CallManager/ DTMF/ MTP Allocation

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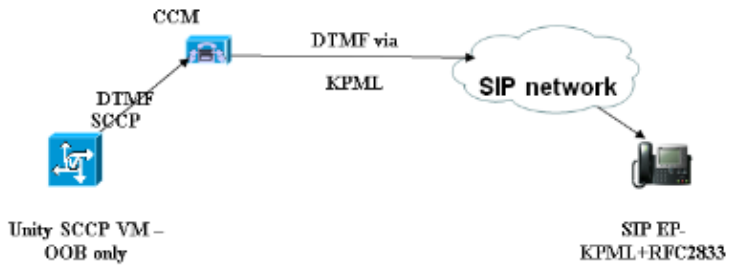
Introduction

This document describes the Cisco CallManager (CCM) Media Termination Point (MTP)/Xcoder allocation for the Dual−Tone Multi−Frequency (DTMF) methods used in different call flows. It covers some of the common call flows that customers use.

Conceptual Diagram

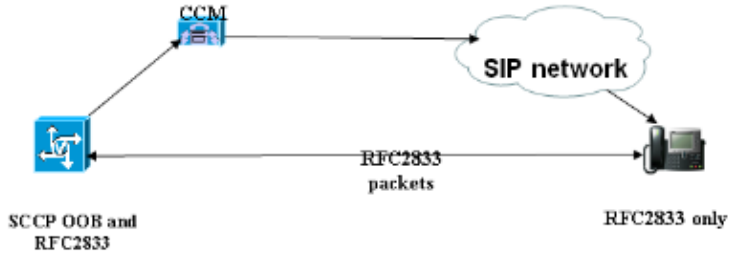
A. Use Out of Band (OOB)

In this scenario, both Session Initiation Protocol (SIP) Endpoint Point (EP) and Skinny Call Control Protocol (SCCP) EP support OOB DTMF. Therefore, CCM will try to use OOB for DTMF and no MTP is needed.



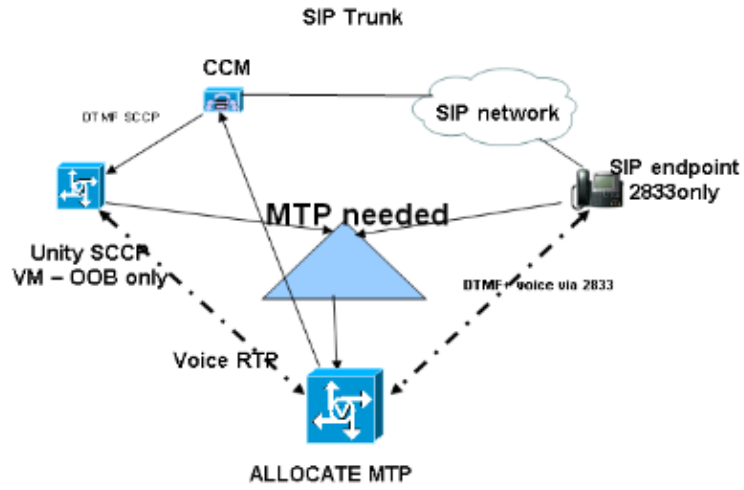
B. Use RFC2833

In this scenario, SCCP EP supports both OOB and RFC2833, and SIP EP supports RFC2833 only. This is an RFC2833 match. Therefore no MTP is needed, and RFC2833 is used for DTMF.



C. Need MTP

In this scenario, SCCP EP supports OOB only, and SIP EP supports RFC2833 only. Therefore an MTP is needed. MTP will send\receive RFC2833 packets to\from the SIP EP and will send\receive OOB DTMF packets to\from CCM. CCM will send\receive OOB DTMF packets to\from MTP and the SCCP phone.



D. DTMF Table

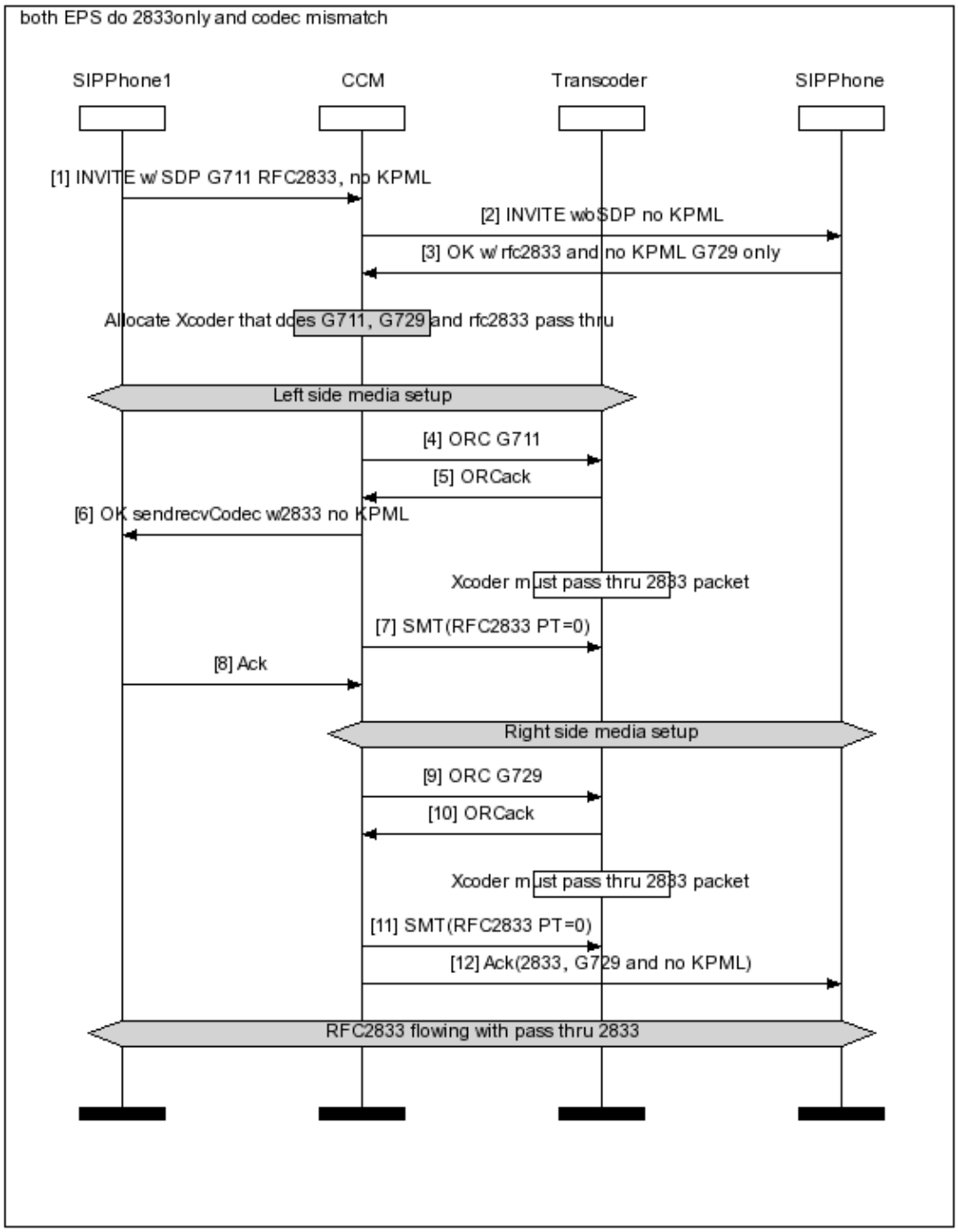
This table provides an overview of DTMF selection based on different configuration settings. When a trunk preference says both, it means that you need to insert MTP if EP behind the trunk supports both OOB and RFC2833, even if there was a DTMF match for one type of method.

SIPT−ept	OOB &2833	OOB & 2833	OOB&2833	OOB&2833
CCM−ept	Pref=Auto	Pref=2833	Pref=OOB	Pref=BOTH
OOB only	OOB	2833 MTP	OOB	OOB &2833 MTP
2833 only	2833	2833	OOB w/ MTP	2833 (and OOB if KPML) MTP
OOB & 2833	2833 OOB (if KPML)	2833	OOB	KPML&2833 (2833 only if UN)

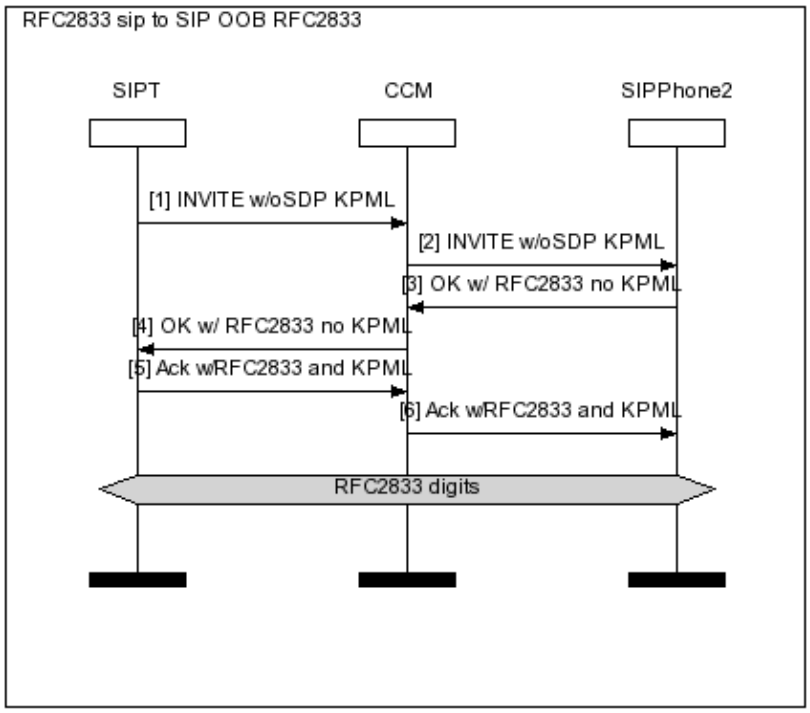
Important Call Flows

A. Call Flow That "Requires" Pass Through From MTP\Xcoder

In this call flow, both EPs support RFC2833 only and Xcoder is inserted due to codec mismatch. In order to use RFC2833 DTMF capability end−to−end, Xcoder needs to pass through RFC2833 packets.



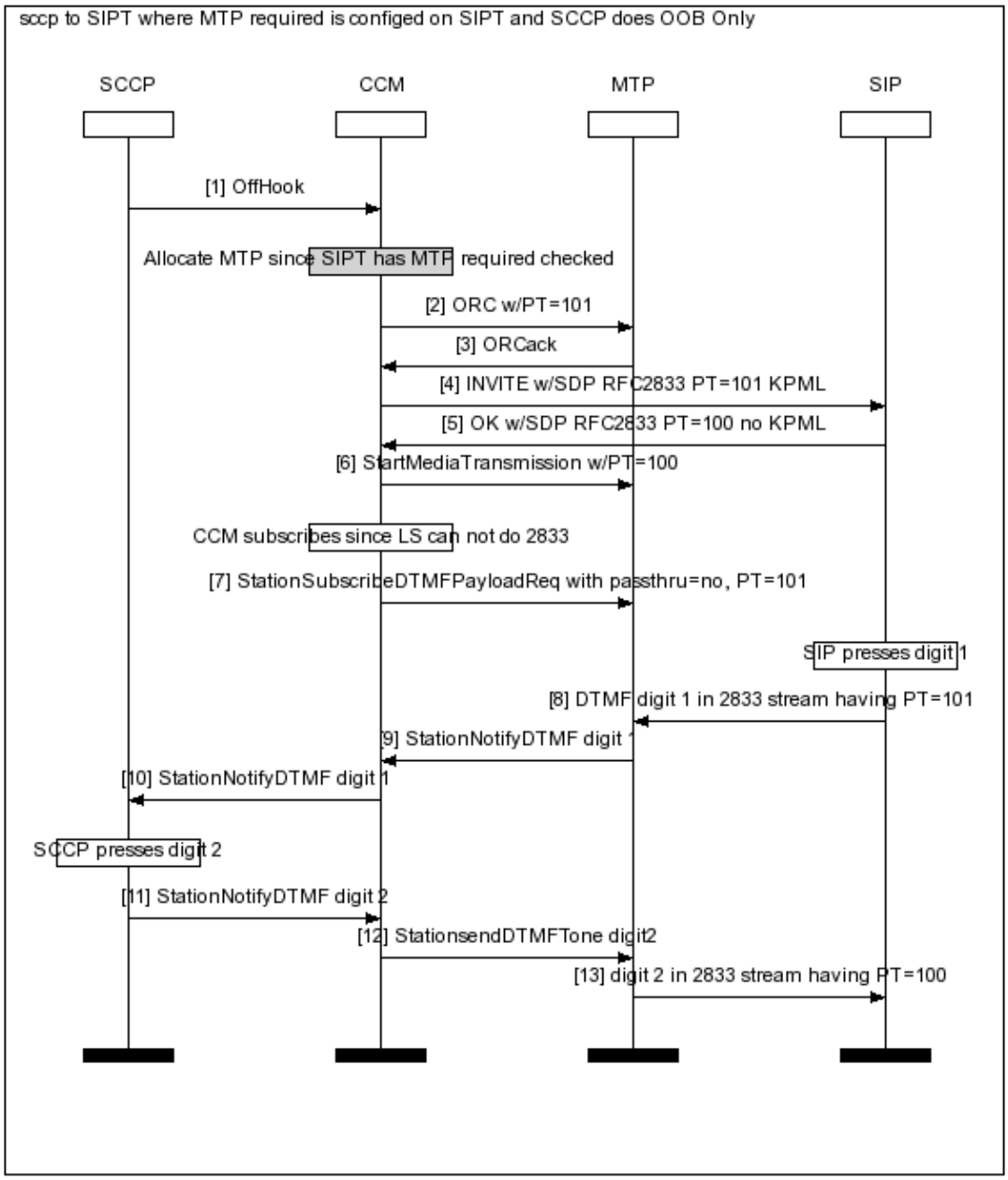
B. No Pass Through Requirement on MTP\Xcoders



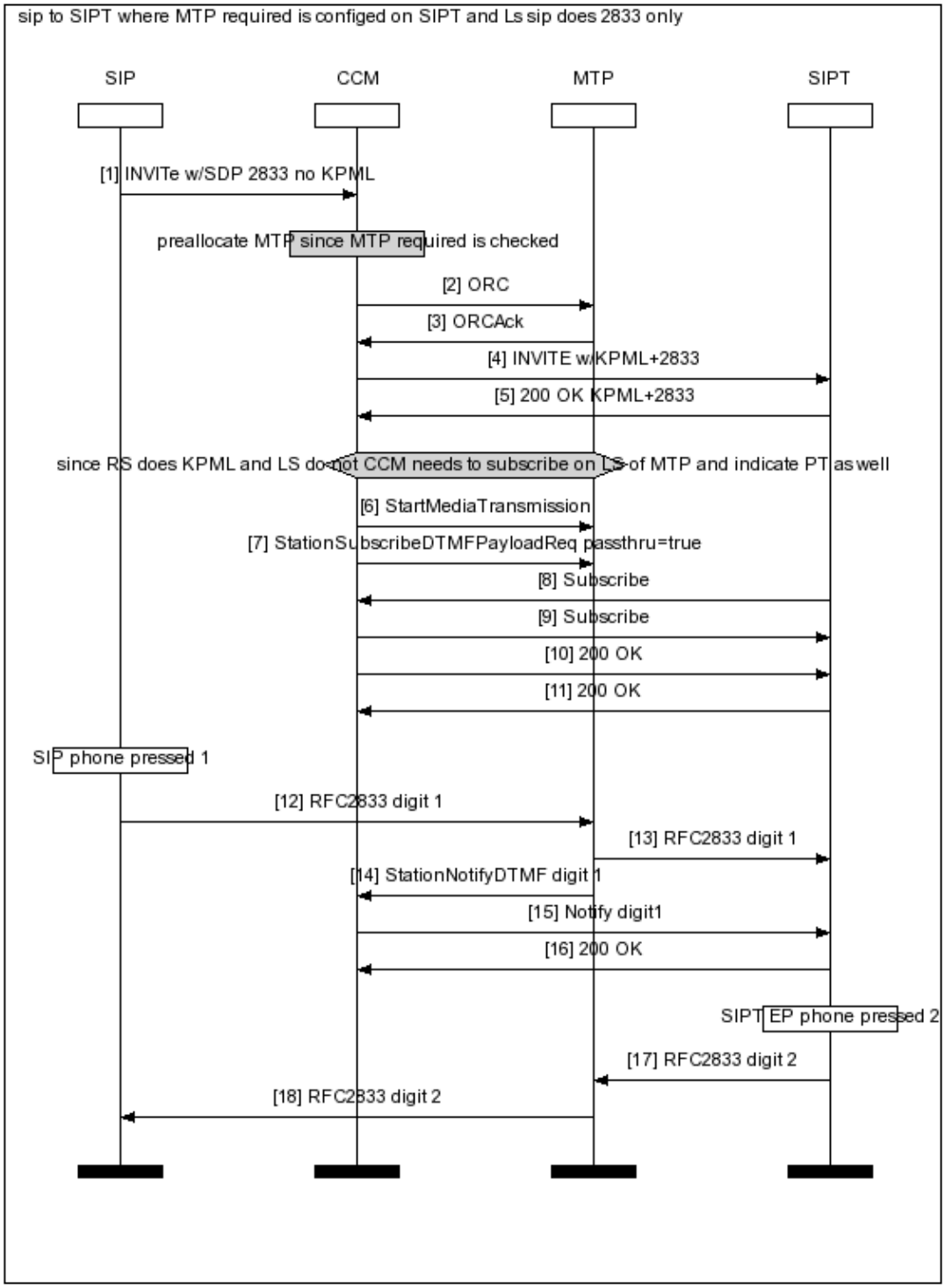
C. Call Flow with Asymmetric RFC2833 Payload Type Requirement on MTP

This call flow demonstrates a different payload type requirement on the sending and receiving side.

- Initially pre−allocated MTP reports that it can receive RFC2833 packets with a Payload Type (PT) of 101.
- SIP EP on Right Side (RS) indicated that it wants to receive DTMF packets with a PT of 100.
- Hence MTP needs to be able to send RFC2833 packets with a PT of 100 and receive RFC2833 packets that have a PT of 101.
- This image also demonstrates the case where CCM subscribes and no pass through of RFC2833 is needed by MTP.



D. Call Flow Where CCM Subscribes to MTP and Also Needs MTP to Pass Through RFC2833


sip to SIPT where MTP required is configed on SIPT and Ls sip does 2833 only
SIP
CCM
MTP
SIPT
[1] INVITe w/SDP 2833 no KPML
preallocate MTP since MTP required is checked
[2] ORC
[3] ORCAck
[4] INVITE w/KPML+2833
[5] 200 OK KPML+2833
since RS does KPML and LS do not CCM needs to subscribe on LS of MTP and indicate PT as well
[6] StartMediaTransmission
[7] StationSubscribeDTMFPayloadReq passthru=true
[8] Subscribe
[9] Subscribe
[10] 200 OK
[11] 200 OK
SIP phone pressed 1
[12] RFC2833 digit 1
[13] RFC2833 digit 1
[14] StationNotifyDTMF digit 1
[15] Notify digit1
[16] 200 OK
SIPT EP phone pressed 2
[17] RFC2833 digit 2
[18] RFC2833 digit 2