

NEMO-LMA Heartbeat

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Feature Information

Summary Data

Status	New Feature
Introduced-In Release	21.2
Modified-In Release(s)	Not Applicable
Applicable Product(s)	P-GW
Applicable Platform(s)	ASR 5500
Default Setting	Disabled
Related CDETS ID(s)	CSCuw08182
Related Changes in This Release	NEMO PMIPv6 Heartbeat on LMA (SAEGW)
Related Documentation	Command Line Interface Reference P-GW Administration Guide SAEGW Administration Guide

Revision History

Important Revision history details are not provided for features introduced before release 21.2.

Revision Details	Release	Release Date
New in this release.	21.2	April 27, 2017

Feature Description

Path management mechanism through Heartbeat messages between the Mobile Router (MR) and Network Mobility-Local Mobility Anchor (NEMO-LMA) is important to know the availability of the peers, to detect failures, quickly inform peers if recovery from the node fails and allow a peer to take appropriate action.

How It Works

The MR and the LMA exchange Heartbeat messages at regular intervals to detect the status of availability between them. The NEMO-LMA initiates a Heartbeat exchange with the MR, by sending a Heartbeat Request message, to check if the MR is reachable. The NEMO-LMA records the sequence number of the last Heartbeat Request message and is used to match the corresponding Heartbeat Response. The NEMO-LMA responds to a Heartbeat Request message with a Heartbeat Response message, irrespective of whether there is PMIPv6 session with the corresponding peer.

Binding Error

When the Binding Error message, with status set to 2, is received in response to a Heartbeat Request message, the NEMO-LMA does not use Heartbeat messages further with the corresponding peer.

Failure Detection

When the LMA node does not receive the Heartbeat response for the configurable parameter **max-heartbeat-retransmission** <*value*> **exceed-action drop-session**, the NEMO-LMA concludes that the peer is not reachable. As such, the Heartbeat request to the peer is stopped and clears the NEMO-LMA session without any traps.

Restart Detection

If the restart counter value is different from the previous received value, then it assumes that the peer had crashed and recovered. And so, the existing NEMO-LMA sessions are cleared.

License Requirements

Use of NEMO requires that a valid license key be installed. Contact your Cisco account or Support representative for information on how to obtain a license.

Configuring NEMO-LMA Heartbeat

Use the following commands under LMA Service Configuration Mode to clear NEMO-LMA sessions without generating traps:

```
configure
   context context_name
      lma-service service_name
         heartbeat retransmission max number [ exceed-action drop-session ]
         end
```

Notes:

- **retransmission max**: The maximum number of heartbeat retransmissions allowed. The *number* must be an integer from 0 to 15. Default: 3
- **exceed-action**: Specifies the action to be taken after the maximum number of Heartbeat retransmissions is reached.
- **drop-session**: Used for dropping the session when path failure is detected.
- The **exceed-action** and **drop-session** keywords are valid only for NEMO-LMA sessions and takes effect if the Heartbeat feature is enabled.

Monitoring and Troubleshooting the NEMO-LMA Heartbeat

The following sections describe commands available to monitor and troubleshoot the feature.

monitor protocol

When using the **monitor protocol** command, enable option **48** to monitor the Heartbeat Request/Reply messages.

show lma-service statistics

Use this command to see the statistics related to Heartbeat messages. The output generated appears similar to the following:

```
Total Disconnects:          1
   Lifetime expiry:         0      Deregistrations:     0
      Admin Drops:          0      Path Failure Drops:  1
      Other Reasons:        0
```

show session disconnect-reasons

Use this command to see the call disconnected due to heartbeat path failure. The output generated appears similar to the following:

```
mme-guti_realloc_failed-detach(615)          0        0.00000
mme-pcscf-rest-detach(616)                   0        0.00000
Reject-ho-old-tun-path-failure(617)          0        0.00000
mip-path-failure(618)                        0        0.00000
```

Bulk Statistics

LMA Schema

The following new bulk statistics variable is added to the LMA schema in support of this feature:

- lma-pathfailsessionscleared – If any path failures/restarted counter value changes for the NEMO-LMA Heartbeat feature, the sessions disconnection counter is incremented.