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Component: CDMA (U-CA-IS41)
Technical Guide
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Guide version: 02.00

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Copyright

CDMA (U-CA-IS41) Technical Guide, Release 1.2.0

02.00

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## About this Document

### Scope
The scope of this document includes all the information required to install, configure and administer the U-CA-IS41 (CDMA) component. It does not include a detailed design of the service.

### Audience
This guide was written primarily for system administrators and persons installing, configuring and administering the U-CA-IS41 (CDMA). However, sections of the document may be useful to anyone requiring an introduction to the application.

### Pre-requisites
A solid understanding of UNIX and a familiarity with IN concepts are an essential pre-requisite for safely using the information contained in this technical guide. Attempting to install, remove, configure or otherwise alter the described system without the appropriate background skills, could cause damage to the system; including temporary or permanent incorrect operation, loss of service, and may render your system beyond recovery.

Although it is not a pre-requisite to using this guide, familiarity with the target platform would be an advantage.

This manual describes system tasks that should only be carried out by suitably trained operators.

### Related documents
The following documents are related to this document:
- SLEE Technical Guide
- SMS Technical Guide
- SMS User's Guide
- ACS Technical Guide
- ACS User's Guide
- SIGTRAN TCAP IF Technical Guide

### Changes in this document
Here are the changes to the document since the last release.

<table>
<thead>
<tr>
<th>Version no.</th>
<th>Revision Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.00</td>
<td>2009-05-22</td>
<td>Initial release.</td>
</tr>
<tr>
<td>02.00</td>
<td>2009-08-13</td>
<td>Updated TSAN parameters.</td>
</tr>
</tbody>
</table>
Document Conventions

**Typographical conventions**

Before you start using this guide, it is important to understand the terms and typographical conventions used in the documentation.

Specialised terms and acronyms are defined in the Glossary at the end of this guide.

<table>
<thead>
<tr>
<th>Formatting convention</th>
<th>Type of information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Special Bold</strong></td>
<td>Items you must select such as menu options, or names of tabs.</td>
</tr>
<tr>
<td></td>
<td>Emphasis within text.</td>
</tr>
<tr>
<td></td>
<td>Names of database tables and fields.</td>
</tr>
<tr>
<td><strong>Italics</strong></td>
<td>Name of a document, chapter, topic or other publication.</td>
</tr>
<tr>
<td><strong>Button</strong></td>
<td>The name of a button to click or a key to press.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong> To close the window, either click <strong>Close</strong> or press <strong>Esc</strong>.</td>
</tr>
<tr>
<td><strong>Key+Key</strong></td>
<td>Key combinations for which the user must press and hold down one key and then press another.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong> <strong>Ctrl+P</strong>, or <strong>Alt+F4</strong>.</td>
</tr>
<tr>
<td><strong>Monospace</strong></td>
<td>Text that you must type and examples of code or standard output.</td>
</tr>
<tr>
<td><strong>variable</strong></td>
<td>Used to indicate variables or text that should be replaced.</td>
</tr>
<tr>
<td><strong>menu option &gt; menu option &gt;</strong></td>
<td>Used to indicate the cascading menu option to be selected, or the location path of a file.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong> <strong>Operator Functions &gt; Report Functions</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong> <strong>/IN/html/SMS/HelpText/</strong></td>
</tr>
<tr>
<td><strong>hypertext link</strong></td>
<td>Used to indicate a hypertext link on an HTML page.</td>
</tr>
</tbody>
</table>

**Icons**

The following icons are used as visual cues to draw attention to important information.

- **Note:** Indicates useful and complementary information. Explanation, comment, or short expansion of the text object that is intended to catch your attention.
- **Tip:** Indicates practical but non-essential information that makes the solution easier to use or operate (e.g. keyboard shortcut, alternative way to perform a step in a procedure, etc).
- **Warning:** Indicates a caution. If this information is ignored, it could cause possible and irreversible damage to the equipment, data or software.

**Terminology**

This topic explains any terminology specific to this manual.
# System Overview

## Overview

### Introduction

This chapter provides a high-level overview of the application. It explains the basic functionality of the system and lists the main components.

It is not intended to advise on any network or service implications of the product.

### In this chapter

This chapter contains the following topics.

- What is CDMA? .......................................................... 2
- Non-WinRoaming .......................................................... 4
- Alarms, Statistics, Reports and EDRs ............................. 6
What is CDMA?

Introduction

The U-CA-IS41 (CDMA) enables operators to make use of the IS-41 protocol to provide phone services to end users on CDMA networks.

CDMA exploits existing products and standard protocols in order to provide a cost-effective solution that potentially can be interfaced to a variety of service platforms.

Diagram

The diagram below illustrates the sub-system components that comprise the U-CA-IS41 (CDMA) service, including external interfaces.

Component descriptions

This table describes the main components involved in the CDMA application.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>cdmagw</td>
<td>cdmagw is the main binary for the CDMA. It is responsible for handling CDMA interactions with MSCs and HLRs, and for triggering appropriate IN interactions to slee_acs. Supports SUA by soft linking to cdmagw_sua (on page 33). Supports M3UA by soft linking to cdmagw_m3ua (on page 34).</td>
<td>cdmagw (on page 32)</td>
</tr>
<tr>
<td>slee_acs</td>
<td>Provides the main call processing and service logic.</td>
<td>ACS Technical Guide</td>
</tr>
</tbody>
</table>

Continued on next page
The following diagram illustrates the possible processing stages initiated by CDMA when an IS-41 message is received from the MSC, converted to INAP and forwarded to the SCF.
Non-WinRoaming

CDMA supports non-WinRoaming traffic, based on relaying pre-IS-826 calls (that is, IS-771 or earlier) from the HLR by informing the requester to retrigger to a local IS-826 capable MSC. The local MSC will then perform IS-826 interactions with the UAS, to permit real-time charging to occur.

CDMA supports real-time control of MO voice calls in a non-WIN capable VPLMN (foreign network). CDMA supports this by causing the calls in the non-WIN capable VPLMN (foreign network) to be re-routed back to the WIN-capable HPLMN (home network) for re-origination of an IS-826 controlled call.

This table describes the standards compliance requirements for the network elements needed to support this solution.

<table>
<thead>
<tr>
<th>Network element</th>
<th>Requirement specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign MSC</td>
<td>Must support ANSI-41 as per:</td>
</tr>
<tr>
<td></td>
<td>• TIA/EIA ANSI-41D, Cellular Radiotelecommunications Intersystem Operations, December 1997</td>
</tr>
<tr>
<td></td>
<td>• 6.4.2.30 OriginationRequest (ORREQ)</td>
</tr>
<tr>
<td></td>
<td>• 6.5.2.90 OriginationTriggers</td>
</tr>
<tr>
<td></td>
<td>• OriginationTriggers contains a value for All Origination</td>
</tr>
<tr>
<td>Home HLR</td>
<td>Must support the IS-771 ORREQ relay capability as per:</td>
</tr>
<tr>
<td>Home MSC</td>
<td>Must be IS-826 WIN capable as per:</td>
</tr>
<tr>
<td></td>
<td>• TIA/EIA IS-826, Wireless Intelligent Network Capabilities for Pre-paid Charging, August 2000.</td>
</tr>
</tbody>
</table>

This process describes how non-WinRoaming calls are handled.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A new IS-771 call arrives at cdmagw (on page 32). If OriginationTriggers (ORIGTRIG) Value = All Origination, cdmagw attempts to apply the non-WinRoaming treatment. Otherwise cdmagw continues using the normal message flow (that is, it sends an empty (successful) ORREQ reply).</td>
</tr>
</tbody>
</table>
| 2     | cdmagw determines the GMSC to use, based on the MSID in the call via the MSID prefix to GMSC name mapping in the file specified by msidGmscFile (on page 21). The gmscName (on page 26) is later used to determine which TSAN range to use. If no msidGmscFile is specified, this lookup is not used. If no GMSC is found:  
|       | • the call will be assigned the default range specified in defaultTsanPool (on page 23), or  
|       | • if no default TSANs are available, AccessDeniedReason is set to noTsanDeniedReason (on page 22). |

Continued on next page
Non-WinRoaming processing (continued)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
</table>
| 3     | *cdmagw allocates a TSAN for storing call data.*  
*cdmagw stores the IS-771 call data required for charging purposes by the following IS-826 call, indexed on TSAN. This data is globally available to all following calls, so it can be retrieved when the corresponding IS-826 call is retriggered.* (Use *nonWinRoamDataTimeout* (on page 22) to timeout call data if no retriggered call arrives.)  
*cdmagw uses the next available TSAN from one of the ranges of TSANs which corresponds to the GMSC. If no free TSAN can be allocated, it drops the call by sending back an orreq with *AccessDeniedReason* set to *noTsanDeniedReason* (on page 22).* |
| 4     | *cdmagw extracts relevant telephony data and sends back a modified orreq message containing the MSCID, and the TSAN in PSTN Termination->DestinationDigits.* |
| 5     | *cdmagw waits for an IS-826 ANYLZD originated by the IS-771 call. When an IS-826 ANYLZD arrives, cdmagw determines if data associated with a corresponding IS-771 call has been stored.* |
| 6     | *If the IS-826 has TRIGTYPE=Specific_Called_Party_Digit_String, cdmagw extracts the TSAN from the Mobile Directory Number (MDN) field of the first ANYLZD message. cdmagw uses the TSAN as a key to check the call data for previously encountered IS-771 call data. This data is stored for triggering to slee_acs.* |
| 7     | *A second ANYLZD message may be received containing data (specifically the Original Calling Party number) which was not received in the first. If waitForCallingParty (on page 19) = true, cdmagw waits for the Original Calling Party number to be received in CallingPartyNumberDigits1 before the call progress.*  
*The second ANYLZD message doesn't include a TSAN, so cdmagw uses the BillingID to map to the call data instead.*  
*If a second ANYLZD is received and the call has already been authorised, an empty anlyzd response is sent back.* |
| 8     | *cdmagw sends Analyzed Response (anlyzd) message with:*  
- the original dialed number in the Digits (dialed) parameter, and  
- the full originating TriggerAddressList parameter.*

**Supported ANLYZD parameters**

The following parameters are supported in ANLYZD messages:

- BillingId
- Digits (Dialed)
- TriggerType
- CallingPartyNumberDigits1
- DestinationDigits
- MSCID
- MobileDirectoryNumber
- MSID (MIN or IMSI)
Alarms, Statistics, Reports and EDRs

Alarms

CDMA uses the SMS integrated alarms collection, viewing and forwarding system. The alarms generated by all components of CDMA are consolidated on the USMS and stored in a centralised alarm database.

The operator can:

- view the alarms through the alarm viewer built into the SMS screens, or
- forward all alarms to an integrated external fault management system using SNMP v1 or v3.

Alarms can be automatically deleted from the SMF alarm database after a configurable period.

For more information about the specific alarms generated by CDMA, see CDMA Alarms Guide.

For more information about the SMS alarms subsystem, see SMS User’s Guide.

Statistics

The following table shows the statistics that will be generated by the cdmagw service if statistics are enabled. For more information about how cdmagw generates statistics, see Configuration (on page 9).

<table>
<thead>
<tr>
<th>Statistic ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUM_ORREQ_INVOKE</td>
<td>Total origination requests.</td>
</tr>
<tr>
<td>NUM_ORREQ_RESPONSE</td>
<td>Total origination responses.</td>
</tr>
<tr>
<td>NUM_ANLYZD_INVOKE</td>
<td>Total analyzed information requests.</td>
</tr>
<tr>
<td>NUM_ANLYZD_RESPONSE</td>
<td>Total analyzed information responses.</td>
</tr>
<tr>
<td>NUM_OANSWER_INVOKE</td>
<td>Total origination answer requests.</td>
</tr>
<tr>
<td>NUM_TANSWER_INVOKE</td>
<td>Total termination answer requests.</td>
</tr>
<tr>
<td>NUM_ODISCONNECT_INVOKE</td>
<td>Total origination disconnect requests.</td>
</tr>
<tr>
<td>NUM_ODISCONNECT_RESPONSE</td>
<td>Total origination disconnect responses.</td>
</tr>
<tr>
<td>NUM_TDISCONNECT_INVOKE</td>
<td>Total termination disconnect requests.</td>
</tr>
<tr>
<td>NUM_TDISCONNECT_RESPONSE</td>
<td>Total termination disconnect responses.</td>
</tr>
<tr>
<td>NUM_CCDIR_INVOKE</td>
<td>Total call control directive requests.</td>
</tr>
<tr>
<td>NUM_CCDIR_RESPONSE</td>
<td>Total call control responses.</td>
</tr>
<tr>
<td>NUM_SUCCESSFUL_CALLS</td>
<td>Total successfully completed call attempts.</td>
</tr>
<tr>
<td>NUM_FAILED_CALLS</td>
<td>Total failed call attempts.</td>
</tr>
<tr>
<td>NUM_CONNRES_INVOKE</td>
<td>Total connect to resource requests.</td>
</tr>
<tr>
<td>NUM_CONNRES_SUCCESS</td>
<td>Total connect to resource successful responses.</td>
</tr>
<tr>
<td>NUM_CONNRES_FAILED</td>
<td>Total connect to resource failed responses.</td>
</tr>
<tr>
<td>NUM_BULKDISCONN_INVOKE</td>
<td>Total bulk disconnect requests.</td>
</tr>
<tr>
<td>NUM_BULKDISCONN_RESPONSE</td>
<td>Total bulk disconnect responses.</td>
</tr>
</tbody>
</table>

Continued on next page
## Alarms, Statistics, Reports and EDRs, Continued

<table>
<thead>
<tr>
<th>Reports</th>
<th>CDMA does not install any specific SMS reports. However, you can report on any statistics which are recorded using the SMS Application report on the SMS Report Functions screen. For more information about running SMS reports, see <em>SMS User's Guide</em>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDRs</td>
<td>CDMA does not write any EDRs itself. However messages sent from cdmagw to slee_acs will result in an EDR being written by slee_acs. For more information about what EDRs are written by slee_acs, see <em>EDR Reference Guide</em>.</td>
</tr>
</tbody>
</table>
Configuration

Overview

Introduction
This chapter explains how to configure the application.

In this chapter
This chapter contains the following topics.

- Configuration Overview ................................................................. 10
- eserv.config Configuration .......................................................... 12
- cdmagw.sh Configuration .............................................................. 29
### Configuration Overview

#### Introduction

This topic provides a high level overview of how the CDMA component is configured.

#### Configuration components

CDMA is configured by the following components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Locations</th>
<th>Description</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>cdmagw.sh</td>
<td>All UAS machines</td>
<td>This shell script sets the command line parameters for the main cdmagw (on page 32) binary.</td>
<td>cdmagw.sh Configuration (on page 29)</td>
</tr>
<tr>
<td>eserv.config</td>
<td>All UAS machines</td>
<td>The CDMA is configured in the cdmagw section of the eserv.config file.</td>
<td>eserv.config Configuration (on page 12)</td>
</tr>
<tr>
<td>msidGmscFile</td>
<td>All UASs</td>
<td>This file holds the MSID to GMSC mapping used to locate an available TSAN when supporting non-WinRoaming.</td>
<td>msidGmscFile (on page 11)</td>
</tr>
<tr>
<td>tdp.conf</td>
<td>All UAS machines</td>
<td>The tdp.conf file configures the IN Call Model in cdmagw.</td>
<td>IN Call Model configuration (on page 10)</td>
</tr>
<tr>
<td>SLEE.cfg</td>
<td>All UAS machines</td>
<td>The SLEE configuration must be altered to include the CDMA.</td>
<td>SLEE Technical Guide</td>
</tr>
<tr>
<td>SMF database</td>
<td>USMS</td>
<td>Statistics and EFM alarms configuration for CDMA. Configured automatically when cdmaSms is installed.</td>
<td>Installing the U-CA-IS41 (CDMA) cdmaSms Package on a USMS (on page 55)</td>
</tr>
</tbody>
</table>

#### IN Call Model configuration

Configuration for the IN Call Model element of the U-CA-IS41 (CDMA) is contained in the /IN/service_packages/SLEE/etc/tdp.conf file. This text shows an example of the file.

```
# mandatory params:
CAMEL
ADDITIONALNUMS
IMSI QUAL=129

# optional params: (comment out if not required)
ACH WARN PERIOD=10
ACH TONE=20,0
ACH ANNOUNCE=156

# the trigger/service key definition
3 1 3 request all all
```

For more information about how to configure the tdp.conf file, see Configuring IN Call Model Triggers (on page 66).  

*Continued on next page*
The msidGmscFile file is only used for non-WIN roaming redirection to pick a GMSC TSAN pool to use.

It contains multiple entries (one entry per line) in the form:

<MSID Prefix>,<GMSC name>

Notes:
- Each MSID Prefix must be less than maxMsidForGmscSelect (on page 21) characters long.
- The GMSC name must exist in the eserv.config under tsanPools (on page 25).
- On configuration reload, the file specified in msidGmscFile (on page 21) is read. This can be triggered by a SIGHUP.
- Lines that begin with hashes (#), are ignored by cdmagw (on page 32).

Example: This text shows an example of a line from msidGmscFile.

189883,MSC1
eserv.config Configuration

Introduction

The eserv.config file is a shared configuration file, from which many Oracle applications read their configuration. Each Oracle machine (USMS and UAS) has its own version of the configuration file, containing configuration relevant to that machine. The configuration file contains many different parts or sections; each application reads the parts of the eserv.config file that contains data relevant to it.

It is located in the following directory:

/IN/service_packages/

The eserv.config file format allows hierarchical groupings, and most applications make use of this to divide up the options into logical groupings.

Configuration file format

To organize the configuration data within the eserv.config file, some sections are nested within other sections. Configuration details are opened and closed using either {} or [].

- Groups of parameters are enclosed with curly brackets - {}
- An array of parameters is enclosed in square brackets - []
- Comments are prefaced with a # at the beginning of the line

To list things within a group or an array, elements must be separated by at least one comma or at least one line break. Any of the following formats may be used, as in this example:

```plaintext
{ name="route6", id = 3, prefixes = [ "00000148", "0000473"] }
{ name="route7", id = 4, prefixes = [ "000001049" ] }
```
or

```plaintext
{  name="route6"
    id = 3
    prefixes = [ "00000148"
                "0000473"
             ]
}
{  name="route7"
    id = 4
    prefixes = [ "000001049"
             ]
}
```
or

```plaintext
{  name="route6"
    id = 3
    prefixes = [ "00000148", "0000473" ]
}
{  name="route7", id = 4
    prefixes = [ "000001049" ]
}
```

Continued on next page
Open the configuration file on your system using a standard text editor. Do not use text editors such as MS Word, that attach control characters. These can be, for example, Microsoft DOS or Windows line termination characters (for example: '^M), which are not visible to the user, at the end of each row. This will cause file errors when the application tries to read the configuration file.

Always keep a backup of your file before making any changes to it. This will ensure you have a working copy which you can return to if necessary.

Here is an example of the cdmagw section in the eserv.config file, showing the CDMA configuration.

```plaintext
cdmagw = {
  ImsiIdpQualifier=129
  CallStatusTimeout=30
  ResetSrftimeOut=30
  ConnresTimeout=10
  DisconnectTimeout=30
  BusyStatusTimeout=10
  CcdirTimeout=30
  CallFailedTimeout=1
  DisconnectWarningType='T'
  DisconnectWarningID=24
  LowCreditWarningType='T'
  LowCreditWarningID=24
  TestInterfaceEnabled=false
  TestInterfacePort=14875
  SoakTestInterfaceEnabled=false
  SoakTestInterfacePort=14876
  EnableDisConnRes=true
  ANLYZDActionCodeRequired=false
  ThrottlingCallRate=0
  EnableStats=false
  AnnouncementsUseCCDIR=true
  MaxStatusCheckFailures=1
  LocationIdIncludesMSCID=false
  SoakTestCalledNumber="1234567890"
  SoakTestCallingNumber="1234567890"
  CompareDestinationDigits=false
  AllowInitialTermination=false
  Dynamic_DMHServiceID=false
  DMHServiceID_ANLYZD_OnRelease=false
  DMHServiceID_ANLYZD=""
  DMHServiceID_ORREQ=""
  DMHServiceID_ODISCONNECT=""
  DMHServiceID_TDISCONNECT=""
  DMHServiceID_DynamicPrefix="1.1"
  waitForCallingParty=false
  abortOnCallFail=false
  forceCorrelationID=false
  dummyMDNForCallLookup="0000"
  msidGmscFile=""
  maxMsidForGmscSelect=6
  msidRequiredDeniedReason=0
  cfnaOnRedirectionIndicators=[3,17]
  nonWinRoamDataTimeout=30
  noTsanDeniedReason=3
  keepTsanLocal=true
  dummyMsid="989123"
  defaultTsanPool="MSC1"
```
**eserv.config Configuration,** Continued

**Example (continued)**

```python
tsanAnlyzdField = "Digits"
tsanPools = [
    {
        gmscName="MSC1"
        tsanNature = 4
        ranges = [
            { rangeStart = "8049096367" rangeEnd = "8049096417" },
            { rangeStart = "9876540850" rangeEnd = "9876540890" },
        ]
    },
    {
        gmscName="MSC2"
        ranges = [
            { rangeStart = "0987650990" rangeEnd = "0987650150" },
            { rangeStart = "5402946949" rangeEnd = "5402946999" },
        ]
    }
]
```

**Parameters**

The following parameters are supported.

**ImsiIdpQualifier**
The identifier that is used when sending the IMSI in an IDP.

- **Default:** 129 (Binary: 10000001)
- **Allowed:** Integer
- **Note:** This value MUST be the same as specified in the ‘tdp.conf’ file.

*Continued on next page*
eserv.config Configuration, Continued

Parameters (continued)

CallStatusTimeout
A periodic timer that checks the status of the call to make sure no calls have been dropped by the MSC without notifying the Cdma Gateway.

Default: 30 seconds
Allowed: Integer

ResetSrfTimeout
A periodic timer that resets the ‘SSFT’ MSC timer.

Default: 30 seconds
Allowed: Integer
Note: This must be sent during an IP interaction, initiated by a CONNRES.

ConnresTimeout
A periodic timer that sets the number of seconds to wait before assuming that the CONNRES was successful.

Default: 10 seconds
Allowed: Integer
Note: The timer can be disabled if the MSC is configured to send TC_CANCEL (0 = disabled)

DisconnectTimeout
A periodic timer that sets the number of seconds to wait before assuming that the forced release (using a CCDIR) has failed.

Default: 30 seconds
Allowed: Integer

BusyStatusTimeout
A periodic timer that sets the number of seconds to wait before checking whether the called party was busy before a call has been answered.

Default: 30 seconds
Allowed: Integer

CcdirTimeout
A periodic timer that sets the number of seconds to wait before assuming that the CCDIR invoke operation failed.

Default: 30 seconds
Allowed: Integer

Continued on next page
eserv.config Configuration, Continued

Parameters (continued)

CallFailedTimeout
The amount of time between verifying a call failure and releasing a call.

Default: 1 second
Allowed: Integer, minimum value 1 second.
Note: Cannot be disabled.

DisconnectWarningType
Plays a tone, or announcement, or nothing when about to disconnect.

Default: T
Allowed: T = Tone, A = Announcement, N = None

DisconnectWarningID
The ID of the tone to be played when a call is disconnected using CCDIR.

Default: PPCDisconnectTone (24)
Allowed: Integer
Note: This is ignored if the type is set to ‘N’.

LowCreditWarningType
Plays a tone, announcement or nothing when credit balance is low.

Default: T
Allowed: T = Tone, A = Announcement, N = None

LowCreditWarningID
The ID of the tone to be played when a call has reached its low credit thershold.

Default: PPCDisconnectTone (24)
Allowed: Integer
Note: This is ignored if the type is set to ‘N’.

TestInterfaceEnabled
Flag to enable or disable the test interface. In a production system this can be disabled by default but enabled so that a test can be run on the system.

Default: false
Allowed: true or false
Note: Enabling the soak test interface overrides this interface.

TestInterfacePort
The tcp network port that the test interface will listen on (if it is enabled).

Default: 14875
Allowed: Integer

Continued on next page
eserv.config Configuration, Continued

Parameters (continued)

SoakTestInterfaceEnabled
Flag to enable or disable the soak test interface. In a production system this can be disabled by default but enabled so that a soak test can be run on the system.

Default: false
Allowed: true or false
Note: Enabling this interface overrides the normal test interface.

SoakTestInterfacePort
The tcp network port that the soak test interface will listen on (if it is enabled).

Default: 14876
Allowed: Integer

EnableDisConnRes
Flag to enable or disable whether the CdmaGateway should send a DISCONNRES before sending an ANLYZD or ODISCONNECT result to an MSC following a CONNRES announcement.

Default: true
Allowed: true or false

ANLYZDActionCodeRequired
Flag to enable sending an ActionCode in an ANLYZD result (success or failure).

Default: true
Allowed: true or false

ThrottlingCallRate
Limits (throttles) how much traffic the cdmagw will process per second.

Default: 0 (disabled)
Allowed: Integer

EnableStats
Flag to enable the reporting of statistics.

Default: false
Allowed: true or false

AnnouncementsUseCCDIR
Flag to control whether switch-based announcements use CCDIR or ANLYZD/ODISCONNECT responses.

Default: false
Allowed: true or false

Continued on next page
Parameters (continued)

**MaxStatusCheckFailures**
How many CCDIR failures to allow before assuming that the call has failed.

- **Default:** 1
- **Allowed:** Integer
- **Note:** Setting this to 1 means that the first failure will cause the call to fail.

**LocationIdIncludesMSCID**
Flag to enable including the MSCID in the Location Area ID (MSCID is prepended to the ServingCellID).

- **Default:** false
- **Allowed:** true or false

**SoakTestCalledNumber**
The default value for called numbers when using the SoakTestInterface. Used for DEST and CALLED numbers.

- **Default:** “1234567890”
- **Allowed:** String

**SoakTestCallingNumber**
The default value for calling numbers when using the SoakTestInterface. Used for MDN and CALLING numbers.

- **Default:** “1234567890”
- **Allowed:** String

**CompareDestinationDigits**

- **Syntax:** \( \text{CompareDestinationDigits} = \langle \text{false} | \text{true} \rangle \)
- **Description:** Which digits to use to determine whether the Called Party number has changed on receipt of a Connect operation from slee_acs.
- **Type:** Boolean
- **Optionality:** Optional (default used if not set).
- **Allowed:** true Compare destination digits.
  false Compare dialled digits.
- **Default:** false

*Continued on next page*
### AllowInitialTermination

**Syntax:**
AllowInitialTermination = <false|true>

**Description:**
Flag to control whether to allow InitialTermination triggers to create a call.

**Type:**
Boolean

**Optionality:**
Optional (default used if not set).

**Allowed:**
- false: Wait for the CalledRoutingAddressAvailable trigger in the second ANLYZD message.
- true: Create a call instance when an InitialTermination trigger arrives.

**Default:**
false

**Notes:**
This trigger does not contain the Called Number (DestinationDigits), so the IDP CalledPartyNumber field contains the Dialed Digits.

For more information about message flow, see Possible processing stages (on page 3).

### waitForCallingParty

**Syntax:**
waitForCallingParty = <false|true>

**Description:**
How long to wait for a calling party value in a message before sending an IDP.

**Type:**
Boolean

**Optionality:**
Optional (default used if not set).

**Allowed:**
- true: If there is no calling party number in the first ANLYZD message, wait until the second ANLYZD message is received.
- false: If there is not a calling party number in the first or second ANLYZD messages use the MDN.

**Default:**
false

**Notes:**
For more information about message flows and ANLYZD messages, see Non-WinRoaming processing (on page 4).

### abortOnCallFail

**Syntax:**
abortOnCallFail = <bool>

**Description:**
Indicates if an abort message should be sent to slee_acs on call failure. i.e. CCDIR failure response.

**Type:**
Boolean

**Optionality:**
Optional (default used if not set).

**Allowed:**
- true
- false

**Default:**
false

**Example:**
abortOnCallFail = false
forceCorrelationID

Syntax: forceCorrelationID = <bool>
Description: Indicates whether to force the correlation ID to be set for the following operations:
- Connect to Resource
- ResetTimer
- Disconnect Resource
Type: Boolean
Optionality: Optional (default used if not set).
Allowed: 
- true
- false
Default: false
Example: forceCorrelationID = false

cfnaOnRedirectionIndicators

Syntax: cfnaOnRedirectionIndicators = <array>
Description: The value specified indicates the DMH_RedirectionIndicator that will be used when handling Call Forward No Answer (CFNA) scenarios.
Type: Array
Optionality: Optional (default used if not set).
Default: [3]
Notes: Specifying 0 means the indicator will not be checked. It overrides all values.
Example: cfnaOnRedirectionIndicators = [3,17]
dummyMDNForCallLookup

Syntax: dummyMDNForCallLookup = "<int>"
Description: The dummy MDN number to use as part of look up key for call lookup.
Type: String
Optionality: Optional (default used if not set).
Default: none (no default pool)
Notes: This is used because the key for call lookup for a second ANLYZD message, consists of both billing ID and MDN. Setting this effectively means that MDN is not used. For more information about how this is used, see Non-WinRoaming processing (on page 4).
Example: dummyMDNForCallLookup = "0000"
Parameters (continued)

msidGmscFile

Syntax: \texttt{msidGmscFile = "<path>/<file>"}

Description: The name and location of file which defines the mapping of MSIDs with to GMSCs.

Type: String

Optionality: Optional (default used if not set).

Default: none (that is, no mapping file)

Notes: For more information about the file, see \texttt{msidGmscFile} (on page 11).

On configuration reload, the file specified in \texttt{msidGmscFile} (on page 21) is read. This can be triggered by a SIGHUP.

For more information about how this mapping is used, see \textit{Non-WinRoaming processing} (on page 4).

Example: \texttt{msidGmscFile = "/IN/service_packages/IS41/etc/msidtogmsc.map ping"}

maxMsidForGmscSelect

Syntax: \texttt{maxMsidForGmscSelect = <max>}

Description: The maximum length of an acceptable MSID prefix within the file specified by \texttt{msidGmscFile} (on page 21) for GMSC lookup.

Type: Integer

Optionality: Optional (default used if not set).

Default: 6

Notes: If an entry in the msidGmscFile is more than this limit, a WARNING alarm is logged and the row is ignored.

Example: \texttt{maxMsidForGmscSelect = 6}

msidRequiredDeniedReason

Syntax: \texttt{msidRequiredDeniedReason = <int>}

Description: The AccessDeniedReason returned if no MSID is available in ORREQ for roaming calls.

Type: Integer

Optionality: Optional (default used if not set).

Default: 0 (MSID not required, TSAN will be allocated from the default TSAN pool)

Notes: For more information about how roaming calls are handled, see \textit{Non-WinRoaming processing} (on page 4).

Example: \texttt{msidRequiredDeniedReason = 0}

Continued on next page
eserv.config Configuration, Continued

Parameters (continued)

nonWinRoamDataTimeout
Syntax: nonWinRoamDataTimeout = <secs>
Description: The number of seconds to retain call data for non-WinRoaming calls.
Type: Integer
Optionality: Optional (default used if not set).
Default: 30
Notes: For more information about how roaming calls are handled, see Non-WinRoaming processing (on page 4).
Example: nonWinRoamDataTimeout = 30

noTsanDeniedReason
Syntax: noTsanDeniedReason = <0|1|2|3|4|5|6>
Description: The AccessDeniedReason to send back if all TSANs are in use.
Type: Integer
Optionality: Optional (default used if not set).
Allowed: 0 Not used.
1 Unassigned directory number (the MS is not served by the accessed system).
2 Inactive (the MS is not active in the accessed system and the HLR pointer to the MSs VLR should be maintained).
3 Busy (the MS is busy in the accessed system and cannot accept additional calls).
4 Termination Denied (terminations to this MS are not allowed).
5 No Page Response (the MS was paged by the accessed system but did not respond).
6 Unavailable (the MS is currently not available and the HLR pointer to the MSs VLR should be maintained and the MS shall remain in the same state).
Default: 3
Notes: For more information about TSANs, see Non-WinRoaming processing (on page 4).
Example: noTsanDeniedReason = 3

Continued on next page
keepTsanLocal
Syntax: keepTsanLocal = <bool>
Description: If this parameter is set to true, the gateway checks if the
Digits or DestinationDigits in a received ANLYZD
message match a non-WIN roaming TSAN record.
If yes, it will replace these fields with stored values from a
previous origination request, preventing the TSAN from being
sent to the service.
Type: Boolean
Optionality: Optional (default used if not set).
Allowed:
• true
• false
Default: true
Example: keepTsanLocal = true

dummyMsid
Syntax: dummyMsid = <int>
Description: This is used to set the MSID internally when no MIN is
received in the ANLYZD message.
Type: Integer
Optionality: Optional (default used if not set).
Default: "0"
Notes: However, if a MIN is received in the ANLYZD, that will be
used to set the MSID internally instead.
Example: dummyMsid = "989123"

defaultTsanPool
Syntax: defaultTsanPool = "<name>"
Description: The name of the default GMSC TSAN pool to use if a MSID
isn't available or it's not found in msidGmscFile (on page 11).
Type: String
Optionality: Optional (default used if not set).
Mandatory for IS-826 retriggering.
Allowed: This must exist in the tsanPools section.
Default: none (No default pool)
Notes: For more information about TSANs, see Non-WinRoaming
processing (on page 4).
Example: defaultTsanPool = "MSC1"
eserv.config Configuration, Continued

Parameters (continued)

**tsanAnlyzdField**

- **Syntax:** `tsanAnlyzdField = <str>`
- **Description:** The number field containing the TSAN for nonWinRoaming.
- **Type:** String
- **Optionality:** Optional (default used if not set).
- **Allowed:**
  - DestinationDigits
  - Digits
  - MDN
- **Default:** Digits
- **Example:** `tsanAnlyzdField = "Digits"`
Parameters (continued)

**tsanPools**

**Syntax:**

```c
{  
    gmscName="<name>"
    ranges = [
        {  
            rangeStart = "<str>"
            rangeEnd = "<str>"
        }
        ...
    ]
}
```

**Description:** The list of permissible TSANs per GMSC.

**Type:** Array

**Optionality:** Optional (not used if not set). Mandatory for IS-826 retriggering.

**Notes:** For more information about IS-826 and TSANs, see *Non-WinRoaming processing* (on page 4).

**Example:**

```c
{  
    gmscName="MSC1"
    ranges = [
        {  
            rangeStart = "8049096367"
            rangeEnd = "8049096417"
        }
        {  
            rangeStart = "9876540850"
            rangeEnd = "9876540890"
        }
    ]
}

{  
    gmscName="MSC2"
    ranges = [
        {  
            rangeStart = "0987650990"
            rangeEnd = "0987650150"
        }
        {  
            rangeStart = "5402946949"
            rangeEnd = "5402946999"
        }
    ]
}
```

Continued on next page
eserv.config Configuration, Continued

Parameters (continued)

**gmscName**

Syntax: \( gmscName = \"<name>\" \)

Description: The name of the Gateway MSC for the range of TSANs defined by the corresponding range parameter.

Type: String

Optionality: Optional (ranges not used if not set).

Mandatory for IS-826 retriggering.

Allowed: A string up to 50 characters long.

Notes: For more information about TSANs, see *Non-WINRoaming processing* (on page 4).

Example: \( gmscName = \"MSC1\" \)

**tsanNature**

Syntax: \( tsanNature = \langle\text{int}\rangle \)

Description: This is the NoA (nature of address) of the TSAN which is sent in the orreq (Origination Request Result) in both the DialedDigits and the DestinationDigits fields (See Notes below).

Type: Integer

Optionality: Optional (default used if not set).

Allowed: 3  Sets national for the INAP representation of NOA for the TSAN.

4  Sets international for the INAP representation of the TSAN.

Default: 3 (national)

Notes:

- These values will be converted into an IS41 Nature of Address in the OriginationRequest return result. i.e. 0 for national and 1 for international.

- The DestinationDigits field is derived from TerminationList -> PSTN Termination -> DestinationDigits.

Example: \( tsanNature = 4 \)

Continued on next page
eserv.config Configuration, Continued

Parameters (continued)

ranges
Syntax: ranges = [
    {}
    ...
]
Description: The TSAN pools which can be used with this Gateway MSC.
Type: Array
Optionality: Optional (not used if not set).
Default: none
Example: For an example of this parameter used in context, see tsanPools (on page 25).

rangeStart
Syntax: rangeStart = "<tsan>"
Description: The first TSAN in a range in a TSAN pool.
Type: String
Optionality: Mandatory if ranges (on page 27) is used.
Notes: For more information about TSANs, see Non-WinRoaming processing (on page 4).
Example: For an example of this parameter used in context, see tsanPools (on page 25).

rangeEnd
Syntax: rangeEnd = "<tsan>"
Description: The last TSAN in a range in a TSAN pool.
Type: String
Optionality: Mandatory if ranges (on page 27) is used.
Notes: For more information about TSANs, see Non-WinRoaming processing (on page 4).
Example: For an example of this parameter used in context, see tsanPools (on page 25).

Dynamic_DMHServiceID
Flag to enable dynamic DMH_ServiceIDs, set by the SCP using FCI. Enabling this overrides the static ANLYZD DMH_ServiceID.
Default: false
Allowed: true or false

Continued on next page
Chapter 2  Commercial In Confidence

eserv.config Configuration, Continued

Parameters (continued)

DMHServiceID_ANLYZD_OnRelease
Flag to enable sending a DMH_ServiceID in an ANLYZD response that releases a call.

Default: true
Allowed: true or false

DMHServiceID_ANLYZD
The DMH_ServiceID to send to the MSC as part of an ANLYZD result. If this is set to an empty value no DMH_ServiceID is sent in the result.

Default: ""
Allowed: String
Note: The format is “marketID.marketSegmentId.ServiceIdValue”

DMHServiceID_ORREQ
The DMH_ServiceID to send to the MSC as part of an ORREQ result. If this is set to an empty value no DMH_ServiceID is sent in the result.

Default: ""
Allowed: String
Note: The format is “marketID.marketSegmentId.ServiceIdValue”

DMHServiceID_ODISCONNECT
The DMH_ServiceID to send to the MSC as part of an ODISCONNECT result. If this is set to an empty value no DMH_ServiceID is sent in the result.

Default: ""
Allowed: String
Note: The format is “marketID.marketSegmentId.ServiceIdValue”

DMHServiceID_TDISCONNECT
The DMH_ServiceID to send to the MSC as part of an TDISCONNECT result. If this is set to an empty value no DMH_ServiceID is sent in the result.

Default: ""
Allowed: String
Note: The format is “marketID.marketSegmentId.ServiceIdValue”

DMHServiceID_DynamicPrefix
The prefix to add to the dynamic DMH_ServiceID. Only used when dynamic dmh_service ids are enabled, this should be set to an empty value. If this is set to an empty value no DMH_ServiceID is sent in the ANLYZD result.

Default: 1.1
Allowed: String
Note: The format is “marketID.marketSegmentId”

SIGTRAN configuration

cdmagw also supports the configuration for sua_if and m3ua_if from the SIGTRAN TCAP Interface in the cdmagw section. The SIGTRAN parameters are used as if they were inside the a sigtran section.

For more information about the available parameters, see SIGTRAN TCAP IF Technical Guide.
cdmagw.sh Configuration

The CDMA startup shell script /IN/service_packages/IS41/bin/cdmagw.sh contains additional configuration for the ANSI TCAP Interface.

This setting states where the tdp.conf file is located (this file is installed during setup):

```
TDP_DEFINITIONS=/IN/service_packages/SLEE/etc/tdp.conf
export TDP_DEFINITIONS
```

# the following settings should be configured to reflect your system
# setup:
# -ssns   = subsystem numbers - default = 19
# -autoac = auto app context set - default = yes
# -defoutac = Specify object identifier to use for TCAP Interface Application context
# -stps     = comma seperated list of STPs
# -monitorperiod = the period over which to monitor call attempts for throttling - default = 1000
# -retssn   = return SSN address
# -retpc    = return PC address
# -retgt    = return GT address
# -retri    = return RI
# -asidbase = application server id base

**Note:** The start up option -retpc can also be expressed as either an existing single integer, or as an ANSI network-cluster-member point code representation.

**For example:**

- retpc 2193
- retpc 10-20-42

This text shows an example cdmagw.sh:

```
TDP_DEFINITIONS=/IN/service_packages/SLEE/etc/tdp.conf
export TDP_DEFINITIONS

exec /IN/service_packages/IS41/bin/cdmagw \
  -ssns 11,146 \ 
  -stps 2596 \ 
>> /IN/service_packages/IS41/tmp/cdmagw.log 2>&1
```
Chapter 3

Background Processes

Overview

Introduction

This chapter explains the processes which run automatically as part of the application. These processes are started automatically by one of the following:

• initab
• crontab, or
• SLEE.

Note: This chapter also includes some plugins to background processes which do not run independently.

In this chapter

This chapter contains the following topics.

cdmagw ......................................................................................................... 32
cdmagw_sua ................................................................................................. 33
cdmagw_m3ua .............................................................................................. 34
### cdmagw

**Purpose**  
cdmagw is the main binary for the CDMA. It is responsible for handling CDMA interactions with MSCs and HLRs, and for triggering appropriate IN interactions to slee_acs. Uses the IN call model.

**Note:** cdmagw is usually a link to one of cdmagw_sua (on page 33) or cdmagw_m3ua (on page 34). The binary linked to defines which version of the SIGTRAN stack is being used.

**Location**  
This binary is located on UASs.

**Startup**  
This task is started by the SLEE, by the following lines in SLEE.cfg:

```bash
INTERFACE=cdmagw cdmagw.sh /IN/service_packages/IS41/bin EVENT
```

**Notes:**
- cdmagw.sh is a shell script which starts cdmagw. For more information about the configuration which must be set in this file, see cdmagw.sh Configuration (on page 29).
- The above are defaults and may vary.

**Configuration**  
As cdmagw is a link to one a specific implementation of cdmagw, see the Configuration section for the binary linked to. Either:
### cdmagw_sua

| Purpose | Provides the cdmagw binary compiled against the sua_if version of the SIGTRAN stack. Provides CDMA voice over SCCP over SUA. For more information about sua_if, see *SIGTRAN TCAP IF Technical Guide*. |
| Location | This binary is located on UASs. |
| Startup | If this binary is linked to from cdmagw, it will be started in the way described in *Startup* (on page 32). |
| Configuration | cdmagw_sua is configured using eserv.config and cdmagw.sh. For more information about the available parameters, see *Configuration* (on page 9). |
cdmagw_m3ua

| Purpose | Provides the cdmagw binary compiled against the m3ua_if version of the SIGTRAN stack. Provides CDMA voice over SCCP over M3UA. For more information about m3ua_if, see SIGTRAN TCAP IF Technical Guide. |
| Location | This binary is located on UASs. |
| Startup | If this binary is linked to from cdmagw, it will be started in the way described in Startup (on page 32). |
| Configuration | cdmagw_m3ua is configured using eserv.config and cdmagw.sh. For more information about the available parameters, see Configuration (on page 9). |
# Administrative Tasks

## Overview

### Introduction

This chapter provides the procedures for administering the U-CA-IS41 (CDMA) application.

### In this chapter

This chapter contains the following topics:

- Starting and Stopping the U-CA-IS41 (CDMA) ............................................. 36
- Backing up the U-CA-IS41 (CDMA) Service................................................... 37
## Starting and Stopping the U-CA-IS41 (CDMA)

<table>
<thead>
<tr>
<th>Introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>This topic explains how to start or stop the U-CA-IS41 (CDMA) application.</td>
</tr>
</tbody>
</table>

### Starting the U-CA-IS41 (CDMA) service

Follow these steps to start the automated shell script, which in turn starts the U-CA-IS41 (CDMA) service.

**Note:** You must be logged in as the user `acs_oper`.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | As the user `acs_oper`:

  - **Type** `/IN/service_packages/SLEE/bin/slee.sh`

  **Result:** This shell script starts the `slee_acs` and the associated interfaces `cdmagw`, `timer IF` and `cdrIF`.

  The stdout and stderr from slee.sh will appear on the screen, so if this screen is closed the output will no longer be viewable. If this information is required then redirect output to a file, e.g. `slee.sh > sleeout.log`.

### Startup output

When the SLEE service starts various information is presented on stdout and the syslog.

### Stopping the U-CA-IS41 (CDMA) service

Follow the steps below to stop the automated shell script, which in turn stops the U-CA-IS41 (CDMA) service.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | As the user `acs_oper`:

  - **Type** `/IN/service_packages/SLEE/bin/stop.sh`

  **Note:** It also recommended to run a `.clean` following the stop.

If the SLEE_FILE variable is being used it must be visible to the stop program. If it is not visible, the program will not be able to clear the shared memory and will exit with error 3005.

**Note:** if the service has stopped for any abnormal reasons a manual cleanup should be performed, .i.e. `ps -fu acs_oper` to find the remaining processes, then `kill <pid>` each one. The shared memory should be checked using `ipcs | grep acs`, then remove `acs_oper` owned ones using `ipcrm` and `clean`. 
Backing up the U-CA-IS41 (CDMA) Service

Introduction

The filesystem areas that should be backed up for the U-CA-IS41 (CDMA) service are:

/IN/service_packages/IS41/

The standard UNIX restore utilities can then be used.
Chapter 5

Troubleshooting

Overview

Introduction
This chapter explains common troubleshooting procedures and problem symptoms.
If the problem is not solved after consulting this chapter, contact Level 1 support.
You will be asked to describe the failure in detail, together with any error messages that may have been displayed at the time of failure.

In this chapter
This chapter contains the following topics.
Common Troubleshooting Procedures ......................................................... 40
Common Troubleshooting Procedures

Introduction
This topic provides instructions for completing common troubleshooting procedures.

Checking current processes
You can check which processes are running using the standard UNIX command: ps. To find processes being run by Oracle software, you can grep for the string 'oper', which will display all processes being run by the application operator accounts (for example, acs_oper, ccs_oper and smf_oper).

**Note:** Some processes which are required for proper functioning may be run by other users, including root or the user which runs the webserver.

**Example command:** `ps -ef | grep oper`

For more information about the ps command, see the system documentation for the ps command.

You can also check how much of the processor a process is using by running the standard UNIX tool: top. If you have some baseline measurements, you will be able to compare it with the current load.

**Example command:** `top`

**Tip:** Some processes should only have one instance. If there are two or more instances, this may indicate a problem. For example, there will usually only be one timerIF running on each UAS.

For more information about which processes should be running on each node, check the Process List for each node in **Installation**.

Process failure
You can check whether a process is restarting using the SMS Alarms subsystem. Processes raise alarms when they are stopped or started. The alarms include:

- their name
- the time the alarm was logged, and
- some other information about why the event may have occurred.

Further information about the specific alarm can be found in either the:

- System Alarms chapter of the application's Technical Guide, or
- application's Alarms Guide.

Alarms can be accessed from:

- the syslog on the local machine and the USMS(s), and
- the **Alarms** tab in the SMS Alarms Management screen.

For more information about the syslog, see **SMS Technical Guide**.

For more information about the Alarms Management screen, see **SMS User’s Guide**.

Debug output
Debugging output is available. Do not enable debugging under production call loads. Enable debugging only when advised to do so by Oracle support.

To switch the debug level, send `cdmagw` (on page 32) a SIGUSR1.

To turn on SCCP logging, send cdmagw a SIGUSR2.

Checking installed packages
To check the details of an installed package, use the `pkginfo` command.

**Example command:** `pkginfo -l smsSms`

Continued on next page
Common Troubleshooting Procedures, Continued

Checking installed packages (continued)

Example output: This is an example of the output of the example command above.

```
PKGINST: smsSms
NAME: Oracle smsSms
CATEGORY: application
ARCH: sun4u
VERSION: 3.1.0
VENDOR: Oracle
PSTAMP: smsNode20041020104925
INSTDATE: Oct 20 2004 13:15
EMAIL: support@Oracle.com
STATUS: completely installed
FILES: 348 installed pathnames
        39 directories
        89 executables
        152448 blocks used (approx)
```

For more information about the `pkginfo` utility, see the system documentation.

Checking network connectivity

Network connectivity will affect any process which requires communication between two different network addresses.

Network connectivity should support ssh sessions between the two machines experiencing the problem.

If you can open an ssh session between the two machines, check the following before contacting Level 1 support with details:

- If the address of either of the machines specified in the Node Management screens is a hostname, check that the hostnames used in the ssh sessions are the hostnames specified in the Node Management screen.

If you cannot ssh, check the following before contacting Level 1 support with details:

- Check that the hostname is resolving correctly in the DNS.
- Check that the physical network connection is working correctly.
- Check that the `inetd` and `sshd` are running.
- Check that `sshd` is listening on the expected port.
- Check that the `smf_oper` and `acs_oper` accounts are not locked, and that the username and password combinations being used are correct.

Checking configuration files

One of the significant areas where faults can occur and be remedied is in the configuration of processes. Configuration files can be edited by any standard text editor. A backup of the existing configuration file should always be taken before editing a configuration file.

For more information about the configuration files used in this application, see `Configuration`.

For more information about the configuration file for a specific program or tool, see the section named after the binary in question.
System Alarms

Overview

<table>
<thead>
<tr>
<th>Introduction</th>
<th>This chapter explains the alarms which may be generated by the application, probable causes and recommended responses.</th>
</tr>
</thead>
<tbody>
<tr>
<td>In this chapter</td>
<td>This chapter contains the following topics.</td>
</tr>
<tr>
<td>Alarm Topic Description</td>
<td>.................................................................44</td>
</tr>
<tr>
<td>U-CA-IS41 (CDMA)</td>
<td>.................................................................45</td>
</tr>
</tbody>
</table>
# Alarm Topic Description

## Alarm generation

Alarms on each configured node are written to the syslog and are then captured by the smsAlarmDaemon for entry in the SMF database. For management of these alarms, refer to the *SMS Technical Guide*.

## Severity levels

This table describes the alarms severity levels.

<table>
<thead>
<tr>
<th>Level</th>
<th>Abbr</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical</td>
<td>C</td>
<td>These alarms are raised when the application has encountered an error which indicates that the system is unable to function.</td>
</tr>
<tr>
<td>Error</td>
<td>E</td>
<td>These alarms indicate the application has encountered a serious problem completing a necessary task and could not complete the task.</td>
</tr>
<tr>
<td>Warning</td>
<td>W</td>
<td>Warnings are raised to indicate the application encountered a problem completing a non-mission critical task.</td>
</tr>
<tr>
<td>Notice</td>
<td>N</td>
<td>Notices are raised to indicate that the application has completed a task successfully.</td>
</tr>
</tbody>
</table>

## Alarm text and variables

The `%d` and `%s` symbols represent variables within the alarm text. These values are generated by the subsystem and added to the message when the alarm is raised. Usually the `%d` is a number and the `%s` is text in the context of the message to complete the alarm message. Occasionally other `%` symbols are also used (e.g. `%u`) for different variables.

## Further information

For more information about the SMS Alarms subsystem, see the *SMS Technical Guide*.

For more information about creating and maintaining the SMS Alarm Relay rule set, see the *SMS User's Guide*. 

---

**Note:**
- The `%d` and `%s` symbols represent variables within the alarm text. These values are generated by the subsystem and added to the message when the alarm is raised.
- Usually the `%d` is a number and the `%s` is text in the context of the message to complete the alarm message. Occasionally other `%` symbols are also used (e.g. `%u`) for different variables.
- For more information about the SMS Alarms subsystem, see the *SMS Technical Guide*.
- For more information about creating and maintaining the SMS Alarm Relay rule set, see the *SMS User's Guide*. 

---
### U-CA-IS41 (CDMA)

#### Critical errors

This table defines the critical messages for U-CA-IS41 (CDMA).

<table>
<thead>
<tr>
<th>Alarm Text</th>
<th>Reason</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unable to attach to the SLEE, CdmaGateway failed</td>
<td>The CdmaGateway cannot be executed directly, it must be declared in the SLEE.conf file. The CdmaGateway will exit abnormally. Error 1003</td>
<td>Declare the CdmaGateway in the SLEE.conf file.</td>
</tr>
<tr>
<td>Unable to initialise Tcap Interface, CdmaGateway failed</td>
<td>The CdmaGateway could not initialise the Hughes Tcap interface, this may be due to a configuration problem. The CdmaGateway will exit abnormally. Error 1019</td>
<td>Review configuration file and/or contact Oracle support.</td>
</tr>
<tr>
<td>Unable to create IN Call Model, CdmaGateway failed</td>
<td>The CdmaGateway could not initialise the IN Call Model, this may be due to a configuration problem. The CdmaGateway will exit abnormally. Error 1022</td>
<td>Review configuration file and/or contact Oracle support.</td>
</tr>
</tbody>
</table>

#### Errors

This table defines the error messages for cdmagw (on page 32).

<table>
<thead>
<tr>
<th>Alarm Text</th>
<th>Reason</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unable to set signal handler for SIGUSR1: cmnSigSet() failed with ...:...</td>
<td>You will be unable to enable and disable debug by using the SIGUSR1 signal. Error 1001</td>
<td>Contact Oracle support.</td>
</tr>
<tr>
<td>Unable to set signal handler for SIGUSR2: cmnSigSet() failed with ...:...</td>
<td>You will be unable to toggle SCCP logging on/off by using the SIGUSR2 signal. Error 1002</td>
<td>Contact Oracle support.</td>
</tr>
<tr>
<td>Loading SUA configuration: Unable to set SIGTRAN_CONFIG_SECTION =cdmagw</td>
<td>Failed to set the section to reread the config from.</td>
<td>Contact Oracle support.</td>
</tr>
<tr>
<td>Unable to read configuration file. Using defaults</td>
<td>The CdmaGateway was unable to find the Oracle file. Error 1004</td>
<td>Make sure it is located at /IN/service_packages/eserv.config or update your ESERV_CONFIG_FILE environment variable.</td>
</tr>
</tbody>
</table>

Continued on next page
### U-CA-IS41 (CDMA), Continued

#### Errors (continued)

<table>
<thead>
<tr>
<th>Alarm Text</th>
<th>Reason</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Failed to delete call</strong></td>
<td>The CdmaGateway was unable delete a call. This indicates an internal error but is recoverable. Error 1012</td>
<td>No action required.</td>
</tr>
<tr>
<td><strong>Unexpected event type:</strong> ...</td>
<td>The CdmaGateway failed to process an unknown event type. This will occur if the message to process has become corrupted. The event will not be processed correctly and the call will not proceed as expected. Error 1014</td>
<td>Contact Oracle support.</td>
</tr>
<tr>
<td><strong>Unexpected Event [ ... ] in State [ ... ]</strong></td>
<td>The CdmaGateway state machine received an unexpected action event in the given state. This internal error occurs if messages are not handled in a defined order. The event will not be processed and the call will be exited. Error 1015</td>
<td>Contact Oracle support.</td>
</tr>
<tr>
<td><strong>CdmaGateway: addPendingEvent NOT SUPPORTED</strong></td>
<td>The CdmaGateway attempted to invoke an unsupported method. This should never occur, but if it does it indicates that the CdmaGateway has become corrupted in some way. Error 1016</td>
<td>Contact Oracle support.</td>
</tr>
<tr>
<td><strong>Encode – invalid action: ... for event type: ...</strong></td>
<td>The CdmaGateway attempted to encode an invalid action for the given event type. This error will only occur when the SCF attempts to send a progress or release to the CdmaGateway. The event will not be sent and the call will not proceed as expected. Error 1017</td>
<td>Contact Oracle support.</td>
</tr>
<tr>
<td><strong>No valid invoke call was found, message not processed: CCDirResult:StatusCheck:Failure</strong></td>
<td>The CdmaGateway could not find a valid call to send the given message to. This could indicate an internal error, or may indicate that the MSC has allowed a call to proceed when we told it not to. It is recoverable but the call has not processed the given action so will not be in the correct state. Error 1018</td>
<td>Contact Oracle support.</td>
</tr>
</tbody>
</table>

*Continued on next page*
### U-CA-IS41 (CDMA), Continued

**Errors (continued)**

<table>
<thead>
<tr>
<th>Alarm Text</th>
<th>Reason</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attempt to send an event [ ... ] on an invalid dialog</td>
<td>The CdmaGateway attempted to send an event on an invalid dialog. The message was not sent but the CdmaGateway will continue. Error 1026</td>
<td>Contact Oracle support.</td>
</tr>
</tbody>
</table>

**Warnings**

This table defines the warning messages for U-CA-IS41 (CDMA).

<table>
<thead>
<tr>
<th>Alarm Text</th>
<th>Reason</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrecognized Operation Id: ...</td>
<td>The CdmaGateway received an invoke tcap component that it was unable to decode, it did not recognise the operation id. Error 1005</td>
<td>No action required.</td>
</tr>
<tr>
<td>Unrecognized Operation Invoke Id: ...</td>
<td>The CdmaGateway received a result tcap component that it was unable to decode. It did not recognise the operation invoke id. Error 1006</td>
<td>No action required.</td>
</tr>
<tr>
<td>Received a Tcap Cancel primitive with invokeId: ...</td>
<td>The CdmaGateway received a cancel tcap primitive. It has not performed any additional processing on it. Error 1007</td>
<td>No action required.</td>
</tr>
<tr>
<td>Received a Tcap Abort primitive with abortType: ...</td>
<td>The CdmaGateway received an abort tcap primitive. It has not performed any additional processing on it. Error 1008</td>
<td>No action required.</td>
</tr>
<tr>
<td>Received a Tcap Notice primitive with reportCause: ...</td>
<td>The CdmaGateway received a notice tcap primitive. It has not performed any additional processing on it. Error 1009</td>
<td>No action required.</td>
</tr>
<tr>
<td>Received an Unknown tcap primitive type: ...</td>
<td>The CdmaGateway received a tcap primitive but did not recognise the primitive type. Error 1010</td>
<td>No action required.</td>
</tr>
<tr>
<td>Attempt to create a duplicate call</td>
<td>The CdmaGateway attempted to create two calls with the same key. This indicates an internal error but is recoverable. Error 1011</td>
<td>No action required.</td>
</tr>
</tbody>
</table>

Continued on next page
Warnings (continued)

<table>
<thead>
<tr>
<th>Alarm Text</th>
<th>Reason</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attempt to insert a duplicate invoke call with dialogId: …</td>
<td>The CdmaGateway attempted to save two invoke calls with the same dialog id, this indicates that a previous invoke operation (such as CCDIR) did not receive a reply. This does not indicate an error, the call will proceed as expected. Error 1013</td>
<td>No action required.</td>
</tr>
<tr>
<td>CdmaGateway exiting with ... active calls</td>
<td>The CdmaGateway is about to shutdown with a number of calls still active. This is only a warning and the CdmaGateway will continue to shutdown. Error 1023</td>
<td>No action required.</td>
</tr>
<tr>
<td>Invalid configuration - ... has an invalid value ...</td>
<td>The specified configuration item has an invalid value, it must be corrected. Error 1028</td>
<td>Correct the invalid configuration item.</td>
</tr>
<tr>
<td>DMH_ServiceID has invalid FCI value, ... truncated to ...</td>
<td>The FCI number given has an invalid value and will be truncated before it is sent in the DMH_ServiceID. FCI values must not exceed 0xFFFF. Error 1029</td>
<td>No action required.</td>
</tr>
</tbody>
</table>

Notices

This table defines the notice messages for U-CA-IS41 (CDMA).

<table>
<thead>
<tr>
<th>Alarm Text</th>
<th>Reason</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>CdmaGateway start</td>
<td>The CdmaGateway has started. Error 1020</td>
<td>No action required.</td>
</tr>
<tr>
<td>CdmaGateway Interface stopped</td>
<td>The CDMA IS41 gateway service process is shutting down. This indicates that the UAS SLEE is shutting down. Error 1021</td>
<td>No action required.</td>
</tr>
<tr>
<td>Soak Test is complete</td>
<td>Soak Test interface only: The current soak test has completed its run. The statistics from the run will follow this message. Error 1024</td>
<td>No action required.</td>
</tr>
<tr>
<td>Throttling is enabled, Call Rate limited to ... CAPS</td>
<td>The CdmaGateway is running with throttling enabled. The maximum call rate is as indicated in the warning message. Error 1025</td>
<td>No action required.</td>
</tr>
</tbody>
</table>
### Notices (continued)

<table>
<thead>
<tr>
<th>Alarm Text</th>
<th>Reason</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Interface: Listening on TCP Port:</td>
<td>The CdmaGateway test interface has been enabled and is listening on the specified port. Error 1027</td>
<td>No action required.</td>
</tr>
</tbody>
</table>
Chapter 7

Installation

Overview

Introduction

This chapter explains how to install the application.

In this chapter

This chapter contains the following topics.

- Installation Pre-requisites ................................................................. 52
- Loading the Distribution File .............................................................. 54
- Installing the U-CA-IS41 (CDMA) cdmaSms Package on a USMS .... 55
- Installing the U-CA-IS41 (CDMA) cdmagw Package on a UAS ......... 57
Installation Pre-requisites

### Introduction

This topic provides a list of the pre-requisites for the installation of the LCA application.

For details on the installation of the required system software, refer to the installation and set-up documentation supplied with the software.

### Unclustered USMS machine

If you want to log statistics to the SMS sub system, you must have installed this package before CDMA is installed on a clustered USMS. For details about which version of the software is required, see the release notes for the CDMA packages you are installing.

<table>
<thead>
<tr>
<th>Software</th>
<th>Version</th>
<th>Description</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>smsSms</td>
<td>3.1.1 or later</td>
<td>Service Management System</td>
<td>SMS Technical Guide</td>
</tr>
<tr>
<td>acsSms</td>
<td>2.4.2 or later</td>
<td>Advanced Control Services</td>
<td>ACS Technical Guide</td>
</tr>
</tbody>
</table>

### Clustered USMS machine

If you want to log statistics to the SMS sub system, you must have installed this package before CDMA is installed on a clustered USMS. For details about which version of the software is required, see the release notes for the CDMA packages you are installing.

<table>
<thead>
<tr>
<th>Software</th>
<th>Version</th>
<th>Description</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>smsSms</td>
<td>3.1.1 or later</td>
<td>Service Management System</td>
<td>SMS Technical Guide</td>
</tr>
<tr>
<td>acsSms</td>
<td>2.4.2 or later</td>
<td>Advanced Control Services</td>
<td>ACS Technical Guide</td>
</tr>
</tbody>
</table>

### UAS machine

This table describes the Oracle software which must be installed before CDMA is installed on a UAS. For details about which version of the software is required, see the release notes for the CDMA packages you are installing.

<table>
<thead>
<tr>
<th>Software</th>
<th>Version</th>
<th>Description</th>
<th>Further information</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLEE</td>
<td>3.2.0 or later</td>
<td>Service Logic Execution Environment</td>
<td>SLEE Technical Guide</td>
</tr>
</tbody>
</table>

If you want to log statistics to the SMS sub system, one of these packages must also have been installed before CDMA is installed.

<table>
<thead>
<tr>
<th>Software</th>
<th>Version</th>
<th>Description</th>
<th>Further information</th>
</tr>
</thead>
<tbody>
<tr>
<td>smsScp</td>
<td>3.1.1 or later</td>
<td>Service Management System</td>
<td>SMS Technical Guide</td>
</tr>
<tr>
<td>smsExtras</td>
<td>3.1.1 or later</td>
<td>Service Management System</td>
<td>SMS Technical Guide</td>
</tr>
<tr>
<td>acsScp</td>
<td>2.4.2 or later</td>
<td>Advanced Control Services</td>
<td>ACS Technical Guide</td>
</tr>
</tbody>
</table>

### Checking Oracle application versions - cmn

Use the pkginfo utility to check the versions of Oracle application packages on each node.

For more information about:

- which versions are required, see the list under the machine name in this topic.
- using `pkginfo`, see *Checking installed packages* (on page 40).  

Continued on next page
## Installation Pre-requisites, Continued

### Checking SunOS version

Follow these steps to check the version number of SunOS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log in as super user.</td>
</tr>
<tr>
<td>2</td>
<td>In the command line, type: <code>uname -a</code></td>
</tr>
</tbody>
</table>

**Result:** This should return the value SunOS 5.9, which is the operating system major version type.

**Note:** The version listed above is an example only. The version number will equal whatever software version is installed.

### Checking software on Solaris

Check that your Solaris version is correct. The version required is listed under the machine names in this topic.

**Example commands:** You can check your Solaris version by using the commands:

- `uname -r`
- `pkginfo`

For more information about finding out your Solaris version, see your Solaris documentation.
Loading the Distribution File

Introduction

Before you can install the application packages, you must load them in an installation directory on the correct machines. This procedure copies and registers packages from the distribution file on to the system.

You must repeat this procedure on every machine. If your application packages have already been loaded, you do not have to complete this procedure.

Installation directory

This procedure copies the distribution file into the /tmp directory. The installation procedure assumes that the /tmp directory has been used.

Procedure

Follow these steps to load the distribution file.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure you are logged onto the machine as root.</td>
</tr>
</tbody>
</table>
| 2    | Copy the distribution file into the /tmp directory.  
The application’s distribution file will be distributed on either CD or from an FTP location. If you do not either have a CD or know the correct FTP location, please contact your Oracle contact. 
The packages are often distributed in one large compressed file (for example, sms.tar.gz). |
| 3    | Check whether the distribution file is compressed (zipped).  
You can usually determine this by the file extension: .gz or .tgz will mean the file is compressed. Occasionally, the file extension will be incorrect, or the file will fail to uncompress or untar. If it is available, you can use the file command to attempt to determine the type of file by checking its contents.  
If the distribution file is:  
• not compressed, go to Step 4.  
• compressed, uncompress the file.  
**Example commands:**  
• gunzip <filename>, or  
• gzip -d <filename>  
Where:  
<filename> is the distribution file  
**Result:** This uncompresses the distribution file. |
| 4    | If the distribution file is:  
• .pkg file, no further actions are required to load the distribution file.  
• a tar ball, untar the distribution.  
**Example command:** tar -xvf <filename>  
Where:  
<filename> is the uncompressed distribution file.  
**Result:** Untarring unzips the packages into the /tmp directory and will create an install sub-directory. |
Installing the U-CA-IS41 (CDMA) cdmaSms Package on a USMS

Introduction

Use this procedure to install the cdmaSms package on a single Sun platform.

This process automatically runs the post-install script on the USMS. It is not necessary to install any other packages on the USMS.

Before you begin

During installation, the installation script will overwrite any previously installed files in /IN/service_packages and /IN/html. If you want to keep these files, move them before starting the installation.

Installing cdmaSms on a single or primary USMS

The table below provides a sample of the text displayed during a cdmaSms package install on a single or primary USMS.

<table>
<thead>
<tr>
<th>Script Output</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td># pkgadd -d . cdmaSms</td>
<td>Type this command to start the installation.</td>
</tr>
<tr>
<td>Processing package instance &lt;cdmaSms&gt; from &lt;/volA/pkgs&gt;</td>
<td>This information shows which component is being installed and reports on some early steps in the install process.</td>
</tr>
<tr>
<td>cdmaSms(sun4u) 1.2</td>
<td></td>
</tr>
<tr>
<td>## Processing package information.</td>
<td></td>
</tr>
<tr>
<td>## Processing system information.</td>
<td></td>
</tr>
<tr>
<td>## Verifying disk space requirements.</td>
<td></td>
</tr>
<tr>
<td>## Checking for conflicts with packages already installed.</td>
<td></td>
</tr>
<tr>
<td>## Checking for setuid/setgid programs.</td>
<td></td>
</tr>
<tr>
<td>This package contains scripts which will be executed with super-user permission during the process of installing this package.</td>
<td>Type y to continue the installation.</td>
</tr>
<tr>
<td>Do you want to continue with the installation of &lt;cdmaSms&gt; [y,n,?] y</td>
<td>This output shows the progress of the installation.</td>
</tr>
<tr>
<td>Installing cdmaSms as &lt;cdmaSms&gt;</td>
<td></td>
</tr>
<tr>
<td>## Executing preinstall script.</td>
<td></td>
</tr>
<tr>
<td>adding group esg... already present</td>
<td></td>
</tr>
<tr>
<td>adding user is41_oper... successful</td>
<td></td>
</tr>
<tr>
<td>## Installing part 1 of 1.</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/IS41/ReleaseNotes.cdmaSms.txt</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/IS41/cdmaSms.conf.sh</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/IS41/lib/ckyorn</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/IS41/lib/cmnInstallLib.sh</td>
<td></td>
</tr>
<tr>
<td>[ verifying class &lt;none&gt; ]</td>
<td></td>
</tr>
<tr>
<td>## Executing postinstall script.</td>
<td></td>
</tr>
<tr>
<td>* Do you want to install the cdmaSms database to SMF?</td>
<td></td>
</tr>
<tr>
<td>[y,n,?]</td>
<td></td>
</tr>
</tbody>
</table>

Continued on next page
Installing the U-CA-IS41 (CDMA) cdmaSms Package on a USMS, Continued

Installing cdmaSms on a single or primary USMS (continued)

<table>
<thead>
<tr>
<th>Script Output</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Please enter the password for the SMF user on the SMF instance</td>
<td>Enter the password for the SMF oracle user.</td>
</tr>
<tr>
<td>(default: SMF) [?]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>* NOTE: Adding cdmaSms to Database.</td>
<td>This output displays the final steps in the installation.</td>
</tr>
<tr>
<td>NOTE: Installing cdmagw statistics definitions for database SMF ....</td>
<td>The cdmaSms package has been successfully installed and configured.</td>
</tr>
<tr>
<td></td>
<td>Note: Any other message will indicate a failed installation. Refer to the install log file for more information.</td>
</tr>
<tr>
<td>* cdmaSms database tables were installed.</td>
<td></td>
</tr>
<tr>
<td>* Install completed successfully.</td>
<td></td>
</tr>
</tbody>
</table>

Installation of <cdmaSms> was successful.
Installing the U-CA-IS41 (CDMA) cdmagw Package on a UAS

### Introduction

Use this procedure to install the cdmaScp package on an UAS. This process automatically runs the post-install script on the UAS. It is not necessary to install any other packages on the UAS.

### Before you begin

During installation, the installation script will overwrite any previously installed files in `/IN/service_packages` and `/IN/html`. If you want to keep these files, move them before starting the installation.

### Installing cdmagw on a UAS

The table below provides a sample of the text displayed during a cdmagw package install on a UAS.

<table>
<thead>
<tr>
<th>Script Output</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td># pkgadd -d . cdmagw</td>
<td>Type this command to start the installation.</td>
</tr>
<tr>
<td>Processing package instance &lt;cdmagw&gt; from &lt;/volA/pkgs&gt;</td>
<td>This output shows the progress of the installation.</td>
</tr>
<tr>
<td>Oracle cdmagw(sun4u) 1.2</td>
<td>Type <code>y</code> to continue with the installation.</td>
</tr>
<tr>
<td>Oracle</td>
<td>This output shows the progress of the installation.</td>
</tr>
<tr>
<td>## Processing package information.</td>
<td></td>
</tr>
<tr>
<td>## Processing system information.</td>
<td></td>
</tr>
<tr>
<td>1 package pathname is already properly installed.</td>
<td></td>
</tr>
<tr>
<td>## Verifying disk space requirements.</td>
<td></td>
</tr>
<tr>
<td>## Checking for conflicts with packages already installed.</td>
<td></td>
</tr>
<tr>
<td>## Checking for setuid/setgid programs.</td>
<td></td>
</tr>
<tr>
<td>This package contains scripts which will be executed with super-user</td>
<td></td>
</tr>
<tr>
<td>permission during the process of installing this package.</td>
<td></td>
</tr>
<tr>
<td>Do you want to continue with the installation of &lt;cdmagw&gt; [y,n,?] y</td>
<td></td>
</tr>
<tr>
<td>Installing Oracle cdmagw as &lt;cdmagw&gt;</td>
<td></td>
</tr>
<tr>
<td>## Executing preinstall script.</td>
<td></td>
</tr>
<tr>
<td>adding group esg... already present</td>
<td></td>
</tr>
<tr>
<td>adding user is41_oper... successful</td>
<td></td>
</tr>
<tr>
<td>## Installing part 1 of 1.</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/IS41/ReleaseNotes.cdmagw.txt</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/IS41/bin/cdmagw.sh</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/SLEE/etc/tdp.conf.cdmagw</td>
<td></td>
</tr>
<tr>
<td>[ verifying class &lt;none&gt; ]</td>
<td></td>
</tr>
<tr>
<td>## Executing postinstall script.</td>
<td></td>
</tr>
<tr>
<td>* cdmagw installation script ./cdmagw.conf.sh</td>
<td></td>
</tr>
<tr>
<td>* installing into /IN/service_packages/IS41</td>
<td></td>
</tr>
<tr>
<td>* checking user is41_oper exists...</td>
<td></td>
</tr>
<tr>
<td>* yes</td>
<td></td>
</tr>
<tr>
<td>* checking group esg exists...</td>
<td></td>
</tr>
<tr>
<td>* yes</td>
<td></td>
</tr>
</tbody>
</table>

Continued on next page
Installing cdmaSms on a UAS (continued)

<table>
<thead>
<tr>
<th>Script Output</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Checking password for is41_oper is valid...</td>
<td>Enter a password for the is41_oper unix user.</td>
</tr>
<tr>
<td>* no</td>
<td></td>
</tr>
<tr>
<td>passwd: password information changed for is41_oper</td>
<td></td>
</tr>
<tr>
<td>* Please enter password for is41_oper</td>
<td></td>
</tr>
<tr>
<td>New Password:</td>
<td></td>
</tr>
<tr>
<td>Re-enter new Password:</td>
<td></td>
</tr>
<tr>
<td>passwd: password successfully changed for is41_oper</td>
<td></td>
</tr>
<tr>
<td>* please enter the path to your SLEE configuration file</td>
<td>If you have moved the SLEE configuration file, enter the new path and/or filename now. Otherwise accept the default.</td>
</tr>
<tr>
<td>* (default is /IN/service_packages/SLEE/etc/SLEE.cfg)</td>
<td></td>
</tr>
<tr>
<td>* adding CdmaGw interface to SLEE configuration file.</td>
<td></td>
</tr>
<tr>
<td>* Linking secure libraries</td>
<td></td>
</tr>
<tr>
<td>* finished</td>
<td>This text shows the progress of the final installation steps.</td>
</tr>
</tbody>
</table>

Please review the release notes, they have been installed to
/IN/service_packages/IS41/ReleaseNotes.cdmagw.txt

An example configuration file has been installed to
/IN/service_packages/IS41/etc/example.cdma.eserv.config
Please use this as a guide to setting up your runtime configuration file at
/IN/service_packages/eserv.config

An example IN call model configuration file has been installed to
/IN/service_packages/IS41/etc/example.cdma.tdp.conf
Please use this as a guide to setting up your IN call model runtime configuration file at
/IN/service_packages/SLEE/etc/tdp.conf

A default cdmagw.sh file has bee installed to
/IN/service_packages/IS41/bin/cdmagw.sh
Please ensure that this contains the correct settings

Once you have modified the configuration files, please restart the SLEE to complete the installation

---

Continued on next page
Installing the U-CA-IS41 (CDMA) cdmagw Package on a UAS, Continued

Installing cdmaSms on a UAS (continued)

<table>
<thead>
<tr>
<th>Script Output</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation of &lt;cdmagw&gt; was successful.</td>
<td>The cdmagw package has been successfully installed and configured.</td>
</tr>
</tbody>
</table>

**Note:** Any other message will indicate a failed installation. Refer to the install log file for more information.
## Overview

<table>
<thead>
<tr>
<th>Introduction</th>
<th>This chapter explains how to remove the application.</th>
</tr>
</thead>
<tbody>
<tr>
<td>In this chapter</td>
<td>This chapter contains the following topics.</td>
</tr>
<tr>
<td></td>
<td>Removing Packages....................................................62</td>
</tr>
</tbody>
</table>
Removing Packages

Before you begin
The `pkgrm` utility deletes the entire package directory. Please check the `/IN/service_packages/IS41` directory for any files you wish to keep.

If you are storing any critical files there, please move them before starting these procedures.

Removing `cdmagw` from a UAS
The table below provides a sample of the text displayed during the removal of a `cdmagw` package from a UAS.

<table>
<thead>
<tr>
<th>Script Output</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td># pkgrm cdmagw</td>
<td>Type this command to start the installation.</td>
</tr>
<tr>
<td>The following package is currently installed:</td>
<td>Type <code>y</code> to continue the removal of the package.</td>
</tr>
<tr>
<td>cdmagw  Oracle cdmagw (sun4u) 1.2</td>
<td></td>
</tr>
<tr>
<td>Do you want to remove this package? [y,n,?,q] y</td>
<td></td>
</tr>
<tr>
<td>## Removing installed package instance &lt;cdmagw&gt;</td>
<td></td>
</tr>
<tr>
<td>This package contains scripts which will be executed with super-user permission</td>
<td>Type <code>y</code> to continue the removal of the package.</td>
</tr>
<tr>
<td>during the process of removing this package.</td>
<td></td>
</tr>
<tr>
<td>Do you want to continue with the removal of this package [y,n,?,q] y</td>
<td></td>
</tr>
<tr>
<td>## Verifying package &lt;cdmagw&gt; dependencies in global zone</td>
<td></td>
</tr>
<tr>
<td>## Processing package information.</td>
<td></td>
</tr>
<tr>
<td>## Executing preremove script.</td>
<td></td>
</tr>
<tr>
<td>* cdmagw uninstallation script ./cdmagw.unconf.sh</td>
<td></td>
</tr>
<tr>
<td>* uninstalling into /IN/service_packages/IS41</td>
<td></td>
</tr>
<tr>
<td>* please enter the path to your SLEE configuration file</td>
<td></td>
</tr>
<tr>
<td>* (default is /IN/service_packages/SLEE/etc/SLEE.cfg)</td>
<td></td>
</tr>
</tbody>
</table>

Continued on next page
### Removing Packages, Continued

#### Removing cdmagw from a UAS (continued)

<table>
<thead>
<tr>
<th>Script Output</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>* removed CdmaGw interface from SLEE configuration file.</td>
<td>This text shows the progress of the removal.</td>
</tr>
<tr>
<td>* Removing secure libraries, if required</td>
<td></td>
</tr>
<tr>
<td>* finished</td>
<td></td>
</tr>
<tr>
<td>## Removing pathnames in class &lt;none&gt;</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/SLEE/etc/tdp.conf.cdmagw</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/IS41/bin/cdmagw.sh</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/IS41/bin</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/IS41/ReleaseNotes.cdmagw.txt</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/IS41 &lt;non-empty directory not removed&gt;</td>
<td></td>
</tr>
<tr>
<td>## Executing postremove script.</td>
<td></td>
</tr>
<tr>
<td>removing user is41_oper... successful</td>
<td></td>
</tr>
<tr>
<td>## Updating system information.</td>
<td></td>
</tr>
<tr>
<td>Removal of &lt;cdmagw&gt; was successful</td>
<td></td>
</tr>
</tbody>
</table>

The cdmagw package has been successfully removed and unconfigured.

**Note:** Any other message will indicate a failed removal. Refer to the remove log file for more information.

#### Removing cdmaSms from a USMS

The table below provides a sample of the text displayed during removal of a cdmaSms package from on a USMS.

<table>
<thead>
<tr>
<th>Script Output</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td># pkgrm cdmaSms</td>
<td></td>
</tr>
<tr>
<td>The following package is currently installed:</td>
<td></td>
</tr>
<tr>
<td>cdmaSms  Oracle cdmaSms</td>
<td></td>
</tr>
<tr>
<td>(sun4u) 1.2</td>
<td></td>
</tr>
<tr>
<td>Do you want to remove this package? [y,n,?,q] y</td>
<td></td>
</tr>
<tr>
<td>## Removing installed package instance &lt;cdmaSms&gt;</td>
<td></td>
</tr>
<tr>
<td>This package contains scripts which will be executed with super-user permission during the process of removing this package.</td>
<td></td>
</tr>
<tr>
<td>Do you want to continue with the removal of this package [y,n,?,q] y</td>
<td></td>
</tr>
</tbody>
</table>

This output shows the progress of the removal.

Type y to continue the removal.

**Continued on next page**
Removing Packages, Continued

Removing cdmaSms from a USMS (continued)

<table>
<thead>
<tr>
<th>Script Output</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>## Verifying package &lt;cdmaSms&gt; dependencies in global zone</td>
<td>This output shows the progress of the removal.</td>
</tr>
<tr>
<td>## Processing package information.</td>
<td></td>
</tr>
<tr>
<td>## Executing preremove script.</td>
<td></td>
</tr>
<tr>
<td>* NOTE: cdmaSms database is currently installed.</td>
<td></td>
</tr>
<tr>
<td>* Do you want to continue removing the cdmaSms database (recommended)?</td>
<td>Type y to continue the removal.</td>
</tr>
<tr>
<td>[y,n,?]</td>
<td></td>
</tr>
<tr>
<td>* NOTE: Removing cdmaSms from database</td>
<td>This output shows the progress of the removal.</td>
</tr>
<tr>
<td>* Please enter the password for the SMF user on the SMF instance</td>
<td>Enter the password for the SMF oracle user on the USMS.</td>
</tr>
<tr>
<td>(default: SMF) [?]</td>
<td></td>
</tr>
<tr>
<td>NOTE: Deleting cdmagw statistics definitions for database SMF ...</td>
<td>This output shows the progress of the removal.</td>
</tr>
<tr>
<td>* cdmaSms database tables were removed.</td>
<td></td>
</tr>
<tr>
<td>* NOTE: cdmaSms uninstall complete</td>
<td></td>
</tr>
<tr>
<td>## Removing pathnames in class &lt;none&gt;</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/IS41/lib/cmnInstallLib.sh</td>
<td>The cdmaSms package has been successfully installed and configured.</td>
</tr>
<tr>
<td>/IN/service_packages/IS41/lib/ckyorn</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td>/IN/service_packages/IS41/cdmaSms.conf.sh</td>
<td>Note: Any other message will indicate a failed installation. Refer to</td>
</tr>
<tr>
<td>/IN/service_packages/IS41/ReleaseNotes.cdmaSms.txt</td>
<td>the install log file for more information.</td>
</tr>
<tr>
<td>/IN/service_packages/IS41 &lt;non-empty directory not removed&gt;</td>
<td></td>
</tr>
<tr>
<td>## Executing postremove script.</td>
<td></td>
</tr>
<tr>
<td>removing user is41_oper... successful</td>
<td></td>
</tr>
<tr>
<td>## Updating system information.</td>
<td></td>
</tr>
</tbody>
</table>

Removal of <cdmaSms> was successful.
### Appendix

#### Overview

<table>
<thead>
<tr>
<th>In this appendix</th>
<th>This appendix contains the following topics.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuring IN Call Model Triggers</td>
<td>.................................................. 66</td>
</tr>
<tr>
<td>Glossary of Terms</td>
<td>.......................................................... 71</td>
</tr>
<tr>
<td>Index</td>
<td>........................................................................ 77</td>
</tr>
</tbody>
</table>
Configuring IN Call Model Triggers

Overview
This introduces the generic configuration requirements of the Oracle IN Call Model.

The Oracle IN Call Model is not a separate product, rather it is a set of libraries that is bound into a final useable interface (such as the VSSP).

Environment variables
This table describes the UNIX shell environment variables to be configured.

<table>
<thead>
<tr>
<th>Environment Variable Name</th>
<th>Description</th>
<th>Example Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDP_DEFINITIONS</td>
<td>Defines the full path name of the Trigger Detection Point definition file.</td>
<td>/IN/service_packages/SLEE /etc/tdp.conf</td>
</tr>
</tbody>
</table>

The tdp.conf file has two sections:

1. a number of configuration parameters, and
2. the trigger tables used to determine when to trigger a call to the SCF.

Example: This text shows an example tdp.conf file:

```
# A comment
KEEP SD
ETC RULES=6 3
3 1 3 request all 123 6
4 2 4 notify all 222 keep
3 1 3 request 2:122 3:222 5 keep
```

Note: All lines starting with # are treated as comments. If no TDP definition file is defined, a default action is taken where:

- ALL calls are triggered to the SCF with a service key of 1 (one) and a trigger point of 3 (analyzedInformation ), and
- none of the global configuration parameters are considered set.

Global configuration parameters
The following configuration parameters may be set once on individual lines in the TDP definition file.

<table>
<thead>
<tr>
<th>Global Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEEP SD</td>
<td>If defined ALL all stop digits (defined by the BCD digit 'F') on the end of called party numbers are kept in the called party number. By default the stop digit is stripped from ALL triggered numbers.</td>
</tr>
<tr>
<td>CAMEL</td>
<td>This parameter is intended for CAMEL testing purposes only and should not be defined under normal usage. If defined, the called party number is also copied into the initialDP’s calledPartyBCDNumber CAMEL parameter. The NOA of the called party number becomes the BCD number type.</td>
</tr>
</tbody>
</table>

Continued on next page
## Configuring IN Call Model Triggers, Continued

### Global configuration parameters (continued)

<table>
<thead>
<tr>
<th>Global Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDITIONALNUMS</td>
<td>If defined, the IN Call Model will request all additional numbers available from the underlying protocol and insert them into the InitialDP message sent to the SCP. All these additional numbers are placed into a G8 extension in the InitialDP except any additional calling party number that is placed in the additionalCallingPartyNumber field.</td>
</tr>
<tr>
<td>ETC RULES= c or ETC RULES= c s</td>
<td>If defined then additional EstablishTemporaryConnection (ETC) rules are used. If the integer c is defined, the correlationID in all ETC messages from the SCF are appended on to the end of the assistingSSPIPRoutingAddress that is used, the digits are padded to a width of c digits. If s is also defined, then the scfID of the ETC is also appended on afterwards in the same way. For example: With &quot;ETC RULES=6 4&quot; and an ETC message with: assistingSSPIPRoutingAddress =1111, correlationID =55, scfID =0x42 Then the actual assistingSSPIPRoutingAddress used will be &quot;11110000550042&quot;</td>
</tr>
<tr>
<td>USER LIB = library</td>
<td>If defined the call model will use the user written shared object library specified by the full pathname library when dealing with ApplyCharging operations.</td>
</tr>
<tr>
<td>AC=a,b,c,...</td>
<td>Sets the TCAP application context used by the call model to the comma separated list of OIDs supplied.</td>
</tr>
<tr>
<td>ORIG_PC= pc</td>
<td>If defined, all InitialDPs will be sent with an SCCP calling party (origination) address that includes a Point Code defined by the integer pc. Note: This value may be defined in hex using a prefix of 0x.</td>
</tr>
<tr>
<td>ORIG_SSN= ssn</td>
<td>If defined, all initialDP’s will be sent with an SCCP calling party (origination) address that includes a subsystem number defined by the integer ssn.</td>
</tr>
<tr>
<td>ORIG_GT=1, n, addr or ORIG_GT=2, t, addr or ORIG_GT=3, t, p, addr or ORIG_GT=4, t, p, n, addr</td>
<td>If defined, all initialDP’s will be sent with an SCCP calling party (origination) address that includes a Global Title defined by the integers n, t, p and the number string addr. The initial value (1 to 4) identifies the Global Title type: • n is the NOA, • t is the Translation Type, • p is the Numbering Plan, and • addr is the address digits (0 to 9, A to F).</td>
</tr>
</tbody>
</table>

Continued on next page
**Configuring IN Call Model Triggers, Continued**

<table>
<thead>
<tr>
<th>Global Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| DEST_PC= pc      | If defined, all initialDP's will be sent with an SCCP called party (destination) address that includes a Point Code defined by the integer pc.  
**Note:** This value may be defined in hex using a prefix of 0x. |
| DEST_SSN= ssn    | If defined, all initialDP's will be sent with an SCCP called party (destination) address that includes a subsystem number defined by the integer ssn. |
| DEST_GT=1, n, addr or DEST_GT=2, t, addr or DEST_GT=3, t, p, addr or DEST_GT=4, t, p, n, addr | If defined all initialDP's will be sent with an SCCP called party (destination) address that includes a Global Title defined by the integers n, t, p and the number string addr.  
The initial value (1 to 4) identifies the Global Title type:  
- n is the NOA,  
- t is the Translation Type,  
- p is the Numbering Plan, and  
- addr is the address digits (0 to 9, A to F).  
See note 2 |
| ACH WARN PERIOD=period | Sets the default ApplyCharging warning to occur *period* seconds before the end of the call. |
| ACH RESOURCE=ad  | Sets the default ApplyCharging warning announcement/tone to use the resource identified by the address digits *ad*.  
**Note:** This is only applicable if the underlying controlled call supports the ability to play announcements/tones. |
| ACH ANNOUNCE= messageId | Causes the default ApplyCharging warning to use announcement with message identifier *messageId*.  
**Note:** This is only applicable if the underlying controlled call supports the ability to play announcements/tones. |
| ACS TONE= id, dur | Causes the default ApplyCharging warning to use tone with identifier *id* for a duration of *dur* seconds.  
**Note:** This is only applicable if the underlying controlled call supports the ability to play announcements/tones. |

**Note 1**

If none of these entries is defined all InitialDPs will be sent without an SCCP calling party address.

**Trigger detection point definitions**

After any global parameters have been set, the configuration file may take one or more trigger detection point (TDP) definitions.  
Each line defines a single trigger; its trigger parameter values that get sent and the conditions under which it gets sent.

Each line takes the following form:  
```
<tdp> <svcKey> <eventType> <msgType> <cgPn> <cdPn> [wild] [keep]
```

*Continued on next page*
### Trigger detection point definitions (continued)

The table below defines the meanings and forms of these parameters.

<table>
<thead>
<tr>
<th>Global Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;tdp&gt;</td>
<td>integer</td>
<td>This integer value defines the point that the TDP is triggered at.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Together with &lt;cgPn&gt;, &lt;cdPn&gt; and &lt;wild&gt; it defines the condition that the trigger will fire on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See the TDP Event Type table for a list of valid values and meanings.</td>
</tr>
<tr>
<td>&lt;svcKey&gt;</td>
<td>integer</td>
<td>This parameter defines the serviceKey value that will be inserted into the initialDP message when this trigger fires.</td>
</tr>
<tr>
<td>&lt;eventType&gt;</td>
<td>integer</td>
<td>This parameter defines the eventTypeBCSM value that will be inserted into the InitialDP message when this trigger fires.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See the TDP Event Type table for a list of valid values and meanings.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Generally this will be the same value as &lt;tdp&gt;.</td>
</tr>
<tr>
<td>&lt;msgType&gt;</td>
<td>request or notify</td>
<td>This parameter defines whether the TDP is sent as a TDP-R (request) or TDP-N(notify). Generally request is used here.</td>
</tr>
<tr>
<td>&lt;cgPn&gt;</td>
<td>&lt;num&gt; or &lt;nat&gt;:&lt;num&gt; or all</td>
<td>This parameter defines the calling party numbers that will trigger the TDP.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Together with &lt;tdp&gt;, &lt;cdPn&gt; and &lt;wild&gt; it defines the condition that the trigger will fire on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• &lt;num&gt; defines the prefix of the calling party digits, numbers must begin with these digits for the trigger to fire.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• &lt;nat&gt; is optional and defines additionally a nature of address (NOA) of the calling party that must match for the trigger to fire. If not provided a nature of 2 (unknown) is assumed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If all is defined then ALL calling party numbers will match.</td>
</tr>
<tr>
<td>&lt;cdPn&gt;</td>
<td>&lt;num&gt; or &lt;nat&gt;:&lt;num&gt; or all</td>
<td>This parameter defines the called party numbers that will trigger the TDP.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Together with &lt;tdp&gt;, &lt;cgPn&gt; and &lt;wild&gt; it defines the condition that the trigger will fire on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• &lt;num&gt; defines the prefix of the called party digits, numbers must begin with these digits for the trigger to fire.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• &lt;nat&gt; is optional and defines additionally a nature of address (NOA) of the called party that must match for the trigger to fire. If not provided a nature of 2 (unknown) is assumed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If all is defined then ALL called party numbers will match.</td>
</tr>
</tbody>
</table>

*Continued on next page*
Configuring IN Call Model Triggers, Continued

Trigger detection point definitions (continued)

<table>
<thead>
<tr>
<th>Global Parameter Value</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;wild&gt;</td>
<td>integer</td>
<td>This optional parameter defines the number of digits that must be present in the called party numbers before the TDP will trigger. Together with &lt;tdp&gt;, &lt;cgPn&gt; and &lt;cdPn&gt; it defines the condition that the trigger will fire on. If set the trigger will not fire until the called party number has this number of digits. Note: The &lt;wild&gt; parameter can be set to a special value of &quot;stop&quot;. If it is set to this value, then the trigger will only fire when a stop digit is received.</td>
</tr>
</tbody>
</table>

| keep                   | -      | If this optional flag is defined then all numbers triggered by this TDP will keep their stop digits (if they have one). |

TDP event type values

The following table defines the list of TDPs as defined by the CS-1 standard. It also defines the point at which the trigger will be instantiated by the Oracle IN Call Model.

<table>
<thead>
<tr>
<th>TDP</th>
<th>CS-1 Trigger Name</th>
<th>Call Model TDP Creation Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>origAttemptAuthorized</td>
<td>digitsReceived</td>
</tr>
<tr>
<td>2</td>
<td>collectedInfo</td>
<td>digitsReceived</td>
</tr>
<tr>
<td>3</td>
<td>analyzedInformation</td>
<td>digitsReceived</td>
</tr>
<tr>
<td>4</td>
<td>routeSelectFailure</td>
<td>released (cause != 16, 17, 18, 19, 21 or 31)</td>
</tr>
<tr>
<td>5</td>
<td>oCalledPartyBusy</td>
<td>released (Aparty, cause==17)</td>
</tr>
<tr>
<td>6</td>
<td>oNoAnswer</td>
<td>released (Aparty, cause==18, 19 or 21)</td>
</tr>
<tr>
<td>7</td>
<td>oAnswer</td>
<td>answered(Aparty)</td>
</tr>
<tr>
<td>8</td>
<td>oMidCall</td>
<td>not supported</td>
</tr>
<tr>
<td>9</td>
<td>oDisconnect</td>
<td>released (Aparty, cause==16 or 31)</td>
</tr>
<tr>
<td>10</td>
<td>oAbandon</td>
<td>released (Aparty, cause==16 or 31)</td>
</tr>
<tr>
<td>12</td>
<td>termAttemptAuthorized</td>
<td>digitsReceived</td>
</tr>
<tr>
<td>13</td>
<td>tCalledPartyBusy</td>
<td>released (Bparty, cause==17)</td>
</tr>
<tr>
<td>14</td>
<td>tNoAnswer</td>
<td>released (Bparty, cause==18, 19 or 21)</td>
</tr>
<tr>
<td>15</td>
<td>tAnswer</td>
<td>answered(Bparty)</td>
</tr>
<tr>
<td>16</td>
<td>tMidCall</td>
<td>not supported</td>
</tr>
<tr>
<td>17</td>
<td>tDisconnect</td>
<td>released (Bparty, cause==16 or 31)</td>
</tr>
<tr>
<td>18</td>
<td>tAbandon</td>
<td>released (Bparty, cause==16 or 31)</td>
</tr>
<tr>
<td>100</td>
<td>n/a</td>
<td>ringing (Aparty)</td>
</tr>
<tr>
<td>101</td>
<td>n/a</td>
<td>ringing (Bparty)</td>
</tr>
</tbody>
</table>
## Glossary of Terms

| **AC** | Application Context. A parameter in a TCAP message which indicates what protocol is conveyed. May indicate MAP, CAMEL, INAP, etc. Also usually specifies the particular version of the conveyed protocol, e.g. which CAMEL Phase. |
| **ACS** | Advanced Control Services configuration platform. |
| **CAMEL** | Customized Applications for Mobile network Enhanced Logic. This is a 3GPP (Third Generation Partnership Project) initiative to extend traditional IN services found in fixed networks into mobile networks. The architecture is similar to that of traditional IN, in that the control functions and switching functions are remote. Unlike the fixed IN environment, in mobile networks the subscriber may roam into another PLMN (Public Land Mobile Network), consequently the controlling function must interact with a switching function in a foreign network. CAMEL specifies the agreed information flows that may be passed between these networks. |
| **CC** | Country Code. Prefix identifying the country for a numeric international address. |
| **CDMA** | Code Division Multiple Access is a method for describing physical radio channels. Data intended for a specific channel is modulated with that channel's code. These are typically pseudo-random in nature, and possess favourable correlation properties to ensure physical channels are not confused with one another. |
| **Connection** | Transport level link between two peers, providing for multiple sessions. |
| **cron** | Unix utility for scheduling tasks. |
| **crontab** | File used by cron. |
| **DP** | Detection Point. |
| **EDR** | Event Detail Record. **Note:** Previously CDR. The industry standard for CDR is EDR (Event Detail Record). Over time EDR will replace CDR in the Oracle documentation. |
| **FCI** | Furnish Charging Information. An INAP operation sent from ACS to the SSP to control the contents of EDRs produced by the SSP. |
| **FDA** | First Delivery Attempt - the delivery of a short message directly to the SME rather than relaying it via the MC. |
| **FTP** | File Transfer Protocol - protocol for electronic transfer of files. |
| **GMSC** | Gateway MSC. The first MSC which handles a call. For a MOC, this is the caller’s attached MSC. For an MTC, this is the first non-transit MSC in the subscriber's network that receives the inbound call. |
| **GPRS** | General Packet Radio Service - employed to connect mobile cellular users to PDN (Public Data Network- for example the Internet). |
GSM

Global System for Mobile communication.

It is a second generation cellular telecommunication system. Unlike first generation systems, GSM is digital and thus introduced greater enhancements such as security, capacity, quality and the ability to support integrated services.

GT

Global Title.

The GT may be defined in any of the following formats:

- **Type 1:** String in the form "1,<noa>,<BCD address digits>"
- **Type 2:** String in the form "2,<trans type><BCD address digits>"
- **Type 3:** String in the form "3,<trans type>,<num plan>,<BCD address digits>"
- **Type 4:** String in the form "4,<trans type>,<num plan>,<noa>,<BCD address digits>"

The contents of the Global Title are defined in the Q713 specification, please refer to section 3.4.2.3 for further details on defining Global Title.

HLR

The Home Location Register is a database within the HPLMN (Home Public Land Mobile Network). It provides routing information for MT calls and SMS. It is also responsible for the maintenance of user subscription information. This is distributed to the relevant VLR, or SGSN (Serving GPRS Support Node) through the attach process and mobility management procedures such as Location Area and Routing Area updates.

HPLMN

Home PLMN

HTML

HyperText Markup Language, a small application of SGML used on the World Wide Web.

It defines a very simple class of report-style documents, with section headings, paragraphs, lists, tables, and illustrations, with a few informational and presentational items, and some hypertext and multimedia.

IDP

INAP message: Initial DP (Initial Detection Point)

IMSI

International Mobile Subscriber Identifier. A unique identifier allocated to each mobile subscriber in a GSM and UMTS network. It consists of a MCC (Mobile Country Code), a MNC (Mobile Network Code) and a MSIN (Mobile Station Identification Number).

The IMSI is returned by the HLR query (SRI-SM) when doing FDA. This tells the MSC exactly who the subscriber is that the message is to be sent to.

IN

Intelligent Network

INAP

Intelligent Network Application Part - a protocol offering real time communication between IN elements.

Initial DP

Initial Detection Point - INAP Operation. This is the operation that is sent when the switch reaches a trigger detection point.

IP

1) Internet Protocol
2) Intelligent Peripheral - a box that is able to play announcements
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>IS-41</td>
<td>Interim Standard 41 is a signaling protocol used in cellular telecommunications systems. It deals with the signalling between the MSC and other network elements for the purpose of handovers and roaming etc.</td>
</tr>
<tr>
<td>ISUP</td>
<td>ISDN User Part - part of the SS7 protocol layer and used in the setting up, management, and release of trunks that carry voice and data between calling and called parties.</td>
</tr>
<tr>
<td>ITU</td>
<td>International Telecommunication Union</td>
</tr>
<tr>
<td>M3UA</td>
<td>MTP3 User Adaptation. The equivalent of MTP in the SIGTRAN suite.</td>
</tr>
<tr>
<td>MAP</td>
<td>Mobile Application Part - a protocol which enables real time communication between nodes in a mobile cellular network. A typical usage of the protocol would be for the transfer of location information from the VLR to the HLR.</td>
</tr>
<tr>
<td>MC</td>
<td>Message Centre. Also known as SMSC.</td>
</tr>
<tr>
<td>MCC</td>
<td>Mobile Country Code. In the location information context, this is padded to three digits with leading zeros. Refer to ITU E.212 (&quot;Land Mobile Numbering Plan&quot;) documentation for a list of codes.</td>
</tr>
<tr>
<td>MDN</td>
<td>Mobile Directory Number</td>
</tr>
<tr>
<td>MIN</td>
<td>Mobile Identification Number, also known as an MSID.</td>
</tr>
<tr>
<td>MNC</td>
<td>Mobile Network Code. The part of an international address following the mobile country code (MCC), or at the start of a national format address. This specifies the mobile network code, i.e. the operator owning the address. In the location information context, this is padded to two digits with a leading zero. Refer to ITU E.212 (&quot;Land Mobile Numbering Plan&quot;) documentation for a list of codes.</td>
</tr>
<tr>
<td>MO</td>
<td>Mobile Originated</td>
</tr>
<tr>
<td>MOC</td>
<td>Managed Object Class</td>
</tr>
<tr>
<td>MS</td>
<td>Mobile Station</td>
</tr>
<tr>
<td>MSC</td>
<td>Mobile Switching Centre. Also known as a switch.</td>
</tr>
<tr>
<td>MSID</td>
<td>Mobile Subscriber Identification, also known as a MIN.</td>
</tr>
<tr>
<td>MSIN</td>
<td>Mobile Station Identification Number.</td>
</tr>
<tr>
<td>MT</td>
<td>Mobile Terminated</td>
</tr>
<tr>
<td>MTC</td>
<td>Mobile Terminated Call. The part of the call associated with a subscriber receiving an inbound call.</td>
</tr>
<tr>
<td>MTP</td>
<td>Message Transfer Part (part of the SS7 protocol stack).</td>
</tr>
<tr>
<td>MTP3</td>
<td>Message Transfer Part - Level 3.</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td>NOA</td>
<td>Nature Of Address - a classification to determine in what realm (Local, National or International) a given phone number resides, for the purposes of routing and billing.</td>
</tr>
<tr>
<td>Oracle</td>
<td>Oracle Corporation</td>
</tr>
<tr>
<td>PC</td>
<td>Point Code. The Point Code is the address of a switching point.</td>
</tr>
<tr>
<td>PLMN</td>
<td>Public Land Mobile Network</td>
</tr>
<tr>
<td>SCCP</td>
<td>Signalling Connection Control Part (part of the SS7 protocol stack).</td>
</tr>
<tr>
<td>SCF</td>
<td>Service Control Function - this is the application of service logic to control functional entities in providing Intelligent Network services.</td>
</tr>
<tr>
<td>SCP</td>
<td>Service Control Point. Also known as UAS.</td>
</tr>
<tr>
<td>SGSN</td>
<td>Serving GPRS Support Node</td>
</tr>
<tr>
<td>SLEE</td>
<td>Service Logic Execution Environment</td>
</tr>
<tr>
<td>SME</td>
<td>Short Message Entity - an entity which may send or receive Short Messages. It may be located in a fixed network, a mobile, or an SMSC.</td>
</tr>
<tr>
<td>SMS</td>
<td>Short Message Service.</td>
</tr>
<tr>
<td>SRI</td>
<td>Send Routing Information - This process is used on a GSM network to interrogate the HLR for subscriber routing information.</td>
</tr>
<tr>
<td>SS7</td>
<td>A Common Channel Signalling system used in many modern telecoms networks that provides a suite of protocols which enables circuit and non circuit related information to be routed about and between networks. The main protocols include MTP, SCCP and ISUP.</td>
</tr>
<tr>
<td>SSN</td>
<td>Subsystem Number. An integer identifying applications on the SCCP layer.</td>
</tr>
<tr>
<td>SSP</td>
<td>Service Switching Point</td>
</tr>
<tr>
<td>SUA</td>
<td>Signalling Connection Control Part User Adaptation Layer</td>
</tr>
<tr>
<td>Switching Point</td>
<td>Anything that can send and receive C7 messages.</td>
</tr>
<tr>
<td>TCAP</td>
<td>Transaction Capabilities Application Part – layer in protocol stack, message protocol.</td>
</tr>
<tr>
<td>TDP</td>
<td>Trigger Detection Point.</td>
</tr>
<tr>
<td>TSAN</td>
<td>Temporary Service Access Number</td>
</tr>
<tr>
<td><strong>Term</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>----------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>UAS</strong></td>
<td>Universal Application Server - hardware on which applications run.</td>
</tr>
<tr>
<td><strong>UCAI</strong></td>
<td>Universal Call Agent ISUP (formerly VSSP)</td>
</tr>
<tr>
<td><strong>USMS</strong></td>
<td>Universal Service Management System hardware platform.</td>
</tr>
<tr>
<td><strong>VLR</strong></td>
<td>Visitor Location Register - contains all subscriber data required for call handling and mobility management for mobile subscribers currently located in the area controlled by the VLR.</td>
</tr>
<tr>
<td><strong>VSSP</strong></td>
<td>Virtual SSP - old name for UCAI</td>
</tr>
</tbody>
</table>
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