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**3RD GENERATION
PARTNERSHIP
PROJECT 2
"3GPP2"**

CNAP/CNAR

Revision: 0

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WIRELESS CALLING NAME FEATURE DESCRIPTIONS

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FOREWORD

This Interim Standard presents a recommended plan for the implementation of Calling Name Presentation (CNAP) and Calling Name Restriction (CNAR) for use in the Wireless Radiotelephone Service.

This Interim Standard builds on the following standards:

- *ANSI/TIA/EIA-664*, Cellular Features Description; Telecommunications Industry Association; June 1996
- *ANSI/TIA/EIA-41-D*, Cellular Radiotelecommunications Intersystem Operations; Telecommunications Industry Association; 1997

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ASSUMPTIONS

The following items are basic understandings used during the development of this Interim Standard:

- a. This document describes intersystem operations for the implementation of Calling Name Presentation (CNAP) and Calling Name Restriction (CNAR) services. Not all of the CNAP and CNAR features and corresponding intersystem operations can be implemented in many public networks because of regulatory constraints, limitations of interconnecting networks, or other restrictions. Examples of such features include:
 - CNAR Blocking Toggle;
 - the use of CNAR feature activation or deactivation codes that are distinct from corresponding Calling Number Restriction (CNIR) feature activation or deactivation codes; and
 - the use of distinct default presentation status for CNIR and CNAR.
- b. There are circumstances in which a CNAP subscriber roaming in a CNAP capable system will be provided with an indication that a calling party name is *not available* for a call that is being redirected to that subscriber, even though the calling party number has been received by the subscriber's Home System and the calling party name is available for retrieval from the appropriate database (e.g., a Line Information Database). These circumstances are limited to cases in which:
 - Before redirection, the call had been directed to an MS from the same Home System as the Home System of the subscriber to which the call is being redirected.
 - The call is redirected by the Serving MSC, rather than by the Originating MSC.

Similarly, in some cases in which these circumstances apply, if the subscriber to which the call is redirected is a CNIP subscriber, that subscriber may receive an indication that a calling party number is not available even though the calling party number has been received by the subscriber's Home System and the Serving System supports CNIP.

These limitations have been accepted because the only proposal that addressed these limitations would impact call delivery for all calls, including calls to MSs that are not subscribed to CNAP (or CNIP), and because it is assumed that circumstances in which these limitations might interfere with the proper operation of CNAP (or CNIP) will be rare.

REVISION HISTORY

Revision	Date	Remarks
0	April 1998	Initial Publication

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1 INTRODUCTION

This document presents a recommended plan for the implementation of Calling Name Presentation (CNAP) and Calling Name Restriction (CNAR) for use in the Wireless Radiotelephone Service.

1.1 General

This document describes the CNAP and CNAR features and the intersystem operations to enable a wireless subscriber to use these features in systems into which the subscriber roams.

1.2 Objective

The purpose of this document is to describe the CNAP and CNAR features, and to specify the operation of CNAP and CNAR so that a roaming wireless subscriber can use these features in a seamless manner.

1.3 Organization

This document is organized as follows:

- Section 2 provides Stage 1 feature descriptions for CNAP and CNAR according to the structure of *TIA/EIA-664*.
- Section 3 provides the modifications and additions to *TIA/EIA-41-D* Chapter 1 “Functional Overview” for CNAP and CNAR.
- Section 4 provides the modifications and additions to *TIA/EIA-41-D* Chapter 3 “Automatic Roaming Information Flows” for CNAP and CNAR.
- Section 5 provides the modifications and additions to *TIA/EIA-41-D* Chapter 5 “Signaling Protocol” for CNAP and CNAR.
- Section 6 provides the modifications and additions to *TIA/EIA-41-D* Chapter 6 “Signaling Procedures” for CNAP and CNAR.

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2 TIA/EIA-664 Modifications

This section provides Stage 1 features descriptions for CNAP and CNAR according to the structure of *TIA/EIA-664*.

2.2 Informative References

(TIA/EIA-664 Page 3)

- [B8] ANSI T1.641-1995; Calling Name Identification Presentation; American National Standards Institute, Inc.; January 1995.
- [B9] ANSI T1.639-1995; Calling Name Identification Restriction; American National Standards Institute, Inc.; January 1995.

3.1 Definitions

(TIA/EIA-664 Page 4)

Calling Name Identification (CNA)

When available, the CNA may include:

- information regarding the availability and presentation status of a calling party’s name, and optionally, characters of name information
- information regarding the availability and presentation status of the last redirecting party’s name, and optionally, characters of name information
- or both

CNA Calling Name Identification

See Calling Name Identification.

CNAP Calling Name Presentation

See 5.A.

CNAR Calling Name Restriction

See 5.B.

RND Redirecting Name Delivery

See 5.A.

5.A Calling Name Presentation (CNAP)

(New for TIA/EIA-664 Section 5)

Calling Name Presentation (CNAP) provides the name identification of the calling party (e.g., personal name, company name, “restricted”, “not available”) to the called subscriber. The calling name identification (CNA) may be provided to the terminating network by the originating network or the terminating network may retrieve it or derive it using the calling number identification (CNI) which is generally provided to the terminating network from the originating network. The CNA is considered public when presentation of the calling name is allowed, and private when presentation of the calling name is restricted. Optionally, the date and time of the call may also be provided to the called subscriber.

Redirecting Name Delivery (RND) is a CNAP subscription option. When CNAP with RND is active and a call has been forwarded, CNAP provides the CNA of the last redirecting party and the original calling party to the called subscriber.

CNAP does not impact a subscriber’s ability to originate calls or to receive calls.

Applicability to Telecommunications Services

CNAP is applicable to voice and circuit switched data telecommunications services.

5.A.1 Normal Procedures With Successful Outcome

Authorization

CNAP may be generally available or may be provided after pre-arrangement with the service provider.

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The authorization may have the following subscription options:

Subscription Options	Values
CNAP Activation	Permanent. CNAP is active while authorized.
	Demand. The subscriber is authorized to control the activation and de-activation of CNAP.
Redirecting Name Delivery (RND)	Not subscribed. In the case of forwarded calls, it shall be the CNA associated with the calling party which is presented to the mobile station (MS).
	Subscribed. In the case of forwarded calls, the CNA of the last redirecting party and the original calling party are presented to the MS.

Table 2-1: CNAP Subscription Options

De-Authorization

CNAP may be withdrawn at the subscriber’s request or for administrative reasons.

Registration

CNAP has no registration.

De-Registration

CNAP has no de-registration.

Activation

CNAP is activated upon authorization for a Permanent CNAP Activation subscriber.

CNAP may also be activated by a Demand Activation authorized subscriber specifying a feature code, as in:

* FC + SEND .

Successful demand activation shall be indicated with feature confirmation treatment.

De-Activation

CNAP shall be de-activated upon de-authorization.

CNAP may also be de-activated by a Demand Activation authorized subscriber specifying a feature code, as in:

* FC0 + SEND .

Successful demand de-activation shall be indicated with feature confirmation treatment.

Invocation

CNAP is invoked when the CNI associated with an incoming call is available, the called subscriber has CNAP active and the call can be presented to the called MS. CNAP is subject to the restrictions of the CNA and the serving service provider.

Normal Operation With Successful Outcome

When the CNAP service is invoked, the destination network shall send the CNA to the MS during alerting on incoming calls. It may be possible to present the CNA in the subscriber’s preferred language.

In the event of call forwarding when CNAP and RND are active, the CNA of the last redirecting party and the original calling party are presented to the MS.

CNI may be used to derive the CNA. Only a network-provided or user-provided (passed screening) calling party number shall be used to derive the calling party name. Only a network-provided redirecting party number shall be used to derive the redirecting party name. Refer to *TIA/EIA-664* “Calling Number Identification Presentation (CNIP)” for a description of the different types of CNI.

Call Detail Record

The system should record call detail information for the following:

- a. CNAP activation activities and events.
- b. CNAP de-activation activities and events.
- c. CNAP invocation activities and events.

See *IS-124* for the specific information to be included for each element.

5.A.2 Exception Procedures or Unsuccessful Outcome

Registration

None identified.

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De-Registration

None identified.

Activation

If the subscriber is not authorized for a request, the system shall apply feature denial treatment.

De-Activation

If the subscriber is not authorized for a request, the system shall apply feature denial treatment.

Invocation

If the calling name is not available, an indication that the calling name is *not available* shall be presented to the MS.

If the calling name is available and the presentation of calling name is restricted, an indication that the calling name is *restricted* shall be presented to the MS.

If the call has been forwarded and the redirecting name is not available, an indication that the redirecting name is *not available* shall be presented to the MS.

If the redirecting name is available and the presentation of the redirecting name is restricted, an indication that the redirecting name is *restricted* shall be presented to the MS.

In all of these exception cases, the mobile station shall provide an appropriate indication to the subscriber. It may be possible to present these indications in the subscriber's preferred language.

Exceptions While Roaming

None identified.

Exceptions During Intersystem Handoff

None identified.

5.A.3 Alternative Procedures

None identified.

5.A.4 Interactions With Other Wireless Services

Asynchronous Data Service (ADS)

None identified.

Call Delivery (CD)

None identified.

Call Forwarding—Busy (CFB)

None identified.

Call Forwarding—Default (CFD)

None identified.

Call Forwarding—No Answer (CFNA)

None identified.

Call Forwarding—Unconditional (CFU)

If the called subscriber has CNAP active, the CNA may be presented to the called subscriber during the abbreviated (or reminder) alert.

Call Transfer (CT)

None identified.

Call Waiting (CW)

If the called subscriber has CNAP and CW active, the CNA shall be presented with the CW notification.

Calling Name Presentation (CNAP)

Not applicable.

Calling Name Restriction (CNAR)

None identified.

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Calling Number Identification Presentation (CNIP)

None identified.

Calling Number Identification Restriction (CNIR)

None identified.

Conference Calling (CC)

None identified.

Data Privacy (DP)

None identified.

Do Not Disturb (DND)

None identified.

Emergency Services (9-1-1)

None identified.

Flexible Alerting (FA)

Interaction between FA and CNAP is beyond the scope of this Standard. The following describes a possible implementation:

If the FA Pilot Directory Number has CNAP active, incoming calls to the FA Pilot Directory Number apply CNAP to the members of the FA group served by the same Home Location Register (HLR) as the Pilot Directory Number.

Group 3 Facsimile (G3 Fax)

None identified.

Incoming Call Screening (ICS)

None identified.

Message Waiting Notification (MWN)

None identified.

Mobile Access Hunting (MAH)

Interaction between MAH and CNAP is beyond the scope of this Standard. The following describes a possible implementation:

If the MAH Pilot Directory Number has CNAP active, incoming calls to the MAH Pilot Directory Number apply CNAP to the members of the MAH group served by the same Home Location Register (HLR) as the Pilot Directory Number.

Network Directed System Selection (NDSS)

None identified.

Non-Public Mode Service (NP)

None identified.

Over-the-Air Service Provisioning (OTASP)

None identified.

Password Call Acceptance (PCA)

None identified.

Preferred Language (PL)

None identified.

Priority Access and Channel Assignment (PACA)

None identified.

Remote Feature Control (RFC)

None identified.

Selective Call Acceptance (SCA)

None identified.

Service Negotiation (SN)

None identified.

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Subscriber Confidentiality (SC)

None identified.

Subscriber PIN Access (SPINA)

None identified.

Subscriber PIN Intercept (SPINI)

None identified.

Three-Way Calling (3WC)

None identified.

User Group ID (UGID)

None identified.

Voice Message Retrieval (VMR)

None identified.

Voice Privacy (VP)

None identified.

5.B Calling Name Restriction (CNAR)

(New for TIA/EIA-664 Section 5)

Calling Name Restriction (CNAR) restricts presentation of the calling subscriber’s name to the called party. CNAR may restrict the presentation of the calling subscriber’s name for all calls, or it may change the presentation status on a per-call basis.

The terminating network may receive the calling name identification (CNA) as part of basic call setup or as a result of a database query. The portion of the CNA associated with the calling subscriber is considered public when presentation to the called party is allowed and private when presentation to the called party is restricted.

CNAR does not impact a subscriber’s ability to originate calls or to receive calls.

Applicability to Telecommunications Services

CNAR is applicable to voice and circuit switched data telecommunications services.

5.B.1 Normal Procedures With Successful Outcome

Authorization

CNAR may be generally available or may be provided after pre-arrangement with the service provider. As a service provider option, CNAR may be offered with several subscription options. It is a service provider option as to how subscription options are applied (e.g., per Directory Number and Bearer Service).

The following table summarizes the subscription options:

Subscription Options	Values
CNAR Mode	Not subscribed. CNAR is inactive for all calls.

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	Permanently Restricted. CNAR is active for all calls.
	Variable, Per-Call Force. The subscriber is authorized to control the activation and de-activation of CNAR on a per call basis regardless of the network stored default value.
	Variable, Per-Call Toggle. The subscriber is authorized to modify the network stored default value from “Allowed” to “Restricted” or from “Restricted” to “Allowed” on a per call basis.
	Variable, Per-Call Force and Per-Call Toggle. The subscriber is authorized for both variable options as described above.
Network Stored Default (only for variable modes)	Presentation Restricted.
	Presentation Allowed.

Table 2-2: CNAR Subscription Options

De-Authorization

CNAR may be withdrawn at the subscriber’s request or for administrative reasons.

Registration

CNAR has no registration.

De-Registration

CNAR has no de-registration.

Activation

If subscribed to the Permanently Restricted CNAR Mode, CNAR is activated upon authorization.

If subscribed to Variable Per-Call Toggle CNAR mode with a Presentation Allowed Default, CNAR may be activated on a per-call basis concurrent with a particular call setup, as in:

* FC + # + termination address + **SEND** .

Alternatively:

* FC + termination address + **SEND** .

If the temporary activation is accepted, the system may indicate success with feature confirmation treatment and the call is allowed to proceed. At the release of the call, CNAR shall resume the default state.

If subscribed to Variable Per-Call Force CNAR mode with a Presentation Allowed Default, CNAR may be activated on a per-call basis concurrent with a particular call setup, as in:

* FC + # + termination address + **SEND** .

Alternatively:

* FC + termination address + **SEND** .

If the temporary activation is accepted, the system may indicate success with feature confirmation treatment and the call is allowed to proceed. At the release of the call, CNAR shall resume the default state.

De-Activation

CNAR shall be de-activated upon de-authorization.

If subscribed to Variable Per-Call Toggle CNAR Mode with Presentation Restricted Default, CNAR may be de-activated on a per-call basis concurrent with a particular call setup, as in:

* FC0 + # + termination address + **SEND** .

Alternatively:

* FC + termination address + **SEND** .

If the temporary de-activation is accepted, the system may indicate success with feature confirmation treatment and the call is allowed to proceed. At the completion of the call, CNAR shall resume the default state.

If subscribed to Variable Per-Call Force CNAR Mode, CNAR may be de-activated on a per-call basis and concurrently with a particular call setup, as in:

* FC0 + # + termination address + **SEND** .

Alternatively:

* FC + termination address + **SEND** .

If the temporary de-activation is accepted, the system may indicate success with feature confirmation treatment and the call is allowed to proceed. At the completion of the call, CNAR shall resume the default state.

Invocation

CNAR is invoked for any calls originated by a subscriber or forwarded on behalf of a subscriber for whom CNAR is active.

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1 **Normal Operation With Successful Outcome**
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3 If subscribed to the Permanently Restricted CNAR Mode, presentation of the caller's
4 name is restricted.
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7 If subscribed to Variable Per-Call Force or Variable Per-Call Toggle CNAR Mode, and
8 CNAR is activated concurrent with a particular call setup, the originating network
9 provides notification to the destination network that presentation of the caller's name is
10 restricted.
11

12 When CNAR is active, an indication of *presentation restricted* is presented to the called
13 party with CNAP subscribed and active. When a call is forwarded for a subscriber with
14 CNAR active, the portion of the CNA associated with that subscriber shall indicate
15 *presentation restricted*.
16
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18 **Call Detail Record**
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20 The system should record call detail information for the following:
21

- 22 a. CNAR activation activities and events.
 - 23 b. CNAR de-activation activities and events.
 - 24 c. CNAR invocation activities and events.
- 25
26

27 See *IS-124* for the specific information to be included for each element.
28
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31 **5.B.2 Exception Procedures or Unsuccessful Outcome**
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33 **Registration**
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35 None identified.
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39 **De-Registration**
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41 None identified.
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45 **Activation**
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47 **Temporary Activation With a Call Setup Request (Per Call Blocking)**
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49 If the subscriber is not authorized for a request made concurrently with a call setup
50 request, the system shall apply feature denial treatment and the call setup shall be
51 denied.
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53 If a subscriber with Presentation Restricted Default active attempts to activate the CNAR
54 feature on a per call basis, the serving system shall progress the call with an indication
55 that the calling name identification is *presentation restricted*.
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De-Activation

Temporary De-Activation With a Call Setup Request (Per Call Allow)

If the subscriber is not authorized for a request made concurrently with a call setup request, the system shall apply feature denial treatment and the call setup shall be denied.

If a subscriber with Presentation Allowed Default active attempts to de-activate the CNAR feature on a per call basis, the serving system shall progress the call with an indication that the calling name identification is *presentation allowed*.

Invocation

None identified.

Exceptions While Roaming

Serving systems may elect to provide CNAR to all roamers by default.

Exceptions During Intersystem Handoff

None identified.

5.B.3 Alternative Procedures

None identified.

5.B.4 Interactions With Other Wireless Services

Asynchronous Data Service (ADS)

None identified.

Call Delivery (CD)

None identified.

Call Forwarding—Busy (CFB)

None identified.

Call Forwarding—Default (CFD)

None identified.

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Call Forwarding—No Answer (CFNA)

None identified.

Call Forwarding—Unconditional (CFU)

None identified.

Call Transfer (CT)

If the CT controlling subscriber is authorized for a Variable Per-Call CNAR Mode and activates CNAR during the setup of a CT leg, the CNAR activation applies only to that call leg.

If the CT controlling subscriber is authorized for a Variable Per-Call CNAR Mode and de-activates CNAR during the setup of a CT leg, the CNAR de-activation applies only to that call leg.

Call Waiting (CW)

None identified.

Calling Name Presentation (CNAP)

None identified.

Calling Name Restriction (CNAR)

Not applicable.

Calling Number Identification Presentation (CNIP)

None identified.

Calling Number Identification Restriction (CNIR)

The CNAR activation code may be the same as the CNIR activation code. The CNAR de-activation code may be the same as the CNIR de-activation code.

Conference Calling (CC)

If the CC controlling subscriber is authorized for a Variable Per-Call CNAR Mode and activates CNAR during the setup of a CC leg, the CNAR activation applies only to that call leg.

If the CC controlling subscriber is authorized for a Variable Per-Call CNAR Mode and de-activates CNAR during the setup of a CC leg, the CNAR de-activation applies only to that call leg.

Data Privacy (DP)

None identified.

Do Not Disturb (DND)

None identified.

Emergency Services (9-1-1)

None identified.

Flexible Alerting (FA)

None identified.

Group 3 Facsimile (G3 Fax)

None identified.

Incoming Call Screening (ICS)

None identified.

Message Waiting Notification (MWN)

None identified.

Mobile Access Hunting (MAH)

None identified.

Network Directed System Selection (NDSS)

None identified.

Non-Public Mode Service (NP)

None identified.

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Over-the-Air Service Provisioning (OTASP)

None identified.

Password Call Acceptance (PCA)

None identified.

Preferred Language (PL)

None identified.

Priority Access and Channel Assignment (PACA)

None identified.

Remote Feature Control (RFC)

None identified.

Selective Call Acceptance (SCA)

None identified.

Service Negotiation (SN)

None identified.

Subscriber Confidentiality (SC)

None identified.

Subscriber PIN Access (SPINA)

CNAR feature code requests should be denied for an MS while SPINA is active.

Subscriber PIN Intercept (SPINI)

None identified.

Three-Way Calling (3WC)

If the 3WC controlling subscriber is authorized for a Variable Per-Call CNAR Mode and activates CNAR during the setup of a 3WC leg, the CNAR activation applies only to that call leg.

If the 3WC controlling subscriber is authorized for a Variable Per-Call CNAR Mode and de-activates CNAR during the setup of a 3WC leg, the CNAR de-activation applies only to that call leg.

User Group ID (UGID)

None identified.

Voice Message Retrieval (VMR)

None identified.

Voice Privacy (VP)

None identified.

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3 TIA/EIA-41-D Chapter 1 Modifications

This section provides new functional overview information for CNAP and CNAR according to the structure of TIA/EIA-41-D Chapter 1.

2.1 NORMATIVE REFERENCES

(TIA/EIA-41.1-D, page 1-2)

ANSI T1 Standards:

- *ANSI T1.111-1988 Signaling System Number 7 - Message Transfer Part (MTP)*
- *ANSI T1.112-1988 Signaling System Number 7 - Signaling Connection Control Part (SCCP)*
- *ANSI T1.114-1988 Signaling System Number 7 - Transaction Capabilities Application Part (TCAP)*
- *ANSI T1.611-1991 Signaling System Number 7 (SS7) - Supplementary Services for Non-ISDN-Subscribers; American National Standards Institute, Inc.; 1991*
- *ANSI T1.209-1989 Operations, Administration, Maintenance, and Provisioning (OAM&P) - Network Tones and Announcements; American National Standards Institute, Inc.; 1989*
- *ANSI T1.610 Generic Procedures for the Control of ISDN Supplementary Services; American National Standards Institute, Inc.; 1994*

TIA/EIA:

- *ANSI/TIA/EIA-660 Uniform Dialing Procedures and Call Processing Treatment for Cellular Radio Telecommunications; Telecommunications Industry Association; July 1996*
- *ANSI/TIA/EIA-664 Cellular Features Description; Telecommunications Industry Association; June 1996*
- *TIA/EIA/IS-93 Cellular Radio Telecommunications Ai - Di Interfaces Standard; Telecommunications Industry Association; December 1993*

AMPS:

- *ANSI/EIA/TIA-553 Mobile Station - Land Station Compatibility Specification; September 1989*

CDMA:

- *TIA/EIA/IS-95-A Mobile Station – Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System*; Telecommunications Industry Association; May 1995
- *TIA/EIA/IS-97 Recommended Minimum Performance Standards for Base Stations Supporting Dual-Mode Wideband Spread Spectrum Cellular Mobile Stations*; Telecommunications Industry Association; December 1994
- *TIA/EIA/IS-637 Short Message Services for Wideband Spread Spectrum Cellular System*; Telecommunications Industry Association; December 1995

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4 SYMBOLS AND ABBREVIATIONS

(TIA/EIA-41.1-D, page 1-14)

<u>CGNAME</u>	<u>CallingPartyName parameter</u>
<u>CNA</u>	<u>Calling Name Identification</u>
<u>CNAP</u>	<u>Calling Name Presentation</u>
<u>CNAR</u>	<u>Calling Name Restriction</u>
<u>DISPTXT</u>	<u>DisplayText parameter</u>
<u>NAMI</u>	<u>Calling Name Capability Indicator</u>
<u>RDNAME</u>	<u>RedirectingPartyNameparameter</u>
<u>SERVREQ</u>	<u>ServiceRequest INVOKE</u>
<u>servreq</u>	<u>ServiceRequest RETURN RESULT</u>
<u>SRVID</u>	<u>ServiceID parameter</u>

5 NETWORK REFERENCE MODEL

(TIA/EIA-41.1-D, page 1-24)

Figure 2 presents the functional entities and the associated interface reference points that may logically comprise a cellular network. The model, as defined herein, is intended to provide a level of abstraction that may facilitate the specification of messages and protocols within TIA/EIA-41. As such, implementations may vary with respect to how the functional entities are distributed among various physical units. In cases where functional entities are combined in the same physical equipment the interface reference points become internal, and need not adhere to interface standards.

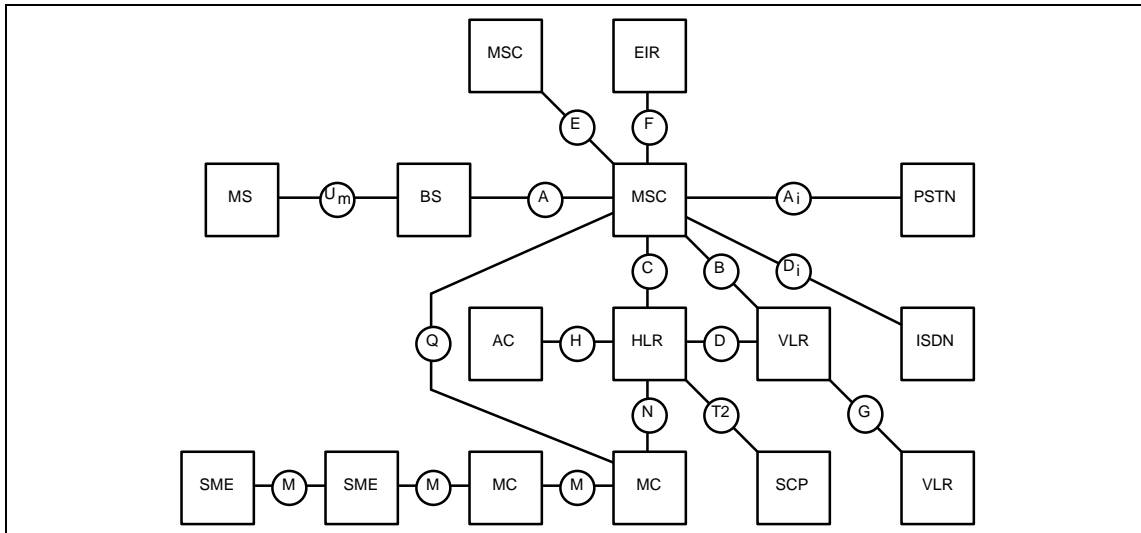


Figure 2 Network Reference Model

Note:

- AC Authentication Center
- BS Base Station
- EIR Equipment Identity Register
- HLR Home Location Register
- ISDN Integrated Services Digital Network
- MC Message Center
- MS Mobile Station
- MSC Mobile Switching Center
- PSTN Public Switched Telephone Network
- SCP Service Control Point
- SME Short Message Entity
- VLR Visitor Location Register

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1 **5.1 FUNCTIONAL ENTITIES**
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(TIA/EIA-41.1-D, page 1-24)

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5 **5.1.X Service Control Point (SCP)**
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7 The SCP is an entity that acts as a real-time database and transaction processing system
8 that provides service control and service data functionality.
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14 **5.2 INTERFACE REFERENCE POINTS**
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(TIA/EIA-41.1-D, page 1-26)

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18 **5.2.X Reference Point T2**
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20 Reference Point T2 is the interface between the HLR and SCP.
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4 TIA/EIA-41-D Chapter 3 Modifications

This section provides new automatic roaming information flows for CNAP and CNAR according to the structure of TIA/EIA-41-D Chapter 3.

6.A Calling Name Presentation

(New for TIA/EIA-41.3-D Section 6)

This section depicts the interactions between network entities in various situations related to automatic roaming and Calling Name Presentation (CNAP). These scenarios are for illustrative purposes only.

6.A.1 CNAP Invocation to an Idle MS

This scenario describes CNAP invocation to an idle, authorized MS which has CNAP active. The HLR queries an SCP to obtain the text to present to the called subscriber.

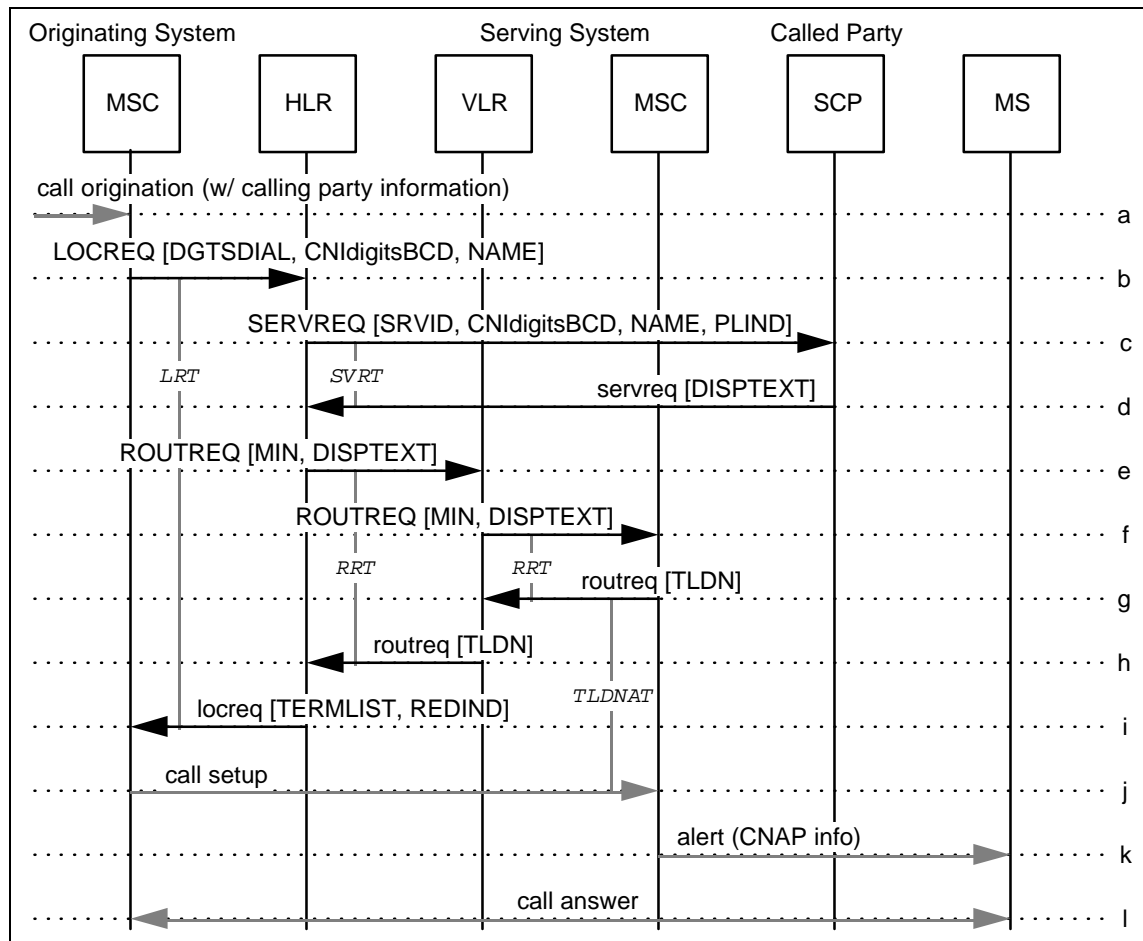


Figure 3-1 CNAP Invocation to an Idle MS

- a. A call origination with dialed MS address digits (i.e., Directory Number) is received by the Originating MSC. Also included in the call origination are calling number identification (CNI) and, if delivered by the network, the calling name identification (CNA).

- b. The Originating MSC sends a LOCREQ to the MS's HLR, including the CNI information. The CNA information is included if received at Step-a.

Parameters	Usage	Type
CNI digitsBCD:	CNI digits parameters in BCD format:	R
[CPNDGTS1]	CallingPartyNumberDigits1. Calling number digits (network-provided), including presentation restriction information.	O
[CPNDGTS2]	CallingPartyNumberDigits2. Calling number digits (user-provided), including presentation restriction information.	O
[RNDGTS]	Redirecting number digits, including presentation restriction information.	O
DGTS DIAL	Digits identifying called party	R
NAME:	The calling name identification parameters:	
[CGNAME]	CallingPartyName. The calling name identification of the original calling party, including presentation restriction information.	O
[RDNAME]	RedirectingPartyName. The calling name identification of the last redirecting party, including presentation restriction information.	O

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- c. The HLR determines CNAP should be invoked and sends a `SERVREQ` to a Service Control Point (SCP) to obtain the text to present to the called subscriber. The `SERVREQ` includes the CNI information, and the CNA information if received at Step-b. The `SRVID` parameter is set to indicate whether the SCP shall execute the CNAP service or the CNAP and redirecting name display (RND) service. (Note: the HLR may obtain the text to present to the called subscriber from an alternate source in lieu of performing the `ServiceRequest` operation.)

Parameters	Usage	Type
<code>SRVID</code>	<code>ServiceID</code> . The identifier of the specific calling name presentation service for the SCP to execute.	R
<code>CNI</code> <code>digitsBCD</code> :	CNI digits parameters in BCD format:	R
<code>[CPNDGTS1]</code>	<code>CallingPartyNumberDigits1</code> . Calling number digits (network-provided), including presentation restriction information.	O
<code>[CPNDGTS2]</code>	<code>CallingPartyNumberDigits2</code> . Calling number digits (user-provided, passed screening), including presentation restriction information.	O
<code>[RNDGTS]</code>	Redirecting number digits, including presentation restriction information.	O
<code>NAME</code> :	The calling name identification parameters:	
<code>[CGNAME]</code>	<code>CallingPartyName</code> . The calling name identification of the original calling party, including presentation restriction information.	O
<code>[RDNAME]</code>	<code>RedirectingPartyName</code> . The calling name identification of the last redirecting party, including presentation restriction information.	O
<code>PLIND</code>	The subscriber's preferred language.	O

- d. The SCP sends the `servreq` to the HLR including the text to present to the called subscriber in the `DisplayText` (`DISPTEXT`) parameter. If the `CallingPartyName` parameter is not received in the `SERVREQ` and the calling party's number is marked as *presentation restricted*, the SCP may treat the calling party's name as *presentation restricted* as well. If the `CallingPartyName` parameter is not received in the `SERVREQ` and the calling party's number is marked as *presentation allowed*, the SCP may use the default presentation status of the calling party's name (as stored in the network). The SCP uses network-validated CNI information to identify the calling party. Network-validated is network-provided or user-provided (screening passed). (Note: the SCP may obtain the text to present to the called subscriber from an alternate database.)
- e. The HLR sends a `ROUTREQ` to the VLR where the MS is registered and includes the `DISPTEXT` parameter.

Parameters	Usage	Type
<code>MIN</code>	Called MS <code>MIN</code> .	R
<code>DISPTEXT</code>	Text for display by the MS.	R

- f. The VLR forwards the `ROUTREQ` to the current Serving MSC. Parameters are as in Step-e.

- g. In response to the ROUTREQ, the Serving MSC checks its internal data structures and determines that the MS is currently idle. Therefore, the Serving MSC allocates a Temporary Local Directory Number (TLDN) and returns this information to the VLR in the routreq. The Serving MSC stores the received DISPTTEXT parameter.
- h. The VLR sends the routreq to the HLR.
- i. When the routreq is received by the HLR, it returns a locreq to the Originating MSC. The locreq includes routing information in the form of the TerminationList parameter, along with an indication of the reason for extending the incoming call (i.e., for CD) in the DMH_RedirectionIndicator parameter. The DISPTTEXT parameter will be included for local termination.
- j. A connection is established between the Originating MSC and the Serving MSC using protocols defined by the interconnection method.
- k. When the inter-MSC call is received at the Serving MSC, the MS is alerted. Included in the alert is the text received in the DISPTTEXT parameter.
- l. When the served MS answers, the call is connected.

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6.A.2 CNAP Interaction with CW

This scenario describes CNAP invocation to a busy, authorized MS for which CNAP and CW are active.

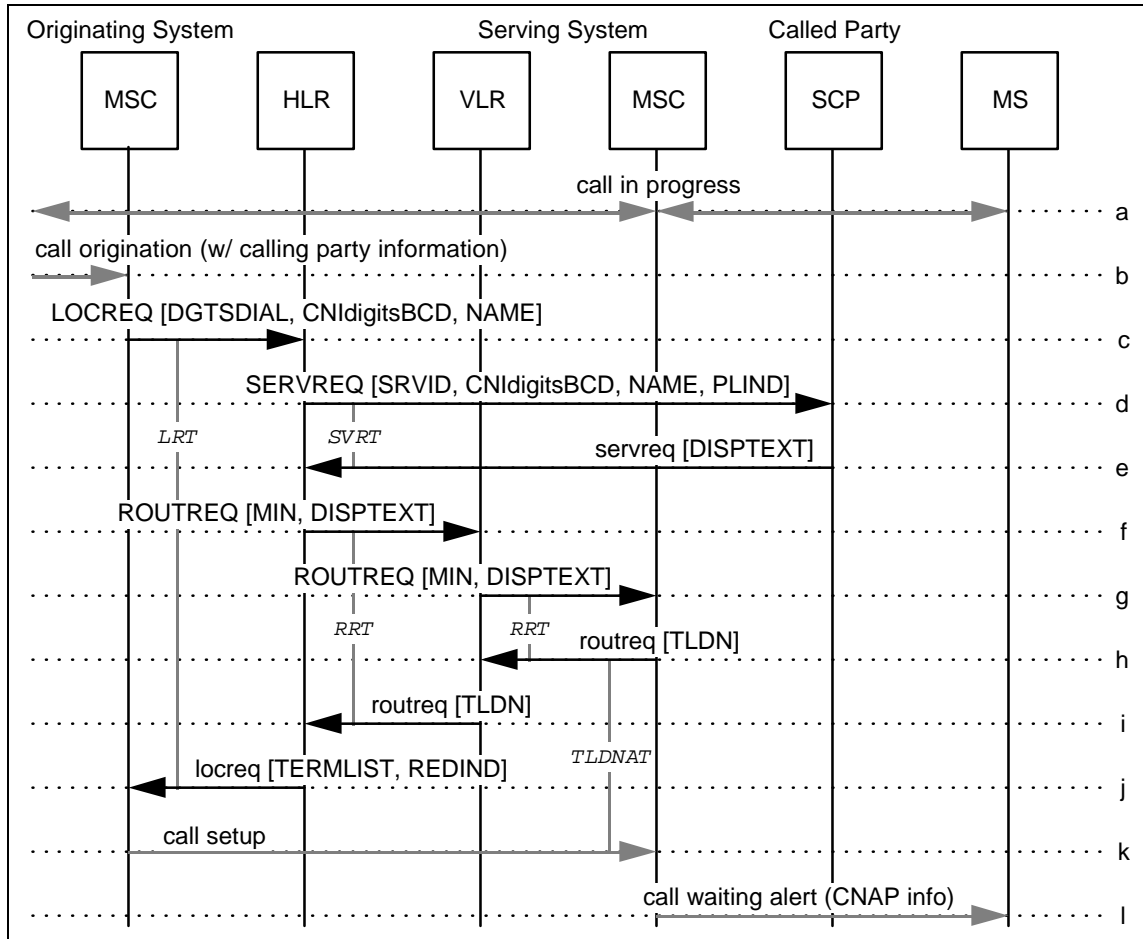


Figure 3-2 CNAP Interaction with CW

- a. A call involving the served MS is in progress.
- b-g. Same as Section 6.A.1, Steps a-f, respectively.
- h. In reaction to the ROUTREQ, the Serving MSC checks its internal data structures and determines that the MS is busy in another call but has CW active. Therefore, the Serving MSC allocates a TLDN (Temporary Local Directory Number) and returns this information to the VLR in the routreq. The Serving MSC stores the received DISPTEXT parameter.
- i-k. Same as Section 6.A.1, Steps h-j, respectively.
- l. When the (second) inter-MSC call is received at the Serving MSC, the Serving MSC provides the MS with a CW notification. Included in the notification is the text received in the DISPTEXT parameter.

6.A.3 CNAP Interaction with CW After Handoff

This scenario describes CNAP invocation to a busy, authorized MS for which CNAP and CW are active, after intersystem handoff of the MS.

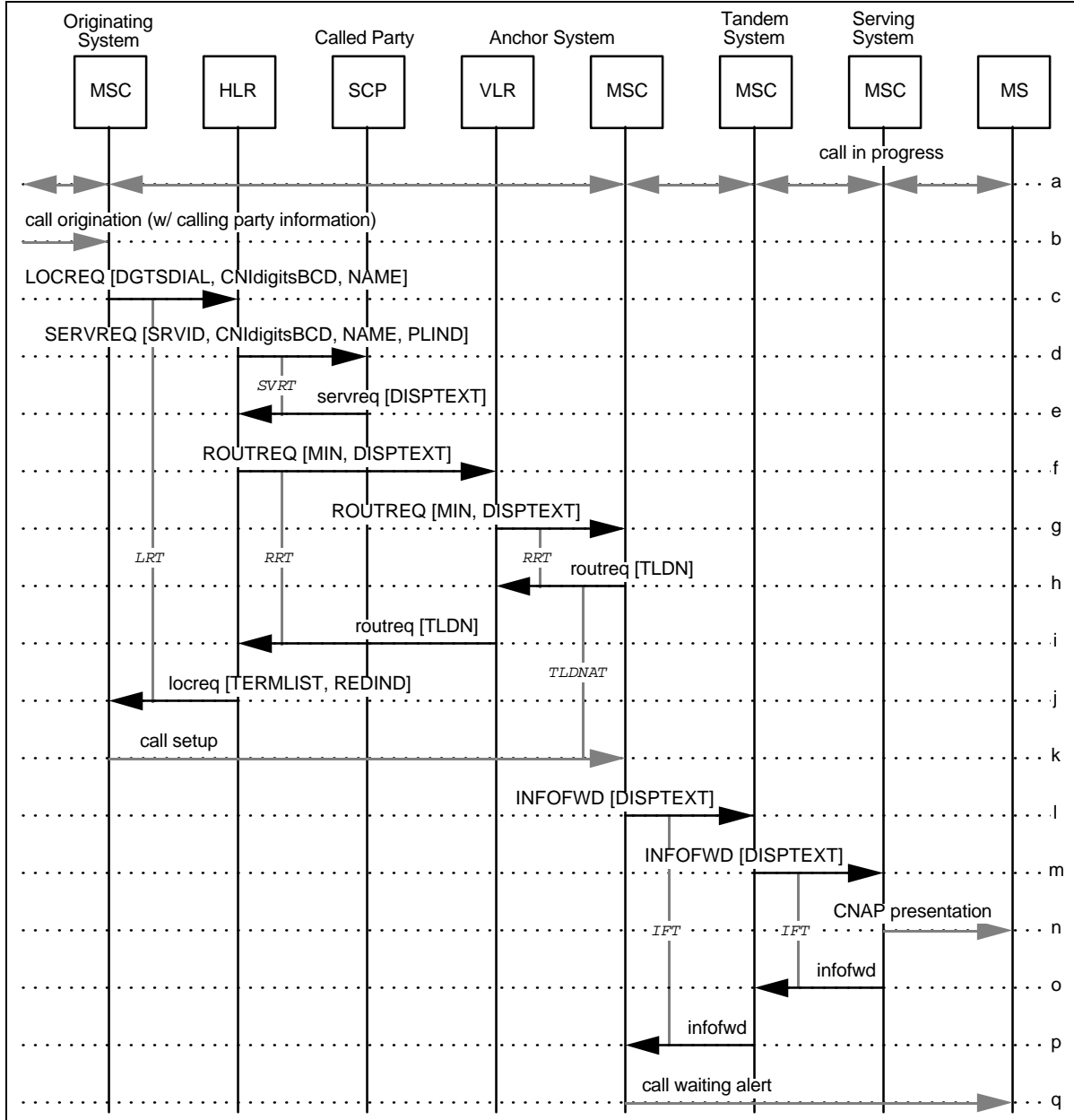


Figure 3-3 CNAP Interaction with CW After Handoff

- a. A call involving the served MS is in progress.
- b-g. Same as Section 6.A.1, Steps a-f, respectively.
- h. In reaction to the ROUTREQ, the Serving MSC checks its internal data structures and determines that the MS is busy in another call but has CW active. Therefore, the Serving MSC allocates a TLDN (Temporary Local Directory Number) and returns this information to the VLR in the routreq. The Serving MSC stores the received DISPTXT parameter.

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- i-k. Same as Section 6.A.1, Steps h-j, respectively.
- l. The Anchor MSC then sends an `INFOFWD` to the Tandem MSC, including the `DISPTEXT` parameter.
- m. The Tandem MSC forwards the `INFOFWD` to the Serving MSC.
- n. The Serving MSC presents the text received in the `DISPTEXT` parameter to the served MS.
- o. The Serving MSC acknowledges receipt by sending an `infofwd` to the Tandem MSC.
- p. The Tandem MSC forwards the `infofwd` to the Anchor MSC.
- q. The Anchor MSC provides the MS with a Call Waiting notification.

6.A.4 CNAP Interaction with CFU

This scenario describes CNAP invocation to an authorized MS for which CNAP and CFU are active.

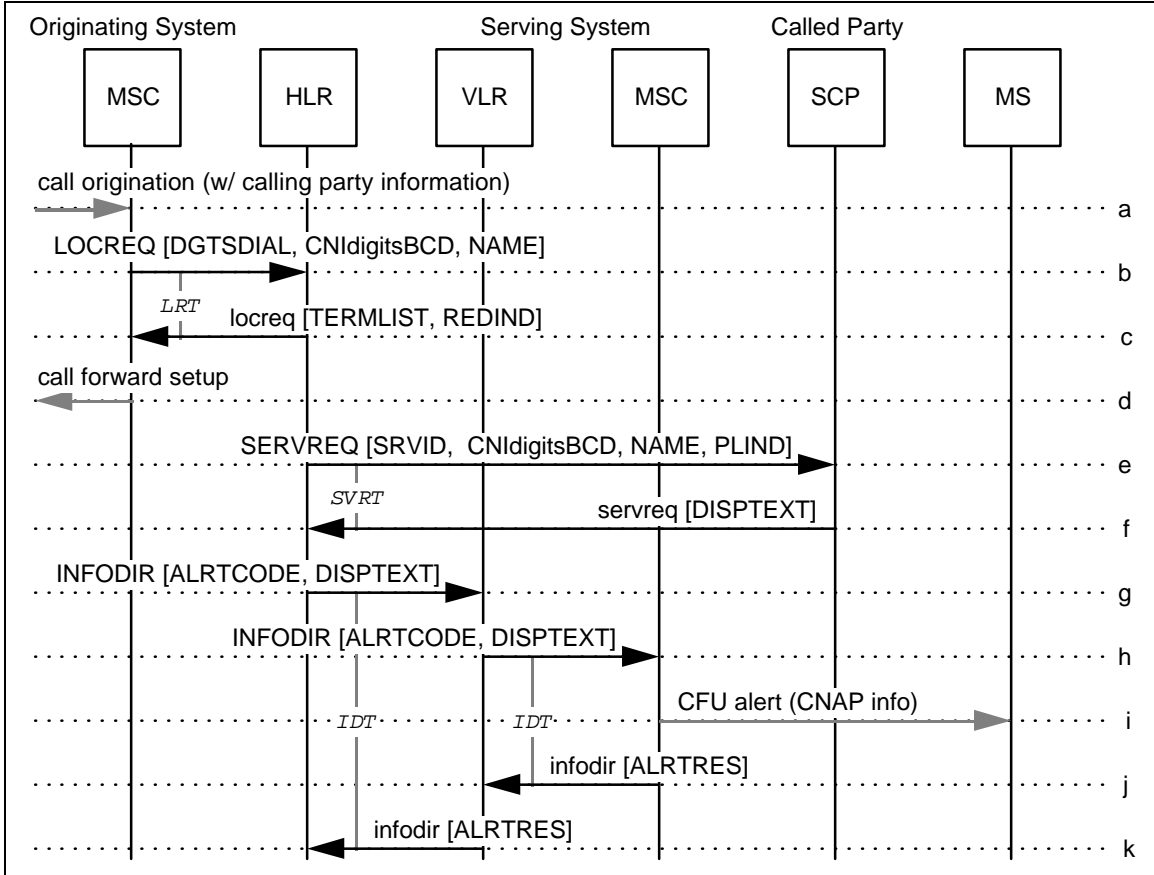


Figure 3-4 CNAP Interaction with CFU

- a-b. Same as Section 6.A.1, Steps a-b, respectively.
- c. The HLR determines that CFU is active for the called subscriber. It sends a `locreq` to the Originating MSC providing the forward-to number and other routing information in the `TerminationList` parameter, along with an indication of the reason for extending the incoming call (i.e., for CFU) in the `DMH_RedirectionIndicator` parameter.
- d. The Originating MSC then forwards the call to the specified forward-to number, including any received calling party identity information and updated last redirecting party number information.

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- e. If the HLR determines that the MS should be informed that a call has been forwarded unconditionally and that CNAP should be invoked, it sends a `SERVREQ` to a Service Control Point (SCP) to obtain the calling name information to present to the called subscriber. The `SERVREQ` includes any network validated CNI information, and the CNA information if received at Step-b. The `SRVID` parameter is set to indicate whether the SCP shall execute the CNAP service or the CNAP and redirecting name display (RND) service. (Note: the HLR may obtain the text to present to the called subscriber from an alternate database.)

Parameters	Usage	Type
<code>SRVID</code>	<code>ServiceID</code> . The identifier of the specific calling name presentation service for the SCP to execute.	R
<code>CNI</code> <code>digitsBCD</code> :	CNI digits parameters in BCD format:	R
<code>[CPNDGTS1]</code>	<code>CallingPartyNumberDigits1</code> . Calling number digits (network-provided), including presentation restriction information.	O
<code>[CPNDGTS2]</code>	<code>CallingPartyNumberDigits2</code> . Calling number digits (user-provided, passed screening), including presentation restriction information.	O
<code>[RNDGTS]</code>	Redirecting number digits, including presentation restriction information.	O
<code>NAME</code> :	The calling name identity parameters:	
<code>[CGNAME]</code>	<code>CallingPartyName</code> . The calling name identity of the original calling party, including presentation restriction information.	O
<code>[RDNAME]</code>	<code>RedirectingPartyName</code> . The calling name identity of the last redirecting party, including presentation restriction information.	O
<code>PLIND</code>	The subscriber's preferred language.	O

- f. The SCP sends the `servreq` to the HLR including the text to present to the called subscriber in the `DisplayText` (`DISPTEXT`) parameter. If the `CallingPartyName` parameter is not received in the `SERVREQ` and the calling party's number is marked as *presentation restricted*, the SCP may treat the calling party's name as *presentation restricted* as well. If the `CallingPartyName` parameter is not received in the `SERVREQ` and the calling party's number is marked as *presentation allowed*, the SCP may use the default presentation status of the calling party's name (as stored in the network). The SCP uses network-validated CNI information to identify the calling party. Network-validated is network-provided or user-provided (screening passed). (Note: the SCP may obtain the text to present to the called subscriber from an alternate database.)

Parameters	Usage	Type
<code>DISPTEXT</code>	Text for display by the MS.	R

- g. The HLR sends an `INFODIR` to the VLR where the MS is registered, including the `DISPTEXT` parameter.
- h. The VLR directs the Serving MSC to alert the served MS by sending an `INFODIR` to the Serving MSC.

- i. The Serving MSC alerts the MS, if idle, via the alerting method specified in the AlertCode parameter in the received `INFODIR`; in this case, the MSC applies a single, abbreviated alert signal to the MS and waits to report paging success or failure. Included in the alert is the text received in the `DISPTXT` parameter.
- j. The Serving MSC sends an `infodir` to the VLR, including the result of the alerting action (e.g., success, not attempted due to MS busy condition).
- k. The VLR forwards the `infodir` to the HLR.

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6.A.5 CNAP Interaction with CFU after Handoff

This scenario describes CNAP invocation to an authorized MS for which CNAP and CFU are active, after intersystem handoff of the MS.

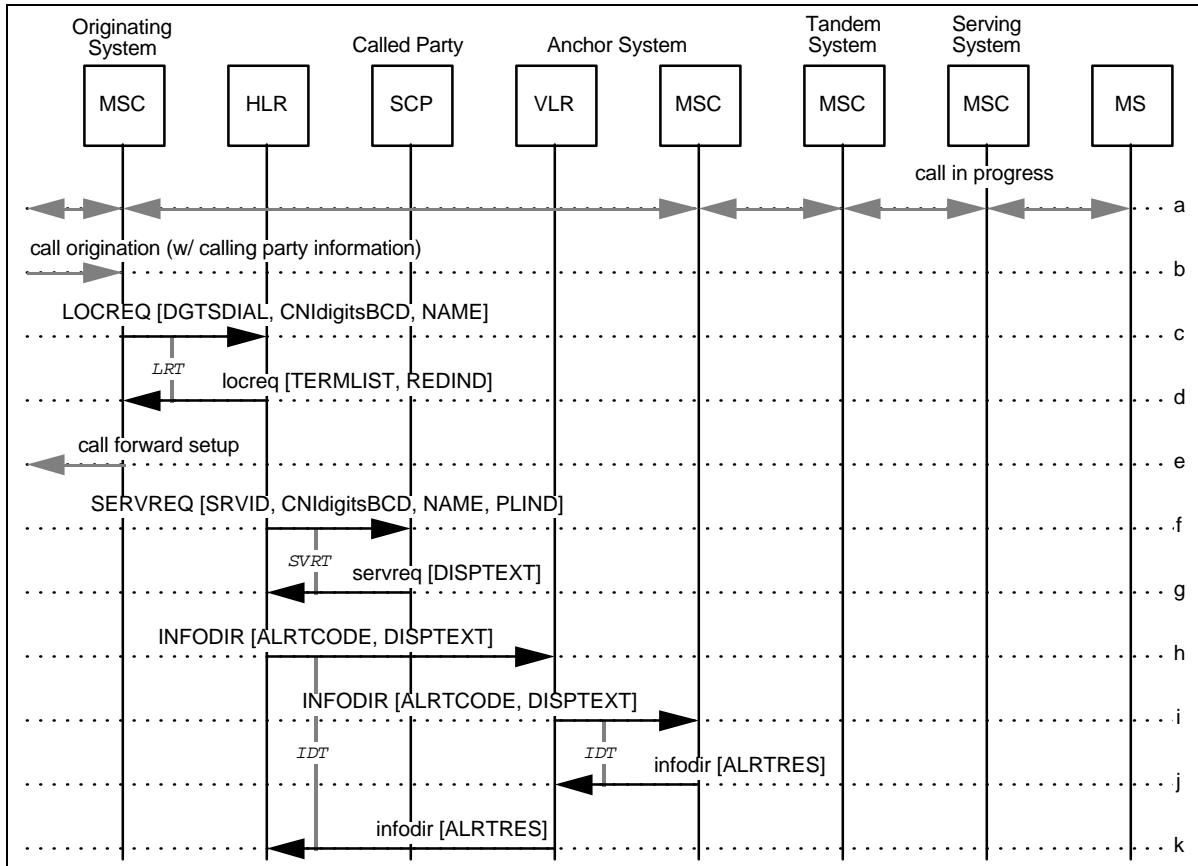


Figure 3-5 CNAP Interaction with CFU After Handoff

- a. A call involving the served MS is in progress.
- b-i. Same as Section 6.A.4, Steps a-h, respectively.
- j. Since the MS is busy, the Anchor MSC sends an *infodir* to the VLR, including the result of the alerting action (i.e., not attempted due to MS busy condition).
- k. The VLR forwards the *infodir* to the HLR.

6.A.6 CNAP with Intersystem Paging

This scenario describes CNAP invocation involving intersystem paging from the serving system to border systems. Intersystem paging may help overcome location uncertainties in border system areas allowing paging to be performed in border systems and by performing call routing towards the system where the subscriber is found.

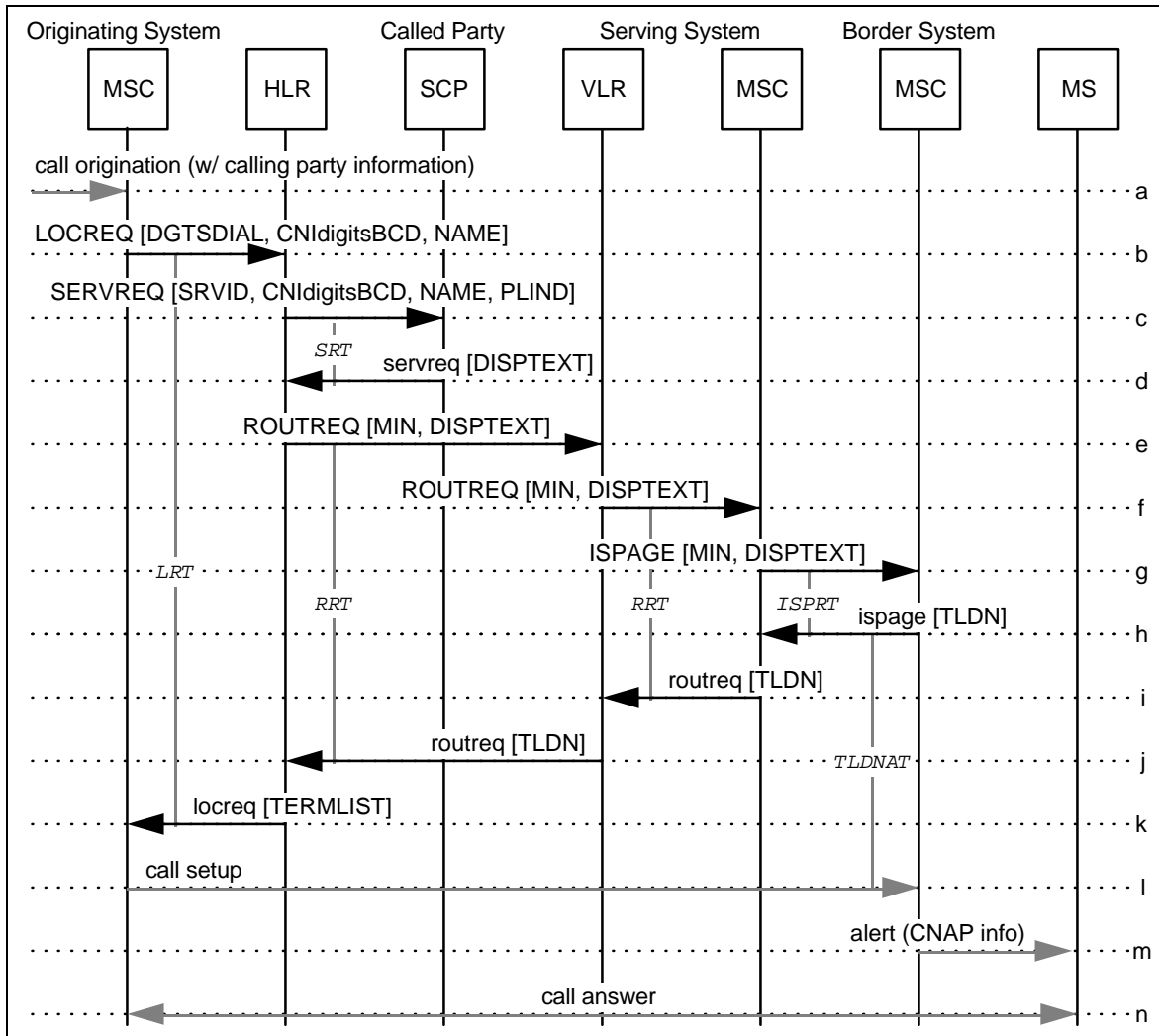


Figure 3-6 CNAP with Intersystem Page

- a-f. Same as Section 6.A.1, Steps a-f.
- g. Before initiating local paging, at the time of local page initiation or after first page time-out, the Serving MSC may send an ISPAGE to one or more bordering MSCs according to its “topographical map” with the DisplayText parameter received in Step-f.
The Border MSC that receives the ISPAGE may initiate paging (i.e., if directed).
- h. If a page response is received at the Border MSC, and if the MS is authentication capable, optionally authenticate the MS (see ANSI-41 for Authentication scenarios). When the Border MSC assigns the MS to a voice/traffic channel, the

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1 Border MSC sends an `ispage` containing a TLDN and the MSCID of the Border
2 MSC to the Serving MSC.
3

- 4 i. The Serving MSC returns a `routreq` to the Serving VLR with the TLDN
5 contained in the `ispage`
6
- 7 j. The Serving VLR returns the `routreq` to the HLR.
8
- 9 k. The HLR then sends a `locreq` to the Originating MSC. The `locreq` includes
10 routing information in the form of the `TerminationList` parameter, along with an
11 indication of the reason for extending the incoming call (i.e., for CD) in the
12 `DMH_RedirectionIndicator` parameter.
13
- 14 l. The Originating MSC establishes a voice path to the Border MSC using existing
15 interconnection protocols (e.g. SS7) and the routing information specified in the
16 `locreq`.
17
- 18 m. When the inter-MSC call is received at the Border MSC, the MS is alerted.
19 Included in the alert is the text received in the `DISPTEXT` parameter.
20
- 21 n. When the served MS answers, the call is connected.
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6.A.7 CNAP with TLDN Call Arrival and Intersystem Paging

This scenario describes CNAP invocation for TLDN Call Arrival at the serving system involving intersystem paging from the serving system to border systems.

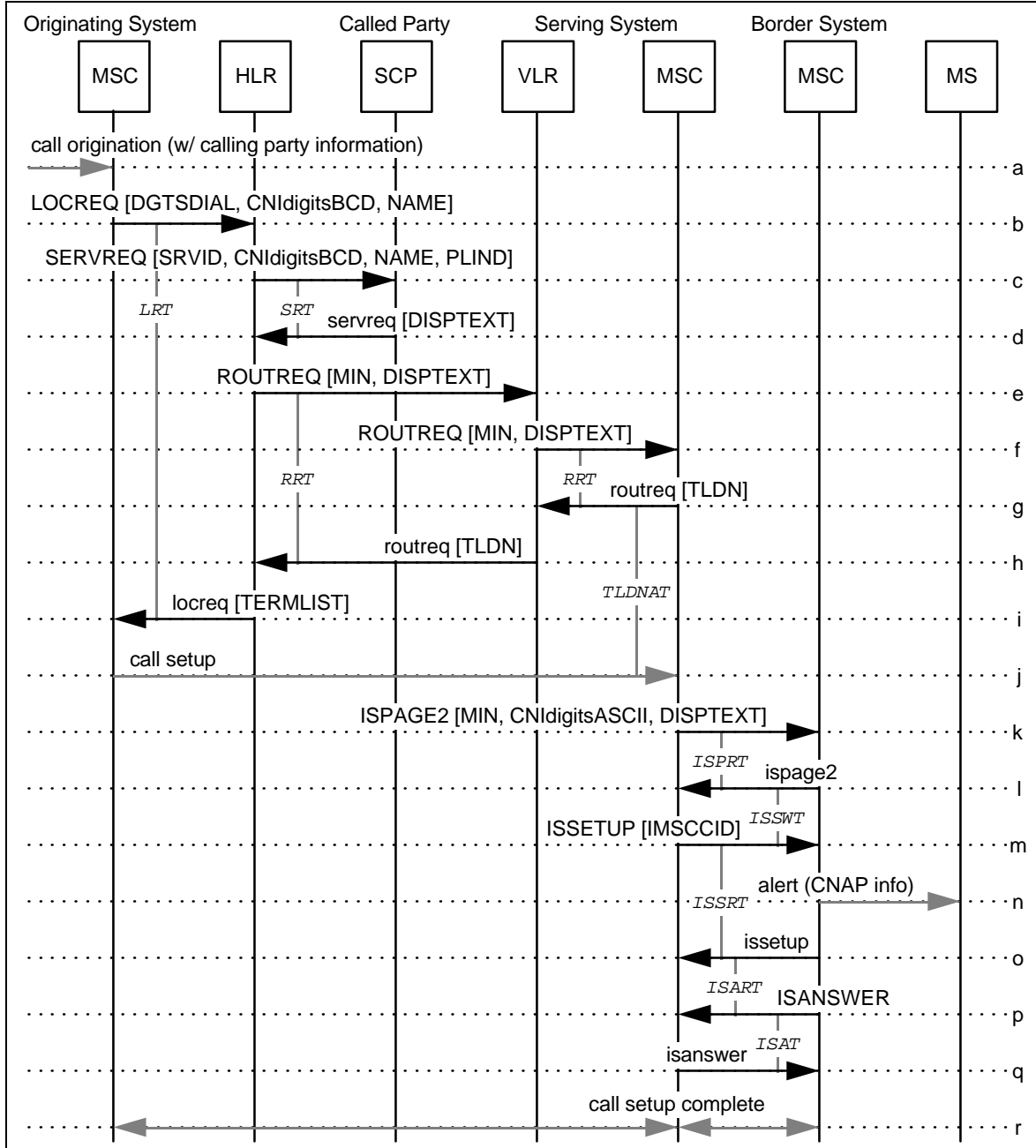


Figure 3-7 CNAP with TLDN Call Arrival and Intersystem Paging

- a-j. Same as Section 6.A.1, Steps a-j.
- k. Before initiating local paging, at the time of local page initiation or after first page time-out, the Serving MSC may send an ISPAGE2 to one or more bordering MSCs according to its "topographical map" with the DisplayText parameter received in Step-f.

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1 The Border MSC that receives the ISPAGE2 may initiate paging (i.e., if directed).

- 2
- 3 l. If a page response is received at the Border MSC, the Border MSC sends an
- 4 `ispage2` to the Serving MSC. If the MS is authentication capable, the Border
- 5 MSC includes applicable authentication parameters in the `ispage2` (see
- 6 *TIA/EIA-41.3-D* for Authentication scenarios).
- 7
- 8 m. The Serving MSC sends an `ISSETUP` to the Border MSC including the `IMSCCID`
- 9 parameter to indicate the intersystem trunk assignment.
- 10
- 11 n. The Border MSC sends an Alert with the `CNAP` information to the MS.
- 12
- 13 o. The Border MSC sends an `issetup` to the Serving MSC.
- 14
- 15 p. When the MS answers, the Border MSC sends an `ISANSWER` to the Serving MSC.
- 16
- 17 q. The Serving MSC sends an `isanswer` to the Border MSC.
- 18
- 19 r. The Serving MSC completes the call setup to the Border MSC.
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6.A.8 CNAP with Unsolicited Page Response

This scenario describes CNAP invocation for an unsolicited page response from a border system to the serving system.

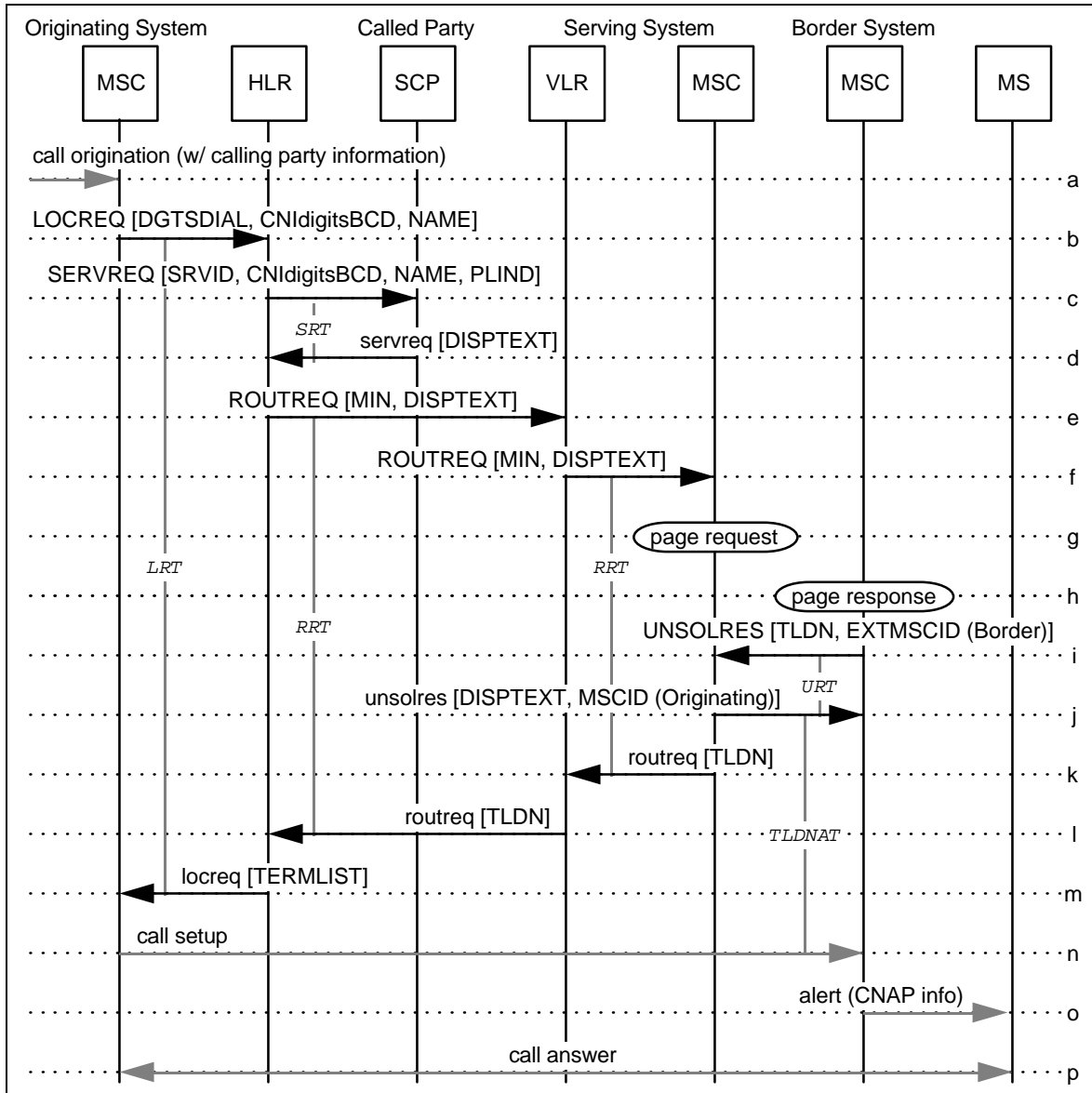


Figure 3-8 CNAP with Unsolicited Page Response

- a-f. Same as Section 6.A.1, Steps a-f.
- g. When the Serving MSC receives the ROUTREQ it initiates paging in its serving area.
- h. The Border MSC receives an unsolicited page response.
- i. The Border MSC sends an UNSOLRES containing a TLDN and the MSCID of the Border MSC to the Serving MSC. If the MS is authentication capable, the Border MSC includes applicable authentication parameters in the UNSOLRES (see ANSI-41 for Authentication scenarios).

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- 1 j. The Serving MSC sends an `unsolres` including the `DisplayText` and `MSCID`
2 (Originating) parameters to the Border MSC.
3
- 4 k. The Serving MSC returns a `routreq` to the Serving VLR with the `TLDN`
5 received in the `UNSOLRES` and the `MSCID` of the Border MSC.
6
- 7 l. The Serving VLR returns the `routreq` to the HLR.
8
- 9 m. The HLR then sends a `locreq` to the Originating MSC. The `locreq` includes
10 routing information in the form of the `TerminationList` parameter.
11
- 12 n. The Originating MSC establishes a voice path to the Border MSC using existing
13 interconnection protocols (e.g., `SS7`) and the routing information specified in the
14 `locreq`.
15
- 16 o. When the inter-MSC call is received at the Border MSC, the MS is alerted.
17 Included in the alert is the text received in the `DisplayText` parameter.
18
- 19 p. When the served MS answers, the call is connected.
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6.B Calling Name Restriction

(New for TIA/EIA-41.3-D Section 6)

This section depicts the interactions between network entities in various situations related to automatic roaming and Calling Name Restriction (CNAR). These scenarios are for illustrative purposes only.

6.B.1 CNAR Variable Per-Call Mode Operation

This scenario describes the Variable Per-Call Mode activation or de-activation of CNAR by an authorized MS. The activation or de-activation occurs coincident with a call request.

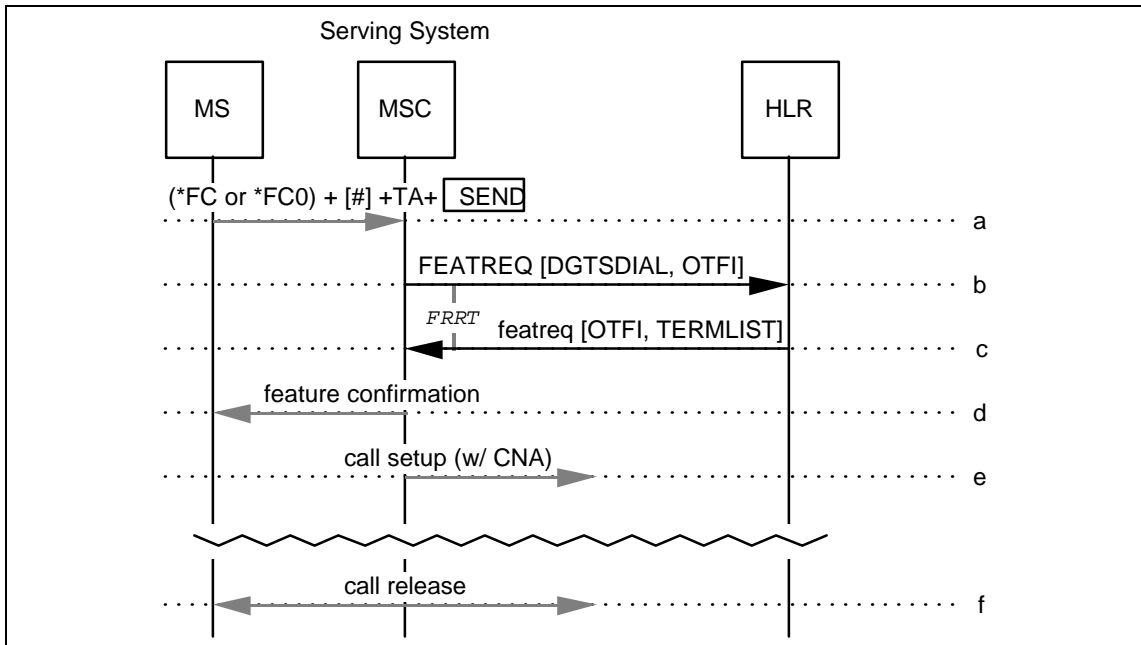


Figure 3-9 CNAR Variable Per-Call Mode Operation

- a. A call origination and dialed digits are received by the Serving MSC. During analysis of the dialed digits, the Serving MSC detects a feature code string.
- b. The dialed digits are included in a FEATREQ and sent from the Serving MSC to the HLR associated with the MS. The Serving MSC includes the OneTimeFeatureIndicator (OTFI) parameter if any of its status bits are set (i.e., if any special feature processing is active for the call).

Additional Parameters	Usage	Type
OTFI (Current Call)	Indicates special feature processing active for duration of call in progress.	O

- c. The HLR detects the authorized CNAR request and sends a featreq to the Serving MSC. The featreq includes call routing information in the TerminationList parameter. It also includes the OTFI parameter, with an indication that CNAR is either activated, de-activated or toggled for the call.

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Additional Parameters	Usage	Type
OTFI (Current Call)	Modify feature processing for duration of call in progress.	R

- d. The Serving MSC stores the CNAR OTFI, activates, de-activates or toggles CNAR, and provides treatment to the served MS as indicated in the *featreq*. In this case, the treatment is to apply feature confirmation.
- e. The Serving MSC extends the call using the call routing information in the *TerminationList* parameter. The Serving MSC includes the calling information indicating the presentation status applicable for the call.

 Note: If the Serving MSC extends the call using ISUP trunk signaling, it includes CNA in the *Generic Name* parameter of the *Initial Address Message*. The presentation field of the *Generic Name* parameter is set to indicate the presentation status for the call.
- f. The CNAR OTFI remains active until the end of the call, at which time it is discarded by the Serving MSC. The calling name presentation restriction status then returns to its pre-call condition.

5 TIA/EIA-41.5-D Modifications

This section provides new signaling protocol for CNAP and CNAR according to the structure of *TIA/EIA-41-D* Chapter 5.

5.1.1 Message Transfer Part

(TIA/EIA-41.5-D, page 5-6)

The MTP is defined in *ANSI T1.111*, with the following supplemental information.

The MAP messages that are transported on an intersystem basis may be assigned a message priority value of either 0 or 1. The INVOKE, RETURN RESULT, RETURN ERROR, and REJECT components associated with the same operation (e.g. FacilitiesDirective) shall have the same message priority value. The recommended message priority values are shown below:

Table 1 MTP Message Priority Values for TIA/EIA-41 Operations

<i>TIA/EIA-41</i> Operation	MTP Message Priority
ServiceRequest	0

6.4.1.2 Operation Specifiers

(TIA/EIA-41.5-D, page 5-24)

The following table lists the *TIA/EIA-41* MAP Operation Specifiers.

Table 8 TIA/EIA-41 MAP Operation Specifiers

Operation Name	Operation Specifier							Decimal	
	H	G	F	E	D	C	B		A
<u>ServiceRequest</u>	0	0	1	1	1	1	1	1	<u>63</u>

6.4.1.3 Mapping of Operations onto TCAP Package Types

(TIA/EIA-41.5-D, page 5-26)

The following table lists the mapping of *TIA/EIA-41* Operations onto *ANSI* TCAP package types.

Table 4 Mapping of ANSI-41 Operations onto TCAP Package Types

Operation Name	Component Type	Package Type
<u>ServiceRequest</u>	<u>INVOKE (LAST)</u> <u>RETURN RESULT (LAST)</u> <u>RETURN ERROR</u> <u>REJECT</u>	<u>QUERY WITH PERMISSION</u> <u>RESPONSE</u> <u>RESPONSE</u> <u>RESPONSE</u>

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6.4.2 Operation Definitions

(TIA/EIA-41.5-D, page 5-27)

The following table summarizes the operations defined for the *TIA/EIA-41* MAP:

Table 10 Summary of MAP Operations

Operation	Reference
<u>ServiceRequest</u>	<u>6.4.2.H</u>

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6.4.2.13 FeatureRequest

(TIA/EIA-41.5-D, page 5-48)

~~This operation was named RemoteFeatureControlRequest prior to this revision of the Interim Standard.~~

The FeatureRequest operation is used to request feature-related treatment on behalf of a registered MS.

The FeatureRequest operation is initiated with a TCAP INVOKE (LAST). This is carried by a TCAP QUERY WITH PERMISSION package. The Parameter Set is encoded as follows:

Table 35 FeatureRequest INVOKE Parameters

FeatureRequest INVOKE Parameters				Timer: FRRT
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.1	
Length	variable octets	M	6.3.2.1	
Contents				
Digits (Dialed)		M	6.5.2.58	
ElectronicSerialNumber		M	6.5.2.63	
MobileIdentificationNumber		M	6.5.2.81	
BillingID (Originating)		O	6.5.2.16	a
CallingPartyName		O	6.5.2.bw	j
CallingPartyNumberDigits1		O	6.5.2.21	b
CallingPartyNumberDigits2		O	6.5.2.22	b
CallingPartySubaddress		O	6.5.2.25	b
ConferenceCallingIndicator		O	6.5.2.49	c
MobileDirectoryNumber		O	6.5.2.80	d
MSCID (Serving)		O	6.5.2.82	e
MSCIdentificationNumber		O	6.5.2.83	b
OneTimeFeatureIndicator		O	6.5.2.88	f
PC_SSN		O	6.5.2.93	g
SenderIdentificationNumber		O	6.5.2.116	h
TransactionCapability		O	6.5.2.160	i

Notes:

- a. Include for recording purposes or for call correlation (see *DMH*).
- b. Include if applicable.
- c. Include to indicate the number of conferees already in the call.
- d. Include if available for recording purposes (see *DMH*).
- e. Include to identify the Anchor MSC. (This may become the Originating MSC for subsequent call redirection.)
- f. Include if any OneTimeFeatureIndicator parameter status bits are set (i.e., have value of 1).

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- g. Include if SS7 may be used for subsequent call redirection.
- h. Include to identify the functional entity sending the message.
- i. Include on *IS-41-C* or later.
- j. Include if calling party name information is known.

The FeatureRequest operation success is reported with a TCAP RETURN RESULT (LAST). This is carried by a TCAP RESPONSE package. The Parameter Set is encoded as follows:

Table 36 FeatureRequest RETURN RESULT Parameters

FeatureRequest RETURN RESULT Parameters				
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.2	
Length	variable octets	M	6.3.2.2	
Contents				
FeatureResult		M	6.5.2.67	
AccessDeniedReason		O	6.5.2.1	a
ActionCode		O	6.5.2.2	b
AnnouncementList		O	6.5.2.6	c
CallingPartyNumberString1		O	6.5.2.23	d
CallingPartyNumberString2		O	6.5.2.24	d
CallingPartySubaddress		O	6.5.2.25	d
CarrierDigits		O	6.5.2.28	d
ConferenceCallingIndicator		O	6.5.2.49	e
Digits (Dialed)		O	6.5.2.58	f
DisplayText		O	6.5.2.bx	!
DMH_AccountCodeDigits		O	6.5.2.59	g
DMH_AlternateBillingDigits		O	6.5.2.60	g
DMH_BillingDigits		O	6.5.2.61	g
DMH_RedirectionIndicator		O	6.5.2.62	d
GroupInformation		O	6.5.2.69	h
MobileDirectoryNumber		O	6.5.2.80	g
NoAnswerTime		O	6.5.2.87	d
OneTimeFeatureIndicator		O	6.5.2.88	i
PACAIndicator		O	6.5.2.91	j
PilotNumber		O	6.5.2.95	h
RedirectingNumberDigits		O	6.5.2.107	d
RedirectingNumberString		O	6.5.2.108	d
RedirectingSubaddress		O	6.5.2.109	d
RoutingDigits		O	6.5.2.114	d
TerminationList		O	6.5.2.156	k
TerminationTriggers		O	6.5.2.159	d

Notes:

- a. Include if access is denied. If included, no other optional parameters shall be included (with the exception of the AnnouncementList parameter).
- b. Include if action to be performed is not implied through presence of other parameters.
- c. Include if provision of one or more tones or announcements is required.

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- d. Include if applicable.
- e. Include to direct that ongoing call be transformed into a Conference Call.
- f. Include if digits remain to be analyzed by the MSC.
- g. Include if applicable and for recording purposes (see *DMH*),
- h. Include for multileg calls.
- i. Include if modification to normal feature processing is required for call in progress.
- j. Include to indicate PACA priority level.
- k. Include if call routing is required.
- l. Include for local termination to an MS if a related feature is active.

6.4.2.21 InformationDirective

(TIA/EIA-41.5-D, page 5-66)

The InformationDirective operation is used by the HLR to direct the serving system to provide a specified notification to an idle MS.

The InformationDirective operation is initiated with a TCAP INVOKE (LAST). This is carried by a TCAP QUERY WITH PERMISSION package. The Parameter Set is encoded as follows:

Table 51 InformationDirective INVOKE Parameters

InformationDirective INVOKE Parameters				Timer: IDT
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.1	
Length	variable octets	M	6.3.2.1	
Contents				
ElectronicSerialNumber		M	6.5.2.63	
MobileIdentificationNumber		M	6.5.2.81	
AlertCode		O	6.5.2.3	a
AnnouncementList		O	6.5.2.6	b
CallingPartyNumberString1		O	6.5.2.23	c
CallingPartyNumberString2		O	6.5.2.24	c
CallingPartySubaddress		O	6.5.2.25	c
DisplayText		O	6.5.2.bx	c
RedirectingNumberString		O	6.5.2.108	c
RedirectingSubaddress		O	6.5.2.109	c
SenderIdentificationNumber		O	6.5.2.116	d

Notes:

- a. Include if the MS is to be alerted.
- b. Include if one or more tones or announcements are to be applied to the MS.
- c. Include if authorized and available.
- d. Include to identify the functional entity sending the message.

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6.4.2.22 InformationForward

(TIA/EIA-41.5-D, page 5-68)

The InformationForward operation is used by the Anchor MSC to transfer information concerning the served MS to the Serving MSC after handoff (e.g., a message waiting status change).

The InformationForward operation is initiated with a TCAP INVOKE (LAST). This is carried by a TCAP QUERY WITH PERMISSION package. The Parameter Set is encoded as follows:

Table 53 InformationForward INVOKE Parameters

InformationForward INVOKE Parameters				Timer: IFT
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.1	
Length	variable octets	M	6.3.2.1	
Contents				
InterMSCCircuitID		M	6.5.2.72	
MobileIdentificationNumber		M	6.5.2.81	
AlertCode		O	6.5.2.3	a
AnnouncementList		O	6.5.2.6	a
CallingPartyNumberString1		O	6.5.2.23	b
CallingPartyNumberString2		O	6.5.2.24	b
CallingPartySubaddress		O	6.5.2.25	b
<u>DisplayText</u>		<u>O</u>	<u>6.5.2.bx</u>	<u>c</u>
ElectronicSerialNumber		O	6.5.2.63	a
MessageWaitingNotificationCount		O	6.5.2.78	a
MessageWaitingNotificationType		O	6.5.2.79	a
RedirectingNumberString		O	6.5.2.108	b
RedirectingSubaddress		O	6.5.2.109	b

Notes:

- a. Include if appropriate.
- b. Include if the MS is authorized for CNIP.
- c. Include if available.

6.4.2.24 InterSystemPage

(TIA/EIA-41.5-D, page 5-71)

The InterSystemPage operation is used by a Serving MSC to request a Border MSC to either (a) page an MS, or (b) listen for a page response from an MS, in the Border MSC prior to Call Delivery. If the MS's presence is confirmed on the Border MSC, the MS should be registered in the Border MSC and the call is delivered directly to the Border MSC.

The InterSystemPage operation is initiated with a TCAP INVOKE (LAST). This is carried by a TCAP QUERY WITH PERMISSION package. The Parameter Set is encoded as follows:

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Table 57 InterSystemPage INVOKE Parameters

InterSystemPage INVOKE Parameters				Timer: ISPRT
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.1	
Length	variable octets	M	6.3.2.1	
Contents				
BillingID (Originating)		M	6.5.2.16	
ElectronicSerialNumber		M	6.5.2.63	
MobileIdentificationNumber		M	6.5.2.81	
AlertCode		O	6.5.2.3	a
CallingPartyNumberString1		O	6.5.2.23	a
CallingPartyNumberString2		O	6.5.2.24	a
CallingPartySubaddress		O	6.5.2.25	a
CDMASlotCycleIndex		O	6.5.2.40	b
CDMAStationClassMark		O	6.5.2.41	c
<u>DisplayText</u>		<u>O</u>	<u>6.5.2.bx</u>	<u>a</u>
DMH_AccountCodeDigits		O	6.5.2.59	a
DMH_AlternateBillingDigits		O	6.5.2.60	a
DMH_BillingDigits		O	6.5.2.61	a
ExtendedMSCID (Serving MSC)		O	6.5.2.64	d
ExtendedSystemMyTypeCode (Serving MSC)		O	6.5.2.65	e
LegInformation		O	6.5.2.75	f
LocationAreaID		O	6.5.2.77	f
MobileDirectoryNumber		O	6.5.2.80	a
MSCID (Originating MSC)		O	6.5.2.82	g
MSCIdentificationNumber		O	6.5.2.83	f
OneTimeFeatureIndicator		O	6.5.2.88	f
PageIndicator		O	6.5.2.92	h
PC_SSN (Originating MSC)		O	6.5.2.93	i
PilotBillingID		O	6.5.2.94	j
PilotNumber		O	6.5.2.95	k
RedirectingNumberString		O	6.5.2.108	a
RedirectingSubaddress		O	6.5.2.109	a
SenderIdentificationNumber		O	6.5.2.116	f
SystemMyTypeCode (Originating MSC)		O	6.5.2.147	l
TerminationTreatment		O	6.5.2.158	f
TerminationTriggers		O	6.5.2.159	a

Notes:

- a. Include if available (i.e., provided in the associated RoutingRequest INVOKE).
- b. Included when the Serving MSC knows that the MS is operating in CDMA Slotted Mode.
- c. Include if a CDMA channel is in use.

d. Include to identify serving system.	1
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e. Include to identify serving system manufacturer.	3
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f. Include if known.	5
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g. Include to identify originating system.	7
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h. Include if request is to listen only. May include if request is to page.	9
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i. Include if available for subsequent call redirection.	11
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j. Include if appropriate.	13
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k. Include on a multileg call.	15
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l. Include to identify originating system manufacturer.	17
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6.4.2.25 InterSystemPage2

(TIA/EIA-41.5-D, page 5-74)

The InterSystemPage2 operation is used by a Serving MSC that has received a call via a TLDN to request a Border MSC to either (a) page an MS, or (b) listen for a page response from an MS, in the Border MSC. If an MS's presence is confirmed in the Border MSC, the call is terminated to the Border MSC via intersystem trunk facilities.

The InterSystemPage2 operation is initiated with a TCAP INVOKE (LAST). This is carried by a TCAP QUERY WITH PERMISSION package. The Parameter Set is encoded as follows:

Table 59 InterSystemPage2 INVOKE Parameters

InterSystemPage2 INVOKE Parameters				Timer: ISPR
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.1	
Length	variable octets	M	6.3.2.1	
Contents				
BillingID (Originating)		M	6.5.2.16	
ElectronicSerialNumber		M	6.5.2.63	
MobileIdentificationNumber		M	6.5.2.81	
AlertCode		O	6.5.2.3	a
CallingPartyNumberString1		O	6.5.2.23	b
CallingPartyNumberString2		O	6.5.2.24	b
CallingPartySubaddress		O	6.5.2.25	b
CDMASlotCycleIndex		O	6.5.2.40	c
CDMAStationClassMark		O	6.5.2.41	d
<u>DisplayText</u>		<u>O</u>	<u>6.5.2.bx</u>	<u>a</u>
LocationAreaID		O	6.5.2.77	e
MobileDirectoryNumber		O	6.5.2.80	a
PageIndicator		O	6.5.2.92	f
RedirectingNumberString		O	6.5.2.108	b
RedirectingSubaddress		O	6.5.2.109	b

Notes:

- a. Include if available (i.e., provided in associated RoutingRequest INVOKE).
- b. Include if available (i.e., provided in associated RoutingRequest INVOKE) and the MS is authorized for CNIP.
- c. Included when the Serving MSC knows that the MS is operating in CDMA Slotted Mode.
- d. Include if a CDMA channel is in use.
- e. Include if known.
- f. Include if request is to listen only. May include if request is to page.

6.4.2.27 LocationRequest

(TIA/EIA-41.5-D, page 5-77)

The LocationRequest operation is used by an Originating MSC to obtain call treatment instructions from the HLR. The call is identified by the dialed MS address digits received by the Originating MSC.

The LocationRequest operation is initiated with a TCAP INVOKE (LAST). This is carried by a TCAP QUERY WITH PERMISSION package. The Parameter Set is encoded as follows:

Table 63 LocationRequest INVOKE Parameters

LocationRequest INVOKE Parameters				Timer: LRT
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.1	
Length	variable octets	M	6.3.2.1	
Contents				
BillingID (Originating)		M	6.5.2.16	
Digits (Dialed)		M	6.5.2.58	
MSCID (Originating)		M	6.5.2.82	
SystemMyTypeCode (Originating)		M	6.5.2.147	
<u>CallingPartyName</u>		<u>O</u>	<u>6.5.2.bw</u>	<u>a</u>
CallingPartyNumberDigits1		O	6.5.2.21	a
CallingPartyNumberDigits2		O	6.5.2.22	a
CallingPartySubaddress		O	6.5.2.25	a
MSCIdentificationNumber		O	6.5.2.83	b
PC_SSN (Originating)		O	6.5.2.93	c
RedirectingNumberDigits		O	6.5.2.107	a
<u>RedirectingPartyName</u>		<u>O</u>	<u>6.5.2.by</u>	<u>a</u>
RedirectingSubaddress		O	6.5.2.109	a
TerminationAccessType		O	6.5.2.155	d
TransactionCapability		O	6.5.2.160	e

Notes:

- a. Include if available (i.e., provided in call origination).
- b. Include to identify the MSC sending the message.
- c. Include if SS7 may be used for subsequent call redirection.
- d. Include if call involves a special access situation (e.g., *Roamer port access*).
- e. Include on *IS-41-C* or later.

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The LocationRequest operation success is reported with a TCAP RETURN RESULT (LAST). This is carried by a TCAP RESPONSE package. The Parameter Set is encoded as follows:

Table 64 LocationRequest RETURN RESULT Parameters

LocationRequest RETURN RESULT Parameters				
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.2	
Length	variable octets	M	6.3.2.2	
Contents				
ElectronicSerialNumber		M	6.5.2.63	a
MobileIdentificationNumber		M	6.5.2.81	a
MSCID (Serving MSC)		M	6.5.2.82	b
AccessDeniedReason		O	6.5.2.1	c
AnnouncementList		O	6.5.2.6	d
CallingPartyNumberString1		O	6.5.2.23	e
CallingPartyNumberString2		O	6.5.2.24	e
Digits (Carrier)		O	6.5.2.58	f
Digits (Destination)		O	6.5.2.58	g, h
DisplayText		O	6.5.2.bx	e
DMH_AccountCodeDigits		O	6.5.2.59	i
DMH_AlternateBillingDigits		O	6.5.2.60	i
DMH_BillingDigits		O	6.5.2.61	i
DMH_RedirectionIndicator		O	6.5.2.62	j
GroupInformation		O	6.5.2.69	k
MobileDirectoryNumber		O	6.5.2.80	i
NoAnswerTime		O	6.5.2.87	l
OneTimeFeatureIndicator		O	6.5.2.88	m
PC_SSN (Serving MSC or VLR)		O	6.5.2.93	n
RedirectingNumberDigits		O	6.5.2.107	j
RedirectingNumberString		O	6.5.2.108	e,f
RedirectingSubaddress		O	6.5.2.109	e, j
RoutingDigits		O	6.5.2.114	f
TerminationList		O	6.5.2.156	o
TerminationTriggers		O	6.5.2.159	f

Notes:

- a. Value is all zeroes, if unknown.
- b. Value is MSCID (Originating), if access is denied or routing to a directory number.
- c. Include if access may be denied.
- d. Include if one or more tones or announcements is to be applied to the MS.
- e. Include for local termination (e.g., the LocalTermination parameter is included within the TerminationList parameter) if a related feature is active.

- ~~e. Include if feature is active and if a LocalTermination parameter is included within the TerminationList parameter.~~
- f. Include if applicable.
- g. Include if call is to be routed over a network.
- h. Use only with system not capable of using the TerminationList parameter.
- i. Include if available for recording purposes (see *DMH*).
- j. Include if available and call redirection may apply.
- k. Include for multileg calls.
- l. Include to request an override of the Originating MSC's default *No Answer Time* value.
- m. Include if modification to normal feature processing is required for a call in progress.
- n. Use is for further study.
- o. Include if call routing is required.

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6.4.2.30 OriginationRequest

(TIA/EIA-41.5-D, page 5-81)

The OriginationRequest operation is used to request call origination treatment on behalf of a registered MS.

The OriginationRequest operation is initiated with a TCAP INVOKE (LAST). This is carried by a TCAP QUERY WITH PERMISSION package. The Parameter Set is encoded as follows:

Table 68 OriginationRequest INVOKE Parameters

OriginationRequest INVOKE Parameters				Timer: ORT
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.1	
Length	variable octets	M	6.3.2.1	
Contents				
BillingID (originating)		M	6.5.2.16	
Digits (Dialed)		M	6.5.2.58	
ElectronicSerialNumber		M	6.5.2.63	
MobileIdentificationNumber		M	6.5.2.81	
MSCID (Originating MSC)		M	6.5.2.82	
OriginationTriggers		M	6.5.2.90	
TransactionCapability		M	6.5.2.160	
CallingPartyName		<u>O</u>	<u>6.5.2.bw</u>	<u>g</u>
CallingPartyNumberDigits1		O	6.5.2.21	a
CallingPartyNumberDigits2		O	6.5.2.22	a
CallingPartySubaddress		O	6.5.2.25	a
MobileDirectoryNumber		O	6.5.2.80	b
MSCIdentificationNumber		O	6.5.2.83	c
OneTimeFeatureIndicator		O	6.5.2.88	d
PC_SSN (Originating MSC)		O	6.5.2.93	e
SenderIdentificationNumber		O	6.5.2.116	f

Notes:

- a. Include if applicable.
- b. Include if available for recording purposes (see *DMH*).
- c. Include to identify the MSC initiating the message.
- d. Include if any OneTimeFeatureIndicator status bits are set (i.e., have value of *I*).
- e. Include if SS7 may be used for subsequent call redirection.
- f. Include to identify intermediate message sender if different from the MSCIdentificationNumber.
- g. Include if calling party name information is known.

The OriginationRequest operation success is reported with a TCAP RETURN RESULT (LAST). This is carried by a TCAP RESPONSE package. The Parameter Set is encoded as follows:

Table 69 OriginationRequest RETURN RESULT Parameters

OriginationRequest RETURN RESULT Parameters				
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.2	
Length	variable octets	M	6.3.2.2	
Contents				
AccessDeniedReason		O	6.5.2.1	a
ActionCode		O	6.5.2.2	b
AnnouncementList		O	6.5.2.6	c
CallingPartyNumberString1		O	6.5.2.23	d, e
CallingPartyNumberString2		O	6.5.2.24	d, e
CallingPartySubaddress		O	6.5.2.25	d, e, f
CarrierDigits		O	6.5.2.28	g
Digits (Dialed)		O	6.5.2.58	h
<u>DisplayText</u>		<u>O</u>	<u>6.5.2.bx</u>	<u>d, e</u>
DMH_AccountCodeDigits		O	6.5.2.59	i
DMH_AlternateBillingDigits		O	6.5.2.60	i
DMH_BillingDigits		O	6.5.2.61	i
DMH_RedirectionIndicator		O	6.5.2.62	i, j
GroupInformation		O	6.5.2.69	k
MobileDirectoryNumber		O	6.5.2.80	i
NoAnswerTime		O	6.5.2.87	l
OneTimeFeatureIndicator		O	6.5.2.88	m
PilotNumber		O	6.5.2.95	k
RedirectingNumberDigits		O	6.5.2.107	f
RedirectingNumberString		O	6.5.2.108	d
RedirectingSubaddress		O	6.5.2.109	d, e
RoutingDigits		O	6.5.2.114	g
TerminationList		O	6.5.2.156	n
TerminationTriggers		O	6.5.2.57	o

Notes:

- a. Include if access is denied. If included, no other optional parameters shall be included (with the exception of the AnnouncementList parameter).
- b. Include if action to be performed is not implied through presence of other parameters.
- c. Include if one or more tones or announcements are to be applied to the MS.
- d. Include if a LocalTermination parameter is included in the TerminationList parameter.
- e. Include if the related feature is active.

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- f. Include if a `PSTNTermination` parameter or an `IntersystemTermination` parameter is included within the `TerminationList` parameter.
- g. Include if applicable.
- h. Include if digits remain to be translated by the MSC.
- i. Include if available for recording purposes (see *DMH*).
- j. Include if redirection may apply.
- k. Include for multileg calls.
- l. Include to request an override of the Serving MSC's default *No Answer Time* value.
- m. Include if modification to normal feature processing is required for the call in progress.
- n. Include if call routing is required.
- o. Include to indicate processing in the Originating MSC for failed call attempts.

6.4.2.40 RoutingRequest

(TIA/EIA-41.5-D, page 5-99)

The RoutingRequest operation is used to inquire as to the preferred method of routing a pending call to the identified MS.

The RoutingRequest operation is initiated with a TCAP INVOKE (LAST). This is carried by a TCAP QUERY WITH PERMISSION package. The Parameter Set is encoded as follows:

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Table 88 RoutingRequest INVOKE Parameters

RoutingRequest INVOKE Parameters				Timer: RRT
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.1	
Length	variable octets	M	6.3.2.1	
Contents				
BillingID (Originating)		M	6.5.2.16	a
ElectronicSerialNumber		M	6.5.2.63	
MobileIdentificationNumber		M	6.5.2.81	
MSCID (Originating MSC)		M	6.5.2.82	
SystemMyTypeCode (Originating MSC)		M	6.5.2.147	
AlertCode		O	6.5.2.3	b
CallingPartyNumberString1		O	6.5.2.23	c
CallingPartyNumberString2		O	6.5.2.24	c
CallingPartySubaddress		O	6.5.2.25	c
DestinationDigits		O	6.5.2.56	d, e
<u>DisplayText</u>		<u>O</u>	<u>6.5.2.bx</u>	<u>c</u>
DMH_AccountCodeDigits		O	6.5.2.59	f
DMH_AlternateBillingDigits		O	6.5.2.60	f
DMH_BillingDigits		O	6.5.2.61	f
LegInformation		O	6.5.2.75	g
LocationAreaID		O	6.5.2.77	f, h
MobileDirectoryNumber		O	6.5.2.80	f
MSCIdentificationNumber		O	6.5.2.83	i
NoAnswerTime		O	6.5.2.87	j
OneTimeFeatureIndicator		O	6.5.2.88	k
PC_SSN (Originating MSC)		O	6.5.2.93	l
PilotBillingID		O	6.5.2.94	m
PilotNumber		O	6.5.2.95	m
RedirectingNumberString		O	6.5.2.108	c
RedirectingSubaddress		O	6.5.2.109	c
SenderIdentificationNumber		O	6.5.2.116	n
TerminationTreatment		O	6.5.2.158	o
TerminationTriggers		O	6.5.2.159	f
VoiceMailboxNumber		O	6.5.2.164	p
VoiceMailboxPIN		O	6.5.2.165	q

Notes:

- a. Required to identify originating call.
- b. Include to specify special alerting treatment.
- c. Include if related feature is active.
- d. Optionally include if TerminationTreatment parameter value is *Dialogue*, to select a dialogue or to provide information to a dialogue.

- e. Optionally include if TerminationTreatment parameter value is *VoiceMailRetrieval* or *VoiceMailStorage* to select the voice mail system.
- f. Include if available and if TerminationTreatment parameter value is *MS termination*.
- g. Include if TerminationTreatment parameter value is *MS termination* and this is a multileg call (e.g., an FA call).
- h. May be included from VLR to MSC-V. Usage is not defined from HLR to VLR.
- i. Include to identify Originating MSC.
- j. Include to inform the serving system of the recommended no-answer time-out.
- k. Include if modification to normal feature processing is required for call in progress.
- l. Include if available (e.g., from received parameter or lower layers) for subsequent call redirection.
- m. Include on a multileg call.
- n. Include to identify the functional entity sending the message.
- o. Include to differentiate termination types, defaulting to value *MS termination*.
- p. Include if the TerminationTreatment parameter value is *VoiceMailRetrieval* or *VoiceMailStorage* and the mailbox is not the *MobileIdentificationNumber*.
- q. Optional, if the TerminationTreatment parameter value is *VoiceMailRetrieval* or *VoiceMailStorage*.

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6.4.2.46 TransferToNumberRequest

(TIA/EIA-41.5-D, page 5-99)

The TransferToNumberRequest operation is used during feature processing to obtain an MS's forward-to number from the HLR.

The TransferToNumberRequest operation is initiated with a TCAP INVOKE (LAST). This is carried by a TCAP QUERY WITH PERMISSION package. The Parameter Set is encoded as follows:

Table 100 TransferToNumberRequest INVOKE Parameters

TransferToNumberRequest INVOKE Parameters				Timer: TTNRT
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.1	
Length	variable octets	M	6.3.2.1	
Contents				
	ElectronicSerialNumber	M	6.5.2.63	
	MobileIdentificationNumber	M	6.5.2.81	
	RedirectionReason	M	6.5.2.110	
	SystemMyTypeCode (MSC)	M	6.5.2.147	
	BillingID (Originating)	O	6.5.2.16	a
	CallingPartyName	O	6.5.2.bw	f
	CallingPartyNumberDigits1	O	6.5.2.21	f
	CallingPartyNumberDigits2	O	6.5.2.22	f
	CallingPartySubaddress	O	6.5.2.25	f
	GroupInformation	O	6.5.2.69	b
	LegInformation	O	6.5.2.75	c
	MSCID (Originating)	O	6.5.2.82	d
	MSCIdentificationNumber	O	6.5.2.83	e
	PilotBillingID	O	6.5.2.94	f
	PilotNumber	O	6.5.2.95	f
	TransactionCapability	O	6.5.2.160	e

Notes:

- a. Include to identify the Originating MSC and its BillingID for subsequent call redirection.
- b. Include if available (i.e., if provided in the associated RoutingRequest INVOKE or LocationRequest RETURN RESULT) for the *None Reachable* termination trigger.
- c. Include if available (i.e., if provided in the associated RoutingRequest INVOKE or LocationRequest RETURN RESULT) for any termination trigger except *None Reachable*.
- d. Include on *TIA/EIA-41* or later.
- e. Include on *IS-41-C* or later.
- f. Include if available.

The TransferToNumberRequest operation success is reported with a TCAP RETURN RESULT (LAST). This is carried by a TCAP RESPONSE package. The Parameter Set is encoded as follows:

Table 101 TransferToNumberRequest RETURN RESULT Parameters

TransferToNumberRequest RETURN RESULT Parameters				
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.2	
Length	variable octets	M	6.3.2.2	
Contents				
Digits (Destination)		M	6.5.2.58	a
AccessDeniedReason		O	6.5.2.1	b
ActionCode		O	6.5.2.2	c
AnnouncementList		O	6.5.2.6	d
CallingPartyNumberString1		O	6.5.2.23	e
CallingPartyNumberString2		O	6.5.2.24	e
CallingPartySubaddress		O	6.5.2.25	e, f
Digits (Carrier)		O	6.5.2.58	g
<u>DisplayText</u>		O	<u>6.5.2.bx</u>	<u>e</u>
DMH_AccountCodeDigits		O	6.5.2.59	h
DMH_AlternateBillingDigits		O	6.5.2.60	h
DMH_BillingDigits		O	6.5.2.61	h
DMH_RedirectionIndicator		O	6.5.2.62	h
GroupInformation		O	6.5.2.69	i
MobileDirectoryNumber		O	6.5.2.80	h
NoAnswerTime		O	6.5.2.87	g
RedirectingNumberDigits		O	6.5.2.107	f
RedirectingNumberString		O	6.5.2.108	e
RedirectingSubaddress		O	6.5.2.109	e, f
TerminationList		O	6.5.2.156	j
TerminationTriggers		O	6.5.2.159	g

Notes:

- a. This parameter is ignored if the TerminationList parameter is provided.
- b. Include if access is denied. If included, no other optional parameters shall be included (with the exception of the AnnouncementList).
- c. Include if action to be performed is not implied through presence of other parameters.
- d. Include if one or more tones or announcements are to be applied to the MS.
- e. Include if related feature is active and if a LocalTermination parameter is included within the TerminationList parameter.
- f. Optionally include if a PSTNTermination parameter or an IntersystemTermination parameter is included within the TerminationList parameter.

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- g. Include if applicable.
- h. Include if available for recording purposes (see *DMH*).
- i. Include for multileg calls.
- j. Include if call routing is required.

6.4.2.51 UnsolicitedResponse

(TIA/EIA-41.5-D, page 5-117)

The UnsolicitedResponse operation success is reported with a TCAP RETURN RESULT (LAST). This is carried by a TCAP RESPONSE package. The Parameter Set is encoded as follows:

Table 111 UnsolicitedResponse RETURN RESULT Parameters

UnsolicitedResponse RETURN RESULT Parameters				
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.2	
Length	variable octets	M	6.3.2.2	
Contents				
AlertCode		O	6.5.2.3	a
BillingID (Originating)		O	6.5.2.16	b
CallingPartyNumberString1		O	6.5.2.23	c
CallingPartyNumberString2		O	6.5.2.24	c
CallingPartySubaddress		O	6.5.2.25	c
DisplayText		O	6.5.2.bx	g
DMH_AccountCodeDigits		O	6.5.2.59	d
DMH_AlternateBillingDigits		O	6.5.2.60	d
DMH_BillingDigits		O	6.5.2.61	d
ExtendedMSCID (Originating MSC)		O	6.5.2.64	e
ExtendedSystemMyTypeCode (Originating MSC)		O	6.5.2.65	f
LegInformation		O	6.5.2.75	g
MobileDirectoryNumber		O	6.5.2.80	d
MSCIdentificationNumber (Origination MSC)		O	6.5.2.83	g
OneTimeFeatureIndicator		O	6.5.2.88	g
PC_SSN (Originating MSC)		O	6.5.2.93	h
PilotBillingID		O	6.5.2.94	g
PilotNumber		O	6.5.2.95	g
RedirectingNumberString		O	6.5.2.108	c
RedirectingSubaddress		O	6.5.2.109	c
TerminationTreatment		O	6.5.2.158	g
TerminationTriggers		O	6.5.2.159	g

Notes:

- a. Include to specify special alerting treatment.
- b. Include for subsequent call redirection at the originating MSC and for recording purposes (see *DMH*).
- c. Include if related feature is active.
- d. Include if available.
- e. Include to identify originating system.
- f. Include to identify originating system manufacturer.

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- g. Include if available (e.g., provided in the associated RoutingRequest INVOKE).
- h. Include if SS7 may be used for subsequent call redirection.

6.4.2.H ServiceRequest

(New for TIA/EIA-41.5-D Section 6)

The ServiceRequest (SERVREQ) operation is used by service logic to invoke specific service logic execution on another network entity (NE) containing the service logic for the requested services.

The ServiceRequest operation is initiated with a TCAP INVOKE (LAST). This is carried by a TCAP QUERY WITH PERMISSION package. The Parameter Set is encoded as follows:

Table 6.4.2.H-1 ServiceRequest INVOKE Parameters

ServiceRequest INVOKE Parameters				Timer: SVRT
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.1	
Length	variable octets	M	6.3.2.1	
Contents				
ServiceID		M	6.5.2.bz	
CallingPartyName		O	6.5.2.bw	a
CallingPartyNumberDigits1		O	6.5.2.21	a
CallingPartyNumberDigits2		O	6.5.2.22	b
PreferredLanguageIndicator		O	6.5.2.96	a
RedirectingPartyName		O	6.5.2.by	a
RedirectingNumberDigits		O	6.5.2.107	a

Notes:

- a. Include if available.
- b. Include if user provided, passed screening calling party number is available.

The ServiceRequest operation success is reported with a TCAP RETURN RESULT (LAST). This is carried by a TCAP RESPONSE package. The Parameter Set is encoded as follows:

Table 6.4.2.H-2 ServiceRequest RETURN RESULT Parameters

ServiceRequest RETURN RESULT Parameters				
Field	Value	Type	Reference	Notes
Identifier	SET [NATIONAL 18]	M	6.3.2.2	
Length	variable octets	M	6.3.2.2	
Contents				
DisplayText		O	6.5.2.bx	a

Notes:

- a. Include if applicable.

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6.5.1.2 Parameter Identifiers

(TIA/EIA-41.5-D page 5-118)

The following table lists the *TIA/EIA-41* MAP Parameter Identifiers.

Table 112 TIA/EIA-41 MAP Parameter Identifiers

Parameter Identifier Name	Parameter Identifier Code								Reference
	H	G	F	E	D	C	B	A	
<u>CallingPartyName</u>	1	0	0	1	1	1	1	1	6.5.2.bw
	1	0	0	0	0	0	0	1	
	0	1	1	1	0	0	1	1	
<u>DisplayText</u>	1	0	0	1	1	1	1	1	6.5.2.bx
	1	0	0	0	0	0	0	1	
	0	1	1	1	0	1	0	0	
<u>RedirectingPartyName</u>	1	0	0	1	1	1	1	1	6.5.2.by
	1	0	0	0	0	0	0	1	
	0	1	1	1	0	1	0	1	
<u>ServiceID</u>	1	0	0	1	1	1	1	1	6.5.2.bz
	1	0	0	0	0	0	0	1	
	0	1	1	1	0	1	1	0	

6.5.2.88 OneTimeFeatureIndicator

(TIA/EIA-41.5-D, page 5-220)

The OneTimeFeatureIndicator (OTFI) parameter defines the modifications to feature processing that are in effect for a designated MS until the time of the next call release by the MS.

Field	Value	Type	Reference	Notes					
Identifier	OneTimeFeatureIndicator IMPLICIT OCTET STRING	M	6.5.1.2						
Length	variable octets	M	6.5.1.1						
Contents									
H	G	F	E	D	C	B	A	octet	Notes
CNIR		MWN		CWIC		CWFI		1	a
Reserved		<u>CNAR</u>		Flash		PACA		2	a, b
...								n	c

Figure 96 OneTimeFeatureIndicator parameter

Notes:

- a. The CNIR and PACA indicators have no meaning when the OTFI is sent in the RoutingRequest INVOKE (i.e., for terminations).
- b. Reserved bits shall be ignored on receipt and set to zero on sending.
- c. Ignore extra octets, if received. Send only defined (or significant) octets.

Table 153 OneTimeFeatureIndicator value

<i>Call Waiting for Future Incoming Call (CWFI) (octet 1, bits A and B)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
									0 0	Ignore. Ignore this indicator (use subscriber's profile).
									0 1	No CW. Call Waiting is turned off. (If this call is answered, Call Waiting should not be applied for future incoming calls.)
									1 0	Normal CW. Call Waiting is turned on. (If this call is answered, Call Waiting may be applied for future incoming calls requesting <i>Normal CW</i> or <i>Priority CW</i> .)
									1 1	Priority CW. (If the call is answered Call Waiting may be applied for future incoming calls requesting <i>Priority CW</i> .)
<i>Call Waiting for Incoming Call (CWIC) (octet 1, bits C and D)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
									0 0	Ignore. Ignore this indicator (treat the same as value 2, <i>Normal Call Waiting</i>).
									0 1	No CW. Call Waiting is not requested.
									1 0	Normal CW. Normal Call Waiting is requested.
									1 1	Priority CW. Priority Call Waiting is requested.

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Table 153 (concluded)

<i>MessageWaitingNotification (MWN) (octet 1, bits E and F)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
			0	0					0	Ignore. Ignore this indicator.
			0	1					1	Pip Tone Inactive. MWN Pip Tones are not active for this call.
			1	0					2	Pip Tone Active. MWN Pip Tones are active for this call.
			1	1					3	Reserved.
<i>Calling Number Identification Restriction (CNIR) (octet 1, bits G and H)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
		0	0						0	Ignore. Ignore this indicator.
		0	1						1	Presentation Allowed CNIR Inactive. CNIR is not active for this call.
		1	0						2	Presentation Restricted CNIR Active. CNIR is active for this call.
		1	1						3	Reserved.
<i>Priority Access and Channel Assignment (PACA) (octet 2, bits A and B)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
								0	0	Ignore. Ignore this indicator.
								0	1	PACA Demand Inactive. PACA is not demand activated.
								1	0	PACA Demand Activated. PACA is demand activated.
								1	1	Reserved.
<i>Flash Privileges (Flash) (octet 2, bits C and D)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
					0	0			0	Ignore. Ignore this indicator.
					0	1			1	Flash Inactive. Flash privileges are deactivated for the remainder of this call. (If flash features, such as Three-Way Calling (3WC) or Call Transfer (CT), have already been invoked, the subscriber may continue his or her operation in progress. Flash features may not be invoked.)
					1	0			2	Flash Active. Normal flash privileges.
					1	1			3	Reserved.
<i>Calling Name Restriction (CNAR) (octet 2, bits E and F)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
				0	0				0	Ignore. Ignore this indicator.
				0	1				1	Presentation Allowed. CNAR is not active for this call.
				1	0				2	Presentation Restricted. CNAR is active for this call.
				1	1				3	Blocking Toggle. CNAR is toggled.

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6.5.2.160 TransactionCapability

(TIA/EIA-41.5-D, page 5-315)

The TransactionCapability (TRANSCAP) parameter indicates a system's transaction capability at the current time (i.e., this capability may change over time).

Field	Value	Type	Reference	Notes					
Identifier	TransactionCapability IMPLICIT OCTET STRING	M	6.5.1.2						
Length	variable octets	M	6.5.1.1						
Contents									
H	G	F	E	D	C	B	A	octet	Notes
<u>NAMI</u> Res'd	<u>NDSS</u>	<u>UZCI</u>	SPINI	RUI	ANN	BUSY	PROF	1	a
Reserved			TL	Multiple Terminations				2	a
...								n	b

Figure 177 TransactionCapability parameter

Notes:

- a. Reserved (~~Res'd~~) bits shall be ignored on receipt and set to zero on sending.
- b. Ignore extra octets, if received. Send only defined (or significant) octets.

Table 192 TransactionCapability parameter

<i>Profile (PROF) (octet 1, bit A)</i>											
Bits	H	G	F	E	D	C	B	A	Value	Meaning	
									0	0	The system is not capable of supporting the IS-41-C profile parameters.
									1	1	The system is capable of supporting the IS-41-C profile parameters.
<i>Busy Detection (BUSY) (octet 1, bit B)</i>											
Bits	H	G	F	E	D	C	B	A	Value	Meaning	
									0	0	The system is not capable of detecting a busy condition at the current time.
									1	1	The system is capable of detecting a busy condition at the current time.
<i>Announcements (ANN) (octet 1, bit C)</i>											
Bits	H	G	F	E	D	C	B	A	Value	Meaning	
									0	0	The system is not capable of honoring the AnnouncementList parameter at the current time.
									1	1	The system is capable of honoring the AnnouncementList parameter at the current time.

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Table 192 (concluded)

<i>Remote User Interaction (RUI) (octet 1, bit D)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
					0				0	The system is not capable of interacting with the user.
					1				1	The system is capable of interacting with the user.
<i>Subscriber PIN Intercept (SPINI) (octet 1, bit E)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
				0					0	The system is not capable of supporting local SPINI operation at the current time.
				1					1	The system is capable of supporting local SPINI operation.
<i>UZ Capability Indicator (UZCI) (octet 1, bit F)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
									0	<u>The system is not User Zone capable at the current time.</u>
									1	<u>The system is User Zone capable at the current time.</u>
<i>NDSS Capability (NDSS) (octet 1, bit G)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
									0	<u>Serving system is not NDSS capable.</u>
									1	<u>Serving system is NDSS capable.</u>
<i>NAME Capability Indicator (NAMI) (octet 1, bit H)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
									0	<u>The system is not CNAP/CNAR capable.</u>
									1	<u>The system is CNAP/CNAR capable.</u>
<i>Multiple Terminations (octet 2, bits A-D)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
					0	0	0	0	0	The system cannot accept a termination at this time (i.e., cannot accept routing information).
					...					
					through					The system supports the number of call legs indicated.
<i>TerminationList (TL) (octet 2, bit E)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
				0					0	The system is not capable of supporting the TerminationList parameter at the current time.
				1					1	The system is capable of supporting the TerminationList parameter at the current time.

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6.5.2.bw CallingPartyName

(New for TIA/EIA-41.5-D Section 6)

The CallingPartyName (CGNAME) parameter carries information regarding the availability and presentation status of the original calling party's name, and optionally, the name text. This parameter is based on the Generic Name parameter defined in *ANSI T1.114 1996*.

Field	Value	Type	Reference	Notes					
Identifier	CallingPartyName IMPLICIT OCTET STRING	M	6.5.1.2						
Length	variable octets	M	6.5.1.1						
Contents									
H	G	F	E	D	C	B	A	octet	Notes
0	0	1	Avail.	Reserved		Pres. Status		1	a, b
1 st IA5 Character								2	c
2 nd IA5 Character								3	
...								...	
n th IA5 Character								n	

Figure 6.5.2.bw-1 CallingPartyName parameter

Notes:

- a. Refer to *ANSI T1.114 1996* for field encoding.
- b. Set reserved values to 0 when sending, ignore if received.
- c. From 0 to 15 IA5 characters of name information may be present.

Table 6.5.2.bw-2 CallingPartyName value

<i>Presentation Status (octet 1, bits A and B)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
							0	0	0	Presentation allowed.
							0	1	1	Presentation restricted.
							1	0	2	Blocking toggle.
							1	1	3	No indication.
<i>Availability (octet 1, bit E)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
				0					0	Name available/unknown.
				1					1	Name not available.

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6.5.2.bx DisplayText

(New for TIA/EIA-41.5-D Section 6)

The DisplayText (DISPTEXT) parameter carries information to be sent to the MS for display. This parameter is based on the Display Text information element defined in Annex D (normative) of *ANSI T1.610*.

The minimum length of this parameter is 3 octets.

Field	Value	Type	Reference	Notes					
Identifier	DisplayText IMPLICIT OCTET STRING	M	6.5.1.2						
Length	variable octets	M	6.5.1.1						
Contents									
H	G	F	E	D	C	B	A	octet	Notes
1	Display Type							1	a
Display information								2	a, b
								<i>n</i>	

Figure 6.5.2.bx-1 DisplayText parameter

Notes:

- a. Refer to *ANSI T1.610* for field encoding.
- b. One or more groups of Display information may be included depending on specific service requirements.

6.5.2.by RedirectingPartyName

(new for TIA/EIA-41.5-D Section 6)

The RedirectingPartyName (RDNAME) parameter carries information regarding the availability and presentation status of a last redirecting party's name, and optionally, the name text. This parameter is based on the Generic Name parameter defined in *ANSI T1.114 1996*.

Field	Value	Type	Reference	Notes					
Identifier	RedirectingPartyName IMPLICIT OCTET STRING	M	6.5.1.2						
Length	variable octets	M	6.5.1.1						
Contents									
H	G	F	E	D	C	B	A	octet	Notes
0	1	1	Avail.	Reserved		Pres. Status		1	a, b
1 st IA5 Character								2	c
2 nd IA5 Character								3	
...								...	
n th IA5 Character								n	

Figure 6.5.2.by-1 RedirectingPartyName parameter

Notes:

- a. Refer to *ANSI T1.114 1996* for field encoding.
- b. Set reserved values to 0 when sending, ignore if received.
- c. From 0 to 15 IA5 characters of name information may be present.

Table 6.5.2.by-1 RedirectingPartyName value

<i>Presentation Status (octet 1, bits A and B)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
							0	0	0	Presentation allowed.
							0	1	1	Presentation restricted.
							1	0	2	Blocking toggle.
							1	1	3	No indication.
<i>Availability (octet 1, bit E)</i>										
Bits	H	G	F	E	D	C	B	A	Value	Meaning
				0					0	Name available/unknown.
				1					1	Name not available.

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6.5.2.bz ServiceID

(new for TIA/EIA-41.5-D Section 6)

The ServiceID (SRVID) parameter indicates the identifier of the specified service.

Field	Value	Type	Reference	Notes					
Identifier	ServiceID IMPLICIT OCTET STRING	M	6.5.1.2						
Length	variable octets	M	6.5.1.1						
Contents									
H	G	F	E	D	C	B	A	octet	Notes
MSB								1	
Service Identifier								2	
...								<i>n</i>	
LSB									

Figure 6.5.2.bz-1 ServiceID parameter

Table 6.5.2.bz-1 Service Identifier values

<i>Service Identifier (octets 1 to n)</i>	
0	Not used.
1	Calling Name Presentation – No RND.
2	Calling Name Presentation with RND.
through	Reserved for assignment by <i>TIA/EIA-41</i> .
other	Reserved for specific service identifiers. These identifiers may be freely assigned by any service provider. Use of these identifiers must be negotiated between the message originator and destination.

6 TIA/EIA-41.6-D MODIFICATIONS

This section provides new signaling procedures for CNAP and CNAR according to the structure of *TIA/EIA-41-D* Chapter 6.

3.2 ORIGINATION CALL TASKS

3.2.3 MSC Analyze MS Dialed Number

(TIA/EIA-41.6-D, page 6-15)

Upon demand the Anchor MSC shall do the following:

- 1 IF flash privileges are suspended (by the *Flash Privileges* in the OneTimeFeature-Indicator parameter e.g., Call Transfer, Call Waiting, Three-Way Calling):
 - 1-1 Include the TransactionCapability parameter with the number of multiple terminations set to 0.
 - 2 ELSEIF Call Transfer, Three-Way Calling or similar feature is being invoked:
 - 2-1 Include the TransactionCapability parameter with the number of multiple terminations set to 1.
 - 3 ELSE:
 - 3-1 Include the TransactionCapability parameter with the number of multiple terminations set appropriately.
 - 4 ENDIF.
- a IF the MSC is responsible for recognizing *67 as the initial three digits of the dialed number as a request that the calling party's number and calling party's name be treated as *private*:
 - a-1 IF *67 are the initial three digits of the dialed number:
 - a-1-1 IF the calling party number is available:
 - a-1-1-1 Set the privacy status of the calling party number and calling party name to *private* for this call, over-riding any value set on the basis of the subscriber profile.
 - a-1-2 ENDIF.
 - a-1-3 Remove the initial *67 from the dialed number and continue digit analysis using the remaining digits in place of the original dialed number.
 - a-2 ENDIF.
- b ENDIF.
- c IF the MSC is responsible for recognizing *82 as the initial three digits of the dialed number as a request that calling party number and calling party name be treated as *public*:
 - c-1 IF *82 are the initial three digits of the dialed number:
 - c-1-1 IF the calling party number is available:
 - c-1-1-1 Set the privacy status of the calling party number and calling party name to *public* for this call, over-riding any value set on the basis of the subscriber profile.
 - c-1-2 ENDIF.

- c-1-3 Remove the initial *82 from the dialed number and continue digit analysis using the remaining digits in place of the original dialed number.
- c-2 ENDIF.
- d ENDIF.
- 5 IF the MS dialed a locally allowed number (e.g., 9-1-1, *-9-1-1, N11, *N11):
 - 5-1 IF the MS dialed number is only routed locally, for instance, for numbers used for access to local emergency service providers:
 - 5-1-1 Process the dialed number locally routing the call with the PreferredLanguageIndicator to set the PointOfReturn.
 - 5-2 ELSEIF the OriginationTriggers matches the *, # or the count of the dialed number digits:
 - 5-2-1 Execute the “MSC Initiating an Origination Request” task (see 4.31.1) to set the PointOfReturn.
 - 5-3 ELSE:
 - 5-3-1 Process the dialed Service Code locally routing the call with the PreferredLanguageIndicator to set the PointOfReturn.
 - 5-4 ENDIF.
- 6 ELSEIF the OriginationTriggers All trigger is on:
 - 6-1 Execute the “MSC Initiating an Origination Request” task (see 4.31.1) to set the PointOfReturn.
 - 6-2 IF a Digits (Dialed) parameter is received:
 - 6-2-1 IF the type of the Digits is *unknown*:
 - 6-2-1-1 Process the dialed number locally to set the PointOfReturn.
 - 6-2-2 ENDIF.
 - 6-3 ENDIF.
- 7 ELSEIF the first digit was a star (*) digit:
 - 7-1 IF the second digit was a star (*) digit:
 - 7-1-1 IF the OriginationTriggers is set for double star codes:
 - 7-1-1-1 Execute the “MSC Initiating an Origination Request” task (see 4.31.1) to set the PointOfReturn.
 - 7-1-1-2 IF a Digits (Dialed) parameter is received:
 - 7-1-1-2-1 IF the type of the Digits is *unknown*:
 - 7-1-1-2-1-1 Process the dialed number as a local feature code to set the PointOfReturn.
 - 7-1-1-2-2 ENDIF.
 - 7-1-1-3 ENDIF.
 - 7-1-2 ELSE:
 - 7-1-2-1 Process the dialed number as a local feature code or local service code to set the PointOfReturn.
 - 7-1-3 ENDIF.
 - 7-2 ELSE (only a single star was dialed):
 - 7-2-1 IF the OriginationTriggers is set for single star codes:
 - 7-2-1-1 Execute the “MSC Initiating an Origination Request” task (see 4.31.1) to set the PointOfReturn.

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1 7-2-2 ELSE:
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3 7-2-2-1 Execute a “MSC Detecting Feature Request” (see 4.14.1) to set the
4 PointOfReturn.
5 7-2-3 ENDIF.
6 7-2-4 IF a Digits (Dialed) parameter is received:
7
8 7-2-4-1 IF the type of the Digits is *unknown*;
9 7-2-4-1-1 Process the dialed number as a local feature code to set the
10 PointOfReturn.
11
12 7-2-4-2 ENDIF.
13 7-2-5 ENDIF.
14
15 7-3 ENDIF.
16 8 ELSEIF the first digit was a pound (#) digit:
17 8-1 IF the second digit was a pound (#) digit:
18 8-1-1 IF the OriginationTriggers is set for double pound codes:
19 8-1-1-1 Execute the “MSC Initiating an Origination Request” task (see 4.31.1)
20 to set the PointOfReturn.
21 8-1-1-2 IF a Digits (Dialed) parameter is received:
22 8-1-1-2-1 IF the type of the Digits is *unknown*;
23 8-1-1-2-1-1 Process the dialed number as a local feature code to set the
24 PointOfReturn.
25 8-1-1-2-2 ENDIF.
26 8-1-1-3 ENDIF.
27 8-1-2 ELSE (the double pound trigger is not set):
28 8-1-2-1 Process the dialed number as a local feature code to set the
29 PointOfReturn.
30 8-1-3 ENDIF.
31 8-2 ELSE (only a single pound was dialed):
32 8-2-1 IF the OriginationTriggers is set for single pound codes:
33 8-2-1-1 Execute the “MSC Initiating an Origination Request” task (see 4.31.1)
34 to set the PointOfReturn.
35 8-2-1-2 IF a Digits (Dialed) parameter is received:
36 8-2-1-2-1 IF the type of the Digits is *unknown*;
37 8-2-1-2-1-1 Process the dialed number as a local feature code to set the
38 PointOfReturn.
39 8-2-1-2-2 ENDIF.
40 8-2-1-3 ENDIF.
41 8-2-2 ELSE (the pound trigger is not set):
42 8-2-2-1 Process the dialed number as a local feature code to set the
43 PointOfReturn.
44 8-2-3 ENDIF.
45 8-3 ENDIF.
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47 9 ELSEIF the OriginationTriggers *Revertive Call* trigger is on AND the dialed
48 number is the MS’s mobile directory number (or MIN if the mobile directory
49 number is not available):
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9-1	Execute the “MSC Initiating an Origination Request” task (see 4.31.1) to set the PointOfReturn.	1
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9-2	IF a Digits (Dialed) parameter is received:	3
9-2-1	IF the type of the Digits is <i>unknown</i> :	4
9-2-1-1	Process the dialed number locally to set the PointOfReturn.	5
		6
9-2-2	ENDIF.	7
9-3	ENDIF.	8
		9
10	ELSEIF any of OriginationTriggers <i>Count</i> triggers are on AND the number of digits dialed equals the corresponding count trigger:	10
		11
10-1	Execute the “MSC Initiating an Origination Request” task (see 4.31.1) to set the PointOfReturn.	12
		13
10-2	IF a Digits (Dialed) parameter is received:	14
10-2-1	IF the type of the Digits is <i>unknown</i> :	15
10-2-1-1	Process the dialed number locally to set the PointOfReturn.	16
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10-2-2	ENDIF.	18
10-3	ENDIF.	19
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11	ELSEIF any of OriginationTriggers <i>Local, ILATA, OLATA, Int'l, WZ, or Unrec</i> , triggers are on AND the call type matches the corresponding trigger:	21
		22
11-1	Execute the “MSC Initiating an Origination Request” task (see 4.31.1) to set the PointOfReturn.	23
		24
11-2	IF a Digits (Dialed) parameter is received:	25
11-2-1	IF the type of the Digits is <i>unknown</i> :	26
11-2-1-1	Process the dialed number locally to set the PointOfReturn.	27
		28
11-2-2	ENDIF.	29
11-3	ENDIF.	30
		31
12	ELSEIF the any unknown OriginationTriggers are on (e.g., reserved bits set to 1 or extra octets with any bit set to 1):	32
		33
12-1	Execute the “MSC Initiating an Origination Request” task (see 4.31.1) to set the PointOfReturn.	34
		35
12-2	IF a Digits (Dialed) parameter is received:	36
12-2-1	IF the type of the Digits is <i>unknown</i> :	37
12-2-1-1	Process the dialed number locally to set the PointOfReturn.	38
		39
12-2-2	ENDIF.	40
12-3	ENDIF.	41
		42
13	ELSEIF the call type matches an active trigger in the SPINITriggers parameter:	43
		44
13-1	Execute the “MSC SPINI Originating Call Invocation” task (see 5.21.3) to set the PointOfReturn.	45
		46
14	ELSEIF the any unknown SPINITriggers are on (e.g., reserved bits set to 1 or extra octets with any bit set to 1):	47
		48
14-1	Execute the “MSC SPINI Originating Call Invocation” task (see 5.21.3) to set the PointOfReturn.	49
		50
15	ELSEIF the MS is permitted to dial only a specific 10-digit number in the service profile (i.e., the MS has hot line activated):	51
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15-1	Set the dialed number to the 10-digit number in the service profile.	53
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1 15-2 Set the PointOfReturn to Directory Number.
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3 16 ELSEIF the MS is restricted from originating any call:
4 16-1 Execute “Apply Access Denial Treatment” task (see 3.4.5).
5 16-2 Exit this task.
6
7 17 ELSEIF the subscriber shall be authorized on a per call basis OR IF authorization is
8 due:
9 17-1 Execute the “MSC Initiating a Qualification Request” task (see 4.33.1).
10 17-2 IF the call is not authorized (AuthorizationDenied or OriginationIndicator is
11 *Origination denied*):
12 17-2-1 Execute “Apply Access Denial Treatment” task (see 3.4.5).
13 17-2-2 Exit this task.
14 17-3 ENDIF.
15
16 18 ELSE:
17 18-1 GOTO AuthorizedSubscriberOrigination.
18 19 ENDIF.
19
20 **AuthorizedSubscriberOrigination:**
21 20 IF the call is on hold and PointOfReturn is *ToneTermination*:
22 20-1 Reconnect the current call.
23 21 ENDIF.
24 22 IF the AnnouncementList parameter is received:
25 22-1 Execute the “Play All Announcements in the AnnouncementList” task (see
26 3.2.5).
27 23 ENDIF.
28 24 IF the dialed or destination number is a potential mobile directory number:
29 24-1 Include TerminationAccessType parameter set to indicate *Mobile to*
30 *MobileDirectoryNumber*.
31 24-2 Execute the “MSC Initiating a Location Request” task (see 4.28.1) to set the
32 PointOfReturn.
33 25 ELSE:
34 25-1 Set the PointOfReturn to *PSTNTermination*.
35 26 ENDIF.
36 27 IF the AnnouncementList parameter is received:
37 27-1 Execute the “Play All Announcements in the AnnouncementList” task (see
38 3.2.5).
39 28 ENDIF.
40 29 Execute the “MSC Routing Points of Return” task (see 3.2.6) to process the
41 PointOfReturn.
42 30 Return to the calling task.
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3.3 TERMINATING CALL TASKS

3.3.5 MS Termination Alerting

(TIA/EIA-41.6-D, page 6-29)

Upon request, the MSC shall perform the following:

- 1 IF the indicated MS is *idle*:
- 1-1 IF a channel has not been allocated for the MS (i.e., the MS has not been paged):
 - 1-1-1 IF an appropriate *idle* voice or traffic channel is available for the identified air interface control channel:
 - 1-1-1-1 Reserve the available voice or traffic channel.
 - 1-1-1-2 Execute the “Page an MS Procedure” (see 3.3.3).
 - 1-1-1-3 IF the paging was locally successful:
 - 1-1-1-3-1 GOTO Await Answer.
 - 1-1-1-4 ELSEIF the paging was successful on another system:
 - 1-1-1-4-1 Execute the “MSC ~~Initiating Initiation of an Intersystem Setup~~” task (see 4.27.1).
 - 1-1-1-4-2 GOTO Await Answer.
 - 1-1-1-5 ELSE (the paging was unsuccessful):
 - 1-1-1-5-1 IF the MS has activated Call Forwarding—No Answer in the CallingFeaturesIndicator or has the *No Page Response* TerminatingTrigger active:
 - 1-1-1-5-1-1 Include the RedirectionReason parameter set to *No Page Response*.
 - 1-1-1-5-1-2 IF this call has requested the *None Reachable* termination trigger AND IF this is the last leg AND IF a GroupInformation parameter was received:
 - 1-1-1-5-1-2-1 Include the GroupInformation parameter.
 - 1-1-1-5-1-3 ELSEIF the LegInformation parameter was received:
 - 1-1-1-5-1-3-1 Include the LegInformation parameter.
 - 1-1-1-5-1-4 ENDIF.
 - 1-1-1-5-1-5 IF the MSC is the Originating MSC:
 - 1-1-1-5-1-5-1 Execute the “MSC Initiating a Transfer-To-Number Request” task (see 4.49.1).
 - 1-1-1-5-1-6 ELSEIF the Originating MSC is provisioned for call redirection:
 - 1-1-1-5-1-6-1 Execute the “MSC Initiating a Redirection Request” task (see 4.36.1).
 - 1-1-1-5-1-7 ELSE:
 - 1-1-1-5-1-7-1 Execute the “MSC Initiating a Transfer-To-Number Request” task (see 4.49.1).
 - 1-1-1-5-1-8 ENDIF.
 - 1-1-1-5-2 ELSE:

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- 1-1-1-5-2-1 Execute “Apply Access Denial Treatment” (see 3.4.5).
- 1-1-1-5-2-2 Exit this task.
- 1-1-1-5-3 ENDIF.
- 1-1-1-6 ENDIF.
- 1-1-2 ENDIF.
- 1-2 ENDIF.
- 1-3 IF the RoutingDigits parameter is received:
 - 1-3-1 Analyze the routing digits to select an internal trunk group (such as, a service monitor, scrambling device).
 - ~~1-3-2 Execute the “MSC CNIP Terminating Call Invocation” task (see 5.8.4).~~
 - 1-4 ENDIF.
 - 1-a Execute the “MSC CNIP Terminating Call Invocation” task (see 5.8.4).
 - 1-b Execute the “MSC CNAP Terminating Call Invocation” task (see 5.X.2).
- 1-5 IF the MobileDirectoryNumber parameter is received:
 - 1-5-1 Include the MobileDirectoryNumber parameter as the Called Number in the MS alerting command.
 - 1-6 ELSE:
 - 1-6-1 Include the MobileIdentificationNumber parameter as the Called Number in the MS alerting command.
 - 1-7 ENDIF.
 - 1-8 IF the AlertCode parameter received:
 - 1-8-1 Include the AlertCode parameter in the MS alerting command to control the pitch and cadence of the alerting.
 - 1-9 ELSE:
 - 1-9-1 Include the system default AlertCode parameter in the MS alerting command to control the pitch and cadence of the alerting.
 - 1-10 ENDIF.
 - 1-11 Order the MS to alert.
 - Await Answer** (get here for normal and CW alerting, alerting has been applied, no timers have been started):
 - 1-12 IF the TerminationTriggers is received:
 - 1-12-1 Store the TerminationTriggers parameter for this leg.
 - 1-12-2 IF the *NoAnswer* trigger is requested in the TerminationTriggers parameter OR IF the MS has Call Forwarding—No Answer activated in the CallingFeaturesIndicator parameter:
 - 1-12-2-1 IF the NoAnswerTime parameter is received:
 - 1-12-2-1-1 Start a no answer timer with the value in the received NoAnswerTime parameter.
 - 1-12-2-2 ELSE:
 - 1-12-2-2-1 Start a no answer timer with a system default value.
 - 1-12-2-3 ENDIF.
 - 1-12-3 ENDIF.
 - 1-13 ENDIF.
 - 1-14 IF the LegInformation parameter is received:

1-14-1	Store the LegInformation to control subsequent redirections.	1
1-15	ENDIF.	2
1-16	Start the alerting timer.	3
1-17	Apply ring back tone to the waiting call.	4
1-18	WAIT for the MS to answer:	5
1-19	WHEN the MS answers:	6
1-19-1	Remove the ring back tone.	7
1-19-2	Connect the MS to the waiting call.	8
1-19-3	IF the OneTimeFeatureIndicator parameter was received and the Call Waiting for future incoming calls field is not set to <i>Ignore</i> :	9
1-19-3-1	Set the Call Waiting for the existing call field in the OneTimeFeatureIndicator parameter equal to the OneTimeFeatureIndicator Call Waiting For Future Incoming Calls field.	10
1-19-4	ELSE (the OneTimeFeatureIndicator parameter was not received or the Call Waiting for Future Incoming Calls field is set to <i>Ignore</i>):	11
1-19-4-1	IF Call Waiting is <i>active</i> in the CallingFeaturesIndicator:	12
1-19-4-1-1	Set the Call Waiting for future incoming calls field in the OneTimeFeatureIndicator parameter set to <i>Normal CW</i> .	13
1-19-4-2	ELSEIF Priority Call Waiting is <i>active</i> in the CallingFeaturesIndicator:	14
1-19-4-2-1	Set the Priority Call Waiting for future incoming calls field in the OneTimeFeatureIndicator parameter set to <i>Priority CW</i> .	15
1-19-4-3	ELSE:	16
1-19-4-3-1	Set the <i>Call Waiting for future incoming calls</i> field in the OneTimeFeatureIndicator parameter set to <i>No CW</i> .	17
1-19-4-4	ENDIF.	18
1-19-5	ENDIF.	19
1-20	WHEN the alerting timer expires:	20
1-20-1	Remove the ring back tone.	21
1-20-2	Connect the calling party to an announcement or tone to indicate that the called party is not answering.	22
1-21	WHEN the no answer timer expires:	23
1-21-1	Include the RedirectionReason parameter set to <i>No Answer</i> .	24
1-21-2	IF this call has requested the <i>None Reachable (NR)</i> termination trigger AND IF this is the last leg AND IF a GroupInformation parameter was received:	25
1-21-2-1	Include the GroupInformation parameter.	26
1-21-3	ELSEIF the LegInformation parameter was received:	27
1-21-3-1	Include the LegInformation parameter.	28
1-21-4	ENDIF.	29
1-21-5	IF the MSC is the Originating MSC:	30
1-21-5-1	Execute the "MSC Initiating a Transfer-To-Number Request" task (see 4.49.1).	31
1-21-6	ELSEIF the Originating MSC is provisioned for call redirection:	32
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1 1-21-6-1 Execute the “MSC Initiating a Redirection Request” task (see 4.36.1).
2
3 1-21-7 ELSE:
4 1-21-7-1 Execute the “MSC Initiating a Transfer-To-Number Request” task (see
5 4.49.1).
6 1-21-8 ENDIF;
7
8 1-22 ENDWAIT.
9
10 2 ELSE (the indicated MS is busy):
11 2-1 IF Call Waiting is invoked (there is another call pending¹) OR IF the MS is
12 otherwise unable to accept a call (e.g., the MS has invoked Priority Access and
13 Channel Assignment, Call Transfer, Conference Calling, Three-Way Calling or
14 the MS is not in a state where it can apply Call Waiting.):
15 2-1-1 GOTO Busy MS Detected.
16 2-2 ELSE (the MS may accept CW):
17 2-2-1 IF the RoutingDigits parameter is received:
18 2-2-1-1 Analyze the Routing digits to select an internal trunk group (such as, a
19 service monitor, scrambling device).
20 2-2-2 ENDIF.
21 2-2-3 IF the MobileDirectoryNumber parameter is received:
22 2-2-3-1 Include the MobileDirectoryNumber parameter as the Called Number
23 in the MS alerting command.
24 2-2-4 ELSE:
25 2-2-4-1 Include the MobileIdentificationNumber parameter as the Called
26 Number in the MS alerting command.
27 2-2-5 ENDIF.
28 2-2-6 Execute the “MSC CW Terminating Call Invocation” task (see 5.7.4).
29 2-2-7 IF Call Waiting is *accepted*:
30 2-2-7-1 GOTO Await Answer.
31 2-2-8 ELSE (Call Waiting was not accepted, the MS is busy):
32
33 **Busy MS Detected:**
34 2-2-8-1 IF the MS has activated Call Forwarding—Busy or has the Busy
35 TerminationTriggers set to *Launch a RedirectionRequest* or
36 *TransferToNumberRequest*:
37 2-2-8-1-1 Include the RedirectionReason parameter set to *Busy*.
38 2-2-8-1-2 IF this call has requested the *None Reachable* termination trigger
39 AND IF this is the last leg AND IF a GroupInformation parameter
40 was received:
41 2-2-8-1-2-1 Include the GroupInformation parameter.
42 2-2-8-1-3 ELSEIF the LegInformation parameter was received:
43 2-2-8-1-3-1 Include the LegInformation parameter.
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54 ¹MS busy or call pending can be defined as either a) actual calls in the MSC or b) a
55 combination of actual calls in the MSC or TLDNs assigned. Choice b) uses less of the
56 call redirection procedures and thereby routes calls faster. Choice a) handles abandoned
57 calls more properly.
58
59
60

2-2-8-1-4	ENDIF.	1
2-2-8-1-5	IF the call arrived via Call Delivery:	2
2-2-8-1-5-1	IF the Originating MSC is provisioned for call redirection:	3
2-2-8-1-5-1-1	Execute the “MSC Initiating a Redirection Request” task (see 4.36.1).	4
2-2-8-1-5-2	ELSE:	5
2-2-8-1-5-2-1	Execute the “MSC Initiating a Transfer-To-Number Request” task (see 4.49.1).	6
2-2-8-1-5-3	ENDIF.	7
2-2-8-1-6	ELSE (call did not arrive via Call Delivery):	8
2-2-8-1-6-1	Execute the “MSC Initiating a Transfer-To-Number Request” task (see 4.49.1).	9
2-2-8-1-7	ENDIF.	10
2-2-8-2	ELSE (busy triggers do not apply):	11
2-2-8-2-1	Apply busy treatment to the waiting call (e.g., apply busy tone).	12
2-2-8-3	ENDIF.	13
2-2-9	ENDIF.	14
2-3	ENDIF.	15
3	ENDIF.	16
4	Return to the calling task.	17

3.3.8 MSC Route the Call Leg Externally

(TIA/EIA-41.6-D, page 6-35)

Upon request, the MSC shall do the following:

- | | | |
|-----|--|----|
| 1 | Execute the “MSC Record the DMH Parameters” task (see 3.3.7). | 18 |
| 2 | IF the DMH_BillingDigits parameter is received: | 19 |
| 2-1 | Use the DMH_BillingDigits as the ISUP Charge Number or Automatic Number
Identification (ANI). | 20 |
| 3 | ELSEIF the MobileDirectoryNumber parameter is received: | 21 |
| 3-1 | Use the MobileDirectoryNumber as the ISUP Charge Number or Automatic
Number Identification (ANI). | 22 |
| 4 | ELSE: | 23 |
| 4-1 | Use the MobileIdentificationNumber as the ISUP Charge Number or Automatic
Number Identification (ANI). | 24 |
| 5 | ENDIF. | 25 |
| 6 | IF the RoutingDigits parameter is received: | 26 |
| 6-1 | Analyze the routing digits to select an internal trunk group or an external
network address (such as, a roamer port, a private network hop-on point,
virtual private network hop-off point). | 27 |
| 7 | ENDIF. | 28 |
| 8 | IF the Digits (Carrier) parameter is received AND IF Carrier selection is
appropriate: | 29 |
| 8-1 | Select the interexchange carrier based on the Digits (Carrier) digits. | 30 |

1 9 ELSE:

2

3 9-1 Select the interexchange carrier based on internal algorithms.

4 10 ENDIF.

5 11 IF the ElectronicSerialNumber parameter is received within the

6 IntersystemTermination parameter;

7

8 11-1 Associate the ElectronicSerialNumber parameter with this call.

9 12 ENDIF.

10

11 13 IF the LegInformation parameter is received:

12 13-1 Store the LegInformation parameter to control subsequent redirections.

13 13-2 IF a BillingID parameter is received:

14 13-2-1 Associate the terminating BillingID parameter with this leg.

15 13-3 ENDIF.

16 14 ENDIF.

17

18 15 IF a PC_SSN parameter is received:

19 15-1 Store the PC_SSN for screening future call redirection attempts of this leg.

20 16 ENDIF.

21

22 17 IF an MSCID parameter is received:

23 17-1 Store the MSCID for screening future call redirection attempts of this leg.

24 18 ENDIF.

25

26 19 IF an MSCIdentificationNumber parameter is received:

27 19-1 Store the MSCIdentificationNumber for screening future call redirection

28 attempts of this leg.

29 20 ENDIF.

30

31 21 IF this ~~is a~~ call is originated by an MS at this MSC:

32

33 21-1 Execute the “MSC CNIP Originating Call Invocation” task (see 5.8.3).

34 21-2 Execute the “MSC CNAR Originating Call Invocation” task (see 5.Y.4).

35

36 22 ELSE (call must be being redirected at this MSC):

37 22-1 Execute the “MSC CNIP Redirecting Call Invocation” task (see 5.8.5).

38 22-2 Execute the “MSC CNAR Redirecting Call Invocation” task (see 5.Y.6).

39 23 ENDIF.

40

41 24 IF the TerminationTriggers parameter is received;

42 24-1 Use these TerminationTriggers instead of the profile event triggers for this call.

43 25 ENDIF.

44

45 26 IF a Digits (Destination) parameter is received:

46 26-1 Set destination to Digits (Destination).

47 27 ELSE IntersystemTermination parameter is received;

48 27-1 Set destination to the DestinationDigits parameter within the

49 IntersystemTermination parameter.

50 27-2 Set MSCID for this leg to the MSCID parameter within the

51 IntersystemTermination parameter.

52 27-3 IF the BillingID parameter is received within the IntersystemTermination

53 parameter;

54 27-3-1 Associate the terminating BillingID parameter with this call leg.

55

56

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27-4	ENDIF.	1
27-5	IF the CarrierDigits parameter is received within the IntersystemTermination parameter;	2
		3
		4
27-5-1	Use these carrier digits instead of other carrier digits.	5
		6
27-6	ENDIF.	7
27-7	IF the ElectronicSerialNumber parameter is received within the IntersystemTermination parameter;	8
		9
27-7-1	Associate the ElectronicSerialNumber parameter with this call leg.	10
		11
27-8	ENDIF.	12
27-9	IF the LegInformation parameter is receive within the IntersystemTermination parameter;	13
		14
27-9-1	Associate the LegInformation parameter with this call leg.	15
		16
27-10	ENDIF.	17
27-11	IF the MobileIdentificationNumber parameter is received within the IntersystemTermination parameter;	18
		19
27-11-1	Associate the MobileIdentificationNumber parameter with this call leg.	20
		21
27-12	ENDIF.	22
27-13	IF the MSCIdentificationNumber parameter is received within the IntersystemTermination parameter;	23
		24
27-13-1	Associate the MSCIdentificationNumber with this call leg.	25
		26
27-14	ENDIF.	27
		28
27-15	IF the RoutingDigits parameter is received within the IntersystemTermination parameter;	29
		30
27-15-1	Use these routing digits instead of other routing digits for this call leg.	31
		32
27-16	ENDIF.	33
27-17	IF the TerminationTriggers parameter is received within the IntersystemTermination parameter;	34
		35
27-17-1	Use these TerminationTriggers instead of other event triggers for this call leg.	36
		37
		38
27-18	ENDIF.	39
		40
28	ELSEIF PSTNTermination parameter is received;	41
		42
28-1	Set destination to DestinationDigits within the PSTNTermination parameter.	43
		44
28-2	IF the CarrierDigits parameter is received within the PSTNTermination parameter;	45
		46
28-2-1	Use these carrier digits instead of other carrier digits.	47
		48
28-3	ENDIF.	49
		50
28-4	IF the ElectronicSerialNumber parameter is received within the PSTNTermination parameter;	51
		52
28-4-1	Associate the ElectronicSerialNumber parameter with this call leg.	53
		54
28-5	ENDIF.	55
		56
28-6	IF the LegInformation parameter is received within the PSTNTermination parameter;	57
		58
28-6-1	Associate the LegInformation with this call leg.	59
		60
28-7	ENDIF.	

1 28-8 IF the MobileIdentificationNumber parameter is received within the
2 PSTNTermination parameter;
3
4 28-8-1 Associate the MobileIdentificationNumber parameter with this call leg.
5 28-9 ENDIF.
6 28-10 IF the RoutingDigits parameter is received within the PSTNTermination
7 parameter;
8
9 28-10-1 Use these routing digits instead of other routing digits for this call leg.
10 28-11 ENDIF.
11 28-12 IF the TerminationTriggers parameter is received within the PSTNTermination
12 parameter;
13
14 28-12-1 Use these TerminationTriggers instead of other triggers for this call leg.
15 28-13 ENDIF.
16
17 29 ELSE (Digits (Destination), IntersystemTermination, OR PSTNTermination
18 parameter not received):
19
20 29-1 Return to the calling task.
21 30 ENDIF.
22
23 31 Process a call setup toward the destination via the route and selected carrier.
24 32 Cut through the voice path in the reverse direction (to allow the calling party to
25 hear call process tones).
26 33 Start an alerting timer.
27 34 IF the TerminationTriggers parameter is received:
28
29 34-1 Store the TerminationTriggers parameter for this leg.
30 34-2 IF the NoAnswer trigger is requested in the TerminationTriggers parameter;
31
32 34-2-1 IF the NoAnswerTime parameter is received:
33
34 34-2-1-1 Start a no answer timer with the value in the received NoAnswerTime
35 parameter.
36 34-2-2 ELSE:
37 34-2-2-1 Start a no answer timer with a system default value.
38 34-2-3 ENDIF.
39 34-3 ENDIF.
40 35 ENDIF.
41
42 36 WAIT for the trunk to be answered.
43
44 37 WHEN a routing failure is detected:
45
46 37-1 IF the RoutingFailure termination trigger point is active:
47
48 37-1-1 Include the RedirectionReason parameter set to *Unroutable*.
49 37-1-2 IF this call has requested the *None Reachable* termination trigger AND IF
50 this is the last leg AND IF a GroupInformation parameter was received:
51 37-1-2-1 Include the GroupInformation parameter.
52 37-1-3 ELSEIF the LegInformation parameter was received:
53 37-1-3-1 Include the LegInformation parameter.
54 37-1-4 ENDIF.
55 37-1-5 Execute the “MSC Initiating a Transfer-To-Number Request” task (see
56 4.49.1).
57
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37-2	ELSE:	1
37-2-1	Remain in this state (to wait for the calling party to disconnect).	2
37-3	ENDIF.	3
38	WHEN a busy is detected:	4
38-1	IF the <i>Busy</i> termination trigger point is active:	5
38-1-1	Include the RedirectionReason parameter set to <i>Busy</i> .	6
38-1-2	IF this call has requested the <i>None Reachable</i> termination trigger AND IF this is the last leg AND IF a GroupInformation parameter was received:	7
38-1-2-1	Include the GroupInformation parameter.	8
38-1-3	ELSEIF the LegInformation parameter was received:	9
38-1-3-1	Include the LegInformation parameter.	10
38-1-4	ENDIF.	11
38-1-5	Execute the “MSC Initiating a Transfer-To-Number Request” task (see 4.49.1).	12
38-2	ELSE:	13
38-2-1	Remain in this state (to wait for the calling party to disconnect).	14
38-2-2	ENDIF.	15
38-3	ENDIF.	16
39	WHEN the trunk is answered:	17
39-1	Cut through the voice path in the forward direction (to allow the calling party to communicate with the called party).	18
40	WHEN the trunk disconnect is detected:	19
40-1	Release the trunk.	20
41	WHEN the alerting timer expires:	21
41-1	Connect the calling party to an announcement or tone to indicate that the called party is not answering.	22
42	WHEN the no answer timer expires:	23
42-1	Include the RedirectionReason parameter set to <i>No Answer</i> .	24
42-2	IF this call has requested the <i>None Reachable</i> termination trigger AND IF this is the last leg AND IF a GroupInformation parameter was received:	25
42-2-1	Include the GroupInformation parameter.	26
42-3	ELSEIF the LegInformation parameter was received:	27
42-3-1	Include the LegInformation parameter.	28
42-4	ENDIF.	29
42-5	Execute the “MSC Initiating a Transfer-To-Number Request” task (see 4.49.1).	30
43	ENDWAIT.	31
44	Exit this task.	32
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4.14 FEATURE REQUEST

4.14.1 MSC Detecting Feature Request

(TIA/EIA-41.6-D, page 6-127)

When performing digit analysis of the dialed digits received from the MS, the MSC detects that the dialed digits are a feature control access. It shall perform the following:

- 1 Include the BillingID parameter set to identify the current call for billing and redirection purposes.
- 2 Include the Digits (Dialed) parameter set to the digits received from the MS.
- 3 Include the ElectronicSerialNumber parameter set to identify the MS.
- 4 Include the MobileIdentificationNumber parameter set to identify the MS.
- 5 Include the MSCID parameter set to the identity of the MSC.
- 6 IF any indicator is set in the OneTimeFeatureIndicator parameter:
 - 6-1 Include the OneTimeFeatureIndicator parameter.
 - 7 ENDIF.
- 8 Include SenderIdentificationNumber parameter set to the identification number of the MSC.
- 9 Include TransactionCapability parameter set appropriately.
- 10 IF the subscriber is involved in a conference call:
 - 10-1 Include the ConferenceCallingIndicator parameter set to the number of conferees currently in the call.
 - 11 ENDIF.
- a IF the calling party name information is known:
 - a-1 Include the CallingPartyName paramter.
 - b ENDIF.
- 12 Send a FeatureRequest INVOKE to the HLR associated with the MS.
- 13 Start the Feature Request Response Timer (FRRT).
- 14 WAIT for Feature Request response:
- 15 WHEN a RETURN RESULT is received:
 - 15-1 Stop timer (FRRT).
 - 15-2 IF the message can be processed:
 - 15-2-1 IF the MS is still connected:
 - 15-2-1-1 IF the AnnouncementList parameter is received:
 - 15-2-1-1-1 Execute the “Play All Announcements in the AnnouncementList” task (see 3.2.5).
 - 15-2-1-2 ELSEIF the FeatureResult parameter indicates *Successful* operation:
 - 15-2-1-2-1 Provide a successful indication to the MS.
 - 15-2-1-3 ELSE:
 - 15-2-1-3-1 Provide an unsuccessful indication to the MS.
 - 15-2-1-4 ENDIF.
 - 15-2-1-5 IF the OneTimeFeatureIndicator parameter is received:

15-2-1-5-1	Store the received OneTimeFeatureIndicator parameter.	1
15-2-1-6	ENDIF.	2
15-2-1-7	IF the ConferenceCallingIndicator parameter is received:	3
15-2-1-7-1	Execute the “MSC CC Invocation” task (see 5.10.3).	4
15-2-1-8	ENDIF.	5
15-2-1-9	IF an ActionCode parameter is received:	6
15-2-1-9-1	Execute the “MSC ActionCode Processing” task (see 3.2.9)	7
15-2-1-10	ENDIF.	8
15-2-1-11	IF the MS is in a state capable of routing a call (e.g., after dialing a feature code from an idle state or a call hold state).	9
15-2-1-11-1	IF the TerminationList parameter is received:	10
15-2-1-11-1-1	Execute the “MSC Routing Points Of Return” task (see 3.2.6).	11
15-2-1-11-2	ENDIF.	12
15-2-1-12	ENDIF.	13
15-2-1-13	IF Digits (Dialed) parameter is received:	14
15-2-1-13-1	Execute the “MSC Analyze MS Dialed Number” task (see 3.2.3) (without re-querying the HLR for the same digits).	15
15-2-1-14	ENDIF.	16
15-2-2	ENDIF.	17
15-3	ELSE the message cannot be processed:	18
15-3-1	Execute “Local Recovery Procedures” task (see 3.5.1).	19
15-3-2	IF the MS is still connected:	20
15-3-2-1	Provide an unsuccessful indication to the MS.	21
15-3-3	ENDIF.	22
15-4	ENDIF.	23
16	WHEN a RemoteUserInteractionDirective INVOKE is received:	24
16-1	Stop timer (FRRT).	25
16-2	Execute the “MSC Remote User Interaction” task (see 4.39.2).	26
16-3	Start the Feature Request Response Timer (FRRT).	27
16-4	Remain in this state.	28
17	WHEN a RETURN ERROR or REJECT is received:	29
17-1	Stop timer (FRRT).	30
17-2	Execute “Local Recovery Procedures” task (see 3.5.1).	31
17-3	IF the MS is still connected:	32
17-3-1	Provide an unsuccessful indication to the MS.	33
17-4	ENDIF.	34
18	WHEN the MS disconnects:	35
18-1	Remain in this state (to handle possible call abandons).	36
19	WHEN timer (FRRT) expires:	37
19-1	Execute “Local Recovery Procedures” task (see 3.5.1).	38
19-2	IF the MS is still connected:	39

19-2-1 Provide an unsuccessful indication to the MS.
 19-3 ENDIF.
 20 ENDWAIT.
 21 Exit this task.

4.14.3 HLR Receiving FeatureRequest INVOKE

(TIA/EIA-41.6-D, page 6-130)

When an HLR receives a FeatureRequest INVOKE, it shall perform the following:

- 1 IF the received message can be processed:
 - 1-1 IF the OneTimeFeatureIndicator parameter is not received:
 - 1-1-1 Set the OneTimeFeatureIndicator parameter to all zeros.
 - 1-2 ENDIF.
 - 1-3 IF the received Digits (Dialed) parameter contains a feature code:
 - 1-3-1 IF SPINA is activated:
 - 1-3-1-1 IF the dialed feature code is not the SPINA De-activation feature code:
 - 1-3-1-1-1 Include the FeatureResult parameter set to *Unsuccessful* to indicate unsuccessful feature operation.
 - 1-3-1-1-2 Send a RETURN RESULT.
 - 1-3-1-1-3 Exit this task.
 - 1-3-1-2 ENDIF.
 - 1-3-2 ENDIF.
 - 1-3-3 CASE feature operation based on dialed feature code (to determine the PointOfReturn and relevant profile parameters) OF:
 - 1-3-4 *FC: Execute the “HLR CD Activation” task (see 5.1.1).
 - 1-3-5 IF the PointOfReturn is indicated:
 - 1-3-5-1 GOTO FeatReqPointOfReturn.
 - 1-3-6 ENDIF.
 - 1-3-7 *FC: Execute the “HLR CD De-Activation” task (see 5.1.2).
 - 1-3-8 IF the PointOfReturn is indicated:
 - 1-3-8-1 GOTO FeatReqPointOfReturn.
 - 1-3-9 ENDIF.
 - 1-3-10 *FC: Execute the “HLR CFB Registration” task (see 5.2.1).
 - 1-3-11 IF the PointOfReturn is indicated:
 - 1-3-11-1 GOTO FeatReqPointOfReturn.
 - 1-3-12 ENDIF.
 - 1-3-13 *FC: Execute the “HLR CFB De-Registration” task (see 5.2.2).
 - 1-3-14 IF the PointOfReturn is indicated:
 - 1-3-14-1 GOTO FeatReqPointOfReturn.
 - 1-3-15 ENDIF.
 - 1-3-16 *FC: Execute the “HLR CFB Activation” task (see 5.2.3).
 - 1-3-17 IF the PointOfReturn is indicated:

1-3-17-1	GOTO FeatReqPointOfReturn.	1
1-3-18	ENDIF.	2
1-3-19	*FC: Execute the “HLR CFB De-Activation” task (see 5.2.4).	3
1-3-20	IF the PointOfReturn is indicated:	4
1-3-20-1	GOTO FeatReqPointOfReturn.	5
1-3-21	ENDIF.	6
1-3-22	*FC: Execute the “HLR CFD Registration” task (see 5.3.1).	7
1-3-23	IF the PointOfReturn is indicated:	8
1-3-23-1	GOTO FeatReqPointOfReturn.	9
1-3-24	ENDIF.	10
1-3-25	*FC: Execute the “HLR CFD De-Registration” task (see 5.3.2).	11
1-3-26	IF the PointOfReturn is indicated:	12
1-3-26-1	GOTO FeatReqPointOfReturn.	13
1-3-27	ENDIF.	14
1-3-28	*FC: Execute the “HLR CFD Activation” task (see 5.3.3).	15
1-3-29	IF the PointOfReturn is indicated:	16
1-3-29-1	GOTO FeatReqPointOfReturn.	17
1-3-30	ENDIF.	18
1-3-31	*FC: Execute the “HLR CFD De-Activation” task (see 5.3.4).	19
1-3-32	IF the PointOfReturn is indicated:	20
1-3-32-1	GOTO FeatReqPointOfReturn.	21
1-3-33	ENDIF.	22
1-3-34	*FC: Execute the “HLR CFNA Registration” task (see 5.4.1).	23
1-3-35	IF the PointOfReturn is indicated:	24
1-3-35-1	GOTO FeatReqPointOfReturn.	25
1-3-36	ENDIF.	26
1-3-37	*FC: Execute the “HLR CFNA De-Registration” task (see 5.4.2).	27
1-3-38	IF the PointOfReturn is indicated:	28
1-3-38-1	GOTO FeatReqPointOfReturn.	29
1-3-39	ENDIF.	30
1-3-40	*FC: Execute the “HLR CFNA Activation” task (see 5.4.3).	31
1-3-41	IF the PointOfReturn is indicated:	32
1-3-41-1	GOTO FeatReqPointOfReturn.	33
1-3-42	ENDIF.	34
1-3-43	*FC: Execute the “HLR CFNA De-Activation” task (see 5.4.4).	35
1-3-44	IF the PointOfReturn is indicated:	36
1-3-44-1	GOTO FeatReqPointOfReturn.	37
1-3-45	ENDIF.	38
1-3-46	*FC: Execute the “HLR CFU Registration” task (see 5.5.1).	39
1-3-47	IF the PointOfReturn is indicated:	40
1-3-47-1	GOTO FeatReqPointOfReturn.	41
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1-3-48 ENDIF.

1-3-49 *FC: Execute the “HLR CFU De-Registration” task (see 5.5.2).

1-3-50 IF the PointOfReturn is indicated:

1-3-50-1 GOTO FeatReqPointOfReturn.

1-3-51 ENDIF.

1-3-52 *FC: Execute the “HLR CFU Activation” task (see 5.5.3).

1-3-53 IF the PointOfReturn is indicated:

1-3-53-1 GOTO FeatReqPointOfReturn.

1-3-54 ENDIF.

1-3-55 *FC: Execute the “HLR CFU De-Activation” task (see 5.5.4).

1-3-56 IF the PointOfReturn is indicated:

1-3-56-1 GOTO FeatReqPointOfReturn.

1-3-57 ENDIF.

1-3-58 *FC: Execute the “HLR CW Activation” task (see 5.7.1).

1-3-59 IF the PointOfReturn is indicated:

1-3-59-1 GOTO FeatReqPointOfReturn.

1-3-60 ENDIF.

1-3-61 *FC: Execute the “HLR CW De-Activation” task (see 5.7.2).

1-3-62 IF the PointOfReturn is indicated:

1-3-62-1 GOTO FeatReqPointOfReturn.

1-3-63 ENDIF.

1-3-64 *FC: Execute the “HLR CW Temporary De-Activation” task (see 5.7.3).

1-3-65 IF the PointOfReturn is indicated:

1-3-65-1 GOTO FeatReqPointOfReturn.

1-3-66 ENDIF.

1-3-a *FC: Execute the “HLR CNAP Activation” task (see 5.X.4).

1-3-b IF the PointOfReturn is indicated:

1-3-b-1 GOTO FeatReqPointOfReturn.

1-3-c ENDIF.

1-3-d *FC: Execute the “HLR CNAP De-Activation” task (see 5.X.5).

1-3-e IF the PointOfReturn is indicated:

1-3-e-1 GOTO FeatReqPointOfReturn.

1-3-f ENDIF.

1-3-67 *FC: Execute the “HLR CNIR Temporary Activation” task (see 5.9.1).

1-3-68 IF the PointOfReturn is indicated:

1-3-68-1 GOTO FeatReqPointOfReturn.

1-3-69 ENDIF.

1-3-70 *FC: Execute the “HLR CNIR Temporary De-Activation” task (see 5.9.2).

1-3-71 IF the PointOfReturn is indicated:

1-3-71-1 GOTO FeatReqPointOfReturn.

1-3-72 ENDIF.

1-3-g *FC: Execute the “HLR CNAR Temporary Activation” task (see 5.Y.1).
1-3-h IF the PointOfReturn is indicated:
1-3-h-1 GOTO FeatReqPointOfReturn.
1-3-i ENDIF.
1-3-j *FC: Execute the “HLR CNAR Temporary De-Activation” task (see
5.Y.3).
1-3-k IF the PointOfReturn is indicated:
1-3-k-1 GOTO FeatReqPointOfReturn.
1-3-l ENDIF.
1-3-m *FC: Execute the “HLR CNAR Toggle” task (see 5.Y.2).
1-3-n IF the PointOfReturn is indicated:
1-3-n-1 GOTO FeatReqPointOfReturn.
1-3-o ENDIF.
1-3-73 *FC: Execute the “HLR CC Invocation” task (see 5.10.1).
1-3-74 IF the PointOfReturn is indicated:
1-3-74-1 GOTO FeatReqPointOfReturn.
1-3-75 ENDIF.
1-3-76 *FC: Execute the “HLR CC Drop Last Party Invocation” task (see 5.10.2).
1-3-77 IF the PointOfReturn is indicated:
1-3-77-1 GOTO FeatReqPointOfReturn.
1-3-78 ENDIF.
1-3-79 *FC: Execute the “HLR DND Activation” task (see 5.11.1).
1-3-80 IF the PointOfReturn is indicated:
1-3-80-1 GOTO FeatReqPointOfReturn.
1-3-81 ENDIF.
1-3-82 *FC: Execute the “HLR DND De-Activation” task (see 5.11.2).
1-3-83 IF the PointOfReturn is indicated:
1-3-83-1 GOTO FeatReqPointOfReturn.
1-3-84 ENDIF.
1-3-85 *FC: Execute the “HLR FA Membership Activation” task (see 5.12.1).
1-3-86 IF the PointOfReturn is indicated:
1-3-86-1 GOTO FeatReqPointOfReturn.
1-3-87 ENDIF.
1-3-88 *FC: Execute the “HLR FA Membership De-Activation” task (see 5.12.2).
1-3-89 IF the PointOfReturn is indicated:
1-3-89-1 GOTO FeatReqPointOfReturn.
1-3-90 ENDIF.
1-3-91 *FC: Execute the “HLR MWN Demand Pip Tone Activation” task (see
5.13.1).
1-3-92 IF the PointOfReturn is indicated:
1-3-92-1 GOTO FeatReqPointOfReturn.
1-3-93 ENDIF.

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- 1-3-94 *FC: Execute the “HLR MWN Demand Pip Tone De-Activation” task (see 5.13.2).
- 1-3-95 IF the PointOfReturn is indicated:
 - 1-3-95-1 GOTO FeatReqPointOfReturn.
- 1-3-96 ENDIF.
- 1-3-97 *FC: Execute the “HLR MWN Demand Pip Tone Temporary De-Activation” task (see 5.13.3).
- 1-3-98 IF the PointOfReturn is indicated:
 - 1-3-98-1 GOTO FeatReqPointOfReturn.
- 1-3-99 ENDIF.
- 1-3-100 *FC: Execute the “HLR MWN Demand Alert Pip Tone Activation” task (see 5.13.4).
- 1-3-101 IF the PointOfReturn is indicated:
 - 1-3-101-1 GOTO FeatReqPointOfReturn.
- 1-3-102 ENDIF.
- 1-3-103 *FC: Execute the “HLR MWN Demand Alert Pip Tone De-Activation” task (see 5.13.5).
- 1-3-104 IF the PointOfReturn is indicated:
 - 1-3-104-1 GOTO FeatReqPointOfReturn.
- 1-3-105 ENDIF.
- 1-3-106 *FC: Execute the “HLR MAH Demand Ordering Registration” task (see 5.14.1).
- 1-3-107 IF the PointOfReturn is indicated:
 - 1-3-107-1 GOTO FeatReqPointOfReturn.
- 1-3-108 ENDIF.
- 1-3-109 *FC: Execute the “HLR MAH Membership Activation” task (see 5.14.2).
- 1-3-110 IF the PointOfReturn is indicated:
 - 1-3-110-1 GOTO FeatReqPointOfReturn.
- 1-3-111 ENDIF.
- 1-3-112 *FC: Execute the “HLR MAH Membership De-Activation” task (see 5.14.3).
- 1-3-113 IF the PointOfReturn is indicated:
 - 1-3-113-1 GOTO FeatReqPointOfReturn.
- 1-3-114 ENDIF.
- 1-3-115 *FC: Execute the “HLR PCA Diversion Number Registration” task (see 5.15.1).
- 1-3-116 IF the PointOfReturn is indicated:
 - 1-3-116-1 GOTO FeatReqPointOfReturn.
- 1-3-117 ENDIF.
- 1-3-118 *FC: Execute the “HLR PCA Diversion Number De-Registration” task (see 5.15.2).
- 1-3-119 IF the PointOfReturn is indicated:
 - 1-3-119-1 GOTO FeatReqPointOfReturn.

1-3-120	ENDIF.	1
1-3-121	*FC: Execute the “HLR PCA Password Registration” task (see 5.15.3).	2
1-3-122	IF the PointOfReturn is indicated:	3
1-3-122-1	GOTO FeatReqPointOfReturn.	4
1-3-123	ENDIF.	5
1-3-124	*FC: Execute the “HLR PCA Password De-Registration” task (see 5.15.4).	6
1-3-125	IF the PointOfReturn is indicated:	7
1-3-125-1	GOTO FeatReqPointOfReturn.	8
1-3-126	ENDIF.	9
1-3-127	*FC: Execute the “HLR PCA Activation” task (see 5.15.5).	10
1-3-128	IF the PointOfReturn is indicated:	11
1-3-128-1	GOTO FeatReqPointOfReturn.	12
1-3-129	ENDIF.	13
1-3-130	*FC: Execute the “HLR PCA De-Activation” task (see 5.15.6).	14
1-3-131	IF the PointOfReturn is indicated:	15
1-3-131-1	GOTO FeatReqPointOfReturn.	16
1-3-132	ENDIF.	17
1-3-133	*FC: Execute the “HLR PL Language Registration” task (see 5.16.1).	18
1-3-134	IF the PointOfReturn is indicated:	19
1-3-134-1	GOTO FeatReqPointOfReturn.	20
1-3-135	ENDIF.	21
1-3-136	*FC: Execute the “HLR PACA Per Call Invocation” task (see 5.17.1).	22
1-3-137	IF the PointOfReturn is indicated:	23
1-3-137-1	GOTO FeatReqPointOfReturn.	24
1-3-138	ENDIF.	25
1-3-139	*FC: Execute the “HLR SCA Diversion Number Registration” task (see 5.19.1).	26
1-3-140	IF the PointOfReturn is indicated:	27
1-3-140-1	GOTO FeatReqPointOfReturn.	28
1-3-141	ENDIF.	29
1-3-142	*FC: Execute the “HLR SCA Diversion Number De-Registration” task (see 5.19.2).	30
1-3-143	IF the PointOfReturn is indicated:	31
1-3-143-1	GOTO FeatReqPointOfReturn.	32
1-3-144	ENDIF.	33
1-3-145	*FC: Execute the “HLR SCA Number Registration” task (see 5.19.3).	34
1-3-146	IF the PointOfReturn is indicated:	35
1-3-146-1	GOTO FeatReqPointOfReturn.	36
1-3-147	ENDIF.	37
1-3-148	*FC: Execute the “HLR SCA Number De-Registration” task (see 5.19.4).	38
1-3-149	IF the PointOfReturn is indicated:	39
1-3-149-1	GOTO FeatReqPointOfReturn.	40
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- 1-3-150 ENDIF.
- 1-3-151 *FC: Execute the “HLR SCA Activation” task (see 5.19.5).
- 1-3-152 IF the PointOfReturn is indicated:
 - 1-3-152-1 GOTO FeatReqPointOfReturn.
- 1-3-153 ENDIF.
- 1-3-154 *FC: Execute the “HLR SCA De-Activation” task (see 5.19.6).
- 1-3-155 IF the PointOfReturn is indicated:
 - 1-3-155-1 GOTO FeatReqPointOfReturn.
- 1-3-156 ENDIF.
- 1-3-157 *FC: Execute the “HLR SPINA Registration” task (see 5.20.1).
- 1-3-158 IF the PointOfReturn is indicated:
 - 1-3-158-1 GOTO FeatReqPointOfReturn.
- 1-3-159 ENDIF.
- 1-3-160 *FC: Execute the “HLR SPINA Activation” task (see 5.20.2).
- 1-3-161 IF the PointOfReturn is indicated:
 - 1-3-161-1 GOTO FeatReqPointOfReturn.
- 1-3-162 ENDIF.
- 1-3-163 *FC: Execute the “HLR SPINA De-Activation” task (see 5.20.3).
- 1-3-164 IF the PointOfReturn is indicated:
 - 1-3-164-1 GOTO FeatReqPointOfReturn.
- 1-3-165 ENDIF.
- 1-3-166 *FC: Execute the “HLR SPINI Registration” task (see 5.21.1).
- 1-3-167 IF the PointOfReturn is indicated:
 - 1-3-167-1 GOTO FeatReqPointOfReturn.
- 1-3-168 ENDIF.
- 1-3-169 *FC: Execute the “HLR VMR Voice Mailbox PIN Registration” task (see 5.23.1).
- 1-3-170 IF the PointOfReturn is indicated:
 - 1-3-170-1 GOTO FeatReqPointOfReturn.
- 1-3-171 ENDIF.
- 1-3-172 *FC: Execute the “HLR VMR Invocation” task (see 5.23.2).
- 1-3-173 IF the PointOfReturn is indicated:
 - 1-3-173-1 GOTO FeatReqPointOfReturn.
- 1-3-174 ENDIF.
- 1-3-175 DEFAULT (the Digits (Dialed) parameter does not contain a recognized feature code):
 - 1-3-175-1 Include the FeatureResult parameter set to *Unsuccessful* to indicate unsuccessful feature operation.
 - 1-3-175-2 IF the serving system is capable of re-translating the feature code digits:
 - 1-3-175-2-1 Include the Digits (Dialed) parameter set to the digits that remain to be translated.
 - 1-3-175-3 ENDIF.

- 1-3-175-4 Send a RETURN RESULT.
- 1-3-175-5 Exit this task.
- 1-3-176 ENDCASE.
- FeatReqPointOfReturn:**
- 1-3-a IF a TerminationList parameter is present:
- 1-3-a-1 IF at least one LocalTermination is present:
- 1-3-a-1-1 Execute the “HLR CNIP Terminating Call Invocation” task (see 5.8.1).
- 1-3-a-1-2 Execute the “HLR CNAP Terminating Call Invocation” task (see 5.X.1).
- 1-3-a-2 ENDIF.
- 1-3-a-3 IF at least one PSTNTermination or IntersystemTermination is present:
- 1-3-a-3-1 Execute the “HLR CNIP Redirecting Call Invocation” task (see 5.8.2).
- 1-3-a-4 ENDIF.
- 1-3-b ENDIF.
- 1-3-176 Send a RETURN RESULT.
- 1-3-177 IF the service profile information has changed:
- 1-3-177-1 Execute the “HLR Initiating a Qualification Directive” task (see 4.32.1).
- 1-3-178 ENDIF.
- 1-4 ELSE (the received digits do not contain ~~are not~~ a feature code):
- 1-4-1 Include the FeatureResult parameter set to *Unsuccessful* to indicate unsuccessful feature operation.
- 1-4-2 Send a RETURN RESULT.
- 1-5 ENDIF.
- 2 ELSE (the received message cannot be processed):
- 2-1 Send a RETURN ERROR with a proper Error Code value (see the following table).
- 3 ENDIF.
- 4 Exit this task.

4.28 LOCATION REQUEST

4.28.1 MSC Initiating a Location Request

(TIA/EIA-41.6-D, page 6-188)

When an MSC receives a call destined toward an MS and the received Directory Number (DN) is not a TLDN assigned by the MSC, it shall perform the following:

- 1 Include the MSCID (Originating) parameter set to the identity of the MSC.
- 2 Include the MSCIdentificationNumber parameter set to the identification number of the MSC.
- 3 Include the TerminationAccessType parameter set to the source of the request (e.g., PSTN, roamer port, private network trunk group).

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- 4 Include the BillingID (Originating) parameter set to the billing identifier for the call assigned by the current Originating MSC.
 - 5 Include the Digits (Dialed) parameter set to the dialed or called digits used to access a mobile subscriber. (This is the digits dialed after reaching a roamer port.)
 - 6 Include the SystemMyTypeCode parameter set to the manufacturer of the Originating MSC.
 - 7 Include the TransactionCapability parameter indicating the MSC's capability for this transaction.
 - 8 IF the network validated calling party number is known:
 - 8-1 Include the CallingPartyNumberDigits1 parameter.
 - 9 ENDIF.
 - 10 IF the user provided calling party number is known:
 - 10-1 Include the CallingPartyNumberDigits2 parameter.
 - 11 ENDIF.
 - 12 IF the calling party subaddress is known:
 - 12-1 Include the CallingPartySubaddress parameter.
 - 13 ENDIF.
 - 14 a IF the calling party name information is known:
 - 15 a-1 Include the CallingPartyNumberName parameter.
 - 16 b ENDIF.
 - 17 IF the message is to be launched on an SS7 network:
 - 18-1 IF the MSC is the home MSC for the indicated directory number:
 - 19-1-1 Include the PC_SSN parameter with the Type set to *Home MSC* and the PC and SSN fields set to the MSC's point code and subsystem number.
 - 20-2 ELSE:
 - 21-2-1 Include the PC_SSN parameter with the Type set to *Originating MSC* and the PC and SSN fields set to the MSC's point code and subsystem number.
 - 22-3 ENDIF.
 - 23-2 ENDIF.
 - 24 IF the received call was redirected (before arrival to the Originating MSC):
 - 25-1 IF the redirecting number is known:
 - 26-1-1 Include the RedirectingNumberDigits parameter.
 - 27-2 ENDIF.
 - 28-3 IF the redirecting subaddress is known:
 - 29-3-1 Include the RedirectingSubaddress parameter.
 - 30-4 ENDIF.
 - 31-5 IF the redirecting name information is known:
 - 32-5-1 Include the RedirectingPartyName parameter.
 - 33-6 ENDIF.
 - 34-7 ENDIF.
 - 35 Optionally provide call progress tone or announcement to the caller.
 - 36 Send a LocationRequest INVOKE to the indicated MS's HLR.
 - 37 Start the Location Request Timer (LRT).

21	WAIT for a Location Request response:	1
22	WHEN a RETURN RESULT is received:	2
		3
22-1	Stop timer (LRT).	4
22-2	IF the message can be processed:	5
		6
24-2-1	IF the incoming call is still connected:	7
22-2-1	IF the incoming call is still connected:	8
		9
22-2-1-1	IF the OneTimeFeatureIndicator parameter is received:	10
22-2-1-1-1	Store the OneTimeFeatureIndicator parameter to modify subsequent call processing actions for this call.	11
		12
22-2-1-2	ENDIF.	13
		14
22-2-1-3	IF the AccessDeniedReason parameter is received:	15
22-2-1-3-1	IF the AccessDeniedReason parameter can be acted upon:	16
22-2-1-3-1-1	IF the AnnouncementList parameter is received:	17
22-2-1-3-1-1-1	Execute the “Play All Announcements in the AnnouncementList” task (see 3.2.5).	18
		19
22-2-1-3-1-1-2	Optionally provide the treatment indicated in the AccessDeniedReason parameter.	20
		21
22-2-1-3-1-2	ELSE:	22
		23
22-2-1-3-1-2-1	Provide the treatment indicated in the AccessDeniedReason parameter.	24
		25
22-2-1-3-1-3	Exit this task.	26
		27
22-2-1-3-1-4	ENDIF.	28
		29
22-2-1-3-2	ENDIF.	30
		31
22-2-1-4	ENDIF.	32
		33
22-2-1-5	IF the Digits (Destination) parameter is included:	34
22-2-1-5-1	IF the AnnouncementList parameter is received:	35
22-2-1-5-1-1	Execute the “Play All Announcements in the AnnouncementList” task (see 3.2.5).	36
		37
22-2-1-5-2	ELSE:	38
		39
22-2-1-5-2-1	Optionally provide call progress tones or announcements to the calling party.	40
		41
22-2-1-5-3	ENDIF.	42
		43
22-2-1-5-4	Execute the “MSC Route the Call Leg Externally” task (see 3.3.8).	44
		45
22-2-1-6	ELSEIF the TerminationList parameter is included:	46
22-2-1-6-1	IF the AnnouncementList parameter is received:	47
22-2-1-6-1-1	Execute the “Play All Announcements in the AnnouncementList” task (see 3.2.5).	48
		49
22-2-1-6-2	ELSE:	50
		51
22-2-1-6-2-1	Optionally provide call progress tones or announcements to the calling party.	52
		53
22-2-1-6-3	ENDIF.	54
		55
22-2-1-6-4	Execute the “MSC Routing Points of Return“ task (see 3.2.6).	56
		57
22-2-1-7	ELSEIF the received MSCID parameter is the same as this MSC’s ID:	58
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22-2-1-7-1      IF the AnnouncementList parameter is received:
22-2-1-7-1-1    Execute the "Play All Announcements in the
                  AnnouncementList" task (see 3.2.5).
22-2-1-7-2      ELSE:
22-2-1-7-2-1    Optionally provide call progress tones or announcements to
                  the calling party.
22-2-1-7-3      ENDIF.
22-2-1-7-4      Execute the "Authorize MS Termination Attempt" task for the
                  MS identified by the received MobileIdentificationNumber
                  parameter (see 3.3.4).
22-2-1-8        ELSE (There is insufficient information to route the call.):
22-2-1-8-1      Execute "Local Recovery Procedures" task (see 3.5.1).
22-2-1-9        ENDIF.
22-2-2          ELSE (the call is disconnected):
22-2-2-1        Execute "Local Recovery Procedures" task (see 3.5.1).
22-2-2-2        Exit this task.
22-2-3          ENDIF.
22-3            ELSE (the message cannot be processed):
22-3-1          Execute "Local Recovery Procedures" task (see 3.5.1).
22-3-2          Exit this task.
22-4            ENDIF.
23  WHEN a RemoteUserInteractionDirective INVOKE is received:
23-1            Stop timer (LRT).
23-2            Execute the "MSC Remote User Interaction" task (see 4.39.2).
23-3            Start the Location Request Timer (LRT).
23-4            Remain in this state (to get further routing instructions).
24  WHEN the incoming call disconnects:
24-1            Remain in this state (to handle possible call abandons).
25  WHEN a RETURN ERROR or REJECT is received:
25-1            Stop timer (LRT).
25-2            Execute "Local Recovery Procedures" task (see 3.5.1).
26  WHEN timer (LRT) expires:
26-1            Execute "Local Recovery Procedures" task (see 3.5.1).
27  ENDWAIT.
28  Exit this task.
    
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4.28.2 HLR Receiving LocationRequest INVOKE

(TIA/EIA-41.6-D, page 6-190)

When an HLR receives a LocationRequest INVOKE, it shall perform the following:¹

- 1 IF the received message can be processed:
 - 1-1 (Execute feature incoming call tasks to determine the feature processing and PointOfReturn.)
 - 1-2 IF the CallingPartyNumberDigits1 parameter was received:
 - 1-2-1 IF the received Digits (Dialed) equal the CallingPartyNumberDigits1 (an MS dialed its own directory number):
 - 1-2-1-1 CASE revertive treatment OF:
 - 1-2-1-2 VMR:
 - 1-2-1-2-1 Execute “HLR VMR Revertive Call Invocation” task (see 5.23.3).
 - 1-2-1-3 FA:
 - 1-2-1-3-1 Execute “HLR FA Revertive Call Invocation” task (see 5.12.4).
 - 1-2-1-4 MAH:
 - 1-2-1-4-1 Execute “HLR MAH Revertive Call Invocation” task (see 5.14.5).
 - 1-2-1-5 DEFAULT:
 - 1-2-1-5-1 Include the AnnouncementCode parameter within the AnnouncementList set to an accessed denied announcement.
 - 1-2-1-5-2 Set the PointOfReturn to ToneTermination.
 - 1-2-1-6 ENDCASE.
 - 1-2-1-7 Send a RETURN RESULT to the requesting MSC.
 - 1-2-1-8 Exit this task.
 - 1-2-2 ENDIF.
 - 1-3 ENDIF.
 - 1-4 Set the called or dialed party equal to the received Digits (Dialed) parameter.
 - 1-5 Execute the “HLR FA Incoming Call Invocation” task (see 5.12.3).
 - 1-6 IF the PointOfReturn is indicated:
 - 1-6-1 GOTO LocReqPointOfReturn.
 - 1-7 ENDIF.
 - 1-8 Execute the “HLR MAH Incoming Call Invocation” task (see 5.14.4).
 - 1-9 IF the PointOfReturn is indicated:
 - 1-9-1 GOTO LocReqPointOfReturn.
 - 1-10 ENDIF.
 - (At this point it can be assumed that a mobile directory number was dialed.)
 - 1-11 Execute the “HLR CFU Incoming Call Invocation” task (see 5.5.5).
 - 1-12 IF the PointOfReturn is indicated:
 - 1-12-1 GOTO LocReqPointOfReturn.

¹Note that the feature interaction is per TIA/EIA-664 ~~is 53~~ and may be different in actual implementations.

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- 1-13 ENDIF.
- 1-14 Execute the “HLR SCA Incoming Call Invocation” task (see 5.19.7).
- 1-15 IF the PointOfReturn is indicated:
 - 1-15-1 IF the PointOfReturn is *Accepted*:
 - 1-15-1-1 GOTO Call Accepted.
 - 1-15-2 ELSE:
 - 1-15-2-1 GOTO LocReqPointOfReturn.
 - 1-15-3 ENDIF.
- 1-16 ENDIF.
- 1-17 Execute the “HLR PCA Incoming Call Invocation” task (see 5.15.7).
- 1-18 IF the PointOfReturn is indicated:
 - 1-18-1 IF the PointOfReturn is *Accepted*:
 - 1-18-1-1 GOTO Call Accepted.
 - 1-18-2 ELSE:
 - 1-18-2-1 GOTO LocReqPointOfReturn.
 - 1-18-3 ENDIF.
- 1-19 ENDIF.
- Call Accepted:**
- 1-20 Execute the “HLR CFNA Incoming Call Invocation” task (see 5.4.5).
- 1-21 IF the PointOfReturn is indicated:
 - 1-21-1 GOTO LocReqPointOfReturn.
- 1-22 ENDIF.
- 1-23 Execute the “HLR CFD Incoming Call Invocation” task (see 5.3.5).
- 1-24 IF the PointOfReturn is indicated:
 - 1-24-1 GOTO LocReqPointOfReturn.
- 1-25 ENDIF.
- 1-26 Execute the “HLR DND Incoming Call Invocation” task (see 5.11.3).
- 1-27 IF the PointOfReturn is indicated:
 - 1-27-1 GOTO LocReqPointOfReturn.
- 1-28 ENDIF.
- (HLR-based features are complete at this point.)
- 1-29 IF termination to the MS is authorized:
 - 1-29-1 Execute the “HLR CD Incoming Call Invocation” task (see 5.1.3).
 - 1-29-2 IF the PointOfReturn is not indicated:
 - 1-29-2-1 (This is the default treatment for LocationRequests.)
 - 1-29-2-2 Include the AnnouncementCode parameter within the AnnouncementList parameter set to Reorder or other appropriate announcement.
 - 1-29-2-3 Set the PointOfReturn to *ToneTermination* (this is the default treatment).
 - 1-29-3 ENDIF.
- 1-30 ELSE (termination to the MS is not authorized):

- 1-30-1 Include the `AnnouncementCode` parameter in the `AnnouncementList` parameter set to an appropriate announcement. 1
2
- 1-30-2 Set the `PointOfReturn` to *ToneTermination*. 3
4
- 1-31 ENDIF. 5
6
- LocReqPointOfReturn** (parameters may be included already and the `PointOfReturn` should be selected by the feature processing tasks): 7
8
- 1-32 CASE `PointOfReturn` OF: 9
- 1-33 *ToneTermination*: 10
11
- 1-33-1 Include the `AccessDeniedReason` parameter set to the proper value (see the following table). 12
13
- 1-33-2 Include the `MSCID` parameter set to the identity of the Originating MSC. 14
15
- 1-34 *LocalTermination*: 16
- 1-34-1 Include the `MSCID` parameter set to the identity of the Serving MSC. 17
- 1-34-2 Execute the “HLR CNIP Terminating Call Invocation” task (see 5.8.1). 18
19
- 1-34-a Execute the “HLR CNAP Terminating Call Invocation” task (see 5.X.1). 20
- 1-34-3 IF the a preferred interexchange carrier is applicable: 21
22
- 1-34-3-1 Include the `Digits (Carrier)` parameter set to the MS’s preferred interexchange carrier. 23
24
- 1-34-4 ENDIF. 25
26
- 1-35 *IntersystemTermination*: 27
- 1-35-1 Include the `MSCID` parameter set to the identity of the Serving MSC. 28
- 1-35-2 IF the `PC_SSN` of the Serving MSC is known: 29
- 1-35-2-1 Include the `PC_SSN` parameter as received. 30
31
- 1-35-3 ENDIF. 32
33
- 1-35-4 Execute the “HLR CNIP Redirecting Call Invocation” task (see 5.8.2). 34
- 1-35-5 IF the a preferred interexchange carrier is applicable: 35
36
- 1-35-5-1 Include the `Digits (Carrier)` parameter set to the MS’s preferred interexchange carrier. 37
38
- 1-35-6 ENDIF. 39
40
- 1-36 *PSTNTermination*: 41
- 1-36-1 Include the `MSCID` parameter set to the identity of the Originating MSC. 42
- 1-36-2 IF selection of interexchange carrier is applicable: 43
- 1-36-2-1 Include the `Digits (Carrier)` parameter set to the MS’s preferred interexchange carrier. 44
45
46
- 1-36-3 ENDIF. 47
48
- 1-36-4 Execute the “HLR CNIP Redirecting Call Invocation” task (see 5.8.2). 49
- 1-36-5 IF the a preferred interexchange carrier is applicable: 50
51
- 1-36-5-1 Include the `Digits (Carrier)` parameter set to the MS’s preferred interexchange carrier. 52
53
- 1-36-6 ENDIF. 54
- 1-37 *MultipleTermination*: 55
- 1-37-1 IF at least one of the routes on the list is for a `LocalTermination`: 56
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- 1-37-1-1 Execute the “HLR CNIP Terminating Call Invocation” task (see 5.8.1).
- 1-37-1-2 Execute the “HLR CNAP Terminating Call Invocation” task (see 5.X.1).
- 1-37-2 ENDIF.
- 1-37-3 IF at least one of the routes on the list is for a *IntersystemTermination* or a *PSTNTermination*:
- 1-37-3-1 Execute the “HLR CNIP Redirecting Call Invocation” task (see 5.8.2).
- 1-37-4 ENDIF.
- 1-37-5 IF the preferred interexchange carrier is applicable:
- 1-37-5-1 Include the Digits (Carrier) parameter set to the MS’s preferred interexchange carrier.
- 1-37-6 ENDIF.
- 1-38 *DEFAULT*:
- 1-38-1 Send a RETURN ERROR with Error Code *SystemFailure*.
- 1-38-2 Exit this task.
- 1-39 ENDCASE.
- 1-40 Send a RETURN RESULT to the requesting MSC.
- 2 ELSE (the received message cannot be processed):
- 2-1 Send a RETURN ERROR with a proper Error Code value (see the following table) to the requesting MSC.
- 3 ENDIF.
- 4 Exit this task.

4.31 ORIGINATION REQUEST

4.31.1 MSC Initiating an Origination Request

(TIA/EIA-41.6-D, page 6-201)

When the MSC determines that the HLR must perform digit analysis (for other than a feature code), it shall perform the following:

- 1 Include the BillingID (Originating) parameter set to the billing identifier for the call assigned by the current Originating MSC.
- 2 Include the Digits (Dialed) parameter set to the digits received from the MS.
- 3 Include the ElectronicSerialNumber parameter set to identify the originating MS.
- 4 Include the MobileIdentificationNumber parameter set to identify the originating MS.
- 5 Include the MSCID parameter set to the identity of the Originating MSC.
- 6 Include the OriginationTriggers parameter set to identify the triggering event.
- 7 Include the TransactionCapability parameter set to identify the current capabilities.
- a IF the calling party name information is known:
- a-1 Include the CallingPartyName parameter.
- b ENDIF.

8	Send <u>an</u> a-OriginationRequest INVOKE to the MS's associated HLR.	1
9	Start the Origination Request Timer (ORT).	2
10	WAIT for Origination Request response:	3
11	WHEN a RETURN RESULT is received:	4
11-1	Stop timer (ORT).	5
11-2	IF the message can be processed:	6
11-2-1	IF the incoming call is still connected:	7
11-2-1-1	IF the AnnouncementList parameter is received:	8
11-2-1-1-1	Execute the "Play All Announcements in the AnnouncementList" task (see 3.2.5).	9
11-2-1-2	ENDIF.	10
11-2-1-3	IF the AccessDeniedReason parameter is received and it can be acted upon:	11
11-2-1-3-1	IF AnnouncementList parameter is not received:	12
11-2-1-3-1-1	Apply the treatment appropriate to the returned AccessDeniedReason value.	13
11-2-1-3-1-2	Return to the calling task.	14
11-2-1-3-2	ENDIF.	15
11-2-1-4	ELSEIF no TerminationList parameter or ActionCode parameter is received (an error condition?):	16
11-2-1-4-1	Execute the "Apply Access Denial Treatment" task (see 3.4.5).	17
11-2-1-4-2	Return to the calling task.	18
11-2-1-5	ENDIF.	19
11-2-1-6	IF the TerminationList parameter is received:	20
11-2-1-6-1	Execute the "MSC Routing Points Of Return" task (see 3.2.6).	21
11-2-1-7	ENDIF.	22
11-2-1-8	IF the ActionCode parameter is received:	23
11-2-1-8-1	Execute the "MSC ActionCode Processing" task (see 3.2.9).	24
11-2-1-9	ENDIF.	25
11-2-2	ENDIF.	26
11-3	ELSE (the message cannot be processed):	27
11-3-1	Execute "Local Recovery Procedures" task (see 3.5.1).	28
11-4	ENDIF.	29
12	WHEN a RemoteUserInteractionDirective INVOKE is received:	30
12-1	Stop timer (ORT).	31
12-2	Execute the "MSC Remote User Interaction" task (see 4.39.2).	32
12-3	Start the Origination Request Timer (ORT).	33
12-4	Remain in this state.	34
13	WHEN the MS disconnects:	35
13-1	Remain in this state (to handle possible call abandons).	36
14	WHEN a RETURN ERROR or REJECT is received:	37
14-1	Stop timer (ORT).	38
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- 14-2 Execute “Local Recovery Procedures” task (see 3.5.1).
- 14-3 Provide an unsuccessful indication to the MS.
- 15 WHEN timer (ORT) expires:
 - 15-1 Execute “Local Recovery Procedures” task (see 3.5.1).
 - 15-2 Provide an unsuccessful indication to the MS.
- 16 ENDWAIT.
- 17 Return to the calling task.

4.31.2 HLR Receiving an OriginationRequest INVOKE

(TIA/EIA-41.6-D, page 6-202)

When an HLR receives an a-OriginationRequest INVOKE, it shall perform the following:

- 1 IF the received message can be processed:
 - 1-1 Execute the “HLR Analyze MS Dialed Number” task (see 3.2.4) to set the PointOfReturn.
 - 1-2 IF the PointOfReturn was not the *ToneTermination*:
 - 1-2-1 Execute the “HLR SPINI Originating Call Invocation task (see 5.21.2).
 - 1-2-2 IF an AccessDeniedReason parameter is included:
 - 1-2-2-1 Send a RETURN RESULT.
 - 1-2-2-2 Exit this task.
 - 1-2-3 ENDIF.
 - 1-3 ENDIF.
 - 1-4 Relay the AnnouncementList parameter.
 - 1-5 CASE PointOfReturn OF:
 - 1-6 *ToneTermination*:
 - 1-6-1 Include the AccessDeniedReason parameter set to the proper reason value (see the following table).
 - 1-6-2 Include the MSCID parameter set to the identity of the Originating MSC.
 - 1-7 *PSTNTermination*:
 - 1-7-1 GOTO OrReqMultTerm.
 - 1-8 *LocalTermination*:
 - 1-8-1 GOTO OrReqMultTerm.
 - 1-9 *IntersystemTermination*:
 - 1-9-1 GOTO OrReqMultTerm.
 - 1-10 *MultipleTermination*:
 - 1-10-2 IF at least one of the routes on the list is for a *LocalTermination*:
 - 1-10-2-1 Execute the “HLR CNIP Terminating Call Invocation” task (see 5.8.1).
 - 1-10-2-2 Execute the “HLR CNAP Terminating Call Invocation” task (see 5.X.1).
 - 1-10-3 ENDIF.

OrReqMultTerm:

- 1-10-4 IF at least one of the routes on the list is for a *IntersystemTermination* or a *PSTNTermination*: 1
- 1-10-4-1 Execute the “HLR CNIP Redirecting Call Invocation” task (see 5.8.2). 2
- 1-10-5 ENDIF. 3
- 1-10-6 FOR all desired routes in list: 4
- 1-10-6-1 CASE type of route desired OF: 5
- 1-10-6-2 *LocalTermination*: 6
- 1-10-6-2-1 Include parameters for a local termination as determined by the 7
feature. 8
- 1-10-6-3 *IntersystemTermination*: 9
- 1-10-6-3-1 Execute the “HLR Initiating a Routing Request” task (see 4.41.1) 10
to set the PointOfReturn. 11
- 1-10-6-3-2 Include parameters for an intersystem termination as determined 12
by the feature. 13
- 1-10-6-4 *PSTNTermination* 14
- 1-10-6-4-1 Include parameters for a PSTN termination as determined by the 15
feature. 16
- 1-10-6-5 ENDCASE. 17
- 1-10-6-6 Include termination in TerminationList. 18
- 1-10-7 ENDFOR. 19
- 1-11 *DEFAULT*: 20
- 1-11-1 Send a RETURN ERROR with Error Code *SystemFailure*. 21
- 1-11-2 Exit this task. 22
- 1-12 ENDCASE. 23
- 1-13 Send a RETURN RESULT to the requesting MSC. 24
- 2 ELSE (the received message cannot be processed): 25
- 2-1 Send a RETURN ERROR with a proper Error Code value (see the following 26
table) to the requesting MSC. 27
- 3 ENDIF. 28
- 4 Exit this task. 29

4.41 ROUTING REQUEST 30

4.41.1 HLR Initiating a Routing Request 31

(TIA/EIA-41.6-D, page 6-250) 32

When an HLR requires a temporary routing address to a termination, such as, an MS, a 33
mail box on a voice mail system, an interaction dialog, or other voice resource, it shall 34
perform the following (termination specific parameter should already be included): 35

- 1 Relay the received BillingID parameter to identify the call on the Originating MSC. 36
- 2 Include the called MobileIdentificationNumber parameter set to identify the called 37
(or affected) MS. 38
- 3 Include the called ElectronicSerialNumber parameter set to identify the called (or 39
affected) MS. 40

1 4 Relay the received MSCID parameter to identify the Originating MSC.
2
3 5 Relay the received SystemMyTypeCode parameter to identify the manufacturer of
4 the Originating MSC.
5 6 IF the PC_SSN parameter is received:
6 6-1 Relay the received PC_SSN parameter to address the Originating MSC.
7
8 7 ENDIF.
9 8 IF the MSCIdentificationNumber parameter is received:
10 8-1 Relay the received MSCIdentificationNumber parameter to address the
11 Originating MSC.
12
13 9 ENDIF.
14 10 IF the call is to a mobile directory number that is not the
15 MobileIdentificationNumber:
16 10-1 Include MobileDirectoryNumber parameter.
17
18 11 ENDIF.
19 12 IF subscriber services are modified for this call:
20 12-1 Include OneTimeFeatureIndicator parameter set for this particular call.
21
22 13 ENDIF.
23 14 Include SenderIdentificationNumber parameter set to the HLR's identification
24 number.
25 15 Execute the "HLR CNIP Terminating Call Invocation" task (see 5.8.1).
26
27 a Execute the "HLR CNAP Terminating Call Invocation" task (see 5.X.1).
28
29 16 Send a RoutingRequest INVOKE to the VLR (or other system) with which the MS
30 is currently registered.
31
32 17 Start the Routing Request Timer (RRT).
33 18 WAIT for a Routing Request response.
34 19 WHEN a RETURN RESULT is received:
35 19-1 Stop timer (RRT).
36 19-2 IF the message cannot be processed:
37 19-2-1 Execute "Local Recovery Procedures" task (see 3.5.1).
38 19-2-2 Include the AccessDeniedReason parameter set to *Termination Denied*.
39 19-3 ENDIF.
40
41 20 WHEN a RETURN ERROR or REJECT is received:
42 20-1 Stop timer (RRT).
43 20-2 Execute "Local Recovery Procedures" task (see 3.5.1).
44 20-3 Include the AccessDeniedReason parameter set to *Termination Denied*.
45 20-4 IF the Error Code indicates *UnrecognizedMIN* OR IF the Error Code indicates
46 *OperationNotSupported*:
47 20-4-1 Clear the HLR's pointer to the VLR serving the MS.
48 20-5 ENDIF.
49 21 WHEN timer (RRT) expires:
50 21-1 Execute "Local Recovery Procedures" task (see 3.5.1).
51 21-2 Include the AccessDeniedReason parameter set to *Termination Denied*.
52
53 22 ENDWAIT.
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23 Return to the calling task.

4.41.3 MSC Receiving RoutingRequest INVOKE

(TIA/EIA-41.6-D, page 6-254)

When an MSC receives a RoutingRequest INVOKE, it shall perform the following:

- 1 IF the received message can be processed:
 - 1-1 IF the TerminationTreatment parameter is received:
 - 1-1-1 Set the termination treatment to the received TerminationTreatment parameter.
 - 1-2 ELSE:
 - 1-2-1 Set the termination treatment to *MS termination* (the default treatment).
 - 1-3 ENDIF.
 - 1-4 IF the termination treatment indicates an *MS termination*:
 - 1-4-1 IF the MS is inactive:
 - 1-4-1-1 Include the AccessDeniedReason parameter set to *Inactive*.
 - 1-4-1-2 Include the MSCID parameter set to the identity of the MSC.
 - 1-4-1-3 IF a TLDN should be returned:
 - 1-4-1-3-1 (Fall through to select a TLDN.)
 - 1-4-1-4 ELSE:
 - 1-4-1-4-1 Send a RETURN RESULT to the requesting VLR.
 - 1-4-1-4-2 Exit this task.
 - 1-4-1-5 ENDIF.
 - 1-4-2 ELSEIF the MS is not available:
 - 1-4-2-1 Include the AccessDeniedReason parameter set to *Unavailable*.
 - 1-4-2-2 Include the MSCID parameter set to the identity of the MSC.
 - 1-4-2-3 IF a TLDN should be returned:
 - 1-4-2-3-1 (Fall through to select a TLDN.)
 - 1-4-2-4 ELSE:
 - 1-4-2-4-1 Send a RETURN RESULT to the requesting VLR.
 - 1-4-2-4-2 Exit this task.
 - 1-4-2-5 ENDIF.
 - 1-4-3 ENDIF.
 - 1-4-4 IF the MSC does not have the MS's service profile information.
 - 1-4-4-1 Optionally execute the "MSC Initiating a Qualification Request" task (see 4.33.1).
 - 1-4-5 ENDIF.
 - 1-4-6 IF the MS is not *busy*:¹

¹MS busy or call pending can be defined as either a) actual calls in the MSC or b) a combination of actual calls in the MSC or TLDNs assigned. Choice b) uses less of the call redirection procedures and thereby routes calls faster. Choice a) better handles abandoned calls.

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1-4-6-1      IF pre-routing call paging is to be performed:
1-4-6-1-1    Execute the "Page an MS Procedure" (see 3.3.3).
1-4-6-1-2    IF the paging was successful on a bordering system.
1-4-6-1-2-1  Relay all parameters received via the InterSystemPage
              RETURN RESULT or UnsolicitedResponse INVOKE.
1-4-6-1-2-2  Send a RETURN RESULT to the requesting VLR.
1-4-6-1-2-3  Exit this task.
1-4-6-1-3    ELSEIF the paging was locally successful;
1-4-6-1-3-1  (Fall through to select a TLDN.)
1-4-6-1-4    ELSE (the paging was unsuccessful):
1-4-6-1-4-1  Relay the indicated AccessDeniedReason parameter.
1-4-6-1-4-2  IF a TLDN should be returned:
1-4-6-1-4-2-1 (Fall through to select a TLDN.)
1-4-6-1-4-3  ELSE:
1-4-6-1-4-3-1 Send a RETURN RESULT to the requesting VLR.
1-4-6-1-4-3-2 Exit this task.
1-4-6-1-4-4  ENDIF.
1-4-6-1-5    ENDIF.
1-4-6-2      ELSE (no pre-routing paging):
1-4-6-2-1    (Fall through to select a TLDN.)
1-4-6-3      ENDIF.
1-4-7        ELSE (the MS is busy)1:
1-4-7-1      IF there is another call pending (for the Call Waiting feature) or the
              call is not in a two-way talking state (e.g., PACA requested, alerting,
              awaiting answer, awaiting page response, CC invoked, 3WC invoked,
              CT invoked):
1-4-7-1-1    Include the AccessDeniedReason parameter set to Busy.
1-4-7-1-2    Include the MSCID parameter set to the identity of the MSC.
1-4-7-1-3    IF a TLDN should be returned:
1-4-7-1-3-1  (Fall through to select a TLDN.)
1-4-7-1-4    ELSE:
1-4-7-1-4-1  Send a RETURN RESULT to the requesting VLR.
1-4-7-1-4-2  Exit this task.
1-4-7-1-5    ENDIF.
1-4-7-2      ELSE (Call Waiting is possible):
1-4-7-2-1    IF the OneTimeFeatureIndicator is received for the incoming call:
1-4-7-2-1-1  IF the Call Waiting for Incoming Call of the
              OneTimeFeatureIndicator is set to ignore:
    
```

¹MS busy or call pending can be defined as either a) actual calls in the MSC or b) a combination of actual calls in the MSC or TLDNs assigned. Choice b) uses less of the call redirection procedures and thereby routes calls faster. Choice a) better handles abandoned calls.

1-4-7-2-1-1-1	Set the incoming call waiting type equal to <i>Normal CW</i> .	1
1-4-7-2-1-2	ELSE:	2
1-4-7-2-1-2-1	Set the incoming call waiting type to the Call Waiting for Incoming Call field of the received OneTimeFeatureIndicator.	3
1-4-7-2-1-3	ENDIF.	4
1-4-7-2-2	ELSE (the OneTimeFeatureIndicator parameter was not received):	5
1-4-7-2-2-1	Set the incoming call waiting type equal to <i>Normal CW</i> .	6
1-4-7-2-3	ENDIF.	7
1-4-7-2-4	CASE incoming call waiting type OF:	8
1-4-7-2-5	<i>No CW</i> :	9
1-4-7-2-5-1	Include the AccessDeniedReason parameter set to <i>Busy</i> .	10
1-4-7-2-5-2	Include the MSCID parameter set to the identity of the MSC.	11
1-4-7-2-5-3	IF a TLDN should be returned:	12
1-4-7-2-5-3-1	(Fall through to select a TLDN.)	13
1-4-7-2-5-4	ELSE:	14
1-4-7-2-5-4-1	Send a RETURN RESULT to the requesting VLR.	15
1-4-7-2-5-4-2	Exit this task.	16
1-4-7-2-5-5	ENDIF.	17
1-4-7-2-5-6	Return to the calling task with a <i>Busy</i> indication.	18
1-4-7-2-5-6	Return to the calling task with a <i>Busy</i> indication.	19
1-4-7-2-6	<i>Normal CW</i> :	20
1-4-7-2-6-1	IF the existing call has <i>Normal CW</i> :	21
1-4-7-2-6-1-1	IF the TerminationTreatment parameter is received:	22
1-4-7-2-6-1-1-1	Include the ConditionallyDeniedReason parameter set to <i>Waitable</i> .	23
1-4-7-2-6-1-2	ENDIF.	24
1-4-7-2-6-1-3	(Fall through to select a TLDN.)	25
1-4-7-2-6-2	ELSE:	26
1-4-7-2-6-2-1	Include the AccessDeniedReason parameter set to <i>Busy</i> .	27
1-4-7-2-6-2-2	Include the MSCID parameter set to the identity of the MSC.	28
1-4-7-2-6-2-3	IF a TLDN should be returned:	29
1-4-7-2-6-2-3-1	(Fall through to select a TLDN.)	30
1-4-7-2-6-2-4	ELSE:	31
1-4-7-2-6-2-4-1	Send a RETURN RESULT to the requesting VLR.	32
1-4-7-2-6-2-4-2	Exit this task.	33
1-4-7-2-6-2-5	ENDIF.	34
1-4-7-2-6-3	ENDIF.	35
1-4-7-2-7	<i>Priority CW</i> :	36
1-4-7-2-7-1	IF the existing call has Call Waiting field set to <i>Normal CW</i> or <i>Priority CW</i> :	37

1 1-4-7-2-7-1-1 IF the TerminationTreatment parameter is received (the
2 false sense of this test is also for backward compatibility):
3
4 1-4-7-2-7-1-1-1 Include the ConditionallyDeniedReason parameter
5 set to *Waitable*.
6 1-4-7-2-7-1-2 ENDIF.
7 1-4-7-2-7-1-3 (Fall through to select a TLDN.)
8
9 1-4-7-2-7-2 ELSE:
10 1-4-7-2-7-2-1 Include the AccessDeniedReason parameter set to *Busy*.
11 1-4-7-2-7-2-2 Include the MSCID parameter set to the identity of the
12 MSC.
13 1-4-7-2-7-2-3 IF a TLDN should be returned:
14 (Fall through to select a TLDN.)
15 1-4-7-2-7-2-3-1
16 1-4-7-2-7-2-4 ELSE:
17 1-4-7-2-7-2-4-1 Send a RETURN RESULT to the requesting VLR.
18 1-4-7-2-7-2-4-2 Exit this task.
19 1-4-7-2-7-2-5 ENDIF.
20 1-4-7-2-7-3 ENDIF.
21 1-4-7-2-8 ENDCASE.
22 1-4-7-3 ENDIF.
23 1-4-8 ENDIF.
24 1-5 ENDIF.
25
26 (TLDN is selected here.)
27
28 1-6 IF TLDN is available:
29
30 1-6-1 CASE termination treatment OF:
31
32 1-6-2 *MSTermination*:
33
34 1-6-2-1 Store the MobileIdentificationNumber parameter of the MS to page.
35 1-6-2-2 Store the ElectronicSerialNumber parameter of the MS to page.
36 1-6-2-3 IF the TerminationTriggers parameter is received:
37 1-6-2-3-1 Store the TerminationTriggers parameter.
38 1-6-2-4 ENDIF.
39 1-6-2-5 IF the LegInformation parameter is received:
40 1-6-2-5-1 Store the LegInformation parameter.
41 1-6-2-6 ENDIF.
42 1-6-2-7 IF the GroupInformation parameter is received:
43 1-6-2-7-1 Store the GroupInformation parameter.
44 1-6-2-8 ENDIF.
45 1-6-2-9 IF the MobileDirectoryNumber parameter is received:
46 1-6-2-9-1 Store the MobileDirectoryNumber parameter.
47 1-6-2-10 ENDIF.
48 1-6-2-11 IF the AlertCode parameter is received:
49 1-6-2-11-1 Store the AlertCode parameter.
50 1-6-2-12 ENDIF.
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1-6-2-13	Execute the “MSC Record the DMH Parameters” task (see3.3.7).	1
1-6-2-14	Assign a TLDN to the indicated MS.	2
1-6-3	<i>VoiceMailDelivery:</i>	3
1-6-3-1	IF the Digits (Destination) parameter is received:	4
1-6-3-1-1	Store the received Digits (Destination) parameter as the voice mail system identifier.	5
1-6-3-2	ELSE:	6
1-6-3-2-1	Store a default voice mail system identifier.	7
1-6-3-3	ENDIF.	8
1-6-3-4	IF the VoiceMailboxNumber parameter is received:	9
1-6-3-4-1	Store the VoiceMailboxNumber as the voice mail box number.	10
1-6-3-5	ELSE:	11
1-6-3-5-1	Store the MS’s MobileIdentificationNumber as the voice mail box number.	12
1-6-3-6	ENDIF.	13
1-6-3-7	IF the VoiceMailboxPIN parameter is received:	14
1-6-3-7-1	Store the VoiceMailboxPIN as the voice mail PIN.	15
1-6-3-8	ENDIF.	16
1-6-3-9	Assign a TLDN for the indicated voice mail delivery.	17
1-6-4	<i>VoiceMailRetrieval:</i>	18
1-6-4-1	IF the Digits (Destination) parameter is received:	19
1-6-4-1-1	Store the received Digits (Destination) parameter as the voice mail system identifier.	20
1-6-4-2	ELSE:	21
1-6-4-2-1	Store a default voice mail system identifier.	22
1-6-4-3	ENDIF.	23
1-6-4-4	IF the VoiceMailboxNumber parameter is received:	24
1-6-4-4-1	Store the VoiceMailboxNumber as the voice mail box number.	25
1-6-4-5	ELSE:	26
1-6-4-5-1	Store the MS’s MobileIdentificationNumber as the voice mail box number.	27
1-6-4-6	ENDIF.	28
1-6-4-7	IF the VoiceMailboxPIN parameter is received:	29
1-6-4-7-1	Store the VoiceMailboxPIN as the voice mail PIN.	30
1-6-4-8	ENDIF.	31
1-6-4-9	Assign a TLDN for the indicated voice mail retrieval.	32
1-6-5	<i>DialogTermination:</i>	33
1-6-5-1	IF a DestinationDigits parameter was received:	34
1-6-5-1-1	Store the received DestinationDigits parameter as the dialog identification.	35
1-6-5-1-2	Store the MobileIdentificationNumber and ElectronicSerialNumber for subsequent interactions.	36
1-6-5-1-3	Assign a TLDN for the indicated dialog.	37
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1-6-5-2      ELSE:
1-6-5-2-1    Send a RETURN ERROR with an Error Code MissingParameter.
1-6-5-3      ENDIF.
1-6-6        DEFAULT:
1-6-6-1      Send a RETURN ERROR with an Error Code
              UnrecognizedParameterValue.
1-6-7        ENDCASE.
1-6-8        Include the Digits (Destination) parameter set equal to the TLDN.
1-6-9        Assign a billing identifier to the TLDN.
1-6-10       Include the BillingID parameter set equal to the TLDN billing identifier.
1-6-11       IF a OneTimeFeatureIndicator parameter is received with received
              messages:
1-6-11-1     Store the parameter overriding the MS profile information.
1-6-12       ENDIF.
1-6-13       Store the received MSCID parameter as the Originating MSC identifier
              and information related to the indicated termination with the assigned
              TLDN.
1-6-14       IF the CallingPartyNumberString1 parameter is received:
1-6-14-1     Store the CallingPartyNumberString1 parameter to identify the calling
              party.
1-6-15       ENDIF.
1-6-16       IF the CallingPartyNumberString2 parameter is received:
1-6-16-1     Store the CallingPartyNumberString2 parameter to identify the calling
              party.
1-6-17       ENDIF.
1-6-18       IF the CallingPartySubaddress parameter is received:
1-6-18-1     Store the CallingPartySubaddress parameter to identify the calling
              party.
1-6-19       ENDIF.
1-6-20       IF the RedirectingNumberString parameter is received:
1-6-20-1     Store the RedirectingNumberString parameter to identify the calling
              party.
1-6-21       ENDIF.
1-6-22       IF the RedirectingSubaddress parameter is received:
1-6-22-1     Store the RedirectingSubaddress parameter to identify the calling
              party.
1-6-23       ENDIF.
1-6-a      IF the DisplayText parameter is received:
1-6-a-1    Store the DisplayText parameter for presentation of display text to the
              MS while alerting.
1-6-b      ENDIF.
1-6-24       IF the MSCIdentificationNumber parameter is received:
1-6-24-1     Store the MSCIdentificationNumber parameter to identify the calling
              party.

```

- 1-6-25 ENDIF. 1
- 1-6-26 Include the MSCID parameter set to the identity of the MSC. 2
- 1-6-27 Include the MSCIdentificationNumber parameter set to the MSC’s ID 3
information. 4
- 1-6-28 Include the PC_SSN parameter with the Type set to *Serving MSC* and the 5
PC and SSN fields set to the MSC’s point code and subsystem number. 6
- 1-6-29 Send a RETURN RESULT to the requesting VLR. 7
- 1-6-30 Execute the “Wait for TLDN Call” task (see 3.3.2). 8
- 1-7 ELSE (no TLDN is available): 9
- 1-7-1 Discard any included parameters. 10
- 1-7-2 Send a RETURN ERROR with Error Code *ResourceShortage* to the 11
requesting VLR. 12
- 1-7-3 Exit this task. 13
- 1-8 ENDIF. 14
- 2 ELSE (the received message cannot be processed): 15
- 2-1 Send a RETURN ERROR with a proper Error Code value (see the following 16
table) to the requesting VLR. 17
- 3 ENDIF. 18
- 4 Exit this task. 19

4.49 TRANSFER-TO-NUMBER REQUEST 20

4.49.1 MSC Initiating a Transfer-To-Number Request 21

(TIA/EIA-41.6-D, page 6-296) 22

When an MSC detects that it needs to request the transfer-to-number associated with an MS, it shall perform the following: 23

- 1 Relay the RedirectionReason parameter set by the calling task. 24
- a IF the network-provided calling party number is known: 25
- a-1 Include the CallingPartyNumberDigits1 parameter. 26
- b ENDIF. 27
- c IF the user-provided calling party number is known: 28
- c-1 Include the CallingPartyNumberDigits2 parameter. 29
- d ENDIF. 30
- e IF the calling party subaddress is known: 31
- e-1 Include the CallingPartySubaddress parameter. 32
- f ENDIF. 33
- k IF the calling party name information is known: 34
- k-1 Include the CallingPartyName parameter. 35
- l ENDIF. 36
- 2 ~~Include the CallingPartyNumberDigits1 parameter.~~ 37
- 3 ~~Include the CallingPartySubaddress parameter.~~ 38
- 4 Include the MS’s ElectronicSerialNumber parameter. 39

- 1 5 Include the MS's MobileIdentificationNumber parameter.
2
3 a Include the MSC's MSCID parameter.
4 6 Include the MSC's MSCIdentificationNumber parameter.
5
6 7 Include the MSC's SystemMyTypeCode parameter.
7 8 Include the TransactionCapability parameter set according to the capabilities of the
8 system and the current call state.
9 9 IF the MSC is the Originating MSC:
10
11 9-1 Include the Originating MSC's call's BillingID parameter to identify the call
12 for subsequent call redirection.
13 10 ELSEIF the MSC is the Serving MSC:
14 10-1 Include the Serving MSC's BillingID parameter to identify the call for
15 subsequent call redirection.
16
17 11 ENDIF.
18 12 IF the leg was established with a PilotBillingID parameter:
19 12-1 Include the PilotBillingID parameter set to the same value as received.
20
21 13 ENDIF.
22 14 Send a TransferToNumberRequest INVOKE to the MS's HLR.
23 15 Start the Transfer-To-Number Request Timer (TTNRT).
24 16 WAIT for a Transfer to Number Request response:
25 17 WHEN a RETURN RESULT is received:
26
27 17-1 Stop timer (TTNRT).
28 17-2 IF the message can be processed:
29 17-2-1 IF the AnnouncementList parameter is received:
30 17-2-1-1 Execute the "Play All Announcements in the AnnouncementList" task
31 (see 3.2.5).
32 17-2-2 ENDIF.
33 17-2-3 IF an ActionCode parameter is received:
34 17-2-3-1 Execute the "MSC ActionCode Processing" task (see 3.2.9).
35 17-2-4 ENDIF.
36 17-2-5 IF the AccessDeniedReason parameter is received:
37 17-2-5-1 IF AnnouncementList parameter was not received:
38 17-2-5-1-1 Apply the treatment appropriate to the returned
39 AccessDeniedReason value.
40 17-2-5-2 ENDIF.
41 17-2-5-3 Return to the calling task with a *successful* indication.
42 17-2-6 ENDIF.
43 17-2-7 IF the TerminationList parameter is received:
44 17-2-7-1 Execute the "MSC Routing Points Of Return" task (see 3.2.6).
45 17-2-7-2 Return to the calling task with a *successful* indication.
46 17-2-8 ELSEIF the Digits (Destination) parameter is received:
47 17-2-8-1 Release all extended facilities associated with the indicated call.
48 17-2-8-2 Execute the "MSC Route the Call Leg Externally" task (see 3.3.8).
49 17-2-8-3 Return to the calling task with a *successful* indication.
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17-2-9	ELSE:	1
17-2-9-1	Execute “Local Recovery Procedures” task (see 3.5.1).	2
17-2-9-2	Return to the calling task with an <i>unsuccessful</i> indication.	3
17-2-10	ENDIF.	4
17-3	ELSE (the message cannot be processed):	5
17-3-1	Execute “Local Recovery Procedures” task (see 3.5.1).	6
17-3-2	Return to the calling task with an <i>unsuccessful</i> indication.	7
17-4	ENDIF.	8
18	WHEN a RemoteUserInteractionDirective INVOKE is received:	9
18-1	Stop timer (TTNRT).	10
18-2	Execute the “MSC Remote User Interaction” task (see 4.39.2).	11
18-3	Start the Transfer-To-Number Timer (TTNRT).	12
18-4	Remain in this state.	13
19	WHEN the incoming call disconnects:	14
19-1	Remain in this state (to handle possible call abandons).	15
20	WHEN a RETURN ERROR or REJECT is received:	16
20-1	Stop timer (TTNRT).	17
20-2	Execute “Local Recovery Procedures” task (see 3.5.1).	18
20-3	Return to the calling task with an <i>unsuccessful</i> indication.	19
21	WHEN timer (RDRT) expires:	20
21-1	Execute “Local Recovery Procedures” task (see 3.5.1).	21
21-2	Return to the calling task with an <i>unsuccessful</i> indication.	22
22	ENDWAIT.	23

4.49.2 HLR Receiving TransferToNumberRequest INVOKE

(TIA/EIA-41.6-D, page 6-296)

When an HLR receives a TransferToNumberRequest INVOKE, it shall perform the following:

- 1 IF the received message can be processed:
 - 1-1 CASE RedirectionReason (to determine the feature processing and PointOfReturn) OF:
 - 1-2 *No Page Response* (This is the Page Failure PointOfDetection.):
 - 1-2-1 Execute the “HLR FA Unresponsive MS Invocation” task (see 5.12.8).
 - 1-2-2 IF the PointOfReturn is indicated:
 - 1-2-2-1 GOTO TraNumReqPointOfReturn.
 - 1-2-3 ENENDIF.
 - 1-2-4 Execute the “HLR MAH Unresponsive MS Invocation” task (see 5.14.9).
 - 1-2-5 IF the PointOfReturn is indicated:
 - 1-2-5-1 GOTO TraNumReqPointOfReturn.
 - 1-2-6 ENENDIF.
 - 1-2-7 Execute the “HLR CFNA Unresponsive MS Invocation” task (see 5.4.8).

1 1-2-8 IF the PointOfReturn is indicated:
2 1-2-8-1 GOTO TraNumReqPointOfReturn.
3
4 1-2-9 ENDIF.
5 1-2-10 Execute the “HLR CFD Unresponsive MS Invocation” task (see 5.3.8).
6
7 1-2-11 IF the PointOfReturn is indicated:
8 1-2-11-1 GOTO TraNumReqPointOfReturn.
9
10 1-2-12 ENDIF.
11 1-2-13 Include the AnnouncementCode parameter in the AnnouncementList
12 parameter set to Reorder or other appropriate announcement.
13
14 1-2-14 Relay the received AccessDeniedReason parameter.
15 1-2-15 Set PointOfReturn to *ToneTermination*.
16 1-3 *Busy* (This is the Busy Failure PointOfDetection.):
17
18 1-3-1 Execute the “HLR FA Busy MS Invocation” task (see 5.12.5).
19 1-3-2 IF the PointOfReturn is indicated:
20 1-3-2-1 GOTO TraNumReqPointOfReturn.
21
22 1-3-3 ENDIF.
23 1-3-4 Execute the “HLR MAH Busy MS Invocation” task (see 5.14.6).
24 1-3-5 IF the PointOfReturn is indicated:
25 1-3-5-1 GOTO TraNumReqPointOfReturn.
26
27 1-3-6 ENDIF.
28 1-3-7 Execute the “HLR CFB Busy MS Invocation” task (see 5.2.5).
29 1-3-8 IF the PointOfReturn is indicated:
30 1-3-8-1 GOTO TraNumReqPointOfReturn.
31
32 1-3-9 ENDIF.
33 1-3-10 Execute the “HLR CFD Busy MS Invocation” task (see 5.3.9).
34 1-3-11 IF the PointOfReturn is indicated:
35 1-3-11-1 GOTO TraNumReqPointOfReturn.
36
37 1-3-12 ENDIF.
38 1-3-13 Relay the received AccessDeniedReason parameter.
39 1-3-14 Set PointOfReturn to *ToneTermination*.
40 1-4 *No Answer* (This is the Answer Failure PointOfDetection.):
41
42 1-4-1 Execute the “HLR FA No Answer MS Invocation” task (see 5.12.9).
43 1-4-2 IF the PointOfReturn is indicated:
44 1-4-2-1 GOTO TraNumReqPointOfReturn.
45
46 1-4-3 ENDIF.
47 1-4-4 Execute the “HLR MAH No Answer MS Invocation” task (see 5.14.10).
48 1-4-5 IF the PointOfReturn is indicated:
49 1-4-5-1 GOTO TraNumReqPointOfReturn.
50
51 1-4-6 ENDIF.
52 1-4-7 Execute the “HLR CFNA No Answer MS Invocation” task (see 5.4.9).
53 1-4-8 IF the PointOfReturn is indicated:
54 1-4-8-1 GOTO TraNumReqPointOfReturn.
55
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1-4-9	ENDIF.	1
1-4-10	Execute the “HLR CFD No Answer MS Invocation” task (see 5.3.10).	2
1-4-11	IF the PointOfReturn is indicated:	3
1-4-11-1	GOTO TraNumReqPointOfReturn.	4
1-4-12	ENDIF.	5
1-4-13	Include the AnnouncementCode parameter in the AnnouncementList parameter set to Reorder or other appropriate announcement.	6
1-4-14	Set the PointOfReturn to <i>ToneTermination</i> (this is the default treatment).	7
1-5	<i>Unroutable</i> (This is the Unroutable PointOfDetection.):	8
1-5-1	Execute the “HLR FA Unroutable MS Invocation” task (see 5.12.10).	9
1-5-2	IF the PointOfReturn is indicated:	10
1-5-2-1	GOTO TraNumReqPointOfReturn.	11
1-5-3	ENDIF.	12
1-5-4	Execute the “HLR MAH Unroutable MS Invocation” task (see 5.14.11).	13
1-5-5	IF the PointOfReturn is indicated:	14
1-5-5-1	GOTO TraNumReqPointOfReturn.	15
1-5-6	ENDIF.	16
1-5-7	Execute the “HLR CFNA Unroutable MS Invocation” task (see 5.4.10).	17
1-5-8	IF the PointOfReturn is indicated:	18
1-5-8-1	GOTO TraNumReqPointOfReturn.	19
1-5-9	ENDIF.	20
1-5-10	Execute the “HLR CFD Unroutable MS Invocation” task (see 5.3.11).	21
1-5-11	IF the PointOfReturn is indicated:	22
1-5-11-1	GOTO TraNumReqPointOfReturn.	23
1-5-12	ENDIF.	24
1-5-13	Include the AnnouncementCode parameter in the AnnouncementList parameter set to Reorder or other appropriate announcement.	25
1-5-14	Set the PointOfReturn to <i>ToneTermination</i> (this is the default treatment).	26
1-6	<i>Unconditional</i> (This is the Unconditional Failure PointOfDetection.):	27
1-6-1	Execute the “HLR CFU Unconditional MS Invocation” task (see 5.5.6).	28
1-6-2	IF the PointOfReturn is indicated:	29
1-6-2-1	GOTO TraNumReqPointOfReturn.	30
1-6-3	ENDIF.	31
1-6-4	Include the AnnouncementCode parameter in the AnnouncementList parameter set to Reorder or other appropriate announcement.	32
1-6-5	Set the PointOfReturn to <i>ToneTermination</i> (this is the default treatment).	33
1-7	<i>DEFAULT:</i>	34
1-7-1	Include the AnnouncementCode parameter in the AnnouncementList parameter set to Reorder or other appropriate announcement.	35
1-7-2	Set the PointOfReturn to <i>ToneTermination</i> (this is the default treatment).	36
1-8	ENDCASE.	37
	TraNumReqPointOfReturn:	38
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- 1-9 Relay the AnnouncementList parameter.
- 1-10 CASE PointOfReturn OF:
- 1-11 *ToneTermination* PointOfReturn:
 - 1-11-1 Send a RETURN RESULT.
 - 1-11-2 Exit this task.
- 1-12 *PSTNTermination* PointOfReturn:
 - 1-12-1 Execute the “HLR CNIP Redirecting Call Invocation” task (see 5.8.2).
 - 1-12-2 Include other parameters for PSTN termination as determined by the feature.
 - 1-12-3 Send a RETURN RESULT.
- 1-13 *LocalTermination* PointOfReturn:
 - 1-13-1 GOTO TraNumReqMultTerm.
- 1-14 *IntersystemTermination* PointOfReturn:
 - 1-14-1 GOTO TraNumReqMultTerm.
- 1-15 *MultipleTermination* PointOfReturn:
 - TraNumReqMultTerm:**
 - 1-15-1 IF at least one of the routes on the list is for a *LocalTermination*:
 - 1-15-1-1 Execute the “HLR CNIP Terminating Call Invocation” task (see 5.8.1).
 - 1-15-1-2 Execute the “HLR CNAP Terminating Call Invocation” task (see 5.X.1).
 - 1-15-1 ENDIF.
 - 1-15-2+ IF at least one of the routes on the list is for an *IntersystemTermination* or a *PSTNTermination*:
 - 1-15-2-1 Execute the “HLR CNIP Redirecting Call Invocation” task (see 5.8.2).
 - 1-15-3 ENDIF.
 - 1-15-4+4 FOR all desired routes in list:
 - 1-15-4+4-1 CASE type of route desired OF:
 - 1-15-4+4-2 *LocalTermination*:
 - 1-15-4+4-2-1 Include parameters for local termination within the LocalTermination parameter as determined by the feature.
 - 1-15-4+4-2-2 Include the LocalTermination parameter within TerminationList parameter.
 - 1-15-4+4-3 *IntersystemTermination*:
 - 1-15-4+4-3-1 Include parameters for an intersystem termination within the IntersystemTermination parameter as determined by the feature.
 - 1-15-4+4-3-2 Include the IntersystemTermination parameter within TerminationList parameter.
 - 1-15-4+4-4 .i.*PSTNTermination*: TransferToNumberRequest;
 - 1-15-4+4-4-1 Include parameters for PSTN termination within the PSTNTermination parameter as determined by the feature.
 - 1-15-4+4-4-2 Include the PSTNTermination parameter within TerminationList parameter.
 - 1-15-4+4-5 ENDCASE.

- 1-15-~~5~~² ENDFOR.
- 1-15-~~6~~³ Send a RETURN RESULT.
- ~~1-15-2~~ ENDIF.
- 1-16 *DEFAULT:*
- 1-16-1 Send a RETURN ERROR with Error Code *FeatureInactive*.
- 1-17 ENDCASE.
- 2 ELSE:
- 2-1 Send a RETURN ERROR with a proper Error Code value (see the following table) to the requesting MSC.
- 3 ENDFIF.
- 4 Exit this task.

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5.1 CALL DELIVERY (CD)

5.1.3 HLR CD Incoming Call Invocation

(TIA/EIA-41.6-D, page 6-309)

When the HLR determines the need for CD incoming call routing, it shall perform the following tasks:

- 1 IF the addressed MS is at home or CD is active and the MS is roaming:
 - 1-1 IF the addressed MS is registered and active:
 - 1-1-1 (Load the parameters for the called MS and common parameters outside the TerminationList parameter.)
 - 1-1-2 Include the ElectronicSerialNumber to identify the called MS.
 - 1-1-3 Include the MobileIdentificationNumber to identify the called MS.
 - 1-1-4 IF the preferred interexchange carrier is applicable for the call:
 - 1-1-4-1 Include the Digits (Carrier) parameter.
 - 1-1-5 ENDFIF.
 - 1-1-6 IF an account code is applicable for the call:
 - 1-1-6-1 Include the DMH_AccountCodeDigits parameter.
 - 1-1-7 ENDFIF.
 - 1-1-8 IF an alternate billing number is applicable for the call:
 - 1-1-8-1 Include the DMH_AlternateBillingDigits parameter.
 - 1-1-9 ENDFIF.
 - 1-1-10 IF a billing number is applicable for the call:
 - 1-1-10-1 Include the DMH_BillingDigits parameter.
 - 1-1-11 ENDFIF.
 - 1-1-12 IF a called mobile directory number is applicable for the call:
 - 1-1-12-1 Include the MobileDirectoryNumber parameter.
 - 1-1-13 ENDFIF.
 - 1-1-14 IF custom no answer timing is applicable for the call:
 - 1-1-14-1 Include the NoAnswerTime parameter.

- 1 1-1-15 ENDIF.
- 2
- 3 1-1-16 IF special features are applicable to the called party for the incoming call:
- 4 1-1-16-1 Include the OneTimeFeatureIndicator parameter.
- 5
- 6 1-1-17 ENDIF.
- 7
- 8 1-1-18 IF special routing is applicable for the incoming call:
- 9 1-1-18-1 Include the RoutingDigits parameter.
- 10
- 11 1-1-19 ENDIF.
- 12 1-1-20 IF triggers should be set for the terminating party at the originating switch
- 13 for the incoming call:
- 14 1-1-20-1 Include the TerminationTriggers parameter.
- 15 1-1-21 ENDIF.
- 16 1-1-22 IF the MS is served by the requesting system:
- 17 1-1-22-1 Include the DMH_RedirectionIndicator parameter set to *CD local*.
- 18 ~~1-1-22-2 Execute the "HLR CNIP Terminating Call Invocation" task (see 5.8.1).~~
- 19
- 20 1-1-22-3 Optionally, include the AnnouncementCode parameter in the
- 21 AnnouncementList parameter set to an appropriate announcement.
- 22
- 23 1-1-22-4 IF the requesting MSC is capable of at least one MultipleTerminations
- 24 according to the TransactionCapability received with the
- 25 LocationRequest INVOKE:
- 26 1-1-22-4-1 Include the ElectronicSerialNumber parameter set to identify the
- 27 called MS within a LocalTermination parameter within a
- 28 TerminationList parameter.
- 29
- 30 1-1-22-4-2 Include the MobileIdentificationNumber parameter set to identify
- 31 the called MS within a LocalTermination parameter within a
- 32 TerminationList parameter.
- 33
- 34 1-1-22-4-3 Include the TerminationTreatment parameter set to *MS*
- 35 *Termination* within a LocalTermination parameter within a
- 36 TerminationList parameter.
- 37 1-1-22-4-4 IF custom alerting is applicable for the call:
- 38 1-1-22-4-4-1 Include the AlertCode parameter set appropriately.
- 39
- 40 1-1-22-4-5 ENDIF.
- 41 1-1-22-4-6 IF triggers should be set for the terminating party at the
- 42 originating switch for the redirecting call:
- 43 1-1-22-4-6-1 Include the TerminationTriggers parameter.
- 44
- 45 1-1-22-4-7 ENDIF.
- 46 1-1-22-4-8 Set the PointOfReturn to *MultipleTerminations*.
- 47 1-1-22-5 ELSE (multiple terminations are not allowed):
- 48 1-1-22-5-1 (Applicable parameter should be already be included.)
- 49 1-1-22-5-2 Set the PointOfReturn to *LocalTermination*.
- 50
- 51 1-1-22-6 ENDIF.
- 52 1-1-23 ELSE (IntersystemTermination applies):
- 53 1-1-23-1 Include the TerminationTreatment parameter set to *MSTermination*.
- 54 1-1-23-2 Include the OneTimeFeatureIndicator parameter set appropriately.
- 55 1-1-23-3 IF custom alerting is applicable for the call:
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- 57
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1-1-23-3-1 Include the AlertCode parameter set appropriately. 1

1-1-23-4 ENDIF. 2

1-1-23-5 IF triggers should be set for the terminating party at the terminating 3
switch for this call: 4

1-1-23-5-1 Include the TerminationTriggers parameter. 5

1-1-23-6 ENDIF. 6

1-1-23-7 Execute the “HLR Initiating a Routing Request” task (see 4.41.1). 7

1-1-23-8 IF the AccessDeniedReason parameter is received and it can be acted 8
upon: 9

1-1-23-8-1 Set the denied reason to the received AccessDeniedReason value: 10

1-1-23-9 ENDIF. 11

1-1-23-10 IF the ConditionallyDeniedReason parameter is received and it can be 12
acted upon: 13

1-1-23-10-1 IF the ConditionallyDeniedReason is *Waitable*. 14

1-1-23-10-1-1 IF Call Waiting is possible based upon the received 15
OneTimeFeatureIndicator. 16

1-1-23-10-1-1-1 Set the denied reason to *Allowed*. 17

1-1-23-10-1-2 ELSE: 18

1-1-23-10-1-2-1 Set the denied reason to *Busy*. 19

1-1-23-10-1-3 ENDIF. 20

1-1-23-10-2 ENDIF. 21

1-1-23-11 ENDIF. 22

1-1-23-12 IF denied reason value is not *Allowed* and the AccessDeniedReason 23
parameter can be acted upon: 24

1-1-23-12-1 CASE denied reason OF: 25

1-1-23-12-2 *Busy*: 26

1-1-23-12-2-1 (This is the Busy PointOfDetection.) 27

1-1-23-12-2-2 Execute the “HLR CFB Busy MS Invocation” task (see 5.2.5). 28

1-1-23-12-2-3 IF the PointOfReturn is indicated: 29

1-1-23-12-2-3-1 GOTO CDPointOfReturn. 30

1-1-23-12-2-4 ENDIF. 31

1-1-23-12-2-5 Execute the “HLR CFD Busy MS Invocation” task (see 5.3.9). 32

1-1-23-12-2-6 IF the PointOfReturn is indicated: 33

1-1-23-12-2-6-1 GOTO CDPointOfReturn. 34

1-1-23-12-2-7 ENDIF. 35

1-1-23-12-2-8 Optionally, include the AnnouncementCode parameter in the 36
AnnouncementList parameter set to an appropriate 37
announcement. 38

1-1-23-12-2-9 Relay the received AccessDeniedReason parameter. 39

1-1-23-12-2-10 Set PointOfReturn to *ToneTermination*. 40

1-1-23-12-3 *Unavailable*: 41

1-1-23-12-3-1 (This is the Unavailable PointOfDetection.) 42

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1-1-23-12-3-2 Execute the “HLR CFNA Unavailable MS Invocation” task (see 5.4.7).

1-1-23-12-3-3 IF the PointOfReturn is indicated:

1-1-23-12-3-3-1 GOTO CDPointOfReturn.

1-1-23-12-3-4 ENDIF.

1-1-23-12-3-5 Execute the “HLR CFD Unavailable MS Invocation” task (see 5.3.7).

1-1-23-12-3-6 IF the PointOfReturn is indicated:

1-1-23-12-3-6-1 GOTO CDPointOfReturn.

1-1-23-12-3-7 ENDIF.

1-1-23-12-3-8 Optionally, include the AnnouncementCode parameter in the AnnouncementList parameter set to an appropriate announcement.

1-1-23-12-3-9 Relay the received AccessDeniedReason parameter.

1-1-23-12-3-10 Set PointOfReturn to *ToneTermination*.

1-1-23-12-4 *No Page Response:*

1-1-23-12-4-1 (This is the Unresponsive PointOfDetection.)

1-1-23-12-4-2 Execute the “HLR CFNA Unresponsive MS Invocation” task (see 5.4.8).

1-1-23-12-4-3 IF the PointOfReturn is indicated:

1-1-23-12-4-3-1 GOTO CDPointOfReturn.

1-1-23-12-4-4 ENDIF.

1-1-23-12-4-5 Execute the “HLR CFD Unresponsive MS Invocation” task (see 5.3.8).

1-1-23-12-4-6 IF the PointOfReturn is indicated:

1-1-23-12-4-6-1 GOTO CDPointOfReturn.

1-1-23-12-4-7 ENDIF.

1-1-23-12-4-8 Optionally, include the AnnouncementCode parameter in the AnnouncementList parameter set to an appropriate announcement.

1-1-23-12-4-9 Relay the received AccessDeniedReason parameter.

1-1-23-12-4-10 Set PointOfReturn to *ToneTermination*.

1-1-23-12-5 *Inactive:*

1-1-23-12-5-1 (This is the Inactive PointOfDetection, which is the same as the DEFAULT treatment.)

1-1-23-12-6 *Unassigned directory number:*

1-1-23-12-6-1 (This value is not expected, give DEFAULT treatment)

1-1-23-12-7 *Termination Denied:*

1-1-23-12-7-1 (This value is not expected, give DEFAULT treatment)

1-1-23-12-8 *DEFAULT:*

1-1-23-12-8-1 (This is the DEFAULT PointOfDetection.)

1-1-23-12-8-2 Set the MS state to *inactive*.

1-1-23-12-8-3 Execute the “HLR CFNA Inactive MS Invocation” task (see 5.4.6).

<u>1-1-23-12-8-4</u>	IF the PointOfReturn is indicated:	1
<u>1-1-23-12-8-4-1</u>	GOTO CDPointOfReturn.	2
<u>1-1-23-12-8-5</u>	ENDIF.	3
<u>1-1-23-12-8-6</u>	Execute the “HLR CFD Inactive MS Invocation” task (see 5.3.6).	4
<u>1-1-23-12-8-7</u>	IF the PointOfReturn is indicated:	5
<u>1-1-23-12-8-7-1</u>	GOTO CDPointOfReturn.	6
<u>1-1-23-12-8-8</u>	ENDIF.	7
<u>1-1-23-12-8-9</u>	Optionally, include the AnnouncementCode parameter in the AnnouncementList parameter set to an appropriate announcement.	8
<u>1-1-23-12-8-10</u>	Relay the received AccessDeniedReason parameter.	9
<u>1-1-23-12-8-11</u>	Set PointOfReturn to <i>ToneTermination</i> .	10
<u>1-1-23-12-9</u>	ENDCASE.	11
<u>1-1-23-12-10</u>	GOTO CDPointOfReturn.	12
<u>1-1-23-13</u>	ENDIF.	13
<u>1-1-23-14</u>	IF the Digits (Destination) parameter is received:	14
<u>1-1-23-14-1</u>	Include the DMH_RedirectionIndicator parameter set to <i>CD unspecified</i> , <i>CD PSTN</i> , or <i>CD Private</i> , as appropriate.	15
<u>1-1-23-14-2</u>	Execute the “HLR CNIP Redirecting Call Invocation” task (see 5.8.2).	16
<u>1-1-23-14-3</u>	Optionally, include the AnnouncementCode parameter in the AnnouncementList parameter set to an appropriate announcement.	17
<u>1-1-23-14-4</u>	Set PointOfReturn to <i>IntersystemTermination</i> .	18
<u>1-1-23-14-5</u>	IF the requesting MSC is capable of at least one MultipleTerminations according to the TransactionCapability received with the LocationRequest INVOKE:	19
<u>1-1-23-14-5-1</u>	Include the DestinationDigits parameter set to the received Digits (Destination) within an IntersystemTermination parameter within a TerminationList parameter.	20
<u>1-1-23-14-5-2</u>	Relay the received MSCID parameter of the Serving MSC within an IntersystemTermination parameter within a TerminationList parameter.	21
<u>1-1-23-14-5-3</u>	IF the BillingID parameter was received:	22
<u>1-1-23-14-5-3-1</u>	Relay the BillingID parameter of the Serving (Anchor) MSC within an IntersystemTermination parameter within a TerminationList parameter.	23
<u>1-1-23-14-5-4</u>	ENDIF.	24
<u>1-1-23-14-5-5</u>	IF the MSCIdentificationNumber parameter was received:	25
<u>1-1-23-14-5-5-1</u>	Relay the MSCIdentificationNumber parameter of the Serving MSC within an IntersystemTermination parameter within a TerminationList parameter.	26
<u>1-1-23-14-5-6</u>	ENDIF.	27
<u>1-1-23-14-5-7</u>	IF the PC_SSN (Serving) parameter was received:	28

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- 1-8 *PSTNTermination:*
- 1-8-1 Include the MSCID parameter set to the identity of the Originating MSC.
- 1-8-2 IF preferred interexchange carrier is applicable:
- 1-8-2-1 Include the Digits (Carrier) parameter set to the MS's preferred interexchange carrier.
- 1-8-3 ENDIF.
- ~~1-8-4 Execute the "HLR CNIP Redirecting Call Invocation" task (see 5.8.2).~~
- 1-9 *MultipleTermination:*
- 1-9-1 Include the MSCID parameter set to the identity of the Originating MSC.
- ~~1-9-2 IF at least one of the routes on the list is for a *LocalTermination*:~~
- ~~1-9-2-1 Execute the "HLR CNIP Terminating Call Invocation" task (see 5.8.1).~~
- ~~1-9-3 ENDIF.~~
- ~~1-9-4 IF at least one of the routes on the list is for a *IntersystemTermination* or a *PSTNTermination*:~~
- ~~1-9-4-1 Execute the "HLR CNIP Redirecting Call Invocation" task (see 5.8.2).~~
- ~~1-9-5 ENDIF.~~
- 1-10 *DEFAULT:*
- 1-10-1 Send a RETURN ERROR with Error Code *SystemFailure*.
- 1-10-2 Return to calling task via the PointOfReturn.
- 1-11 ENDCASE.
- 2 ELSE:
- 2-1 (Allow the call to continue.)
- 3 ENDIF.
- 4 Return to the calling process via the PointOfReturn.

5.5 CALL FORWARDING—UNCONDITIONAL (CFU)

5.5.5 HLR CFU Incoming Call Invocation

(TIA/EIA-41.6-D, page 6-329)

When the HLR determines the needs for CFU incoming call routing, it shall perform the following tasks:

- 1 IF CFU is active and registered:
- 1-1 Set the selected forward-to number to the CFU forward-to number.
- 1-2 Execute the "HLR Select Forward-To or Diversion Number Point of Return" task (see 6.1.2).
- 1-3 Include the DMH_RedirectionIndicator parameter set to *CFU*.
- 1-4 IF DND is not active:
- 1-4-1 IF the addressed MS is registered and active:
- 1-4-1-1 IF the CFU reminder alert applies:
- 1-4-1-1-1 Include the AlertCode parameter set to Call Forwarding Reminder Alert.
- 1-4-1-1-2 Execute the "HLR CNIP Terminating Call Invocation" task (see 5.8.1).

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- 1-4-1-1-3 Execute the “HLR CNAP Terminating Call Invocation” task (see 5.X.1).
- 1-4-1-1-4 Spawn the “HLR Initiating an Information Directive” task (see 4.22.1).
- 1-4-1-2 ENDIF.
- 1-4-1-1 ~~Include the AlertCode parameter set to Call Forwarding Reminder Alert.~~
- 1-4-1-2 ~~Execute the “HLR CNIP Redirecting Call Invocation” task (see 5.8.2).~~
- 1-4-1-3 ~~IF the CFU reminder alert applies:~~
 - 1-4-1-3-1 ~~Spawn the “HLR Initiating an Information Directive” task (see 4.22.1).~~
 - 1-4-1-4 ~~ENDIF.~~
- 1-4-2 ~~ENDIF.~~
- 1-5 ~~ENDIF.~~
- 2 ~~ELSE:~~
 - 2-1 ~~Continue processing the call toward the addressed MS.~~
 - 3 ~~ENDIF.~~
 - 4 ~~Return to calling task via the PointOfReturn.~~

5.7 CALL WAITING (CW)

5.7.4 MSC CW Terminating Call Invocation

(TIA/EIA-41.6-D, page 6-331)

Upon CW invocation, the MSC shall do the following:

- 1 CASE Call Waiting for future incoming calls field of the OneTimeFeatureIndicator for the call in progress (as previously stored) OF:
 - 2 *No CW:*
 - 2-1 Return as *refused*.
 - 3 *Normal CW:*
 - 3-1 IF the OneTimeFeatureIndicator parameter’s Call Waiting for Incoming Call indicator is set to *Normal CW* or *Priority CW*:
 - 3-1-1 Include the AnnouncementCode parameter within an AnnouncementList parameter set to the *CallWaitingTone*.
 - 3-1-2 Execute the “MSC CNIP Terminating Call Invocation” task (see 5.8.4).
 - 3-1-a Execute the “MSC CNAP Terminating Call Invocation” task (see 5.X.2).
 - 3-1-3 IF the MSC is the Serving MSC:
 - 3-1-3-1 Execute the “MSC Special MS Alerting” task (see 3.3.6).
 - 3-1-4 ELSE (the call has been handed off):
 - 3-1-4-1 Execute the “MSC Initiating an Information Forward” task (see 4.23.1).
 - 3-1-5 ENDIF.
 - 3-1-6 Return as *accepted*.
 - 3-2 ELSE:
 - 3-2-1 Return as *refused*.

- 3-3 ENDIF. 1
- 4 *Priority CW*: 2
- 4-1 IF the `OneTimeFeatureIndicator` parameter’s Call Waiting for Incoming Call indicator is set to *Priority CW*: 3
- 4-1-1 Include the `AnnouncementCode` parameter within an `AnnouncementList` parameter set to the *CallWaitingTone*. 4
- 4-1-2 Execute the “MSC CNIP Terminating Call Invocation” task (see 5.8.4). 5
- 4-1-3 IF the MSC is the Serving MSC: 6
- 4-1-3-1 Execute the “MSC Special MS Alerting” task (see 3.3.6). 7
- 4-1-4 ELSE (the call has been handed off): 8
- 4-1-4-1 Execute the “MSC Initiating an Information Forward” task (see 4.23.1). 9
- 4-1-5 ENDIF. 10
- 4-1-6 Return as *accepted*. 11
- 4-2 ELSE: 12
- 4-2-1 Return as *refused*. 13
- 4-3 ENDIF. 14
- 5 *DEFAULT (Ignore)*: 15
- 5-1 Return as *refused*. 16
- 6 ENDCASE. 17

5.8 CALLING NUMBER IDENTIFICATION PRESENTATION (CNIP)

5.8.2 HLR CNIP Redirecting Call Invocation

(TIA/EIA-41.6-D, page 6-333)

Upon CNIP invocation, the HLR shall do the following:

- ~~1~~ IF the `CallingPartyNumberDigits1` parameter is received: 18
- ~~1-1~~ Relay the `CallingPartyNumberDigits1` parameter set to indicate the identity of the calling party. 19
- ~~2~~ ENDIF. 20
- ~~3~~ IF the `CallingPartyNumberDigits2` parameter is received: 21
- ~~3-1~~ Relay the `CallingPartyNumberDigits2` parameter set to indicate the identity of the calling party. 22
- ~~4~~ ENDIF. 23
- ~~5~~ IF the `CallingPartySubaddress` parameter is received: 24
- ~~5-1~~ Relay the `CallingPartySubaddress` parameter set to indicate the subaddress of the calling party. 25
- ~~6~~ ENDIF. 26
- 17 IF the call is being redirected by the HLR (e.g., CFB, CFD, CFNA, CFU, FA, or MAH, PCA, or SCA): 27
- 17-1 Include the `RedirectingNumberDigits` parameter set to indicate the identity of the last redirecting party (i.e., called mobile directory number or pilot directory number, except for Call Delivery). 28

1 17-2 IF the redirecting party has a subaddress:
2
3 17-2-1 Include the RedirectingSubaddress parameter set to indicate the subaddress
4 of the last redirecting party.
5
6 17-3 ENDIF.
7 ~~8 ELSEIF the RedirectingNumberDigits parameter is received:~~
8 ~~8-1 Relay the RedirectingNumberDigits parameter to indicate the identity of the last~~
9 ~~redirecting party.~~
10 ~~8-2 IF the RedirectingSubaddress parameter is received:~~
11 ~~8-2-1 Relay the RedirectingSubaddress parameter to indicate the subaddress of the last~~
12 ~~redirecting party.~~
13 ~~8-3~~ ENDIF.
14
15 2 ELSEIF the RedirectingNumberDigits parameter is received:
16 2-1 IF the TransactionCapability parameter received from the MSC does not
17 indicate CNAP/CNAR support:
18 2-1-1 Relay the RedirectingNumberDigits parameter to indicate the identity of
19 the last redirecting party.
20
21 2-1-2 IF the RedirectingSubaddress parameter is received:
22 2-1-2-1 Relay the RedirectingSubaddress parameter to indicate the subaddress
23 of the last redirecting party.
24
25 2-1-3 ENDIF.
26
27 2-2 ENDIF.
28
29 ~~39~~ ENDIF.
30
31 ~~440~~ Return to the calling task.

5.8.3 MSC CNIP Originating Call Invocation

(TIA/EIA-41.6-D, page 6-333)

Upon request for a call origination, the MSC shall do the following:

1 1 IF the selected outgoing trunk is capable of transporting the CNI:
2
3 1-1 IF the MS's MobileDirectoryNumber is available:
4
5 1-1-1 Set the CallingPartyNumberDigits1 to the MS's MobileDirectoryNumber.
6
7 1-1-2 Execute the "MSC CNIR Originating Call Invocation" task (see 5.9.3).
8
9 1-1-3 Include the calling party number information, modified for the trunk
10 signaling used in the outgoing call setup request.
11
12 1-2 ELSEIF a CallingFeaturesIndicator containing a CNIR indicator is available:
13
14 1-2-1 Set the CallingPartyNumberDigits1 to the MS's MIN with presentation
15 status set as indicated by the CallingFeaturesIndicator.
16
17 1-2-2 Execute the "MSC CNIR Originating Call Invocation" task (see 5.9.3).
18
19 1-2-3 Include the calling party number information, modified for the trunk
20 signaling used in the outgoing call setup request.
21
22 1-3 ENDIF.
23
24 1-4 IF the RedirectingNumberDigits parameter is received:
25
26 1-4-1 Include the redirecting number information, modified for the trunk
27 signaling used in the outgoing call setup request.
28
29 1-5 ENDIF.

- 2 ENDIF.
- 3 Return to the calling task.
- ~~1 IF the MS's MobileDirectoryNumber is available:~~
- ~~1-1 Set the CallingPartyNumberDigits1 to the MS's MobileDirectoryNumber.~~
- ~~2 ELSE:~~
- ~~2-1 Set the CallingPartyNumberDigits1 to the MS's MIN.~~
- ~~3 ENDIF.~~
- ~~4 Execute the "MSC CNIR Originating Call Invocation" task (see 5.9.3).~~
- ~~5 Return to the calling task.~~

5.8.5 MSC CNIP Redirecting Call Invocation

(TIA/EIA-41.6-D, page 6-335)

Upon request for a call redirection, the redirecting MSC shall do the following:

- 1 IF the selected outgoing trunk is capable of transporting the CNI:
 - 1-1 IF the RedirectingNumberDigits parameter is received:
 - 1-1-1 Include the redirecting number information and if received, the redirecting subaddress, modified for the trunk signaling used in the outgoing call setup request. Use the RedirectingNumberDigits parameter in the call setup request.
 - 1-a ELSEIF the redirecting number information or redirecting subaddress is received via trunk signaling:
 - 1-a-1 Include that redirecting number information and, if received, the redirecting subaddress, modified for the trunk signaling used in the outgoing call setup request.
 - ~~1-2 ELSEIF the MS's MobileDirectoryNumber parameter is available:~~
 - ~~1-2-1 Set the RedirectingNumberDigits parameter set to the MS's MobileDirectoryNumber.~~
 - ~~1-3 ELSE:~~
 - ~~1-3-1 Set the RedirectingNumberDigits to the MS's MIN.~~
 - ~~1-24 ENDIF.~~
 - ~~1-3 IF the Calling Party Number or Calling Party Subaddress is received via trunk signaling, or this is an MS-originated call from this MSC:~~
 - ~~1-3-1 Include the Calling Party Number and if received, the and Calling Party Subaddress, as modified for the outgoing trunk signaling protocol used in the outgoing call setup request.~~
 - ~~1-4 ENDIF.~~
 - ~~1-5 IF CNIR is active in the OneTimeFeatureIndicator:~~
 - ~~1-5-1 Mark the RedirectingNumberDigits as presentation restricted.~~
 - ~~1-6 ENDIF.~~
 - ~~1-7 Relay the CallingPartyNumberDigits1, CallingPartyNumberDigits2, and CallingPartySubaddress as received and modified for the trunk signaling protocol used.~~
 - 2 ENDIF.
 - 3 Return to the calling task.

1
2
3 **5.9 CALLING NUMBER IDENTIFICATION RESTRICTION (CNIR)**
4

5
6 **5.9.3 MSC CNIR Originating Call Invocation**
7

(TIA/EIA-41.6-D, page 6-336)

8
9 Upon request, the MSC shall do the following:

10
11 1 IF the MSC detected a request that the calling party's number be *Private* during its
12 analysis of the MS dialed digits:

13
14 1-1 Mark the Calling Party Number as *Presentation Restricted*.

15
16 2 ELSEIF the MSC detected a request that the calling party's number be *Public*
during its analysis of the MS dialed digits:

17
18 2-1 Mark the Calling Party Number as *Presentation Allowed*.

19
20 3 ELSEIF the *Calling Number Identification Restriction* is activated based upon the
OneTimeFeatureIndicator:

21
22 3-1 Mark the Calling Party Number as *Presentation Restricted*.

23
24 4 ELSEIF the *Calling Number Identification Restriction* is temporarily de-activated
based upon the OneTimeFeatureIndicator:

25
26 4-1 Mark the Calling Party Number as *Presentation Allowed*.

27
28 5 ENDIF.

29
30 6 Return to the calling task.

31
32 ~~1 IF *Calling Number Identification Restriction* is activated based upon the~~
~~OneTimeFeatureIndicator:~~

33
34 ~~1-1 Mark the CallingPartyNumberDigits1 as *Presentation Restricted*.~~

35
36 ~~2 ELSE (CNIR is temporarily de-activated):~~

37
38 ~~2-1 Mark the CallingPartyNumberDigits1 as *Presentation Allowed*.~~

39
40 ~~3 ENDIF.~~

41
42 ~~4 Return to the calling task.~~

43
44 **5.X CALLING NAME PRESENTATION (CNAP)**
45

(New for TIA/EIA-41.6-D Section 5)

46
47 **5.X.1 HLR CNAP Terminating Call Invocation**
48

(New for TIA/EIA-41.6-D Section 5)

49
50 Upon CNAP invocation, the HLR shall do the following:

51
52 1 IF CNAP is active for the subscriber:

53
54 1-1 IF RND is authorized:

55
56 1-1-a IF the call is being redirected by the HLR (e.g., CFB, CFD, CFNA, CFU,
FA, or MAH, PCA, or SCA):

57
58 1-1-a-1 Include the RedirectingNumberDigits parameter set to indicate the
identity of the last redirecting party (i.e., called mobile directory
number or pilot directory number, except for Call Delivery).

59
60 1-1-1 ELSEIF the RedirectingNumberDigits parameter is received:

1-1-1-1	Include the RedirectingNumberDigits parameter.	1
1-1-1-2	IF the RedirectingPartyName parameter is received:	2
1-1-1-2-1	Include the RedirectingPartyName parameter.	3
1-1-1-3	ENDIF.	4
1-1-2	ENDIF.	5
1-1-3	Include the ServiceID parameter set to the value for <i>Calling Name Presentation with RND</i> .	6
1-a	ELSE (RND is not authorized):	7
1-a-1	Include the ServiceID parameter set to the value for <i>Calling Name Presentation – No RND</i> .	8
1-2	ENDIF.	9
1-3	IF the CallingPartyNumberDigits1 parameter is received:	10
1-3-1	Include the CallingPartyNumberDigits1 parameter.	11
1-3-2	IF the CallingPartyName parameter is received:	12
1-3-2-1	Include the CallingPartyName parameter.	13
1-3-3	ELSEIF the TransactionCapability parameter received from the MSC does not indicate CNAP/CNAR capability:	14
1-3-3-1	Include the CallingPartyName parameter set to indicate <i>Name not available</i> .	15
1-3-4	ENDIF.	16
1-4	ELSEIF the CallingPartyNumberDigits2 parameter is received which is set to <i>user provided passed screening</i> :	17
1-4-1	Include the CallingPartyNumberDigits2 parameter.	18
1-4-2	IF the CallingPartyName parameter is received:	19
1-4-2-1	Include the CallingPartyName parameter.	20
1-4-3	ELSEIF the TransactionCapability parameter received from the MSC does not indicate CNAP/CNAR capability:	21
1-4-3-1	Include the CallingPartyName parameter set to indicate <i>Name not available</i> .	22
1-4-4	ENDIF.	23
1-5	ENDIF.	24
1-6	IF neither the RedirectingNumberDigits nor the CallingPartyNumberDigits1 nor a <i>passed screening</i> CallingPartyNumberDigits2 parameters is received:	25
1-6-1	Include DisplayText parameter set to default value (e.g., <i>not available</i>).	26
1-6-2	Return to calling task.	27
1-7	ENDIF.	28
1-8	IF a preferred language is active:	29
1-8-1	Include the PreferredLanguageIndicator parameter set appropriately.	30
1-9	ENDIF.	31
1-10	Send the ServiceRequest INVOKE to the Name SCP.	32
1-11	Start the Service Request Timer (SVRT).	33
1-12	WAIT for the Service Request response.	34
1-13	WHEN a RETURN RESULT is received:	35
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1 1-13-1 Stop the timer (SVRT).
2 1-13-2 IF the message can be processed:
3 1-13-2-1 IF the DisplayText parameter is received:
4 1-13-2-1-1 Include the DisplayText parameter.
5 1-13-2-2 ELSE (DisplayText parameter is not received):
6 1-13-2-2-1 Include the DisplayText parameter set to a default value (e.g., *not*
7 *available*).
8 1-13-2-3 ENDIF.
9 1-13-3 ELSE (the message cannot be processed):
10 1-13-3-1 Include the DisplayText parameter set to a default value (e.g., *not*
11 *available*).
12 1-13-4 ENDIF.
13 1-14 WHEN a RETURN ERROR or REJECT is received:
14 1-14-1 Stop timer (SVRT).
15 1-14-2 Execute “Local Recovery Procedures” task (see *ANSI-41* Chapter 6 Section
16 3.5.1).
17 1-14-3 Include the DisplayText parameter set to a default value (e.g., *not*
18 *available*).
19 1-15 WHEN the timer expires:
20 1-15-1 Execute “Local Recovery Procedures” task (see *ANSI-41* Chapter 6 Section
21 3.5.1).
22 1-15-2 Include the DisplayText parameter set to a default value (e.g., *not*
23 *available*).
24 1-16 ENDWAIT.
25 1-17 Return to calling task.
26 2 ELSE (CNAP inactive or not authorized):
27 2-1 Return to the calling task.
28 3 ENDIF.

5.X.2 MSC CNAP Terminating Call Invocation

(new for TIA/EIA-41.6-D Section 5)

Upon request, the MSC shall do the following:

- 1 IF the DisplayText parameter is received:
 - 1-2 Include the DisplayText parameter in the MS alerting command.
- 2 ENDIF.
- 3 Return to the calling task.

5.X.3 SCP Receiving ServiceRequest INVOKE

(new for TIA/EIA-41.6-D Section 5)

When an SCP receives a ServiceRequest INVOKE, it shall perform the following:

- 1 IF the received message can be processed:
 - 1-1 Execute the service logic corresponding to the received ServiceID parameter.

- 1-2 Include the appropriate parameters.
- 1-3 Send a RETURN RESULT to the requesting network entity.
- 2 ELSE (the received message cannot be processed or the requested information cannot be made available):
 - 2-1 Send a RETURN ERROR with a proper Error Code value (see the following table) to the requesting network entity.
 - 3 ENDIF.
 - 4 Exit this task.

Table xx SCP ServiceRequest Response

Problem Detection and Recommended Response from SCP to HLR							
PROBLEM DEFINITION	1	2	3	4	5	6	Notes
RETURN ERROR Error Code							
<i>UnrecognizedMIN</i>							a
<i>UnrecognizedESN</i>							a
<i>MIN/HLRMismatch</i>							a
<i>OperationSequenceProblem</i>							a
<i>ResourceShortage</i>		X					
<i>OperationNotSupported</i>	X						b
<i>TrunkUnavailable</i>							a
<i>ParameterError</i>				X			c
<i>SystemFailure</i>			X				
<i>UnrecognizedParameterValue</i>					X		c
<i>FeatureInactive</i>							a
<i>MissingParameter</i>						X	c

Problem Detections:

1. The requested MAP operation is recognized, but not supported by the SCP or the requesting network entity is not authorized.
2. A required SCP resource (e.g., internal memory record, SCP is fully occupied) is temporarily not available (e.g., congestion).
3. A required resource (e.g., data base access, functional entity) is not presently accessible due to a failure. Human intervention may be required for resolution.
4. A supplied parameter value has an encoding problem (e.g., The supplied CallingPartyNumberDigits1 parameter digit values do not meet the BCD specification).
5. A supplied parameter value is unrecognized or has nonstandard values (e.g., the supplied Service Identifier is unknown, the supplied CallingPartyNumberDigits1 parameter contains an unexpected Code 11, Code 12, Spare, *, # or ST digit, the supplied CallingPartyNumberDigits1 parameter is an unexpected length, the CallingPartyNumberDigits1 parameter is using an unrecognized value for numbering plan, encoding, or type of digits).
6. An expected, or required, optional parameter (e.g., CallingPartyNumberDigits1) was not received.

Notes:

- a. This Error Code is not an appropriate SCP response to a ServiceRequest transaction.
- b. It is recommended that an SCP supports ServiceRequest transactions.
- c. Include the *Parameter Identifier* in question as the FaultyParameter parameter.

5.X.4 HLR CNAP Activation

(new for TIA/EIA-41.6-D Section 5)

Upon request, the HLR shall do the following:

- 1 IF CNAP Demand Activation is authorized:
 - 1-1 Optionally, include the `AnnouncementCode` parameter in the `AnnouncementList` parameter set to an appropriate announcement.
 - 1-2 Include the `FeatureResult` parameter set to *Successful* to indicate successful feature operation.
 - 1-3 Activate CNAP service.
- 2 ELSE:
 - 2-1 Optionally, include the `AnnouncementCode` parameter in the `AnnouncementList` parameter set to an appropriate announcement.
 - 2-2 Include the `FeatureResult` parameter set to *Unsuccessful* to indicate unsuccessful feature operation.
- 3 ENDIF.
- 4 Set `PointOfReturn` to *ToneTermination*.
- 5 Return to calling task via the `PointOfReturn`.

5.X.5 HLR CNAP De-Activation

(new for TIA/EIA-41.6-D Section 5)

Upon request, the HLR shall do the following:

- 1 IF CNAP Demand De-activation is authorized:
 - 1-1 Optionally, include the `AnnouncementCode` parameter in the `AnnouncementList` parameter set to an appropriate announcement.
 - 1-2 Include the `FeatureResult` parameter set to *Successful* to indicate successful feature operation.
 - 1-3 De-activate CNAP service.
- 2 ELSE:
 - 2-1 Optionally, include the `AnnouncementCode` parameter in the `AnnouncementList` parameter set to an appropriate announcement.
 - 2-2 Include the `FeatureResult` parameter set to *Unsuccessful* to indicate unsuccessful feature operation.
- 3 ENDIF.
- 4 Set `PointOfReturn` to *ToneTermination*.
- 5 Return to calling task via the `PointOfReturn`.

5.Y CALLING NAME RESTRICTION (CNAR)

(new for TIA/EIA-41.6-D Section 5)

If the CNIR and CNAR features are linked, then the CNIR procedures may be used instead of the CNAR procedures (see 5.9).

5.Y.1 HLR CNAR Temporary Activation

(new for TIA/EIA-41.6-D Section 5)

Upon request, the HLR shall do the following:

- 1 IF CNAR Temporary Activation is authorized:
 - 1-1 Set the *Calling Name Restriction* in the *OneTimeFeatureIndicator* parameter.
 - 1-2 Include the *OneTimeFeatureIndicator* parameter.
 - 1-3 Optionally, include the *AnnouncementCode* parameter in the *AnnouncementList* parameter set to an appropriate announcement.
 - 1-4 Include the *FeatureResult* parameter set to *Successful* to indicate successful feature operation.
 - 1-5 Execute the “Termination Address Expansion” task (see *ANSI-41* Chapter 6 Section 6.2.1).
- 2 ELSE:
 - 2-1 Optionally, include the *AnnouncementCode* parameter in the *AnnouncementList* parameter set to an appropriate announcement.
 - 2-2 Set *PointOfReturn* to *ToneTermination*.
 - 2-3 Include the *FeatureResult* parameter set to *Unsuccessful* to indicate unsuccessful feature operation.
- 3 ENDIF.
- 4 Return to calling task via the *PointOfReturn*.

5.Y.2 HLR CNAR Toggle

(new for TIA/EIA-41.6-D Section 5)

Upon request, the HLR shall do the following:

- 1 IF CNAR Toggle is authorized:
 - 1-1 Set the *Calling Name Restriction* to toggle in the *OneTimeFeatureIndicator* parameter.
 - 1-2 Include the *OneTimeFeatureIndicator* parameter.
 - 1-3 Optionally, include the *AnnouncementCode* parameter in the *AnnouncementList* parameter set to an appropriate announcement.
 - 1-4 Include the *FeatureResult* parameter set to *Successful* to indicate successful feature operation.
 - 1-5 Execute the “Termination Address Expansion” task (see *ANSI-41* Chapter 6 Section 6.2.1).
- 2 ELSE:
 - 2-1 Optionally, include the *AnnouncementCode* parameter in the *AnnouncementList* parameter set to an appropriate announcement.
 - 2-2 Set *PointOfReturn* to *ToneTermination*.
 - 2-3 Include the *FeatureResult* parameter set to *Unsuccessful* to indicate unsuccessful feature operation.
- 3 ENDIF.
- 4 Return to calling task via the *PointOfReturn*.

1 **5.Y.3 HLR CNAR Temporary De-Activation**

(new for TIA/EIA-41.6-D Section 5)

2
3
4 Upon request, the HLR shall do the following:

- 5
6 1 IF CNAR Temporary De-Activation is authorized:
- 7 1-1 Clear the *Calling Name Restriction* in the *OneTimeFeatureIndicator* parameter.
 - 8 1-2 Include the *OneTimeFeatureIndicator* parameter.
 - 9 1-3 Optionally, include the *AnnouncementCode* parameter in the
 - 10 *AnnouncementList* parameter set to an appropriate announcement.
 - 11 1-4 Include the *FeatureResult* parameter set to *Successful* to indicate successful
 - 12 feature operation.
 - 13 1-5 Execute the “Termination Address Expansion” task (see *ANSI-41* Chapter 6
 - 14 Section 6.2.1).
- 15
16 2 ELSE:
- 17 2-1 Optionally, include the *AnnouncementCode* parameter in the
 - 18 *AnnouncementList* parameter set to an appropriate announcement.
 - 19 2-2 Set *PointOfReturn* to *ToneTermination*.
 - 20 2-3 Include the *FeatureResult* parameter set to *Unsuccessful* to indicate
 - 21 unsuccessful feature operation.
- 22
23 3 ENDIF.
- 24
25 4 Return to calling task via the *PointOfReturn*.
- 26
27
28

29 **5.Y.4 MSC CNAR Originating Call Invocation**

(new for TIA/EIA-41.6-D Section 5)

30
31
32 Upon request, the MSC shall do the following:

- 33
34 1 IF the selected outgoing trunk is capable of transporting the CNA:
- 35 1-1 IF the MSC detected a request that the calling party’s name be *private* during
 - 36 its analysis of the MS dialed digits:
 - 37 1-1-1 Mark the *CallingPartyName* as *Presentation Restricted* AND include the
 - 38 calling party name information, modified for the trunk signaling used in
 - 39 the outgoing call setup request.
 - 40 1-2 ELSEIF the MSC detected a request that the calling party’s name be *Public*
 - 41 during its analysis of the MS dialed digits:
 - 42 1-2-1 Mark the *CallingPartyName* as *Presentation Allowed* AND include the
 - 43 calling party name information, modified for the trunk signaling used in
 - 44 the outgoing call setup request.
 - 45 1-3 ELSEIF the *Calling Name Restriction* is temporarily activated based upon the
 - 46 *OneTimeFeatureIndicator*:
 - 47 1-3-1 Mark the *CallingPartyName* as *Presentation Restricted* AND include the
 - 48 calling party name information, modified for the trunk signaling used in
 - 49 the outgoing call setup request.
 - 50 1-4 ELSEIF the *Calling Name Restriction* is temporarily de-activated based upon
 - 51 the *OneTimeFeatureIndicator*:
 - 52 1-4-1 Mark the *CallingPartyName* as *Presentation Allowed* AND include the
 - 53 calling party name information, modified for the trunk signaling used in
 - 54 the outgoing call setup request.
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- 1-5 ELSEIF the *Calling Name Restriction is Blocking Toggle* based upon the OneTimeFeatureIndicator: 1
- 1-5-1 Mark the CallingPartyName as *Blocking Toggle* AND include the calling party name information, modified for the trunk signaling used in the outgoing call setup request. 2
- 1-6 ENDIF. 3
- 2 ENDIF. 4
- 3 Return to the calling task. 5

5.Y.6 MSC CNAR Redirecting Call Invocation

(new for TIA/EIA-41.6-D Section 5)

Upon request for a call redirection, the redirecting MSC shall do the following:

- 1 IF the selected outgoing trunk is capable of transporting the CNA: 16
- 1-1 IF the HLR has not redirected the call (i.e., the RedirectingNumberDigits parameter has not been received): 17
- 1-1-1 IF the redirecting party name information has been received via trunk signaling: 18
- 1-1-1-1 Include that redirecting party name information modified for the trunk signaling used in the outgoing call setup request. 19
- 1-1-2 ENDIF. 20
- 1-2 ENDIF. 21
- 1-3 IF the calling party name information has been received via trunk signaling. 22
- 1-3-1 Include that calling party name information, modified for the trunk signaling used in the outgoing call setup request. 23
- 1-4 ENDIF. 24
- 2 ENDIF. 25
- 3 Return to the calling task. 26

7 OPERATION TIMER VALUES

(TIA/EIA-41.6-D, page 6-400)

The following table provides a summary of the timers used for MAP operations. The timer values specified in this table are default values only and should be optimized for actual operating environments. Some timers are locally defined and are not in this table (e.g., alerting timer, no answer timer, page response timer, maximum interaction timer, interdigit timer).

Table 63 Operation Timer Values

Timer	Default (sec.)	Started when	Normally stopped when	Action when timer expires
<u>SVRT</u> Service Request Timer	<u>6</u>	<u>ServiceRequest</u> <u>INVOKE</u> is sent.	<u>ServiceRequest</u> <u>RETURN RESULT</u> or <u>RETURN ERROR</u> is received.	<u>Execute</u> <u>recovery</u> <u>procedures.</u>

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