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## Introduction

This document describes how to track heartbeat messages between Customer Voice Portal (CVP) Callserver and Voice Response Unit Peripheral Interface Manager (VRU PIM) using VRU PIM logs and Wireshark capture.

## Prerequisites

### Requirements

Cisco recommends that you have knowledge of these topics:

- CVP Server
- Cisco Unified Intelligent Contact Management (ICM), Cisco Unified Contact Center Enterprise (UCCE) Deployments

### Components Used

The information in this document is based on these software versions:

- CVP Server 9.0 and above
- UCCE 9.0 and above
- Wireshark

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## Background Information

Heartbeat messages are exchanged between CVP Call Server and VRU PIM using the port configured on the ICM subsystem of the CVP Call Server. The default port number is 5000.

# Procedure

In order to track heartbeat messages between CVP and VRU PIM, there are several steps that need to be executed.

Step1. On the VRU PIM side, increase the level of traces. The default trace level does not show any heartbeat messages.

If you enable only heartbeat traces ( **\*heartbeat\*** /on), the logs won't show the heartbeat intercarcation between CVP and VRU PIM, you see only this :

```
18:58:00:552 pg2A-pim1 Trace: PIMActiveHeartbeat
```

```
18:58:05:536 pg2A-pim1 Trace: PIMActiveHeartbeat
```

```
18:58:10:536 pg2A-pim1 Trace: PIMActiveHeartbeat
```

```
18:58:15:537 pg2A-pim1 Trace: PIMActiveHeartbeat
```

```
18:58:20:537 pg2A-pim1 Trace: PIMActiveHeartbeat
```

But if you have trace **\*heartbeat\*** /on and trace **\*session\*** /on it actually shows you the messages in the VRU PIM logs with the sequence numbers:

Here is the example on how to enable the VRU PIM traces:

```
C:\icn\ins98\PG1A\logfiles>procnon ins98 pg1a pin2
18:35:56 Trace: EMI Creating Mutex Global\IMICConnect_DisconnectLock
>>>>trace *session* /on
>>>>trace *heartbeat* /on
>>>>
```

**Warning:** Increase the level of traces in a production envorment can degradade the performance of the system.

There are 3 messages that complete one heartbeat exchange.

```
18:59:05:538 pg2A-pim1 Trace: PG->VRU: Heartbeat Req (= Message Type 5); Message Length 4 bytes
Invoke ID: (2857109196) aa4c06cc
```

```
18:59:05:538 pg2A-pim1 Trace: VRU->PG: Heartbeat Conf (= Message Type 6); Message Length 4 bytes
Invoke ID: (2857109196) aa4c06cc
```

```
18:59:05:538 pg2A-pim1 Trace: PIMActiveHeartbeat
```

And 5 seconds later:

```
18:59:10:538 pg2A-pim1 Trace: PG->VRU: Heartbeat Req (= Message Type 5); Message Length 4 bytes
Invoke ID: (2857109197) aa4c06cd
```

18:59:10:538 pg2A-pim1 Trace: VRU->PG: **Heartbeat Conf** (= Message Type 6); Message Length 4 bytes  
Invoke ID: (2857109197) aa4c06cd

18:59:10:538 pg2A-pim1 Trace: **PIMActiveHeartbeat**

And every 5 seconds after that

18:59:15:538 pg2A-pim1 Trace: PG->VRU: **Heartbeat Req** (= Message Type 5); Message Length 4 bytes  
Invoke ID: (2857109198) aa4c06ce

18:59:15:538 pg2A-pim1 Trace: VRU->PG: **Heartbeat Conf** (= Message Type 6); Message Length 4 bytes  
Invoke ID: (2857109198) aa4c06ce

18:59:15:538 pg2A-pim1 Trace: **PIMActiveHeartbeat**

18:59:20:538 pg2A-pim1 Trace: PG->VRU: **Heartbeat Req** (= Message Type 5); Message Length 4 bytes  
Invoke ID: (2857109199) aa4c06cf

18:59:20:538 pg2A-pim1 Trace: VRU->PG: **Heartbeat Conf** (= Message Type 6); Message Length 4 bytes  
Invoke ID: (2857109199) aa4c06cf

18:59:20:538 pg2A-pim1 Trace: **PIMActiveHeartbeat**

Step2. Capture Wireshark traces.

The VRU PIM log messages are typically enough to see the heartbeat interaction between the two components. However, in some scenarios wireshark captures are needed.

Here is a snippet of a wireshark traces taken from the CVP Callserver.

Since the two devices are talking on port 5000, the traces are filtered by **tcp.port==5000**

The heartbeat packets in the wireshark are 66 bytes for (push, ack) and then 54 to 60 bytes for the ack.

The actual keepalive data in the push messages that are sent from CVP Callserver to VRU PIM and viceversa is only 12 bytes

Packet length

3 packets for every heartbeat exchange

Every 5 Seconds

No.	Time	Source	Destination	Protocol	Length	Info
34	2012-12-01 18:59:05.536897	192.168.0.25	192.168.0.27	TCP	66	opencore > complex-main [PSH, ACK] Seq=3382468379 Ack=1858767277 win=65079 Len=12
35	2012-12-01 18:59:05.536897	192.168.0.27	192.168.0.25	TCP	66	complex-main > opencore [PSH, ACK] Seq=1858767277 Ack=3382468391 win=64887 Len=12
38	2012-12-01 18:59:07.645295	192.168.0.25	192.168.0.27	TCP	54	opencore > complex-main [ACK] Seq=3382468391 Ack=1858767289 win=65067 Len=0
83	2012-12-01 18:59:10.537089	192.168.0.25	192.168.0.27	TCP	66	opencore > complex-main [PSH, ACK] Seq=3382468391 Ack=1858767289 win=65067 Len=12
84	2012-12-01 18:59:10.537089	192.168.0.27	192.168.0.25	TCP	66	complex-main > opencore [PSH, ACK] Seq=1858767289 Ack=3382468403 win=64875 Len=12
87	2012-12-01 18:59:10.5374784	192.168.0.25	192.168.0.27	TCP	54	opencore > complex-main [ACK] Seq=3382468403 Ack=1858767301 win=65055 Len=0
114	2012-12-01 18:59:14.208964	192.168.0.27	192.168.0.25	TCP	150	complex-main > opencore [PSH, ACK] Seq=1858767301 Ack=3382468403 win=64875 Len=12
117	2012-12-01 18:59:14.396464	192.168.0.25	192.168.0.27	TCP	54	opencore > complex-main [ACK] Seq=3382468403 Ack=1858767397 win=64959 Len=0
148	2012-12-01 18:59:15.537089	192.168.0.25	192.168.0.27	TCP	66	opencore > complex-main [PSH, ACK] Seq=3382468403 Ack=1858767397 win=64959 Len=12
149	2012-12-01 18:59:15.537089	192.168.0.27	192.168.0.25	TCP	66	complex-main > opencore [PSH, ACK] Seq=1858767397 Ack=3382468415 win=64863 Len=12
152	2012-12-01 18:59:15.724081	192.168.0.25	192.168.0.27	TCP	54	opencore > complex-main [ACK] Seq=3382468415 Ack=1858767409 win=64947 Len=0
199	2012-12-01 18:59:20.537281	192.168.0.25	192.168.0.27	TCP	66	opencore > complex-main [PSH, ACK] Seq=3382468415 Ack=1858767409 win=64947 Len=12
200	2012-12-01 18:59:20.537281	192.168.0.27	192.168.0.25	TCP	66	complex-main > opencore [PSH, ACK] Seq=1858767409 Ack=3382468427 win=64851 Len=12
201	2012-12-01 18:59:20.733570	192.168.0.25	192.168.0.27	TCP	54	opencore > complex-main [ACK] Seq=3382468427 Ack=1858767421 win=64935 Len=0

Take one packet. as an example, choose packet 34. This packet matches with the timestamp(18:59:05) of first heartbeat messages seen in the VRU PIM logs earlier.

Expand just the data portion of the frame:

```

Frame 34: 66 bytes on wire (528 bits), 66 bytes captured (528 bits)
Ethernet II, Src: Vmware_96:10:ea (00:50:56:96:10:ea), Dst: Vmware_96:6c:e1 (00:50:56:96:6c:e1)
Internet Protocol Version 4, Src: 192.168.0.25 (192.168.0.25), Dst: 192.168.0.27 (192.168.0.27)
Transmission Control Protocol, Src Port: opencore (4089), Dst Port: complex-main (5000), Seq: 3382468379, Ack: 1858767277, Len: 12
Data (12 bytes)
  data: 0000000400000005aa4c06cc
  [Length: 12]

```

You can see the data **aa4c06cc** matches with the Invoke number in the VRU PIM traces.

The heartbeat packets that follow would then have the number **aa4c06cd**, **aa4c06cde** and so on.