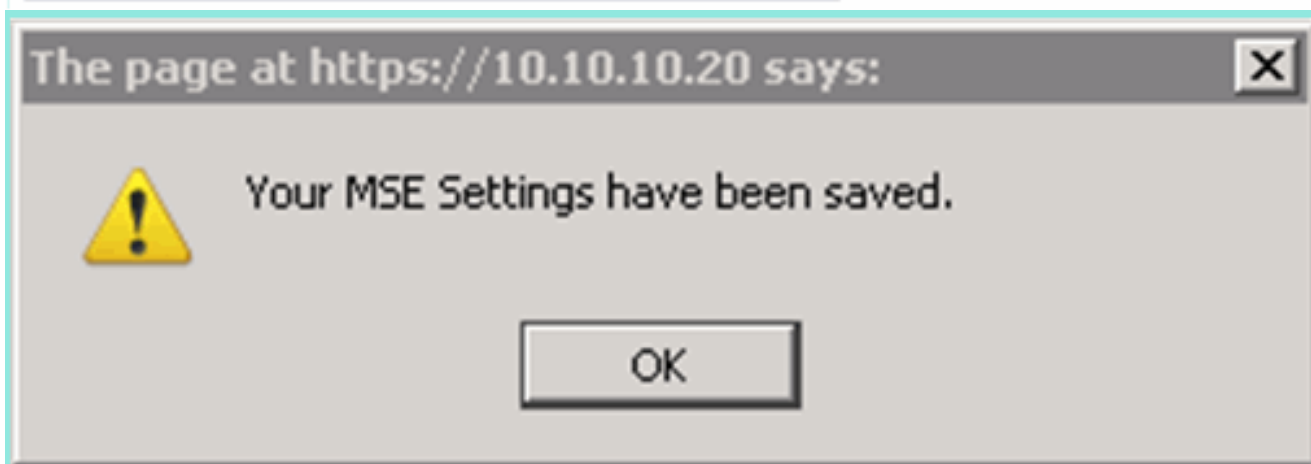
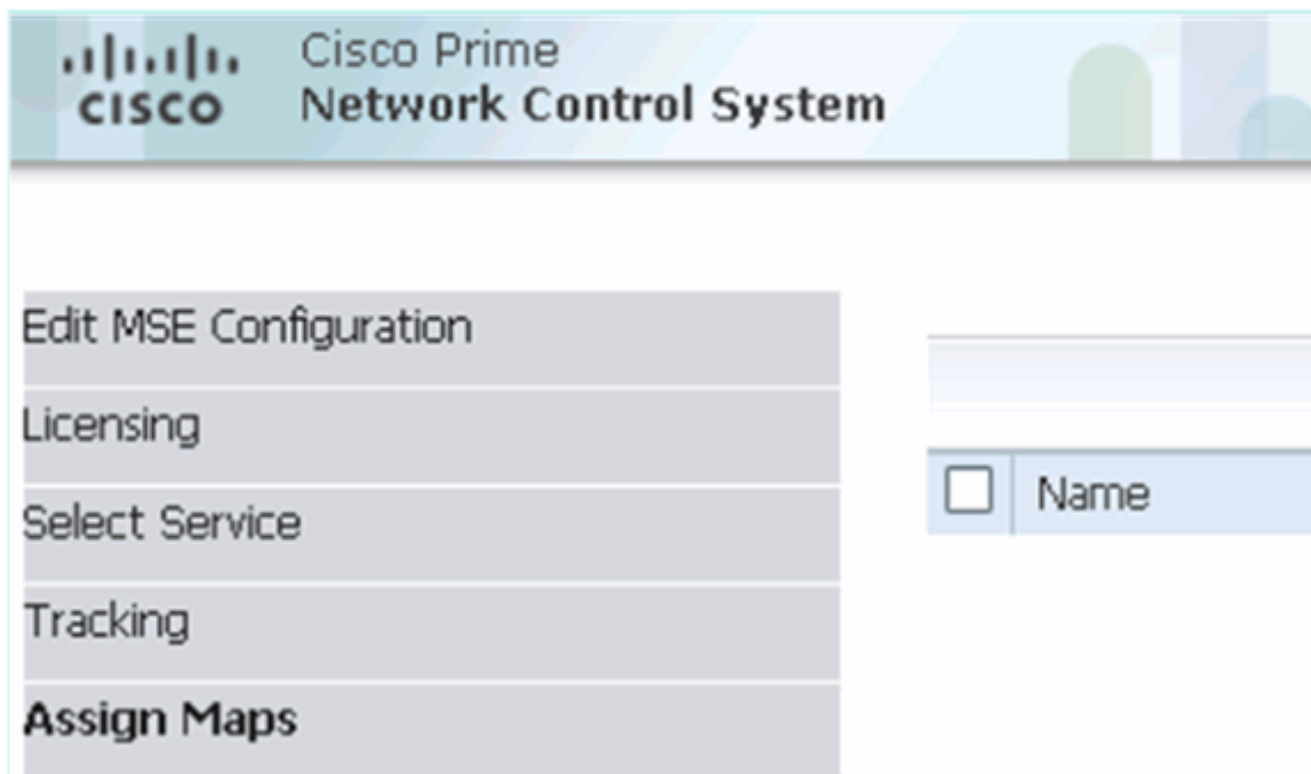
5. 选择MSE服务，然后单击“下一步”。



6. 启用跟踪参数，然后单击“下一步”。



7. 分配映射和同步MSE服务是可选操作。单击**Done**完成将MSE添加到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，然后点击要配置的连接。



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* - [默认或设置脚本] 故障转移类型* - [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阅MSE文档。

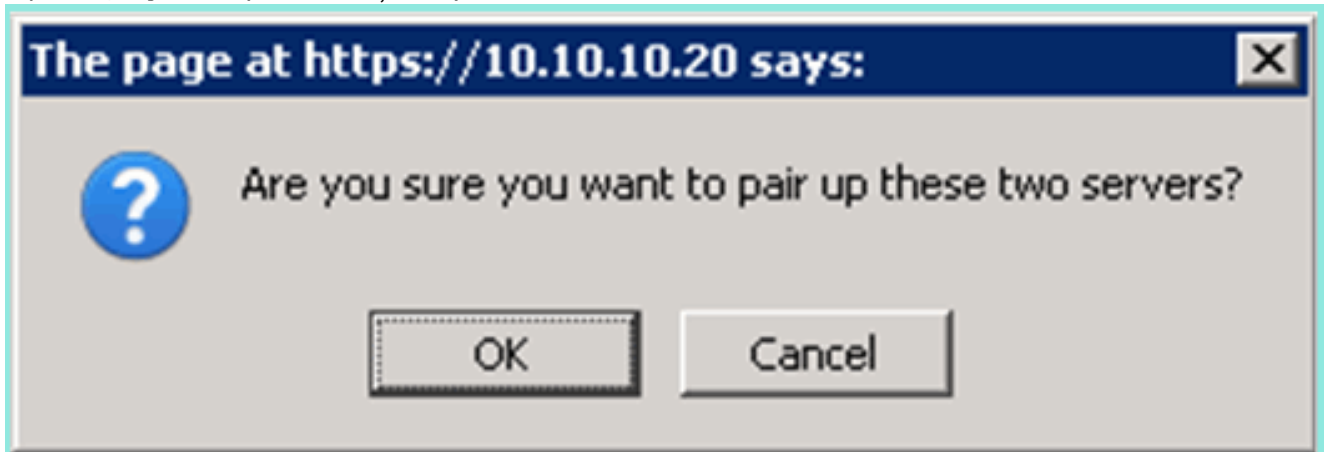
HA Configuration : mse1

Services > Mobility Services Engines > System > Services High Availability > **Configure High Availability Parameters**

Configure High Availability Parameters

Primary Health Monitor IP	10.10.10.12
Secondary Device Name	<input type="text" value="mse2"/>
Secondary IP Address	<input type="text" value="10.10.10.13"/>
Secondary Password ⓘ	<input type="password" value="•••••"/>
Failover Type ⓘ	<input type="text" value="Automatic"/>
Failback Type ⓘ	<input type="text" value="Manual"/>
Long Failover Wait ⓘ	<input type="text" value="10"/> seconds

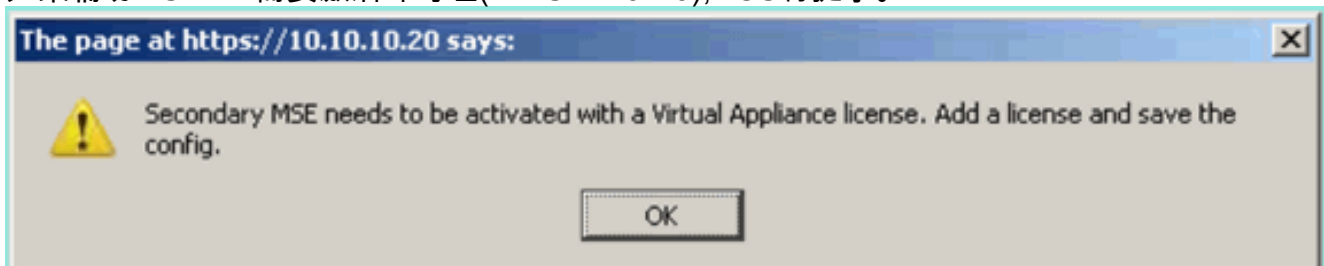
3. 当NCS提示对两个MSE时，单击OK。



NCS需要几秒钟时间才能创建配置。



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



4. 单击OK并找到License File (许可证文件) 以激活辅助。

HA Configuration : mse1

Services > Mobility Services Engines > System > Services High Availability > Configure High Availability Parameters

Configuration

Primary Health Monitor IP	10.10.10.12
Secondary Device Name	mse2
Secondary IP Address	10.10.10.13
Secondary Password ⓘ	•••••
Secondary Platform UDI	AIR-MSE-VA-K9:V01:mse2_666f2046-5699-11e1-b1b1-0050566
Secondary Activation Status	Not Activated
Activate Secondary with License	<input type="text"/> <input type="button" value="Browse..."/>
Failover Type ⓘ	Automatic ▼
Failback Type ⓘ	Manual ▼
Long Failover Wait ⓘ	10 seconds

5. 激活辅助MSE VA后，单击**Save**完成配置。

HA Configuration : mse1

Services > Mobility Services Engines > System > Services High Availability > Configure High Availability Parameters

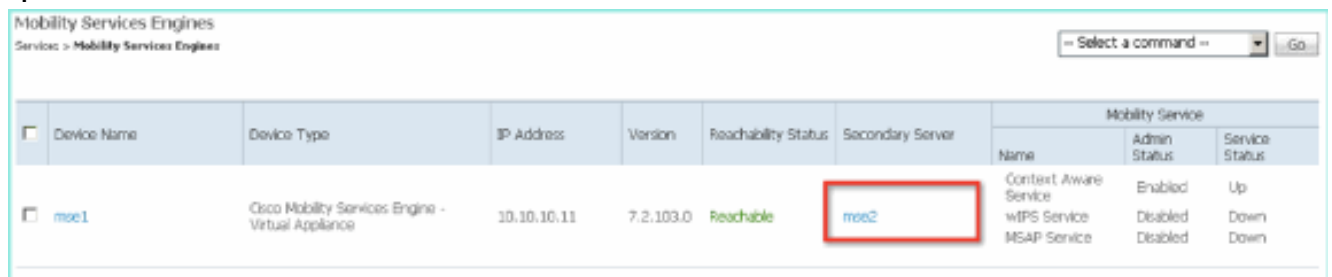
Configuration

Primary Health Monitor IP	10.10.10.12
Secondary Device Name	mse2
Secondary IP Address	10.10.10.13
Secondary Password ⓘ	•••••
Secondary Platform UDI	AIR-MSE-VA-K9:V01:mse2_666f2046-5699-11e1-b1b1-005
Secondary Activation Status	Activated
Delete Secondary Activation license ⓘ	<input type="checkbox"/>
Failover Type ⓘ	Automatic ▼
Failback Type ⓘ	Manual ▼
Long Failover Wait ⓘ	10 seconds

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

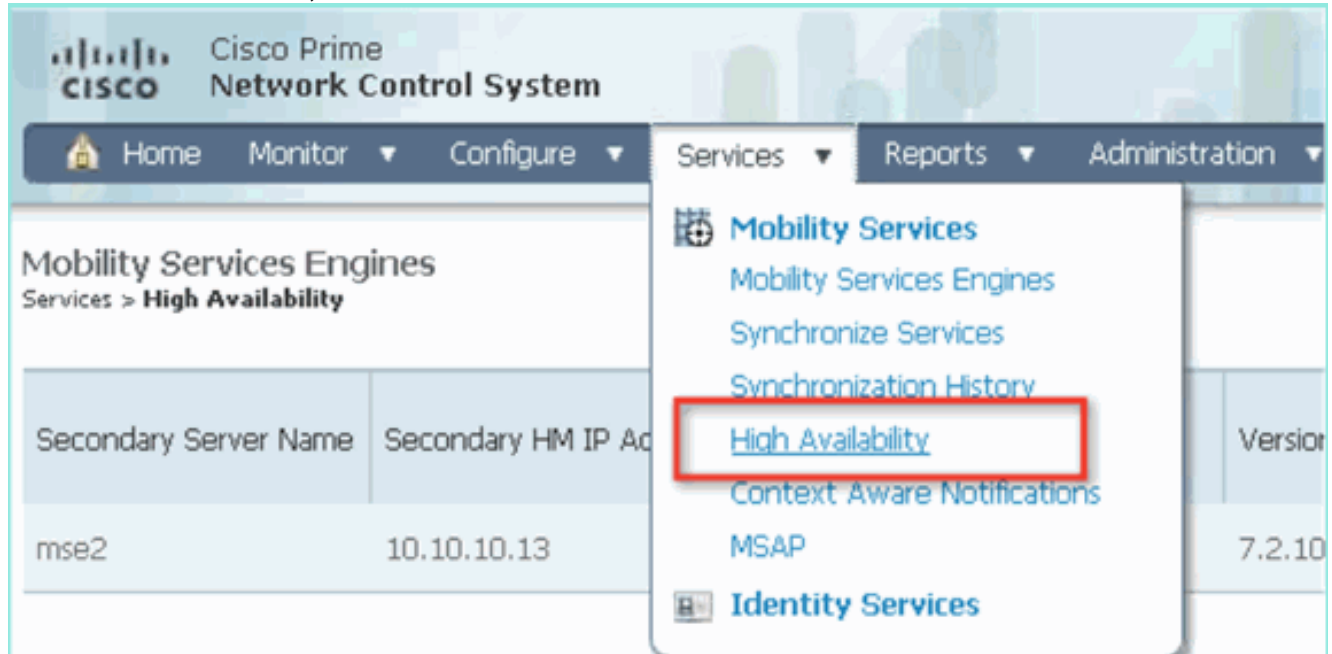
MSE显示在辅助服务器的列中

：



Device Name	Device Type	IP Address	Version	Reachability Status	Secondary Server	Mobility Service		
						Name	Admin Status	Service Status
<input type="checkbox"/> mse1	Cisco Mobility Services Engine - Virtual Appliance	10.10.10.11	7.2.103.0	Reachable	mse2	Context Aware Service	Enabled	Up
						WIPS Service	Disabled	Down
						MSAP Service	Disabled	Down

7. 要查看高可用性状态，请导航至NCS >服务>高可用性。



在HA状态中，您可以通过MSE对查看当前状态和事件。



The screenshot shows the 'HA Configuration : mse1' page in the Cisco Prime Network Control System. The page displays the current high availability status as 'Active' and an events log with several entries. The events log includes the following entries:

Event Description	Generated By	Timestamp	Remarks
Active	Primary	2012-Feb-14, 00:22:26 UTC	-
Heartbeats have been setup successfully	Primary	2012-Feb-14, 00:19:00 UTC	-
Primary and secondary server synchronization in progress	Primary	2012-Feb-14, 00:18:56 UTC	-
Configuration successfully created	Primary	2012-Feb-14, 00:18:56 UTC	-

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，如上所示。

Current High Availability Status	
Status	Primary and secondary server synchronization in progress (68% complete)
Heartbeats	Up
Data Replication	Setting up
Mean Heartbeat Response Time	108 millsec

随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
-----

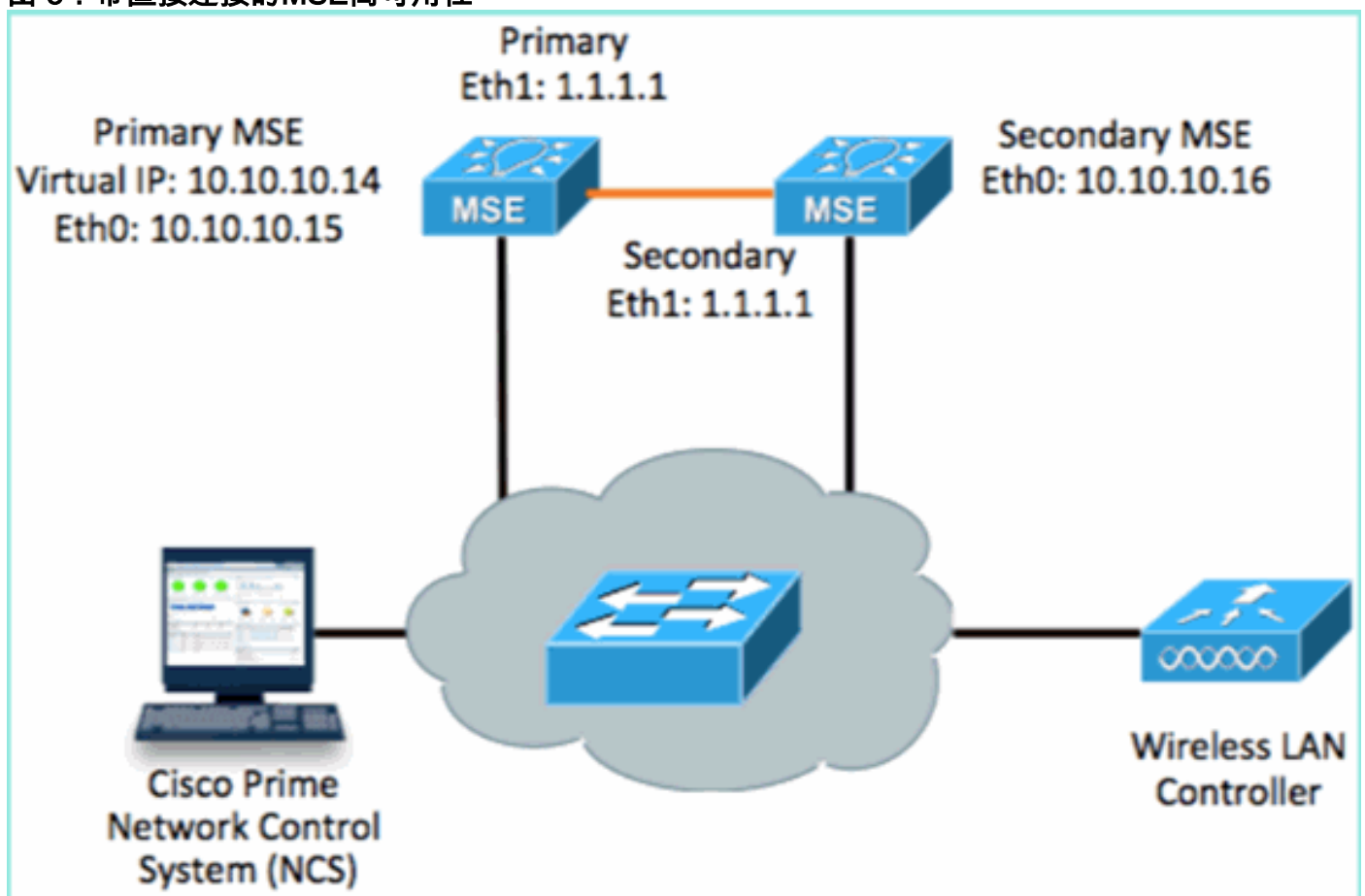
Health Monitor IP Address 10.10.10.12
Virtual IP Address: 10.10.10.11
Version: 7.2.103.0
UDI: AIR-MSE-VA-K9:V01:mse1_d5972642-5696-11e1-bd0c-0050568901d6
Failover type: Manual
Failback type: Manual
Failover wait time (seconds): 10
Instance database name: mseos3
Instance database port: 1524
Dataguard 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]

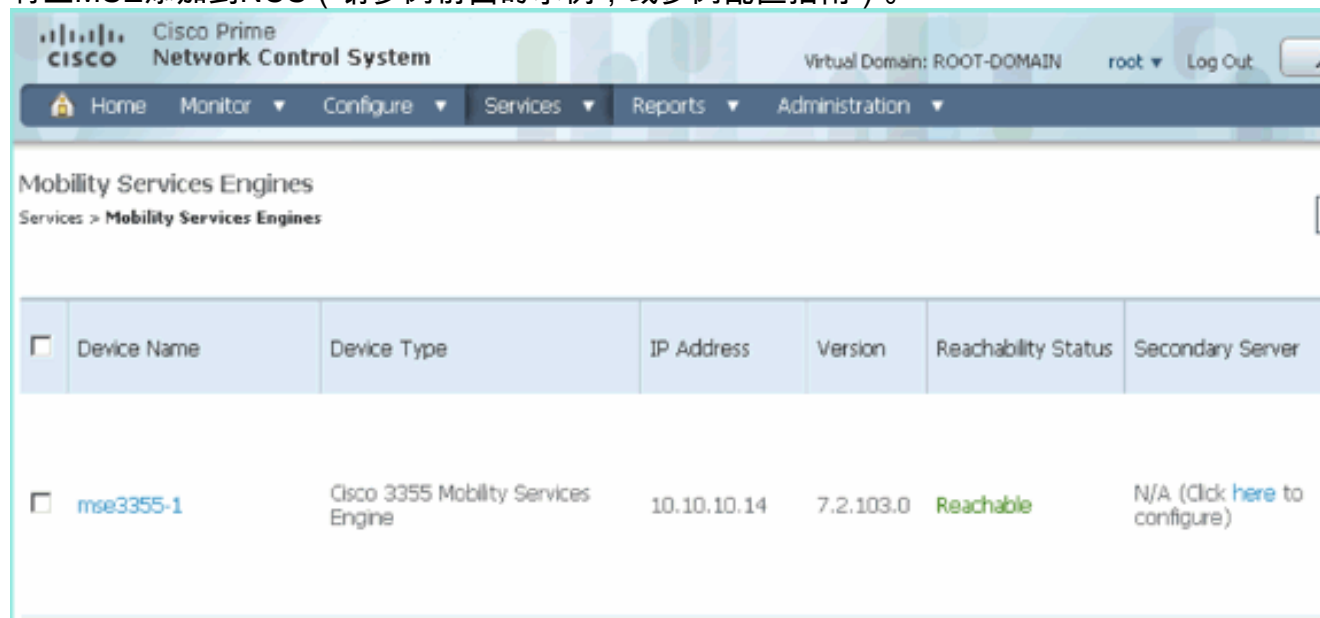
```

```
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 (请参阅前面的示例，或参阅配置指南)。



The screenshot shows the Cisco Prime Network Control System (NCS) interface. The top navigation bar includes 'Home', 'Monitor', 'Configure', 'Services', 'Reports', and 'Administration'. The main content area is titled 'Mobility Services Engines' and displays a table of configured devices.

<input type="checkbox"/>	Device Name	Device Type	IP Address	Version	Reachability Status	Secondary Server
<input type="checkbox"/>	mse3355-1	Cisco 3355 Mobility Services Engine	10.10.10.14	7.2.103.0	Reachable	N/A (Click here to configure)

4. 从NCS >配置辅助服务器设置辅助MSE。输入辅助设备名称 — [mse3355-2]辅助IP地址 — [10.10.10.16]完成其余参数并单击Save。

Cisco Prime Network Control System Virtual Domain: ROOT-

Home Monitor Configure Services Reports Administration

System

- General Properties
- Active Sessions
- Trap Destinations
- Advanced Parameters
- Logs
- Services High Availability
 - HA Configuration
 - HA Status
- Accounts
 - Users
 - Groups
- Status
 - Server Events
 - Audit Logs

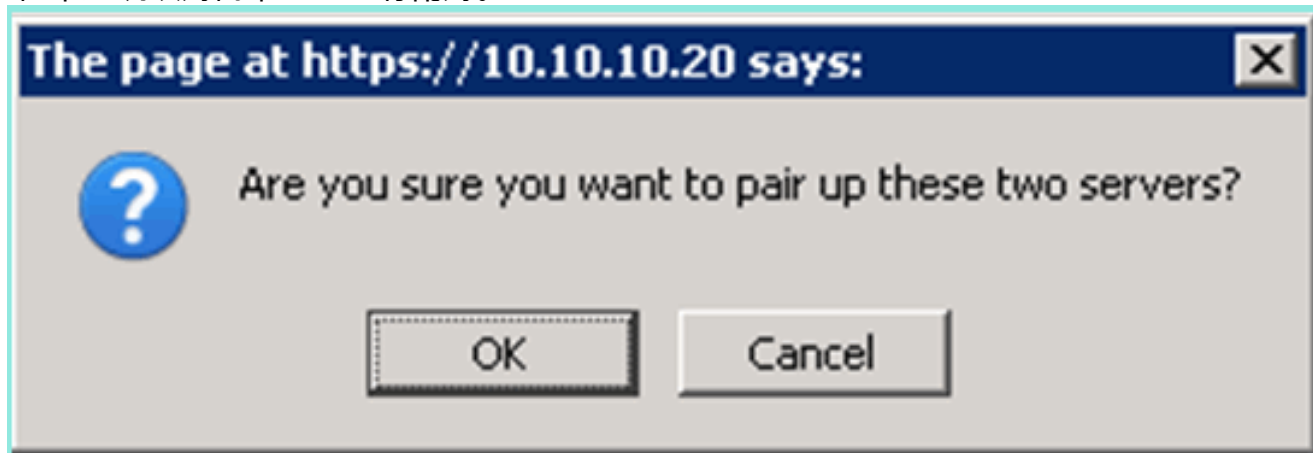
HA Configuration : mse3355-1

Services > Mobility Services Engines > System > Services High Availability

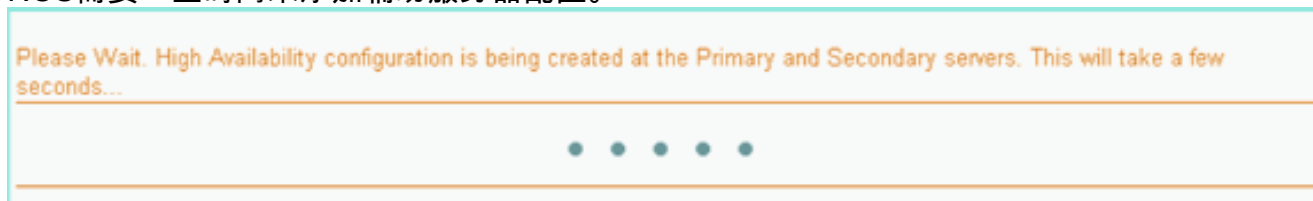
Configure High Availability Parameters

Primary Health Monitor IP	10.10.10.15
Secondary Device Name	<input type="text" value="mse3355-2"/>
Secondary IP Address	<input type="text" value="10.10.10.16"/>
Secondary Password ⓘ	<input type="password" value="....."/>
Failover Type ⓘ	<input type="text" value="Manual"/>
Failback Type ⓘ	<input type="text" value="Manual"/>
Long Failover Wait ⓘ	<input type="text" value="10"/> seconds

5. 单击OK确认对两个MSE进行配对。



NCS需要一些时间来添加辅助服务器配置。



6. 完成后，对HA参数进行任何更改。Click Save.

HA Configuration : mse3355-1

Services > Mobility Services Engines > System > Services High Availability > **Configure High Availability Parameters**

Configuration

Primary Health Monitor IP 10.10.10.15

Secondary Device Name mse3355-2

Secondary IP Address 10.10.10.16

Secondary Password ⓘ

Secondary Platform UDI AIR-MSE-3355-K9:V01:KQ:.....

Failover Type ⓘ

Failback Type ⓘ

Long Failover Wait ⓘ seconds

7. 查看新MSE HA对的HA状态以实时进度。

The screenshot shows the Cisco Network Control System (NCS) interface. The top navigation bar includes Home, Monitor, Configure, Services, Reports, and Administration. The main content area is titled "HA Configuration : mse3355-1" and shows the "Current High Availability Status".

Current High Availability Status

Status	Primary and secondary server synchronization in progress (66% complete)
Heartbeats	Up
Data Replication	Setting up
Mean Heartbeat Response Time	8 msec

Events Log

Event Description	Generated By	Timestamp	Remarks
Configuration updated	Primary	2012-Feb-15, 20:10:56 UTC	Failover mode set to AUTOMATIC.
Heartbeats have been setup successfully	Primary	2012-Feb-15, 20:10:11 UTC	-
Primary and secondary server synchronization in progress	Primary	2012-Feb-15, 20:10:09 UTC	-
Configuration successfully created	Primary	2012-Feb-15, 20:10:09 UTC	-

At the bottom of the HA Status section, there is a "Refresh Status" button.

8. 从NCS > Services > Mobility Services > Mobility Services Engines , 确认MSE (直接连接) HA已添加到NCS。

The screenshot shows the Cisco Prime Network Control System interface. The top navigation bar includes Home, Monitor, Configure, Services, Reports, and Administration. The main content area is titled 'Mobility Services Engines' and displays a table with the following data:

<input type="checkbox"/>	Device Name	Device Type	IP Address	Version	Reachability Status	Secondary Server
<input type="checkbox"/>	mse3355-1	Cisco 3355 Mobility Services Engine	10.10.10.14	7.2.103.0	Reachable	mse3355-2

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
```

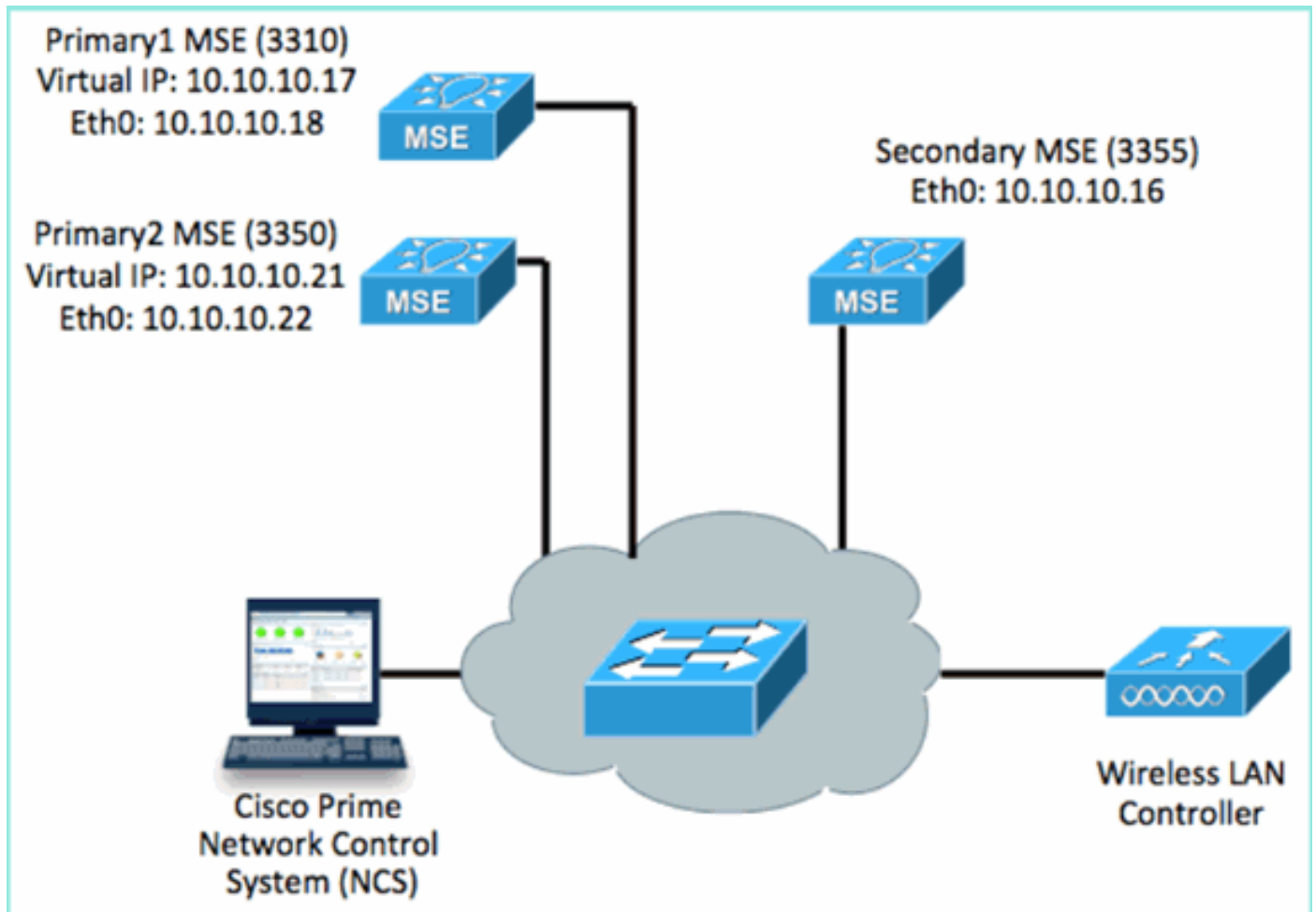
```
Virtual IP Address: Not Applicable for a secondary
Version: 7.2.103.0
UDI: AIR-MSE-3355-K9:V01:KQ45xx
Number of paired peers: 1
```

```
-----
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。



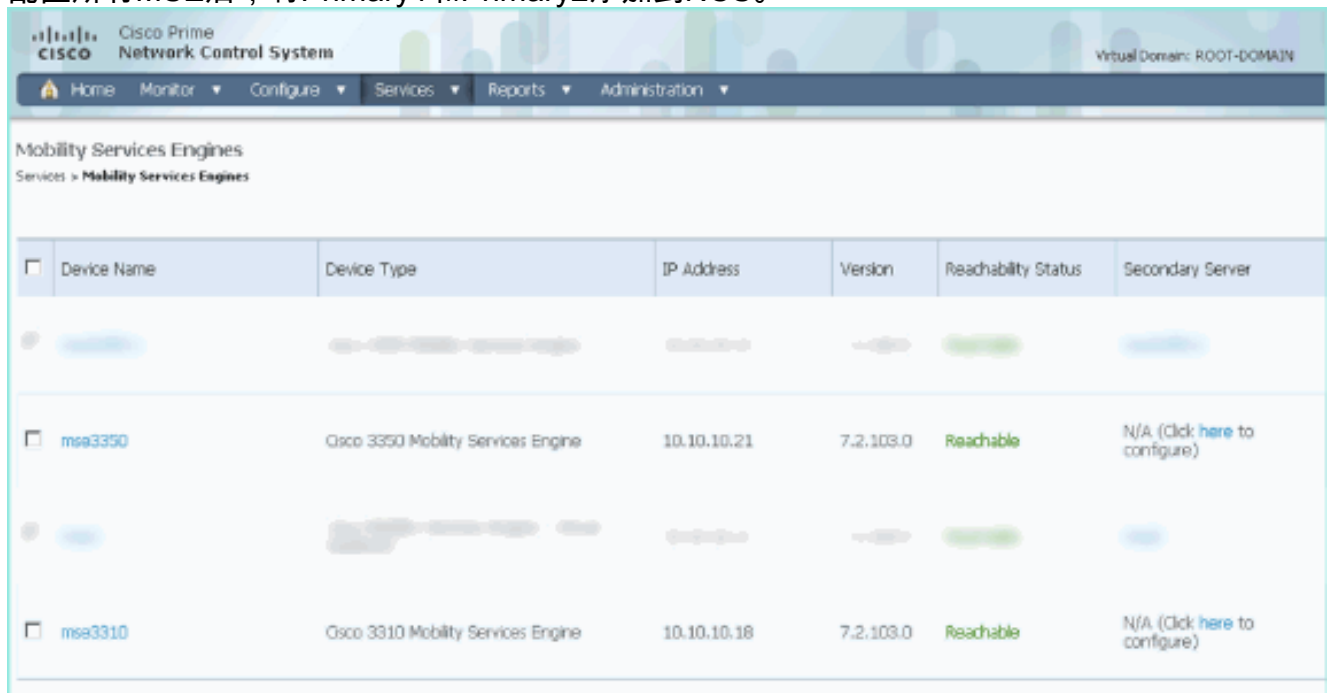
1. 配置每个MSE以演示2:1的高可用性场景：

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. 配置所有MSE后，将Primary1和Primary2添加到NCS。



The screenshot shows the Cisco Prime Network Control System interface. The top navigation bar includes Home, Monitor, Configure, Services, Reports, and Administration. The main content area is titled 'Mobility Services Engines' and displays a table of configured devices. The table has columns for Device Name, Device Type, IP Address, Version, Reachability Status, and Secondary Server. Two devices are listed: msa3350 and msa3310, both with a 'Reachable' status.

<input type="checkbox"/>	Device Name	Device Type	IP Address	Version	Reachability Status	Secondary Server
<input type="checkbox"/>	msa3350	Cisco 3350 Mobility Services Engine	10.10.10.21	7.2.103.0	Reachable	N/A (Click here to configure)
<input type="checkbox"/>	msa3310	Cisco 3310 Mobility Services Engine	10.10.10.18	7.2.103.0	Reachable	N/A (Click here to configure)


3. 单击以配置辅助服务器 (如前面的示例所示)。从其中一个主MSE开始。

Reachability Status	Secondary Server
Reachable	N/A (Click here to configure)
Reachable	N/A (Click here to configure) 

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。Click **Save**.

HA Configuration : mse3350
 Services > Mobility Services Engines > System > Services High Availability > **Configure High Availability Parameters**

Configuration

Primary Health Monitor IP	10.10.10.22
Secondary Device Name	mse3355-2
Secondary IP Address	10.10.10.16
Secondary Password ⓘ	<input type="password" value="•••••"/>
Secondary Platform UDI	AIR-MSE-3355-K9:V01:KQ4 
Failover Type ⓘ	<input type="text" value="Manual"/>
Failback Type ⓘ	<input type="text" value="Manual"/>
Long Failover Wait ⓘ	<input type="text" value="10"/> seconds

5. 请稍等片刻，以便配置第一个辅助条目。

Please Wait. High Availability configuration is being created at the Primary and Secondary servers. This will take a few seconds...



6. 确认为第一个主MSE添加了辅助服务器。

Mobility Services Engines
Services > Mobility Services Engines

<input type="checkbox"/>	Device Name	Device Type	IP Address	Version	Reachability Status	Secondary Server
<input type="checkbox"/>	mse3350	Cisco 3350 Mobility Services Engine	10.10.10.20	7.2.103.0	Reachable	mse3350-2
<input type="checkbox"/>	mse3350	Cisco 3350 Mobility Services Engine	10.10.10.21	7.2.103.0	Reachable	mse3355-2

7. 对第二个主MSE重复步骤3到6。

Mobility Services Engines
Services > Mobility Services Engines

<input type="checkbox"/>	Device Name	Device Type	IP Address	Version	Reachability Status	Secondary Server
<input type="checkbox"/>	mse3350	Cisco 3350 Mobility Services Engine	10.10.10.20	7.2.103.0	Reachable	mse3350-2
<input type="checkbox"/>	mse3350	Cisco 3350 Mobility Services Engine	10.10.10.21	7.2.103.0	Reachable	mse3355-2
<input type="checkbox"/>	mse3310	Cisco 3310 Mobility Services Engine	10.10.10.18	7.2.103.0	Reachable	N/A (Click here to configure)

8. 使用第二个主MSE的HA参数完成。

HA Configuration : mse3310

Services > Mobility Services Engines > System > Services High Availability > **Configure High Availability Parameters**

Configure High Availability Parameters

Primary Health Monitor IP	10.10.10.17
Secondary Device Name	<input type="text" value="mse3355-2"/>
Secondary IP Address	<input type="text" value="10.10.10.16"/>
Secondary Password ⓘ	<input type="password" value="•••••"/>
Failover Type ⓘ	<input type="text" value="Manual"/>
Failback Type ⓘ	<input type="text" value="Manual"/>
Long Failover Wait ⓘ	<input type="text" value="10"/> seconds

9. 保存设置。

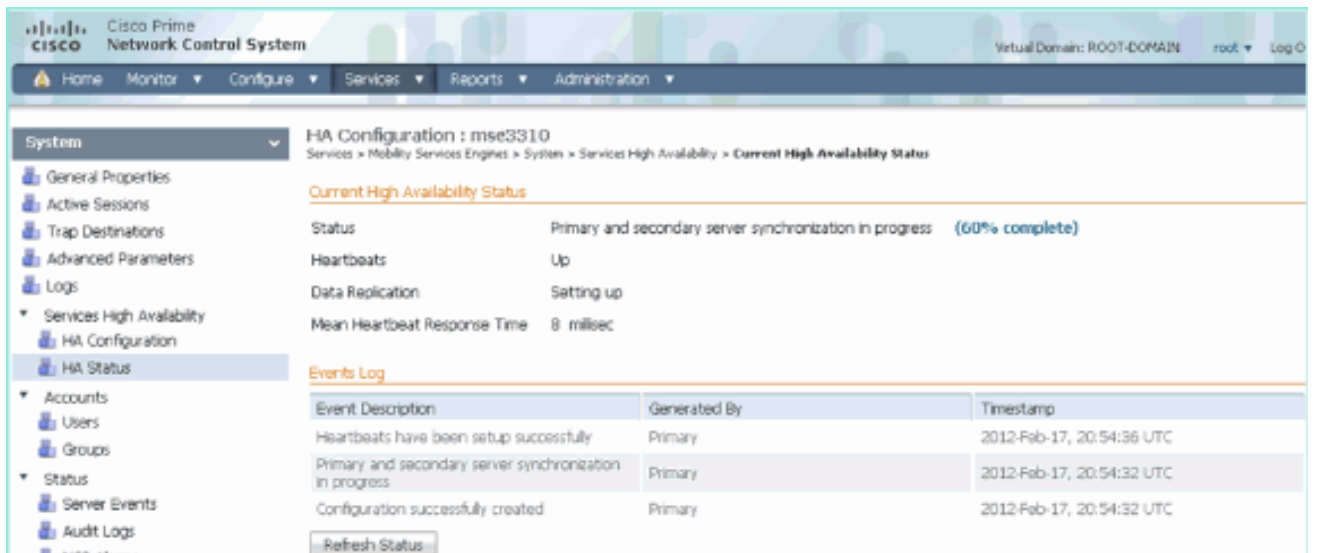
HA Configuration : mse3310

Services > Mobility Services Engines > System > Services High Availability > **Configure High Availability Parameters**

Configuration

Primary Health Monitor IP	10.10.10.17
Secondary Device Name	mse3355-2
Secondary IP Address	10.10.10.16
Secondary Password ⓘ	<input type="password" value="•••••"/>
Secondary Platform UDI	AIR-MSE-3355-K9:V01:KQ- <input type="text"/>
Failover Type ⓘ	<input type="text" value="Manual"/>
Failback Type ⓘ	<input type="text" value="Manual"/>
Long Failover Wait ⓘ	<input type="text" value="10"/> seconds

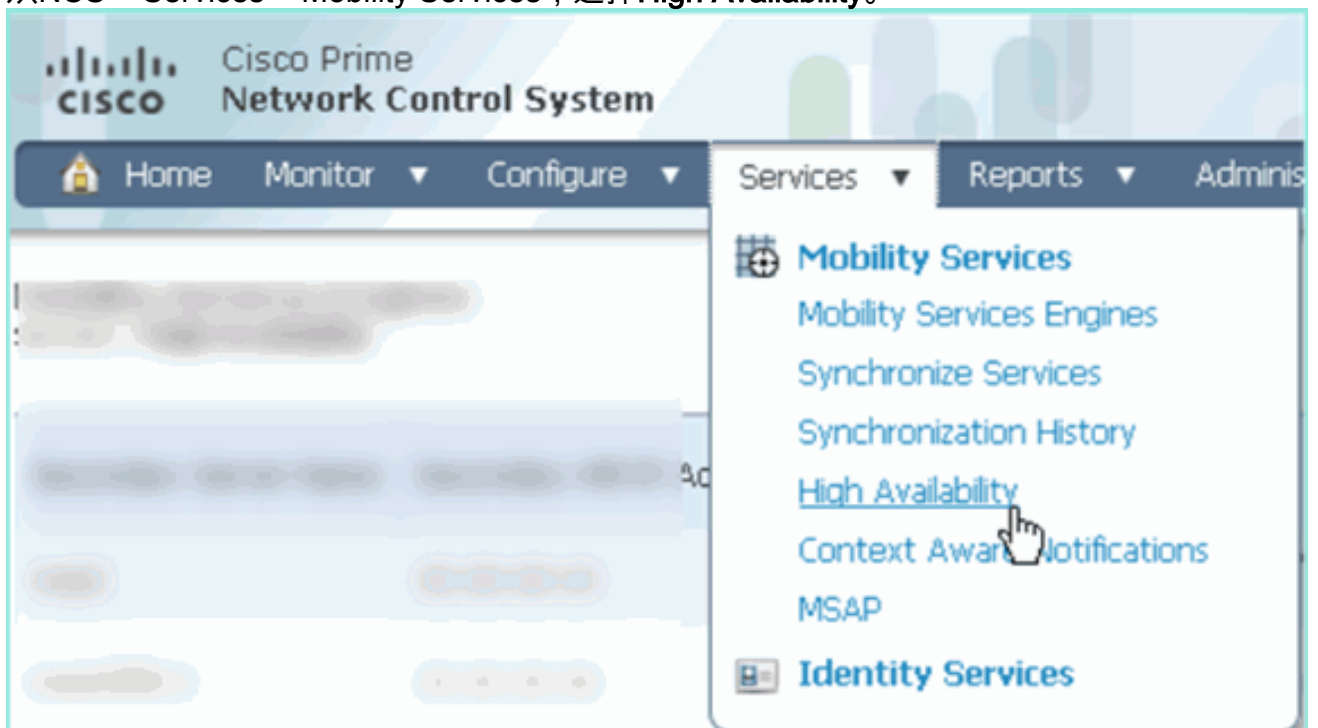
10. 检查每个主MSE的进度状态。



11. 确认已使用辅助MSE设置Primary1和Primary2 MSE。



12. 从NCS > Services > Mobility Services，选择High Availability。



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

Cisco Prime Network Control System						
Virtual Domain: ROOT-DOMAIN		root	Log Out			
Home	Monitor	Configure	Services	Reports	Administration	
Mobility Services Engines Services > High Availability						
Secondary Server Name	Secondary HM IP Address	Secondary Device Type	Version	Associated Primary Mobility Service Engines		
				Device Name	Device Type	Heartbeats
mse3355-2	10.10.10.16	Cisco 3355 Mobility Services Engine	7.2.103.0	mse3310 mse3350	Cisco 3310 Mobility Services Engine Cisco 3350 Mobility Services Engine	Up Up

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的状态均为完全活动。

HA Configuration : mse3310
 Services > Mobility Services Engines > System > Services High Availability > Current High Availability Status

Current High Availability Status

Status	Active
Heartbeats	Up
Data Replication	Up
Mean Heartbeat Response Time	5 msec

Events Log

Event Description	Generated By
Active	Primary
Heartbeats have been setup successfully	Primary
Primary and secondary server synchronization in progress	Primary
Configuration successfully created	Primary

HA Configuration : mse3350
 Services > Mobility Services Engines > System > Services High Availability > Current High Availability Status

Current High Availability Status

Status	Active
Heartbeats	Up
Data Replication	Up
Mean Heartbeat Response Time	4 msec

Events Log

Event Description	Generated By
Active	Primary
Heartbeats have been setup successfully	Primary
Primary and secondary server synchronization in progress	Primary
Configuration successfully created	Primary

MSE HA的基本故障排除

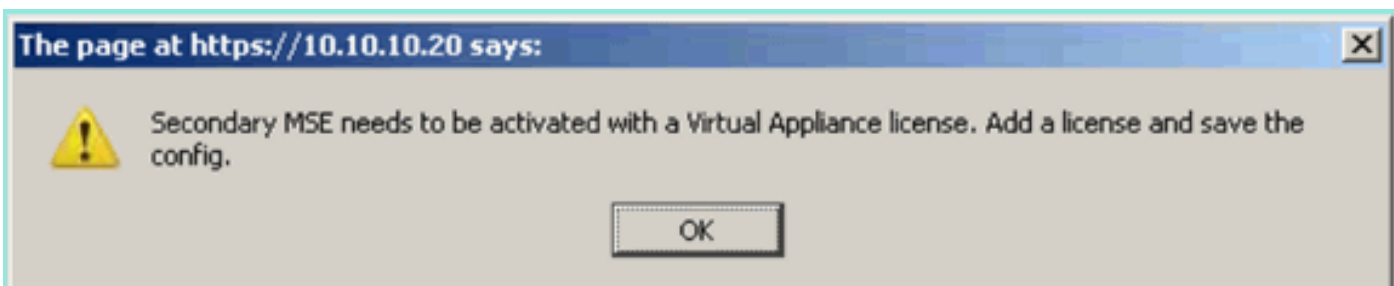
添加辅助MSE时，您会看到如下提示：



在设置脚本期间可能存在问题。

- 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/mseed start`命令。
- 如果需要，请再次运行安装脚本(`/mse/setup/setup.sh`)，并保存到末尾。

MSE的虚拟设备还需要激活许可证(L-MSE-7.0-K9)。否则，NCS在添加辅助MSE VA时会提示。获取并添加MSE VA的激活许可证。



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/mseed stop`命令停止服务，然后再次运行设置脚本(`/mse/setup/setup.sh`)。

```
Applying High Availability configuration
*** User has switched roles for this MSE. MSE must be stopped before switching r
oles.
*** Please stop MSE and then re-run setup.sh.
ERROR: One or more of the requested configurations was not applied.
Role=2, Health Monitor Interface=eth0, Direct connect interface=none
Success
[root@mse2 setup]#
```

使用`gethainfo`命令获取MSE上的高可用性信息。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高可用性视图是获取MSE的高可用性设置可视性的一个出色管理工具。

Cisco Prime Network Control System Virtual Domain: ROOT-DOMAIN root Log Out

Home Monitor Configure Services Reports Administration

System HA Configuration : mse3310
 Services > Mobility Services Engines > System > Services High Availability > Current High Availability Status

Current High Availability Status

Status Primary and secondary server synchronization in progress (60% complete)

Heartbeats Up

Data Replication Setting up

Mean Heartbeat Response Time 8 msec

Events Log

Event Description	Generated By	Timestamp
Heartbeats have been setup successfully	Primary	2012-Feb-17, 20:54:36 UTC
Primary and secondary server synchronization in progress	Primary	2012-Feb-17, 20:54:32 UTC
Configuration successfully created	Primary	2012-Feb-17, 20:54:32 UTC

Refresh Status

相关信息

- [MSE配置指南（虚拟和物理设备）](#)
- [MSE高可用性配置](#)
- [订购](#)
- [技术支持和文档 - Cisco Systems](#)