



Configuring High Availability

This chapter describes how to configure high availability on the Cisco Mobility Services Engine. The MSE is a platform for hosting multiple mobility applications. Every active MSE is backed up by another inactive instance. The active MSE is called the Primary MSE and the inactive MSE is called the Secondary MSE.

The main component of high availability system is the health monitor. The health monitor configures, manages, and monitors the high availability setup. Heartbeat is maintained between the primary and secondary MSE. Health monitor is responsible for setting up the database, file replication, and monitoring the application. When the primary MSE fails and the secondary MSE takes over, the virtual address of the primary MSE is switched transparently to the secondary MSE.



Note

The MSEs, Synchronize Services, Synchronization History, High Availability, Context Aware Notifications, and Mobile Concierge pages on the Services tab are available only in the virtual domain in Release 7.3.

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Overview of the High Availability Architecture

This section provides an overview of the high availability architecture.

- Every active primary MSE is backed up by another inactive instance. The purpose of the secondary MSE is to monitor the availability and state of the primary MSE. The secondary MSE becomes active only after the failover procedure is initiated.

- One secondary MSE can support one primary MSE.

Pairing Matrix

The following table lists the server type pairing matrix information.

Table 1: Pairing Matrix

	Secondary Server Type					
Primary Server Type		3355	VA-2	VA-3	VA-4	VA-5
	3355	Y	N	N	N	N
	VA-2	N	Y	Y	Y	Y
	VA-3	N	N	Y	Y	Y
	VA-4	N	N	N	Y	Y
	VA-5	N	N	N	N	Y

Guidelines and Limitations for High Availability

- Both the health monitor IP and virtual IP should be accessible from Prime Infrastructure.
- The health monitor IP and virtual IP should always be different. The health monitor and virtual interface can be on the same network interface or different interfaces.
- You can use either manual or automatic failover. Failover should be considered temporary. The failed MSE should be restored to normal as soon as possible, and failback should be reinitiated. The longer it takes to restore the failed MSE, the longer you are running with a single MSE without high availability support.
- You can use either manual or automatic failback.
- Both the primary and secondary MSE should be running the same software version.
- High Availability over WAN is not supported.
- High Availability over LAN is supported only when both the primary and secondary MSEs are in the same subnet.
- The ports over which the primary and secondary MSEs communicate must be open (not blocked with network firewalls, application firewalls, gateways, and so on). The following input/output ports should be opened: 80, 443, 8080, 8081, 22, 8001, 1521, 1411, 1522, 1523, 1524, 1525, 9006, 15080, 61617, 59000, 12091, 1621, 1622, 1623, 1624, 1625, 8083, 8084, and 8402.

Failover Scenario for High Availability

When a primary MSE failure is detected, the following events occur:

- The primary MSE is confirmed as non-functioning (hardware fail, network fail, and so on) by the health monitor on the secondary MSE.
- If automatic failover has been enabled, the secondary MSE is starts immediately. If automatic failover is disabled, an e-mail is sent to the administrator asking if they want to manually start failover.
- When manual failover is configured, an e-mail is sent only if the e-mail is configured for MSE alarms.
- The result of the failover operation is indicated as an event in the Health Monitor UI, and a critical alarm is sent to Prime Infrastructure.

Failback Scenario for High Availability

When the primary MSE is restored to its normal state, if the secondary MSE is already in failover state for the primary, then failback can be invoked.

Failback can occur only if the secondary MSE is in one of the following states for the primary instance:

- The secondary MSE is actually failing over for the primary MSE.
- Manual failover is configured but the administrator did not invoke it.
- The primary MSE failed but the secondary MSE cannot take over because it has encountered errors.
- Failback can occur only if the administrator starts up the failed primary MSE.

HA Licensing

For high availability, an activation license is required on the primary and secondary virtual appliances. No other service license is required on the secondary MSE. It is required only on the primary MSE.

Configuring High Availability on the MSE

During the installation of the MSE software (or using the MSE setup script), configure some critical elements. Pair up the primary and secondary MSE from the Prime Infrastructure UI.

**Note**

By default, all MSEs are configured as primary. If you do not want high availability support and are upgrading from an earlier release, you can continue to use the IP address for the MSE. If you want to set up high availability, then you must configure the health monitor IP address. The health monitor then becomes a virtual IP address.

To configure high availability on the primary MSE, follow these steps:

- Step 1** Ensure that the network connectivity between the primary and secondary MSEs is functioning and that all the necessary ports are open.
- Step 2** Install the correct version of MSE on the primary MSE.
- Step 3** Make sure that the same MSE version is installed on the secondary MSE.
- Step 4** On the intended primary MSE, enter the following command:

```

/opt/mse/setup/setup.sh
-----
Welcome to the Cisco Mobility Services Engine Appliance Setup.

You may exit the setup at any time by typing <Ctrl+c>.
-----

Would you like to configre MSE using:
    1. Menu mode
    2. Wizard mode
    Choose 1 or 2: 1
-----

Mobility Services Engine Setup

Please select a configuration option belwo and enter the
requested information. You may exit setup at any time by typing <Ctrl +C>.

You will be prompted to choose whether you wish to configure a
parameter, skip it, or reset it to its initial default value.
Skipping a parameter will leave it unchanged from its current
value.

Please note that the following parameters are mandatory and must be configured at lease once.
    -> Hostname
    -> Network interface eth0
    -> Timezone settings
    -> Root password
    -> NTP settings
    -> Prime Infrastructure password

You must select option 24 to verify and apply any changes made during this session.
-----

PRESS <ENTER> TO CONTINUE:

-----

Configure MSE:

    1) Hostname *
    2) Network interface eth0 settings*
    3) Timezone settings*
    13) Remote syslog settings
    14) Host access control settings
    15) Audit Rules
  
```

- 4) Root password *
- 5) NTP settings *
- 6) Prime Infrastructure password *
- 7) Display current configuration
- 8) Domain
- 9) High availability role
- 10) Network interface eth1 settings
- 11) DNS settings
- 12) Future restart time
- 16) Login banner
- 17) System console restrictions
- 18) SSH root access
- 19) Single user password check
- 20) Login and password settings
- 21) GRUB password
- 22) Root access control
- 23) Auto start MSE on system boot up
- 24) ## Verify and apply changes ##

Please enter your choice [1 - 24]:

Step 5 Configure the hostname:

Please enter your choice [1 - 24]: 1

Current Hostname=[mse]
 Configure Hostname? (Y)es/(S)kip/(U)se default [Skip]: y
 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

Step 6 Configure the domain:

Please enter your choice [1-24]: 8
 Current domain=[]
 Configure domain name? (Y)es/(S)kip/(U)se default [Skip]: S

Step 7 Configure the Network interface eth0 settings.

Please enter your choice [1 - 24]: 2

Current eth0 interface IP address=[10.0.0.1]
 Current eth0 interface netmask=[255.0.0.0]
 Current IPv4 gateway address=[172.20.104.123]
 Configure eth0 interface parameters? (Y)es/(S)kip/(U)se default [Skip]:y

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

Enter eth0 IP address [10.0.0.2]:

Enter the network mask for IP address 172.21.105.126

Enter network mask [255.255.255.224]:

Enter the default gateway address for this machine.

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

Enter default gateway address [172.20.104.123]:

Step 8 Configure the Root password:

Please enter your choice [1 - 24]: 4

Root password has not been configured
 Configure root password? (Y)es/(S)kip/(U)se default [Skip]:
 Changing password for user root.

You can now choose the new password.

A valid password should be a mix of upper and lower case letters, digits, and other characters. You can use an 8 character long password with characters from all of these classes. An upper case letter that begins the password and a digit that ends it do not count towards the number of character classes used.

Enter new password:

Step 9 Configure the High availability role:

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

High availability role for this MSE (Primary/Secondary)

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

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

Select Health Monitor Interface [eth0/eth1] [eth0]: 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 appropriately configure the respective interfaces.

"none" implies you do not wish to use direct connect configuration.

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

Enter a Virtual IP address for the Primary MSE server

Enter Virtual IP address [1.1.1.1]: 10.10.10.11

Enter network mask for IP address 10.10.10.1

Enter network mask [1.1.1.1]: 255.255.255.0

Select to start the sever in recovery mode.

You should choose yes only if this primary MSE was paired earlier and you have nowlost the

configuration from this box.

And, now you want to restore the configuration from Secondary via Cisco Prime Infrastructure
Do you wish to start this MSE in HA recovery mode?: (yes/no) [no]:**no**

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 [Skip]:

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

The second ethernet interface is currently disabled for this machine.

Configure eth1 interface parameters? (Y)es/(S)kip/(U)se default [Yes]: **S**

Step 10 Configure the Timezone settings:

Please enter your choice [1 - 24]: 3

Current Timezone=[America/New_York]

Configure Timezone? (Y)es/(S)kip/(U)se default [Skip]: y

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.

#? 2

Please select a country.

- | | |
|----------------------|----------------|
| 1) Anguilla | 27) Honduras |
| 2) Antigua & Barbuda | 28) Jamaica |
| 3) Argentina | 29) Martinique |

- | | |
|------------------------|-----------------------------|
| 4) Aruba | 30) Mexico |
| 5) Bahamas | 31) Montserrat |
| 6) Barbados | 32) Netherlands Antilles |
| 7) Belize | 33) Nicaragua |
| 8) Bolivia | 34) Panama |
| 9) Brazil | 35) Paraguay |
| 10) Canada | 36) Peru |
| 11) Cayman Islands | 37) Puerto Rico |
| 12) Chile | 38) St Barthelemy |
| 13) Colombia | 39) St Kitts & Nevis |
| 14) Costa Rica | 40) St Lucia |
| 15) Cuba | 41) St Martin (French part) |
| 16) Dominica | 42) St Pierre & Miquelon |
| 17) Dominican Republic | 43) St Vincent |
| 18) Ecuador | 44) Suriname |
| 19) El Salvador | 45) Trinidad & Tobago |
| 20) French Guiana | 46) Turks & Caicos Is |
| 21) Greenland | 47) United States |
| 22) Grenada | 48) Uruguay |
| 23) Guadeloupe | 49) Venezuela |
| 24) Guatemala | 50) Virgin Islands (UK) |
| 25) Guyana | 51) Virgin Islands (US) |
| 26) Haiti | |

#? 47

Please select one of the following time zone regions.

- 1) Eastern Time
- 2) Eastern Time - Michigan - most locations
- 3) Eastern Time - Kentucky - Louisville area
- 4) Eastern Time - Kentucky - Wayne County
- 5) Eastern Time - Indiana - most locations
- 6) Eastern Time - Indiana - Daviess, Dubois, Knox & Martin Counties
- 7) Eastern Time - Indiana - Pulaski County
- 8) Eastern Time - Indiana - Crawford County
- 9) Eastern Time - Indiana - Pike County
- 10) Eastern Time - Indiana - Switzerland County
- 11) Central Time
- 12) Central Time - Indiana - Perry County
- 13) Central Time - Indiana - Starke County
- 14) Central Time - Michigan - Dickinson, Gogebic, Iron & Menominee Counties
- 15) Central Time - North Dakota - Oliver County
- 16) Central Time - North Dakota - Morton County (except Mandan area)
- 17) Mountain Time
- 18) Mountain Time - south Idaho & east Oregon
- 19) Mountain Time - Navajo
- 20) Mountain Standard Time - Arizona
- 21) Pacific Time
- 22) Alaska Time
- 23) Alaska Time - Alaska panhandle
- 24) Alaska Time - Alaska panhandle neck
- 25) Alaska Time - west Alaska
- 26) Aleutian Islands
- 27) Hawaii

#? 21

The following information has been given:

```
United States
Pacific Time
```

```
Therefore TZ='America/Los_Angeles' will be used.
Local time is now:      Sun Apr  6 18:45:27 PDT 2014.
Universal Time is now:  Mon Apr  7 01:45:27 UTC 2014.
Is the above information OK?
1) Yes
2) No
#? 1
```

Step 11 Configure the DNS settings:

```
Please enter your choice [1 - 24]: 11
```

```
Domain Name Service (DNS) Setup
```

```
Enable DNS (yes/no) [no]: y
Default DNS server 1=[8.8.8.8]
Enter primary DNS server IP address:
DNS server address must be in the form #.#.#.#, where # is 0 to 255 or hexadecimal :
separated v6 address
```

```
Enter primary DNS server IP address [8.8.8.8]:
Enter backup DNS server IP address (or none) [none]:
```

Step 12 Configure the NTP settings:

```
Please enter your choice [1 - 24]: 5
```

```
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 [Skip]: y
```

```
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]: y
Default NTP server 1=[time.nist.gov]
Enter NTP server name or address:
NTP server address must be in the form #.#.#.3, where # is 0 to 255 hexadecimal :
separated v6 address.
```

```

Enter NTP server name or [time.nist.gov]:
Enter another NTP server IP address (or none) [none]:
Configure NTP Authentication ? (Y)es/(S)kip/(U)se default [Skip]: y
Enter NTP Auth key Number [1]:
Enter NTP Auth key Value (String) [Secret]:
Do you want to continue (yes/no) [no]: y

```

Step 13 Configure the Prime Infrastructure password:

```
Please enter your choice [1 - 24]: 6
```

```

Cisco Prime Infrastructure communication password has not been configured.
Configure Prime Infrastructure password? (Y)es/(S)kip/(U)se default [Yes]:

```

```

Enter a password for the admin user.
The admin user is used by the Prime Infrastructure and other northbound systems to authenticate
their SOAP/XML session with the server. Once this password is updated, it must correspondingly
be updated on the NCS page for MSE General Parameters so that the Prime Infrastructure can
communicate with the MSE.

```

Step 14 Verify and apply changes

```
Please enter your choice: 24
```

```
Please verify the following setup information.
```

```

-----BEGIN-----

Hostname=mse1
Role= 1, Health Monitor Intercace=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
Time zone=America/Los_Angeles
Enable DNS=yes, DNS servers=8.8.8.8
Enable NTP=yes, NTP servers=time.nist.gov
Time zone=America/Los_Angeles
Root password is changed.
Cisco Prime Infrastructure password is changed.

-----END-----

```

```
You may enter "yes" to proceed with configuration, "no" to make
more changes.
```

```

Configuration Changed
Is the above information correct (yes or no): yes

```

```
-----
Checking mandatory configuration information...
```

```
Root password: Not configured
```

```

**WARNING**
The above parameters are mandatory and need to be configured.

```

```

-----
Ignore and proceed (yes/no): yes
Setup will now attempt to apply the configuration.
Restarting network services with new settings.
Shutting down interface eth0:

```

The system is minimally configured right now. It is strongly recommended that you run the setup script under /opt/mse/setup/setup.sh command to configure all appliance related parameters immediately after installation is complete.

PRESS <ENTER> TO EXIT THE INSTALLER:

Step 15

Reboot the system:

```

[root@mse1]# reboot
Stopping MSE Platform

```

```

Flushing firewall rules:                [OK]
Setting chains to policy ACCEPT: nat filter [OK]
Unloading iptables modules:             [ok]

```

Broadcast message from root (pts/0) (Tue Apr29 14:15:27:2014):

The system is going down for reboot NOW:

Step 16

Start the MSE services:

```

[root@mse1]# /etc/init.d/mseed start
Starting MSE Platform.

```

```

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

```

Step 17

After all services have started, confirm MSE services are working properly by entering the following command:

```

[root@mse1]# getserverinfo

```

Step 18

After the new installation, the initial login starts the Setup wizard where in you can configure the secondary MSE.

```

Current hostname=[mse1]
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 hostname [mse]: mse2

```

Step 19 Configure the domain:

```
Please enter your choice [1-24]: 8
Current domain=[ ]
Configure domain name? (Y)es/(S)kip/(U)se default [Skip]: S
```

Step 20 Configure the High availability role:

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

```
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 Prime Infrastructure to
communicate among themselves
```

```
Select Health Monitor Interface [eth0/eth1] [eth0]: 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 appropriately configure the respective interfaces.
```

```
"none" implies you do not wish to use direct connect configuration.
```

```
-----
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
```

```
The second ethernet interface is currently disabled for this machine.
```

```
Configure eth1 interface parameters? (Y)es/(S)kip/(U)se default [Yes]: S
```

Step 21 Configure the Timezone settings:

Please enter your choice [1 - 24]: 3

Current Timezone=[America/New_York]

Configure Timezone? (Y)es/(S)kip/(U)se default [Skip]: y

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.

#? 2

Please select a country.

- | | |
|------------------------|-----------------------------|
| 1) Anguilla | 27) Honduras |
| 2) Antigua & Barbuda | 28) Jamaica |
| 3) Argentina | 29) Martinique |
| 4) Aruba | 30) Mexico |
| 5) Bahamas | 31) Montserrat |
| 6) Barbados | 32) Netherlands Antilles |
| 7) Belize | 33) Nicaragua |
| 8) Bolivia | 34) Panama |
| 9) Brazil | 35) Paraguay |
| 10) Canada | 36) Peru |
| 11) Cayman Islands | 37) Puerto Rico |
| 12) Chile | 38) St Barthelemy |
| 13) Colombia | 39) St Kitts & Nevis |
| 14) Costa Rica | 40) St Lucia |
| 15) Cuba | 41) St Martin (French part) |
| 16) Dominica | 42) St Pierre & Miquelon |
| 17) Dominican Republic | 43) St Vincent |
| 18) Ecuador | 44) Suriname |
| 19) El Salvador | 45) Trinidad & Tobago |
| 20) French Guiana | 46) Turks & Caicos Is |
| 21) Greenland | 47) United States |
| 22) Grenada | 48) Uruguay |
| 23) Guadeloupe | 49) Venezuela |
| 24) Guatemala | 50) Virgin Islands (UK) |
| 25) Guyana | 51) Virgin Islands (US) |

#? 47

Please select one of the following time zone regions.

- 1) Eastern Time
- 2) Eastern Time - Michigan - most locations

- 3) Eastern Time - Kentucky - Louisville area
 - 4) Eastern Time - Kentucky - Wayne County
 - 5) Eastern Time - Indiana - most locations
 - 6) Eastern Time - Indiana - Daviess, Dubois, Knox & Martin Counties
 - 7) Eastern Time - Indiana - Pulaski County
 - 8) Eastern Time - Indiana - Crawford County
 - 9) Eastern Time - Indiana - Pike County
 - 10) Eastern Time - Indiana - Switzerland County
 - 11) Central Time
 - 12) Central Time - Indiana - Perry County
 - 13) Central Time - Indiana - Starke County
 - 14) Central Time - Michigan - Dickinson, Gogebic, Iron & Menominee Counties
 - 15) Central Time - North Dakota - Oliver County
 - 16) Central Time - North Dakota - Morton County (except Mandan area)
 - 17) Mountain Time
 - 18) Mountain Time - south Idaho & east Oregon
 - 19) Mountain Time - Navajo
 - 20) Mountain Standard Time - Arizona
 - 21) Pacific Time
 - 22) Alaska Time
 - 23) Alaska Time - Alaska panhandle
 - 24) Alaska Time - Alaska panhandle neck
 - 25) Alaska Time - west Alaska
 - 26) Aleutian Islands
 - 27) Hawaii
- #? 21

The following information has been given:

```

United States
Pacific Time

```

```

Therefore TZ='America/Los_Angeles' will be used.
Local time is now:      Sun Apr  6 18:45:27 PDT 2014.
Universal Time is now: Mon Apr  7 01:45:27 UTC 2014.
Is the above information OK?
1) Yes
2) No
#? 1

```

Step 22 Configure the NTP settings:

```
Please enter your choice [1 - 24]: 5
```

```
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 [Skip]: y
```

```
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]: y
Default NTP server 1=[time.nist.gov]
Enter NTP server name or address:
NTP server address must be in the form #.#.#.3, where # is 0 to 255 hexadecimal :
separated v6 address.
Enter NTP server name or [time.nist.gov]:
Enter another NTP server IP address (or none) [none]:
Configure NTP Authentication ? (Y)es/(S)kip/(U)se default [Skip]: y
Enter NTP Auth key Number [1]:
Enter NTP Auth key Value (String) [Secret]:
Do you want to continue (yes/no) [no]: y

```

Step 23 Verify and apply changes

Please enter your choice: 24

Please verify the following setup information.

```

-----BEGIN-----

  Hostname=mse2
  Role= 2, Health Monitor Intercace=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=America/Los_Angeles
  Enable NTP=yes, NTP servers=time.nist.gov
  Time zone=America/Los_Angeles

-----END-----

```

You may enter "yes" to proceed with configuration, "no" to make more changes.

```

Configuration Changed
Is the above information correct (yes or no): yes

```

```

-----
Checking mandatory configuration information...

```

Root password: Not configured

****WARNING****

The above parameters are mandatory and need to be configured.

```

-----
Ignore and proceed (yes/no): yes
Setup will now attempt to apply the configuration.

```

```
Restarting network services with new settings.
Shutting down interface eth0:
```

```
The system is minimally configured right now. It is strongly recommended that you run the setup
script under /opt/mse/setup/setup.sh command to configure all appliance related parameters
immediately after installation is complete.
```

```
PRESS <ENTER> TO EXIT THE INSTALLER:
```

Step 24

Reboot the system:

```
[root@mse2 installers]# reboot
Stopping MSE Platform
```

```
Flushing firewall rules: [OK]
Setting chains to policy ACCEPT: nat filter [OK]
Unloading iptables modules: [ok]
```

```
Broadcast message from root (pts/0) (Tue Apr29 14:15:27:2014):
```

```
The system is going down for reboot NOW:
```

Step 25

Start the MSE services:

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

```
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
```

Step 26

Once you configure both the primary MSE and secondary MSE, the Prime Infrastructure UI should be used to set up a pairing between the primary and secondary MSE.

Step 27

Once you add the primary MSE successfully, choose **Services > High Availability** or click the primary MSE device in the **Services > Mobility Services Engine > System > Services High Availability > HA Configuration**. The HA Configuration page appears.

Step 28

Enter the secondary device name with which you want to pair the primary MSE.

Step 29

Enter the secondary IP address which is the health monitor IP address of the secondary MSE.

Step 30

Enter the secondary password. This is the Prime Infrastructure communication password configured on the MSE.

Step 31

Specify the failover type. You can choose either **Manual** or **Automatic** from the Failover Type drop-down list.

Step 32

Specify the failback type by choosing either **Manual** or **Automatic** from the Failback Type drop-down list.

Step 33

Specify the Long Failover Wait in seconds.
After 10 seconds, the system fails over. The maximum failover wait is two minutes.

Step 34

Click **Save**.
The pairing and the synchronization happens automatically.

- Step 35** To check whether the heartbeat is received from the primary MSE or not, choose **Services > Mobility Services Engine > System > Services High Availability > HA Status**.
-

Recovering Pairing Information on the New Primary MSE using Setup Script

To recover the pairing information on the new Primary MSE, follow these steps:

- Step 1** Configure the MSE as a primary using the setup script.
- Step 2** Set up a pairing between the primary and secondary MSE using PI.
- Step 3** Initiate failover to secondary.
- Step 4** Configure the replacement MSE as a primary using the setup script.
Note The new primary MSE must have the same version as the secondary.
- Step 5** Choose the recovery mode and follow the instructions.
- Step 6** Initiate the failback to the new primary using PI.
A new license is required on the this new primary MSE, as the original license will not match the UDI of the primary, and will not work.
-

Viewing Configured Parameters for High Availability

To view the configured parameters for high availability, follow these steps:

- Step 1** Choose **Services > High Availability**.
- Step 2** Click **MSE Name** to view its configured fields.
The HA configuration page appears.
- Step 3** Choose **Services High Availability > HA Configuration** from the left sidebar menu. The HA Configuration page provides the following information:
- Primary Health Monitor IP
 - Secondary Device Name
 - Secondary IP Address
 - Secondary Password
 - Failover Type
 - Failback Type
 - Long Failover Wait

Viewing High Availability Status

To view the high availability status, follow these steps:

-
- Step 1** Choose **Services** > **High Availability**.
- Step 2** Click **MSE Name** to view the desired status.
The HA Configuration page appears.
- Step 3** Choose **HA Status** from the left sidebar menu. The HA Configuration page provides the following information:
- Current High Availability Status
 - Status—Shows whether the primary and secondary MSE instances are correctly synchronized or not.
 - Heartbeats—Shows whether the heartbeat is received from the primary MSE or not.
 - Data Replication—Shows whether the data replication between the primary and secondary databases is happening or not.
 - Mean Heartbeat Response Time—Shows the mean heartbeat response time between the primary and secondary MSE instance.

 - Event Log—Shows all the events generated by the MSE. The last 20 events can be viewed.
-