

**Oracle® Communications
Convergent Charging Controller**

Short Message Charging Bundle User's and Technical
Guide

Release 12.0.0

December 2017

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About This Document

Scope

The scope of this document includes all the information required to install, configure and administer the Short Message Charging Bundle application.

Audience

This guide was written primarily for system administrators and persons installing, configuring and administering the SMCB) application. However, sections of the document may be useful to anyone requiring an introduction to the application.

Prerequisites

Although there are no prerequisites for using this guide, familiarity with the target platform would be an advantage.

A solid understanding of Unix, Oracle and a familiarity with IN concepts are an essential prerequisite 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.

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:

- *Service Management System Technical Guide*
- *Service Logic Execution Environment Technical Guide*
- *Advanced Control Services Technical Guide*
- *Charging Control Services User's Guide*
- *Charging Control Services Technical Guide*

Document Conventions

Typographical Conventions

The following terms and typographical conventions are used in the Oracle Communications Convergent Charging Controller documentation.

| Formatting Convention | Type of Information |
|--|--|
| Special Bold | Items you must select, such as names of tabs. Names of database tables and fields. |
| <i>Italics</i> | Name of a document, chapter, topic or other publication. Emphasis within text. |
| Button | The name of a button to click or a key to press. Example: To close the window, either click Close , or press Esc . |
| Key+Key | Key combinations for which the user must press and hold down one key and then press another. Example: Ctrl+P or Alt+F4 . |
| Monospace | Examples of code or standard output. |
| Monospace Bold | Text that you must enter. |
| <i>variable</i> | Used to indicate variables or text that should be replaced with an actual value. |
| menu option > menu option > | Used to indicate the cascading menu option to be selected. Example: Operator Functions > Report Functions |
| hypertext link | Used to indicate a hypertext link. |

Specialized terms and acronyms are defined in the glossary at the end of this guide.

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 specific Oracle Communications Convergent Charging Controller network or service implications of the product.

In this Chapter

This chapter contains the following topics.

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What is Short Message Charging Bundle?

About SMCB

The Short Message Charging Bundle (SMCB) service allows the sending of Short Messages (SMS) to be billed using the Charging Control Services (CCS) platform. The charging of Mobile Originating (SMS_MO) and Mobile Terminating (SMS_MT) services can be applied differently, because the Short Message Charging service differentiates between Originating and Terminating. This means that different Advanced Control Services (ACS) control plans can be used for each service.

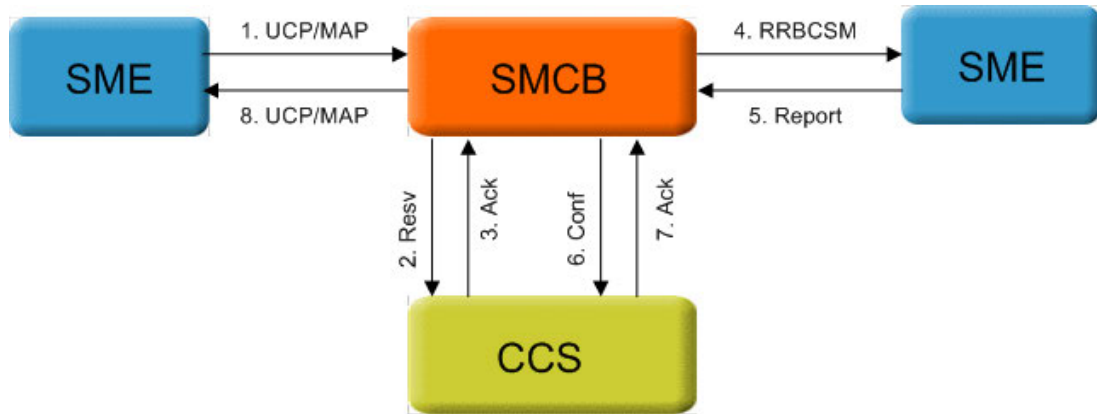
The handle name of the SLEE Service Key is analyzed to check for the suffix “SM_MO” or “SM_MT”. This means the Mobile Originating or Mobile Terminating InitialDPs must come from different service keys for SMCB to be able to differentiate between Originating and Terminating services.

The SMCB Service can be used in conjunction with a UCP Trigger Application to allow Application Service Providers (ASPs) to connect and bill for Short Message sending. The login, and connection management of ASPs is provided within the UCP trigger application. The interface to ACS is a CAMEL Phase 2 InitialDP regardless of whether the UCP trigger application is used, or the Short Message Charging service is invoked directly.

Note: The use of the Mobile Originating and Mobile Terminating services are licensed separately, so throughout this document, license controlled features are marked with ⁽¹⁾. This means those features may not be present if the relevant license has not been purchased.

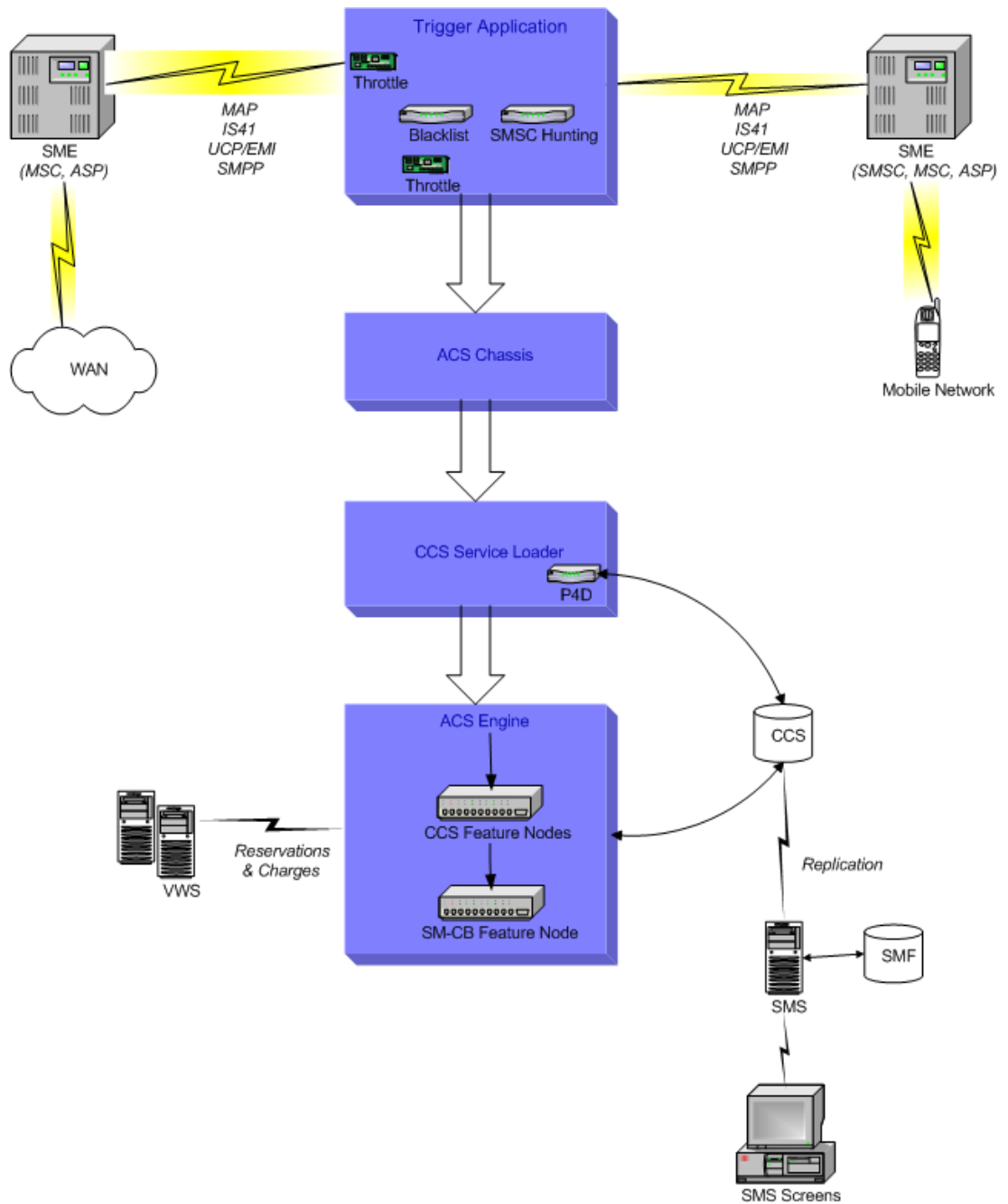
Charging overview diagram

This diagram shows the interaction between SME, CCS and SMCB.



Architectural overview

This diagram shows the physical components used for the Short Message Charging Bundle.



EDRs

Overview

The Billing Engine EDRs are used to record the billing events produced by SMCB.

For a detailed description of the EDRs, refer to *Event Detail Record Reference Guide*.

The Short Message Charging Tariff Types are based on existing BE EDRs as follows:

| Tariff Type | Original EDR Type | SMCB EDR Type | Additional Fields |
|-------------|-------------------|---------------|---|
| | CDR_TYPE=5 | CDR_TYPE=12 | TN, WALLET_TYPE, CLI, LOCADD |
| | N/A | N/A | None – this tariff type does not interact with the Billing Engines. |
| | CDR_TYPE=1 | CDR_TYPE=13 | WALLET_TYPE, LOCADD |

Where:

- CLI = Logical Calling Number (MSISDN of subscriber)
- LOCADD = Network Calling Number (Global Title of MSC/VMSC)
- TN = Logical Called Number (Terminating Number)

SMS User Templates

Template descriptions

The SMCB service has three user template permissions to control the access to MO or MT functionality.

| Access Name | Description |
|-----------------------------------|---|
| ⁽¹⁾ CCS SM Origination | Grants access to the following Mobile Originating specific functionality: <ul style="list-style-type: none"> • Originating Message Plan field in the Edit Product Type Screen. |
| ⁽¹⁾ CCS SM Termination | Grants access to the following Mobile Terminating specific functionality: <ul style="list-style-type: none"> • Terminating Message Plan field in the Edit Product Type Screen. |
| CCS Short Message Charging | Grants access to the Short Message Charging Rating screens. |

SMS Reports

Reports

This table lists the available SMS reports for the SMCB service.

| Report Name | Description |
|--------------------------------------|--|
| Peak Usage Report | Reports the maximum number of MO and MT calls in a single statistics period for a given time period. |
| ⁽¹⁾ SMSMO Summary Report | Provides sum totals for each SMSMO statistic for a given time period. |
| ⁽¹⁾ SMSMO Detailed Report | Lists the detailed SMSMO statistics for a given time period. |
| ⁽¹⁾ SMSMT Summary Report | Provides sum totals for each SMSMT statistic for a given time period. |

Configuration

Overview

Introduction

Both the SMS and SLC require post-installation configuration before Short Message Charging Bundle can be used. This chapter explains the configuration required on each of the platforms.

In this chapter

This chapter contains the following topics.

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Configuring the SLC

Introduction

The following configuration files must be set up for SMCB SLC platform:

| Configuration File | Description |
|---------------------------|---|
| <code>eserv.config</code> | Main CCS configuration file, located in <code>/IN/service_packages</code> |
| <code>acs.conf</code> | Main ACS configuration file, located in <code>/IN/service_packages/ACS/etc</code> |
| <code>SLEE.cfg</code> | Main SLEE configuration file, located in <code>/IN/service_packages/SLEE/etc</code> |

The `eserv.config` configuration file consists of two sections relevant to SMCB:

| Section Type | Description |
|---------------------------------|---|
| <code>CCS.smcbMacroNodes</code> | A sub-section called <code>smcbMacroNodes</code> in the <code>CCS</code> section. This contains all the SMCB specific configuration for CCS. |

smcbMacroNodes

Parameters

Here are the parameters required in the `CCS.smcbMacroNodes` section of the `eserv.config` configuration file.

To configure SMCB, set up the parameters in the `eserv.config` configuration file:

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//N/service_packages/eserv.config

To edit the configuration file, use a text editor such as vi.

AlwaysSendContinue

| | |
|---------------------|---|
| Syntax: | <code>AlwaysSendContinue = true false</code> |
| Description: | Determines whether the SMCB/ACS sends a Continue or a Connect. |
| Type: | Boolean |
| Optionality: | Optional (default used if not set). |
| Allowed: | true, false |
| Default: | false |
| Notes: | When set to: <ul style="list-style-type: none">• True, a Continue is sent regardless of whether the number from the incoming IDP is changed by the normalization process.• False, a Connect is sent if the number from the incoming IDP is changed by the normalization process, otherwise a Continue is sent. |
| Example: | <code>AlwaysSendContinue = true</code> |

CacheRefreshInterval

| | |
|---------------------|---|
| Syntax: | <code>CacheRefreshInterval = seconds</code> |
| Description: | Time to wait before checking the cache has up to date rating rules and types information. |
| Type: | Integer |
| Optionality: | Optional |
| Allowed: | Seconds. Maximum is 43200 seconds (12 hours) |
| Default: | 600 |
| Notes: | If this has expired, then the new configuration is re-read. |
| Example: | <code>CacheRefreshInterval = 600</code> |

CallingPartyNumberPrefix

| | |
|---------------------|--|
| Syntax: | <code>CallingPartyNumberPrefix = "prefix"</code> |
| Description: | String to prefix the calling number with for tariffed charging, so Short Messages can be billed differently to voice calls from the same location. |
| Type: | String |
| Optionality: | Optional |
| Allowed: | Maximum 20 characters |
| Default: | "E" |
| Notes: | Can be set to "" (empty string) to disable prefix. |
| Example: | <code>CallingPartyNumberPrefix = "E"</code> |

CdrOrigCdNumExt

| | |
|---------------------|--|
| Syntax: | <code>CdrOrigCdNumExt = ext</code> |
| Description: | The original called party IDP number, extension number that is recorded in the CDR TN field. |
| Type: | Integer |
| Optionality: | Optional |
| Allowed: | |
| Default: | 0 |

Notes:

Example: `CdrOrigCdNumExt = 0`

`CdrUsePendingTN`

Syntax: `CdrUsePendingTN = true|false`

Description: Use pending TN rather than original called number in EDRs

Type: Boolean

Optionality: Optional (default used if not set).

Allowed: true, false

Default: false

Notes:

Example: `CdrUsePendingTN = false`

`DisableAutoReply`

Syntax: `DisableAutoReply = true|false`

Description: Disable the auto-reply message.

Type: Boolean

Optionality: Optional

Allowed: true, false

Default: 0

Notes:

Example: `DisableAutoReply = false`

`HomeCountryCode`

Syntax: `HomeCountryCode = "code"`

Description: String identifying the home country code for SMS-MO country code statistics.

Type: String

Optionality: Optional

Allowed: Maximum is 10 characters

Default: ""

Notes:

Example: `HomeCountryCode = ""`

`OverrideInitialEventCdrType`

Syntax: `OverrideInitialEventCdrType = true|false`

Description: Override the EDR type for the initial event reservation

Type: Boolean

Optionality: Optional (default used if not set).

Allowed: true, false

Default: true

Notes:

Example: `OverrideInitialEventCdrType = true`

Chapter 2

OverrideInitialTariffCdrType

| | |
|---------------------|--|
| Syntax: | <code>OverrideInitialTariffCdrType = true false</code> |
| Description: | Override the EDR type for the initial tariff reservation |
| Type: | Boolean |
| Optionality: | Optional (default used if not set). |
| Allowed: | true, false |
| Default: | true |
| Notes: | |
| Example: | <code>OverrideInitialTariffCdrType = true</code> |

ReportSMSCFailures

| | |
|---------------------|---|
| Syntax: | <code>ReportSMSCFailures = true false</code> |
| Description: | Report SMSC delivery failures to the system log file. |
| Type: | Boolean |
| Optionality: | Optional (default used if not set). |
| Allowed: | true, false |
| Default: | true |
| Notes: | |
| Example: | <code>ReportSMSCFailures = true</code> |

TimeToBill

| | |
|---------------------|--|
| Syntax: | <code>TimeToBill = seconds</code> |
| Description: | The time used for Tariffed calls. |
| Type: | Integer |
| Optionality: | Optional |
| Allowed: | Maximum is 3600 seconds (1 hour). |
| Default: | 60 |
| Notes: | This value should match the initial period in the CCS CLI-DN screen, so the cost of the Short Message equals the Initial Cost field. |
| Example: | <code>TimeToBill = 60</code> |

TimeZone

| | |
|---------------------|---|
| Syntax: | <code>TimeZone = "zone"</code> |
| Description: | The time zone sent in the event reservation request to the VWS. For example, GMT, MST, or GMT+01:00. |
| Type: | String |
| Optionality: | Optional (default used if not set) |
| Allowed: | <i>zone</i> must be typed in a form recognized by the operating system. You can find a list of recognized time zones in the Time Zones appendix of <i>Advanced Control Services Technical Guide</i> . |
| Default: | "GMT" |
| Notes: | |
| Example: | <code>TimeZone = "GMT"</code> |

Example

After installation of the packages are complete, place the following entries into `/IN/service_packages/eserv.config`. An example is provided in the `smcbMacroNodes` section in `/IN/service_packages/SMCB/etc/examples/eserv.config.smcb_example`:

```
CCS = {
    smcbMacroNodes = {
        CallingPartyNumberPrefix = "E"
        TimeToBill = 60
        CacheRefreshInterval = 600
        HomeCountryCode = "44"
        DisableAutoReply = false
        AlwaysSendContinue = false
        ReportSMSCFailures = true
        CdrOrigCdNumExt = 0
        OverrideInitialTariffCdrType = true
        OverrideInitialEventCdrType = true
        CdrUsePendingTN = false
        TimeZone = "PST"
    }
}#
```

acs.conf

Parameters

To configure SMCB in ACS, set up the parameters in the `acs.conf` configuration file:

`/IN/service_packages/ACS/etc/acs.conf`

To edit the configuration file, use a text editor such as `vi`.

Note: The `acs.conf` parameters must begin with an initial space otherwise they will not be read by ACS.

This table describes the parameters required in the `acsChassis` section of the `acs.conf` configuration file.

| Parameter | Description |
|---|---|
| <code>ServiceEntry(SERVICE_HANDLE, WHO_CHARGE, WHERE_FROM, WHERE_TO, WHO_CONNECT, SERVICE_LIBRARY)</code> | Although ACS has specific terms for the fields in a Service Entry, the use of them in SMCB is described here. This shows how the desired behavior can be achieved. |

Example

An example configuration for three SMCB services are shown below.

Note: The parameters of the `ServiceEntry` field should NOT be space separated.

| Parameter | Description |
|---|---|
| <code>MacroNodePluginFile libSMCBMacroNodes.so</code> | Library with SMCB Feature Node. |
| <code>ServiceEntry(CCS_SM_MO, nN, cC, dD, E, ccsServiceLibrary.so)</code> | Defines the ACS Chassis fields to use for a Mobile Originating Service. |
| <code>ServiceEntry(CCS_SM_MT, dD, cC*, dD, E,</code> | Defines the ACS Chassis fields to use for a |

| Parameter | Description |
|---|---|
| <code>ccsServiceLibrary.so</code> | Mobile Terminating Service. * Note: for “SM_MT” handles the ASP_NAME will be prepended to the WHERE_FROM field. |
| <code>ServiceEntry(CCS_REVERSE_SM_MT, cC, dD*, dD, E, ccsServiceLibrary.so)</code> | Defines the ACS Chassis fields to use for a Mobile Terminating Service where there is a separate sender than the ASP to charge. * Note: for “SM_MT” handles the ASP_NAME will be prepended to the WHERE_FROM field. |

SLEE.cfg

Parameters

The following parameters are required in the **SLEE.cfg** configuration file.

- `APPLICATION=slee_acs slee_acs.sh /IN/service_packages/ACS/bin 1 1 1000`
- `SERVICE=SM_MO 1 slee_acs CCS_SM_MO`
- `SERVICE=SM_MT 1 slee_acs CCS_SM_MT`
- `SERVICEKEY=INTEGER 5 SM_MO`
- `SERVICEKEY=INTEGER 6 SM_MT`

The values in bold are the Service Handles that SMCB will compare to decide whether to run the Short Message Originating Call Plan or the Short Message Terminating Call Plan.

Note: The third field in SERVICEKEY must match the first field in SERVICE.

Configuring the SMSC

Configuration requirements

The SMCB SLC platform requires SMSC to be installed and configured for Auto-Reply Text Message support.

The smcbScp installation configures the short message template for the **Unknown** language only.

The default SMSC installation creates a SLEE notification interface using the `notificationIF` name. CCS requires that the interface be named **Notification**; this requires a change to the **SLEE.cfg** file.

The SMSC notification interface requires a `.from` file to be created in the `/IN/service_packages/SLEE/msgs` directory, this file contains the text that will become the Calling Party Address for the short message sent to the SMSC.

Nokia 47 Extension Configuration

Configuration requirements

To configure an extension the following changes are required to the `acs.conf` file.

Firstly, the service entry line requires the use of the extension number in place of the called/calling number. This is indicated by the use of a **0** instead of `cC` or `dD`.

Example:

```
ServiceEntry (EXT_CCS_SM_MT,0,0,dD,dD,ccsSvcLibrary.so)
```


Secondly, an extension definition is required, to specify the type of extension to be used. It has the following format:

- Extension number (the number specified in the service entry)
- Extension type (IDP tag as specified in the trigger application)
- Extension number format (fixed at 'inapaddressstring')
- Number description (fixed at 'extension,nature,plan,digits')

Example:

```
extensionNumber 0 47 inapaddressstring extension,nature,plan,digits
```

Configuring the SMS

Introduction

The SMCB service provides Service Management System screens to allow configuration of billing rates and rules. This defines the charging mechanism and cost for sending a Short Message.

Refer to the chapter - *SMCB Service* (on page 23) for details.

SMS Import Export

Overview

Introduction

This chapter explains the SMS import and export utility.

In this chapter

This chapter contains the following topics.

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SMS Import Export Utility

Introduction

The SMS Import Export utility provides a replacement for the SMSMO Time of Day tariffing option.

It lets you perform the following actions:

- Export the SMCB rating types and rules to a readable text file
- Import a set of previously saved SMCB rating types and rules
- Verify a set of previously exported SMCB rating types and rules. For example, use this option if you want to verify the validity of any manual changes you make to the file contents prior to importing the file into the database

All previous rating types and rules are replaced by the imported rules.

When the data has been imported into the database, the new data becomes available to the SMCB feature node once it has been replicated to the SLC. The text file takes a standard 'config' file format.

An additional utility is provided to swap the data using a single command. The `smcbSwapData` utility backs up the current data to an export file and imports data previously exported into the running database, replacing the current rules with the imported rules. This script can be run as a cron job to allow overnight rule and type changes with no user intervention.

Import Export Utility

Parameters

The SMCB Import Export utility is executed using the `smcbImportExport` command which is installed into `/IN/service_packages/SMCB/bin`.

This command takes the following arguments:

| Argument | Default | Explanation |
|----------|---|---|
| import | n/a | Run in import, export or verify mode, can only be one |
| export | n/a | of 'import', 'export' or 'verify' (mandatory) |
| verify | n/a | |
| -u | / | database user to connect to Oracle as (optional) |
| -f | /IN/service_packages/SMCB/ etc/ smcbDumpFile.cfg | filename for import/export data (optional) |

Procedure

Follow these steps to run the Import Export Utility on the SMS.

| Step | Action |
|------|---|
| 1 | Log in as <code>ccs_oper</code> . |
| 2 | Change to the SMCB directory, by typing: <code>cd /IN/service_packages/SMCB</code> |
| 3 | Type: <code>bin/smcblmportExport export</code> Result: This invokes the utility to export the SMCB rating types and rules. If you specify the <code>-f</code> option, then the data is exported to the specified file, otherwise the data is exported to a file called <code>smcbDumpFile.cfg</code> located in <code>/IN/service_packages/SMCB/etc</code> . |
| 4 | Type: <code>bin/smcblmportExport verify</code> Result: This invokes the utility to verify the SMCB rating types and rules. If you specify the <code>-f</code> option, then the data from the specified file is verified, otherwise the data from a file called <code>smcbDumpFile.cfg</code> , located in <code>/IN/service_packages/SMCB/etc</code> , is verified. This is only required if changes were made to the exported data. |
| 5 | Type: <code>bin/smcblmportExport import</code> Result: This invokes the utility to import the SMCB rating types and rules. If you specify the <code>-f</code> option, then the data is imported from the specified file, otherwise the data is imported from a file called <code>smcbDumpFile.cfg</code> located in <code>/IN/service_packages/SMCB/etc</code> . |

Enabling Debug

You can enable debug by setting the `smcblmportExport` debug section.

Example

```
DEBUG=smcblmportExport ; export DEBUG
```

Note: This only takes effect on the next run of `smcblmportExport` or `smcbSwapData.sh`.

This table describes any potential problems.

| Problem | Solution |
|---|--|
| Export mode failed because the file exists. | Remove or rename the existing file. |
| Import/verify mode failed because | Make sure the file exists and is readable. |

| Problem | Solution |
|---|--|
| the file does not exist or is unreadable. | |
| Import/verify mode failed because the import file is not well formed. | Make sure import file has correct format. |
| Import/verify mode failed because the rating type does not exist. | Make sure the rating type specified is in the import file. |
| Import mode failed because the named event does not exist. | Make sure the named event specified has been created in the CCS tariff screens. |
| Import/export mode failed because the database login is incorrect. | Make sure that the provided username and password are correct for your database instance and that the database is running. |

Swap Data Utility

Parameters

The SMCB Swap Data utility is executed using the `smcbSwapData.sh` command which is installed into `/IN/service_packages/SMCB/bin`.

This command takes the following arguments:

| Argument | Description |
|---------------------------|--|
| <code>export-file</code> | Specifies the export file, this file cannot exist. |
| <code>import-file</code> | Specifies the import file, this file must exist. |
| <code>-u user/pass</code> | Specifies the oracle username and password (optional). |

Procedure

Follow these steps to run the Swap Data Utility on the SMS.

| Step | Action |
|------|--|
| 1 | Log in as <code>ccs_oper</code> . |
| 2 | Change to the SMCB directory, type: <code>cd /IN/service_packages/SMCB</code> |
| 3 | Type either of the following: <ul style="list-style-type: none"> <code>bin/smcbSwapData.sh export-file import-file</code> <code>bin/smcbSwapData.sh export-file import-file -u user/pass</code> <p>Result: This invokes the utility to swap the SMCB rating types and rules. The live feature node data will be replaced when feature node refreshes its cache.</p> |

Potential problems

This table describes the potential problems and their resolution.

| Problem | Solution |
|--|--|
| Swap data utility failed with invalid arguments. | Specify one of the following: <ul style="list-style-type: none"> 2 arguments: \$1 = export file, \$2 = import |

| Problem | Solution |
|---|---|
| | file <ul style="list-style-type: none"> 4 arguments: \$3 & \$4 = -u user/pass. |
| Swap data utility failed because the export file exists. | Remove or rename the existing export file. |
| Swap data utility failed because the import file does not exist or is unreadable. | Make sure the import file exists and is readable. |

Import-Export File Format

File format

The export/import files used by the SMCB Import Export utility have the format shown below.

Note: This file follows the standard `eserv.config` file formatting rules. Comments begin with a hash (#) symbol.

```
smcb = {
  ratingTypes = [
    {
      name = "string"           # max 20 chars
      rtype = 'char'           # values: 'T', 'N' or 'F'
      acsCustId = number        # the id of the ACS Customer
      callingNumberPrefix = "string" # max 10 chars (optional)
      eventClass = "string"     # NE class as string (optional)
      # (Note: required when type = 'N')
      eventName = "string"     # NE name as string (optional)
      # (Note: required when type = 'N')
    }
  ]
  ratingRules = [
    {
      name = "string"           # max 20 chars
      priority = number         # values between 0 ... 99999
      acsCustId = number        # the id of the ACS Customer
      sourceRegex = "string"    # regex, max 64 chars
      destRegex = "string"      # regex, max 64 chars
      textRegex = "string"      # max 200 chars
      ratingType = "string"     # name of rating type
      comment = "string"        # max 100 chars (optional)
      noFundsReply = "string"   # max 160 chars (optional)
      ignoreTextCase = true|false # ignore or match text case
    }
  ]
}
```

SMS Statistics

Overview

Introduction

The tables in this chapter show the statistics that will be generated by the SMCB Feature Node.

In this chapter

This chapter contains the following topics.

| | |
|--------------------------------|----|
| Statistic Mapping | 17 |
| Statistics by Transaction..... | 18 |
| SMS Statistics Update..... | 20 |

Statistic Mapping

SMS-MO

This table describes the available SMS-MO statistics.

| Name | Description |
|--------------------|--|
| NUM_IDP | Total messages processed for both SMS-MO and SMS-MT. |
| MO_NUM_IDP | Total SMS-MO messages processed. |
| MO_NUM_POSTPAID | Total SMS-MO postpaid messages processed. |
| MO_NUM_PREPAID | Total SMS-MO prepaid messages processed. |
| MO_NUM_BILLED | Total successfully billed SMS-MO prepaid messages. |
| MO_NUM_NO_CREDIT | Total SMS-MO messages where the submitter has insufficient balance. |
| MO_NUM_INVALID_BE | Total SMS-MO messages where the submitter is not valid for E2BE. |
| MO_NUM_INVALID_NE | Total SMS-MO messages where the named event is not valid for E2BE. |
| MO_NUM_NO_RULE | Total SMS-MO messages where no rating rule applies. |
| MO_NUM_CONTINUE | Total continue messages sent to message max for SMS-MO prepaid. |
| MO_NUM_RELEASE | Total release call messages sent to message max for SMS-MO prepaid. |
| MO_NUM_SME_FAILURE | Total SMS-MO prepaid messages where the destination SME processing failed. |
| MO_NUM_PREPAID_? | Total SMS-MO prepaid messages per country code. (where '?' is the country code) |
| MO_NUM_BILLED_? | Total successful SMS-MO prepaid messages per country code. (where '?' is the country code) |

| Name | Description |
|--------------------|---|
| MO_NUM_PREPAID_ALL | Total SMS-MO prepaid messages for all country codes. (only when a country code stat is reported) |
| MO_NUM_BILLED_ALL | Total successful SMS-MO prepaid messages for all country codes. (only when a country code stat is reported) |

SMS-MT

This table describes the available SMS-MT statistics.

| Name | Description |
|---------------------|---|
| NUM_IDP | Total messages processed for both SMS-MO and SMS-MT. |
| MT_NUM_IDP | Total SMS-MT messages processed. |
| MT_NUM_POSTPAID | Total SMS-MT postpaid messages processed. |
| MT_NUM_PREPAID | Total SMS-MT prepaid messages processed. |
| MT_NUM_BILLED | Total successfully billed SMS-MT prepaid messages. |
| MT_NUM_NO_CREDIT | Total SMS-MT messages where the submitter has insufficient balance. |
| MT_NUM_INVALID_BE | Total SMS-MT messages where the submitter is not valid for E2BE. |
| MT_NUM_INVALID_NE | Total SMS-MT messages where the named event is not valid for E2BE. |
| MT_NUM_NO_RULE | Total SMS-MT messages where no rating rule applies. |
| MT_NUM_CONTINUE | Total Continue messages sent to Message Max for SMS-MT prepaid. |
| MT_NUM_RELEASE | Total ReleaseCall messages sent to Message Max for SMS-MT prepaid. |
| MT_NUM_SME_FAILURE | Total SMS-MT prepaid messages where the destination SME processing failed. |
| MT_NUM_PREPAID_?_?? | Total SMS-MT prepaid messages for each ASP Id prefix matched (based on the network calling numbers). (where '?' is the Aspld and '??' is the OAdC / network calling number) |
| ASP_?_SUB_OP_CODE | Total P4D messages where MNP wrong network occurred for each Aspld. (where '?' is the Aspld). |

Statistics by Transaction

MT Transactions

This table indicates which statistics have MT transactions.

| Statistic | TS | NES | NoR | NoC | TF | NEF | NEI | Free |
|--------------------------|----|-----|-----|-----|----|-----|-----|------|
| NUM_IDP | Y | Y | Y | Y | Y | Y | Y | Y |
| MT_NUM_IDP | Y | Y | Y | Y | Y | Y | Y | Y |
| MT_NUM_PREPAID | Y | Y | Y | Y | Y | Y | Y | Y |
| MT_NUM_PREPAID_?_?? (*3) | Y | Y | Y | Y | Y | Y | Y | Y |
| MT_NUM_BILLED | Y | Y | | | | | | |
| MT_NUM_NO_CREDIT | | | | Y | | | | |
| MT_NUM_INVALID_BE | | | | Y | | | Y | |

| Statistic | TS | NES | NoR | NoC | TF | NEF | NEI | Free |
|------------------------|----|-----|-----|-----|----|-----|-----|------|
| MT_NUM_INVALID_NE (*2) | | | | Y | | | Y | |
| MT_NUM_NO_RULE | | | Y | | | | | |
| MT_NUM_CONTINUE | Y | Y | | | | | | |
| MT_NUM_RELEASE | | | | | Y | Y | | |
| MT_NUM_SME_FAILURE | | | | | Y | Y | | |
| MT_NUM_POSTPAID | | | | | | | | |
| ASP_?_SUB_OP_CODE | | | | | | | | |

MO Transactions

This table indicates which statistics have MO transactions.

| Statistic | TS | NES | NoR | NoC | TF | NEF | NEI | Free |
|-------------------------|----|-----|-----|-----|----|-----|-----|------|
| NUM_IDP | Y | Y | Y | Y | Y | Y | Y | Y |
| MO_NUM_IDP | Y | Y | Y | Y | Y | Y | Y | Y |
| MO_NUM_PREPAID | Y | Y | Y | Y | Y | Y | Y | Y |
| MO_NUM_PREPAID_? (*1) | Y | Y | Y | Y | Y | Y | Y | Y |
| MO_NUM_BILLED | Y | Y | | | | | | |
| MO_NUM_BILLED_? (*1) | Y | Y | | | | | | |
| MO_NUM_NO_CREDIT | | | | Y | | | | |
| MO_NUM_INVALID_BE | | | | Y | | | Y | |
| MO_NUM_INVALID_NE (*2) | | | | Y | | | Y | |
| MO_NUM_NO_RULE | | | Y | | | | | |
| MO_NUM_CONTINUE | Y | Y | | | | | | |
| MO_NUM_RELEASE | | | | | Y | Y | | |
| MO_NUM_SME_FAILURE | | | | | Y | Y | | |
| MO_NUM_POSTPAID | | | | | | | | |
| MO_NUM_PREPAID_ALL (*1) | Y | Y | Y | Y | Y | Y | Y | Y |
| MO_NUM_BILLED_ALL (*1) | Y | Y | | | | | | |

Transaction key

This table describes Transaction keys.

| Key | Description |
|-----|---|
| TS | Successful tariffed transaction. |
| NES | Successful named event transaction. |
| NoR | No tariffing rule fired for this transaction. |

| Key | Description |
|-----|---|
| NoC | Insufficient credit for this transaction. |
| TF | Tariffed transaction failed because SMS not delivered to SME. |
| NEF | Named event transaction failed because SMS not delivered to SME. |
| NEI | Named event transaction where named event is invalid (change tariffing NE config after setting SMCB tariffing). |
| ? | MT: Asp Name, MO: Country Code. |
| ?? | MT: OAdC Number. |
| *1 | Only if not home country code and if registered country code stat found. |
| *2 | Only for named event reservations. |
| *3 | Only if Asp Id is present in IDP. |

SMS Statistics Update

Introduction

The updateStats utility updates the SMS-MO country code and SMS-MT Asp-Id/OAdC statistics in the SMF_STATISTICS_DEFN database table on the SMS machine.

SMS-MO Country Codes

The updateStats utility examines the country codes file (stats/country_codes.txt) to determine which country code statistics to insert into the database, and which to remove.

Note: Statistics that are already present in the database are ignored. Statistics that are present in the database, but are no longer present in the file, are removed.

Statistics are generated and inserted into the database using the following templates:

- MO_NUM_PREPAID_?
- MO_NUM_BILLED_?

where ? is the country code.

SMS-MT Asp-Ids

The updateStats utility examines the Asp Id directory (stats/asp_ids) to determine which Asp-Id and OAdC statistics require inserting into the database.

The name of the Asp-Id file should reflect the name of the Asp. Each Asp-Id file should contain a list of the OAdCs that are associated with that ASP.

Statistics are generated and inserted into the database using the following template:

MT_NUM_PREPAID_?_??

where ? is the Asp Name and ?? is the OAdC.

An additional extractStats utility is provided that migrates an existing set of Asp-Id/OAdC statistics into the new format used by SMCB.

The template used for existing statistics is: ASP_<asp-id> and SMSMT<asp-id>_<oadc>.

Run update stats utility

Follow these steps to run the update statistics utility on the SMS.

| Step | Action |
|------|--|
| 1 | Log in as ccs_oper . |
| 2 | Change to the SMCB directory, by typing: <code>cd /IN/service_packages/SMCB</code> |
| 3 | Type <code>bin/updateStats.sh</code> Follow the on screen prompts for information. Result: This invokes the utility to update the country code and Asp-Id statistics. The statistics that are updated are different depending on your license type. If no updates are required no changes will be made to your system. |
| 4 | For the new stats to become effective the smsStatsDaemon process should be restarted on the SLC. |

Run extract stats utility

Follow these steps to run the extract statistics utility on the SMS.

| Step | Action |
|------|---|
| 1 | Log in as ccs_oper . |
| 2 | Change to the SMCB directory, by typing: <code>cd /IN/service_packages/SMCB</code> |
| 3 | Type: <code>bin/extractStats.sh</code> Follow the on screen prompts for information. Result: This invokes the utility to extract the Asp-Id statistics from an existing database and produces a set of Aspld files. This utility only performs changes to your system when your license type allows it. |

SMCB Service

Overview

Introduction

This chapter explains the how to use the SMCB Service screen.

In this chapter

This chapter contains the following topics.

| | |
|-------------------------------|----|
| CCS SMCB Service Screen | 23 |
| Rating Rules | 24 |
| Rating Types | 28 |

CCS SMCB Service Screen

Introduction

The Short Message Charging Bundle service provides an SMS screen to allow you to configure billing rates and rules. This defines the charging mechanism and cost for sending a short message.

There are three rule types:

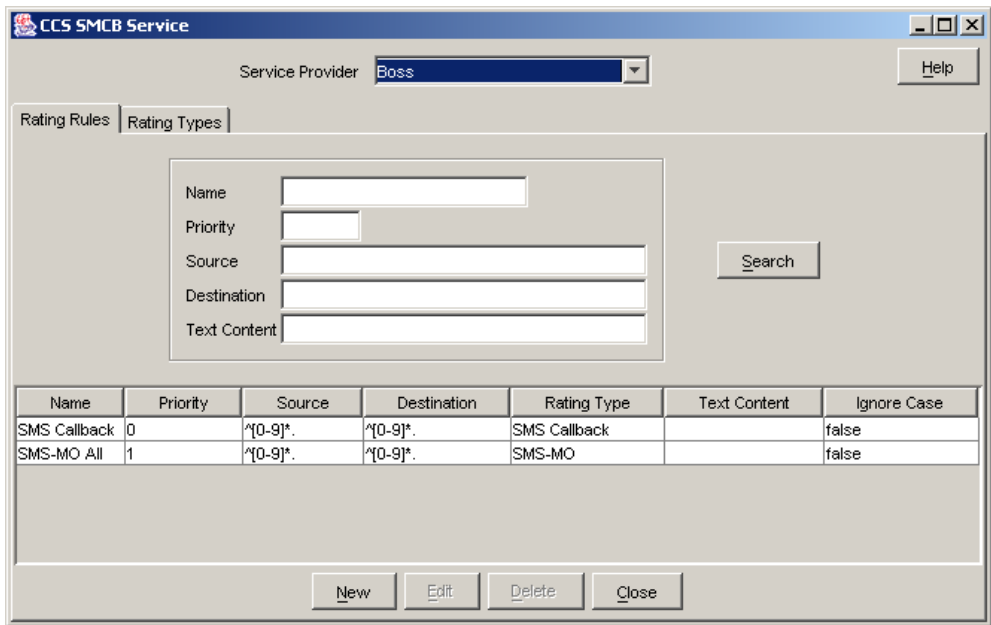
- Named Event
- Tariffed
- Free

Accessing the CCS SMCB Service screen

Follow these steps to access the CCS SMCB Service screen.

| Step | Action |
|------|--|
| 1 | From the main Service Management System screen, select the menu options Services > SMCB Service . Result: You see the CCS SMCB Service screen. |

Step Action



Searching for records

Follow these steps to search for records on the tabs of the CCS SMCB Service screen.

Step Action

- 1 Within the search fields at the top of the tab, enter all or part of the content you are searching for.
 Note: Leaving all fields blank will return all records.
- 2 Click **Search**.

Rating Rules

Introduction

You create rating rules on the **Rating Rules** tab in the CCS SMCB Services screen. They can be prioritized to provide a given behavior, such as charging for short codes differently to PSTN numbers that start with the same digits.

Lower priority (0..1) entries are processed before higher priority entries (2+).

Rating Rules tab

Here is an example **Rating Rules** tab.

| Name | Priority | Source | Destination | Rating Type | Text Content | Ignore Case |
|--------------|----------|----------|-------------|--------------|--------------|-------------|
| SMS Callback | 0 | ^[0-9]*. | ^[0-9]*. | SMS Callback | | false |
| SMS-MO All | 1 | ^[0-9]*. | ^[0-9]*. | SMS-MO | | false |

Rating Rules tab search fields

This table describes the fields on the **Rating Rules** tab available for searching records.

| Field | Description |
|--------------|--|
| Name | The name of the rating rule to search for. Restricted to 20 characters in length. |
| Priority | The priority given to this rule, from 0 (most preferred) to 99999 (least preferred). |
| Source | The source regular expression to search for. Restricted to 64 characters. |
| Destination | The destination regular expression to search for. Restricted to 64 characters. |
| Text Content | The text to search for. Restricted to 64 characters. |

For more information, see *Searching for records* (on page 24).

A note about regular expressions

The following is an explanation of regular expressions and their use.

Regular expressions can contain anchors ('^' and '\$'), groups ('[]') and wild cards ('*'):

- '^' anchors the expression to the start of the string
- '\$' anchors the expression to the end of the string
- '[']' groups characters into a class, for example [0-9] means any number
- '*' repeats the previous character class zero or more times, such as '[0-9]*'

Examples

This table shows some example expressions.

| Expression | Description |
|-----------------|--|
| ^1234\$ | Will match the exact string 1234. |
| ^1234 | Will match any string beginning with 1234. |
| 1234\$ | Will match any string that ends with 1234. |
| ^[0-9]*1234\$ | Will match a string that begins with zero or more numbers (0-9) and ends with 1234. |
| 1234[0-9][0-9]* | Will match a string that contains the substring 1234 and then 1 or more numbers (0-9). |

Creating rating rules

Follow these steps to set up an SMCB rating rule.

| Step | Action |
|------|--------|
|------|--------|

- 1 On the **Rating Rules** tab, click **New**.
Result: You see the Create SMCB Rating Rule screen.

- 2 Fill in the fields, as described in *Rating rules fields* (on page 26).
- 3 Click **Save**.

Rating rules fields

This table describes the function of each field.

| Field | Description |
|----------|--|
| Name | The name given to this rating rule. Restricted to 20 characters. |
| Priority | The priority given to this rule, from 0 (most preferred) to 99999 (least |

| Field | Description |
|-------------------|--|
| | preferred). If the source, destination and (optionally) content regular expressions from two rules <i>both</i> match a given short message, the priority will be used to determine which rule is used. If the two rules have the same priority, the rules will be ordered alphabetically by rule name. |
| Source Regex | The regular expression that is applied to the source number to determine if the rule matches. Restricted to 64 characters. This field will be verified when the Save button is selected, (see <i>A note about regular expressions</i> (on page 25)). |
| Destination Regex | The regular expression that is applied to the destination number to see if the rule matches. Restricted to 64 characters. This field will be verified when the Save button is selected, (see <i>A note about regular expressions</i> (on page 25)). |
| Content Regex | The text against which messages are matched. This rule is optional. It is applied after the other rules have been applied. Restricted to 200 characters. |
| Ignore Text Case | Defines whether or not to ignore the case of the message text when matching it against the text in the Content Regex field. |
| Rating Type | The type of the rating the will be applied to the call if the rule matches. Lists all the currently defined rating type names. This shows the name of the rating types on the Rating Types tab. |
| No Funds Reply | The text that is returned to the user if there are insufficient funds to bill this call. Restricted to 160 characters. |
| Comment | A free form text field allowing you to enter comments. This field is not used for any processing, but is present to allow you to save extra information if needed. Restricted to 100 characters. |

Editing rating rules

Follow these steps to edit an SMCB rating rule.

| Step | Action |
|------|---|
| 1 | On the Rating Rules tab, from the table, select the rule to edit. |
| 2 | Click Edit . Result: You see the Edit SMCB Rating Rule screen. |

| Step | Action |
|------|--------|
|------|--------|

The screenshot shows a dialog box titled "Edit SMCB Rating Rule". It contains the following fields and controls:

- Name:** SMS-MO All
- Priority:** 1
- Source Regex:** ^[0-9]*
- Destination Regex:** ^[0-9]*
- Content Regex:** (empty)
- Ignore Text Case:**
- Rating Type:** SMS-MO (dropdown menu)
- No Funds Reply:** Please recharge your account and try again.
- Comment:** (empty text area)
- Buttons:** Save, Cancel, and Help.

- 3 Make changes to the fields, as described in *Rating rules fields* (on page 26).
- 4 Click **Save**.

Deleting rating rules

Follow these steps to delete an SMCB rating rule.

| Step | Action |
|------|--------|
|------|--------|

- 1 On the **Rating Rules** tab, from the table, select the rule to delete.
- 2 Click **Delete**.
Result: You see a Confirm Deletion dialog box.
- 3 Click **OK**.

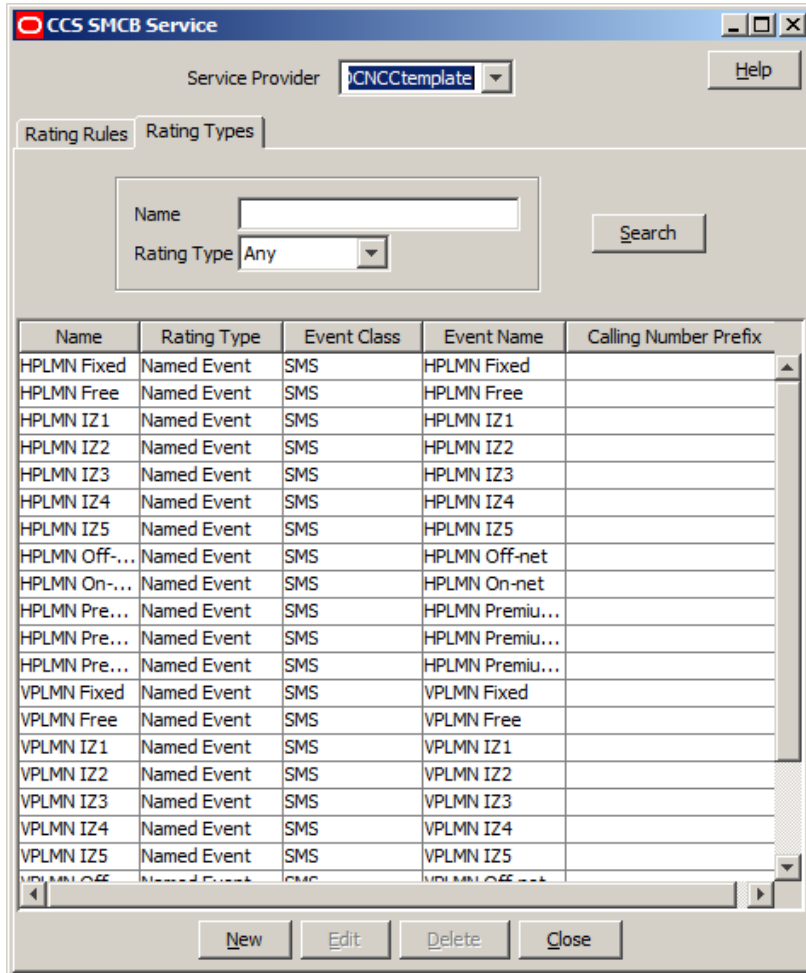
Rating Types

Introduction

The **Rating Types** tab lists the SMCB rating types that have been defined for use in the rating rules. You can add new rating types to the list, edit, or delete existing ones.

Rating Types tab

Here is an example **Rating Types** tab.



Rating Types tab search fields

This table describes the fields on the **Rating Types** tab available for searching records.

| Field | Description |
|-------------|---|
| Name | The name of the rating type to be found. Restricted to 20 characters. |
| Rating Type | The type of the rating to be search for. The drop down list is set to: <ul style="list-style-type: none"> • Any • Tariff • Free • Named Event |

For more information, see *Searching for records* (on page 24).

Creating rating types

Follow these steps to create an SMCB rating type.

- | Step | Action |
|------|--|
| 1 | On the Rating Types tab, click New . Result: You see the Create SMCB Rating Type screen. |

- | | |
|---|--|
| 2 | Fill in the fields, as described in <i>Rating types fields</i> (on page 30). |
| 3 | Click Save . |

Rating types fields

This table describes the function of each field.

| Field | Description |
|-----------------------|--|
| Name | The name of this rating type. Restricted to 20 characters. |
| Rating Type | The type of the rating type. The available types are: <ul style="list-style-type: none"> • Free • Named Event • Tariff |
| Calling Number Prefix | The calling number prefix that is applied before sending the information to the billing engine (only enabled with type is <code>Tariff</code>). Restricted to 10 hexadecimal digits (0-9,A-F). |
| Named Event Class | The named event class that is billed (only enabled with type is <code>Named Event</code>). Restricted to currently defined event classes in the database. |
| Named Event Name | The named event name that is billed (only enabled with type is <code>Named Event</code>). Restricted to currently defined event names in the database. |

Editing rating types

Follow these steps to edit an SMCB Rating Type.

- | Step | Action |
|------|---|
| 1 | On the Rating Types tab, from the table, select the type to edit. |
| 2 | Click Edit . Result: You see the Edit SMCB Rating Type screen. |

| Step | Action |
|------|--------|
|------|--------|

The screenshot shows a dialog box titled "Edit SMCB Rating Type". It contains the following fields and values:

- Name: SMS Callback
- Rating Type: Named Event
- Calling Number Prefix: (empty)
- Named Event Class: SMS Events
- Named Event Name: SMS Callback

Buttons: Save, Cancel, Help

- | | |
|---|--|
| 3 | Make changes to the fields, as described in <i>Rating types fields</i> (on page 30). |
| 4 | Click Save . |

Deleting rating types

Follow these steps to delete an SMCB rating type.

| Step | Action |
|------|--------|
|------|--------|

- | | |
|---|--|
| 1 | On the Rating Types tab, from the table, select the type to delete. |
| 2 | Click Delete . Result: You see a Confirm Deletion dialog box. |
| 3 | Click OK . |

Short Message Charging Feature Node

Overview

Introduction

This chapter explains how the Short Message Charging feature node may be used.

For information on the Short Message Charging feature node, refer to *Feature Nodes Reference Guide*.

In this chapter

This chapter contains the following topics.

| | |
|--------------------------------|----|
| Feature Node Access Setup..... | 33 |
| Message Call Plan Setup | 34 |
| Using Other Feature Nodes..... | 35 |

Feature Node Access Setup

Configuring access to SM Charging Feature Node

Follow these steps to configure access to the Short Message Charging feature node on a per Service Provider basis.

| Step | Action |
|------|--|
| 1 | On the ACS Main screen, click Customer . |
| 2 | On the ACS Customer screen, select the Resource Limits tab. |
| 2 | Select the customer from the table and click Edit . |
| 3 | On the Edit Customer Resources screen, in the Allocate Feature Sets box of the Public Set Access area, select the CCS Full check box. |
| 4 | Click Save to return to the ACS Main screen. |
| 5 | On the ACS Main screen, click Configuration . |
| 6 | On the ACS Configuration screen, select the Feature Sets tab. |
| 7 | In the Feature Node Set drop down list, select CCS Full . |
| 8 | In the Edit Feature Set screen, select the SMCB Macro tab. |
| 9 | Select the SM Charging check box. |

| Step | Action |
|------|--------|
| | |

10 Press **Save**.

For detailed information on Feature Sets, refer to *Advanced Control Services User's Guide*.

Message Call Plan Setup

Procedure

Access to the Short Message Charging Control Plans are set on a per product type basis in the Product Type screen in the Prepaid Charging UI. Use the following steps to set up an Originating or Termination Message control plan.

| Step | Action |
|------|--|
| 1 | On the Prepaid Charging UI select the menu options Resources->Product Type->Edit Product Type . |
| 2 | Select Control Plans from the panel list of the left. Refer to Resources - Product Type in <i>Charging Control Services User's Guide</i> . |
| 3 | Associate a control plan with the following CCS Capabilities - SMS_MO , SMS_MT and RSMS_MT , by creating (or editing) entries in the Capability List. |
| 4 | Click Save . |

Using Other Feature Nodes

Introduction

The Short Message Charging feature node is designed to work with the following feature nodes:

| Application | Feature Node | Use to |
|-------------|---------------------|--|
| ACS | Terminate Unchanged | Send a Continue back to the trigger application |
| ACS | Disconnect | Send a Release back to the trigger application |
| CCS | Set Wallet Type | Set whether to use the primary or secondary wallet in the CCS service loader. Should be used before the SMCB feature node. |

Other compatible nodes

This table lists other compatible nodes.

| Application | Feature Node |
|-------------|---|
| ACS | Start |
| ACS | End |
| ACS | Dynamic Switch |
| ACS | Attempt Termination |
| ACS | Unconditional Termination |
| CCS | Account Activation |
| CCS | Account State Branch |
| CCS | Account State Text Message |
| CCS | Balance State Branch |
| CCS | Billable Event |
| CCS | Business Prefix Branch |
| CCS | Friend and Family/Friend and Destination Discount |
| CCS | Set Discount |
| ACS | Event Branching |
| ACS | Event Counting |
| ACS | Event Setting |
| ACS | Calling Party Filter |
| ACS | Called Party Filter |
| ACS | Number Matching |
| ACS | Prefix Tree Filtering |
| ACS | Profile Branching |
| ACS | Store Profile |
| ACS | Day of Week |
| ACS | Day of Year |
| ACS | Time of Day |
| ACS | Time of Week |
| CCS | Declined Billing Cause |

Tools and Utilities

Overview

Introduction

This chapter explains tools and utilities for use with SMCB.

In this chapter

This chapter contains the following topics.

SMCB Capability Tool 37

SMCB Capability Tool

Introduction

The SMCB Capability Tool sets the default control plan to run if the 'call' is:

- Mobile Originating (SMS_MO)
- Mobile Terminated (SMS_MT)
- Reverse Mobile Terminated (RSMS_MT)

and if no account is found in CCS, that is, it is a Post Paid account.

Usage

A utility script allows management of default control plans within the CCS_CAPABILITY database table. It is installed in `/IN/ service_packages/SMCB/bin` and has the following usage:

Usage:

```
[-u user/pass] [-d] -o ["Originating_Control_Plan"]
[-u user/pass] [-d] -t ["Terminating_Control_Plan"]
[-u user/pass] [-d] -r ["Reverse_Terminating_Control_Plan"]
```

where:

- '-u user/pass' (database username/password OPTIONAL, default: '/')
- '-o' for Originating (if control plan not specified: display only)
- '-t' for Terminating (if control plan not specified: display only)
- '-r' for Reverse Terminating (if control plan not specified: display only)
- '-d' delete existing Control Plan - must also specify -t or -o or -r

Examples

Execute the `smcbCapability.sh` script with:

- No arguments, displays the current default control plan for the SMS_MO, SMS_MT and RSMS_MT capabilities.
- The following argument:

'-o' will display the default control plan for the SMS_MO capability only.

This also works for '-t' for SMS_MT and '-r' for RSMS_MT.

- The following argument:

' -t "ACS Management" ' will update the SMS_MT capability and set 'ACS Management' as its default control plan.

This also works for '-o' for SMS_MO and '-r' for RSMS_MT

- The following argument:

'-d -r' will disassociate (remove) the current default control plan from the RSMS_MT capability.

This also works for '-o' for SMS_MO and '-t' for SMS_MT. Using the '-d' on its own is an error and will have no effect.

These options may be combined, for example to update the SMS_MO and SMS_MT capabilities in one go, the following arguments may be used:

```
' -o "ACS Management" -t "ACS Management"
```

However, using the -d option overrides any other options, so that only removals are possible. For example, ' -o "ACS Management" -d -t ' will remove the default control plans for both SMS_MO and SMS_MT and not update the SMS_MO capability to use the specified default control plan.

Additional notes

- Execute the smcbCapability.sh script with the following argument:
'-?' displays the usage (as above) and exits immediately.
- An optional argument allows the database login to be specified: ' -u "user/pass" '
It is recommended to run the smcbCapability.sh script as 'ccs_oper' so this argument is not required, however if used the user should enter the database username/password for the CCS_ADMIN schema.
- Existing control plans must be specified, therefore the control plan must exist and be selectable in the Control Plan Editor for it to be chosen using this tool.
If the user enters a control plan that does not match an existing name then the following error will be displayed:

```
"Error: you must specify an existing Control Plan for CAPABILITY"  
where CAPABILITY is 'SMS_MO', 'SMS_MT', or 'RSMS_MT'
```

- If a partial name is chosen for a control plan and this partial name matches a single control plan, then this control plan will be used. However, if the partial name matches more than one control plan then a menu will be displayed allowing the user to select from the matching control plans:

For example:

Execute the smcbCapability.sh script with the following arguments:

- ' -o ACS ' will associate the 'ACS Management' default control plan with the SMS_MO capability, on the test system there is only one control plan with the 'ACS' prefix therefore this resolves to a single control plan.
- ' -t "E2" ' will attempt to associate the SMS_MT capability with a control plan beginning with the word 'E2', however there are 2 control plans that begin with this name. A menu will be displayed as follows:

```
Note: the Control Plan you specified resolves to more than one plan  
please select from the following Control Plans:  
1: E2 CR5 Example Restriction Plan  
2: E2 Global Prompt For Account Reference  
select:
```

The user should enter the number matching the required control plan; this will be associated with the capability specified.

Administration Tasks

Operating Procedures

Introduction

This chapter provides the operating procedures for the application.

These procedures are normally performed once, after the installation and configuration of the system.

In this chapter

This chapter contains the following topics.

| | |
|---|----|
| Managing Processes | 39 |
| Turning Debug ON / OFF | 40 |
| Re-reading Database Configuration | 40 |

Managing Processes

Introduction

The Short Message Charging Bundle service runs within the `slee_acs` process, using the `ccsSvcLibrary.so` and `smcbMacroNodes.so` libraries.

This means SMCB is started when the SLEE on the SLC is started (as `acs_oper`).

Starting the SLEE

Follow these steps to start the service.

| Step | Action |
|------|---|
| 1 | Login as the <code>acs_oper</code> unix user. |
| 2 | Start the SLEE by typing: <code>/IN/service_packages/SLEE/bin/slee.sh</code> |

Stopping the SLEE

Follow these steps to stop the service.

| Step | Action |
|------|--|
| 1 | Login as the <code>acs_oper</code> unix user. |
| 2 | Stop the SLEE by typing: <code>/IN/service_packages/SLEE/bin/stop.sh</code> |

Turning Debug ON / OFF

Procedure

Follow these steps to set the debug option.

| Step | Action |
|------|---|
| 1 | To turn on debug, set the UNIX environment variable DEBUG to SMCB_FN or all . Example: <code>DEBUG=SMCB_FN; export DEBUG</code> Note: The all selection of the DEBUG section displays all sections of debug. This is the most verbose debug level, so using the SMCB_FN section is recommended when specifically checking the SMCB service. |
| 2 | To turn off debug, unset the DEBUG environment variable. |
| 3 | Restart the SLEE to make the new setting effective. |

Re-reading Database Configuration

Procedure

Follow these steps to check when the Short Message Charging Feature Node last re-read the database configuration.

| Step | Action |
|------|---|
| 1 | Set the UNIX environment variable DEBUG to SMCB_Cache , for example: <code>DEBUG=SMCB_Cache; export DEBUG</code> |
| 2 | Restart the SLEE to make the new setting effective. Result: SMCB Cache related actions are shown, allowing the monitoring of the cache state. |
| 3 | Check the system logfile for the following entry and note its timestamp: <code>NOTICE: CCS SMCB_FN (55): 1003: Rating cache updated</code> |
| 4 | Check the value in eserv.config for: <code>CCS.smcbMacroNodes.CacheRefreshInterval</code> |
| 5 | To turn off debug, the DEBUG environment variable must be unset. |
| 6 | Restart the SLEE to make the new setting effective. |

Troubleshooting

Overview

Introduction

This chapter explains the important processes on each of the server components in Convergent Charging Controller, and describes a number of example troubleshooting methods that can help aid the troubleshooting process before you raise a support ticket.

In this chapter

This chapter contains the following topics.

Possible Problems..... 41

Possible Problems

Problem scenarios

This table describes problems and their resolution.

| Problem | Solution |
|--|---|
| New Rating configuration is not being used. | Check timestamp Tariff configuration last saved, and the value of cacheRefreshInterval in eserv.config section CCS.smcMacroNodes . If SMCB should have re-read the configuration, check syslog for errors. If symptoms persist, restart the SLEE and check. |
| Rating Cache is updated every period (alarm 1003 is logged). | Update the statistics on the SMF (using updateStats.sh or update an entry using the screens) and allow the data to be replicated. |

Balance type problems

The **CCS** and **BE** sections of **eserv.config** have items that do not directly affect SMCB, but have an effect on the other parts of the system that calculate how much should be charged for the request that SMCB sends the billing engine.

This table describes balance type problems and their resolution.

| Problem | Solution |
|---|--------------------------------|
| The value of the balance type(s) does not change as expected. | Check parameters listed below. |

This table describes the parameters in **eserv.config** relevant to SMCB and how they affect charging.

| Parameter | Purpose of Parameter | Possible effect |
|-------------------------------------|---|---|
| CCS.ccsRewards.balanceTypes. | Lists the Ids of the balance types that can | Another balance type to the one you are using may also go up in value. If you are using the |

| Parameter | Purpose of Parameter | Possible effect |
|---|--|--|
| allowed | be used for rewards, on a per Service Provider basis | same balance type then it will appear to go up more than you expect. Check the CCS Rewards screen for configuration. |
| CCS.ccsRewards.balanceTypes.expenditure | Lists the ID of the balance type that records the monthly expenditure, on a per Service Provider basis | Only the monthly expenditure should increase as a result of this item. However, if there is another unexpected increase in value for a balance type, check the balance type ID matches the monthly expenditure ID for that Service Provider. |
| CCS.ccsVWARSActivation.balanceTypes.freeSmsType | Set the balance type ID to use for the FreeSMS credits, on a per Service Provider basis | Only the FreeSMS balance type should increase as a result of this item. However, if there is another unexpected increase in value for a balance type, check the balance type ID matches the FreeSMS ID for that Service Provider. |
| CCS.reservationHandler.overrideDiscountType | Sets the behavior of the discounts in CCS. | If the charge is not as expected, check the discounts setup for that Service Provider, and the expected behavior of them from this item. |
| CCS.reservationHandler.refundBalanceTypes.balanceTypeId | Sets the Balance Type ID the CCS refunds behavior should use, on a per Service Provider basis. | The ID listed is credited when the CCS refunds functionality is used. Check the correct balance type ID is being used. |

BE message problems

This table lists messages to BE problems.

| Problem | Solution |
|--|--------------------------------|
| The messages to the BE do not appear to get through. | Check parameters listed below. |

This table describes the parameters in `eserv.config` relevant to SMCB and how they affect messages to BE.

| Parameter | Purpose of Parameter | Possible effect |
|---|---|---|
| CCS.ccsActions.maxOutstandingBeClientMsgs | Maximum outstanding messages beClient will hold before it rejects a request without querying the BEs. | Reservations or confirmations to the BE receive an error code of General Error or Could not contact BE. Resolve by increasing the value (more memory use) and restart SLEE. |
| CCS.ccsServiceLibrary.IncomingCallBarEnable | If set to True then if the Call Barring is enabled on the calling number | Short Messages do not reach SMCB FN, as the service loader rejects them before the call plan is run. Check the account and account type call barring screens. |
| CCS.reservationHandler.maxReservationLength | The time the BE will hold a Tariff Reservation before the BE will release it. | If the time between the Tariffed reservation and confirmation/voke is greater than this period, an error is returned saying the Reservation does not exist. |
| CCS.reservationHandler.greedyReservationLengthLimit | Minimum time for the Tariffed reservation. | If a Tariffed reservation is requested for less than this time then the reservation time returned is this minimum, and not the value requested. |
| CCS.namedEvent | How long a Named Event | If a Named Event Reservation is not |

| Parameter | Purpose of Parameter | Possible effect |
|--|--|--|
| Handler.maxWalletLockLength | Reservation will lock the wallet. | acknowledged in this time, then the reservation is canceled. This could happen when the BEs are heavily loaded and take longer than this length to Ack the reservation. |
| CCS.namedEventHandler.cascade | The cascade ID to use when the “promotional use” flag is False. | When the promotional use flag is false, the cost of the Named Event is charged in the balance type order of the defined cascade. See CCS Named Event screen and Edit Product Type Chargeable Events screen (for per product type overrides). |
| CCS.namedEventHandler.promo_cascade | The cascade ID to use when the “promotional use” flag is True | When the promotional use flag is true, the cost of the Named Event is charged in the balance type order of the defined cascade. See CCS Named Event screen and Edit Product Type Chargeable Events screen (for per product type overrides). |
| CCS.namedEventHandler.reservationPeriod | How long a Named Event reservation will last | If a Named Event Reservation is not confirmed or revoked in this time the confirmation/reservation will fail. |
| CCS.namedEventHandler.minResyncReservationLength | Named Event reservations of less than this period will not be copied to the other BE during a BE failover. | If a BE failover happens between a reservation and confirmation/revoke, an error is returned saying “reservation does not exist” as it has not been copied to the other BE to handle. This is a trade-off for failover performance. |

About Installation and Removal

Overview

Introduction

This chapter provides information about the installed components for the Oracle Communications Convergent Charging Controller application described in this guide. It also lists the files installed by the application that you can check for, to ensure that the application installed successfully.

In this Chapter

This chapter contains the following topics.

| | |
|---|----|
| Installation and Removal Overview | 45 |
| Checking the Installation | 45 |
| SMS Reload Procedure..... | 46 |

Installation and Removal Overview

Introduction

For information about the following requirements and tasks, see *Installation Guide*:

- Convergent Charging Controller system requirements
- Pre-installation tasks
- Installing and removing Convergent Charging Controller packages

SMCB packages

An installation of Short Message Charging Bundle includes the following packages, on the:

- SMS:
 - smcbSms
- SLC:
 - smcbScp

Checking the Installation

Checking smcbScp installation

Once the installation is complete, refer to this checklist to ensure that installation has been successful.

| Step | Action |
|------|---|
| 1 | Use SQLPLUS as the smf oracle user to check 3 database tables are created, by typing: <pre>select table_name from all_tables where table_name like 'CCS_SMCB%';</pre> |
| 2 | Check <code>/IN/service_packages/SMCB/smcbScp.install.log</code> for errors. |

| Step | Action |
|------|---|
| 3 | <p>Check the following entries are placed in <code>//IN/service_packages/ACS/etc/acs.conf</code> ⁽¹⁾</p> <ul style="list-style-type: none"> ServiceEntry (CCS_SM_MO,cC,nN,dD,dD,ccsSvcLibrary.so) # Added by smcbScp ⁽¹⁾ ServiceEntry (CCS_SM_MT,dD,cC,dD,dD,ccsSvcLibrary.so) # Added by smcbScp ⁽¹⁾ ServiceEntry (REVERSE_CCS_SM_MT,cC,cC,dD,dD,ccsSvcLibrary.so) # Added by smcbScp ⁽¹⁾ MacroNodePluginFile smcbMacroNodes.so # Added by smcbScp ⁽¹⁾ |
| 4 | <p>Check <code>//IN/service_packages/SLEE/etc/SLEE.cfg</code> contains the following entries ⁽¹⁾:</p> <ul style="list-style-type: none"> SERVICEKEY=INTEGER 11 SM_MO #Added by smcbScp ⁽¹⁾ SERVICEKEY=INTEGER 12 SM_MT #Added by smcbScp ⁽¹⁾ SERVICEKEY=INTEGER 13 R_SM_MT #Added by smcbScp ⁽¹⁾ SERVICE=SM_MO 1 slee_acs CCS_SM_MO #Added by smcbScp ⁽¹⁾ SERVICE=SM_MT 1 slee_acs CCS_SM_MT #Added by smcbScp ⁽¹⁾ SERVICE=R_SM_MT 1 slee_acs(1) REVERSE_CCS_SM_MT #Added by smcbScp ⁽¹⁾ REVERSE_CCS_SM_MT #Added by smcbScp ⁽¹⁾ |
| 5 | <p>Add the SMCB Macro node configuration to the <code>eserv.config</code> file, as detailed in the <code>smcbMacroNodes</code> (on page 5) section.</p> |

Checking smcbSms installation

Once the installation is complete, refer to this checklist to ensure that installation has been successful.

| Step | Action |
|------|---|
| 1 | <p>Use <code>SQLPLUS</code> as the smf oracle user to check 2 database tables are created, by typing:</p> <pre>select table_name from all_tables where table_name like 'CCS_SMCB%';</pre> |
| 2 | <p>Check <code>//IN/service_packages/SMCB/smcbSms install.log</code> for errors.</p> |

SMS Reload Procedure

Procedure

Follow these steps to reload (remove and reinstall) the SMCB system.

| Step | Action |
|------|--|
| 1 | Remove SMCB service plans from the CCS Resources->Product Type->Control Plans window. |
| 2 | Delete data in ACS Control Plan Editor for all service plans that contain the SMCB Feature Node. |
| 3 | Remove the SMCB SMS package (see below for more information). |
| 4 | Install the SMCB SMS package (see above for more information). |
| 5 | Create the service plans for SMCB in CPE (see below for more information). |
| 6 | Select the ACS Control Plan Editor service plan in the CCS Resources->Product Type->Control Plans window. |
| 7 | Initialize the ACS Control Plan Editor replication (replicate the data to the SLC). |

Glossary of Terms

ACS

Advanced Control Services configuration platform.

ANI

Automatic Number Identification - Term used in the USA by long-distance carriers for CLI.

ASP

- Application Service Provider, or
- Application Server Process. An IP based instance of an AS. An ASP implements a SCTP connection between 2 platforms.

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.

CCS

- 1) Charging Control Services component.
- 2) Common Channel Signalling. A signalling system used in telephone networks that separates signalling information from user data.

CDR

Call Data Record

Note: The industry standard for CDR is EDR (Event Detail Record).

CLI

Calling Line Identification - the telephone number of the caller. Also referred to as ANI.

Convergent

Also "convergent billing". Describes the scenario where post-paid and pre-paid calls are handed by the same service platform and the same billing system. Under strict converged billing, post-paid subscribers are essentially treated as "limited credit pre-paid".

CPE

Control Plan Editor (previously Call Plan Editor) - software used to define the logic and data associated with a call -for example, "if the subscriber calls 0800 *nnnnnn* from a phone at location *xxx* then put the call through to *bb bbb bbbb*".

cron

Unix utility for scheduling tasks.

DP

Detection Point

IDP

INAP message: Initial DP (Initial Detection Point)

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.

ISDN

Integrated Services Digital Network - set of protocols for connecting ISDN stations.

MNP

Mobile Number Portability

MO

Mobile Originated

MSC

Mobile Switching Centre. Also known as a switch.

MSISDN

Mobile Station ISDN number. Uniquely defines the mobile station as an ISDN terminal. It consists of three parts; the country code (CC), the national destination code (NDC) and the subscriber number (SN).

MT

Mobile Terminated

PLMN

Public Land Mobile Network

PSTN

Public Switched Telephone Network - a general term referring to the variety of telephone networks and services.

Service Provider

See Telco.

SLC

Service Logic Controller (formerly UAS).

SLEE

Service Logic Execution Environment

SME

Short Message Entity - This is an entity which may send or receive short messages. It may be located in a fixed network, a mobile, or an SMSC.

SMS

Depending on context, can be:

- Service Management System hardware platform
- Short Message Service
- Service Management System platform
- Convergent Charging Controller Service Management System application

SMSC

Short Message Service Centre stores and forwards a short message to the indicated destination subscriber number.

SMS-MO

Short Message Service Mobile Originated

SMS-MT

Short Message Service Mobile Terminating

SN

Service Number

Telco

Telecommunications Provider. This is the company that provides the telephone service to customers.

Telecommunications Provider

See Telco.

VMSC

Visited Mobile Switching Centre

VWS

Oracle Voucher and Wallet Server (formerly UBE).

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