

3GPP TSG CN Plenary Meeting #17
4th - 6th September 2002. Biarritz, France.

NP-020346

Source: TSG CN WG2
Title: CRs on Rel-5 Work Item CAMEL4, CR Pack 7
Agenda item: 8.3
Document for: APPROVAL

Introduction:

This document contains 2 CRs on Rel-5 WI CAMEL4. These CRs have been agreed by TSG CN WG2 and are forwarded to TSG CN Plenary meeting #17 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.078	260	1	N2-020784	Rel-5	Playing of Warning Tones	B	5.0.0
23.078	418	2	N2-020794	Rel-5	Playing of Warning Tones	B	5.0.0

CHANGE REQUEST

⌘ **29.078 CR 260** ⌘ rev **1** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘	Playing of Warning Tones	
Source:	⌘	Alcatel	
Work item code:	⌘	CAMEL4	Date: ⌘ 01/08/2002
Category:	⌘	B	Release: ⌘ Rel-5
		Use <u>one</u> of the following categories:	Use <u>one</u> of the following releases:
		F (correction)	2 (GSM Phase 2)
		A (corresponds to a correction in an earlier release)	R96 (Release 1996)
		B (addition of feature),	R97 (Release 1997)
		C (functional modification of feature)	R98 (Release 1998)
		D (editorial modification)	R99 (Release 1999)
		Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘	At one of the last CN2 meeting it was said that the warning tone shall be played to the party which was indicated in the Apply Charging operation. However it seems to be that this decision was based on a simple approach and that we may not have taken various service examples into account.
Summary of change:	⌘	The warning tone shall be played to the party that is indicated by the gsmSCF.
Consequences if not approved:	⌘	A lot of confusion for user getting no warning tone or unexpected warning tones.

Clauses affected:	⌘	6.1.1, 11.2.1.1										
Other specs affected:	⌘	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">X</td> </tr> <tr> <td></td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ Rel-5 23.078-CR418
		Y	N									
		X										
	X											
	X											
	Test specifications											
	O&M Specifications											
Other comments:	⌘	No changes are necessary for ApplyChargingReport.										

— **First modified section** —

```
AudibleIndicator ::= SEQUENCE {CHOICE-  
  Tone [0] BOOLEAN OPTIONAL,  
  burstList [1] Burstlist OPTIONAL,  
  partyToReceiveWarningTone [2] SendingSideID OPTIONAL,  
  ...  
}
```

— **Next modified section** —

11.2 ApplyCharging procedure

11.2.1 General description

The gsmSCF uses this operation for interacting with the gsmSSF function: "CSE control of call duration". The ApplyChargingReport operation provides the feedback from the gsmSSF to the gsmSCF.

The charging scenarios supported by this operation are those given in 3GPP TS 22.078 [3] for "CSE control of call duration".

11.2.1.1 Parameters

CR Editor's note: please provide correct indentation of all parameters and sub-parameters. E.g. warningPeriod and bursts shall be sub-parameters of burstlist. they shall therefore be indented (as B3 Format) in respect to burstlist (which is B2 Format). The indentation may need also some correction at other operations.

- aChBillingChargingCharacteristics:
This parameter specifies a list of parameters required for "CSE control of call duration":

The list may contain the following parameters:

- timeDurationCharging:

This list contains the following parameters:

- maxCallPeriodDuration:
This parameter specifies the period of time for which a call may progress before an ApplyChargingReport shall be sent to the gsmSCF.
- releaseIfdurationExceeded:
This parameter specifies the action to be taken at the gsmSSF when the duration specified above has been reached. If the parameter is present and the call duration has been reached, then the gsmSSF shall release the leg.

- audibleIndicator:
This parameter indicates to the gsmSSF that an audible indicator may be played to the served subscriber. This audible indicator may either be a predefined sequence of tones or a sequence defined by the gsmSCF. This parameter shall consist of either tone or burstlist together with a partyToReceiveWarningTone parameter as described below:

- tone:
This parameter indicates that a warning tone shall be played when the pre-defined warning tone timer expires.
- burstlist:
This parameter indicates that a variable sequence of tones shall be played when the gsmSCF-defined warning tone timer expires. This parameter may consist of the following parameters:

- partyToReceiveWarningTone:
This parameter identifies the party to whom the warning tone indicated by the tone or the burstlist shall be played.

- warningPeriod:

This parameter indicates the time, before the Max Call Period Duration timer expires when the playing of the burstlist shall start.

- burst:

This parameter indicates the number of bursts that form the burstlist.

- burstInterval:

This parameter indicates the time interval between the successive burst in the burstlist.

- toneInBurst:

This parameter indicates the number of tones to be played in each burst.

- toneDuration:

This parameter indicates the time duration that the tone shall be played for.

- toneInterval:

This parameter indicates the time interval between successive tones in a burst

- tariffSwitchInterval (for the CSE control of call duration):

This parameter indicates the time duration until the next tariff switch for the CSE control of call duration.

The measurement of the elapsed tariff switch period shall start immediately after successful execution of this operation.

- partyToCharge:

This parameter indicates the party in the call.

- aChChargingAddress:

This parameter identifies the call party to which the ApplyCharging operation applies. That is the leg or srfConnection. If not present, then the ApplyCharging operation applies to the default legID 1.

This parameter is a choice of one of the following parameters:

- legID:

This parameter indicates that the "CSE control of call duration" is associated to the specified leg.

or

- srfConnection:

This parameter indicates that the "CSE control of call duration" is associated to the Temporary Connection or to the connection to a gsmSRF. The connection is related to the specified Call Segment indicated by the srfConnection parameter.

11.2.2 Responding entity (gsmSSF)

11.2.2.1 Normal procedure

gsmSSF preconditions:

- (1) A control relationship exists between the gsmSCF and the gsmSSF.
- (2) The gsmSSF FSM is in one of the following states:

"Waiting_for_Instructions"; or

"Waiting_for_end_of_User_Interaction"; or

"Waiting_for_end_of_Temporary_Connection"; or

"Monitoring".

gsmSSF postconditions:

- (1) No gsmSSF FSM state transition.

On receipt of this operation, the gsmSSF sets the charging data using the information elements included in the operation and acts accordingly.

If the aChChargingAddress indicates a legID, then:

The "CSE control of call duration" is associated to the specified leg. If Answer has not already been received on the incoming or outgoing connection (leg) to the Call Party, then the gsmSSF shall start monitoring for the Answer event upon receipt of the ApplyCharging operation. Upon subsequent detection of the Answer event on the outgoing connection charging is started. If the Answer event has occurred on the incoming or outgoing connection already when the ApplyCharging operation is received, then charging starts immediately.

Upon release of the incoming or outgoing connection to the Call Party any indication of Answer event occurred on the incoming or outgoing connection shall be cleared, i.e. set to "Answer event not occurred".

If the aChChargingAddress indicates a srfConnection, then:

The "CSE control of call duration" is associated to the Temporary Connection or to the connection to a gsmSRF. If Answer has not already been received on the Temporary Connection, then the gsmSSF will start monitoring for the Answer event upon receipt of the ApplyCharging operation; or, if the gsmSRF is not yet connected, then the gsmSSF will start monitoring for a connection to a gsmSRF. Upon subsequent detection of the Answer event on the Temporary Connection or the subsequent connection to a gsmSRF, charging shall be started. If the Answer event has been received from an Temporary Connection already or if the gsmSRF is already connected when the ApplyCharging operation is received, then charging shall start immediately.

Upon release of the Temporary Connection any indication of Answer event receipt on the outgoing connection shall be cleared i.e. set to "Answer event not received". Upon end of the connection to an gsmSRF, any indication of the connection to the gsmSRF shall be cleared.

11.2.2.2 Error handling

"TaskRefused": In addition to the generic error handling noted below, this error shall be indicated when:

- a previously received call period duration is pending for this leg or srfConnection;
- a tariffSwitchInterval for the "CSE control of call duration" is indicated when a previously received tariffSwitchInterval for the "CSE control of call duration" is pending for the Called Party, the Temporary Connection or the connection to a gsmSRF.

Generic error handling for the operation related errors is described in clause 10 and the TC services used for reporting operation errors are described in clause 14.

— END —

CHANGE REQUEST

⌘ **23.078 CR 418** ⌘ rev **2** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Playing of Warning Tones		
Source:	⌘ Alcatel		
Work item code:	⌘ CAMEL4	Date:	⌘ 02/08/2002
Category:	⌘ B	Release:	⌘ Rel-5
	<i>Use <u>one</u> of the following categories:</i> F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use <u>one</u> of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ At one of the last CN2 meeting it was said that the warning tone shall be played to the party which was indicated in the Apply Charging operation. However it seems to be that this decision was based on a simple approach and that we may not have taken various service examples into account.
Summary of change:	⌘ The warning tone shall be played to the party that is indicated by the gsmSCF. As the leg to play the warning tone may be in another CS, the CS_gsmSSF send the Int_Apply_Warning_Tone to the CSA_gsmSSF. The CSA_gsmSSF will forward this primitive to the CS_gsmSSF where the leg to receive the warning tone resides. If no indication of the gsmSCF is received the CAMEL phase 3 party is assumed to receive the warning tone.
Consequences if not approved:	⌘ A lot of confusion for users getting no or unexpected warning tones.

Clauses affected:	⌘ 4.5.7.4, 4.5.7.6, 4.6.2.2										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">Y</td> <td style="text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications Test specifications O&M Specifications	Y	N	X			X		X	⌘ Rel-5 29.078-CR260	
Y	N										
X											
	X										
	X										
Other comments:	⌘ Further editorial change: Tw precised by Tw(pty).										

— Discussion section —

Service Scenarios

Note: The service examples should be just taken as examples. It is not the purpose of this CR to discuss them in detail but to show just the complexity of the warning tone issue.

CAMEL Phase 3

The Play Tone IE is sent in the Apply Charging IF "if a tone has to be played to the party for whom the BCSM is operating". That is:

MO call: The warning tone applies always to the calling party.

MF call: -- not allowed to use this IE. --

MT call: The warning tone applies always to the called party.

VT call: The warning tone applies always to the called party.

User interaction and follow on calls: User interaction and follow on calls can be charged separately.

Basic Call examples

1. The calling party is a prepaid subscriber, i.e. he is charged for the MO call, the called party has no CAMEL subscription (e.g. the charging of called party is not supervised by gsmSCF) -> warning tone to the calling party.
2. The calling party has no CAMEL subscription but called party is prepaid subscriber and called party is charged for the MT call -> warning tone to called party
3. The calling party has no CAMEL subscription but the called party is a prepaid subscriber, the call is forwarded by the called party to the forwarded to party and the called party is charged for the forwarded leg -> there may be situations where a warning tone to the forwarded to party is not applicable (e.g. the forwarded to party is a mailbox).
4. The calling party and the called party are prepaid subscribers and the called party is charged for the MT call -> warning tone to the calling party related to the ApplyCharging for the "A-leg", warning tone to the called party related to the ApplyCharging for the "B-leg"

CAMEL Phase 4 specials

For CAMEL phase 4 the gsmSCF can charge the legs individually by sending the Apply Charging operation to the leg concerned. In CAMEL There are also ICA calls (NC call) and new parties (NP case). Furthermore we need to consider Disconnect Leg, Split Leg, Move Leg and new call segments:

1. If the gsmSCF wants to charge the complete MO call in a single step, it will send AC on the incoming A leg and will receive an Apply Charging Report at latest when the subscriber releases the call.

In CAMEL phase 3 the warning tone applies always to the calling party, i.e. the incoming leg. Same will be for CAMEL phase 4.

2. If the gsmSCF wants to charge the outgoing legs within an MO call individually as in CAMEL phase 3, it will send AC on the individual outgoing legs. It will receive an Apply Charging Report at latest when the individual leg is released.

In CAMEL phase 3 the warning tone applies allways to the calling party, i.e. the incoming leg. In CAMEL phase 4 the tone would be played to the outgoing leg, i.e. the B-subscriber. This seems not to be desirable.

3. If a call is created newly by the gsmSCF (NC call):

The warning tone shall be played to the called party of the ICA. However it may also be that the gsmSCF calls the charged party (e.g. chef) only if the first ICA call (e.g. worker) is successful.

4. A new leg may be created (NP case) within all the other scenarios, that is in MO, MF, MT, VT or NC call:

The warning tone should be played to the party to which the call case applies. E.g. for a NC call to the called party of the first ICA. If that party for the tone does not exist any longer or if that party and the leg to which the AC has been send are not in the same call segment then no tone will be played.

5. If the leg to which the AC has been send does not exist any longer

No tone will be sent.

6. If the leg to which the tone is to be played has been released:

No tone will be sent.

7. If the leg with the AC is no longer in the same call segment as the leg to which the tone is to be played:

No tone will be sent.

Proposal

The above examples are showing various possibilities to which party the warning tone would be most useful. To standardize for the gsmSSF to which party the warning tone shall be sent seems to be quite complex. Making this dependent on various services is quite impossible.

Having this in mind it is more useful to say that the party to charge will receive the warning tone. It is proposed that the gsmSCF indicates the "party to play warning tone" to the gsmSSF.

Within CAMEL Phase 3 this parameter is already available. However it does have only a referencing purpose and do not have a charging purpose. In CAMEL phase 3 the value can be chosen individually by the gsmSCF.

For CAMEL Phase 4 this parameter can be used more useful to indicate the party to which the warning tone is to be played.

— First modified section —

4.5.7.4 Process CS_gsmSSF and procedures

Process CS_gsmSSF

1(56)

```
/* Invocation of CS_gsmSSF */
```

```
/* Timers used in the CS_gsmSSF process:
```

```
Tssf: Application timer in the ssf.
```

```
The following timers are applicable for call legs as well as for the connected SRF (srf ID).
```

```
That is 'pty' may be a leg ID or an srf ID.
```

```
Tcp(pty): Timer for call period.
```

```
This timer measures the duration of a call period.
```

```
Tsw(pty): Timer for tariff switch.
```

```
At the expiration of this timer, a new tariff shall be started.
```

```
Tw(pty): Warning timer.
```

```
At the expiration of this timer, a warning tone shall be played to the calling party.
```

```
DELTA(pty): time, measured in the CS_gsmSSF, elapsed between the time an
```

```
ApplyChargingReport operation is sent to the gsmSCF and an
```

```
ApplyCharging operation is received from the gsmSCF for that pty.
```

```
Tccd(pty): Control of call duration timer.
```

```
This timer supervises if after sending of ACR a new AC is received for that pty.
```

```
Tccd has a value range of 1 to 20 seconds.
```

```
Ranges for the default values for Tssf.
```

```
- non user interaction Tssf timer value: 1 second to 20 seconds
```

```
- user interaction Tssf timer value: 1 minute to 30 minutes
```

```
*/
```

Process CS_gsmSSF

1(56)

```
/* Invocation of CS_gsmSSF */
```

```
/* Timers used in the CS_gsmSSF process:
```

```
Tssf: Application timer in the ssf.
```

```
The following timers are applicable for call legs as well as for the connected SRF (srf ID).  
That is 'pty' may be a leg ID or an srf ID.
```

```
Tcp(pty): Timer for call period.
```

```
This timer measures the duration of a call period.
```

```
Tsw(pty): Timer for tariff switch.
```

```
At the expiration of this timer, a new tariff shall be started.
```

```
Tw(pty): Warning timer.
```

```
At the expiration of this timer, a warning tone shall be played to the Party To Receive Warning Tone.
```

```
DELTA(pty): time, measured in the CS_gsmSSF, elapsed between the time an
```

```
ApplyChargingReport operation is sent to the gsmSCF and an
```

```
ApplyCharging operation is received from the gsmSCF for that pty.
```

```
Tccd(pty): Control of call duration timer.
```

```
This timer supervises if after sending of ACR a new AC is received for that pty.
```

```
Tccd has a value range of 1 to 20 seconds.
```

```
Ranges for the default values for Tssf.
```

```
- non user interaction Tssf timer value: 1 second to 20 seconds
```

```
- user interaction Tssf timer value: 1 minute to 30 minutes
```

```
*/
```

Figure 4.95a: Process CS_gsmSSF (sheet 1)

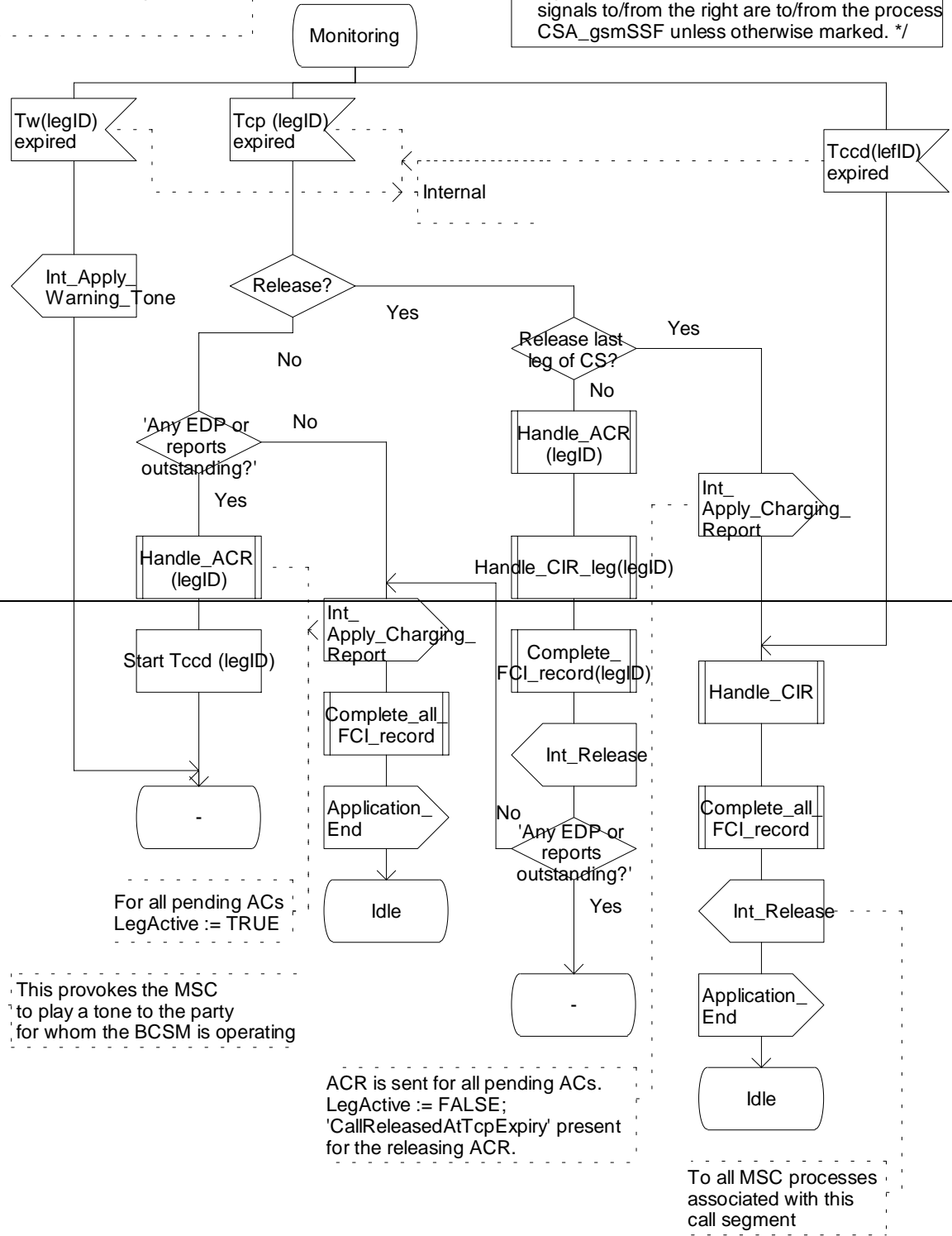
— Next modified section —

Process CS_gsmSSF

32(56)

/* Invocation of CS_gsmSSF */

/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA_gsmSSF unless otherwise marked. */



For all pending ACs LegActive := TRUE

This provokes the MSC to play a tone to the party for whom the BCSM is operating

ACR is sent for all pending ACs. LegActive := FALSE; 'CallReleasedAtTcpExpiry' present for the releasing ACR.

To all MSC processes associated with this call segment

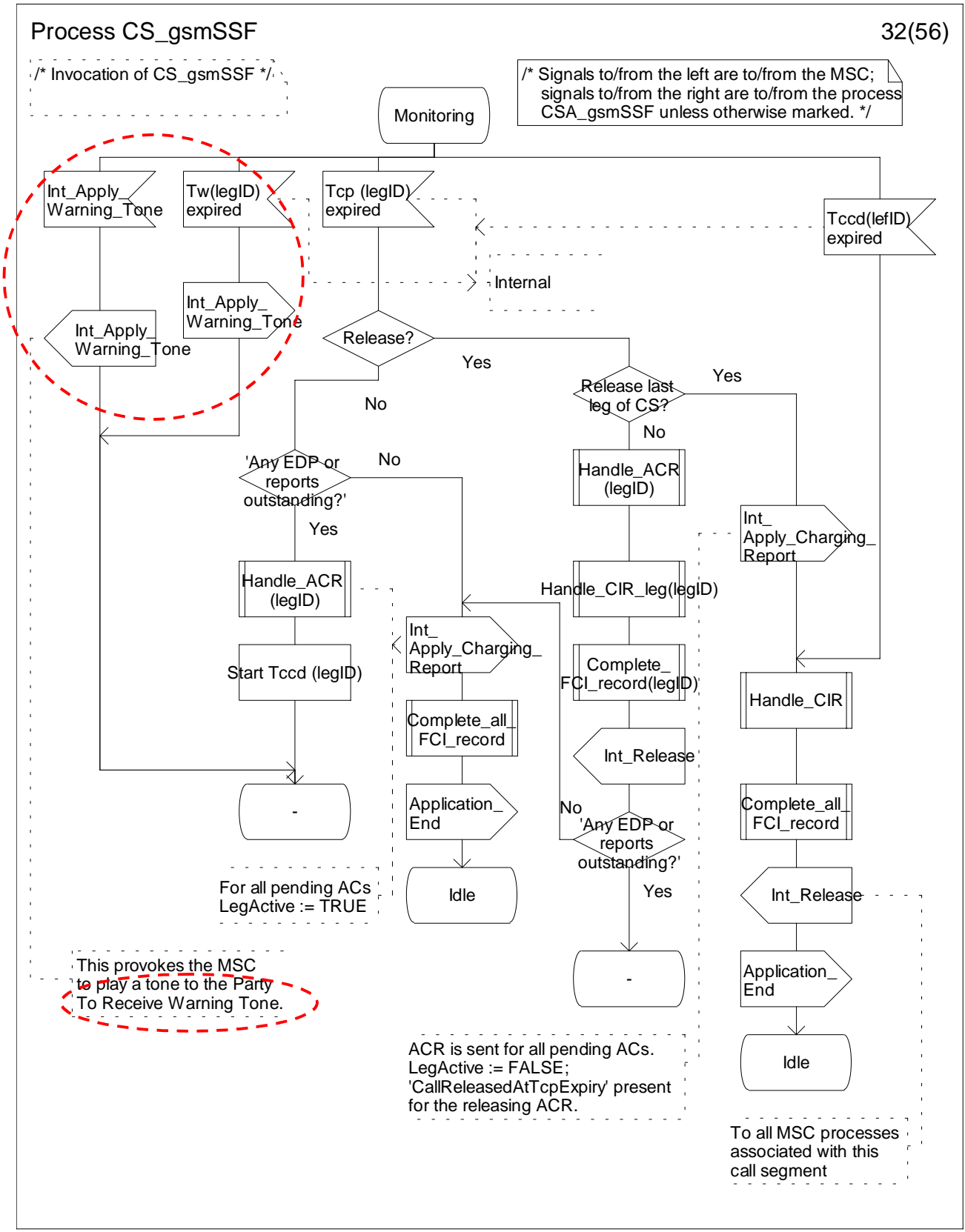


Figure 4.95ff: Process CS_gsmSSF (sheet 32)

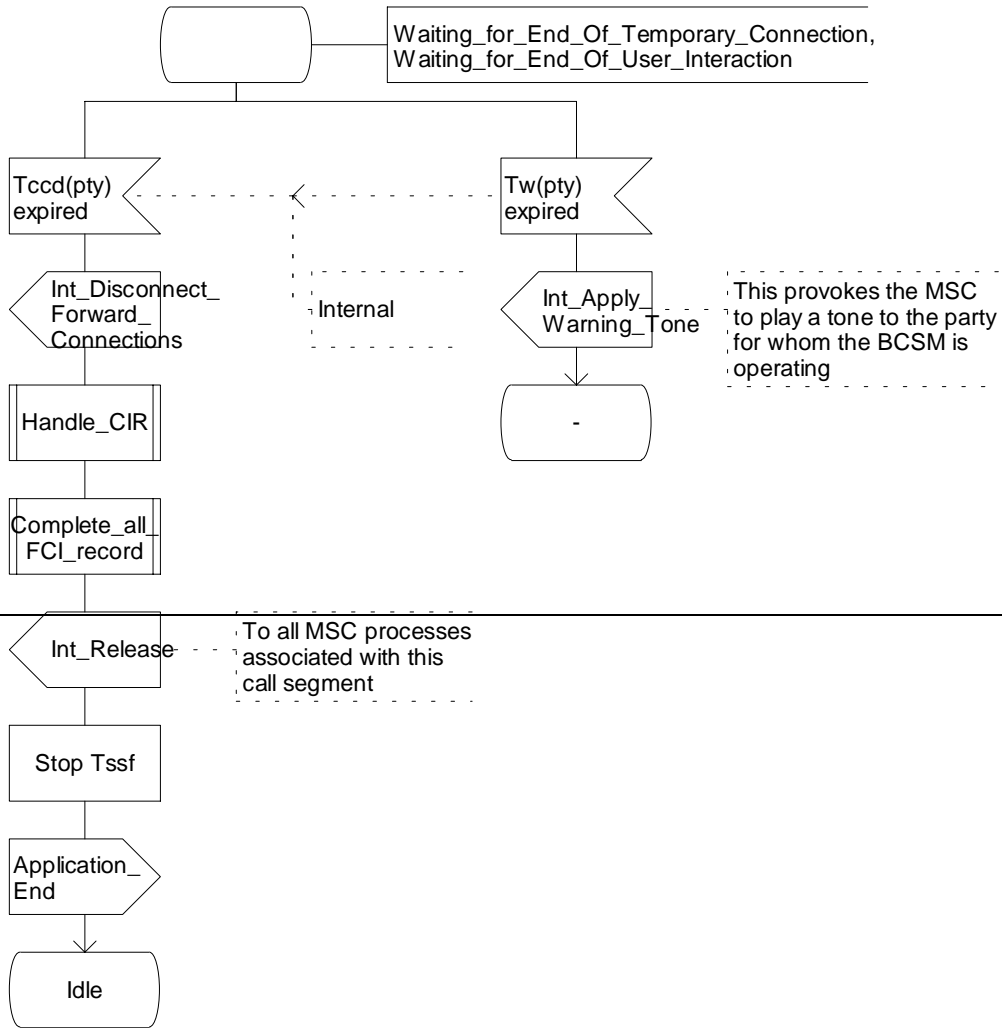
— Next modified section —

Process CS_gsmSSF

46(56)

/* Invocation of CS_gsmSSF */

/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA_gsmSSF unless otherwise marked. */



Process CS_gsmSSF

46(56)

/* Invocation of CS_gsmSSF */

/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA_gsmSSF unless otherwise marked. */

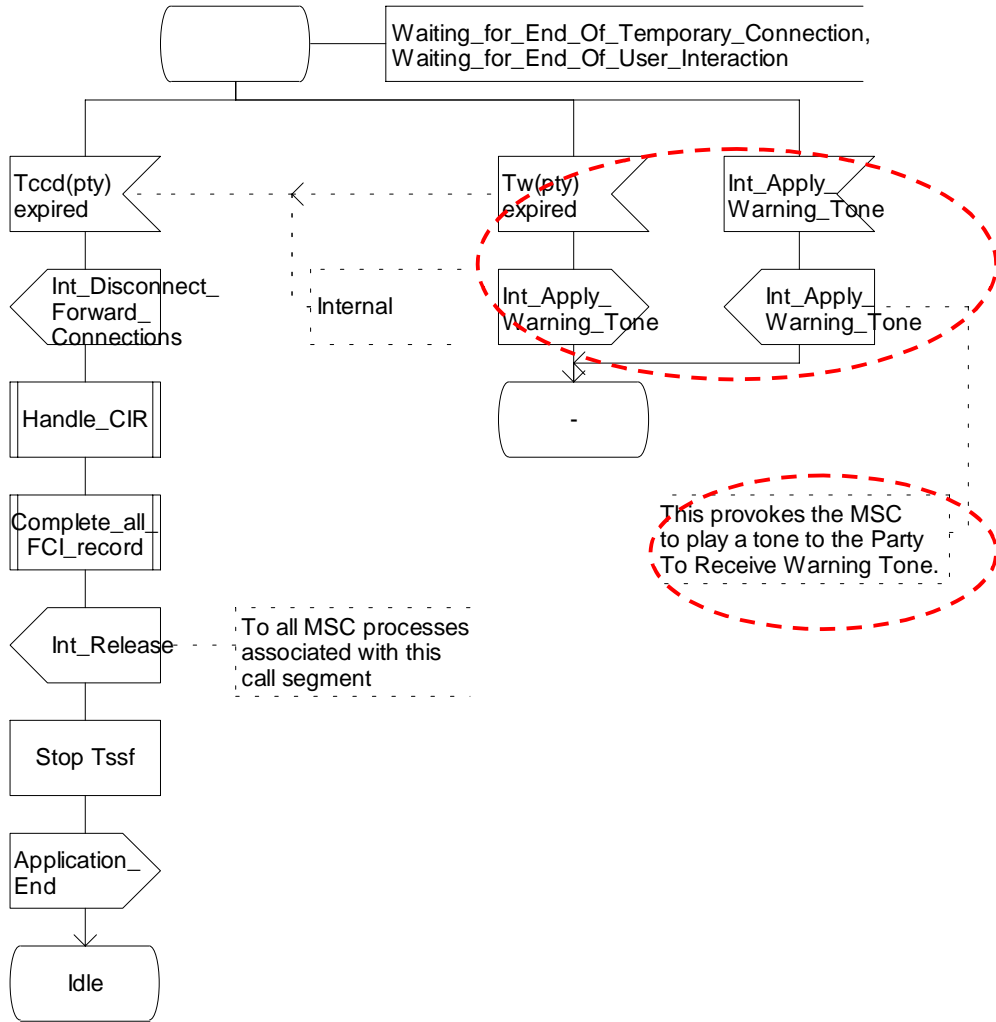


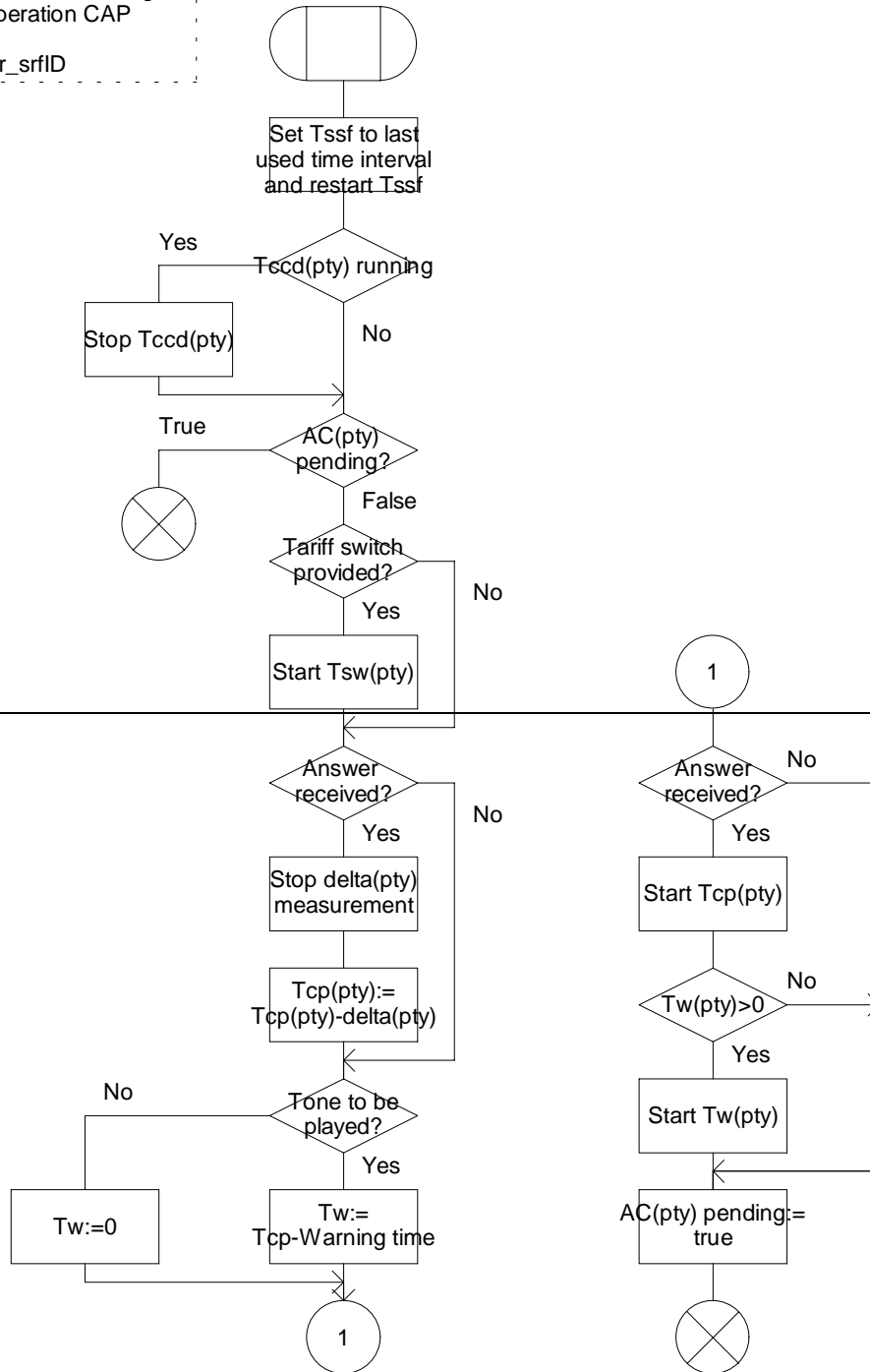
Figure 4.95tt: Process CS_gsmSSF (sheet 46)

— Next modified section —

Procedure Handle_AC

1(1)

/* This procedure shows the handling in the gsmSSF for the operation CAP Apply Charging. */
 FPAR IN pty LegID_or_srfID



Procedure Handle_AC

1(1)

/* This procedure shows the handling in the gsmSSF for the operation CAP Apply Charging. */
 FPAR IN pty LegID_or_srfID

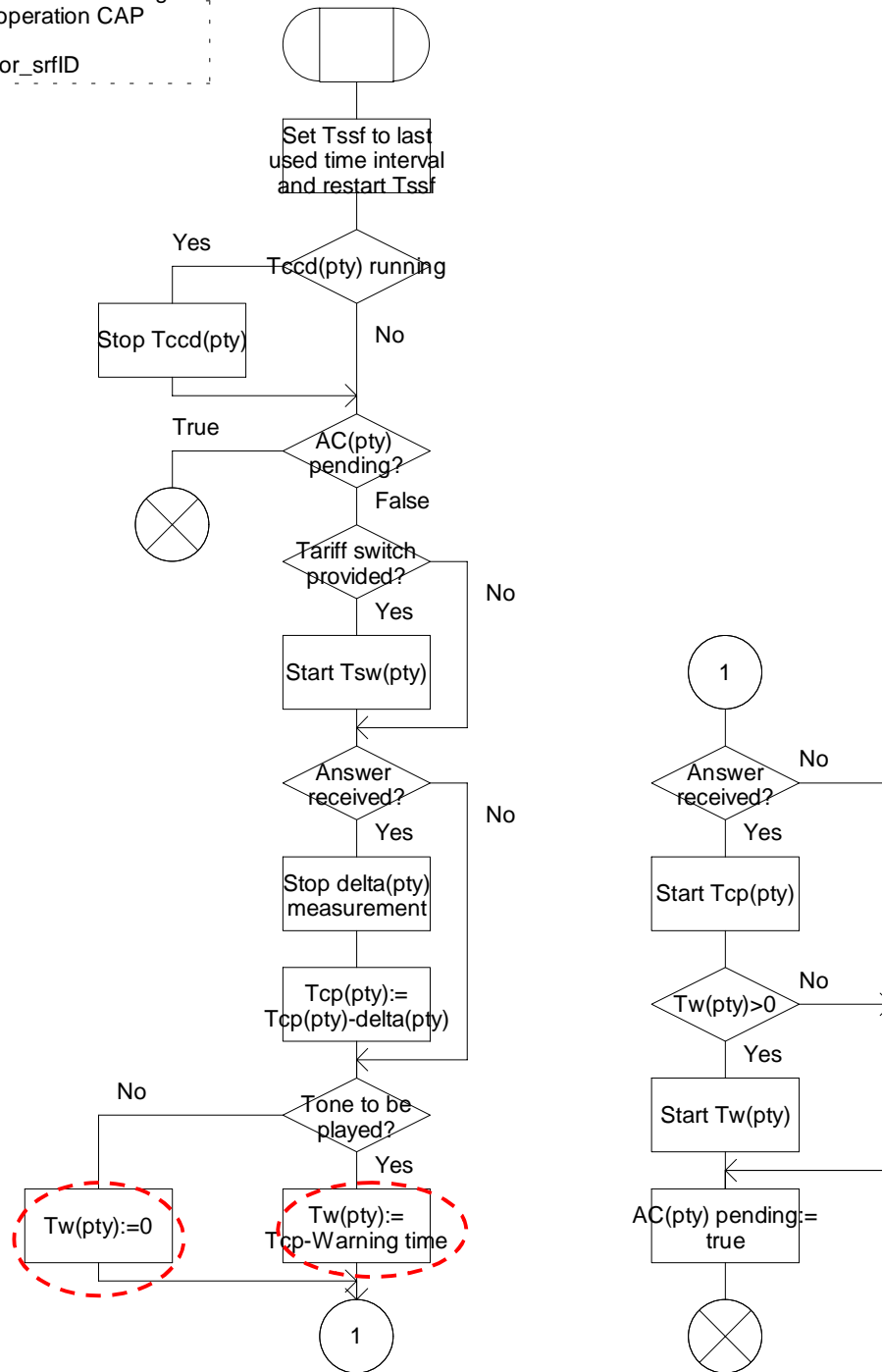


Figure 4.100a: Procedure Handle_AC (sheet 1)

—Next modified section —

4.5.7.6 Process CSA_gsmSSF and procedures

The call gap information flow can only be received for an opened transaction between the CSA_gsmSSF and the gsmSCF.

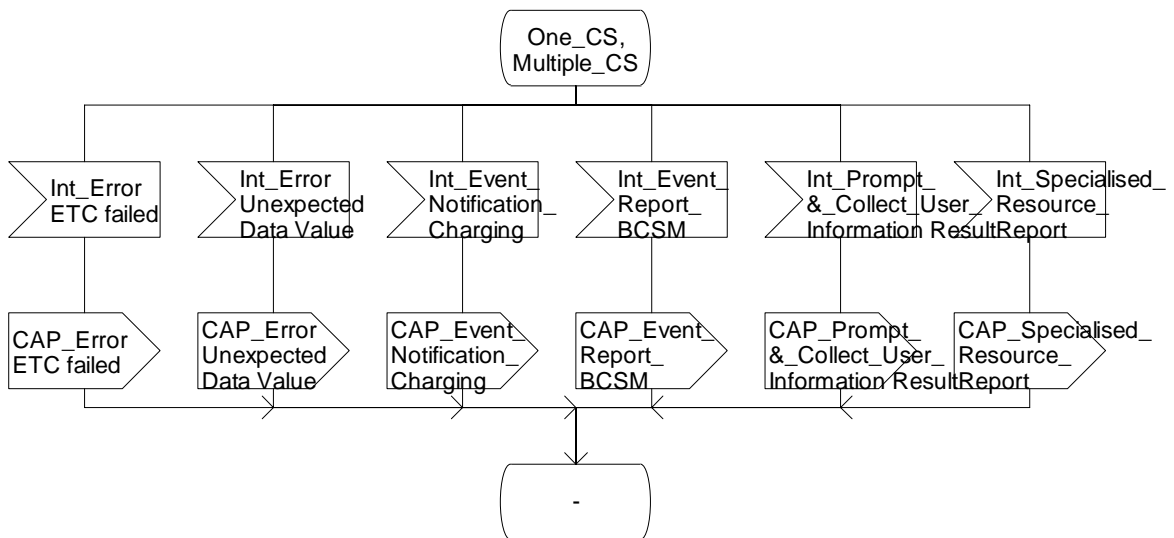
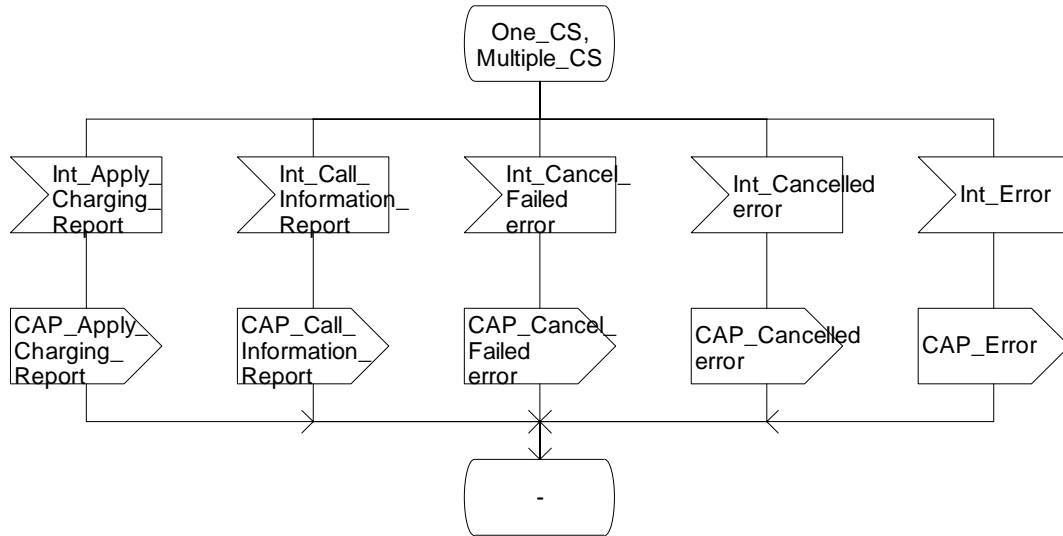
...

Process CSA_gsmSSF

4(21)

/* A process in the gsmSSF to co-ordinate the Call Segments for a call. */

/* Signals to/from the left are to/from one or more instances of the process CS_gsmSSF; signals to/from the right are to/from the gsmSCF. */



Process CSA_gsmSSF

4(21)

/* A process in the gsmSSF to co-ordinate the Call Segments for a call. */

/* Signals to/from the left are to/from one or more instances of the process CS_gsmSSF; signals to/from the right are to/from the gsmSCF. */

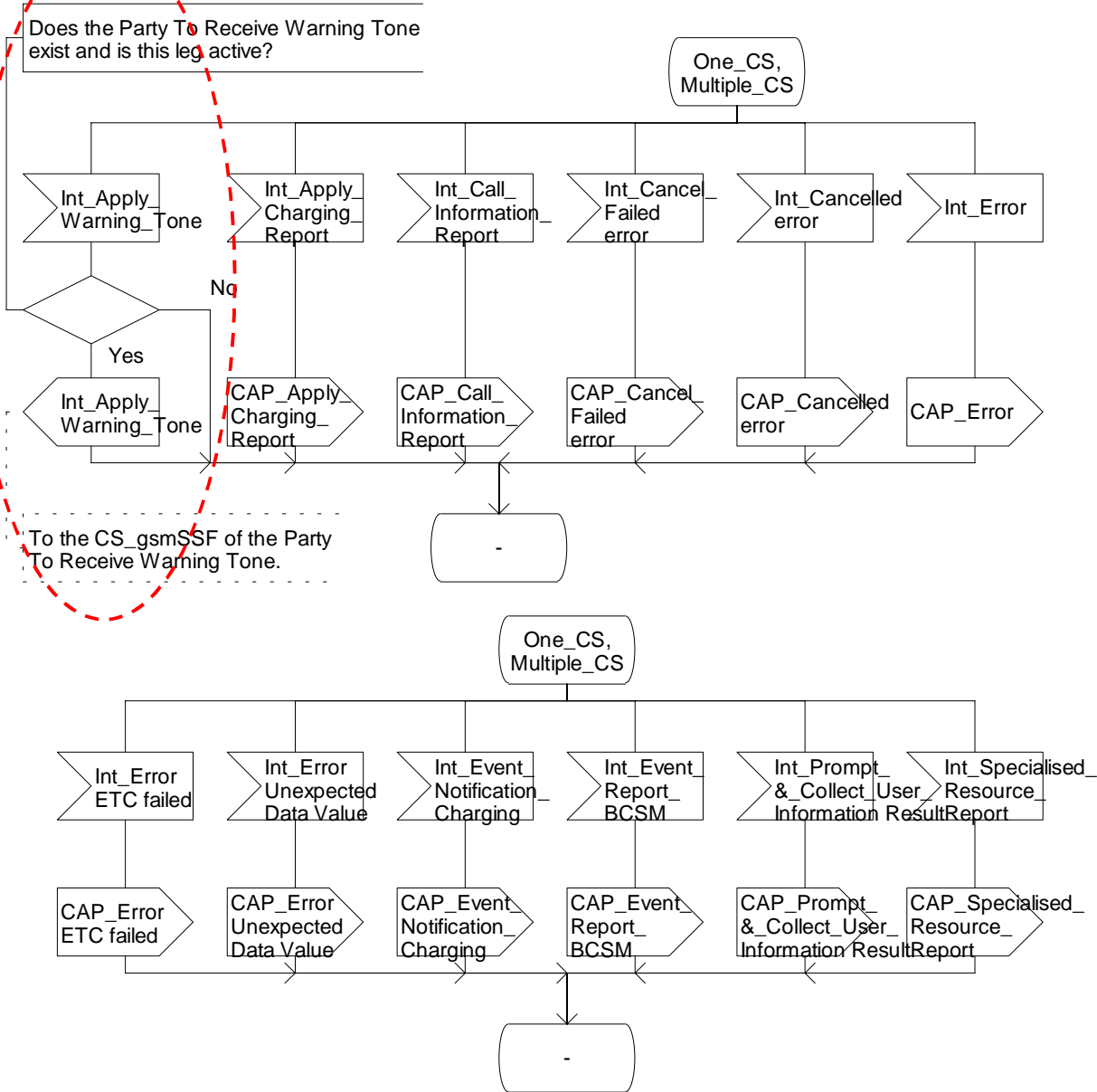


Figure 4.112d: Process CSA_gsmSSF (sheet 4)

—Next modified section —

4.6.2 gsmSCF to gsmSSF information flows

...

4.6.2.2 Apply Charging

4.6.2.2.1 Description

This IF is used to instruct the gsmSSF to apply charging mechanisms to control the call duration.

4.6.2.2.2 Information Elements

Information element name	MO	MF	MT	VT	NC	NP	Description
ACh Billing Charging Characteristics	M	M	M	M	M	M	This IE specifies the charging related information to be provided by the gsmSSF and the conditions on which this information has to be provided back to the gsmSCF.
Party To Charge	M	M	M	M	M	M	This IE shall be reflected in the corresponding IE of the Apply Charging Report IF. This IE has no effect on the charging procedures in the MSC.
Leg ID	M	M	M	M	M	M	This IE identifies the call party concerned by the Apply Charging IF.

ACh Billing Charging Characteristics contains the following information element:

Information element name	MO	MF	MT	VT	NC	NP	Description
Time Duration Charging	M	M	M	M	M	M	This IE is described in a table below.

Time Duration Charging contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Max Call Period Duration	M	M	M	M	M	M	This IE indicates the maximum call period duration timer.
Tariff Switch Interval	O	O	O	O	O	O	This IE indicates the tariff switch time until the next tariff switch applies for this call leg.
Release If Duration Exceeded	O	O	O	O	O	O	This IE indicates that the call leg shall be released when the Max call Period Duration expires. The cause used in the Release IF shall be "normal unspecified". The default handling is to continue the call.
Audible Indicator	O	-	O	O	O	O	This IE is described in a table below.

Audible Indicator IE shall contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Play Tone	E	-	E	E	E	E	This IE indicates that a fixed sequence of tones shall be played to the <u>Party To Receive Play Warning Tone</u> party for whom the BCSM is operating. If present, this IE indicates that 30 seconds before the Max Call Period Duration timer expires, a fixed sequence of tones consisting of 3 tones of 900 Hz, with a 200 milliseconds tone duration and a 200 milliseconds intertone duration shall be played.
Play Burstlist	E	-	E	E	E	E	This IE is described in the table below. This IE indicates a variable sequence of bursts that shall be played during the call period to the <u>Party To Receive Play Warning Tone</u> party for whom the BCSM is operating.
Party To Receive Warning Tone	<u>O</u>	<u>:</u>	<u>O</u>	<u>O</u>	<u>M</u>	<u>M</u>	This parameter identifies the party to whom the warning tone indicated by the tone or the burstlist shall be played. If this IE is not present the gsmSSF shall assume the following value for this IE: - MO case: leg1 - MT case and VT case: leg2 Note: For MO, MT and VT case this is the same as in CAMEL phase 3.

Play Burstlist IE consists of the following information elements:

Information element name	Status	Description
Warning Period	M	This IE indicates the time, before the Max Call Period Duration timer expires, when the Play Burst List IE shall start.
Number Of Bursts	M	This IE indicates the number of bursts to be played. There may be up to three bursts.
Burst Interval	O	This IE indicates the time interval between successive bursts.
Number Of Tones In Burst	M	This IE indicates the number of tones to be played in each burst. There may be up to three tones per burst. The tone is fixed to 900 Hz.
Tone Duration	M	This IE indicates the duration of a tone in a burst.
Tone Interval	O	This IE indicates the time interval between successive tones in a burst.

Service logic designers should note that the total duration of the Burst List should not exceed the WarningPeriod IE, otherwise an incomplete Burst List will be played to the served party.

— END —