# Cisco IOS, Phone, UCM and CUC Packet, and PCM Captures Command Reference

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## Introduction

This document describes the specific commands required to collect the output from either CallManager servers or Cisco IOS® gateways and phones. Many documents are referenced in the collection of Pulse Code Modulation (PCM) and packet captures from different platforms.

## Packet Capture on CallManager, Unity Connection, or CUPS

In order to run the packet capture, complete these steps:

1. Secure Shell (SSH) to the CallManager, Unity Connection, or Cisco Unified Presence Server (CUPS) for which you would like to run the capture.

2. Once you are logged in with the platform administrative rights, enter this command:

   ```
   utils network capture size all count 1000000 file ciscotacpub
   ```
   **Note**: Press **Ctrl-C** in order to stop the trace.
3. After the packet capture is collected from the Servers Console/SSH Terminal, collect it with the Real-Time Monitoring Tool (RTMT). Log in to the RTMT and choose these options:

   System > Tools > Trace > Trace & Log Central > Collect Files > Check the **Packet Capture Logs** check box.

For further information about Unified CallManager packet captures, refer to Packet Capture on Unified Communications Manager Appliance Model.

# Packet Capture on Phones

## CallManager Phone

In order to enable the PC port on the phone at the phone's device level configuration in the Unified CallManager configuration interface, complete these steps:

1. Log in to the CallManager Administration web interface with administrative rights and complete these tasks:

   Choose the Device > Select the phone > PC Port * > Set to Enable > Save > Apply or Reset the phone.

2. Connect a work station to the PC port on the back of the phone and run Wireshark on the work station.

For more information, reference Collecting a packet capture from a Cisco IP Phone.

## CME Phone

This command reference is used to enable a PC Port on a CallManager Express registered IP Phone.

- The parameter in "service phone <parameter>" is case-sensitive.
- The Communications Manager Express (CME) PC port only works on certain phones. Ensure the phone load is compatible with the CME version prior to testing.
- If further assistance is needed, a hub can be used to broadcast the packet from the phone port to a PC connected to the hub.

```
!
telephony-services
 service phone pcPort 0
 service phone spanToPCPort 0
 no create cnf
 create cnf
!
ephone xx
 reset
!
```

- In certain phone models and phone loads, the parameters should be changed from "service phone pcPort 0" to "service phone pcPort 1".
- Once the PC port is enabled, connect a work station to the PC port on the back of the phone and run Wireshark captures.

For further details on the service phone global parameter, refer to these documents:

- Cisco Unified Communications Manager Express Command Reference - service phone
- Cisco Unified Communications Manager Express Command Reference - vendorConfig

Parameter

For further details on compatibility, refer to the Cisco Unified CME and Cisco IOS Software Version Compatibility Matrix to ensure your software is compatible with Cisco IOS.

# Packet Capture on Cisco IOS Gateways

## Packet Capture with IP Export

- This does not work well with the first generation Integrated Services Routers (ISRs) (2800 and 3800 Series routers). The first generation ISRs truncate large packets that cause the Real-Time Protocol (RTP) headers to lose details when troubleshooting Audio RTP related issues.
- Works very well in ISR G2 (2900 and 3900 Series routers).
- Optional - access list to filter out any un-wanted captures:

```
!
 access-list 100 permit ip any any
 access-list 100 permit udp any any
 access-list 100 permit tcp any any
!
!
!
ip traffic-export profile TACCAPTURE mode capture
 bidirectional
 incoming access-list 100
 outgoing access-list 100
 no length
!
interface GigabitEthernet0/0
 ip traffic-export apply TACCAPTURE size 100000000
!
!
enable:
traffic-export interface <type-number> clear
traffic-export interface <type-number> start
traffic-export interface <type-number> stop
traffic-export interface <type-number> copy
!
```

- The traffic export is collected directly from the buffer into the flash/tftp/ftp. For example:

```
!
traffic-export interface <type-number> copy ftp://<ftp-ip address>/filename.pcap
!
```

OR

```
!
traffic-export interface <type-number> copy flash://filename.pcap
!
```

For further details on Cisco IOS packet captures, refer to Router IP Traffic Export Packet Capture Enhancements.

### Embedded Packet Capture

- This command reference captures the interface GigabitEthernet 0/1 bidirectional.
- The capture buffer name in this scenario is capture-buff and the interface reference is capture-pt.

```
!
MS-2901#monitor capture buffer capture-buff size 4000 max-size 1500 linear
MS-2901#monitor capture point ip cef capture-pt gigabitEthernet 0/1 both
MS-2901#monitor capture point associate capture-pt capture-buff
MS-2901#monitor capture point start all
MS-2901#monitor capture point stop all
MS-2901#monitor capture buffer capture-buff export tftp://10.137.8.185/capture.pcap
!
```

For further details on the Embedded IOS packet capture, refer to these documents:

- Cisco IOS Embedded Packet Capture Data Sheet
- Embedded Packet Capture Configuration Guide

## PCM Capture on Cisco IOS Gateway

### Earlier than Cisco IOS Release 15.2(2)T1

- This command reference is used to collect PCM captures on Cisco IOS releases earlier than 15.2(2)T1.
- The destination of the file referenced here is the flash.
- The PCM captures a specific port specified by the **test voice port** command.

```
!
 voice hpi capture buffer 50000000
 voice hpi capture destination flash:pcm.dat
!
!
test voice port x/x/x pcm-dump caplog 7 duration 255
!
!
```

- Run the **test voice port** command from enable mode.
- Review the output from the **show voice call status** command to verify which port the call traverses.

### Cisco IOS Release 15.2(2)T1 and Later

#### SIP and H.323 Gateways

- SIP gateways support triggered captures and H.323 call flows do not work.

### MGCP Gateways

- With regards to the collection of Cisco IOS PCM captures on a Cisco IOS Release 15.2(2)T1 and later, the command reference has changed when compared to earlier Cisco IOS versions.

- The commands are very similar to the SIP and H.323 gateway PCM captures. However, since Media Gateway Control Protocol (MGCP) gateways do not have specified dial-peer (back-haul), enter the **test voice port** command in order to apply the trigger that specifies the voice port in question.

```
!
voice pcm capture buffer 200000
voice pcm capture destination tftp://x.x.x.x/
!

test voice port x/x/x pcm-dump caplog fff duration xxx
!
```

- You can also review the output from the **show voice call status** command in order to verify which port the call traverses.

### Triggered PCM Capture on Cisco IOS Gateway

- The triggered Cisco IOS PCM capture is a feature only available in Cisco IOS Release 15.2(2)T1 and later.

- This feature, when enabled on a voice gateway, starts a PCM capture when the DTMF key *** (star, star, star) on a Cisco registered phone is pressed. Ensure the phone call from this phone traverses the gateway in question.

- The PCM capture stops after the digits ### are entered on the captured phone.

- This will not work for H323 call flows. It only works for SIP call flows.

- There is an optional duration parameter that can be used to specify a specific capture duration after the triggered PCM capture is started. If this parameter is set to 0, the capture is infinite until stopped.

```
!
voice pcm capture buffer 200000
voice pcm capture destination tftp://x.x.x.x/
voice pcm capture on-demand-trigger
voice pcm capture user-trigger-string *** ### stream 7 duration 0
!

press *** on the IP phone to start the capture
press ### on the IP phone to Stop the capture
```