



# APPENDIX **A**

## Feature Tones

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### Introduction

This appendix explains special tones the BTS supports for subscriber and operator features. The BTS supports these tones by sending MGCP messages to the gateways.

### Tones per Feature

**Table A-1**      *Feature Tones*

Feature	Tone	Condition(s) That Initiate Tone <sup>1</sup>
AC	ALERTING PATTERN 3	
ACR	No tone	
ACRA ACRD	CONFIRMATION TONE	Anonymous call rejection (ACR) was successfully activated or deactivated by subscriber actions.
	REORDER TONE	ACR was not successfully activated or deactivated by subscriber actions.
AR	ALERTING PATTERN 3	
BLV/OI	REORDER TONE	Normal access is not available. There is a local office problem. The line is momentarily unavailable. No-test access is not available.
	BUSY VERIFICATION	CFU is activated on the terminating line. Terminating line is a data-only line or a denied line.
	PERMANENT SIGNAL TONE	Line up to receiver off-hook tone. Terminating line receiving a permanent signal announcement. Terminating line is high and wet (battery and ground shorted) or high and dry (off hook for an extended period).

Table A-1 Feature Tones (continued)

Feature	Tone	Condition(s) That Initiate Tone <sup>1</sup>
CW CIDCW	CW TONE	If called party has MDN feature: primary DN matched.  If called party is in Centrex system with DACWI: there is no extension for the number dialed.  If called party has DRCW feature: calling party is not on the DRCW screening list. <sup>2</sup>
	CW TYPE 2	If called party has MDN feature: second DN matched.  If called party is in Centrex system with DACWI: extension exists for the number dialed.
	CW TYPE 3	If called party has MDN feature: third DN matched.
	CW TYPE 4	If called party has DRCW feature: calling party is on the DRCW screening list. <sup>2</sup>
	STUTTER TONE	For Centrex subscriber with CHD feature and currently on an active call: A third party calls in, and the called party hears a call-waiting tone. The called party presses Flash button or switchhook to place the current remote station on hold, and hears the stutter tone.  The called party has the following options: <ul style="list-style-type: none"> <li>• Press Flash button or switchhook again to return to the original call.</li> <li>• Dial a designated vertical service code (VSC)—typically *52—to be connected to the new calling party; the first calling party is kept on hold.</li> </ul>
	TONES OFF	No tones are played for CW or CIDCW. (Tones are turned off under certain special circumstances.)
	ALERTING PATTERN 1	Alerting pattern (ringing) is provided to the calling party and called party, as applicable, for all reconnect, re-ring, callback and recall scenarios.
CCW	CONFIRMATION TONE	The subscriber in two-way call cancels call waiting.
	DIAL TONE	POTS or Centrex subscriber picks up phone to cancel call waiting.
	STUTTER TONE	The subscriber places the other party on hold (CHD) and then activates CCW while call is still on hold.
	ALERTING PATTERN 1	The subscriber goes on hook with the other party still on hold; the BTS provides alerting pattern (ringing).
CDP	DIAL TONE	The subscriber is granted access to an outside (public) line, typically after dialing 9.
	ALERTING PATTERN 3	Member of a Centrex group receives an incoming call from the group attendant.
CFU	REMINDER RING TONE	Alerting pattern (ringing) is provided on the called station to indicate that a call has been received and automatically forwarded.

Table A-1 Feature Tones (continued)

Feature	Tone	Condition(s) That Initiate Tone <sup>1</sup>
CFU-ACT	STUTTER TONE	The subscriber has successfully activated CFU from the handset.
	DIAL TONE	The subscriber has dialed the CFU-ACT star code, and the BTS is ready to receive digits for the forward-to DN. 1-second timer elapses following the confirmation tone.
	CONFIRMATION TONE	Centrex subscriber successfully activates extension forwarding. If the subscriber has multiple call forwarding (MCF), the subscriber has successfully activated a chain call forwarding scenario POTS subscriber receives ROUTE SELECTED DIALING PLAN.
	REORDER TONE	The CFU-ACT attempt was not successful due to <ul style="list-style-type: none"> <li>Attempt to activate CFU when it was already activated</li> <li>Attempt to forward calls to a DN that could not be reached</li> <li>Attempt to forward call from a DN to itself.</li> </ul>
CFU-DEACT	CONFIRMATION TONE	The subscriber successfully deactivates CFU.
	DIAL TONE	1-second timer elapses following the confirmation tone.
	REORDER TONE	The subscriber attempts to deactivate CFU when it was already deactivated
CFB-ACT and CFNA-ACT	DIAL TONE	The subscriber has dialed the CFB-ACT or CFNA-ACT star code, and the BTS is ready to receive digits for the forward-to DN.
	CONFIRMATION TONE	The subscriber successfully activates CFB or CFNA.
	DIAL TONE	1-second timer elapses following the confirmation tone.
CFB-DEACT and CFNA-DEACT	CONFIRMATION TONE	The subscriber has dialed the CFB-DEACT or CFNA-DEACT star code, and CFB or CFNA has been deactivated.
	DIAL TONE	Issued after a 1-second timer elapses following the confirmation tone.
CHD	STUTTER TONE	For Centrex subscriber (controlling party) currently on an active call: The controlling party places the other party on hold by pressing the Flash button or switchhook, and hears the stutter tone.  Controlling party has the following options: <ul style="list-style-type: none"> <li>Press Flash button or switchhook again to return to the original call.</li> <li>Dial a designated vertical service code (VSC)—typically *52—hear the stutter tone again, then dial a third party. The first calling party is kept on hold.</li> </ul>
	ALERTING PATTERN 1	Alerting pattern (ringing) is provided to the calling party and called party, as applicable, for all reconnect, re-ring, callback and recall scenarios.
CNAM CND	No tone	

Table A-1 Feature Tones (continued)

Feature	Tone	Condition(s) That Initiate Tone <sup>1</sup>
CNDB CNAB CIDB CIDS	DIAL TONE	The subscriber has dialed the star code for the identity blocking feature, and the BTS is ready to receive digits for the DN to be called.
COS: Account Codes	CONFIRMATION TONE	The BTS prompts the subscriber to enter the account code.
COS: Authorization Codes	CONFIRMATION TONE	The BTS prompts the subscriber to enter the authorization code.
CPRK	REORDER TONE	The subscriber has dialed the call park (CPRK) access code, but is not subscribed to the CPRK feature.  The subscriber has CPRK and has dialed the CPRK access code, but the CPRK attempt was not successful.  <b>Note</b> In this case (CPRK attempt was not successful), the reorder tone is played for two seconds, and then the subscriber is reconnected to the original call.
	STUTTER TONE	The subscriber presses Flash button or switchhook to park the call.
CPRK_RET	REORDER TONE	The subscriber has CPRK and has dialed the CPRK access code, but is unable to retrieve the call.
	STUTTER TONE	The subscriber enters the CPRK_RET access code, and the BTS is waiting for the subscriber to dial the extension against which the parked call should be retrieved.
CT/TWC	ALERTING PATTERN 1	The subscriber hangs up with one party on hold.
DACWI	ALERTING PATTERN 3	Distinctive ring pattern.
DPN	STUTTER TONE	The subscriber has dialed DPN access code, and DPN access has been granted.
	REORDER TONE	Reorder tone is returned to the subscriber who initiated a DPN request when any of the following occurs: <ul style="list-style-type: none"> <li>• The DPN feature has not been assigned to the requesting line.</li> <li>• The dialed extension is not assigned in the business group dialing plan.</li> <li>• The line associated with the dialed extension is not being rung. (Note that “being rung” should not include being given call-waiting treatment.)</li> <li>• The call has been answered, picked up, or abandoned.</li> <li>• The requesting line is not allowed to pick up the particular call because of being assigned the fully restricted terminating or the denied termination feature.</li> </ul>

Table A-1 Feature Tones (continued)

Feature	Tone	Condition(s) That Initiate Tone <sup>1</sup>
DPU	STUTTER TONE	The subscriber has dialed DPU access code, and DPU access has been granted.
	REORDER TONE	Reorder tone is returned to the subscriber who initiated a DPU request when any of the following occurs: <ul style="list-style-type: none"> <li>The dialed extension is not assigned in the business group dialing plan.</li> <li>The line associated with the dialed extension is not assigned the DPU feature.</li> <li>The line associated with the dialed extension is neither being rung nor involved in a stable two-way call. (Note that “being rung” should not include being given call-waiting treatment. Note also that DPU should not allow a subscriber to barge-in on the controller of a multiway connection, that is, a call-waiting configuration, a call-hold configuration, or a conference call.)</li> <li>The call is abandoned by the caller before the DPU request is recognized or has been picked up by a line without DPU assigned.</li> <li>The requesting line is not allowed to pick up the particular call because of being assigned the fully restricted terminating or the denied termination feature.</li> </ul>
	CONFIRMATION TONE	Barge-in connection is being processed and connection will occur within one second. <b>Note</b> Confirmation tone is repeated twice.
DRCW	ALERTING PATTERN 1	DN of incoming call is <i>not</i> on the DRCW screening list.
	ALERTING PATTERN 6	DN of incoming call is on the DRCW screening list.
	CW TONE	DN of incoming call is <i>not</i> on the DRCW screening list.
	CW TYPE 4	DN of incoming call is on the DRCW screening list.
Emergency—911	ALERTING PATTERN 1	After a normal two-party call, the subscriber presses the Flash button or hookswitch, dials 911, and then hangs up before the 911 operator answers.
MDN	ALERTING PATTERN 1	Station is on hook and there is an incoming call to primary DN.
	ALERTING PATTERN 4	Station is on hook and there is an incoming call to secondary DN.
	ALERTING PATTERN 5	Station is on hook and there is an incoming call to the third DN.
	CW TONE	Station is off hook and there is an incoming call to primary DN.
	CW TYPE 2	Station is off hook and there is an incoming call to secondary DN.
	CW TYPE 3	Station is off hook and there is an incoming call to the third DN.
MWI <sup>3</sup>	MWI TONE	The subscriber has MWI service and has a message waiting.
MIDCALL	STUTTER TONE	After pressing Flash button or hookswitch and the BTS acknowledges it is as a valid midcall action.
	ALERTING PATTERN 1	The subscriber goes on hook with the other party still on hold; the BTS provides alerting pattern (ringing).

Table A-1 Feature Tones (continued)

Feature	Tone	Condition(s) That Initiate Tone <sup>1</sup>
SC1D-ACT SC2D-ACT	STUTTER TONE	Stutter tone is used once after the subscriber enters the *74 (SC1D activation) or *75 (SC2D activation) to begin the process of collecting the information required to provision one of the speed call slots. After a speed call slot has been successfully provisioned, the subscriber will again receive the stutter tone to signify that the speed call slot was successfully provisioned.
VMWI <sup>3</sup>	STUTTER TONE	The subscriber has VMWI and has a message waiting, but the serving MGW does not have a visual indicator.

1. When more than one condition is listed for a single tone, any one of the conditions can cause the tone to be played.
2. For more information on the screening list, refer to the *Cisco BTS 10200 Softswitch System Description*.
3. MWI = message waiting indicator; VMWI = visual message waiting indicator.

## Tone Frequencies and Cadences

Tones are requested by the BTS and delivered to the subscriber or operator by the MGW. Some MGWs can be provisioned to play tone cadences different than the ones described in this table.

Table A-2 Subscriber and Operator Tone Descriptions

Tone	Frequency (Hz)	Cadence Played by MGW
Alerting pattern (ringing) 1	440 + 480	2 sec on, 4 sec off, repeating
Alerting pattern (ringing) 2	440 + 480	0.8 sec on, 0.4 sec off, 0.8 sec on, 4.0 sec off, repeating
Alerting pattern (ringing) 3	440 + 480	0.4 sec on, 0.2 sec off, 0.4 sec on, 0.2 sec off, 0.8 sec on, 4 seconds off, repeating
Alerting pattern (ringing) 4	440 + 480	0.3 sec on, 0.2 sec off, 1 sec on, 0.2 sec off, 0.3 sec on, 4 sec off, repeating
Alerting pattern (ringing) 5	440 + 480	0.5 sec on once
Alerting pattern (ringing) 6	440 + 480	1 sec on, 3sec off, repeating
Busy verification (used for operator BLV <sup>1</sup> )	440	2 sec burst, followed by 0.5 sec burst every 10 sec
CW tone	440	0.3 sec on once
CW Type 1	440	0.3 sec on once
CW Type 2	440	0.1 sec on, 0.1 sec off, 2 times
CW Type 3	440	0.1 sec on, 0.1 sec off, 3 times
CW Type 4	440	0.1 sec on, 0.1 sec off, 0.3 sec on, 0.1 sec off, 0.1 sec on
Confirmation tone	350 + 440	0.1 sec on, 0.1 sec off, 3 times
Dial tone	350 + 440	steady on
Line busy tone	480 + 620	0.5 sec on, 0.5 sec off, repeating
Message waiting indicator tone	350 + 440	10 bursts (0.1 sec on, 0.1 sec off), then steady on
Off-hook warning tone (receiver off-hook tone)	1400 + 2060 + 2450 + 2600	0.1 sec on, 0.1 sec off, repeating

**Table A-2** Subscriber and Operator Tone Descriptions (continued)

Tone	Frequency (Hz)	Cadence Played by MGW
Permanent signal (used for operator BLV <sup>1</sup> )	480	Steady on
Reminder ring tone (ring splash)	440 + 480	0.5 sec ring
Reorder tone	480 + 620	0.25 sec on, 0.25 sec off, repeating
Ringback tone (audible ringing)	440 + 480	2 sec on, 4 sec off (repeated)
Stutter (recall) dial tone	350 + 440	3 bursts (0.1 sec on, 0.1 sec off), then steady on

1. BLV = busy line verification

Table A-3 lists the maintenance tones used for continuity testing. See the Telcordia document GR-317-CORE for additional details.

**Table A-3** Maintenance Tone Descriptions

Tone	Frequency (Hz)	Description
2010-Hz continuity tone	2010	Used for single-tone test under either of the following conditions: <ul style="list-style-type: none"> <li>The circuit is a 4-wire circuit at both the transceiver end and the distant end</li> <li>The circuit is a 2-wire circuit at the transceiver end</li> </ul>
1780-Hz continuity tone	1780	Used for dual-tone test with a 4-wire circuit at the transceiver end and a 2-wire circuit at the distant end

All tones are based on information in the following:

- Telcordia document *GR-506-CORE, Signaling for Analog Interfaces*
- Telcordia document *TR-NWT-506, Issue 3, Signaling*
- Telcordia document *GR-590-CORE, Call Pickup Features (FSD 01-02-2800)*
- Telcordia document *GR-317-CORE, Switching System Generic Requirements for Call Control Using the Integrated Services Digital Network User Part (ISDNUP)*
- Telcordia document *GR-219-CORE, Distinctive Ringing/Call Waiting (FSD 01-01-1110)*.
- IETF document *RFC 2705, Media Gateway Control Protocol (MGCP) Version 1.0*

