## Heartbeat Monitor Application

### Description

Heartbeat monitor application demonstrates use of custom indications in Dual-Stack custom applications. It monitors heartbeat failure.

Under normal Dual-Stack working, if Talaria TWO crashes or hangs, the host application will be unable to detect it. The heartbeat feature is implemented to avoid this. Every 10 seconds, the host sends a heartbeat signal to Talaria TWO. Talaria TWO acknowledges this by sending an indication of its normal working. If Talaria TWO stops responding, the host detects this issue notifies this in the custom application: heartbeat\_monitor.

The custom application is located in *hapi/dual\_stack/bins* folder.

### Prerequisites

1. GTKTerm or similar application.
2. Start the tunadapter with heartbeat=1.

### Command Description

Enable the heartbeat feature. By default, the heartbeat feature is disabled.

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| --- |
| ./tunadapter heartbeat=1& |

Monitor heartbeat failure.

|  |
| --- |
| $./heartbeat\_monitor |

### Procedure

Execute the following operations on Talaria TWO:

**Step 1**: Start the tunadapter with heartbeat=1.

**Step 2**: Heartbeat message is sent every 10 seconds, which is fixed.

**Step 3**: Run the custom application (heartbeat\_monitor), to monitor heartbeat feature.

**Step 4**: When Talaria TWO crashes or is out-of-sync with the host, the host notifies the custom application and displays the same.

**Step 5**: The custom application waits for the indication message from the host and once received, prints the message.

### Expected Output

#### Host Console Logs

A computer screen shot of a black screen

Description automatically generated

A screen shot of a computer program

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Figure 4: Heartbeat monitor - Host console logs

Host serial log – text output:

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| --- |
| [root@:]# ./tunadapter heartbeat=1 &  [root@:]# heartbeat=1  ./tunadapter: platform=<host>\_SDIO  Opening Serial device /dev/wlanSDIO0  Speed=10000000  [ 45.335718] sw\_open  hapi\_recv\_thread:943 DEBUG:recv thread entry  wakeup gpio(gpio\_63) conf success  in hapi\_wakeup\_config. dev=/sys/class/gpio/gpio63/value  wakeup\_fd = 4  hapi\_config:1526 DEBUG:hapi\_config. 14 1 0 0  hapi\_config:1586 DEBUG:before calling hio\_query  hapi\_hio\_query:352 DEBUG:Connected to T2, max packet size is 4092  hapi\_hio\_query:353 DEBUG:Firmware version: , patch version  hapi\_hio\_query:354 DEBUG:Hapi version: 1  hapi\_config:1588 DEBUG:after calling hio\_query  hapi init:start  Registering Wake up Indication Handlers  Registering Shutdown Indication Handlers  hapi init:done  dual\_stack\_status:0:0:0  dual\_stack\_ver:e4f2ebcd:FREERTOS\_SDK\_1.0:1.0.05  port:70-40000  dual\_stack\_sockid:-1:-1:-1  Creating tun interface  Initialising tun interface  hapi\_wcm\_create:105 DEBUG:WiFi interface created with mac addr: 00:00:00:00:18:1F  Regsitering WCM Indication Handlers  heartbeat[10-30000] conf done  waiting for data from tun....  ptsname:/dev/pts/0  [root@:]# ./heartbeat\_monitor &  [root@:]# register\_custom\_inds. num=1  custom\_ind\_msgq created----  registering ind. g=0x54, m=0xc0  register\_custom\_inds. num=1. done  dualstack custom ind reg success.!  calling msgrcv.rxmsg size=136, payload size=132,long=4  hapi\_show\_packet\_infos:189 DEBUG:pkt\_out:0x005b0c40,group=0x55,msg=0x00,trxid=0006  hapi\_show\_packet\_infos:189 DEBUG: pkt\_in:0x769004f0,group=0x55,msg=0xc1,trxid=0000 |

In case of heartbeat failure, host prints the following hexdump on the console:

A screen shot of a computer

Description automatically generated

Figure 5: Heartbeat failure hexdump

|  |
| --- |
| heartbeat timeout  calling msgsnd. txmsg size=136, payload size=132,long=4  deliver\_ind\_to\_custom\_app: status=0  Heartbeat failed..  Hexdump of rx msg, len=32  17 12 00 00 54 C0 04 00 00 00 00 00 00 00 00 00 | ....T...........  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 | ................  group\_id----->0x54,msg\_id ::0xc0,len=0x4,Hexdump of ind data, len=4  00 00 00 00 |

### List of Message IDs Used

This application demonstrates the use of custom indications in Dual-Stack custom apps and uses Group number 84. Following is the message ID used:

1. HEARTBEAT\_MONITOR\_FAILED\_IND

This message is sent to indicate heartbeat failure.