

Oracle® Communications Convergent Charging Controller

Feature Nodes Reference Guide

Release 6.0.1

April 2017

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About This Document

Scope

The scope of this document includes all the feature nodes used within control plans created using the Oracle Communications Convergent Charging Controller ACS Control Plan Editor (CPE) application.

Audience

This guide is written primarily for control plan administrators.

Prerequisites

Although there are no prerequisites for using this guide, familiarity with control plans and the ACS Control Plan Editor application would be an advantage.

Related Documents

The following documents are related to this document:

- *Advanced Control Services User's Guide*
- *Control Plan Editor User's 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.

Feature Nodes and Feature Sets

Overview

Introduction

This chapter describes how customers use feature sets in the Oracle Communications Convergent Charging Controller ACS Control Plan Editor and explains how to use profile blocks and buffers in control plans.

Control plans define where to route calls, based on factors such as the type of service, geographic location, time of day, and so on. For more information about control plans, see *CPE User's Guide*.

In this chapter

This chapter contains the following topics.

About Feature Sets.....	1
Profile Blocks and Fields	2
Domains.....	6
ACS Buffers.....	7
Messaging Manager Profile Fields	12

About Feature Sets

About Customer Feature Sets

A feature set is a configurable list of feature nodes. Customers are allocated one or more feature sets by the ACS system administrator and the feature nodes from those feature sets can be used in any control plan that the customer creates. The feature node sets for a customer define which feature nodes will be available in the feature palette in the Control Plan Editor window.

For information on configuring feature sets, see *ACS User's Guide*.

About the Feature Palette

The feature nodes that are available from the feature palette are organized into feature groups. A feature group is a group of feature nodes that are related to a common function.

The way in which you display a feature group in the feature palette depends on the feature palette style:

- The floating panel style displays feature group names in a list, and the feature nodes within a selected group in a floating panel. This is the default. The floating panel style enables you to quickly locate a feature node in the palette by using the **Search Palette** feature to filter the available feature nodes.
- The static panel style displays an expandable list of feature node groups from which you select individual feature nodes. The **Search Palette** feature is not available.

You can configure the Control Plan Editor to use the static panel style by setting the `jnlp.acs.paletteStyle` Java application property in the `acs.jnlp` and `sms.jnlp` configuration files. For more information, see *ACS Technical Guide*.

Profile Blocks and Fields

What is a profile block

A profile block is a piece of binary data that is usually stored in the database in a "long raw" column type. For example, the profile block containing data relevant to an ACS customer is held in the PROFILE field of the ACS_CUSTOMER table.

Profile blocks store data used during session processing.

Profile block definition

Profile blocks and the mapping of profile tags to profile blocks are defined in **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs. For more information see the discussion on profile tag configuration in *ACS User's Guide*.

Primary tags

Profile blocks contain a series of different pieces of data called primary tags. Each tag is indexed by a hex tag. Some feature nodes enable you to specify which tag to use. For example, the Profile Branch feature node enables you to compare the value of a specific primary tag with a specified value, and branch on the result.

Profiles are generally maintained by editing the relevant screens in the UI for the application. They can also store data from the session, or be updated by a feature node, such as the Store Profile feature node.

Profile selection through tag#

Various feature nodes use profile blocks as part of their configuration. A profile block and tag can be selected either from the drop down lists of available profile blocks and tags, or in some cases by entering a tag value.

Enter tag value

Where allowed, perform one of the following actions:

- For the profile selection field set, the **Data Type** drop down list has a **Fixed Value** option, selection of which replaces the location and field drop down list with the fixed value box for the value to be typed into.
- For previous versions of the profile selection field sets, press **Backspace** to empty the **Location** drop down list, and replace the location and field drop down list with the **Fixed Value** box for the value to be typed into.

Profile block availability

The service loader you are using determines the profile blocks that are available to the control plan. All service loaders include the global profile.

The service loader also specifies the uses of Application Specific profiles 1-8.

Block Name	Description
Application Specific 1	Subscriber account (CCS_ACCT_REFERENCE).
Application Specific 2	Product type
Application Specific 3	Control plan
Application Specific 5	CCS global configuration
Application Specific 6	Temporary storage containing:

Block Name	Description
	<ul style="list-style-type: none"> • Wallet type ID • Account (subscriber) type ID • Account (subscriber) reference • Wallet type • EDR ID
Application Specific 7	Temporary storage
Application Specific 8	Temporary storage
Customer	Service provider

Those specified as temporary storage are never written back to the database and are cleared at the end of the session. They can be used for such things as moving data from one application to another within the control plan (for example between a USSD feature node and a DAP feature node).

Whether the CCS profile blocks are updateable or read-only is specified in the `eserv.config` configuration file. If you wish to make a profile updateable back to the database, you must set the appropriate `enableProfile` parameter to `true` before using any feature nodes that can write back to a profile. For more information, see *CCS Technical Guide*.

Standard profile block list

Here are the profile blocks available with a new installation of ACS.

Name	Description
Any Valid Profile	Allows you to search for relevant tags in all profiles that have been loaded.
App Specific Profile 1 App Specific Profile 2 App Specific Profile 3 App Specific Profile 4 App Specific Profile 5 App Specific Profile 6 App Specific Profile 7 App Specific Profile 8	Contains information specific to an application, for example, Messaging Manager.
CLI Subscriber Profile	<p>Contains most of the information you can specify in the CLI tab of the ACS Numbers screen, for example:</p> <ul style="list-style-type: none"> • Account code • Language • Follow me number <p>Note: Only relevant to the 0800 service.</p>
Control Plan Profile	This profile contains current switch node exits only.
Customer Profile	<p>Contains customer information, for example:</p> <ul style="list-style-type: none"> • Incoming barred/allowed list type • Incoming barred/allowed list • PIN rights • Default language • Incoming barred/allowed ignore

Name	Description
	<ul style="list-style-type: none"> • Termination number ranges • Termination number range policy
Global Profile	Contains global information, for example: <ul style="list-style-type: none"> • PIN rights • Multi-lingual announcements • Default language • Control plan version hiding
Incoming Session Data	Data which comes in over the network, including the list of buffers as described in <i>ACS Buffers</i> (on page 7). Examples include: <ul style="list-style-type: none"> • InitialDP received for voice • MO Forward SM for SMS using Messaging Manager • Diameter CCR (INITIAL_REQUEST)
Outgoing Session Data	Data which goes out over the network, including the list of buffers as described in <i>ACS Buffers</i> (on page 7).
Service Number Profile	Contains most of the information you can specify in the Service Number tab of the ACS Numbers screen, for example: <ul style="list-style-type: none"> • Account code • Language • Follow me number <p>Note: Only relevant to the 0800 service.</p>
Temporary Storage	Stores the data in memory and does not write it to the database. It exists for the duration of the control plan execution only.
VPN Network Profile	Contains most of the information you can specify in the VPN edit network, for example: <ul style="list-style-type: none"> • Account Code maximum length • Outgoing barred/allowed list type • Incoming barred/allowed list type • VPN network SD no check • VPN present private address <p>Note: Only relevant if you have the VPN service installed.</p>
VPN Station Profile	Contains most of the information you can specify in the VPN edit station, for example: <ul style="list-style-type: none"> • Outgoing barred/allowed list type • Incoming barred/allowed list type • VPN bar all incoming • VPN bar off network incoming <p>Note: Only relevant if you have the VPN service installed.</p>

CCS Profile Block list

When you install CCS, the application specific profiles (1-8) are updated to show CCS-specific names instead of the ACS defaults, as described in the following table:

Name	App block	Description
Account Reference Profile	1	Details of a subscriber's account.
Product Type Profile	2	Details of a product type.
Control Plan Profile	3	Data associated with a specific control plan.
CCS Global Profile	5	Data available across the system.
CCS Temporary Profile	6	Temporary storage areas. Not written back to database.
CCS Temporary Profile	7	
CCS Temporary Profile	8	

Note: The CCS temporary profiles are available to provide compatibility with control plans created with earlier versions of ACS. Where possible, use the ACS Temporary Storage profile instead.

Sub-tags

It is possible to store a sub-profile block within a main profile block. For example, the speed dial block contains the list of speed dial numbers:

```

Tag          Desc                                     Len  HexData...
-----
0x000009 Outgoing BA List Type                       1    01
1
...
0x00001a Speed Dial Block                           48
  SubTags (2):
    0x000001 10   01 30 34 39 33 39 33 34 30 34
    0x000002 5    02 31 32 33 34

```

So, the speed dial block is a profile block containing:

- sub-tag 1, the off-net number 049393404
- sub-tag 2, the on-net number 1234

There is a sub-tag variable associated with the call which can be set using the *Collect Digits To Sub-tag* (see page 339) node and is used to indicate which tag in such a sub-profile block is to be accessed.

This variable can be used in the following nodes:

- *Copy* (see page 295)
- *Number Lookup and Translation* (see page 428)
- *Set Pending TN from Profile* (see page 487)

Array tags

Array tags are primary tags that have an array of records, each of which contains a number of sub-tags.

Array tag example

For example, sending short messages to several numbers through a single primary tag can be configured (in **ACS > Configuration > Profile Tag Details** tab) as follows:

Profile Tag Name	Profile Tag Type	Profile Tag	Parent Profile Tag
Short Message To Send	Array	2000	
Number To Send To	Numeric String	2001	2000
Message To Send	String	2002	2000

Primary Tag Name = Short Message To Send

Profile Tag Type = Array

Profile Tag location = 2000

Record Sub tag name = Number To Send To

Profile Tag Type = Numeric String

Profile Tag location = 2001

Parent Profile tag = 2000

Record Sub tag name = Message To Send

Profile Tag Type = String

Profile Tag location = 2002

Parent tag = 2000

So, in this example, there might be five records under tag 2000, each of which is a short message to send and the number to send to.

Updateable ACS profiles

The following profiles can be made updateable, using the Load Profile node:

- CUSTOMER
- CALL_PLAN
- SUBSCRIBER
- Service Number

Domains

Introduction

While ACS profiles are usually stored in the local database, it is possible to use third-party stored data in control plans. For example, if a third-party billing engine stores subscriber data which is needed in a control plan, the profile feature nodes can use the domain of the subscriber to direct profile interactions to the third-party billing engine.

Service domains

Part of the call context for ACS control plans includes service domains. While ACS does not populate, configure or use service domains itself, it provides call context slots for service domains which can be populated and used by plug-in services (for example, CCS).

The feature nodes in the plug-in service macro node library will use the service domains to select the correct destination billing engines.

Subscriber data

Where subscriber data is stored on a compatible billing engine, a domain can be configured to control where subscriber data interactions are directed.

ACS Buffers

What is an ACS buffer?

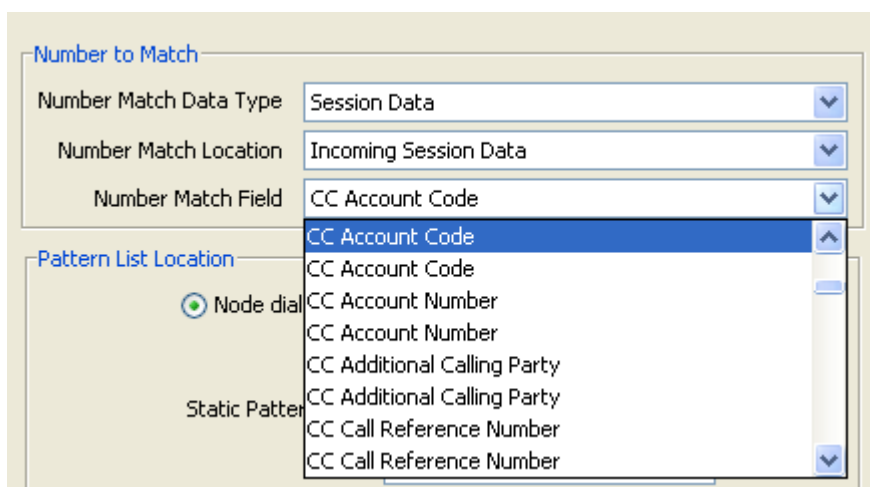
An ACS buffer is one of a number of ACS session data variables, most of which contain digits. A session data variable is a piece of data associated with a particular session, for example; a redirecting party ID. Session data variables are created at any point during session processing. Some variables are set at the beginning of the session from the values in the InitialDP. For more information about which variables are populated by which parts of the InitialDP, see *ACS Technical Guide*.

During session processing, session data variables can be used or updated by feature nodes. Feature nodes that use session data variables usually display the available session data in the lists on the feature node's configuration window.

Session data variables are retained only for the duration of the session processing. After a session is processed, ACS deletes any session data variables it may have defined. To store a session data variable permanently, you must write it to a profile field.

Nodes using buffers

You can access the list of buffers in a feature node containing the combination of profile **Data Type**, **Location** and **Field** lists. For example, you can use the Number Matching feature node to match a number in an incoming session data profile field:



Buffer list

The table describes the buffers that are automatically created when you install ACS, and describes how they are populated. For more information about the available buffers, see the discussion on profile tag configuration in *Advanced Control Services User's Guide*.

Name	Description
Account Code	Account code entered in <i>Account Code Entry</i> (see page 369) feature node.
Account Number	Account number of CCS subscriber account. Only use with CCS.
Additional Calling Party	Set from the Additional Calling Party Number parameter in the InitialDP. For more information, see acsChassis ServiceEntry configuration in the <i>ACS Technical Guide</i> .

Name	Description
Call Duration Seconds	From either: <ol style="list-style-type: none"> 1 Report BCSM the difference between the Disconnect and Answer (if armed). 2 Apply charging Report 3 Call Information Report
Call ID	The SLEE Call ID.
Call Reference Number	Set from the callReferenceNumber parameter from a CAP protocol InitialDP. See <i>3GPP TS 29.078</i> .
Call Start Time Hour	The hour that the InitialDP was received, in local system time (tz variable of slee_acs).
Call Start Time Minute	The minute of the hour that the InitialDP was received, in local system time (tz variable of slee_acs).
Called IMSI	Set by the RIMS Query feature nodes. For more information about RIMS Query feature nodes, see <i>MM Technical Guide</i> .
Called Location Number	VMSC Address. Set by the RIMS Query feature nodes. For more information about RIMS Query feature nodes, see <i>MM Technical Guide</i> .
Called SGSN	Set by the RIMS Query feature nodes. For more information about RIMS Query feature nodes, see <i>MM Technical Guide</i> .
Calling IMSI	Set by the RIMS Query feature nodes. For more information about RIMS Query feature nodes, see <i>MM Technical Guide</i> .
Calling Logical Number	Set from the InitialDP for the call. For more information, see acsChassis ServiceEntry configuration in <i>ACS Technical Guide</i> .
Calling Network Address	Set from the InitialDP for the call. For information about how this buffer is set, see acsChassis ServiceEntry configuration in <i>ACS Technical Guide</i> .

Name	Description																																		
Calling Party Category	<p>Set from the InitialDP for the call.</p> <p>(callingPartysCategory parameter from the IDP in ETSI INAP, Called partysCategory in CAP). These standards refer to ETSI ISUP which refers to ITU-T ISUP (Q763) which has the following codes used in the calling party's category parameter field:</p> <table border="0"> <tr> <td>0</td> <td>calling party's category unknown at this time (national use)</td> </tr> <tr> <td>1</td> <td>operator, language French</td> </tr> <tr> <td>2</td> <td>operator, language English</td> </tr> <tr> <td>3</td> <td>operator, language German</td> </tr> <tr> <td>4</td> <td>operator, language Russian</td> </tr> <tr> <td>5</td> <td>operator, language Spanish</td> </tr> <tr> <td>6 to 8</td> <td>available to Administrations for selection a particular language by mutual agreement</td> </tr> <tr> <td>9</td> <td>reserved (see Recommendation Q.104) (Note) (national use)</td> </tr> <tr> <td>10</td> <td>ordinary calling subscriber</td> </tr> <tr> <td>11</td> <td>calling subscriber with priority</td> </tr> <tr> <td>12</td> <td>data call (voice band data)</td> </tr> <tr> <td>13</td> <td>test call</td> </tr> <tr> <td>14</td> <td>spare</td> </tr> <tr> <td>15</td> <td>payphone</td> </tr> <tr> <td>16 to 223</td> <td>spare</td> </tr> <tr> <td>224 to 254</td> <td>reserved for national use</td> </tr> <tr> <td>255</td> <td>spare</td> </tr> </table>	0	calling party's category unknown at this time (national use)	1	operator, language French	2	operator, language English	3	operator, language German	4	operator, language Russian	5	operator, language Spanish	6 to 8	available to Administrations for selection a particular language by mutual agreement	9	reserved (see Recommendation Q.104) (Note) (national use)	10	ordinary calling subscriber	11	calling subscriber with priority	12	data call (voice band data)	13	test call	14	spare	15	payphone	16 to 223	spare	224 to 254	reserved for national use	255	spare
0	calling party's category unknown at this time (national use)																																		
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13	test call																																		
14	spare																																		
15	payphone																																		
16 to 223	spare																																		
224 to 254	reserved for national use																																		
255	spare																																		
Calling Party ID	<p>Set from the Calling Party Number parameter in the InitialDP.</p> <p>For information about how this buffer is set, see acsChassis ServiceEntry configuration in <i>ACS Technical Guide</i>.</p>																																		
Calling Private Network Address	<p>For VPN. Available if VPN is installed.</p>																																		
Calling SGSN	<p>Set by the RIMS Query feature nodes.</p> <p>For more information about RIMS Query feature nodes, see <i>MM Technical Guide</i>.</p>																																		
Carrier Code	<p>Set in <i>Set Carrier Code</i> (see page 466) node.</p>																																		
Cell ID	<p>Set from the Cell Identity parameter in the CAMEL InitialDP. CAMEL IDP.LocationInformation.cellGlobalIdOrServiceAreaIdOrLAI.Cell Identity</p>																																		
Current Time Hour	<p>Current hour, in local system time (tz variable of slee_acs).</p>																																		
Current Time Minute	<p>Current minute of the hour, in local system time (tz variable of slee_acs).</p>																																		
Extension Digits 0 Extension Digits 1 Extension Digits 2 Extension Digits 3	<p>Set from corresponding extension parameter in the InitialDP.</p> <p>For information about how this buffer is set, see acsChassis ServiceEntry configuration in <i>ACS Technical Guide</i>.</p>																																		

Name	Description
Extension Digits 4 Extension Digits 5 Extension Digits 6 Extension Digits 7 Extension Digits 8 Extension Digits 9	
First Redirecting Party	Set from the original called party ID parameter in the InitialDP. For information about how this buffer is set, see <i>acsChassis ServiceEntry</i> configuration in <i>ACS Technical Guide</i> .
Last Redirecting Party	Set from the redirecting party ID parameter in the InitialDP. For information about how this buffer is set, see <i>acsChassis ServiceEntry</i> configuration in <i>ACS Technical Guide</i> .
Last Termination Number	Last number used in destination Routing address (DRA) in INAP connect operation.
Location Area Code	Set from Location Area Code parameter in CAMEL InitialDP. CAMEL IDP.LocationInformation.cellGlobalIdOrServiceAreaIdOrLAI.Location Area Code
Location Info Location Number	Set from locationNumber parameter in the locationInformation parameter in a CAP InitialDP. This parameter is optional in the InitialDP.
Location Number	Set from locationNumber parameter in the InitialDP. For information about how this buffer is set, see <i>acsChassis ServiceEntry</i> configuration in <i>ACS Technical Guide</i> .
Max Permitted Call Duration	Set by a feature node in the control plan, such as the Set Profile Field feature node, to define the maximum permitted duration of a call.
Mobile Country Code	Set from Country Code parameter in CAMEL InitialDP. CAMEL IDP.LocationInformation.cellGlobalIdOrServiceAreaIdOrLAI.Country Code
Mobile Network Code	Set from Network Code parameter in CAMEL InitialDP. CAMEL IDP.LocationInformation.cellGlobalIdOrServiceAreaIdOrLAI.Network Code
Mobile Originating Cell ID	Cell ID, from one of: <ul style="list-style-type: none"> • InitialDP • LCP (if originating)
Mobile Originating Country Code	Country Code, from one of: <ul style="list-style-type: none"> • InitialDP • LCP (if originating)
Mobile Originating Location Code	Location Code, from one of: <ul style="list-style-type: none"> • InitialDP • LCP (if originating)
Mobile Originating Network Code	Network Code, from one of: <ul style="list-style-type: none"> • InitialDP • LCP (if originating)

Name	Description
Mobile Terminating Cell ID	Cell ID, from one of: <ul style="list-style-type: none"> InitialDP LCP (if terminating)
Mobile Terminating Country Code	Country Code, from one of: <ul style="list-style-type: none"> InitialDP LCP (if terminating)
Mobile Terminating Location Code	Location Code, from one of: <ul style="list-style-type: none"> InitialDP LCP (if terminating)
Mobile Terminating Network Code	Network Code, from either: <ul style="list-style-type: none"> InitialDP LCP (if terminating)
MSC Address	Set from the mscAddress parameter from a CAP protocol InitialDP. See <i>3GPP TS 29.078</i> .
MSG TYPE	Set from the eventTypeBCSM parameter in the InitialDP.
Original Called Number	Set from Original Called Party ID parameter in the InitialDP. For information about how this buffer is set, see acsChassis ServiceEntry configuration in <i>ACS Technical Guide</i> .
Pending Termination Number	Set from Destination Routing Address parameter in InitialDP. For information about how this buffer is set, see acsChassis ServiceEntry configuration in <i>ACS Technical Guide</i> .
PIN Digits	Set from PIN entered in <i>PIN Authorisation</i> (see page 341) node
Pending TN Type	Type of number stored in Pending Termination Number buffer. Note: Not available in Call Context drop down list. For more information about this buffer, see <i>Pending termination number variables</i> (on page 11).
Private Network Address	Only relevant with VPN. For example, my private network address would be 3404, it is a number which only makes sense within a private network.
SCCP Calling Party Address GT	Global Title from SCCP Calling Party Address InitialDP.
Service Key	Set from ServiceKey parameter in InitialDP. This is the only compulsory parameter from an InitialDP. This is true for all flavours of INAP. For information about how this buffer is set, see acsChassis ServiceEntry configuration in <i>ACS Technical Guide</i> .
Service Number	Normalised called party number from InitialDP.
Subscriber State	Subscriber state from the CAMEL InitialDP.
VLR Number	Set from the VLR Number parameter in the CAMEL InitialDP. CAMEL IDP.locationInformation.VLR Number.

Pending termination number variables

There are two pending termination number variables:

- 1 PendingTN.
- 2 PendingTNType.

PendingTN contains a number which is used as the TN when a call is terminated. PendingTNType defines the type of number contained in PendingTN.

PendingTNType can classify the contents of PendingTN in one of six ways as listed in the following table.

Identification number	Classification of the number held in PendingTN
0	A number of an unknown type.
1	A number that accesses the PSTN directly (sometimes called an Off-Net number).
2	A number that passes through a private network on its way to the PSTN - the 'dial 1 to get out' scenario (sometimes called an On-Net number).
3	A speed-dial number. For example 754 assigned to the TN 64493934919.
4	A service number.
5	A calling line identification (CLI).

When a control plan starts:

- PendingTN is set from a value determined by the `pendingTNSource` parameter in a `ServiceEntry` configuration line in the `acs.conf` file. For information about `ServiceEntry` lines, see the *acsChassis ServiceEntry Configuration (SLC)* section of *ACS Technical Guide*.
- PendingTNType is set to 'unknown'.

PendingTN corresponds to CC Pending Termination Number in the drop down lists in the screens. PendingTNType is not available from the drop down lists (it is set by the Type of Digits to Collect drop down list).

ACS feature nodes that interact with pending termination number variables are listed below:

- The Collect Digits to Buffer feature node changes the value of PendingTN and PendingTNType.
- Test Pending TN Type can read PendingTNType.

Note: PendingTN is also known as Pending TN Buffer.

Messaging Manager Profile Fields

About Messaging Manager Temporary Storage Profile

When a message enters Messaging Manager Multigate, the data in the message is used to populate Messaging Manager profile fields in the temporary storage profile. You can manipulate or use the values stored in these profile fields by using the feature nodes that use profile tags in control plans. Feature nodes that use profile tags include:

- Copy
- Extract Content
- Message Attribute Branching

For more information about profiles, see *Profile Blocks and Fields* (on page 2).

For more information about Messaging Manager feature nodes see:

- *XMS Content Feature Nodes* (on page 607)
- *XMS Control Feature Nodes* (on page 621)
- *XMS Parameters Feature Nodes* (on page 655)

Temporary Storage Profile Fields

This table lists the profile field names, tag numbers (in decimal), and tag types for the Messaging Manager profile fields held in the temporary storage profile.

Profile Field Name	Tag Number	Tag Type	Remarks
MMX Adaptations	3932475	Integer	MMS request. Whether the originator allows adaptation of the content.
MMX Adapter Name	3932426	String	
MMX Allow Alternate Delivery	3932425	Integer	
MMX Alt Dest Address	3932233	String	
MMX Autoreply Active	3932184	Boolean	
MMX Autoreply History	3932185	String	
MMX Autoreply History Clear Time	3932219	Date	
MMX Autoreply Replied Address List	3932208	Limited Ordered Prefix Tree	
MMX Autoreply Text	3932183	String	
MMX Aux Application	3932472	String	MMS request. Auxiliary application addressing information.
MMX Barring Active	3932180	Boolean	
MMX Barring Default Action	3932182	Integer	
MMX Barring History	3932181	String	
MMX Barring List 1	3932173	Limited Ordered Prefix Tree	
MMX Barring List 1 Name	3932171	String	
MMX Barring List 1 Type	3932172	Integer	
MMX Barring List 2	3932176	Limited Ordered Prefix Tree	
MMX Barring List 2 Name	3932174	String	
MMX Barring List 2 Type	3932175	Integer	
MMX Barring List 3	3932179	Limited Ordered Prefix Tree	
MMX Barring List 3 Name	3932177	String	
MMX Barring List 3 Type	3932178	Integer	

Profile Field Name	Tag Number	Tag Type	Remarks
MMX Billing Identifier	3932458	String	Message request. Additional billing information for the SMSC/MMSC from the ASP/VASP.
MMX Charged Party	3932478	Integer	MMS request. Who is charged: <ul style="list-style-type: none"> • Recipient • Both, or • Neither
MMX Content Class	3932473	Integer	MMS request. Classifies the content of the MM to the smallest content class to which the message belongs.
MMX Content Type	3932467	String	MIME request. The media types of content contained in the message.
MMX Copied List	3932245	String	
MMX Copy Notify Active	3932220	Boolean	
MMX Current Alphabet	3932438	String	Message request. The user data character set that the User Data field is currently using.
MMX Current Recipient	3932441	Integer	Message request. Current delivery destination being processed.
MMX Delivery Succeeded	3932449	Integer	Message request. Status of original message for delivery reports.
MMX Desired Alphabet	3932439	String	Message request. The user data character set that should be used if possible when delivering the message.
MMX Destination Address	3932235	String	
MMX Destination Application	3932470	String	MMS request. Identification of the destination application.
MMX Destination Domain	3932428	String	
MMX Destination IMSI	3932450	String	Message request. Identifies the destination MS.
MMX Destination LMSI	3932451	String	Message request. Additional identification of the destination MS when roaming.
MMX Destination MSC	3932452	String	Message request. Destination MSC or SGSN.
MMX Destination NPI Incoming	3932488	Byte	Read only profile field, derived from the number plan indicator (NPI) part of the MMX Destination Address profile field. Enables operators to branch based on NPI by using the Profile Branching feature node in control plans.
MMX Destination TON Incoming	3932486	Byte	Read only profile field, derived from the type of number (TON) part of the MMX Destination Address profile field. Enables operators to branch based on TON by using the Profile Branching feature node in control plans.
MMX DRM Content	3932474	Integer	MMS request. Whether the MM contains DRM-protected content.
MMX Drop Original Message	3932186	Boolean	
MMX Earliest Delivery	3932455	Integer	Message request.

Profile Field Name	Tag Number	Tag Type	Remarks
Time			
MMX Email Address 0	3932198	String	
MMX Email Address 1	3932199	String	
MMX Email Address 2	3932200	String	
MMX Email Address 3	3932201	String	
MMX Email Address 4	3932202	String	
MMX Email Address 5	3932203	String	
MMX Email Address 6	3932204	String	
MMX Email Address 7	3932205	String	
MMX Email Address 8	3932206	String	
MMX Email Address 9	3932207	String	
MMX Enhanced SMS to Email Shortcode	3932243	Numeric String	
MMX Enhanced SMS to IM Shortcode	3932241	Numeric String	
MMX Failed Copy List	3932244	String	
MMX Failure Cause	3932454	Integer	Message request. The cause code from message source to allow errors or reasons to be translated through different protocols.
MMX Forwarding Address 0	3932187	String	
MMX Forwarding Address 1	3932188	String	
MMX Forwarding Address 2	3932189	String	
MMX Forwarding Address 3	3932190	String	
MMX Forwarding Address 4	3932191	String	
MMX Forwarding Address 5	3932192	String	
MMX Forwarding Address 6	3932193	String	
MMX Forwarding Address 7	3932194	String	
MMX Forwarding Address 8	3932195	String	
MMX Forwarding Address 9	3932196	String	
MMX Forwarding Setting	3932197	Integer	
MMX Global Barring Notify	3932165	Boolean	
MMX Global Barring Response	3932164	Integer	

Profile Field Name	Tag Number	Tag Type	Remarks
MMX Global Default Domain	3932168	String	
MMX Global Temp Access Number Range End	3932170	Numeric String	
MMX Global Temp Access Number Range Start	3932169	Numeric String	
MMX Global Unique Autoreply Interval	3932167	Integer	
MMX Global Wait For Hunting Result	3932166	Boolean	
MMX IM Address 0	3932209	String	
MMX IM Address 1	3932210	String	
MMX IM Address 2	3932211	String	
MMX IM Address 3	3932212	String	
MMX IM Address 4	3932213	String	
MMX IM Address 5	3932214	String	
MMX IM Address 6	3932215	String	
MMX IM Address 7	3932216	String	
MMX IM Address 8	3932217	String	
MMX IM Address 9	3932218	String	
MMX Integer Scratchpad	3932239	Integer	
MMX Message Centre Name	3932430	String	
MMX Message Contents	3932423	Integer	
MMX Message ID	3932436	String	Message response. Identifies a message in some protocol-specific format. Message request. Delivery receipt?
MMX Message Protocol	3932420	Integer	
MMX Message Reference	3932447	Integer	Message request. From MS, for correlation purposes.
MMX Message Size	3932456	Integer	Message request.
MMX Message Type	3932236	Integer	
MMX Message Waiting Group	3932459	Integer	SMS request. GSM Message Waiting Indication Group (Discard, Store), SMPP, ms_validity.
MMX Message Waiting Indicator	3932460	Integer	SMS request. GSM MessageWaiting Indication Sense, SMPP, ms_msg_wait_facilities.
MMX Message Waiting Type	3932461	Integer	SMS request. GSM Message Waiting Indication Type, SMPP, ms_msg_wait_facilities.
MMX MMS Message Class	3932468	String	MMS request. The class of the MM (for example: personal, advertisement, information service). Present if specified by the originator MMS User Agent.

Profile Field Name	Tag Number	Tag Type	Remarks
MMX More Messages	3932453	Integer	Message request.
MMX Next Temp Access Number	3932232	Numeric String	
MMX Number of Recipients	3932440	Integer	Message request. Total number of delivery destinations.
MMX Numeric String Scratchpad	3932238	Numeric String	
MMX Oldest Temp Access Number	3932231	Integer	
MMX Originating Address	3932234	String	
MMX Originating Domain	3932427	String	
MMX Originating IMSI	3932433	String	Message request. Identifies the calling MS.
MMX Originating NPI Incoming	3932487	Byte	Read only profile field, derived from the number plan indicator (NPI) part of the MMX Originating Address profile field. Enables operators to branch based on NPI by using the Profile Branching feature node in control plans.
MMX Originating TON Incoming	3932485	Byte	Read only profile field, derived from the type of number (TON) part of the MMX Originating Address profile field. Enables operators to branch based on TON by using the Profile Branching feature node in control plans.
MMX Originator System Address	3932476	String	MMS request. The Address of the origination MMS Relay/Server.
MMX Priority	3932424	Integer	
MMX Privacy Indicator	3932442	Integer	Message request. None, restricted, confidential, secret.
MMX Protocol Identifier	3932446	Integer	Message request. This is defined in GSM 03.40 (TP-PID). Also used by SMPP and EMI for sending to GSM.
MMX Protocol Version	3932421	String	
MMX Provide Reply Path	3932448	Integer	Message request.
MMX Read Reply Request	3932457	Integer	Message request. Whether the originator wants a read reply.
MMX Reject Duplicates	3932445	Integer	Message request.
MMX Reply Application	3932471	String	MMS request. 'Reply-path' to this MM.
MMX Scratchpad	3932237	String	
MMX Segment Count	3932463	Integer	SMS request. The number of segments in a concatenated message. Zero if not concatenated.
MMX Segment Number	3932464	Integer	SMS request. Segment of a concatenated message that is currently being processed. First segment is number 1.

Profile Field Name	Tag Number	Tag Type	Remarks
MMX Segment Reference	3932465	Integer	SMS request. Reference number linking together the segments of a concatenated message
MMX Sender Visibility	3932469	Integer	MMS request. A request to show or hide the sender's identity when the message is delivered to the MM recipient.
MMX Service Centre Timestamp	3932434	Integer	Message request. The time at which the message was received by the message centre. Will be set by MMX for early ack or FDA.
MMX Single Shot	3932444	Integer	Message request.
MMX SMS Message Class	3932462	Integer	SMS request. Message class part of GSM DCS, SMPP, dest_addr_subunit.
MMX SMS to Email Shortcode	3932242	Numeric String	
MMX SMS to IM Shortcode	3932240	Numeric String	
MMX SMSC Address	3932422	String	
MMX Source Location Information	3932479	String	Message request. Passed in IDP (Location Number), but not Connect.
MMX Status Report Request	3932437	Integer	Message request. Who requested a delivery receipt: <ul style="list-style-type: none"> • None (noone) • SME • XMS, or • both.
MMX Storage Requested	3932477	Integer	MMS request.
MMX Subject	3932466	String	MIME request. The title of the whole MM if specified by the originator MMS User Agent.
MMX Teleservice	3932429	Integer	
MMX Temp Access Address 0	3932226	String	
MMX Temp Access Address 1	3932227	String	
MMX Temp Access Address 2	3932228	String	
MMX Temp Access Address 3	3932229	String	
MMX Temp Access Address 4	3932230	String	
MMX Temp Access Number 0	3932221	Numeric String	
MMX Temp Access Number 1	3932222	Numeric String	
MMX Temp Access Number 2	3932223	Numeric String	
MMX Temp Access Number 3	3932224	Numeric String	

Profile Field Name	Tag Number	Tag Type	Remarks
MMX Temp Access Number 4	3932225	Numeric String	
MMX User Timezone	3932443	String	Message request.
MMX Validity Period	3932435	Integer	Message request. How long the message is valid for.
MMX Validity Period Type	3932480	Integer	
MMX VAS ID	3932432	String	Message request. Identifies an Value-Added Service (application).
MMX VASP ID	3932431	String	Message request. Identifies a Value-Added Service Provider (or Application Service Provider). Taken from inbound path name for SMS IP adapters.

NPI and TON Override Profile Fields

You can override the number plan indicator (NPI) values, or type of number (TON) values sent by Messaging Manager in outgoing messages. You set the override values by using the Set, or the Copy feature node, before sending the outgoing message by using the Send Short Message Notification feature node. Possible values are in the range of 0 (zero) to 255.

If you do not specify an override value, then Messaging Manager sends the original value from the incoming message in the outgoing message.

This table lists the names, tag numbers (in decimal), and tag types for the profile fields that override NPI and TON values in outgoing messages.

Profile Field Name	Tag Number	Tag Type	Description
SSMN Destination NPI Override	3932484	Byte	Overrides the destination NPI value in the outgoing message.
SSMN Destination TON Override	3932482	Byte	Overrides the destination TON value in the outgoing message.
SSMN Originating NPI Override	3932483	Byte	Overrides the originating NPI value in the outgoing message.
SSMN Originating TON Override	3932481	Byte	Overrides the originating TON value in the outgoing message.

Base Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Base feature nodes. Base feature nodes form the fundamental outline of a control plan. They are the feature nodes that are essential to call routing, but do not provide any additional call processing.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	21
Attempt Termination	22
Control Plan Notes	24
Disconnect Call.....	25
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End27	
Junction	28
Proportional Distribution	30
Start	31
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Available Feature Nodes

Base Feature Nodes List

This table lists the available Base feature nodes.

Node name	Node description
Attempt Termination (see page 22)	The Attempt Termination node will attempt to terminate the call to a specified Termination Number but, if for some reason cannot terminate it to that number correctly, it takes a branch determined by the status of the call so that (for example) call diversion can be performed by the next node. Shortcut keys: Alt+A
Control Plan Notes (see page 24)	Allows you to place notes on the CPE canvas. The note box can be expanded or contracted by clicking and dragging the resizing handle in the bottom right hand corner of the feature node. Note: There is no feature node icon for this, just a yellow box for entering notes.
Disconnect Call (see page 25)	Plays tone or message to the caller and disconnects the call. Shortcut keys: Alt+R
Dynamic Switch (see page 26)	Takes a specific exit which can be specified in the node edit dialog and which may be overridden by dialing a management control plan.
End (see page	Signifies the end of the control plan branch.

Node name	Node description
27)	Shortcut keys: Alt+E
Junction (on page 28)	Use the Junction feature node to collect all incoming feature node connections into a single exit point. The usefulness is being able to position this feature node in a strategic position to move connecting lines clear of other feature nodes, thus making it easier to see what the control plan is doing.
Proportional Distribution (see page 30)	Routes set proportions of the calls down each exit. Shortcut keys: Alt+D
Sleep (on page 470)	The Sleep node allows time for background tasks to complete before proceeding to the next step in the control plan.
Start (see page 31)	The start node must be the first node in the control plan. Shortcut keys: Alt+S
Terminate Unchanged (see page 32)	Tells the switch to continue, which normally results in the call being terminated to the number originally dialed.
Unconditional Termination (see page 33)	Directs the call to be terminated to a specified termination number. Shortcut keys: Alt+U

Attempt Termination

Node description

The Attempt Termination node will attempt to terminate the call to a specified termination number but, if for some reason cannot terminate it to that number correctly, it takes a branch determined by the status of the call so that (for example) call diversion can be performed by the next node.

Termination numbers are specified as ranges of numbers in the ACS Configuration screens. The numbers shown in the Configure Attempt Termination screen are the ranges of termination numbers that have been specified for the logged in customer. If the customer for whom the call plan is being created is a managed customer, the termination numbers that have not been specified for the customer may be used in the node.

Note: The Attempt Termination feature node can be set to automatically display the TN as the feature node name by setting the `useTNForNodeName` parameter in the `acs.jnlp` file. If this parameter is set, then you may not manually edit the feature node name. For more information, see *Advanced Control Services Technical Guide*.

Shortcut keys

The shortcut keys to add an Attempt Termination node are **Alt+A**.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Attempt Termination nodes as required.

Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Some nodes require telephony (that is, Play Announcement, Unconditional Termination, Disconnect, Attempt Termination, Selection Dependant Routing, Unconditional Terminate to Pending TN). Such nodes may follow Exits 2 and 3 of the Attempt Termination node. They may not follow exits 1, 4, 5 and 6.

Exit	Cause	Description
1	Success	The call was successfully connected to the specified termination number.
2	Busy	The Termination Number was busy (that is, in use) so the call was routed to Exit 2.
3	No Answer	The call was routed to the specified Termination Number, that phone rang for the specified Timeout time and then was routed down Exit 3.
4	Abandoned	The person placing the call hung up, so the call was routed to Exit 4.
5	Abort	The call will be sent to this exit in the case of network failure.
6	Routing Failure	Due to congestion, the call was forwarded to this exit.

Configuration screen

Here is an example Configure Attempt Termination screen.

Configuring the node

Follow these steps to edit the Attempt Termination node.

Step	Action
1	To specify a termination number for the node, select the range in which the number lies from the ranges shown. Result: The prefix digits will be entered into the Termination Number entry field.
2	Use the Termination Number entry field to complete the number. The Xs in the range signify the minimum number of digits that are required and the Ys signify the maximum number of digits in the range.
3	Type the number of seconds that the call is to ring at the termination number before it is routed down the No Answer branch of the node.
4	Click Save to commit that termination number to the node. Note: The Save button will only become available when a number that is within the selected range is displayed in the Termination Number entry field.

Control Plan Notes

Node description

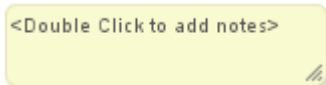
Allows you to place notes on the CPE canvas. The note box can be expanded or contracted by clicking and dragging the resizing handle in the bottom right hand corner of the feature node.

Note: There is no feature node icon for this, just a yellow box for entering notes.

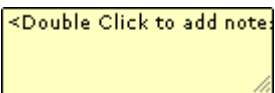
Control plan notes are simply notes you can place anywhere on the canvas to add understanding to the control plan, including behind feature node icons to add comments to a group of feature nodes. They add no functionality to the control plan.

Once a note has been placed on the canvas, it may be moved around, duplicated, or deleted as required. Control plan notes will 'stick' where they are placed when the control plan is saved and reloaded.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Control Plan Notes nodes as required.

Node exits

This node has no entries or exits, as it is not connected to other nodes within a control plan.

Editing Control Plan Notes

Follow these steps to add a note to a control plan.

Step	Action
1	Drag the node on to the canvas and drop into place. The Control Plan Notes feature node icon appears in the canvas.
2	Double click the Control Plan Notes feature node icon. The Edit Comments window displays.
3	Click inside the editable area and type the text that is to appear in the control plan note. Note: All text appears in the note exactly as it is entered. To ensure that text does not appear in a long line, break it up with manual line breaks.
4	Click Ok . The text appears in the note box.

Disconnect Call

Node description

This node will disconnect a call. The disconnect call will use the cause value 31 by default. This may be changed using the node editing screen.

Shortcut keys

The shortcut keys to add a Disconnect Call node are **Alt+R**.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Disconnect Call nodes as required.

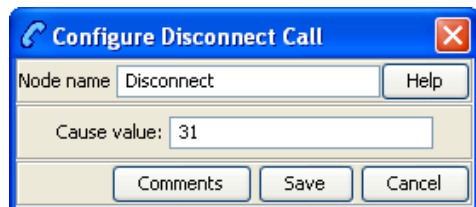
Any node that requires telephony (that is, Play Announcement, Unconditional Termination, Disconnect, Attempt Termination, Selection Dependant Routing), may not follow the Disconnect Call node.

Node exits

This node has one entry and one exit. The number of exits cannot be changed.

Configuration screen

Here is an example Configure Disconnect Call screen.



Configuring the node

To edit the Disconnect Call node, enter the value that is to be sent to the switch in the ReleaseCall operation. The value entered determines the tone or message played to the caller on disconnection of the call.

The cause value defaults to 31. Other values are listed in ITU-T recommendation Q850.

Some examples are:

Value	Cause of Disconnection
16	Normal call clearing
17	User busy
19	No answer from user
31	Normal unspecified

Dynamic Switch

Node description

The switching node allows calls to be routed to a specified exit. The switching node is simply a switch. It can point to one exit at any time and does not make any decision-based routing. All calls that reach that node are directed to the exit to which the switch points.

It is possible to enable the switch to be changed by the customer over the phone. This achieved in conjunction with profile nodes.

A control plan may contain as many Dynamic Switch nodes as required.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



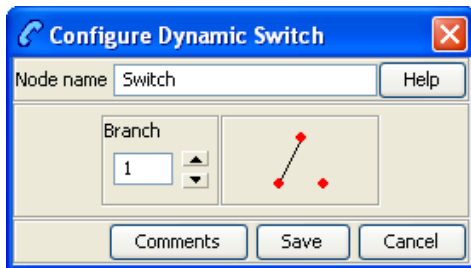
Node exits

This node has one entry and 2 through 20 exits. Although this node accepts up to 20 exits, it is recommended that this number is restricted to a maximum of 10. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See Editing node exits.

Only one exit at a time may be used, and all calls will be routed to the active exit.

Configuration screen

Here is an example Configure Dynamic Switch screen.



Configuring the node

Follow these steps to change the exit to which the switch points.

Step	Action
1	Edit the node exits to add up to another eighteen exits as required to accommodate the branches you are planning to configure.. See Editing node exits for details.
2	Use the arrows to change the exit number displayed. Result: As the exit number is changed, the diagram to the right will graphically demonstrate the exit to which the switch is set.
3	Click Save .

End

Node description

This node signifies the end of the control plan branch.

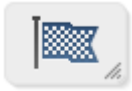
A control plan may contain as many End nodes as required. The end node must be the last node in each branch of the control plan. There may not be any other node attached after the end node.

Note: If the control plan is going to be used by any sub control plan nodes, there is a maximum of 20 End nodes allowed in the control plan.

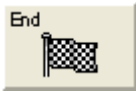
Shortcut keys

The shortcut keys to add an End node are **Alt+E**.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.

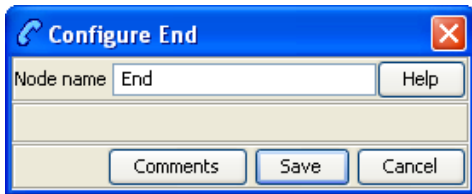


Node exits

This node has one entry and no exit. It is possible to attach several branches of the control plan to the entry of a single End node.

Configuration screen

Here is an example Configure End screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Junction

Node description

Use the Junction feature node to collect all incoming feature node connections into a single exit point.

The usefulness is being able to position this feature node in a strategic position to move connecting lines clear of other feature nodes, thus making it easier to see what the control plan is doing.

Node icon



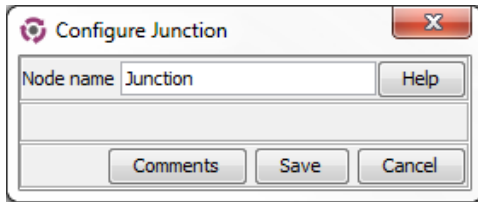
Node exits

This feature node has one entry and one exit. The number of exits cannot be changed.

Exit	Cause	Description
Branch 1	NA	Connects all the incoming feature nodes to the destination feature node.

Configuration screen

Here is an example Configure Junction screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Proportional Distribution

Node description

This node allows calls to be routed to different exits, based on the proportion of calls that are received. The user may configure the proportions of calls to be routed to each exit.

For example, you may wish 20% of calls to be routed to one exit, and 80% of calls to be routed to a second exit. This could be achieved by entering 20:80 in the node edit screen, or by entering 1:4.

Shortcut keys

The shortcut keys to add a Proportional Distribution node are **Alt+D**.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

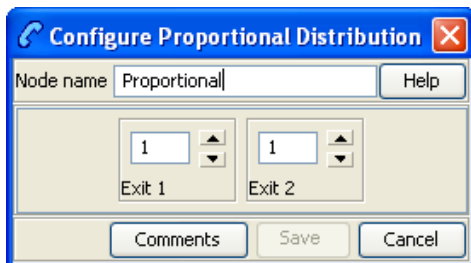
A control plan may contain as many Proportional Distribution nodes as required.

Node exits

This node has one entry and may have 2 through 20 exits. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See Editing node exits.

Configuration screen

Here is an example Configure Proportional Distribution screen.



Configuring the node

Follow these steps to configure the node.

Step	Action
1	Ensure that you have enough exits specified to accommodate the proportions you are

Step	Action
	planning to configure.
2	Using the spin box for each exit, change the number displayed to show the proportion of calls that are routed down that exit. Note: The proportion is calculated per total across all exits. To configure the node on a percentage basis, the total must equal 100. If there are two exits, configured with the digits 1 and 4, 1 out of 5 calls will route down exit 1 and the remaining 4 calls will route down exit 2.
3	When all proportions are as required, click Save .

Start

Node description

The start node must be the first node in the control plan. All feature nodes in the control plan must be available on a branch starting from the Start node.

Shortcut keys

The shortcut keys to add a Start node are **Alt+S**.

Note: If there is already a Start node in the Control Plan, pressing this key combination will select the Start node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

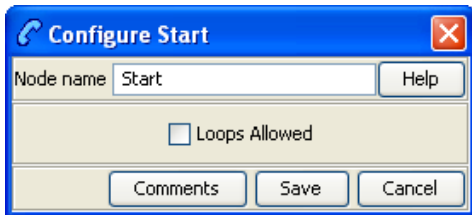
There may be only one Start node in a control plan.

Node exits

This node has no entry and one exit. The number of exits is fixed and cannot be changed.

Configuration screen

Here is an example Configure Start screen.



Configuring the node

The Start node does not need to have any control plan data attached to it when operating in standard mode, although the user must accept the default settings by opening the node edit screen and clicking **Save**.

Follow these steps to configure the Start node.

Step	Action
1	In the Standard Mode of operation, the control plan may not contain loops. For some advanced control plans, loops may be required. To allow loops in the control plan, select the Loops Allowed check box. Note: The control plan compiler will permit loops within the control plan, as long as those loops contain at least one feature node that performs a telephony action. For example, an attempt termination node or node that plays an announcement.
2	Click Save .

Terminate Unchanged

Node description

The number that was dialed is used to connect the call.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Terminate Unchanged nodes as required.

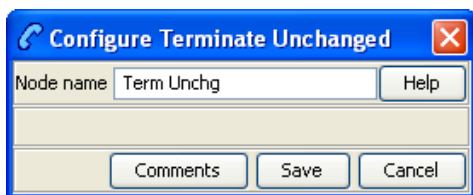
Node exits

This node has one entry and one exit. The number of exits is fixed and cannot be changed.

Exit	Cause	Description
1	Unconditional termination	Terminate call, taking no other actions.

Configuration screen

Here is an example Configure Terminate Unchanged screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Unconditional Termination

Node description

The Unconditional Termination node directs the call to be terminated to a specified termination number (TN).

Termination numbers are specified as ranges of numbers in the ACS Configuration screens. The numbers shown in the Configure Unconditional Termination screen are the ranges of termination numbers that have been specified for the logged in ACS Customer. If the customer for whom the control plan is being created is a managed customer, termination numbers that have not been specified for the customer may be used in the node. For more information about setting up ranges of numbers, see *ACS User's Guide*.

Note: The Unconditional Termination feature node can be set to automatically display the TN as the feature node name by setting the `useTNForNodeName` parameter in the `acs.jnlp` file. If this parameter is set, then you may not manually edit the feature node name. For more information, see *Advanced Control Services Technical Guide*.

Shortcut keys

The shortcut keys to add an Unconditional Termination node are **Alt+U**.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

There may be as many Unconditional Termination nodes in a control plan as required. The Unconditional Termination node may not be followed by any node that requires telephony (for example: Play Announcement, Disconnect, Attempt Termination, Selection Dependant Routing).

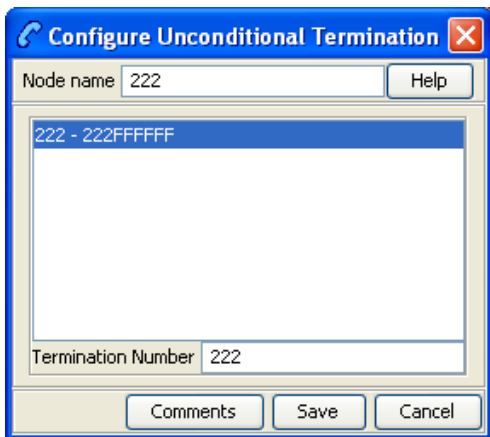
Node exits

This node has one entry and one exit. The number of exits cannot be changed.

Exit	Cause	Description
1	Unconditional termination	Terminates to the configured termination number.

Configuration screen

Here is an example Configure Unconditional Termination screen.



Configuring the node

Follow these steps to configure the node.

Step	Action
1	To specify a termination number for the node, select the range in which the number lies from the ranges shown. Result: The prefix digits will be entered into the Termination Number field.
2	Use the Termination Number field to complete the number. The Xs in the range signify the minimum number of digits that are required and the Ys signify the maximum number of digits in the range.
3	Click Save to commit that termination number to the node. The Save button will become available when a number that is within the selected range is displayed in the Termination Number field.

CCS Charging Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller CCS charging feature nodes.

In this chapter

This chapter contains the following topics.

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Available Feature Nodes

CCS Charging feature nodes list

This table lists the feature nodes available from the CCS Charging palette group in the ACS Control Plan Editor.

Node Name	Node description
Balance Cascade Override (on page 37)	The Balance Cascade Override node is used to specify a balance cascade to override the balance cascade that otherwise would have been used for the next charging action.
Business Prefix Branch (on page 44)	The Business Prefix Branch node checks to see if the caller has dialed the business prefix as part of their number.

Node Name	Node description
Balance Cascade Override (on page 37)	The Balance Cascade Override node is used to specify a balance cascade to override the balance cascade that otherwise would have been used for the next charging action.
Call Information SMS (on page 46)	The Call Information SMS node is used after a uATB node to send an SMS notification to the user with regards to the duration and cost of the call, using templates defined for each language.
Cost Call Duration Branching (on page 50)	Allows for balance type and cost threshold branching, or call duration branching, on the values returned for the last charged call.
Credit Wallet Transfer (on page 53)	The Credit Wallet Transfer node allows cash credit to be converted into an alternative balance type for a subscriber's own account or the account of an alternate subscriber.
Declined Billing Cause (on page 57)	The Declined Billing Cause node sends the cause of a billing failure to the subscriber.
Direct Unit Charge Request (on page 58)	The Direct Unit Charge Request node retrieves wallet information and sends it to the billing engine.
Named Event (on page 61)	The Named Event feature node is used to bill the caller for a defined number of named events with a defined discount.
Get CUG Details (on page 60)	The Get CUG Details node analyzes the calling and called party numbers to determine whether they are part of a closed user group (CUG).
Play Tariff Plan Announcement (on page 66)	The Play Tariff Plan Announcement node plays the announcement associated with the selected tariff plan.
Set Active Domain (on page 68)	The Set Active Domain node allows the selection of a billing domain for use by the current top-up/voucher redeem activity for the following management types: <ul style="list-style-type: none"> • Wallet • Voucher • Rating • Subscriber • Service
Set BE EDR (on page 71)	The Set BE EDR node alters and adds EDR tags in EDRs generated by slee_acs during call flow. The EDR tag must be specified. The value can be static or populated from a profile field.
Set Discount (on page 75)	The Set Discount node retrieves discount information from the specified location and uses that information for any subsequent billing requests.
Set Tariff Plan Rule (on page 77)	Specifies the tariff plan to be used for combinations of network access type and bearer capability.
Set Wallet Type (on page 80)	The Set Wallet Type node specifies the wallet type to use in the call context.
Tariff Plan Override (on page 82)	The Tariff Plan Override node overrides the configured tariff plan with the tariff plan specified in the node.
Universal ATB (on page 84)	The Universal Attempt Termination with Billing (UATB) node is used to bill subscribers for calls that they make or receive.
Variable Amount Recharge (on page 89)	The Variable Amount Recharge node will attempt a standard recharge for the specified wallet based on the voucher and wallet data derived from profile fields.
Voice Call Cost (on page 92)	The Voice Call Cost node plays the cost of the last call within the current control plan.

Balance Cascade Override

Node description

The Balance Cascade Override node is used to specify a balance cascade to override the balance cascade that otherwise would have been used for the next charging action.

The balance cascade can be specified in the node or defined in a profile field.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

The balance cascades available to this node are limited to those available for the Service Provider of the screens user.

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type BCD. See *Charging Control Services User's Guide* for further details on charging domains.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either error / failure or that the Domain being used does not support this feature node.
2	Success	The balance cascade has been overridden.

Configuration screen

Here is an example Configure Balance Cascade Override screen.

Configuration fields

This table describes the function of each field.

Field	Description
From Profile	If selected then the Select Balance Cascade Override frame become enabled.
Manual Definition	If selected then the Balance Cascade Override Selection frame becomes enabled.
TagID Data Type	Specifies the data type to use when From Profile is selected. Note: This affects the profile location list.
TagID Location	Specifies the profile to use when From Profile is selected.
TagID Field	The profile field containing the balance cascade to use instead of the one currently configured for the next node in the control plan, that has a balance type cascade associated with it.
Balance Cascade	When Manual Definition is selected, this defines the override balance type cascade for the next node in the control plan that has a balance type cascade associated with it, such as an ATB or Named Event node.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	In the Balance Cascade Override area select either: <ul style="list-style-type: none"> • From Profile, or • Manual Definition. <p>Result: The relevant Balance Cascade Override fields are made available.</p>
2	Select the Balance Cascade to override the balance cascade defined for the next charging action. If you selected: <ul style="list-style-type: none"> • Manual Definition, Select the Balance Cascade from the drop down list. Only valid balance cascades will be available. • From Profile, Select the TagID Data Type, Location and Field containing the balance cascade you want to use from the drop down lists.
3	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Billable Event

Node description

Warning: This feature node has now been deprecated and should no longer be used. This feature node will still function in existing control plans. For new control plans please use the **Named Event** feature node.

The Billable Event feature node is used to bill the caller for a defined number of billable events with a defined discount.

The action is one of:

- Billing the caller wallet
- Reserving the event cost
- Confirming the cost can be billed
- Canceling the reserved event cost
- Retrieving the cost of the event

The number of events is either configured in the node, or stored at a selected location.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

This node deals only with the wallet type currently set in the call context. If a different wallet is required, a Set Wallet Type node must be invoked before this node.

For more information, see *Set Wallet Type* (on page 80).

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Note: These exit descriptions are specific to the responses received from an Oracle Voucher and Wallet Server billing engine. For specific information about how responses from other billing engines map to these exits, see the technical guide for the interface for billing engine being used.

Exit	Cause	Description
1	Success	The caller has successfully exited the node with the billing event successfully completed. Note: This includes: <ul style="list-style-type: none"> A negative wallet balance when the allow negative balance option has been selected (allow not selected would result in the No Credit branch being taking instead). Any single Reserve or Confirm requests regardless of wallet balance.
2	No Credit	The caller has no credit and the allow negative balance option is off.
3	Billing Fault	An error has occurred within the billing function. Possible faults are: <ul style="list-style-type: none"> multiple reservation attempts (just a single reservation at a time is permitted). confirm or revoke requests when there has not been a previous reserve request.
4	Unsupported	Either error / failure or that the Domain being used does not support this feature node.

Configuration screen

Here is an example Configure Billable Event node screen.

The screenshot shows the 'Configure Billable Event' dialog box. The 'Node name' field is set to 'Bill Event'. The 'Event Class' is 'FnF FnD Events' and the 'Billable Event' is 'FnD Config Change'. Under 'Number of Events', the 'Profile' radio button is selected, and the 'Number of Events' is set to 0. The 'Number of Events Data Type' is 'Session Data', the 'Number of Events Location' is 'Incoming Session Data', and the 'Number of Events Field' is 'CC Extension Digits 5'. The 'Discount Percentage' is 0. The 'Allow Negative Balance' checkbox is unchecked. Under 'Billable Event Feature Selection', the 'Direct Event' radio button is selected. The 'Store Cost' checkbox is unchecked. Under 'Charge Cost', the 'ChargeCost Data Type' is 'Database', the 'ChargeCost Location' is 'Account Reference Profile', and the 'ChargeCost Field' is 'Acct Ref DB Id'. The 'Exit Branches' section shows four options: 1 Success, 2 No Credit, 3 Billing Fault, and 4 Unsupported. At the bottom, there are buttons for 'Comments', 'Save', and 'Cancel'.

Configuration fields

This table describes the function of each field.

Field	Description
Event Class	List of event types that can be billed.
Billable Event	List of events for the Event Class selected.
Number of Events	The number of events to bill the subscriber. This value can be obtained from: <ul style="list-style-type: none"> • Number of Events field, when the Node dialog option is selected, or • Number of Events Field location, when the Profile option is selected.

Field	Description
	Note: The number of events value is hexadecimal, for example: 10 in the Number of Events field is actually 16 events.
Discount Percentage	The percentage discount to apply to the billable event cost.
Allow Negative Balance	Indicates if the caller wallet balance is allowed to become negative as a result of this event billing (includes an already negative wallet balance before this billable event).
Billable Event Feature Selection	<p>This node has five modes of operation:</p> <ul style="list-style-type: none"> • Direct Event - requests the billing engine to charge the caller wallet with the cost of the event(s). • Reserve Event - requests the billing engine to reserve the cost of the event(s) against the caller wallet. • Confirm Event - confirms the previously reserved event cost. • Revoke Event - cancels the previously reserved event cost. • Cost of Event - requests the billing engine to return the cost of the event(s). <p>Note: The option selected here will affect the list of available items to select in the Event Class and Billable Event.</p>
Store Cost	Indicates if the billed cost is to be saved in the Charge Cost location.
Charge Cost	Location to save the billed cost into for later use.

Configuring the node

Follow these steps to configure the node.

Warning: If using Diameter, refer to *Diameter Control Agent Technical Guide* before configuring this node.

Step	Action
1	<p>Select the mode of operation for this instance of the node:</p> <ul style="list-style-type: none"> • Direct Event - to bill the caller for the event cost. • Reserve Event - to reserve the event cost against the caller wallet balance. • Confirm Event - to confirm the reserved event cost. • Revoke Event - to cancel a previously made reserve request. • Cost of Event - to retrieve the cost of the event. <p>Note: This affects content for Event Class and Billable Event lists.</p>
2	<p>From the Event Class drop down list, select the class of this billable event.</p> <p>Note: This list is configured in the SMS > Services > PrePaid Charging > Rating Management > Billable Event tab (refer to <i>CCS User's Guide</i> for more information).</p>
3	<p>From the Billable Event drop down list, select the event to bill.</p> <p>Note: This list is configured in the SMS > Services > PrePaid Charging > Rating Management > Billable Event tab (refer to <i>CCS User's Guide</i> for more information).</p>
4	<p>In the Number of Events section, select the option to use to obtain the number of events to bill.</p> <p>Either select:</p> <ul style="list-style-type: none"> • Node dialog to obtain the value from this node, or

Step	Action
	<ul style="list-style-type: none"> • Profile to obtain the value from a location.
5	<p>Result: The relevant Number of Events fields are made available.</p> <ul style="list-style-type: none"> • If Node dialog: In the Number of Events field, type the number of events to bill. • If Profile :Select the Number of Events Data Type, Location and Field from the drop down lists. <p>Warning: The number of events value in either field is a hexadecimal number, for example 10 entered is actually 16 events.</p>
6	In the Discount field, type the discount percentage to apply to the billed event cost.
7	To permit a negative wallet balance when reserving or billing, select the Allow check box.
8	<p>If the mode of operation is:</p> <ul style="list-style-type: none"> • Direct Event, • Confirm Event, or • Cost of Event <p>and the cost is to be saved, select the Store Cost check box.</p>
9	If the Store Cost check box has been selected, select the ChargeCost Data Type , Location and Field from the drop down lists.
10	Click Save .

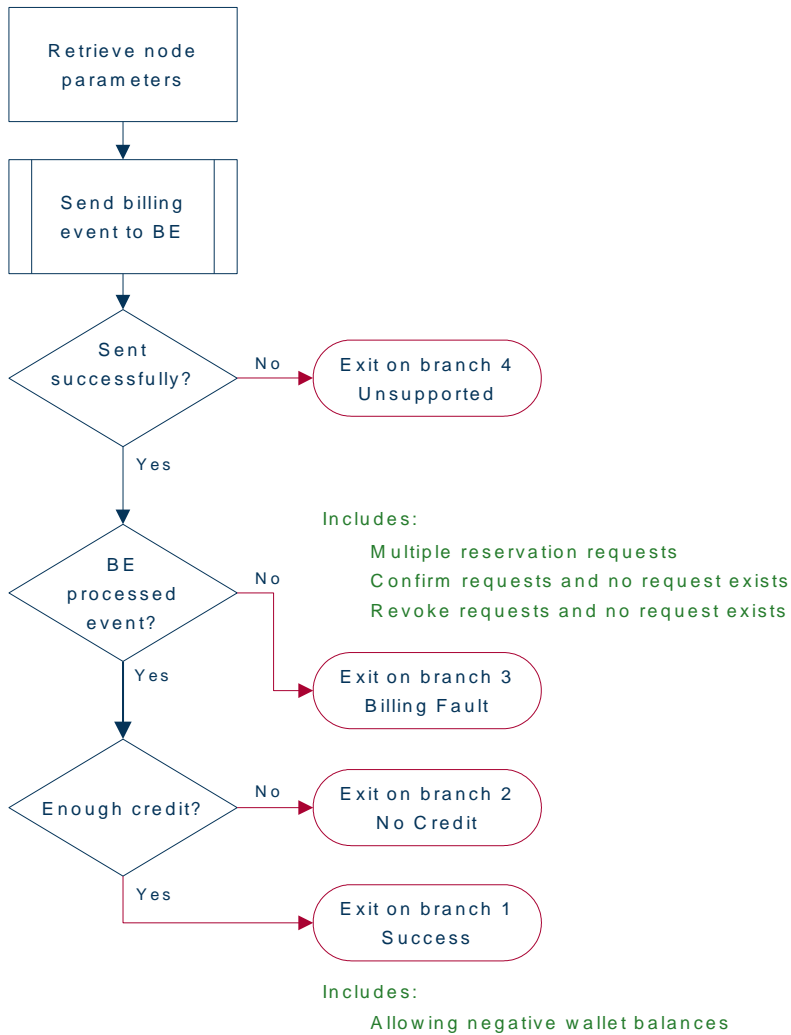
Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Node logic

This diagram shows the internal logic processing of the node.



Business Prefix Branch

Node description

The Business Prefix Branch node checks to see if the caller has dialed the business prefix as part of their number. If so, the node strips the prefix from the dialed number and routes accordingly.

The Business Prefix is configured in the **Resource Limits** tab on the Resources screen within CCS.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

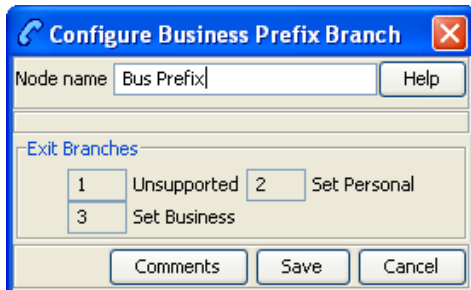
Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either error / failure or that the Domain being used does not support this feature node.
2	Set Personal	The caller has not dialed the Business Prefix.
3	Set Business	The caller has dialed the Business Prefix.

Configuration screen

Here is an example Configure Business Prefix Branch node screen.

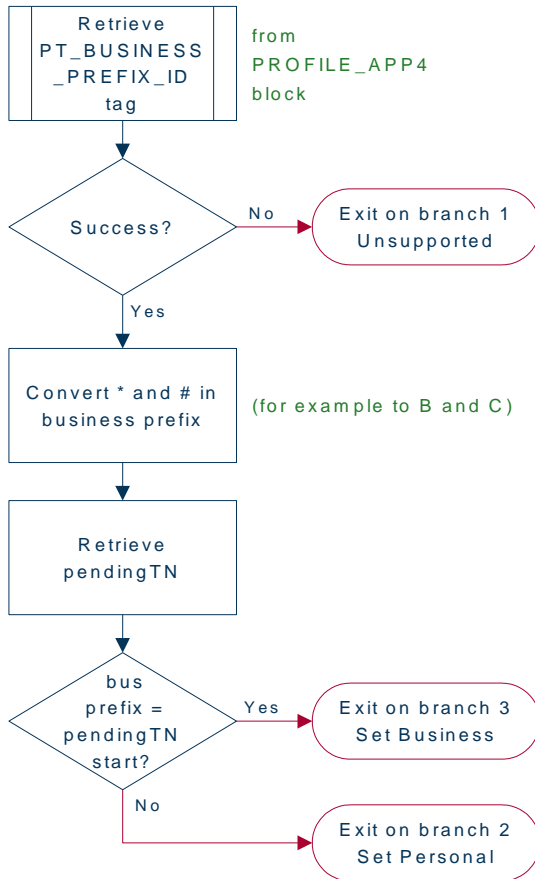


Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Node logic

This diagram shows the internal logic processing of the node.



Call Information SMS

Node description

The Call Information SMS node is used after a uATB node to send an SMS notification to the user with regards to the duration and cost of the call, using templates defined for each language. The user can also configure the following items in the node:

- The template to use to send the message (configured through the **ACS > Configuration > Notification** screens)
- The currency in which to display the cost of the call

The following parameters (some use strings configured in CCS, see *CCS User's Guide*, can be included in the messages:

- Duration - hours/minutes/seconds (available only after a call)
- Call cost (available only after a call)
- Wallet type
- Wallet expiry
- Balances
- Balance expiry

Notes:

The node will filter out all Expenditure Balance Types and not include them in the SMS notification message. See *CCS User's Guide - Balance Types* topic.

Node icon

If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.

**Restrictions**

This node may be used any number of times within a control plan.

This node requires an existing short message service.

This node deals only with the wallet type currently set in the call context. If a different wallet is required, a Set Wallet Type node must be invoked before the uATB node in the control plan.

For more information, see *Set Wallet Type* (on page 80).

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either error / failure or that the Domain being used does not support this feature node, a text message has not been sent.
2	Success	A text message has been successfully sent to the short message service.

Configuration screen

Here is an example Configure Call Information SMS node screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	In the SMS Termination Number Selection panel, select the location of the number to which the SMS will be sent. Select either: <ul style="list-style-type: none"> • Number Buffer, or • Profile String Result: The relevant fields are made available.
2	<ul style="list-style-type: none"> • If Number Buffer: Select from the Number Buffer drop down list. • If Profile String: Select from the Profile String Data Type, Location and Field drop down lists.
3	Select the Application where the notification template is defined from the drop down list. Note: ACS will be used by default.
4	Select the notification Type from the drop down list. Defaults to CallInfoDurationCost for application ACS.
5	<ul style="list-style-type: none"> • To use the subscriber's wallet currency when constructing the cost string for the SMS, select Use Wallet Cost Currency. • To use a different currency, select Override Cost Currency and select the currency you want from the drop down list.

Step	Action
6	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Message parameters

Message parameters included in the notification template message text are searched for and replaced with an appropriate value.

Here is a list of available parameters.

Parameter	Description												
\$1	Call length hours (not zero padded).												
\$2	Call length minutes (not zero padded).												
\$3	Call length seconds (not zero padded). Examples. <table border="1"> <thead> <tr> <th>Actual call length</th> <th>\$1</th> <th>\$2</th> <th>\$3</th> </tr> </thead> <tbody> <tr> <td>1 hour, 15 minutes and 23 seconds</td> <td>1</td> <td>15</td> <td>23</td> </tr> <tr> <td>28 minutes and 5 seconds</td> <td>0</td> <td>28</td> <td>5</td> </tr> </tbody> </table>	Actual call length	\$1	\$2	\$3	1 hour, 15 minutes and 23 seconds	1	15	23	28 minutes and 5 seconds	0	28	5
Actual call length	\$1	\$2	\$3										
1 hour, 15 minutes and 23 seconds	1	15	23										
28 minutes and 5 seconds	0	28	5										
\$4	The Balance Types details of the Wallet. Details include: <ul style="list-style-type: none"> • Balance description • Balance currency • Balance amount • Balance expiry (either the number of days to expiry or the no balance expiry text). <p>Note: The balance details string is configured on the Balance Type Translations tab in the Wallet Management screen in CCS. You must configure an entry for all languages used for sending notifications. See <i>CCS User's Guide</i> for details.</p>												
\$5	The wallet expiry details. One of the following: <ul style="list-style-type: none"> • The number of days remaining before the wallet expires • The no expiry date text defined for wallets that have no expiry date set <p>Note: The wallet expiry date text is configured on the Wallet Name Translations tab in the Wallet Management screen in CCS. See <i>CCS User's Guide</i> for details.</p>												
\$6	The cost details including the currency and amount. <p>Note: The cost string is configured on the Balance Type Translations tab in the Wallet Management screen in CCS. See <i>CCS User's Guide</i> for details.</p>												
\$7	The wallet description. <p>Note: The wallet description is configured on the Wallet Name Translations tab in the Wallet</p>												

Parameter	Description
	Management screen in CCS. You must configure an entry for all languages used for sending notifications. See <i>CCS User's Guide</i> for details.
\$8	The total call length in hours, minutes and seconds. Example: 1:16:51.
\$9	The total call length in minutes and seconds. Example: 76:51 Note: Use parameters \$8 or \$9 instead of using parameters \$1, \$2 and \$3.

Message example

Here are some example templates and the corresponding messages generated by the Call Information SMS node.

Example 1

A template of:

Call Dur: \$1 hr \$2 min \$3 secs - call cost \$6 - a/c type \$7 - exp details \$5- bal \$4
will send the message:

"Call Dur: 0 hr 7 min 42 secs - call cost Gen Bal AED7.68 - a/c type Eng Private - exp details no expiry - bal Eng Gen Bal AED7287.21-no expiry"

Example 2

A template of:

Call Dur: \$9 minutes - call cost \$6 - a/c type \$7 - exp details \$5- bal \$4
will send the message:

"Call Dur: 7:42 minutes - call cost Gen Bal AED7.68 - a/c type Eng Private - exp details no expiry - bal Eng Gen Bal AED7287.21-no expiry"

Cost Call Duration Branching

Node description

Allows for balance type and cost threshold branching, or call duration branching, on the values returned for the last charged call.

This feature node when combined with the **Store Profile Field** and **Retrieve Profile Field** feature nodes will allow a service to be defined in a control plan where a configured number of the free daily connections of less than a configured number of seconds can be allocated to a group of specified numbers.

This feature node is used for one of:

- Call cost branching
- Call duration branching

Depending on the mode, either the balance type and cost threshold (call cost branching) or just the duration threshold (call duration branching) will be configured on the feature node, making these parameters instance specific within the control plan. Optionally, the cost per duration may be stored in a selected profile field.

This feature node when used for call cost branching will limit the balance types that can be selected by the operator to only those that are used as chargeable balance types; hence this does not include 'Expenditure' and 'Cross Balance Type Discount' balance types.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Cost Call Duration Branching nodes as required.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Note: The reason an exit is taken depends on the mode in use (cost or call duration).

Exit	Cause	Description
1	>	The wallet balance or call duration is greater than the configured threshold. Telephony actions are allowed after this branch.
2	<	The wallet balance or call duration is less than the configured threshold. Telephony actions are allowed after this branch.
3	=	The wallet balance or call duration is the same as the configured threshold. Telephony actions are allowed after this branch.
4	No Balance Found	The specified balance type was not found in the subscriber's wallet, or the current domain does not support the required actions. Telephony actions are allowed after this branch.
5	Unsupported	Any error/failure encountered.

Note: A zero wallet balance could potentially use either exit 2 or exit 3 depending on the threshold value.

Configuration screen

Here is an example Configure Cost Call Duration Branching screen.

The screenshot shows a configuration window titled "Configure Cost Call Duration Branching". The "Node name" field is set to "CCD Branch". Under "Branch Type", the "Cost" radio button is selected. In the "Balance Selection" section, the "Sum All" checkbox is unchecked, and the "Balance Type" dropdown is set to "General Cash". The "Threshold" is set to "0". The "Store Cost/Duration" section has the "Enabled" checkbox unchecked, and the destination fields are set to "Database", "Account Reference Profile", and "CCS CWTR Name". The "Exit Branches" section contains a table with the following entries:

1	>	2	<
3	=	4	No Balance Found
5	Unsupported		

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
------	--------

- 1 Select the **Branch Type** to use.
Either:
 - **Cost**, or
 - **Call Duration****Result:** The relevant fields are made unavailable.

Cost

- 2 Select which balance type(s) to use.
Either:
 - Tick the **Sum All** check box to use all cash balance types, or
 - Select from the **Balance Type** drop down list to use a single cash balance type.**Note:** The Balance Type drop down list shows all **Cash** balance types for the current ACS customer that can be used for charging. This excludes all **Expenditure** and **Cross Balance Type Discount** balances.

Cost and Call Duration

Step	Action
3	Type the comparison balance or duration threshold to use in the Threshold field.
4	To store the call cost or duration tick the Enabled check box in the Store Cost/Duration area. Then, select the Destination profile from the Data Type , Location and Field drop down lists.
5	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Credit Wallet Transfer

Node description

The Credit Wallet Transfer node allows cash credit to be converted into an alternative balance type for a subscriber's own account or the account of an alternate subscriber.

Credit transfers only apply to peer-to-peer and service bundle transfer definitions. See *CCS User's Guide* for further information.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Credit Wallet Transfer nodes as required.

Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	The current charging domain does not support all the required services needed by the feature node.
2	Success	Credit transfer completed successfully.
3	Unauthorised	The product type of the purchaser was not found in the limited product type list associated with this credit transfer.

Exit	Cause	Description
4	Bad PIN	The PIN of the purchaser failed to validate. This may be due to the: <ul style="list-style-type: none"> • Supplied PIN was invalid • PIN was required but was not supplied • Subscriber does not have a PIN associated with this wallet
5	Invalid Transfer	The credit transfer short name specified (and the credit transfer type required, either service bundle or peer-to-peer) was invalid.
6	Error	Various general errors which may, amongst others, be: <ul style="list-style-type: none"> • Configuration related • Insufficient funds related • Purchaser or recipient wallet related

Configuration screen

Here is an example Configure Credit Wallet Transfer screen.

Node name: CredWalTrnfr [Help]

Recipient CLI
RecipientCLI: Dialed Service Number

Purchasing Subscriber PIN
SubscriberPIN: Dialed Service Number

Recipient Wallet Type Category Selection
 UsePrimaryWallet
 UseSecondaryWallet
 RetrieveFromBuffer

Recipient Wallet Type Category
WalletTypeCategory: Dialed Service Number

Credit Wallet Transfer Name Selection
 RetrieveFromNode
 RetrieveFromBuffer
 RetrieveFromProfile

Credit Wallet Transfer: [Dropdown]

Credit Wallet Transfer Name
 CreditWalletTransfer: Dialed Service Number
 CreditWalletTransfer Data Type: Database
 CreditWalletTransfer Location: Account Reference Profile
 CreditWalletTransfer Field: CCS CWTR Name

Exit Branches

1	Unsupported	2	Success
3	Unauthorised	4	Bad PIN
5	Invalid Transfer	6	Error

[Comments] [Save] [Cancel]

Configuration fields

This table describes the function of each field.

Field	Description
Recipient CLI	<p>The phone number of the credit transfer recipient, found in one of the ACS phone-number buffers.</p> <p>Note: Location Area Code and Cell Identity buffers are not available for use; all remaining phone-number buffer types are valid.</p>
Purchasing Subscriber PIN	<p>The PIN number for the purchasing subscribers wallet the credit is coming from, found in one of the ACS phone-number buffers.</p> <p>Note: Location Area Code and Cell Identity buffers are not available for use; all remaining phone-number buffer types are valid.</p>
Recipient Wallet Type Category	<p>The destination wallet for the credit transfer. Can be one of:</p> <ul style="list-style-type: none"> • Primary wallet • Secondary wallet • Retrieve from buffer <p>Notes:</p> <ul style="list-style-type: none"> • The buffer content must be PRIMARY or SECONDARY. • Location Area Code and Cell Identity buffers are not available for use; all remaining phone-number buffer types are valid.
Credit Wallet Transfer Name Selection	<p>Select the Credit Transfer short name (this list is configured in the CCS Transfer Management screen).</p> <p>Can be one of:</p> <ul style="list-style-type: none"> • RetrieveFromNode (Credit Wallet Transfer list) • RetrieveFromBuffer (Credit Wallet Transfer Name section, Credit Wallet Transfer list) • RetrieveFromProfile (Credit Wallet Transfer Name section, Data Type, Location and Field lists) <p>Note: Location Area Code and Cell Identity buffers are not available for use; all remaining phone-number buffer types are valid.</p>
Credit Wallet Transfer	<p>Select the Credit Wallet Transfer to use in the feature node. This is configured in the CCS Transfer Management screen.</p> <p>This option is enabled when the Credit Wallet Transfer Name Selection is set to RetrieveFromNode:</p>
Credit Wallet Transfer Name	<p>This field is enabled when the Credit Wallet Transfer Name Selection is set to RetrieveFromBuffer:</p> <ul style="list-style-type: none"> • CwTrName1 - The name of the Credit Wallet Transfer. <p>These fields are enabled when the Credit Wallet Transfer Name Selection is set to RetrieveFromProfile:</p> <ul style="list-style-type: none"> • CwTrName2 Data Type - The data type of the Credit Wallet Transfer name. • CwTrName2 Location - The location of the Credit Wallet Transfer name. • CwTrName2 Field - The second name field for the Credit Wallet Transfer.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	From the Recipient CLI drop down list, select the buffer containing the phone number of the credit transfer recipient.
2	From the Purchaser PIN drop down list, select the buffer containing the purchaser wallet PIN.
3	From the Recipient Wallet Type Category Selection options, select the wallet to use or the location of the wallet to use. Note: If the buffer option is selected, from the Wallet Type Category drop down list also select the buffer containing the wallet type.
4	From the Credit Wallet Transfer Selection options, select the location of the credit transfer details. Note: The following fields require completion depending on the option selected.
5	If Feature Node option selected: <ul style="list-style-type: none"> from the Credit Wallet Transfer drop down list, select the Credit Transfer short name to use. or If Buffer option selected: <ul style="list-style-type: none"> from the CreditWalletTransfer drop down list, select the buffer containing the Credit Transfer short name to use. or If Profile option selected: <ul style="list-style-type: none"> from the Data Type, Location and Field drop down lists the profile the Credit Transfer short name is located in. Note: The short name in a buffer or profile field must match a name configured in the PrePaid Charging > Transfer Management screen.
6	Click Save . Result: The purchaser and recipient may receive SMS notifications, depending on the setting of the notification opt out flag and the result of the transfer. See <i>CCS User's Guide</i> , Adding Subscribers for configuration instructions and SMS notifications for messages and their content.

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

SMS notification

This table describes the SMS notifications and the conditions enabling them to be sent.

Message to	MSISDN	Transfer status	Message content
Purchaser	Differs from recipient	Success	Cost of the transfer plus the recipient MSISDN

Message to	MSISDN	Transfer status	Message content
		Failure	Alternative failure message.
	Same as recipient	Success	Cost of the transfer plus credits received.
		Failure	Alternative failure message.
Recipient	Differs from purchaser	Success	Credits received plus the purchaser MSISDN.

Declined Billing Cause

Node description

The Declined Billing Cause node sends the cause of a billing failure to the subscriber.

This feature node provides additional functionality for the UATB feature node when placed after the "declined (no funds)" branch of the UATB feature node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan. However, it must be placed after a UATB node - declined (no funds) branch.

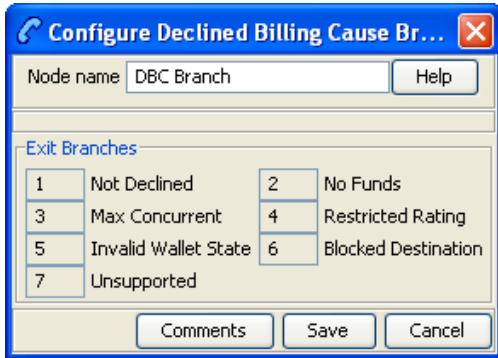
Node exits

This node has one entry and seven exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Not Declined	The billing was not declined.
2	No Funds	The billing was declined due to lack of funds.
3	Max Concurrent	Number of concurrent users for this wallet has been exceeded.
4	Restricted Rating	Rating/ tariff for this call destination has not been established.
5	Invalid Wallet State	Wallet is frozen.
6	Blocked Destination	The billing was declined due to the destination being barred.
7	Unsupported	Either error / failure or that the Domain being used does not support this feature node.

Configuration screen

Here is an example Configure Declined Billing Cause Branch node screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Direct Unit Charge Request

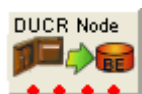
Node description

The Direct Unit Charge Request node retrieves wallet information and sends it to the billing engine.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The request has been successfully applied to the BE.
2	Not Enough Info	No call information was found.
3	Billing Fault	Any BE error (such as insufficient credit or timeout).
4	Unsupported	Either error / failure or that the Domain being used does not support this feature node.

Configuration screen

Here is an example Configure Direct Unit Charge node screen.

Configuration fields

This table describes the function of each field.

Field	Description
Use Actual Duration	Uses the actual call duration for billing.
Override Duration	Uses the specified duration time for billing. You must enter a value in the Duration Time field.
Duration Time	Time, in seconds, to use for billing. A value of 0 or greater is accepted.
Debit	Allow the request to perform a debit instead of a credit.
Credit	Allow the request to perform a credit instead of a debit.
Ignore Wallet Balance	Allows the wallet balance to go negative instead of being rejected (used only when the account reference is configured to do so.)

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the duration to use for billing: <ul style="list-style-type: none"> • Actual Duration – To bill for the actual call duration. • Override Duration – To bill for the specified duration (in seconds). You must enter a duration of 0 seconds or greater.
2	Select either the Debit or Credit options.
3	Select the Ignore Wallet Balance check box to allow the wallet balance to go negative.
4	Click Save .

Get CUG Details

Node description

The Get CUG Details node analyzes the calling and called party numbers to determine whether they are part of a closed user group (CUG). If they belong to the same CUG, then the tariff plan used by the next UATB node is overridden by the tariff plan specified for the CUG in the Resources screens.

Note: If both parties belong to more than one CUG, then the tariff plan from the first CUG to be returned, is normally used.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type BCD. See *Charging Control Services User's Guide* for further details on charging domains.

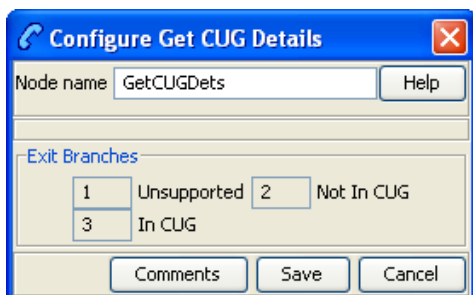
Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either error / failure or that the Domain being used does not support this feature node.
2	Not In CUG	Either the Calling Party or the Called Party are not in a Closed User Group (CUG), or they are not in the same one.
3	In CUG	Both the Calling Party and the Called Party are in the same CUG, and the current tariff plan has been successfully overridden.

Configuration screen

Here is an example Configure Get CUG Details node screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Named Event

Node description

The Named Event feature node is used to bill the caller for a defined number of named events with a defined discount.

The action is one of:

- Billing the caller wallet
- Reserving the event cost
- Confirming the cost can be billed
- Canceling the reserved event cost
- Retrieving the cost of the event

The number of events is either configured in the feature node or stored at a selected location.

Node icon



Restrictions

This node may be used any number of times within a control plan.

This node deals only with the wallet type currently set in the call context. If a different wallet is required, a Set Wallet Type node must be invoked before this node.

For more information, see *Set Wallet Type* (on page 80).

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Note: These exit descriptions are specific to the responses received from an Oracle Voucher and Wallet Server billing engine. For specific information about how responses from other billing engines map to these exits, see the technical guide for the interface for billing engine being used.

Exit	Cause	Description
1	Success	The caller has successfully exited the node with the billing event successfully completed. Note: This includes: <ul style="list-style-type: none"> • A negative wallet balance when the allow negative balance option has been selected (allow not selected would result in the No Credit branch being taking instead). • Any single Reserve or Confirm requests regardless of wallet balance.
2	No Credit	The caller has no credit and the allow negative balance option is off.
3	Billing Fault	An error has occurred within the billing function. Possible faults are: <ul style="list-style-type: none"> • multiple reservation attempts (just a single reservation at a time is permitted). • confirm or revoke requests when there has not been a previous reserve request.
4	Unsupported	Either error / failure or that the Domain being used does not support this feature node.

Configuration screen

Here is an example Configure Named Event screen.

Configure Named Event

Node name:

Event Definition

Node dialog Profile

If 'Profile' is chosen, the event class and named event will be read from the Event Class and Event Type tags in temporary storage.

Event Class:

Named Event:

Persistent Reservation

Persistent Res:

If 'Persistent Res' is ticked, the reservation ID will be written to the Reservation ID tag in temporary storage in reserve mode. In commit mode, the reservation ID will be read from the Reservation ID tag in temporary storage.

Number of Events

Node dialog Profile

Number of Events:

Number of Events Data Type:

Number of Events Location:

Number of Events Field:

Discount Percentage

Discount:

Allow Negative Balance

Allow:

Named Event Feature Selection

Direct Event Reserve Event Confirm Event Revoke Event Cost of Event

Store Cost:

Exit Branches

1	Success	2	No Credit
3	Billing Fault	4	Unsupported

Configuring the node

Follow these steps to configure the Named Event feature node.

Note: If using Diameter, see *Diameter Control Agent Technical Guide* before configuring this feature node.

Step	Action
1	<p>From the Event Definition section, select the option to define how the event class and name will be specified.</p> <p>Select one of:</p> <ul style="list-style-type: none"> • Node dialog to read the event class and named event from the values specified in the dialog • Profile to read the event class and named event from the Event Class and Event Type tags in temporary storage
2	<p>If Node dialog:</p> <p>From the Event Class list, select the class of this named event.</p> <p>Note: This list is configured in the SMS > Services > PrePaid Charging > Rating Management > Named Event tab (see <i>CCS User's Guide</i> for more information).</p> <p>From the Named Event list, select the event to bill.</p> <p>Note: This list is configured in the SMS > Services > PrePaid Charging > Rating Management > Named Event tab (see <i>CCS User's Guide</i> for more information).</p>
3	<p>If required, select the Persistent Reservation check box to write the reservation ID to the Reservation ID tag in temporary storage in reserve mode. In commit mode, the reservation ID will be read from the Reservation ID tag in temporary storage. This can be used to pass the reservation ID in an OSD SOAP request, for example.</p> <p>Note: If you select to use this feature, set the <code>reservationPeriod</code> parameter in the CCS, namedEventHandler section of the <code>eserv.config</code> file on the VWS to a suitable value, such as setting the <code>reservationPeriod</code> parameter to the maximum time that persistent reservations are allowed open before being confirmed or revoked because reservations will expire at the end of this period.</p> <p>If you configure the Named Event feature node for Diameter, and if the Persistent Reservation check box is enabled, the feature node requires a value in the Number Of Events Used profile tag when in commit mode. To populate that profile tag, precede the Named Event feature node with a node that can set profile data, such as the Set or Extract Content feature nodes. The Extract Content feature node can be configured to read the number of events that were used from incoming data and store that amount in the Number Of Events Used profile tag. If the profile tag is empty, the session takes the Unsupported exit from the Named Event feature node.</p>
4	<p>In the Number of Events section, select the option to use to obtain the number of events to bill.</p> <p>Select one of:</p> <ul style="list-style-type: none"> • Node dialog to obtain the value from this node • Profile to obtain the value from a profile location
5	<p>If Node dialog: In the Number of Events field, type the number of events to bill.</p> <p>If Profile: Select the Number of Events Data Type, Location and Field from the drop down lists.</p> <p>Note: The number of events value in the Node Dialog is a decimal number, but the value from the Profile field depends on the type of the profile:</p> <ul style="list-style-type: none"> • INTEGER: the value is a decimal number • STRING or NSTRING: if the string has a "0x" prefix then the value is a hexadecimal number; if the string does not have a "0x" prefix then the value is a decimal number
6	<p>In the Discount Percentage field, type the discount percentage to apply to the billed event</p>

Step	Action
	cost.
7	To permit a negative wallet balance when reserving or billing, select the Allow check box.
8	Select the mode of operation for this instance of the node: <ul style="list-style-type: none"> • Direct Event - to bill the caller for the event cost. • Reserve Event - to reserve the event cost against the caller wallet balance. • Confirm Event - to confirm the reserved event cost. • Revoke Event - to cancel a previously made reserve request. • Cost of Event - to retrieve the cost of the event.
	Note: This affects content for event class and named event lists.
9	If the mode of operation is: <ul style="list-style-type: none"> • Direct Event • Confirm Event • Cost of Event and the cost is to be saved, select the Store Cost check box.
10	If the Store Cost check box has been selected, select the ChargeCost Data Type , Location and Field from the drop down lists.
11	Click Save .

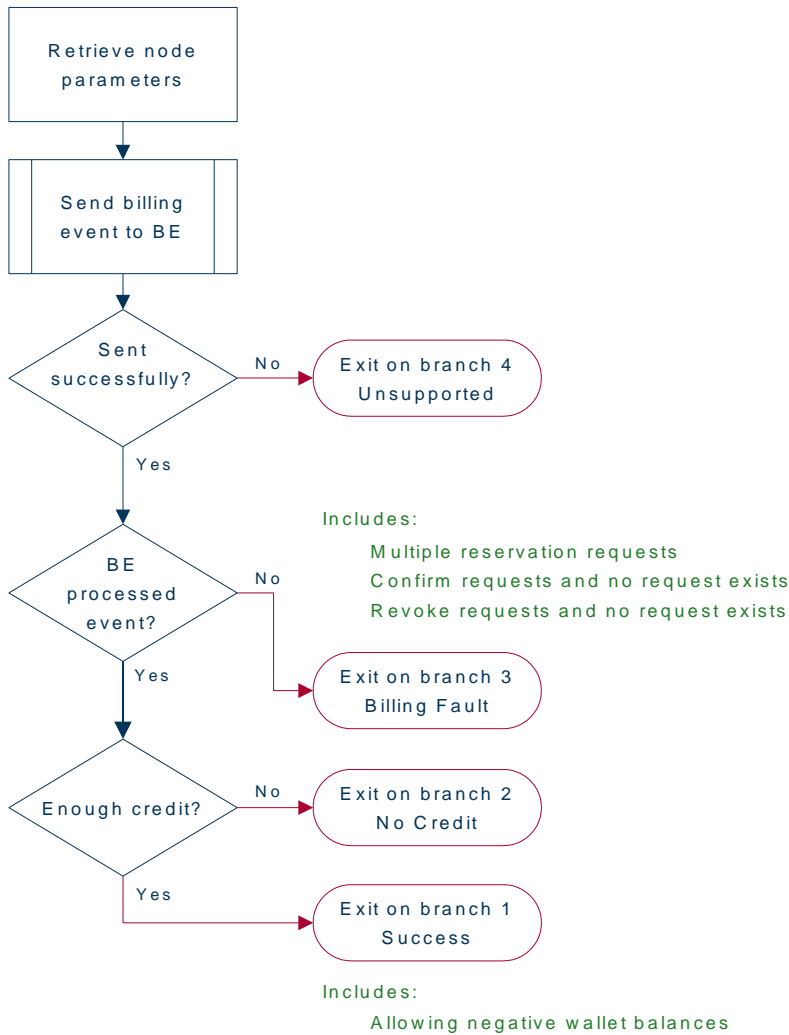
Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Node logic

This diagram shows the internal logic processing of the node.



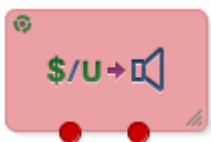
Play Tariff Plan Announcement

Node description

The Play Tariff Plan Announcement node plays the announcement associated with the selected tariff plan.

The tariff plan can be selected in the node or specified in a profile tag field.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Play Tariff Plan Announcement nodes as required.

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type BCD. See *Charging Control Services User's Guide* for further details on charging domains.

Node exits

This node has one entry and 2 exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The node successfully found the selected tariff plan and played the associated announcement.
2	Error	An error/failure occurred finding the selected tariff plan or when loading and playing the announcement.

Configuration screen

Here is an example Configure Play Tariff Plan Announcement screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	In the Tariff Plan Source area select: <ul style="list-style-type: none"> • From Profile • Manual Definition, or • Active Tariff Plan.
2	If From Profile : Select the Data Type , Location and Field drop down lists containing the required tariff plan. If Manual Definition : Select the Tariff Plan from the drop down list. If Active Tariff Plan : Then the currently active tariff plan will be used.
3	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Set Active Domain

Node description

The Set Active Domain node allows the selection of a billing domain for use by the current top-up/voucher redeem activity for the following management types:

- Wallet
- Voucher
- Rating
- Subscriber
- Service

This node also allows changing the domain type at any point within a control plan.

For example, if TUS is installed (using the default VoucherDomainType from **eserv.config** for TUS) then the domain can be changed mid call to UBE and vice versa with the Set Active Domain node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Set Active Domain nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The billing domain to use was set successfully.
2	Error	A system error of some kind occurred. The billing domain to use has not set.

Configuration screen

Here is an example Configure Set Active Domain screen.

Configuration fields

This table describes the function of each field.

Field	Description
Domain options	The domain to set can be either the name of a domain or a type of domain. The drop down list available will depend on the option selected here.

Field	Description
Name	A drop down list of all the valid domain names. The domain names are maintained in the SMS > Services > PrePaid Charging > Service Management > Domain tab screens.
Type	A drop down list of all the valid domain types. The domain types are maintained in the SMS > Services > PrePaid Charging > Service Management > Domain tab screens.
Management check boxes	These are the chassis actions to apply to the selected domain. The availability of check boxes for selection is maintained with the domain in the SMS > Services > PrePaid Charging > Service Management > Domain tab screens.
Rating	Sets the rating domain.
Service	Sets service chassis action.
Subscriber	Sets the subscriber chassis action.
Tracker	Sets the tracker chassis action.
Voucher	Sets the voucher chassis action.
Wallet	Sets the wallet chassis action.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the option to use to identify the domain: <ul style="list-style-type: none"> • Domain Name • Domain Type
2	From the Name or Type drop down lists, select the domain name or type. <p>Notes:</p> <ul style="list-style-type: none"> • When Domain Name is selected, the Type is automatically filled. • When Domain Type is selected, the Name field is blank and disabled. • The domain names and types are maintained in the SMS > Services > PrePaid Charging > Service Management > Domain tab screens.
3	Optionally select the Management check boxes allowed to set the required chassis action for the domain: <ul style="list-style-type: none"> • Service • Subscriber • Tracker • Wallet • Voucher <p>Notes:</p> <ul style="list-style-type: none"> • The defaults are: Service - unselected, the others except the Tracker option - selected. The Tracker option will only be available if the domain type is set to UBE. • The Service check box should only be selected with due caution and a thorough understanding of the potential consequences. See <i>CCS User's Guide</i>.

Step	Action
4	Optionally select the Management Rating check box (if allowed) to set the required domain billing engine. Note: The default is selected.
5	Click Save .

Note: The optional check boxes are available for use once they have been selected in the **SMS > Services > PrePaid Charging > Service Management > Domain** tab screens.

Example use of node

The following is an example of how this node can be used under the existing available features.

Example	Description
Scenario	A system is setup to redeem UBE vouchers, but this control plan requires the redemption of a voucher.
Solution	Select a domain type of TUS , then select the voucher check box.
Result	All subsequent voucher requests will be made to the TUS servers instead of the UBE.

Set BE EDR

Node description

The Set BE EDR node alters and adds EDR tags in EDRs generated by `slee_acs` during call flow. The EDR tag must be specified. The value can be static or populated from a profile field. If the tag already exists on the EDR, the value of the tag is overridden.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Existing BE EDR tag details successfully over-riden, new tag

Exit	Cause	Description
		appended.
2	Unsupported	Either error / failure or the Domain being used does not support this feature node.

Configuration screen

Here is an example Configure Set BE EDR node screen when using profile blocks.

Configuration screen

Here is an example Configure Set BE EDR node screen when using a CCS context value.

Configuration fields

This table describes the function of each field.

Note: Location/Field are mutually exclusive from Fixed Value.

Field	Description
EDR Tag	The tag to set the value to. One of: <ul style="list-style-type: none"> A new tag to add to the EDR The EDR tag to replace the value of This field must be between 1 and 50 characters long. This field is required. Warning: The only characters which can be used in this field are 0-9, a-z, A-Z, -_ and spaces.
Data Type, Location, Field	The type, location and field of the profile block that contains the required field.
Field	The profile field that contains the value to use for the EDR Tag.
Context Field	The call context field to use for the EDR Tag. For more information about call context fields, see <i>ACS User's Guide</i> . Note: The entries in this field are a sub-set of the fully available set of call context fields.
Fixed Value	Select the Data Type of Fixed Value to see this field. Value to use for the EDR Tag This field must be between 1 and 50 characters long.

Field	Description
	Warning: The only characters which can be used in this field are 0-9, a-z, A-Z, -_ and spaces.
Context Number	When selected, normalization occurs on fields selected from the Context Field based upon capability and rules.

Configuring the node

Follow these steps to configure the node.

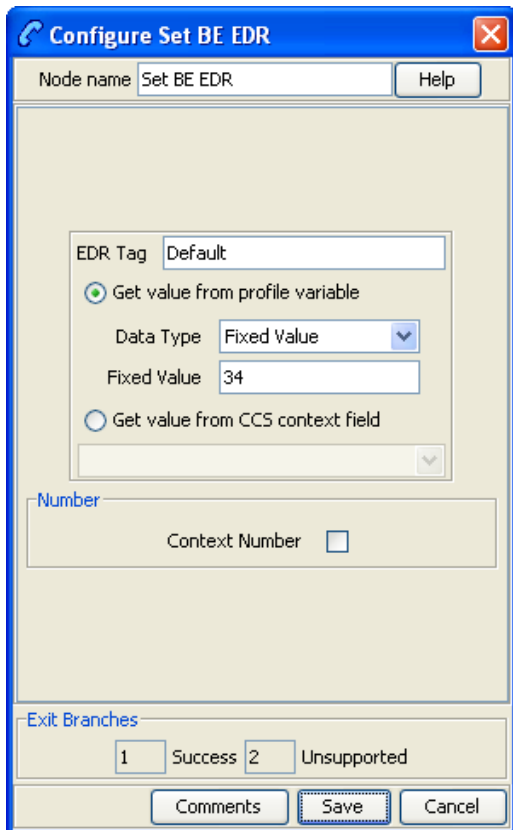
Step	Action
1	In the EDR Tag field, enter the string you want to use as the EDR field label.
2	To set the EDR Tag value or source: <ul style="list-style-type: none"> From a profile field, select Get value from profile variable radio button. Enter a fixed value, select Get value from profile variable radio button. From a CCS context field, select Get value from CCS context field radio button.

From a profile field

- 3 Select the field from the **Data Type**, **Location** and **Field** drop down lists.
- 4 Click **Save**.

From a fixed value

- 3 Select the **Data Type** field.
Result: The screen changes, the Fixed Value field replaces the Location and Field list boxes.



Step	Action
4	Type the value in the Fixed Value field. Note: To revert to a profile field selection, select an entry from the Data Type drop down list.
5	Click Save .
From a CCS context field	
3	Select the field from the drop down list.
4	Select the Context Number check box to have the CCS context field value normalised. Un-select to use the CCS context field value as stored.
5	Click Save .

For more information about the fields this node uses, see Configuration fields.

Set Discount

Node description

The Set Discount node retrieves discount information from the specified location and uses that information for any subsequent billing requests. The discount information collected by this node overrides the last set discount node encountered while traversing a Control Plan.

Note: The discounts provided by the node are applied in addition to any existing discounts.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

The Set Discount node may be used any number of times within a control plan.

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type **BCD**. See *Charging Control Services User's Guide* for further details on charging domains.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

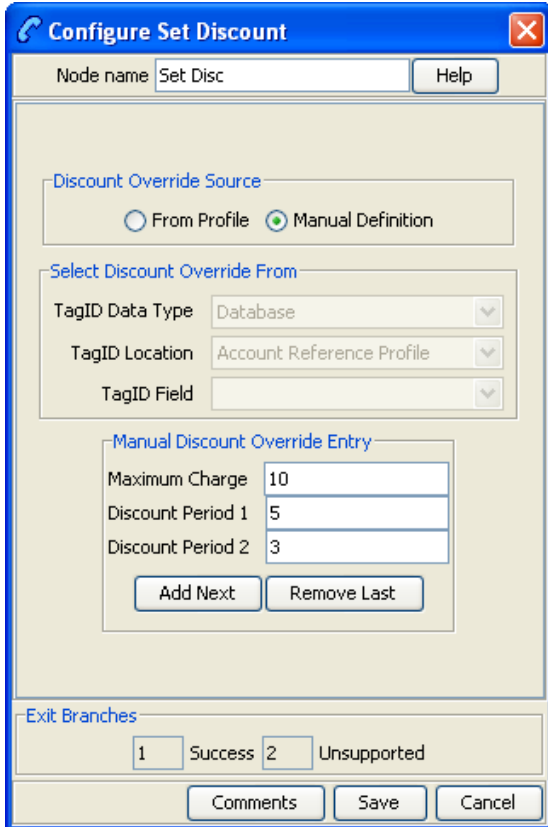
Exit	Cause	Description
1	Success	Discount information retrieved successfully.
2	Unsupported	Either:

Exit	Cause	Description
		<ul style="list-style-type: none"> • General error or failure • The Domain being used does not support this feature node

Configuration screen

Here is an example Configure Set Discount node screen.

Note: Discount Period fields will only be visible in the screen if a manual discount override entry has been configured and **Add Next** has been used to add percentage discount override values.



Configuration fields

This table describes the function of each field.

Field	Description
Discount Override Source	Takes the discount from either: <ul style="list-style-type: none"> • The configured profile (From Profile option) • This node (Manual Definition option)
Select Discount Override From	The profile Data Type , Location and Field (in decimal) for the discount information. Available when From Profile option is selected.
Maximum Charge	The maximum charge allowed for the call.
Discount Period <i>n</i>	Allows up to ten discounts. Each discount is configured as a percentage. This will be applied to the corresponding period for the rate in the tariff plan used for the charge. Negative percentages may be specified, allowing the cost to be increased

Field	Description
	instead of decreased. The number of Discount Periods is maintained through Add Next (to add a new entry) or Remove Last (remove the most recently added entry).

Configuring the node

Follow these steps to configure the node

Step	Action
1	Select the source for the discount from the Discount Override Source options. Either: <ul style="list-style-type: none"> • From Profile (retrieves the discount from the specified profile block and tag) • Manual Definition (retrieves the discount from this node configuration).
If From Profile option used.	
2	From the drop down lists in the Select Discount Override From area, select the profile data type, location and field where the discount is stored.
3	Click Save to complete this procedure.
If Manual Definition used.	
4	Type the maximum charge allowed for the call in the Maximum Charge field.
5	Click Add Next to display the Discount Period 1 field, and type in the discount percentage for this period. Note: When editing, all the discount percentages currently configured in the node will be shown.
6	To add a discount percentage for the next period, repeat step 5 (you may specify discount percentages for up to ten periods).
7	To remove the discount percentage for the most recent discount period, click Remove Last .
8	Click Save to complete this procedure.
Note: The list of data types is fixed at installation time for each feature node or screen.	

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Set Tariff Plan Rule

Node description

Specifies the tariff plan to be used for combinations of network access type and bearer capability.

When the Set Tariff Plan Rule node is activated during a call, the settings configured in the node are retrieved from the call plan data. When the call passes through the next UATB node, these settings are used to determine which tariff plan should be used for the caller's current network access type and bearer capability. If the tariff plan changes, then the notification configured in the node for network access type and bearer capability combination will be sent.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

To function correctly this node should be placed in front of the UATB node. The rules defined in the last Set Tariff Plan Rule node before the UATB node will be used.

If a Tariff Plan Override node is placed after the Set Tariff Plan Rule node in a call plan, then the charging defined in the TPO node will be used instead. Otherwise the charging defined in the Set Tariff Plan Rule node will be used.

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type **BCD**. See *Charging Control Services User's Guide* for further details on charging domains.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either error / failure, or the domain being used does not support this feature node.
2	Success	The product type tariff plan has been successfully overridden by the one specified in the node.

Configuration screen

Here is an example Configure Set Tariff Plan Rule node screen.

Configuration fields

This table describes the function of each field.

Field	Description
Access Network	List of available access network types. These are defined in Access Network geography set in ACS. Note: The "None" value is used for rules where the access network type is not relevant.
Bearer Type	List of available bearer types. Valid values are 1 to 255 and "None". Note: The "None" value is used for rules where the bearer type is not relevant.
Tariff Plan	Sets the tariff plan for the selected access network type and bearer type combination.
Notification Application	List of applications defined in ACS under which the available notification messages are grouped.
Notification Message	Lists the available notification messages for the selected notification application.

For more information about the notifications and geography sets configured in ACS, see *ACS User's Guide*.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	From the Access Network drop down list, select the access network for the rule you are adding.
2	From the Bearer Type drop down list, select the bearer type for the rule.
3	From the Tariff Plan drop down list, select the tariff plan to use for this combination of access network type and bearer type.
4	From the Notification App drop down list, select the application for which the notification message you want to use has been configured in ACS.
5	From the Notification Message drop down list, select the message to output for this rule.
6	Click Add . Result: The rule is added to the grid.
7	Repeat step 1 to 6 for all the combinations of access network type and bearer type you require. Modify any existing rules as required. To <ul style="list-style-type: none"> • update a rule, highlight it in the grid. Use the selection boxes to change its values, and click Update. • delete a rule, highlight it in the grid and click Delete.
8	Click Save .

Set Wallet Type

Node description

The Set Wallet Type node specifies the wallet type to use in the call context. Currently, one of:

- Primary
- Secondary

Node icon



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry point and two exits that are set by the system. The number of exits is not changeable by the user.

Exit	Cause	Description
1	Success	The caller has successfully exited the node and the desired wallet type has been set.

2	Unsupported	<p>One of the following:</p> <ul style="list-style-type: none"> • An error or failure occurred. • The domain being used does not support this feature node. • The caller does not have a business wallet but the BusinessWallet configuration option has been ticked.
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Configuration screen

Here is an example Configure Set Wallet Type node screen.

Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available Announcement Sets.
Announcement Entry	List of all the announcements belonging to the selected Announcement Set.
UseSecondaryWallet	Select this check box to use the secondary wallet for billing.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller.

Step	Action
	Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Select the UseSecondaryWallet check box to use the secondary wallet.
3	Click Save .

Note: This will be grayed out until all the announcement sets have been selected.

Tariff Plan Override

Node description

The Tariff Plan Override node overrides the configured tariff plan with the tariff plan specified in the node. Optionally the tariff plan can be selected from a profile field.

The override only applies to the next UATB node in the control plan.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either error / failure or that the domain being used does not support this feature node.
2	Success	The product type tariff plan has been successfully overridden by the one specified in the node.

Configuration screen

Here is an example Configure Tariff Plan Override screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	In the Tariff Plan Override Source area select one of the following: <ul style="list-style-type: none"> • From Profile • Manual Definition
2	Select the tariff plan to use instead of the one configured for the product type, for the next IRR or CRR action. If you selected: <ul style="list-style-type: none"> • From Profile: Select from the Data Type, Location and Field drop down lists the profile field containing the tariff plan you want to use. • Manual Definition: Select from the Tariff Plan drop down list.
3	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Universal ATB

Node description

The Universal Attempt Termination with Billing (UATB) node is used to bill subscribers for calls that they make or receive. Billing is done following the tariff plan assigned to the subscriber's product type.

The UATB node can be used in either an originating or a terminating control plan with one of the following switch types:

- CS1 switch (the VSSP is required to translate from CS1 to CAMEL for UATB to operate)
- Nokia switch
- CAMEL Phase 2 switch
- CAMEL Phase 3 switch

The switch type is determined by extracting the 'Application Context' parameter from the TCAP primitive and will follow the correct charging flow accordingly.

A pre-call announcement may be played by setting the `PreCallAnnouncementId` parameter (in `eserv.config` file) to a valid announcement ID. For more information about this parameter, see *CCS Technical Guide* topic `ccsSvcLibrary`.

The UATB feature node checks if a control plan trigger has been armed after each billing engine action is performed. If a control plan trigger has been armed the UATB feature node will fetch the required trigger details for the call capability/product type and invoke the new control plan trigger chassis action, passing in the trigger detail.

The duration of a call can be limited by determining a value for the Maximum Permitted Call Duration profile tag. If a value is included in the Max Permitted Call Duration profile tag, that value will determine the maximum duration of a call, and will be used to overwrite the corresponding value in the `InitialTimeReservationResponse`.

Note: If a Max Permitted Call Duration value is not set in the profile tag, no limit on call duration will occur.

Note: The Max Permitted Call Duration profile can be set using the Set feature node prior to the UATB feature node in your control plan.

A grace period can be used to configure whether a call is allowed to continue for the specified number of seconds on communication or system errors for subsequent reservations. If a value is included in the `GracePeriodLength` profile tag, that value will determine the grace period of a call. If the `GracePeriodLength` profile tag is set, its value will be used to overwrite the value set the `BFTGracePeriodLength` parameter in the `ccsMacroNodes` section in `eserv.config`. It can also be set using the Set feature node prior to the UATB node.

About testing new rate tables

You can use the UATB feature node to test your rating configuration by performing a test call at a date and time that you specify in the CCS Call Date profile field. This feature allows you to test key elements of the rating system, such as:

- Time of day tariffs
- Day of week tariffs
- Holiday tariffs

The CCS Call Date profile field is held in temporary storage. You can set it to a specific date and time by using a Set feature node prior to the UATB feature node in your control plan. When set, the current system date and time will be overwritten by the profile field value in message requests sent to the VWS by the UATB feature node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and 14 exits. The number of exits cannot be changed.

Note: These exit descriptions are specific to the responses received from an Oracle VWS Voucher and Wallet Server. For specific information about how responses from other Voucher and Wallet Servers map to these exits, see the technical guide for the interface for Voucher and Wallet Server being used.

Exit	Cause	Description
1	Declined (No Funds)	Exit taken for one of the following: <ul style="list-style-type: none"> • Insufficient balance found to satisfy even the initial reservation request • Max-concurrent reached for the subscriber's wallet • Restricted rating • Blocked destination • Invalid wallet state (that is: frozen, suspended or terminated).
2	BFT	Exit taken for one of the following: <ul style="list-style-type: none"> • Could not talk to the Voucher and Wallet Server due to one of the following: <ul style="list-style-type: none"> ▪ Could not contact billing engine client ▪ Voucher and Wallet Server is busy ▪ Various internal "no dialog" type errors

Exit	Cause	Description
		<ul style="list-style-type: none"> • Could not charge for call, • Unknown account/wallet
3	BFT (Released)	<p>Exit taken for one of the following:</p> <ul style="list-style-type: none"> • Calling number has run out of funds during the call (subsequent reservation has failed due to a system error or through failing to contact the Voucher and Wallet Server) • 'BFT grace period length' is set (that is, BFT grace period length is greater than '0') <p>Call will be released and call processing will no longer be permitted.</p>
4	BFT (Disconnected)	<p>Exit taken for one of the following:</p> <ul style="list-style-type: none"> • Calling number has run out of funds during the call (subsequent reservation has failed due to a system error or through failing to contact the Voucher and Wallet Server) • 'BFT grace period length' is set (that is, BFT grace period length is greater than '0') <p>Called number (leg 2) will be disconnected and call processing will still be possible.</p> <p>Warning: Not supported for the Nokia switch.</p>
5	NSF (Released)	<p>Exit taken when calling number has run out of funds during the call. Call will be released and call processing will no longer be permitted.</p>
6	NSF (Disconnected)	<p>Exit taken when calling number has run out of funds during the call. Called number (leg 2) will be disconnected and call processing will still be possible.</p> <p>Warning: Not supported for the Nokia switch.</p>
7	Free Call (Released)	<p>Exit taken when:</p> <ul style="list-style-type: none"> • 'free call' indicator flag is set in the Apply Charging Report • 'free call disposition' set in the initial reservation response is 'free call release' <p>Call will immediately be released when the Apply Charging Report is received.</p> <p>Warning: Not supported for the Nokia switch.</p>
8	Abort	<p>Exit taken when:</p> <ul style="list-style-type: none"> • TCAP Abort as indicated in the event type Event Report BCSM returned from the switch • TCAP Abandon as indicated in the event type Event Report BCSM returned from the switch • 'abort' flag is set by ACS in the response to the Apply Charging returned to the Universal ATB • Processing error during the call which cannot be classified elsewhere
9	Route Select Failure	<p>TCAP Route Select Failure as indicated in the event type in the Event Report BCSM returned from the switch.</p> <p>Warning: Not supported for the Nokia switch.</p>
10	Busy	<p>Called number is busy as indicated in the event type in the Event Report BCSM returned from the switch.</p>

Exit	Cause	Description
11	No Answer	Called party failed to answer as indicated in the event type in the Event Report BCSM returned from the switch.
12	Disconnect (Calling)	Calling party has disconnected as indicated in the event type in the Event Report BCSM returned from the switch.
13	Disconnect (Called)	Called party has disconnected as indicated in the event type in the Event Report BCSM returned from the switch. Warning: Not supported for the Nokia switch.
14	Unsupported	Either: <ul style="list-style-type: none"> an unexpected error or failure, or the Domain being used does not support this feature node.

Note: These exit descriptions pertain to the Oracle VWS. When used with other Voucher and Wallet Servers the exit causes may differ. See the relevant technical guide for the Voucher and Wallet Server being used.

Call end reasons

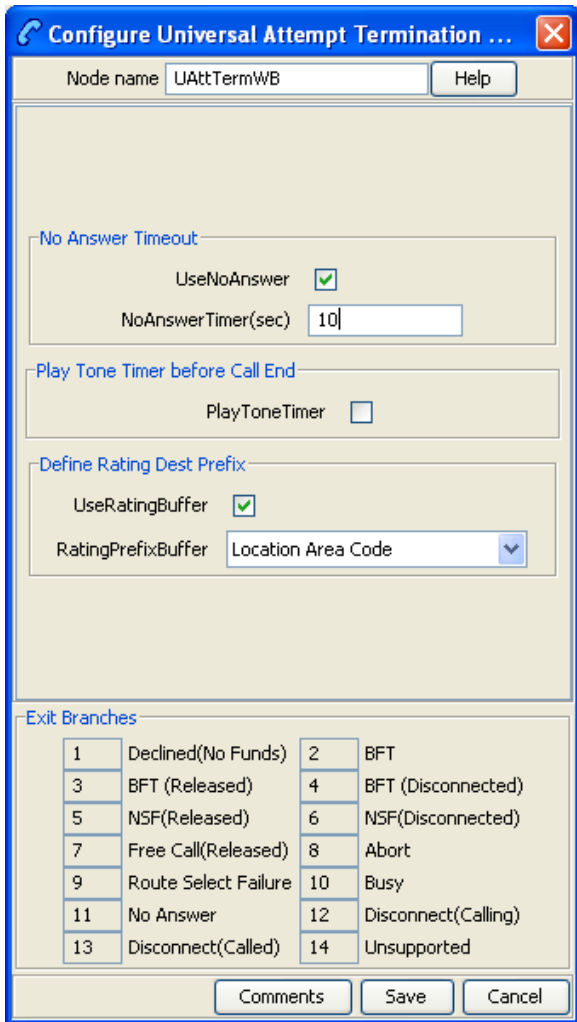
This feature node provides ACS callEndReasons on issuing a FinaliseCall action, prior to taking one of the exits. This table lists the callEndReasons.

callEndReasons	Value	Description
reasonNotSet	0	Not set (default)
precallAnnouncementFailure	1	Issued when a precall announcement cannot be played, whether due to abandonment, or other error conditions.
firstEventACRAbort	2	Issued when an abort occurs when ACR is received before event report.
firstEventATABort	3	Issued when an abort occurs due to an AT (Attempt Terminate) which is caused by sending either a <code>connect</code> or a <code>continue</code> to the switch. Note: This value is currently not set, and is reserved for future use.
secondEventACRAbort	4	Issued when an abort occurs following receipt of an event report (waiting for the apply charging report).
secondEventATABort	5	Is set (for CS1 / Nokia switches) when ACS is attempting termination and waiting for a BCSM Event Report. For CAMEL, it is set where an abort is received in the ERBCSM.
abortWaitingForBEResponse	6	Issued when an abort occurs on the main dialog while waiting for a response to the extend time reservation action.
releasedOnTCPExpiry	7	Issued when the switch releases the call on timer expiry (noted in the apply charging report).
releasedNoFunds	8	Issued where the UATB issues a release on failure to secure further funds for the call.
disconnectedLegBNoFunds	9	Issued where the UATB issues a B leg disconnect on failure to secure further funds for the call.
calledPartyBusy	10	Issued on busy.

callEndReasons	Value	Description
routeSelectFailure	11	Issued on route select failure.
callingPartyAbandon	12	Issued on abandon.
noAnswer	13	Issued on no answer.
callingPartyDisconnected	14	Issued on calling party disconnected.
calledPartyDisconnected	15	Issued on called party disconnected.

Configuration screen

Here is an example Configure Universal Attempt Termination With Billing node screen.



Configuration fields

This table describes the function of each field.

Field	Description
UseNoAnswer	Select this check box to use the No Answer Timer value.
NoAnswerTimer	This option provides a value for the No Answer Timer that is sent with a Connect message. This option is supported for all switch types.

Field	Description
PlayToneTimer	This option is only available for the CAMEL charging flow. When selected, a tone will be played before the caller runs out of funds.
UseRatingBuffer	Select this check box to specify the Rating Prefix Buffer.
RatingPrefixBuffer	Sets the destination prefix buffer to use for rating. When UseRatingBuffer is not selected, the default Pending Termination Number buffer is used.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	If required select the UseNoAnswer check box and then enter a value, in seconds, in the NoAnswerTimer(sec) field.
2	If required select the PlayToneTimer check box.
3	If required select the UseRatingBuffer check box and then select destination prefix buffer to use for rating from the RatingPrefixBuffer drop down list.
4	Click Save .

Note: Additional configuration is available in **eserv.config**. For more information, see *CCS Technical Guide*, `ccsSvcLibrary` and `ccsMacroNodes`.

Variable Amount Recharge

Node description

The Variable Amount Recharge node will attempt a standard recharge for the specified wallet based on the voucher and wallet data derived from profile fields.

The feature node will combine the following recharge details and invoke the WalletDelegation chassis action:

- Recharge entries (containing balance, recharge amount information)
- Wallet expiry extension policy
- Wallet expiry extension period
- Voucher specified by the voucher type name (if supplied and configured)

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Variable Amount Recharge nodes as required.

Node exits

This node has one entry and eight exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The variable recharge data was found and applied successfully.
2	No Balances	No balance information is specified in Recharge List. Recharge action is skipped.
3	Invalid Wallet Type	Specified wallet type is invalid/ not recognized by the billing engine.
4	Wallet Not Found	The wallet does not exist upon the charging domain.
5	Wallet Non-rchrgble	The wallet cannot be recharged as it is in an inappropriate state (for example: pre-use, frozen, suspended or terminated), or a balance is not rechargeable (for example: single use balance type).
6	Invalid Recharge Val	Recharge attempt was unsuccessful due to Bad PIN.
7	System Error	A general system error occurred.
8	Communicate Error	A communication error occurred (usually meaning unable to communicate with the billing engine).

Configuration screen

Here is an example Configure Variable Amount Recharge screen.

Configure Variable Amount Recharge

Node name:

Recharge List

Recharge Data Type:

Recharge Location:

Recharge Field:

Override Balance Type

Override Type:

Wallet Expiry Extension Policy

Expiry Policy Data Type:

Expiry Policy Location:

Expiry Policy Field:

Wallet Expiry Period

Expiry Period Data Type:

Expiry Period Location:

Expiry Period Field:

Exit Branches

1	Success	2	No Balances
3	Invalid Wallet Type	4	Wallet Not Found
5	Wallet Non-rchrgble	6	Invalid Recharge Val
7	System Error	8	Communicate Error

Configuring the node

Follow these steps to configure the node.

Step	Action
1	<p>In the Recharge List area, select a profile location from the Recharge Data Type, Recharge Location and Recharge Field drop down lists.</p> <p>The Recharge List profile field stores a list of recharge entries, each containing the following sub profile fields and tags:</p> <ul style="list-style-type: none"> • Balance Type Name • Recharge Amount • Balance Expiry Extension Period (optional) • Balance Expiry Extension Policy (optional) • Bucket Creation Policy (optional)
2	<p>Optionally, select the balance type override from the Override Type drop down list to overwrite the balance specified in the Recharge List.</p>
3	<p>Select the Wallet Expiry Extension Policy profile from the Expiry Policy Data Type, Expiry Policy Location and Expiry Policy Field drop down lists.</p>

Step	Action
4	<p>This profile indicates the policy used in determining the expiry date for the wallet.</p> <p>Select the Wallet Expiry Period profile from the Expiry Period Data Type, Expiry Period Location and Expiry Period Field drop down lists.</p> <p>This profile indicates the period used to determine the new expiry date for the wallet.</p>
5	<p>In the Select Voucher Type area, choose the source of voucher information as either:</p> <ul style="list-style-type: none"> • From Node • From Profile
6	<p>Depending on the above selection, appropriate fields are enabled in the Voucher Type area.</p> <ul style="list-style-type: none"> • Select a voucher profile location from Data Type, Location and Field drop down lists, or • Select a voucher node from Data Type, Type from node drop down lists.
7	<p>Select the Wallet Type profile from the Wallet Type Name Data Type, Wallet Type Name Location and Wallet Type Name Field drop down lists.</p> <p>This profile contains the wallet that will be recharged at the end of the transaction.</p>

Note: The items in the drop down lists are all managed via the **SMS > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs.

Voice Call Cost

Node description

The Voice Call Cost node plays the cost of the last call within the current control plan.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry point and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	All information has been played successfully.
2	Abandon	The caller has abandoned the call.

Exit	Cause	Description
3	Unsupported	Either error / failure or that the Domain being used does not support this feature node.

Configuration screen

Here is an example Configure Voice Call Cost node screen.

Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available Announcement Sets.
Announcement Entry	List of all the announcements belonging to the selected Announcement Set.

Configuring the node

Follow these steps to configure the node

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save . Note: This will be grayed out until all the announcement sets have been selected.

CCS Credit Card Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller CCS credit card feature nodes.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	95
Create and Register Credit Card	96
Credit Card State Branching.....	101
Credit Cards Per Subscriber Branching	102
Delete Credit Card Details.....	104
Deregister Credit Card.....	105
Modify Credit Card Details.....	107
Retrieve Credit Cards for Subscriber	110
Subscribers Per Credit Card Branching	113

Available Feature Nodes

CCS Credit Card Feature Nodes List

This table lists the feature nodes available from the CCS Credit Card palette group in the ACS Control Plan Editor, and the fast key for each feature node in the list. You can use fast keys to search for feature nodes in the palette or the canvas.

Node Name	Node Description
<i>Create and Register Credit Card</i> (on page 96)	The Create & Register Credit Card feature node links a specified subscriber (or if the token identifier is already in the database, then the current logical subscriber) to a credit card. Fast key: CRCC
<i>Credit Card State Branching</i> (on page 101)	The Credit Card State Branching feature node enables control plan flow logic depending on the status of a specified credit card. Fast key: CCSB
<i>Credit Cards Per Subscriber Branching</i> (on page 102)	The Credit Cards Per Subscriber Branching feature node enables control plan flow logic based on the number of credit cards associated with a specified subscriber. Fast key: CCSL
<i>Delete Credit Card Details</i> (on page 104)	The Delete Credit Card Details feature node enables the credit card record and the associated subscriber registration to be removed from the database. Fast key: RMCC

Node Name	Node Description
<i>Deregister Credit Card</i> (on page 105)	The Deregister Credit Card feature node removes the link between the credit card and the specified subscriber. Fast key: DRCC
<i>Modify Credit Card Details</i> (on page 107)	The Modify Credit Card Details feature node enables a credit card to be modified. Fast key: MDCC
<i>Retrieve Credit Cards for Subscriber</i> (on page 110)	The Retrieve Credit Cards for Subscriber feature node retrieves details for all the credit cards for the subscriber specified in the feature node configuration. Fast key: RTCC
<i>Subscribers Per Credit Card Branching</i> (on page 113)	The Subscribers Per Credit Card Branching feature node enables control plan flow logic depending on the number of subscribers associated with a specified credit card. Fast key: SCCL

Create and Register Credit Card

Node description

The Create & Register Credit Card feature node links a specified subscriber (or if the token identifier is already in the database, then the current logical subscriber) to a credit card.

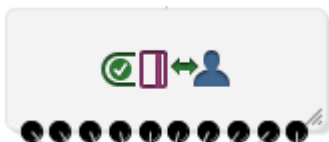
When the option in the **Action** frame is set to:

- **New In Frozen State**, the feature node will not search for a subscriber record; it will only search for a credit card record.
- **Register**, the feature node searches the SCP database (through a cache) for an existing registration between the specified subscriber and the specified credit card record using the tokenized number as a search key.

If no credit card record is found for the tokenized number, the feature node applies the masking rule specified to the full credit card number, resulting with a display number split into prefix and suffix that is sent to the SMS with the remaining parameters.

The display prefix and display suffix fields are encrypted by a local database function before being sent to the SMS in the replication request.

Node icon



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and ten exits. The number of exits cannot be changed.

Exit	Name	Cause
1	1st Reg to New CC	No credit card record for the given tokenized number was found, and the action field is set to Register (Create if required).
2	1st Reg Activated CC	No subscriber registration records were found (but the credit card record is present and the state is Frozen) and the action field is set to Register (Create if required).
3	Secondary Reg Added	A matching subscriber registration record is not found (but the credit card record is present and the state is Active) and the action field is set to Register (Create if required) and the Confirm Secondary Registration flag has been set.
4	Pending Reg Added	A matching subscriber registration record was not found (but the credit card record is present and the state is Active) and the action field is set to Register (Create if required) and the Confirm Secondary Registration flag has not been set.
5	Frozen CC Created	No credit card record for the given tokenized number was found, and the action field is set to Create in Frozen state .
6	Already Registered	A matching subscriber registration record for the credit card exists.
7	CC in Frozen State	The action field has been set to Create in Frozen state and an existing credit card record is found which is either in the Active state or has the Frozen flag set. Note: For Active states, this will allow the operator to use the Modify CC feature node to set the state to Frozen on the existing credit card record.
8	CC in Deleted State	The credit card record is in the Deleted state.
9	CC in Active State	A matching subscriber registration record is found.
10	Error	Any of the following: <ul style="list-style-type: none"> • One of the required parameters is not present (such as Expiry Date). • No subscriber registration records were found (but the Credit Card record is present) and either of the subscribers per credit card or the credits cards per subscriber limits has already been reached. • The tokenized number is longer than 256 characters.

Node fields

This table describes the function of each field.

Field	Description
Action	<p>The initial state for the credit card.</p> <p>Register</p> <ul style="list-style-type: none"> • No credit card record found - new record created as Active state and registered to the subscriber as Primary card. • Credit card record found, but no subscriber registration record found. <ul style="list-style-type: none"> ▪ For Frozen states, register as Primary. ▪ For Active states and Confirm Secondary Registration set, register as Secondary. ▪ For Active states and Confirm Secondary Registration not set, register as Pending. <p>New Frozen State</p> <p>No credit card found - new record is created as Frozen state. (Default is Register).</p>
Credit Card Number Source	The profile field containing the full credit card number (optional, but mandatory for new credit cards).
Tokenised Credit Card Number Source	The profile field containing the tokenized credit card number (mandatory).
Subscriber ID Source	The profile field containing the subscriber number (optional).
Expiry Data Source	The profile field containing the credit card expiry date (optional, but mandatory for new credit cards).
Card Holder Source	The profile field containing the name on the credit card (optional, but mandatory for new credit cards).
Masking Rule	The profile field or list containing the credit card masking rule (optional, but mandatory for new credit cards).
Secondary Registration	<p>A flag to indicate the credit card is a pending or secondary registration (default is unset - pending).</p> <p>Select for a secondary registration and leave clear for a Pending registration</p>
Service Provider ID Source	The profile field containing the ACS Customer identity.

Configuration screen

Here is an example Configure Create-Register CC screen.

Configure Create-Register CC

Node name CrRegisterCC Help

Action

Register (Maybe New) New In Frozen State

Credit Card Number Source

CC Data Type Database

CC Location Account Reference Profile

CC Field BF Number

Tokenised Credit Card Number Source

TCC Data Type Database

TCC Location Account Reference Profile

TCC Field BF Number

Subscriber ID Source

Subscriber Data Type Database

Subscriber Location Account Reference Profile

Subscriber Field BF Number

Expiry Date Source

Expiry Data Type Database

Expiry Location Account Reference Profile

Expiry Field BF Number

Card Holder Name Source

Holder Data Type Database

Holder Location Account Reference Profile

Holder Field CCS CWTR Name

Masking Rule

From Profile

Data Type: Database

Location: Account Reference Profile

Field: CCS CWTR Name

From Node

Name: Global- Suffix: 4

Secondary Registration

Confirm On Create

Service Provider ID Source

Service Provider Data Type: Database

Service Provider Location: Account Reference Profile

Service Provider Field: Acct Ref DB Id

Exit Branches

1	1st Reg to New CC	2	1st Reg Activated CC
3	Secondary Reg Added	4	Pending Reg Added
5	Frozen CC Created	6	Already Registered
7	CC in Frozen State	8	CC in Deleted State
9	CC in Active State	10	Error

Comments Save Cancel

Configuring the node

Follow these steps to configure the Create & Register Credit Card feature node.

Step	Action
1	Select the required Action option. The options are: <ul style="list-style-type: none"> Register New Frozen State
2	Select from the Data Type , Location and Field drop down lists to set the following data locations: <ul style="list-style-type: none"> Credit Card Number Source Tokenised Credit Card Number Source Subscriber ID Source Expiry Data Source Card Holder Name Source Service Provider ID Source
3	Select the Masking Rule option: <ul style="list-style-type: none"> From profile - then select from the Data Type, Location and Field drop down lists From node - then select from the Name drop down list.
4	Confirm the registration as one of the following: <ul style="list-style-type: none"> Secondary (select the Confirm on Create check box) Pending (ensure Confirm on Create check box is not selected).
5	Click Save .

Note: The available profile fields are managed using the **SMS > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs. For more information, see *Advanced Control Services User's Guide*.

Credit Card State Branching

Node description

The Credit Card State Branching feature node enables control plan flow logic depending on the status of a specified credit card.

The feature node will read the SCP database (through a cache) and check the specified credit card record using the tokenized number as a search key.

Node icon



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Active	The credit card record is in the Active state.
2	Frozen	The credit card record is in the Frozen state.
3	Unknown CC	No credit card record was found for the specified tokenized number.
4	Deleted	The credit card record is in the Deleted state.
5	Error	A general error has occurred.

Configuration screen

Here is an example Configure CC State Branching screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select from the Data Type , Location and Field profile field drop down lists to set the Tokenised Credit Card Number Source data location.
2	Click Save .

Note: The available profile fields are managed using the **SMS > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs. For more information, see *Advanced Control Services User's Guide*.

Credit Cards Per Subscriber Branching

Node description

The Credit Cards Per Subscriber Branching feature node enables control plan flow logic based on the number of credit cards associated with a specified subscriber.

The feature node will search the SCP database (through a cache) to look for credit card registrations for the selected subscriber.

The search results will include credit card records in either the active or frozen state, but exclude those in the deleted state.

The subscriber registration state field will be ignored, therefore pending registrations will be included in the number of records found.

The feature node compares the number of returned records with the credit cards per subscriber limit, which is read from either the customer profile or the CCS global profile (in that order).

Node icon



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Name	Cause
1	None Registered	No credit card records were found.
2	One Registered	One credit card record is found and the credit cards per subscriber limit is greater than one.
3	Limit Not Reached	The number of credit card records found (including pending registrations) is less than the configured credit cards per subscriber limit.
4	Limit Reached	The number of credit card records found (including pending registrations) is greater than or equal to the credit cards per subscriber limit.
5	Error	A credit cards per subscriber limit could not be found.

Configuration screen

Here is an example Configure CCs Per Subscriber Limit Branching screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select from the Data Type , Location and Field profile field drop down lists to set the Subscriber ID Source data location.
2	Click Save .

Note: The available profile fields are managed using the **SMS > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs. For more information, see *Advanced Control Services User's Guide*.

Delete Credit Card Details

Node description

The Delete Credit Card Details feature node enables the credit card record and the associated subscriber registration to be removed from the database.

Note: If the state of the credit card is frozen, the state is changed to deleted and no records are removed.

The feature node searches the SCP database (through a cache) for the specified credit card record using the tokenized number as a search key.

Node icon



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Name	Cause
1	Deleted	The Credit Card record is in either the Active or Frozen state.
2	CC Already Deleted	The Credit Card record is already in the Deleted state.
3	Unknown CC	No Credit Card records have been found.
4	Error	A general error occurred.

Configuration screen

Here is an example Configure Delete CC screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select from the Data Type , Location and Field profile field drop down lists to set the Tokenised Credit Card Number Source data location.
2	Click Save .

Note: The available profile fields are managed using the **SMS > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs. For more information, see *Advanced Control Services User's Guide*.

Deregister Credit Card

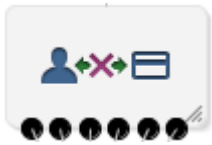
Node description

The Deregister Credit Card feature node removes the link between the credit card and the specified subscriber.

The feature node searches the SCP database (through a cache) for a matching credit card record (using the tokenized number as a search key) and a registration to the specified subscriber.

Primary registration states cannot be removed by this feature node. The credit card can be removed by using the Delete Credit Card Details feature node. The primary registration may be changed using the CCS screens (**SMS > Services > Prepaid Charging > Subscriber Management > Credit Cards**) or a PI command (see *PI Commands (CCS) Operations Guide*).

Node icon



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Deregistered	A registration record is found and the registration state is Secondary or Pending.
2	No Pri Dereg Allowed	A registration record is found and the registration state is Primary.
3	CC in Deleted State	A credit card record is found with the Deleted state.
4	Not Registered	A credit card record is found but no registration can be found.
5	Unknown CC	No credit card record can be found.
6	Error	A general error has occurred.

Configuration screen

Here is an example Configure Deregister CC screen.

Configure Deregister CC

Node name:

Subscriber ID Source

Subscriber Data Type:

Subscriber Location:

Subscriber Field:

Tokenised Credit Card Number Source

TCC Data Type:

TCC Location:

TCC Field:

Exit Branches

1	Deregistered	2	No Pri Dereg Allowed
3	CC in Deleted State	4	Not Registered
5	Unknown CC	6	Error

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select from the Data Type , Location and Field profile field drop down lists to set the following data locations: <ul style="list-style-type: none"> • Subscriber Source • Tokenised Credit Card Number Source
2	Click Save .

Note: The available profile fields are managed using the **SMS > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs. For more information, see *Advanced Control Services User's Guide*.

Modify Credit Card Details

Node description

The Modify Credit Card Details feature node enables a credit card to be modified.

The feature node searches the SCP database (through a cache) for an existing credit card record with the specified current tokenized number.

The modification type selection drives what is changed:

- **Activate** - Changes the credit card state from frozen to active.
- **Confirm** - Changes the selected subscriber registration state from pending to secondary.
- **Expiry Date** - Changes the credit card expiry date (the expiry date and new tokenized number fields are only available with this option).
- **Freeze** - Changes the credit card state from active to frozen.

Node icon



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and eight exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	This branch taken for any of these conditions: <ul style="list-style-type: none"> • The modification type is Confirm and the subscriber registration record is found with a registration state of Pending. • The modification type is Activate and the credit card record is found with the state of Frozen. • The modification type is Freeze and the credit card record is found with the state of Active. • The modification type is Expiry Date and both the required information and credit card record are found.
2	CC Already Active	This branch taken when the modification type is Activate and the retrieved credit card state is Active.
3	CC Already Frozen	This branch taken when the modification type is Freeze and the retrieved credit card state is Frozen.
4	Unknown CC	This branch taken when an existing credit card record with the specified current tokenized number could not be found.
5	Reg Not Pending	This branch taken when the modification type is Confirm and a subscriber registration record is found with a registration state of Primary or Secondary.
6	Subscriber Not Regd	This branch taken when the modification type is Confirm and no subscriber registration record is found.
7	CC in Deleted State	This branch taken when the found credit card record is in the Deleted state.
8	Error	This branch taken for any of these conditions: <ul style="list-style-type: none"> • The new tokenized number is longer than 256 characters. • The modification type is Expiry Date and the expiry date or new tokenized number have not been provided. • The modification type is Expiry Date and no records are found. • The modification type is Activate and no records are found. • The modification type is Confirm and the credit card record has a state of Frozen.

Configuration screen

Here is an example Configure Modify CC screen.

Configure Modify CC

Node name:

Modification Type

Activate Confirm Expiry Date Freeze

Current Tokenised Credit Card Number Source

CC Data Type:

CC Location:

CC Field:

New Tokenised Credit Card Number Source

TCC Data Type:

TCC Location:

TCC Field:

Subscriber ID Source

Subscriber Data Type:

Subscriber Location:

Subscriber Field:

Expiry Date Source

Expiry Data Type:

Expiry Location:

Expiry Field:

Exit Branches

1	Success	2	CC Already Active
3	CC Already Frozen	4	Unknown CC
5	Reg Not Pending	6	Subscriber Not Regd
7	CC in Deleted State	8	Error

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the required Modification Type option, one of: <ul style="list-style-type: none"> • Activate • Confirm • Expiry Date • Freeze

Note: The available profile field selections are made available according to this selection.

Step	Action
2	Select from the available profile field Data Type , Location and Field drop down lists to set the following data locations: <ul style="list-style-type: none"> • Current Tokenised Credit Card Number Source • New Tokenised Credit Card Number Source • Subscriber ID Source • Expiry Date Source
3	Click Save .

Note: The available profile fields are managed using the **SMS > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs. For more information, see *Advanced Control Services User's Guide*.

Retrieve Credit Cards for Subscriber

Node description

The Retrieve Credit Cards for Subscriber feature node retrieves details for all the credit cards for the subscriber specified in the feature node configuration.

The feature node searches for credit card records in the following states:

- Active
- Frozen (Optional. By default, frozen credit cards are not retrieved)
- Primary or secondary registration
- Pending registration (Optional. By default credit cards that are pending registration are not retrieved)

The feature node retrieves the following credit card details for each credit card registered to the subscriber, and orders the results in ascending registration date order:

- Tokenized credit card number
- Credit card number suffix
- Credit card expiry date
- Credit card holder

The feature node saves the results in temporary storage to the configured profile block. You must specify a profile block, such as the CCS-CC Registered Cards profile block, that contains four sub-tags in which to store the credit card details.

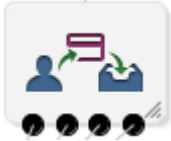
Use the Open Services Development (OSD) feature node after the Retrieve Credit Card Details feature node in your control plans to copy the details for each credit card from temporary storage to the OSD profile tags.

The following table lists the profile tag details for the CCS-CC Registered Cards profile block.

Profile Tag Name	Profile Tag Type	Profile Tag ID	Parent Tag ID
CCS-CC Registered Cards	Array	1311509	
CS-CC Registered Tokens	Nstring	1311510	1311509
CCS-CC Registered Suffix	Nstring	1311511	1311509
CCS-CC Registered Expiry	Nstring	1311512	1311509

Profile Tag Name	Profile Tag Type	Profile Tag ID	Parent Tag ID
CCS-CC Registered Holder	Nstring	1311513	1311509

Node icon



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	One Registration	A single registration has been found (including if selected, those in Pending or Frozen state).
2	Many Registrations	Multiple credit card records found (including if selected, those in Pending or Frozen state).
2	No Registrations	No registration records found (including if selected, those in Pending or Frozen state).
4	Error	If the destination profile block type is not array, or it does not have four nstring type sub-tags, then the error branch is taken.

Configuration screen

Here is an example Configure Retrieve CCs For Sub screen.

Configuring the node

Follow these steps to configure the Retrieve Credit Cards for Subscriber feature node.

Step	Action
1	Select the Include options as required: <ul style="list-style-type: none"> To include credit cards that are still pending registration, select the Pending Registration check box. Credit cards that are pending registration are excluded by default. To include credit cards that are frozen, select the Frozen Credit Card check box. Frozen credit cards are excluded by default.
2	Select from the profile field Data Type , Location and Field lists to set the following data locations: <ul style="list-style-type: none"> Subscriber ID Source Credit Card Information Target. You must select an array type profile block that contains four nstring sub-tags, such as the <code>CCS-CC Registered Cards</code> temporary storage profile block that is installed when you install Convergent Charging Controller.
3	Click Save .

Note: The available profile fields are managed using the **SMS > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs. For more information, see *Advanced Control Services User's Guide*.

Subscribers Per Credit Card Branching

Node description

The Subscribers Per Credit Card Branching feature node enables control plan flow logic depending on the number of subscribers associated with a specified credit card.

The feature node searches the SCP database (through a cache) to look for subscriber registrations for the specified credit card record using the tokenized number as a search key.

The search results include all records in the pending, frozen or active states.

The subscribers per credit card limit is read from either the customer profile or the CCS global profile (in that order).

Node icon



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Name	Cause
1	No Registrations	No subscribers registered to the credit card.
2	Limit Not Reached	The configured limit of subscribers registered (including pending registration) to this credit card not yet reached.
3	Limit Reached	The number of subscribers registered (including pending registration) to this credit card is equal to or more than the configured limit.
4	Unknown CC	No records found for the credit card.
5	CC in Deleted State	The credit card is in the Delete state.
6	Error	No limit value found for the subscribers per credit card limit.

Configuration screen

Here is an example Configure Subscribers per CC Limit Branch screen.

Configure Subscribers per CC Limit Branch

Node name: SubCCLimitBr Help

Tokenised CC Number Source

TCC Data Type: Database

TCC Location: Account Reference Profile

TCC Field: 2nd Ann Data

Exit Branches

1	No Registrations	2	Limit Not Reached
3	Limit Reached	4	Unknown CC
5	CC in Deleted State	6	Error

Comments Save Cancel

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select from the profile field Data Type , Location and Field drop down lists to set the Tokenised Credit Card Number Source data location.
2	Click Save .

Note: The available profile fields are managed using the **SMS > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs. For more information, see *Advanced Control Services User's Guide*.

CCS Subscriber Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller CCS Subscriber feature nodes.

In this chapter

This chapter contains the following topics.

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Available Feature Nodes

CCS Subscriber Feature Nodes List

This table lists the available CCS Subscriber feature nodes.

Node Name	Node Description
Change PIN (on page 117)	Prompts the user to enter digits to change their PIN.

Node Name	Node Description
Credit Card Details Change (on page 119)	The Credit Card Details Change node allows the user to enter a new expiry date for their credit card.
Credit Card Recharge Menu (on page 124)	The Credit Card Recharge Menu allows the user access to the credit card recharge facility, and to change their credit card recharge details.
Credit Card Secret Code Change (on page 128)	The Credit Card Secret Code Change node allows the user to enter a new Credit Card PIN.
Credit Card Starter Menu (on page 130)	The Credit Card Starter Menu node collects a security PIN from the user for identity verification when the user attempts credit card recharges on their account.
Do Credit Card Recharge (on page 131)	The Do Credit Card Recharge node allows the user to recharge an account using a credit card.
Friends and Destination Configuration (on page 137)	The Friends and Destination Configuration node enables the caller to maintain their friends and destination discount prefix.
Friends and Family Configuration (on page 140)	The Friends and Family Configuration node enables the caller to maintain their friends and family service number list.
Friends and Destination Discount (on page 143)	The Friends and Destination Discount node enables the Friends and Family / Friends and Destination service to apply the discount for that service as configured for the product type in use.
Friends and Destination Menu (on page 145)	The Friends and Destination Menu node informs the caller which service - if any - is currently active.
Get Destination Prefix (on page 147)	The Get Destination Prefix node retrieves the longest matching favourite destination prefix for a provided number.
Help Information (on page 150)	The Help Information node provides an information service over the phone.
Main Menu (on page 152)	The Main Menu node offers the caller a range of call options and routes the call according to the selection made.
Personal Options Menu (on page 154)	The Personal Options Menu node offers the caller a range of options about their profile and routes the call according to the selection made.
Play Destination (on page 157)	The Play Destination node plays to the caller the destination announcement associated with the provided destination prefix.
Product Type Branching (on page 158)	<p>The Product Type Branching node branches depending on the comparison of the destination (called) subscriber's product type, and one of:</p> <ul style="list-style-type: none"> • A specified product type • The product type of the subscriber loaded by the CCS service library (usually the calling party)
Product Type Swap (on page 162)	The Product Type Swap node enables a subscriber to change their own product type.
Read Secret Code (on page 164)	The Read Secret Code node prompts the caller to enter their PIN.

Node Name	Node Description
Refresh Subscriber Information (on page 166)	The Refresh Subscriber Information node allows the stored subscriber information to be retrieved during a call to avoid out of date information being used.
Remote Access Service (on page 167)	The Remote Access Service node enables a user to turn their Remote Access feature on or off.
Select Language (on page 169)	The Select Language node allows the user to change the language in which their announcements are played.
Set Product Type (on page 171)	The Set Product Type node enables a subscriber to set the product type.
What's New (on page 175)	The What's New node plays the "What's New" announcement to the caller. The caller can divert to a specified service number in order to obtain further information about the content of the announcement.

Change PIN

Node description

Prompts the user to enter digits to change their PIN.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Change PIN nodes as required.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The subscriber's PIN was successfully changed.
2	Unsupported	Any condition, error, failure that occurred, not covered by the other three exits.
3	Abandon	The subscriber hung up before the PIN was changed,
4	Escape	The subscriber pressed the Escape key.

Configuration screen

Here is an example Configure Change PIN screen.

Configuration fields

This table describes the function of each field.

Field	Description
First PIN Prompt	This is the announcement to play that requests the subscribers to enter their new PIN.
Timeout	This is the announcement to play when the subscriber has not responded in the configured amount of time. Note: The timeout time is different between the first digit and the rest of the digits, defined by the <code>acs.conf</code> parameters <code>FirstDigitTimeout</code> and <code>InterDigitTimeout</code> . See <i>ACS Technical Guide</i> .
PIN Too Long	This is the announcement to play when the entered PIN contained too many digits. Note: This is un-configurable and set at ten digits.
PIN Too Short	This is the announcement to play when the entered PIN contained too few digits. Note: This is un-configurable and set at four digits.
Max Retries Exceeded	This is the announcement to play when the subscriber has had more than the configured number of attempts to change their PIN.

Field	Description
	Note: The number of retries is defined by the <code>eserv.config</code> parameter <code>MaximumMenuRetries</code> . See <i>CCS Technical Guide</i> .
Second PIN Prompt	This is the announcement to play that requests the subscribers to enter their new PIN again for confirmation.
PIN Mismatch	This is the announcement to play when the second PIN entry is not the same as the first PIN entry.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	From the First PIN Prompt drop down lists, select the announcement requesting the new PIN.
2	From the Timeout drop down lists, select the announcement to use when the subscriber has failed to respond.
3	From the PIN Too Long drop down lists, select the announcement to use when the entered PIN has too many digits.
4	From the PIN Too Short drop down lists, select the announcement to use when the entered PIN has too few digits.
5	From the Max Retries Exceeded drop down lists, select the announcement to use when the subscriber has run out of attempts to change their PIN.
6	From the Second PIN Prompt drop down lists, select the announcement requesting the new PIN again for confirmation.
7	From the PIN Mismatch drop down lists, select the announcement to use when the entered PIN values are not the same.
8	Click Save .

Credit Card Details Change

Node description

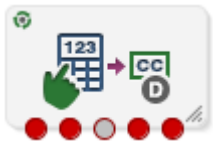
Warning: This feature node has now been deprecated and should no longer be used. This feature node will still function in existing control plans. For new control plans there is currently no replacement feature node.

The Credit Card Details Change feature node allows the user to enter a new expiry date for their Credit Card.

- 1 The user is prompted to enter the Credit Card Number.
- 2 If the number is valid, the user is prompted for a new Expiry date.
- 3 If the date is valid, the user is prompted to confirm the expiry date and the account record is updated.

If the customer exceeds the number of allowed invalid entries (as defined in the `asc.conf`. Refer to *ACS Technical Guide* for further information) the account will be frozen.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either error / failure, the Domain being used does not support this feature node, or no selection has been made.
2	Success	The credit card details have been changed successfully.
3	Abandon	The caller has abandoned the call.
4	Escape	The caller has selected the Escape option.
5	Frozen	The account has been frozen.

Configuration screen

Here is an example Configure Credit Card Details Change node screen.

Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.

Configuring the node

Follow these steps to configure the node.

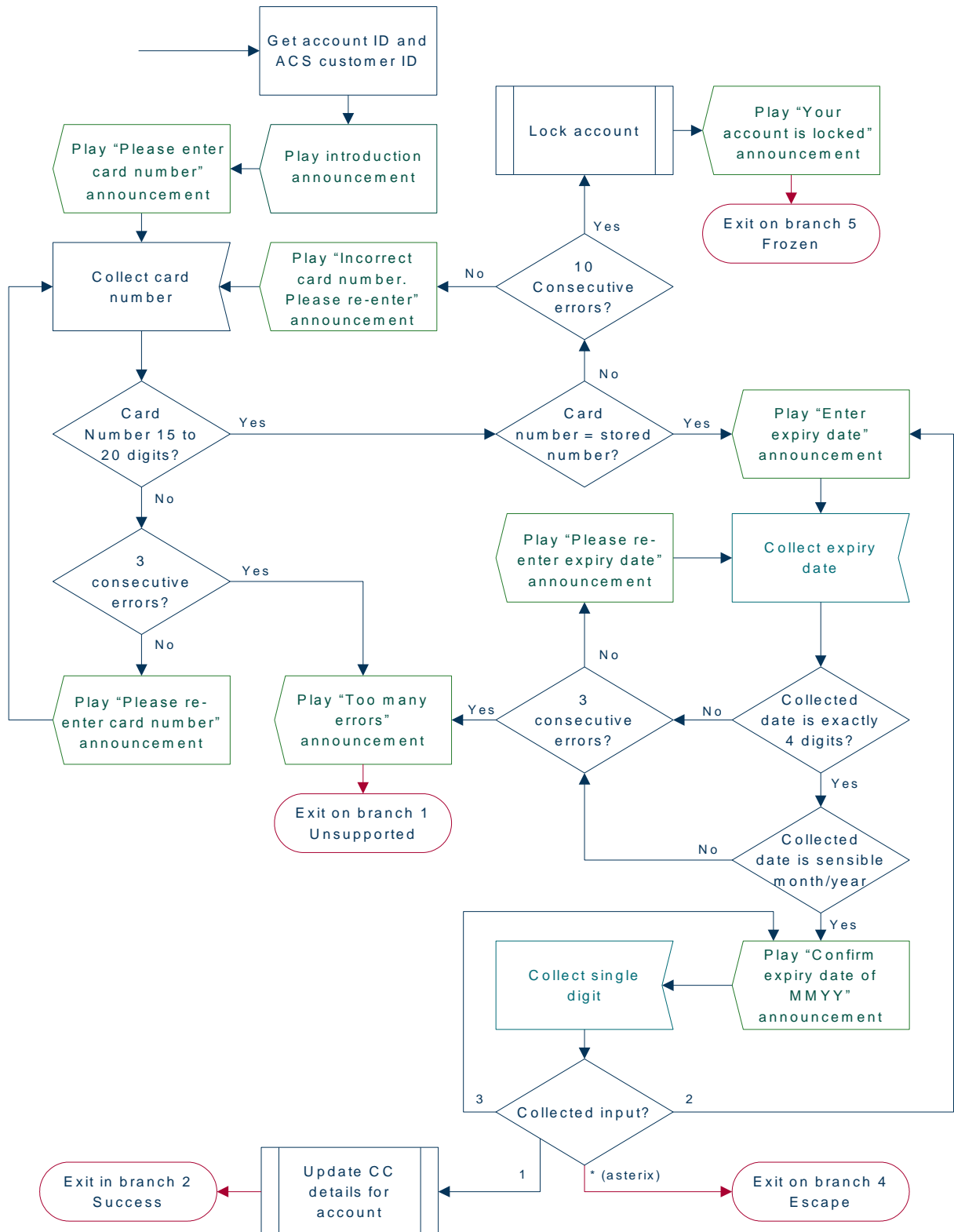
Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save .

Step	Action
------	--------

Note: This will be grayed out until all the announcement sets have been selected.

Node logic

This diagram shows the internal logic processing of the node.



Credit Card Recharge Menu

Node description

Warning: This feature node has now been deprecated and should no longer be used. This feature node will still function in existing control plans. For new control plans there is currently no replacement feature node.

The Credit Card Recharge Menu feature node allows the user access to the Credit Card Recharge facility, and to change their Credit Card Recharge details. The feature node allows the user:

- Access to the Credit Card Recharge facility
- To change their Credit Card Recharge details

For security, all Credit Card details are stored in the system and a PIN is used to access the recharge node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either, error / failure, the Domain being used does not support this feature node, or the caller has not made a menu selection.
2	Abandon	The caller has abandoned the call.
3	Escape	The caller has selected the Escape option.
4	Recharge	The caller has selected the Recharge option.
5	Change Code	The caller has selected the Change PIN option.
6	Change Details	The caller has selected the Change Credit Card Details option.

Configuration screen

Here is an example Configure Credit Card Recharge Menu node screen.

The screenshot shows the 'Configure Credit Card Recharge Menu' dialog box. The 'Node name' field is set to 'CC Rechg'. The dialog is organized into several sections, each with two dropdown menus for 'Announcement Set' and 'Announcement Entry':

- Menu Title:** Both dropdowns are set to '(Unspecified Announcement Set/Entry)'.
- CC recharge menu options:** Both dropdowns are set to '(Unspecified Announcement Set/Entry)'.
- Invalid key:** Both dropdowns are set to '(Unspecified Announcement Set/Entry)'.
- No key detected:** Both dropdowns are set to '(Unspecified Announcement Set/Entry)'.
- Failure:** Both dropdowns are set to '(Unspecified Announcement Set/Entry)'.

At the bottom, the 'Exit Branches' section contains the following table:

1	Unsupported	2	Abandon
3	Escape	4	Recharge
5	ChangeCode	6	ChangeDetails

Buttons at the bottom include 'Comments', 'Save', and 'Cancel'.

Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available Announcement Sets.
Announcement Entry	List of all the announcements belonging to the selected Announcement Set.

Configuring the node

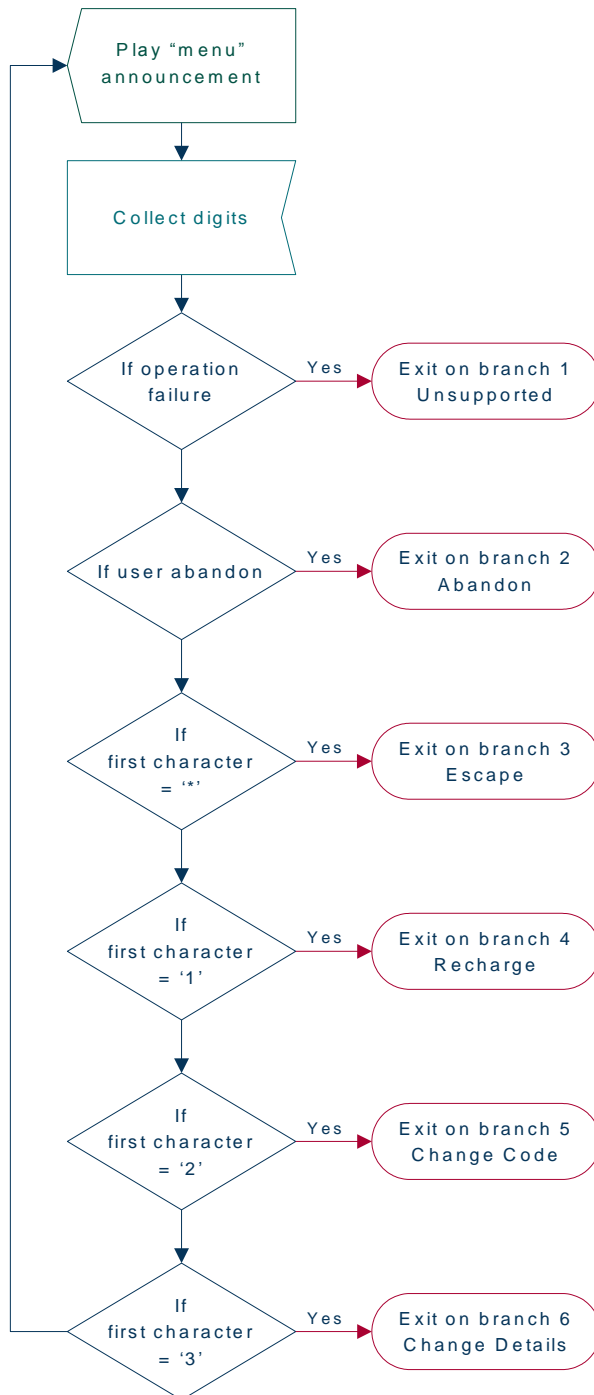
Follow these steps to configure the node.

Step	Action
1	For each announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller.

Step	Action
2	Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
	Click Save . Note: This will be greyed out until all the announcements have been selected.

Node logic

This diagram shows the internal logic processing of the node.



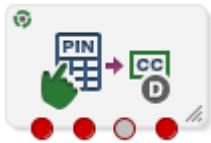
Credit Card Secret Code Change

Node description

Warning: This feature node has now been deprecated and should no longer be used. This feature node will still function in existing control plans. For new control plans there is currently no replacement feature node.

The Credit Card Secret Code Change feature node allows the user to enter a new Credit Card PIN. User security access should be verified before this node is reached. On successfully entering the PIN, the account record is updated.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The credit card PIN details have been changed successfully.
2	Unsupported	Either, error / failure, the Domain being used does not support this feature node, or the caller has not selected an entry.
3	Abandon	The caller has abandoned the call.
4	Escape	The caller has selected the Escape option.

Configuration screen

Here is an example Configure Credit Card Secret Code Change node screen.

Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.
EnableAnnouncement	Allows the selected announcements to be played.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Select the Enable Announcement check box as required to enable the Play Re-enter Code Announcement.
3	Click Save .

Step	Action
------	--------

Note: This will be greyed out until all the announcement sets have been selected.

Credit Card Starter Menu

Node description

Warning: This feature node has now been deprecated and should no longer be used. This feature node will still function in existing control plans. For new control plans there is currently no replacement feature node.

The Credit Card Starter Menu feature node collects a security PIN from the user for identity verification when the user attempts credit card recharges on their account. The node first verifies the user by asking them to enter their credit card number and expiry, then checks to see if the values entered match the values stored in the system.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either, error / failure, the Domain being used does not support this feature node, or the number of menu retries has exceeded the limit.
2	Success	The credit card PIN details have been stored.
3	Abandon	The caller has abandoned the call.
4	Escape	The caller has selected the Escape option.
5	Frozen	The caller's account status is Frozen, and they are therefore forbidden to use this node.
6	No CC Details	No credit card details exist for this caller, and they are therefore forbidden to use this node.

Configuration screen

Here is an example Configure Credit Card Starter node screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save . Note: This will be greyed out until all the announcement sets have been selected.

Do Credit Card Recharge

Node description

Warning: This feature node has now been deprecated and should no longer be used. This feature node will still function in existing control plans. For new control plans there is currently no replacement feature node.

The Do Credit Card Recharge feature node allows the user to recharge an account using a credit card. There are nine possible recharge options, which may be configured in any combination and played as a single menu. The caller may then recharge the account using the selected option.

The feature node will filter out all expenditure balance types and not include them in the played message. See *CCS User's Guide - Balance Types* topic.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The account has been successfully recharged.
2	Escape	The caller has selected the Escape option.
3	Abandon	The caller has abandoned the call.
4	Unsupported	Either, error / failure, the Domain being used does not support this feature node, or the caller has not chosen an option from the menu.

Configuration screen

Here is an example Configure Do Credit Card Recharge node screen.

Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.
EnableAnnouncement	Allows the selected announcements to be played.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Select the Enable Announcement check boxes as required to enable the Play Title Announcement and Play Confirm Change Announcement.
3	Click Save .

Step	Action
------	--------

Note: This will be grayed out until all the announcement sets have been selected.

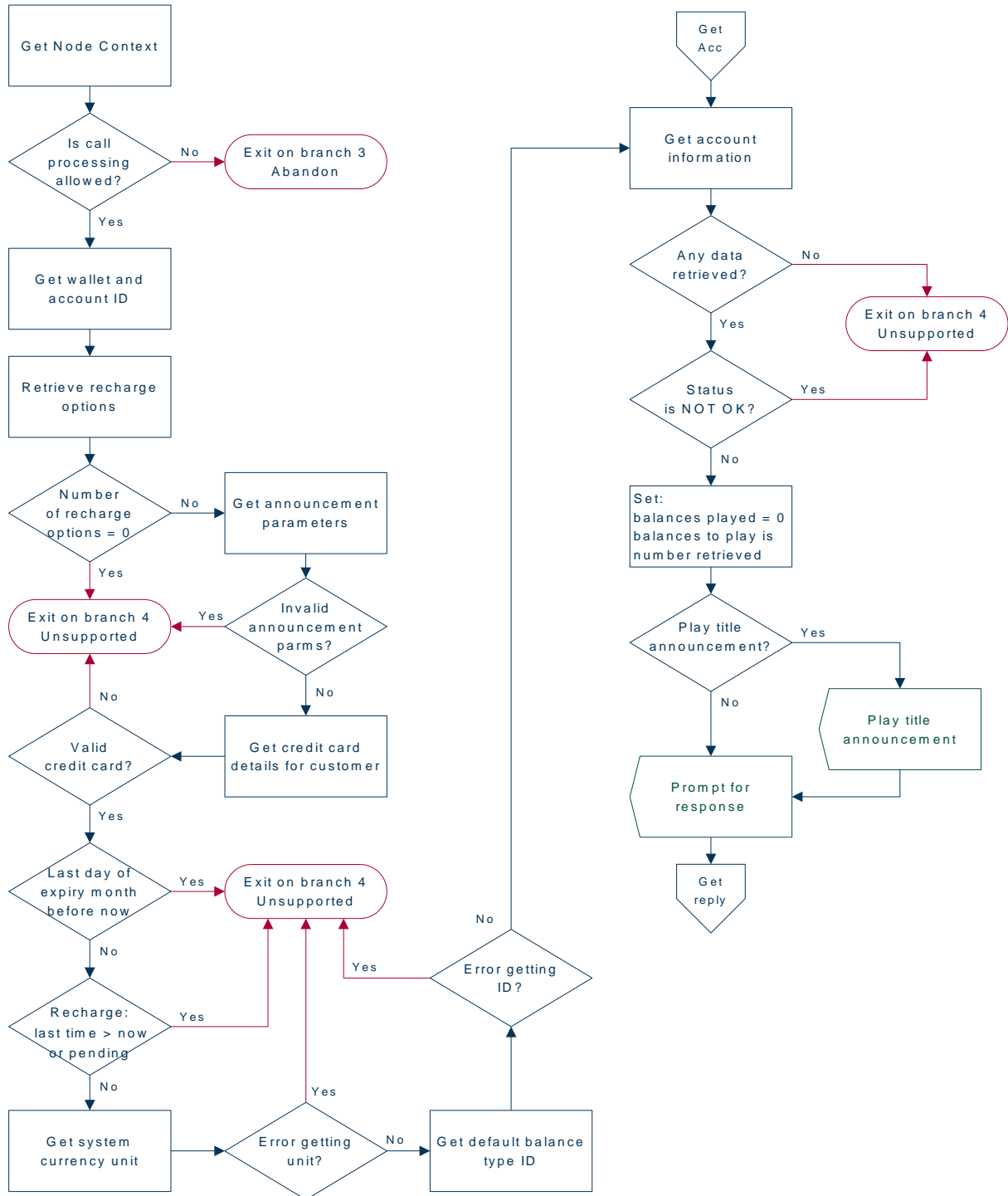
Note: The caller has three chances to press an invalid key, or to let the menu timeout, before the Abandon exit branch is taken. If the caller presses the * key, the call is routed down the Escape branch.

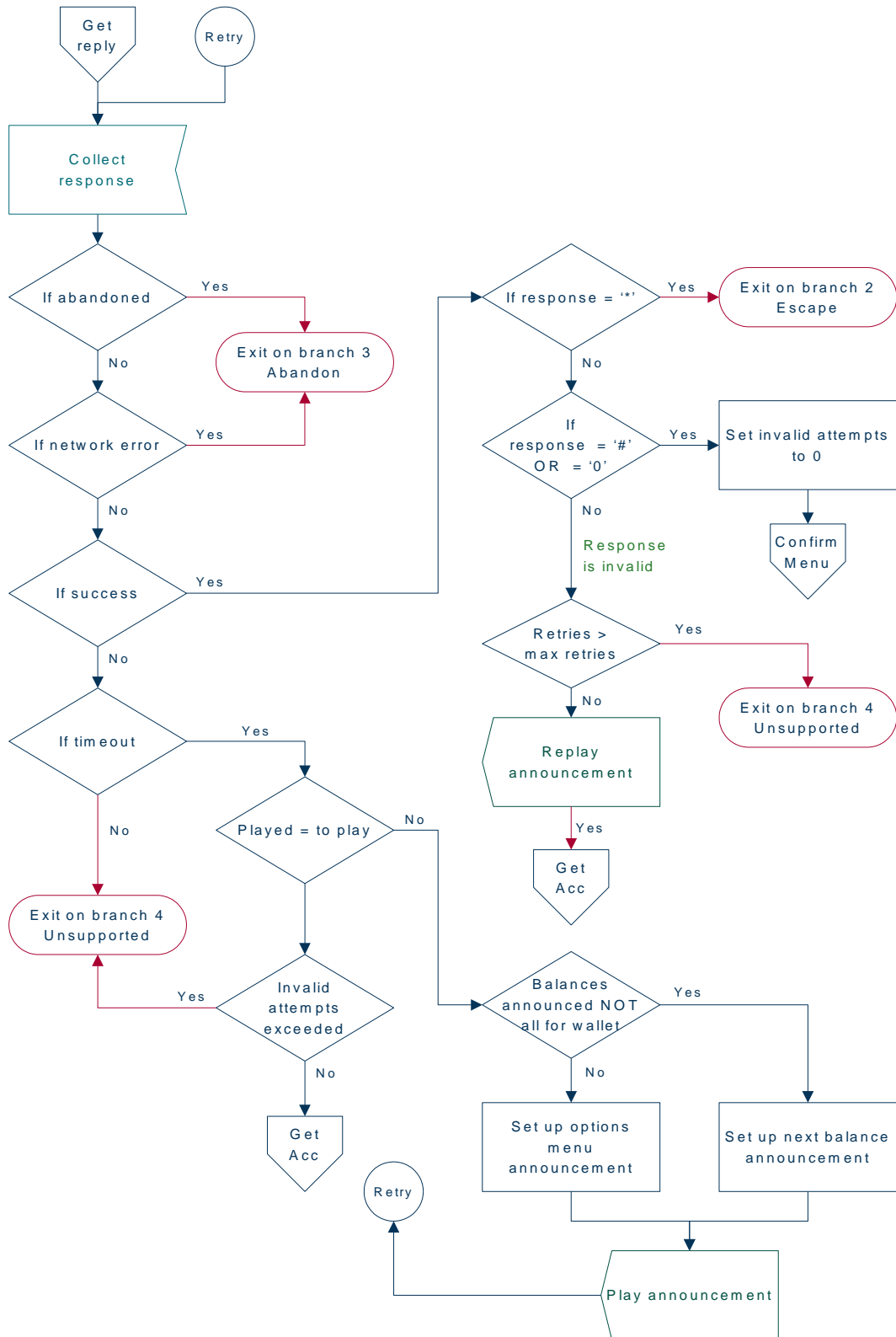
Further reference:

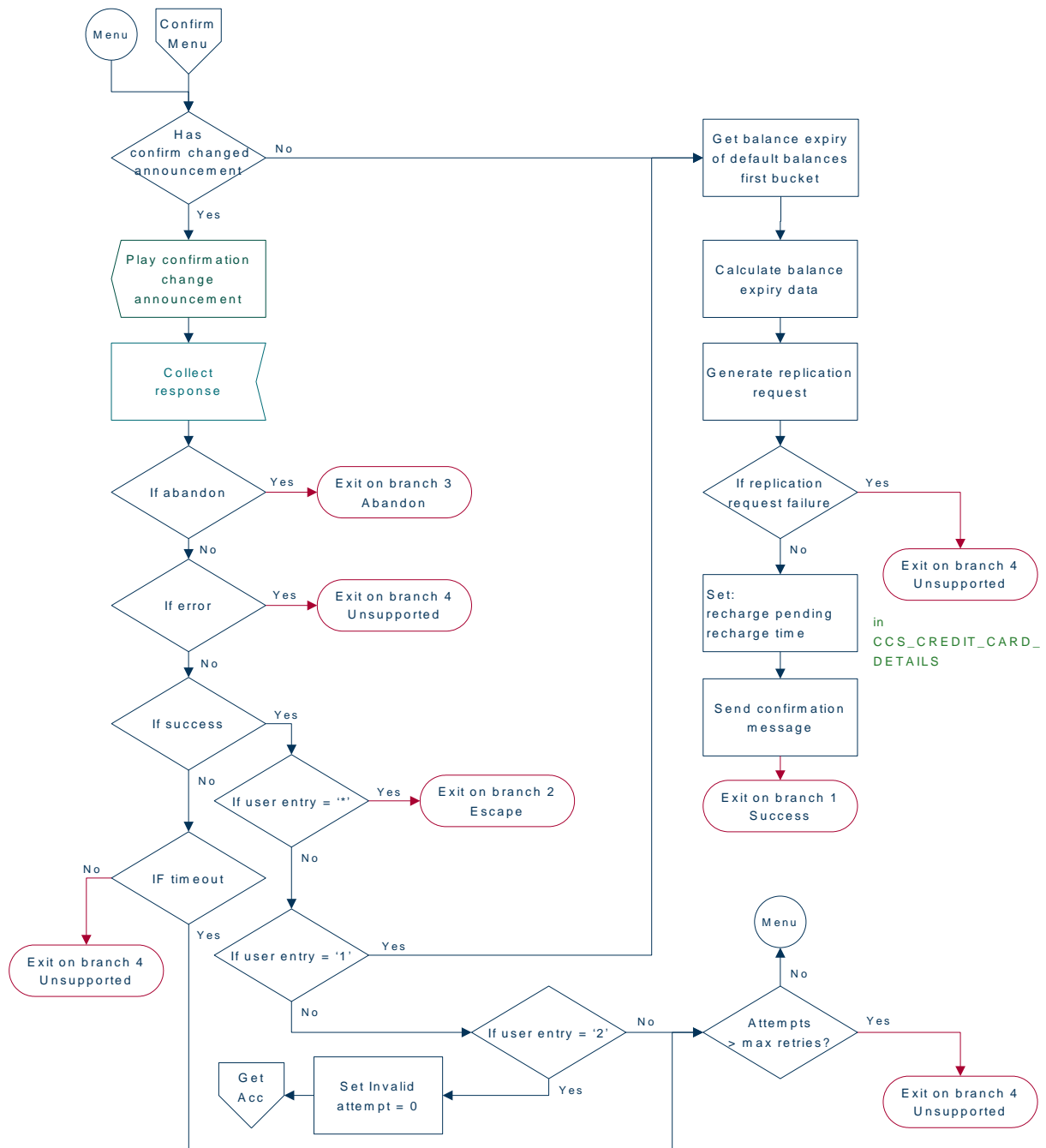
The credit card recharge rules applying to this node, are defined in the Prepaid Charging, Subscriber Management, Product Type window. For more information, see *CCS User's Guide*.

Node logic

This diagram shows the internal logic processing of the node.







Friends and Destination Configuration

Friends, Family and Destination Discount module

The Friends, Family and Destination Discount module seeks to apply a configured discount to calls made to numbers defined in a list, of up to 10 entries, for a particular account when made from an MSISDN associated with that account.

The discount percentage is the cumulative amount which is to be discounted in total for Friends and Family numbers.

The only time in which an individual call is discounted by the amount configured for the Friends and Family product associated with an account is when that account has only one Friends and Family number configured.

Friends and Destination discounting occurs either for a single number prefix or for a group of prefixes, depending on how the Friends/Destination Discount feature node is configured:

- If Multi-Destinations is selected, then the percentage discount is applied to calls where the call prefix belongs to the same group as the discount prefix defined in this node (prefixes belong to the same group if they share the same announcement).
- If Multi-Destinations is not selected, then the discount applies only to calls with the specified discount prefix.

Note: Only dialed numbers which exactly match the configured Friends and Family numbers will be discounted.

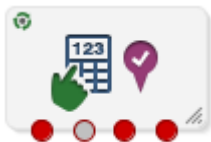
Node description

The Friends and Destination Configuration node enables the caller to maintain their friends and destination discount prefix. The node prompts the caller to select one of the following options:

Key	Function	Description
1	Add/Change Prefix	If no prefix has been previously defined for this subscriber, or enter a new prefix for discount calls.
2	Delete Prefix	Remove any existing prefix.
9	Activate Service	Enables the Friends and Destination discount service.

Note: The subscriber can have either the Friends and Family *or* the Friends and Destination service active. Activating the Friends and Destination service will mean that the Friends and Family service will no longer be in use.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Main Menu	The caller has selected the Main Menu option.
2	User Hang-up	The caller has abandoned the call.

Exit	Cause	Description
3	Disconnect	The caller has entered too many invalid entries or has not made a selection from the menu.
4	Unsupported	Either, error / failure, the Domain being used does not support this feature node, or the caller has selected the Escape option.

Configuration screen

Here is an example Configure Friends and Destination Configuration node screen.

Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.
MaxInvalidDigits	The maximum number of invalid entries allowed.
AnnouncementTimeout	The timeout used for standard prompt announcements.
ListCyclingTimeout	The timeouts used during list cycling.
ListStartTimeout	The timeouts used during list start.
SendChargeSMS	Send SMS text message with change detail and cost.
Event Class	List of event types that can be billed.

Field	Description
Named Event	List of events for the event class selected.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For <i>each relevant</i> announcement, use the drop down lists to select the prerecorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Enter the maximum number of retries allowed for entering digits in the MaxInvalidDigit field.
3	Type the timeout period in seconds for all prompt and collect messages in the AnnouncementTimeout field.
4	Select the SendChargeSMS check box if the amount charged is to be sent to the caller.
5	Select the Event Class to use from the drop down list.
6	Select the Named Event to use from the drop down list.
7	Click Save .
Note: This will be grayed out until all the announcement sets have been selected.	

Friends and Family Configuration

Node description

The Friends and Family Configuration node enables the caller to maintain their friends and family service number list. The node plays announcements that:

- Inform the caller of how many friends and family numbers they currently have stored in their list
- Enable them to perform predefined functions using phone key pad buttons

Caller available functions

Callers can use the following keys to perform the listed function.

Key	Function	Description
1	Review Numbers	Enables caller to scroll stored numbers.
2	Change Numbers	Enables caller to select and edit a number. The new number must appear in the white list, and must not appear in the global black list.
3	Add Numbers	Available if the caller has not exceeded the maximum number of stored entries for their product type. New numbers must appear in the white list, and must not appear in the global black list.
4	Delete Numbers	Available if any stored number exists.
5	Activate F&F Service	If not already activated.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

None, but the Friends and Family Configuration node is expected to be used together with the others (that is, the node will be used with the Friends and Destination Configuration node and the Main Menu node).

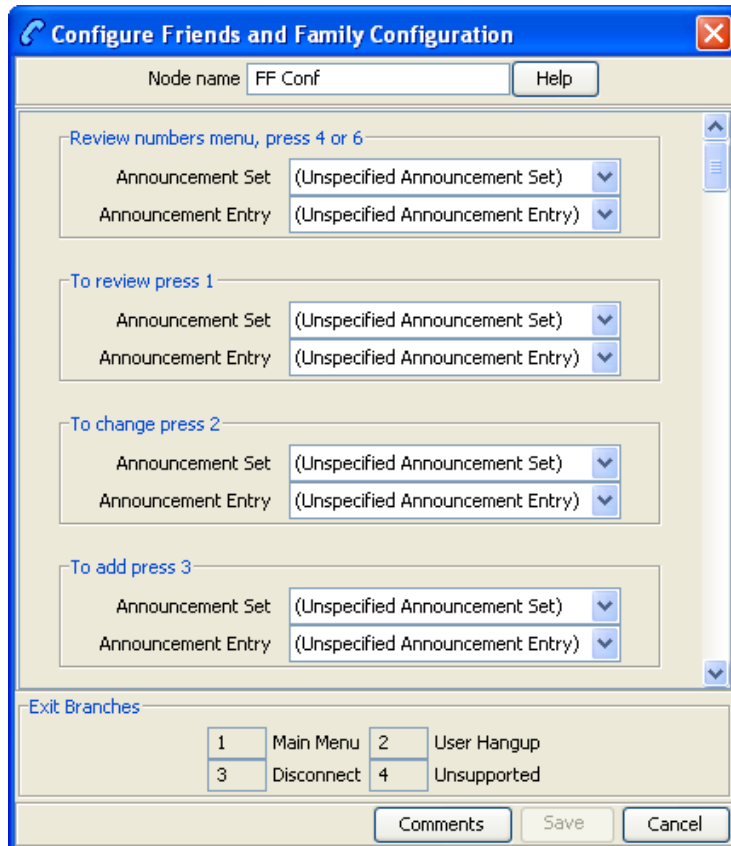
Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Main Menu	The caller has selected the Main Menu option.
2	User Hang-up	The caller has abandoned the call.
3	Disconnect	The caller has entered too many invalid entries or has not made a selection from the menu.
4	Unsupported	Either, error / failure, the Domain being used does not support this feature node, or the caller has selected the Escape option.

Configuration screen

Here is an example Configure Friends and Family Configuration node configuration screen.



Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.
MaxInvalidDigits	The maximum number of invalid entries allowed.
AnnTimeout	The timeout used for standard prompt announcements.
ListCyclingTimeout	The timeouts used during list cycling.
ListStartTimeout	The timeouts used during list start.
SendChargeSMS	Send SMS text message with change detail and cost.
Event Class	List of event types that can be billed.
Named Event	List of events for the event class selected.

If the caller initiates a change or addition to the stored Friends and Family numbers list this node will bill the subscriber's account for the amount set in the Named Event panel of the Tariff screen for Friends and Family configuration changes.

Note: The subscriber can have either the Friends and Family **OR** the Friends and Destination service active. Activating the Friends and Family service will mean that the Friends and Destination service will no longer be in use.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For <i>each relevant</i> announcement, use the drop down lists to select the prerecorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Type the maximum number of times a caller can enter a disallowed number in the MaxInvalidDigits field.
3	Type the length of time in seconds after the main announcement is played before the call is disconnected in the AnnTimeout field.
4	Type the length of time in seconds a list announcement is played before the call is disconnected in the ListCyclingTimeout field.
5	Type the length of time a list announcement is played before the call is disconnected in the ListStartTimeout field.
6	Select the SendChargeSMS check box if the amount charged is to be sent to the caller.
7	Select the Event Class to use from the drop down list.
8	Select the Named Event to use from the drop down list.
9	Click Save .

Note: This will be grayed out until all the announcement sets have been selected.

Friends and Destination Discount

Node description

The Friends and Destination Discount node enables the Friends and Family / Friends and Destination service to apply the discount for that service as configured for the product type in use. The node is placed before any UATB node to set the required discount percentage for the call.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

None, but the Friends/Destination Discount node is expected to be used together with the others (that is, the node will be used with the Friends and Family node and the Main Menu node).

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type BCD. See *Charging Control Services User's Guide* for further details on charging domains.

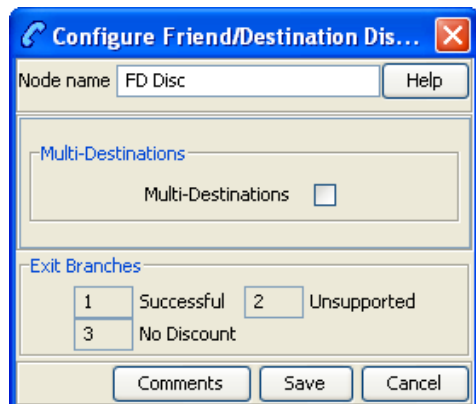
Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The caller has successfully exited the node and the correct discount override will be used.
2	Unsupported	Either error / failure or that the Domain being used does not support this feature node.
3	No Discount	The caller has not qualified for a Friends and Family / Friends and Destination discount. No discount will be applied to the call.

Configuration screen

Here is an example Configure Friend/Destination Discount node screen.



Configuration fields

This table describes the function of each field.

Field	Description
Multi-Destinations	Determines whether the discount is applied to a single number prefix or to a group of prefixes. When selected, the discount is applied to all calls where the call prefix belongs to the same group as the discount prefix defined for the caller.

Note: Prefixes are grouped by announcement (prefixes that share the same announcement belong to the same group). You can use this facility to map prefixes by region.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	If required, tick the Multi_Destinations check box.
2	Click Save .

Friends and Destination Menu

Node description

The Friends and Destination Menu node informs the caller which service - if any - is currently active. The caller is then prompted to select which service they would like to maintain.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

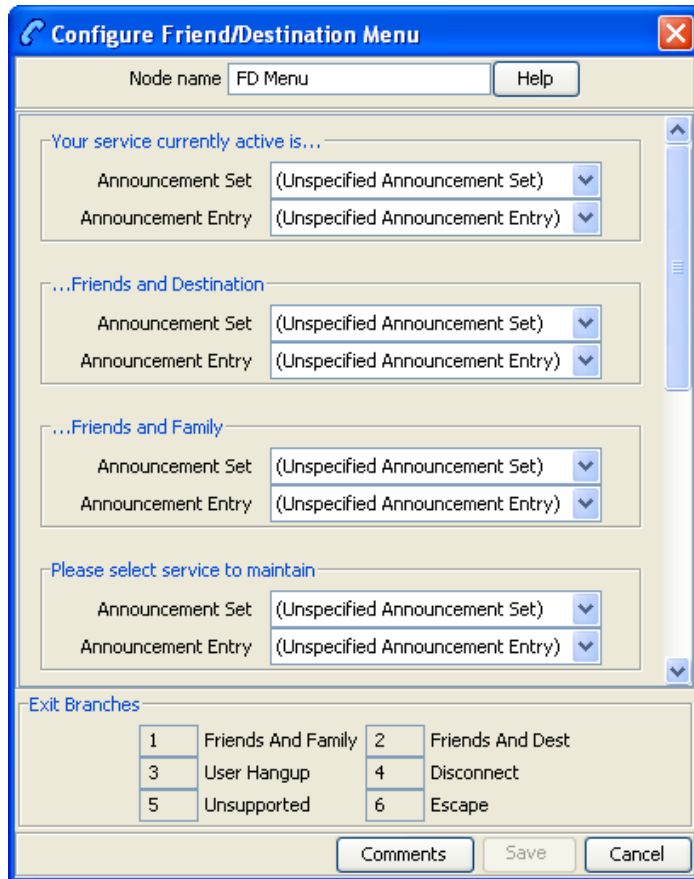
Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Friends and Family	The caller has selected the Friends and Family option from the menu.
2	Friends and Destination	The caller has selected the Friends and Destination option from the menu.
3	User Hang up	The caller has abandoned the call.
4	Disconnect	The caller has entered too many invalid entries or has not made a selection from the menu.
5	Unsupported	Either error / failure or that the Domain being used does not support this feature node.
6	Escape	The caller has selected the Escape option.

Configuration screen

Here is an example Configure Friend/Destination Menu node screen.



Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.
MaxInvalidDigits	The maximum number of invalid entries allowed.
AnnTimeout	The timeout used for standard prompt announcements.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Type the maximum number of times a caller can enter a disallowed number in the

Step	Action
	MaxInvalidDigits field.
3	Type the length of time in seconds after the main announcement is played before the call is disconnected in the AnnTimeout field.
4	Click Save .
	Note: This will be greyed out until all the announcement sets have been selected.

Get Destination Prefix

Node description

The Get Destination Prefix node retrieves the longest matching favourite destination prefix for a provided number.

The feature node:

- Uses the source digits to look up the friends and destination prefix map
- The longest matching friends and destination prefix is found
- The result is stored in the destination prefix profile field.

The source number will be provided in one of the following profile field types:

- Limited Number String
- Number String

The feature node will place the prefix in a profile field of type:

- Number String.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

The Get Destination Prefix node may be used any number of times within a control plan.

Node exits

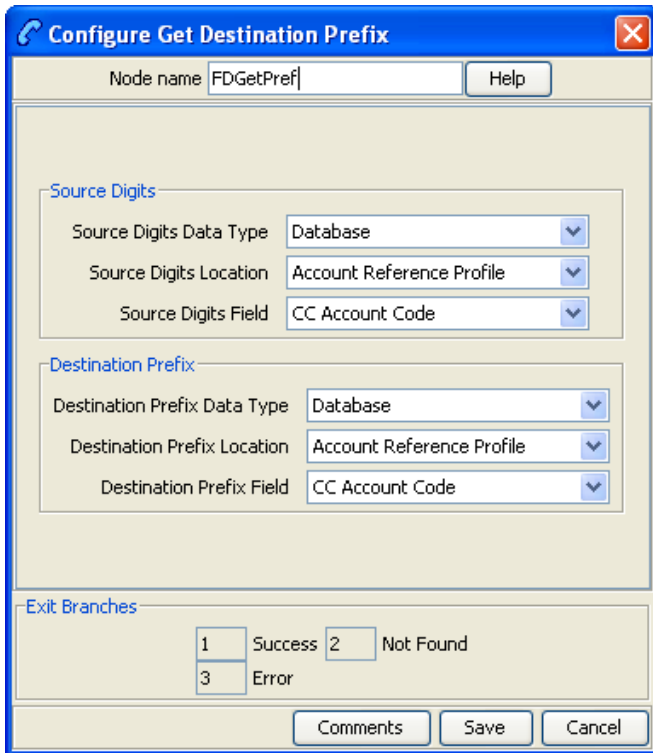
This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The destination prefix was found, and the announcement was played.
2	Not Found	No mappings were found for the provided number.

Exit	Cause	Description
3	Error	One of: <ul style="list-style-type: none"> • Source number profile field missing • General error

Configuration screen

Here is an example Configure Get Destination Prefix node screen.



Configuration fields

This table describes the function of each field.

Field	Description
Source Digits section	The profile Data Type , Location and Field for the source digits information.
Destination Prefix section	The profile Data Type , Location and Field for the destination prefix information.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the Source Digits Data Type , Location and Field from the drop down lists.
2	Select the Destination Prefix Data Type , Location and Field from the drop down lists.
3	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Help Information

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node description

The Help Information node provides an information service over the phone. The caller navigates through a menu of help topics and listens to the recorded messages on the topics of their choice.

Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either, error / failure, the Domain being used does not support this feature node, or the caller has not made a menu selection.
2	Abandon	The caller has abandoned the call.
3	Success	The caller has exited the node successfully.

Configuration screen

Here is an example Configure Help Info node screen.

Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save .

Step	Action
------	--------

Note: This will be greyed out until all the announcement sets have been selected.

Main Menu

Node description

The Main Menu node offers the caller a range of call options and routes the call according to the selection made.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and eight exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Any of: <ul style="list-style-type: none"> Error / failure Domain being used does not support this feature node Number of menu retries has exceeded the limit.
2	Abandon	The caller has abandoned the call.
3	What's New	The caller has selected the What's New option by entering key 1.
4	Account	The caller has selected the Account Status option by entering key 2.
5	Personal	The caller has selected the Personal Options option by entering key 3.
6	Recharge	The caller has selected the Recharge option by entering key 4.
7	Information	The caller has selected the Information option by entering key 5.
8	Out-call	The caller has selected the Make Call option by entering key 6.

Configuration screen

Here is an example Configure Main Menu node screen.

The screenshot shows the 'Configure Main Menu' dialog box. The 'Node name' is 'Main Menu'. The 'Menu Title' section has two dropdowns for 'Announcement Set' and 'Announcement Entry'. The 'Whats new' section also has two dropdowns. The 'Fixed Options' section has two dropdowns. The 'Information' section has two dropdowns. The 'Exit Branches' section contains a table with 8 rows and 2 columns:

1	Unsupported	2	Abandon
3	Whats new	4	Account
5	Personal	6	Recharge
7	Information	8	Out-call

At the bottom of the dialog are 'Comments', 'Save', and 'Cancel' buttons.

Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.

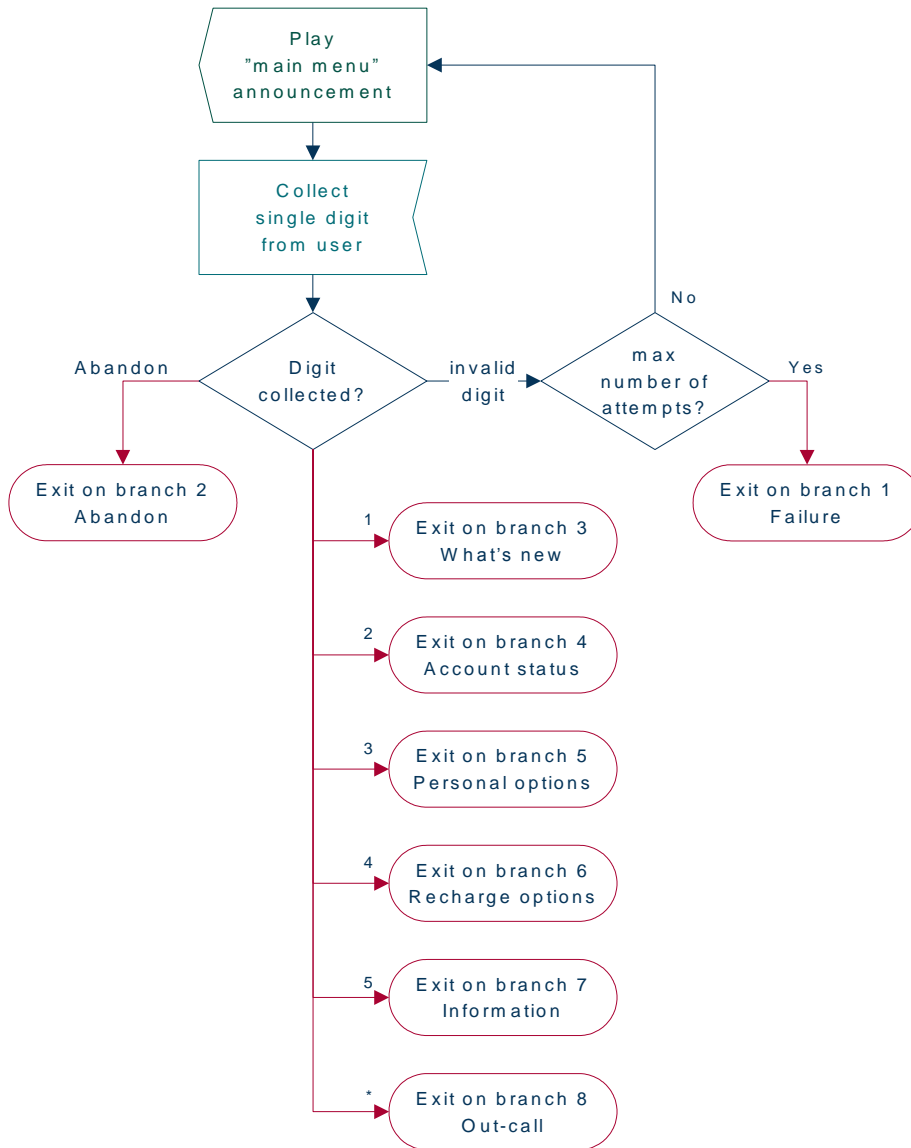
Step	Action
------	--------

2 Click **Save**.

Note: This will be greyed out until all the announcement sets have been selected.

Node logic

This diagram shows the internal logic processing of the node.



Personal Options Menu

Node description

The Personal Options Menu node offers the caller a range of options about their profile and routes the call according to the selection made.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

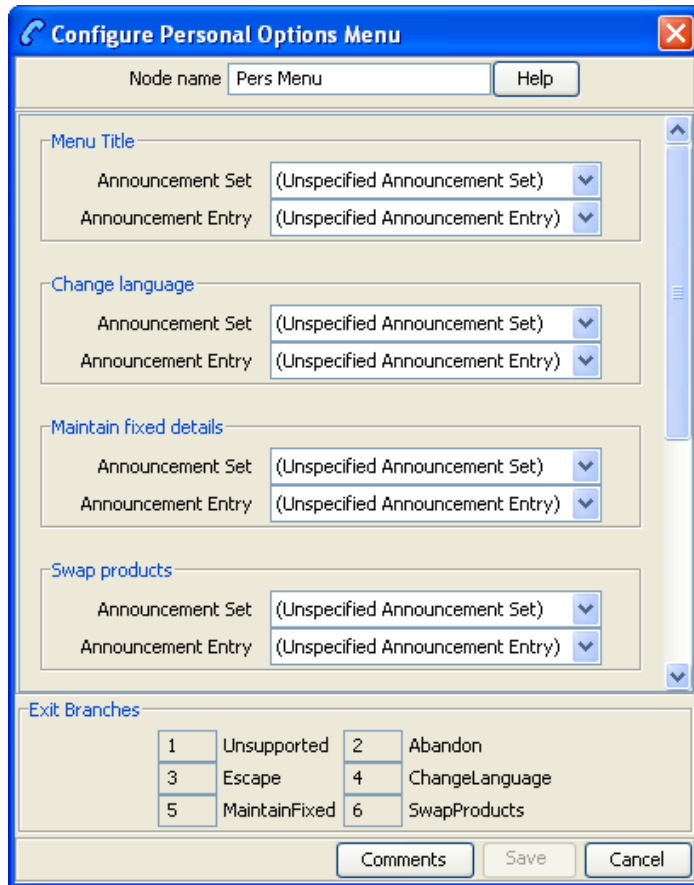
Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either, error / failure, the Domain being used does not support this feature node, or number of menu retries has exceeded the limit.
2	Abandon	The caller has terminated the call.
3	Escape	The caller has selected the Escape option by entering *.
4	Change Language	The caller has selected the Change Language option by entering 1.
5	Maintain Fixed	The caller has selected the Maintain Fixed option by entering 2.
6	Swap Products	The caller has selected the Product Swap option by entering 3.

Configuration screen

Here is an example Configure Personal Options Menu node screen.



Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save . Note: This will be grayed out until all the announcement sets have been selected.

Play Destination

Node description

The Play Destination node plays to the caller the destination announcement associated with the provided destination prefix.

The feature node:

- Uses the destination prefix to look up the destination announcement configured in friends and destination
- If the announcement is found it is then played

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

The Play Destination node may be used any number of times within a control plan.

To function correctly, this node should be placed after the *Get Destination Prefix* (on page 147) node.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The destination prefix was found, and the announcement was played.
2	Not Found	The destination prefix has no matching entry in the friends and destination prefix map list.
3	Error	General errors.
4	Abandon	The user hung up during the announcement.

Configuration screen

Here is an example Configure Play Destination node screen.

Configuration fields

This table describes the function of the field.

Field	Description
Destination Prefix section	The profile Data Type , Location and Field for the destination prefix information.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the Destination Prefix Data Type , Location and Field from the drop down lists.
2	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Product Type Branching

Node description

The Product Type Branching node branches depending on the comparison of the destination (called) subscriber's product type, and one of:

- A specified product type
 - The product type of the subscriber loaded by the CCS service library (usually the calling party)
- The basic configuration has three default branches. The node can be configured to have up to an additional twenty branches to define product type branching rules.

This functionality allows for:

- Improved/promotional rating between certain product type groups to occur (such as community calling discounts)
- Additional functionality within the control plan

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This feature node may be used any number of times within a control plan.

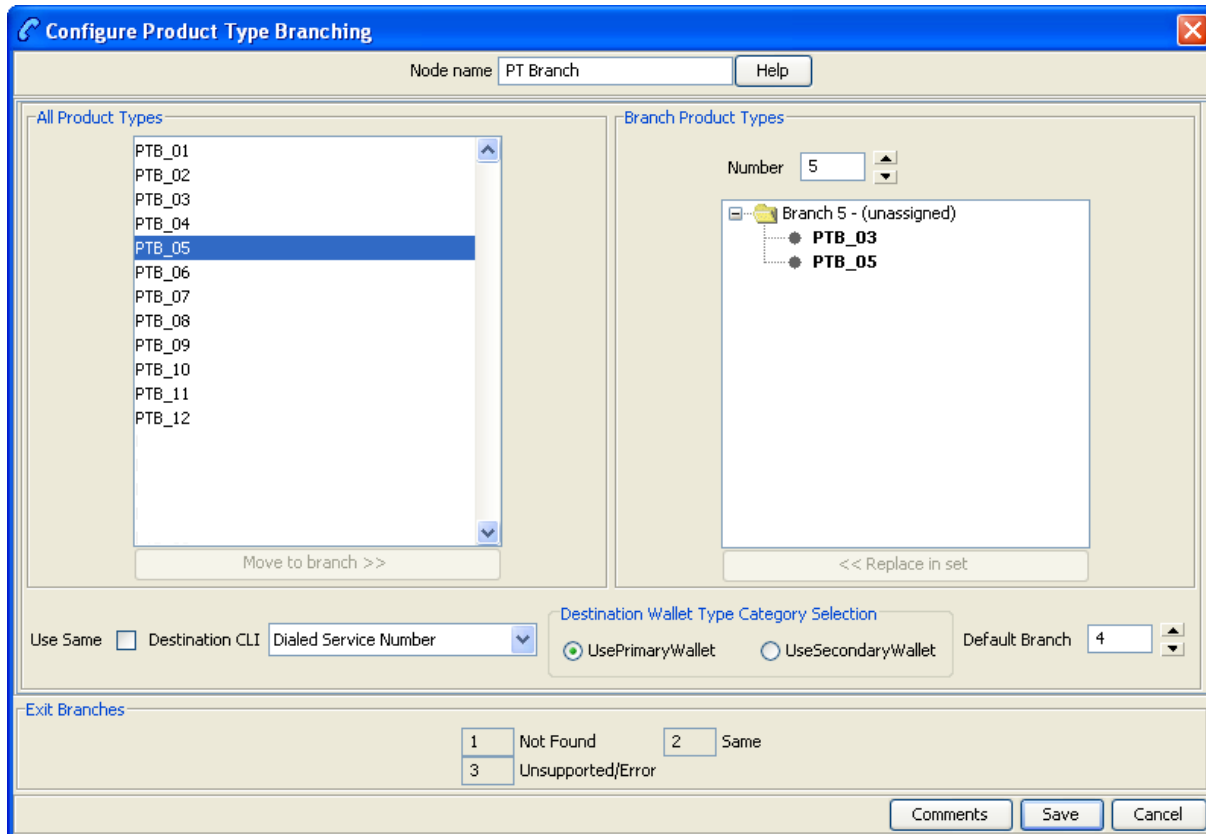
Node exits

The Product Type Branching node has one entry point and 3 to 23 exit points. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See [Editing node exits](#).

Exit	Cause	Description
1	Not found	The destination subscriber's product type was not found.
2	Same	The Use Same check box is selected and the calling subscriber and destination subscriber's product types match. The matched branch rules are ignored. Note: The standard configuration for this node sets this exit as the default exit. The default branch is taken when the destination subscriber's product type does not match any branch rules. This includes situations where no matched branch rules have been configured.
3	Unsupported or Error	Wrong configuration information or general system errors such as timeout.
4 to 23	Matched	The destination subscriber's product type matched one of the branches.

Configuration screen

Here is an example Configure Product Type Branching screen.



Configuration fields

This table describes the function of each field.

Field	Description
All Product Types	This is the list of all the product types defined in the Service Management System > PrePaid Charging > Subscriber Management > Product Type screens for the current service provider.
Branch Product Types	The branch number being configured and the product types associated with the branch.
Use Same	If selected, branch two will be taken if the calling subscriber and destination subscriber have the same product types regardless of any matching branch configuration.
Destination CLI	Use this buffer as the source for the CLI of the destination subscriber. The product type for this subscriber will be the one matched against. Note: If found, these details are written to Application Specific Profile 4 (App 4).
Destination Wallet Type Category Selection	Which wallet type to use to determine the destination subscriber's product type to be used. Primary wallet is the default and most common wallet.
Default Branch	Provides the branch to take if the destination subscriber's product type was not found in any of the branch product type rules.

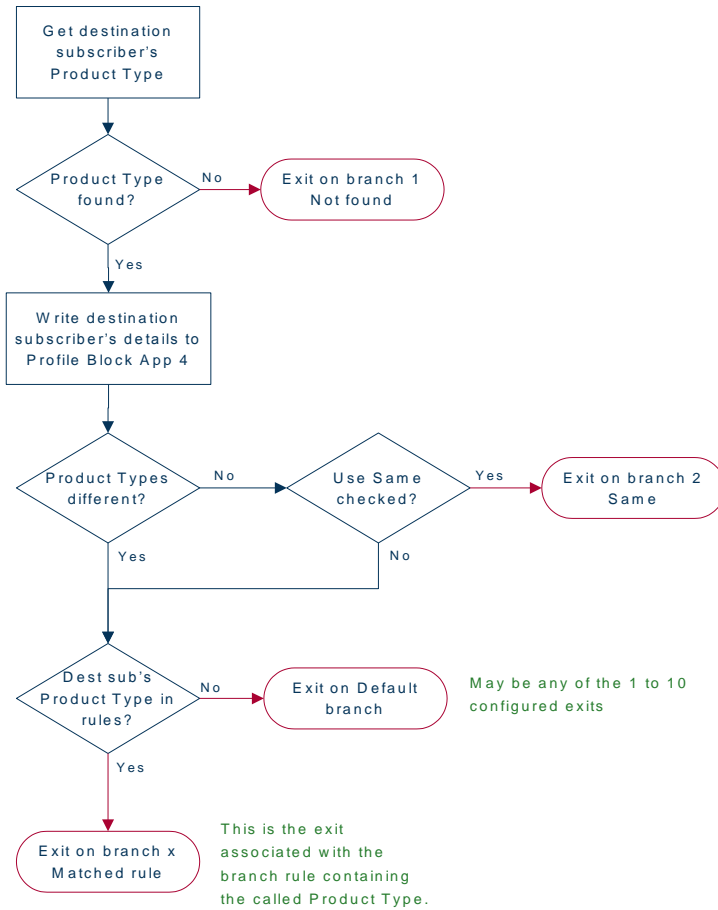
Configuring the node

Follow these steps to configure the node.

Step	Action
1	Determine and establish the number of Product Type exits to configure (maximum of seven). See Editing node exits.
2	In the Branch Product Types area, use the Number scroll bar to select the match branch to configure. Result: The selected branch with any current rules appears in the panel below.
3	To remove a Product Type from the selected branch, click the Product Type and then click << Replace in set . Result: The Product Type is removed from the branch and becomes available for adding to another branch.
4	In the All Product Types area, select a Product Type to associate with the selected branch. Result: If the Product Type has not been assigned to a branch, the Move to branch >> button becomes available.
5	Click Move to branch >> Result: The Product Type is added to the selected branch.
6	Repeat steps 3 and 4 for all the Product Types to associate with the selected branch.
7	Repeat steps 2 to 6 for all match branches. Note: The node can work without matching branches. The default exit will be used for all destination subscribers which have a Product Type.
8	Select which wallet type to use to determine the destination subscriber's Product Type.
9	Use the Default Branch scroll bar to select what branch to take if the destination subscriber's Product Type is not in the match branches.
10	Click Save .

Node logic

This diagram shows the internal logic processing of the node.



Product Type Swap

Node description

The Product Type Swap node enables a subscriber to change their own product type. The Service Provider can bill or not bill for this service.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either, error / failure, the domain being used does not support this feature node, or the product type change was unsuccessful.
2	Success	The product type change was successful.
3	Abandon	The caller has terminated the call.
4	Insufficient Credit	The caller has insufficient credit to complete the product type change.
5	Escape	The caller has selected the Escape option.

Configuration screen

Here is an example Configure Product Type Change node screen.

Configure Product Type Change

Node name: Swap PT Help

Menu title

Announcement Set: (Unspecified Announcement Set)

Announcement Entry: (Unspecified Announcement Entry)

Current setting preamble

Announcement Set: (Unspecified Announcement Set)

Announcement Entry: (Unspecified Announcement Entry)

To change to

Announcement Set: (Unspecified Announcement Set)

Announcement Entry: (Unspecified Announcement Entry)

press one

Announcement Set: (Unspecified Announcement Set)

Announcement Entry: (Unspecified Announcement Entry)

Exit Branches

1 Unsupported 2 Success

3 Abandon 4 Insufficient Credit

5 Escape

Comments Save Cancel

Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.
Event Class	List of event types that can be billed.
Named Event	List of events for the event class selected.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For <i>each</i> announcement, use the drop down lists to select the prerecorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Select the Event Class from the drop down list.
3	Select the Named Event from the drop down list.
4	Click Save .

Note: This will be grayed out until all the announcements have been selected.

Read Secret Code

Node description

Warning: This feature node has now been deprecated and should no longer be used. This feature node will still function in existing control plans. For new control plans there is currently no replacement feature node.

The Read Secret Code feature node prompts the caller to enter their PIN. If the user exceeds the number of attempts allowed, the entry process will be abandoned.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	A valid code has been entered successfully.
2	Invalid Code	The maximum number of incorrect code attempts has been entered.
3	Frozen	The caller's account is Frozen and therefore cannot use this node.
4	Escape	The caller has selected the Escape option.
5	Abandon	The caller has abandoned the call.
6	Failure	Either, error / failure, the Domain being used does not support this feature node, or no selection has been made.

Configuration screen

Here is an example Configure Read Secret Code node screen.

Node name:

Prompt for secret code

Announcement Set: (Unspecified Announcement Set)
 Announcement Entry: (Unspecified Announcement Entry)

The number entered was too short

Announcement Set: (Unspecified Announcement Set)
 Announcement Entry: (Unspecified Announcement Entry)

Max invalid codes. exit

Announcement Set: (Unspecified Announcement Set)
 Announcement Entry: (Unspecified Announcement Entry)

Account Frozen

Announcement Set: (Unspecified Announcement Set)
 Announcement Entry: (Unspecified Announcement Entry)

Exit Branches

1	Success	2	InvalidCode
3	Frozen	4	Escape
5	Abandon	6	Unsupported

Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save .
	Note: This will be greyed out until all the announcement sets have been selected.

Refresh Subscriber Information

Node description

Some parts of the call context can become out of date while a call is being processed. The Refresh Subscriber Information node allows the stored subscriber information to be retrieved during a call to avoid out of date information being used. This node sends out one RetrieveSubscriberInformation MOX message request for new subscriber information to the billing system.

Note: This node should not be used in Billing Failure Treatment (BFT) control plans.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

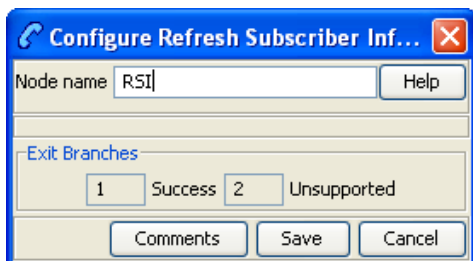
This node has one entry and two exits. The number of exits cannot be changed.

Note: These exit descriptions are specific to the responses received from an Oracle VWS. For specific information about how responses from other billing engines map to these exits, see the technical guide for the interface for billing engine being used.

Exit	Cause	Description
1	Success	Subscriber information is successfully retrieved.
2	Unsupported	Either error / failure or that the Domain being used does not support this feature node.

Configuration screen

Here is an example Configure Subscriber Information screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Remote Access Service

Node description

The Remote Access Service node enables a user to turn their Remote Access feature on or off. The announcement played to the caller depends on the state of the user's Remote Access Service feature.

Example: If Remote Access has been disabled (turned off) the announcement played will give the option of enabling (turning on).

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

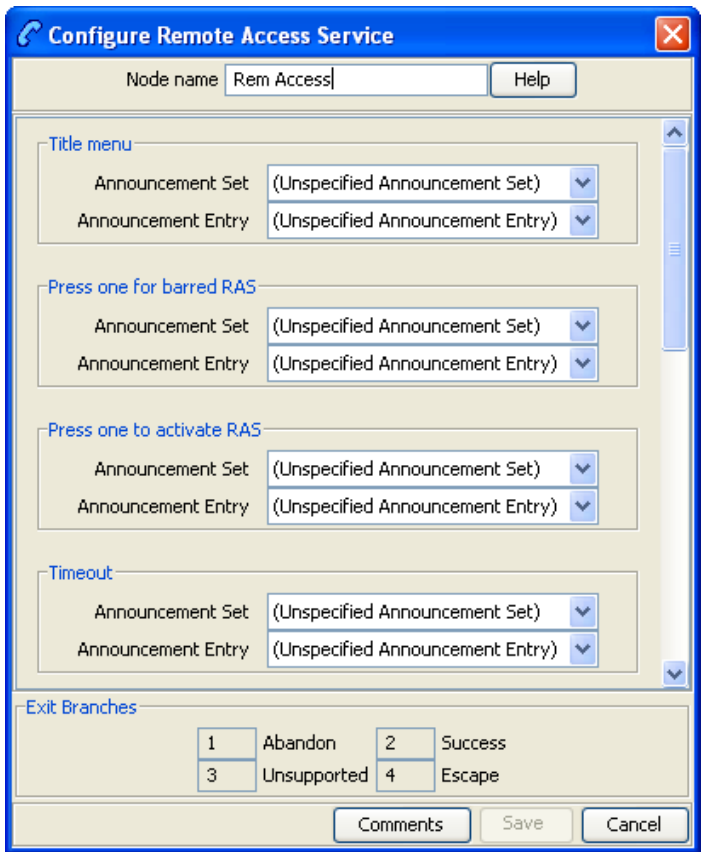
Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Abandon	The caller has terminated the call.
2	Success	The caller has successfully exited the node.
3	Unsupported	Either error / failure or that the Domain being used does not support this feature node.
4	Escape	The caller has selected the Escape option.

Configuration screen

Here is an example Configure Remote Access Service node screen.



Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save .

Note: This will be greyed out until all the announcement sets have been selected.

Select Language

Node description

The Select Language node allows the user to change the language in which their announcements are played. This change is made to the user's profile, and is therefore an immediate, global change.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

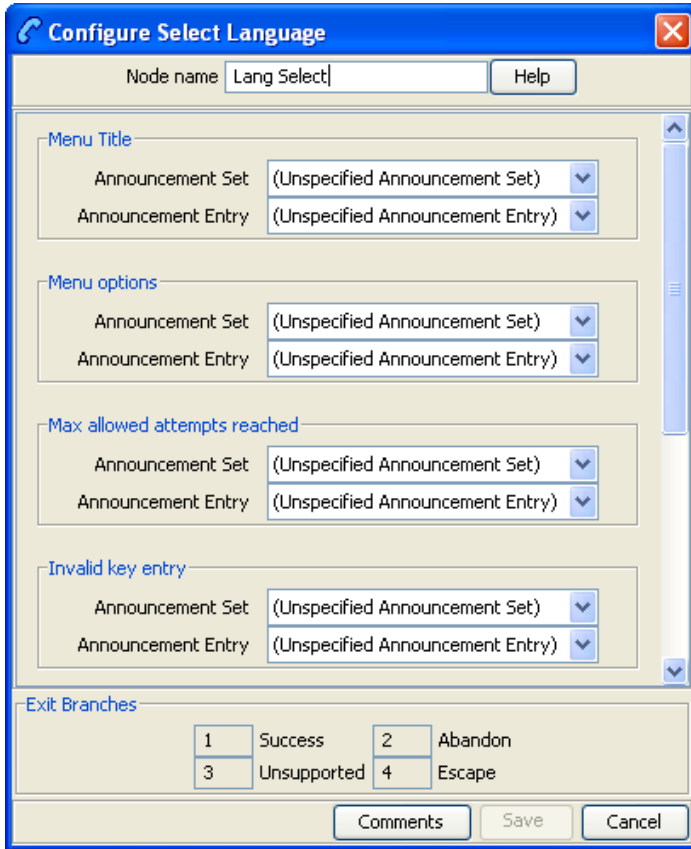
Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	A language has been chosen and set.
2	Abandon	The caller has terminated the call.
3	Unsupported	Either, error / failure, the Domain being used does not support this feature node, or the number of menu retries has exceeded the limit.
4	Escape	The caller has selected the Escape option by entering *.

Configuration screen

Here is an example Configure Select Language node screen.



Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available Announcement Sets.
Announcement Entry	List of all the announcements belonging to the selected Announcement Set.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save . Note: This will be greyed out until all the announcement sets have been selected.

Set Product Type

Node description

The Set Product Type node enables a subscriber to set the product type. The Service Provider can bill or not bill for this service.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The product type was successfully set.
2	Type Not Found	The selected product type was not found.
3	Failure	Either, error / failure, the domain being used does not support this feature node, or the product type selection was unsuccessful.

Configuration screen

Here is an example Configure Set Product Type node screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the Product Type from the drop down list.
2	Click Save .

Subscriber Creation/ Deletion

Node description

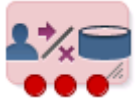
This node can be used to dynamically create and delete subscribers (and wallets) from the SLC. It consists of the configuration parameters needed for subscriber creation and deletion, which it passes to the chassis action, which in turn invokes the appropriate PI command (ADD or DEL).

To create a subscriber, the following information is used:

- ACS customer
- ACS language
- Product type
- Subscriber CLI digits, saved to buffer

To delete a subscriber, the subscriber CLI digits are passed to the chassis action.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

Only one Subscriber Creation/ Deletion node per control plan is required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The subscriber is successfully created or deleted depending on the selected action.
2	Failure	Either, error/failure, the Domain being used does not support this feature node, or no selection has been made. The subscriber creation or deletion operation failed.
3	Error	An error occurred when attempting to read the feature node configuration.

Configuration screen

Here is an example Configure Subscriber Creation Deletion screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	In the Subscriber Creation/Deletion frame, select the operation to be performed. One of: <ul style="list-style-type: none"> • SubscriberCreation - creates subscribers and wallets from the SLC. • SubscriberDeletion - deletes subscribers and wallets from the SLC.
2	From the ACS Customer drop down list, select the ACS customer to whom the control plan belongs. The subscriber will be associated with this ACS customer or telco.
3	From the ACS Language drop down list, select the applicable language for the new subscriber.
4	From the Product Type drop down list, select the name of the product type applicable to the subscriber.
5	From the SubDigitBuffer drop down list, select the buffer type where the collected subscriber's digits should be stored in, before being passed to the chassis action. For subscriber creation, this field will be used to store the subscriber CLI, the account number and the account PIN. For subscriber deletion, this field will be used to store the subscriber CLI.
6	Click Save .

What's New

Node description

The What's New node plays the “What's New” announcement to the caller. The caller can divert to a specified service number in order to obtain further information about the content of the announcement.

Note: This node stores only the Connect To number in the Pending TN buffer and does not connect the call. Therefore a further node is required to make the connection to the specified service number.

The control plan processing can continue if telephony is allowed through the chosen exit point: Failure, Success and Outcall. No further telephony is allowed if the caller abandons the call.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either error / failure or that the Domain being used does not support this feature node.
2	Abandon	The caller has abandoned the call.
3	Success	The announcement played successfully, but the caller chose not to divert/connect to the service number by entering 2 or *.
4	Outcall	The caller chose to divert/connect to the service number by entering 1.

Configuration screen

Here is an example Configure Whats New node screen.

Configure Whats New

Node name:

Do you want to call this number

Announcement Set: (Unspecified Announcement Set) ▼
Announcement Entry: (Unspecified Announcement Entry) ▼

Invalid key

Announcement Set: (Unspecified Announcement Set) ▼
Announcement Entry: (Unspecified Announcement Entry) ▼

No key detected

Announcement Set: (Unspecified Announcement Set) ▼
Announcement Entry: (Unspecified Announcement Entry) ▼

Failure

Announcement Set: (Unspecified Announcement Set) ▼
Announcement Entry: (Unspecified Announcement Entry) ▼

Exit Branches

1	Unsupported	2	Abandon
3	Success	4	Outcall

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements to play as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save .

Note: The **Save** button is enabled only after you have selected all the announcements.

CCS Voucher Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller CCS Voucher feature nodes.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	177
Play Voucher Redeemed Info	178
Recharge Menu	180
Scratch Card Recharge	182
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Select Voucher Scenario	194
Voucher Reserve - FN	200
Voucher Redeemed.....	208
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Voucher Type Branching	212
Voucher Type Recharge.....	215

Available Feature Nodes

CCS Voucher Feature Nodes List

This table lists the feature nodes available from the CCS Voucher palette group in the ACS Control Plan Editor.

Node Name	Node description
Play Voucher Redeemed Info (on page 178)	The Play Voucher Redeemed Info node plays the voucher balance to the subscriber.
Recharge Menu (on page 180)	The Recharge Menu node allows the caller to select a method of recharging an account.
Scratch Card Recharge (on page 182)	The Scratch Card Recharge node enables a caller to use a scratch card to recharge their account, and to change the product type if required.
Scratch Card Recharge Alternate Subscriber (on page 186)	The Scratch Card Recharge Alternative Subscriber node enables a caller to use a scratch card to recharge another user's account, and to change the product type if required.
Select Voucher Scenario (on page 194)	The Select Voucher Scenario node enables a subscriber to select from amongst the different ways the voucher can be redeemed, by choosing a particular scenario.

Node Name	Node description
Play Voucher Redeemed Info (on page 178)	The Play Voucher Redeemed Info node plays the voucher balance to the subscriber.
Voucher Reserve - FN (on page 200)	The Voucher Recharge node allows the caller to recharge their account using a voucher number, and to change their product type if required.
Voucher Redeemed (on page 208)	The Voucher Redeemed node retrieves a voucher number from the specified location.
Voucher Type Balance Information (on page 210)	The Voucher Type Balance Information node retrieves the balances associated with a Voucher Type and stores them in a selected profile.
Voucher Type Branching (on page 212)	The Voucher Type Branching feature node branches based on the voucher type of the voucher retrieved from either the control plan context or a profile field.
Voucher Type Recharge (on page 215)	The Voucher Type Recharge node invokes the voucher type recharge billing engine action using the configured name of the voucher type.

Play Voucher Redeemed Info

Node description

The Play Voucher Redeemed Info node plays the voucher balance to the subscriber. The node will generate and play a multi-part announcement that is built up from the response information from a successful voucher redeem. Is to be placed after a voucher redemption node (For example, Scratchcard or Voucher Redeem and plays out what the billing engine actually redeemed.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The caller received the voucher information.
2	Abandon	The caller abandoned the call.

Exit	Cause	Description
3	Unsupported	Either error / failure or that the Domain being used does not support this feature node.

Configuration screen

Here is an example Configure Play Voucher Redeemed Info node screen.

Configuration fields

This table describes the function of each field in the Configure Play Voucher Redeemed Info screen.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.

Note: You can set the node to use the system currency using the `PAVRBalancesUseSystemCurrency` parameter. For more information, see *CCS Technical Guide*.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save . Note: This will be greyed out until all the announcement sets have been selected.

Recharge Menu

Node description

Warning: This feature node has now been deprecated and should no longer be used. This feature node will still function in existing control plans. For new control plans please use a combination of the **Profile Branching** and **Selection Dependent Routing** feature nodes.

The Recharge Menu feature node allows the caller to select a method of recharging an account.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either, error / failure, the Domain being used does not support this feature node, or the number of menu retries has exceeded the limit.
2	Abandon	The caller has terminated the call.
3	Escape	The caller has selected the Escape option by entering *.
4	Voucher	The caller has selected the Voucher Menu option by entering key 1.
5	Credit Card	The caller has selected the Credit Card Menu option by entering key 2 when they have a PIN set. This exit is only available when the caller has previously made a credit card recharge.
6	First Credit Card	The caller has selected the Credit Card Menu option by entering key 2, and has no PIN set. This exit is only available when the caller has never before made a credit card recharge.

Configuration screen

Here is an example Configure Recharge Menu node screen.

The screenshot shows the 'Configure Recharge Menu' dialog box. The 'Node name' field is set to 'Rechg Menu'. The 'Menu Title' section contains two dropdown menus for 'Announcement Set' and 'Announcement Entry', both currently set to '(Unspecified Announcement Set/Entry)'. The 'Voucher menu option' section also contains two dropdown menus for 'Announcement Set' and 'Announcement Entry', both set to '(Unspecified Announcement Set/Entry)'. The 'Creditcard menu option' section contains two dropdown menus for 'Announcement Set' and 'Announcement Entry', both set to '(Unspecified Announcement Set/Entry)'. The 'Invalid key' section contains two dropdown menus for 'Announcement Set' and 'Announcement Entry', both set to '(Unspecified Announcement Set/Entry)'. The 'Exit Branches' section is a table with the following data:

1	Unsupported	2	Abandon
3	Escape	4	Voucher
5	Creditcard	6	FirstCreditcard

At the bottom of the dialog are three buttons: 'Comments', 'Save', and 'Cancel'.

Configuration fields

This table describes the function of each field in the Configure Recharge Menu node screen.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save .

Step	Action
------	--------

Note: This will be greyed out until all the announcement sets have been selected.

Scratch Card Recharge

Node description

The Scratch Card Recharge node enables a caller to use a scratch card to recharge their account, and to change the product type if required. The caller is prompted to enter their scratch card number.

The maximum number of consecutive times a caller can enter an invalid number is configured by the `MaximumBadCodeRetries` parameter in the `ccsMacroNodes` section of `eserv.config`. See *CCS Technical Guide* for details.

Note: If the Set Wallet Type feature node is used prior to the Scratch Card Recharge node, then the product type of the alternative wallet is changed when the voucher is redeemed.

Notes:

If the subscriber:

- Enters an invalid number the configurable amount of times (and is not already Blacklisted), then they are set to Blacklisted and exited down the Blacklist branch.
- Has been blacklisted, they will also be required to enter the serial number of the scratch card. The subscriber has three attempts to enter a valid serial number.
- Is blacklisted and does not enter a valid scratch card number and serial number during any attempt, they are then set to Frozen and exited down the Frozen branch.
- Enters a valid scratch card number and serial number, then the voucher is redeemed.

When the voucher is redeemed, the product type may also be changed if the rules defined for product type changes are met. The product type is only changed if:

- the 'from' and 'to' product types are current product types for the account's service provider,
- the default wallet for the account is using one of the 'from' product types,
- and the 'to' product type is listed in the swap configuration for the 'from' product type.

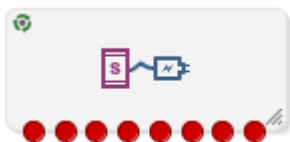
A successful product type change is replicated back through the SMS.

Note: When a voucher recharge attempt is made, the voucher's redeemed date is set to the current system date and time. The redeemed field for the voucher is set to one of:

- True for successful attempts
- False for unsuccessful attempts

This allows you to check if a voucher has been redeemed, or if a failed redeem attempt has been made.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

This node deals only with the wallet type currently set in the call context. If a different wallet is required, a Set Wallet Type node must be invoked before this node.

For more information, see *Set Wallet Type* (on page 80).

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type **BCD**. See *Charging Control Services User's Guide* for further details on charging domains.

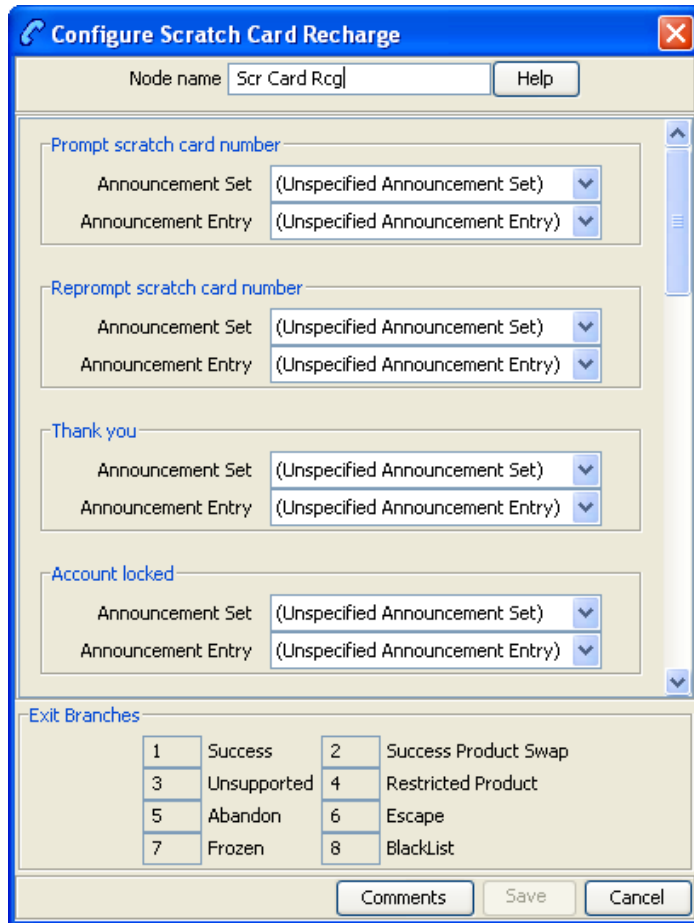
Node exits

This node has one entry and eight exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The caller has successfully exited the node or the wallet may not be recharged, or the voucher was successfully recharged but a product type swap request was unsuccessful.
2	Success Product Swap	The caller has successfully exited the node and requested a product type swap.
3	Unsupported	Either, error / failure, the Domain being used does not support this feature node, or the caller has not made an entry.
4	Restricted Product	The caller was unable to recharge the voucher because the caller's product type does not belong to the list of available product types for the voucher.
5	Abandon	The caller has terminated the call.
6	Escape	The caller has selected the Escape option.
7	Frozen	The caller's account has been set to Frozen and therefore cannot use this node.
8	Blacklist	The call has entered too many invalid scratch card numbers and has been Blacklisted.

Configuration screen

Here is an example Configure Scratch Card Recharge node screen.



Configuration fields

This table describes the function of each field in the Configure Scratch Card Recharge node screen.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.

Configuring the node

Follow these steps to configure the node.

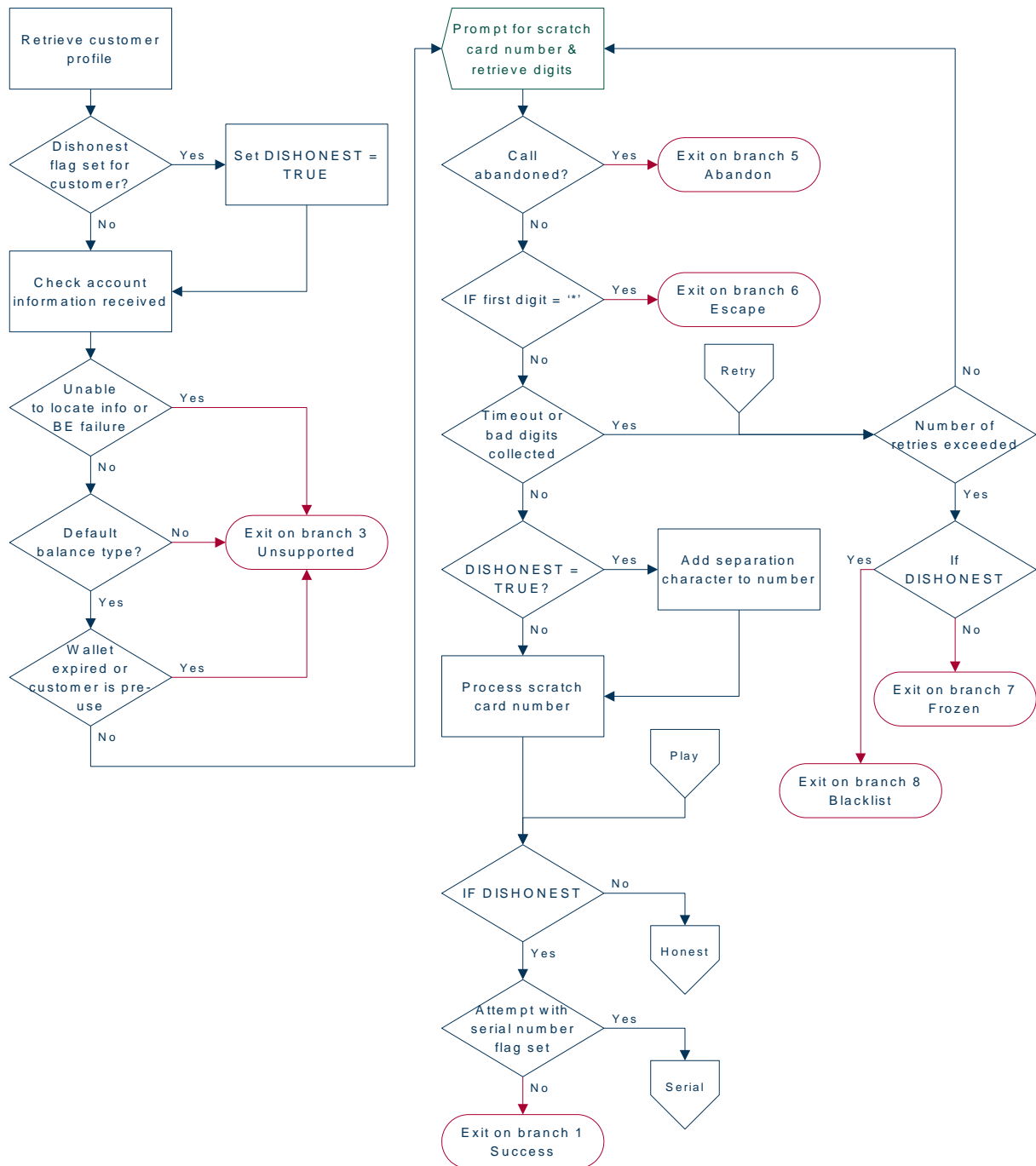
Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save .

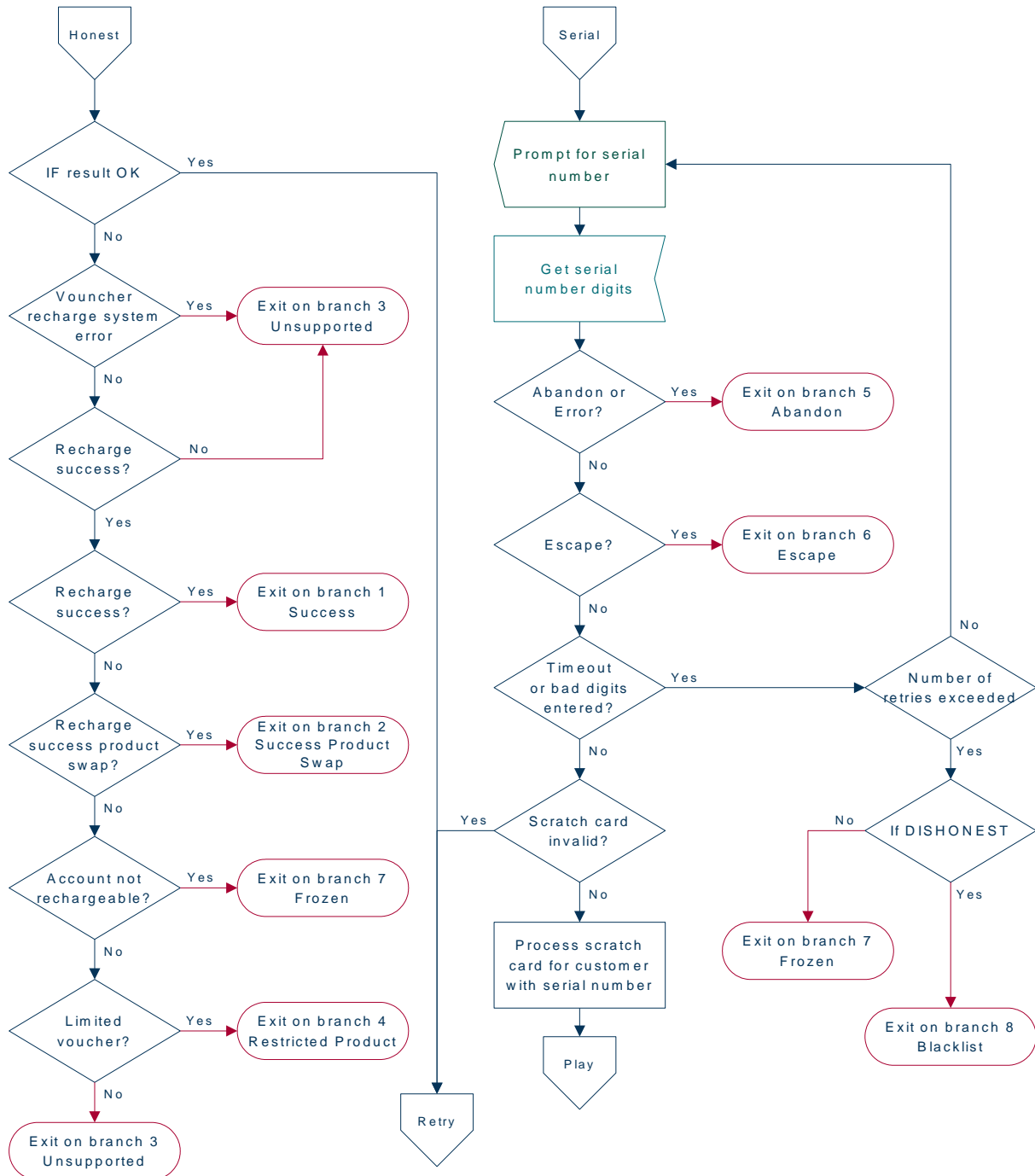
Step	Action
------	--------

Note: This will be greyed out until all the announcement sets have been selected.

Node logic

This diagram shows the internal logic processing of the node.





Scratch Card Recharge Alternate Subscriber

Node description

The Scratch Card Recharge Alternative Subscriber node enables a caller to use a scratch card to recharge another user's account, and to change the product type if required.

The caller is prompted to enter the MSISDN of the account, and re-enter for confirmation, that they wish to recharge. They are then prompted to enter the scratch card number. The caller has three attempts to enter a valid scratch card number.

Note: If the Set Wallet Type feature node is used prior to the Scratch Card Recharge - Alternate Subscriber node, then the product type of the alternative wallet is changed when the voucher is redeemed.

Node description

If the caller:

- Does not enter a valid scratch card number at any attempt (and is not already Blacklisted), then they are set to Blacklisted and exited down the Blacklist branch.
- Has been blacklisted, they will also be required to enter the serial number of the scratch card (voucher). The caller has three attempts to enter a valid serial number.
- Is blacklisted and does not enter a valid scratch card number and serial number during any attempt they are then exited down the Failure branch.
- Enters a valid scratch card number and serial number, then the voucher is redeemed.

When the voucher is redeemed, the product type may also be changed if the rules defined for product type changes are met. The product type is only changed if:

- the 'from' and 'to' product types are current product types for the account's service provider,
- the default wallet for the account is using one of the 'from' product types, and
- the 'to' product type is listed in the swap configuration for the 'from' product type.

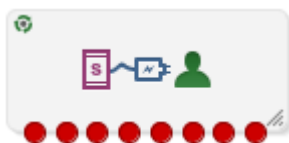
A successful product type change is replicated back through the SMP.

Note: When a voucher recharge attempt is made, the voucher's redeemed date is set to the current system date and time. The redeemed field for the voucher is set to one of:

- True for successful attempts
- False for unsuccessful attempts

This allows you to check if a voucher has been redeemed, or if a failed redeem attempt has been made.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

This node deals only with the wallet type currently set in the call context. If a different wallet is required, a Set Wallet Type node must be invoked before this node.

For more information, see *Set Wallet Type* (on page 80).

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type **BCD**. See *Charging Control Services User's Guide* for further details on charging domains.

Node exits

This node has one entry and eight exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The caller has successfully recharged the voucher and exited the node, but a product type swap, if requested, was unsuccessful.
2	Success Product Swap	The caller has successfully exited the node and requested a product type swap.
3	Unsupported	Either, error / failure, the Domain being used does not support this feature node, or the caller has not made an entry.
4	Restricted Product	The caller was unable to recharge the voucher because the caller's product type does not belong to the list of available product types for the voucher.
5	Abandon	The caller has terminated the call.
6	Escape	The caller has selected the Escape option.
7	Frozen	The caller's account is Frozen and therefore cannot use this node.
8	Blacklist	The call has entered too many invalid scratch card numbers and has been Blacklisted.

Configuration screen

Here is an example Configure Scratch Card Recharge - Alternate Subscriber node screen.

Node name: SCR - AN Help

Prompt scratch card number

Announcement Set: (Unspecified Announcement Set) Announcement Entry: (Unspecified Announcement Entry)

Reprompt scratch card number

Announcement Set: (Unspecified Announcement Set) Announcement Entry: (Unspecified Announcement Entry)

Thank you

Announcement Set: (Unspecified Announcement Set) Announcement Entry: (Unspecified Announcement Entry)

Account locked

Announcement Set: (Unspecified Announcement Set) Announcement Entry: (Unspecified Announcement Entry)

Exit Branches

1	Success	2	Success Product Swap
3	Unsupported	4	Restricted Product
5	Abandon	6	Escape
7	Frozen	8	BlackList

Comments Save Cancel

Configuration fields

This table describes the function of each field in the Configure Scratch Card Recharge - Alternate Subscriber node screen.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.

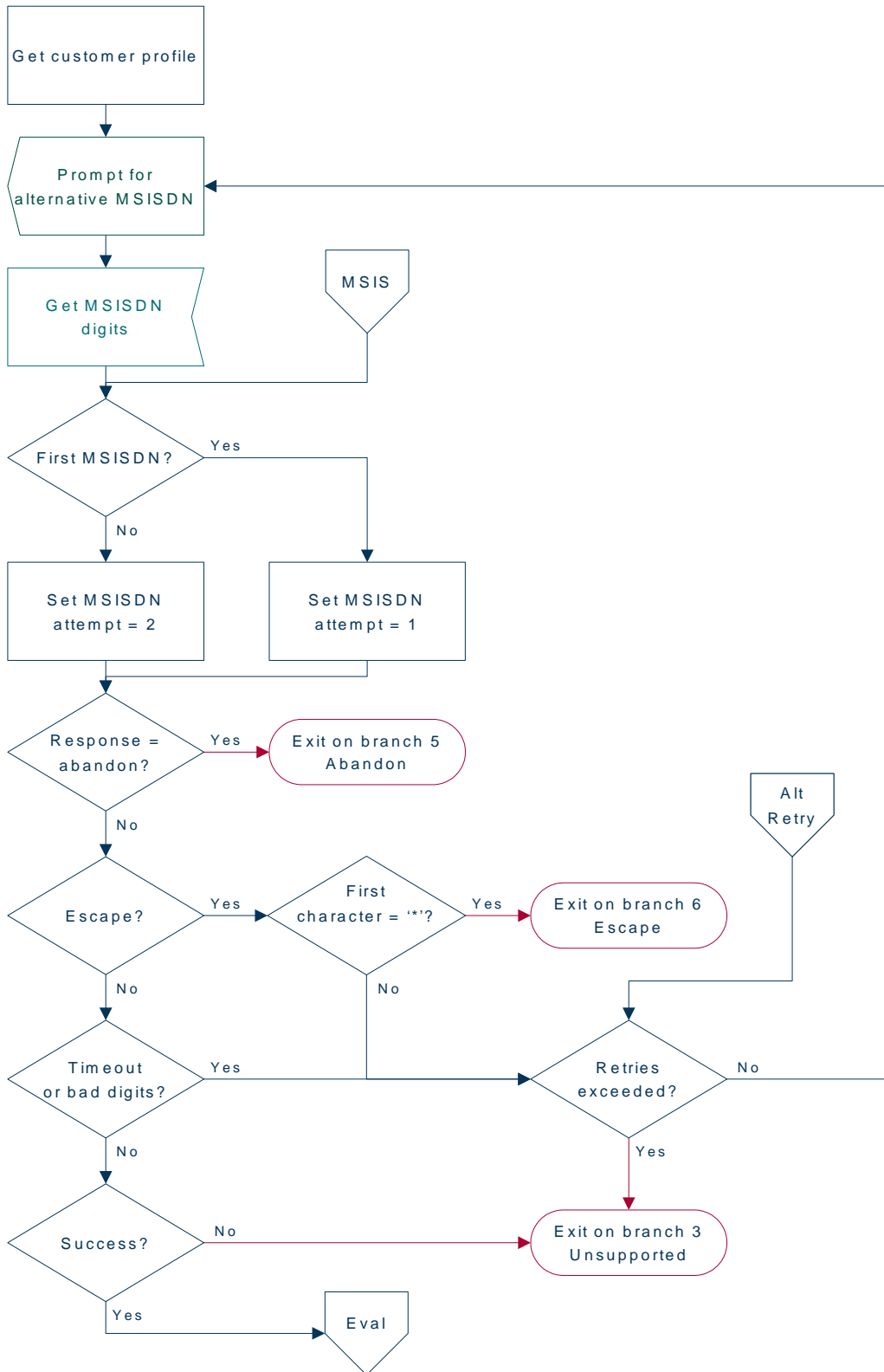
Configuring the node

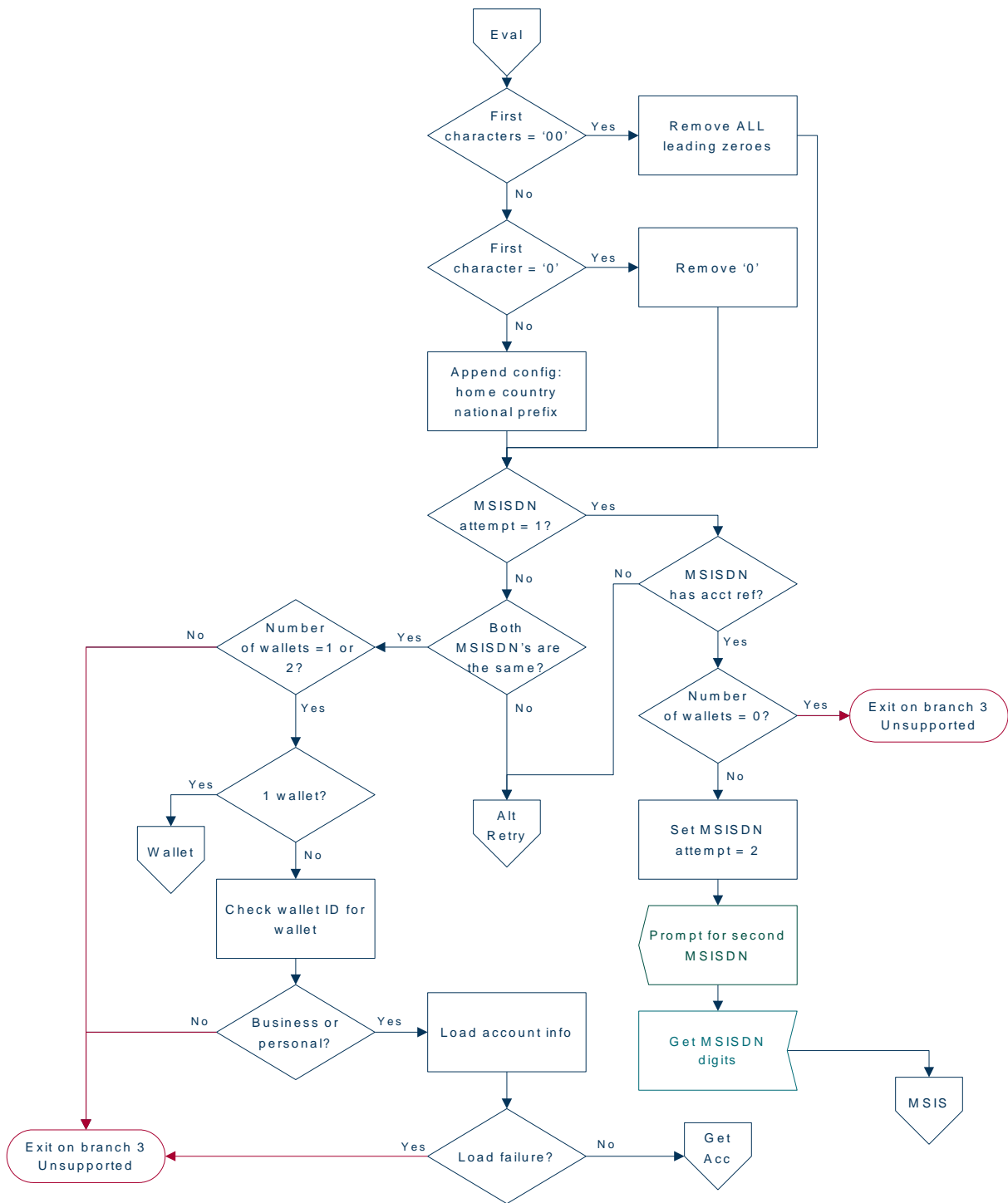
Follow these steps to configure the node.

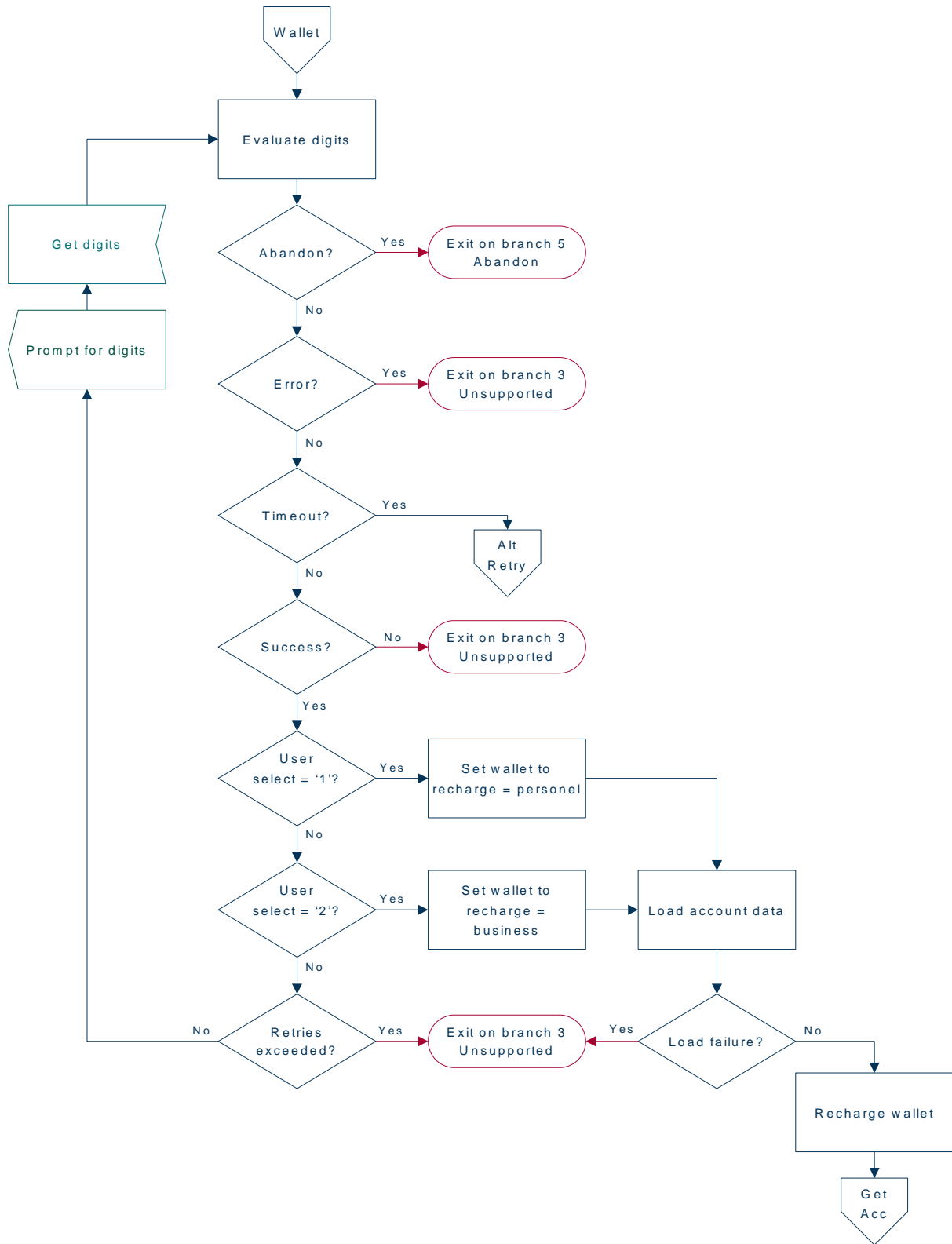
Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	Click Save .
	Note: This will be greyed out until all the announcement sets have been selected.

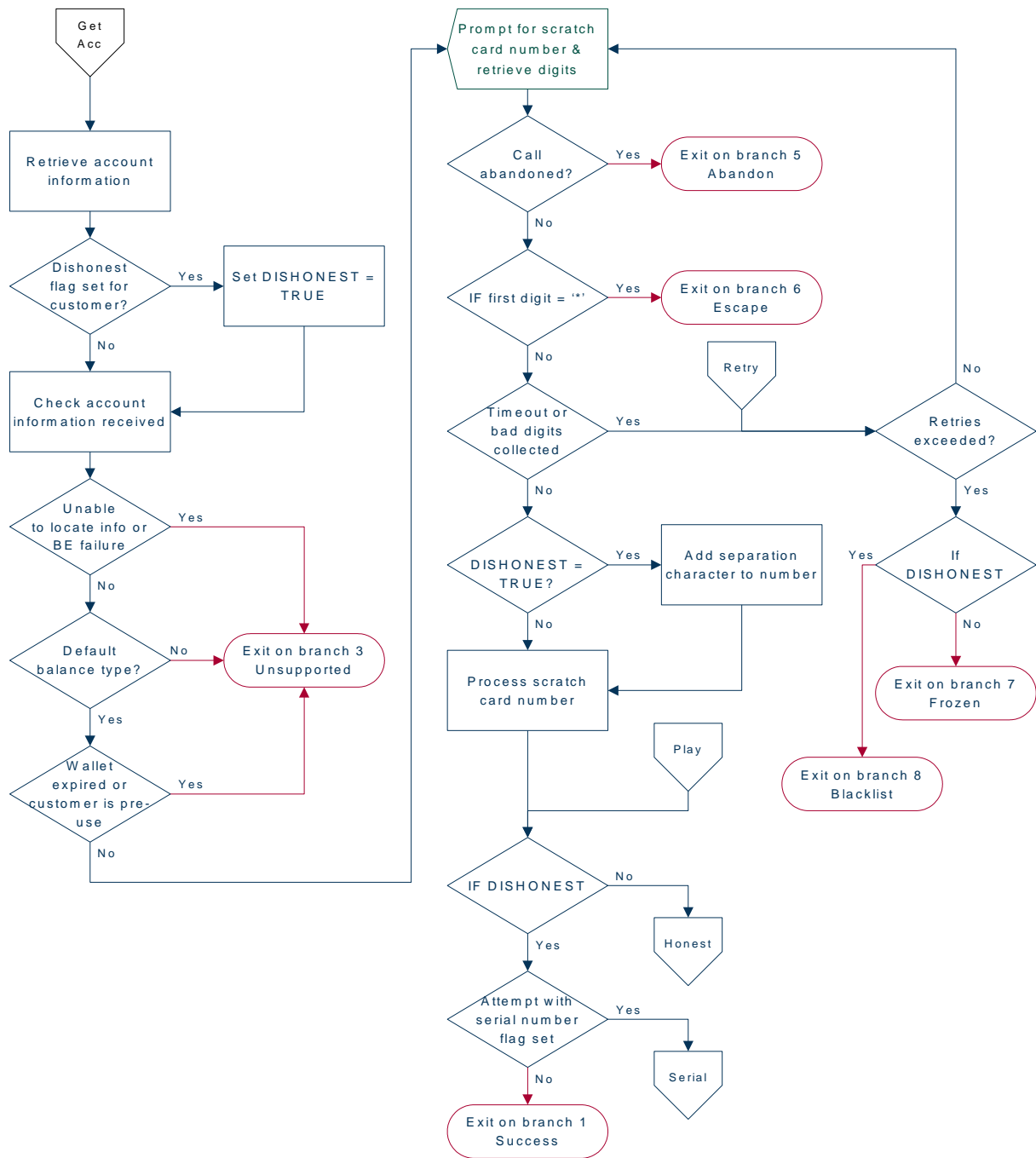
Node logic

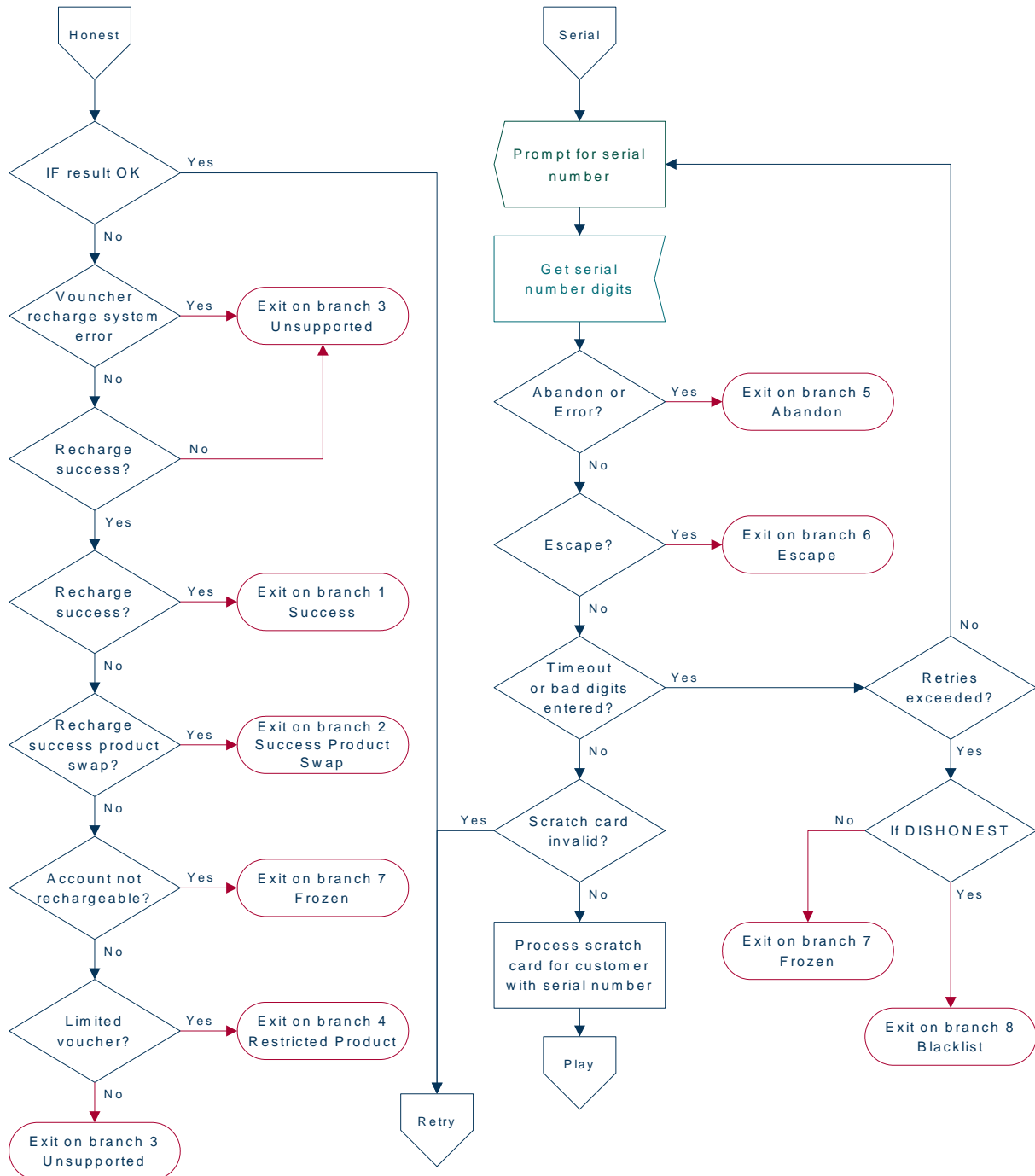
This diagram shows the internal logic processing of the node.











Select Voucher Scenario

Node description

The Select Voucher Scenario node enables a subscriber to select from amongst the different ways the voucher can be redeemed, by choosing a particular scenario.

Note: It is possible for a scenario to increment a balance or extend the expiry date for the balance, or both. In addition, a scenario may also possibly change the overall account expiry date.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Select Voucher Scenario nodes as required.

To work correctly, this node must be placed between two Voucher Recharge nodes in a working control plan.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	A scenario has been selected by the subscriber.
2	Failure	Any of a number of failures, for example: <ul style="list-style-type: none"> • Profile that should have contained the scenario list is missing or empty • Subscriber pressed escape
3	Unsupported	An unknown response was received from Voucher Management.
4	Abandon	The caller has hung up before completing the scenario selection.
5	Timeout	The subscriber failed to respond within the configured timeout period

Configuration screen

Here is an example Configure Select Voucher Scenario screen showing the fields for an SMS interaction.

Configure Select Voucher Scenario

Node name: SelScenario Help

Scenario Data

Scenario Data Type: Database

Scenario Location: Account Reference Profile

Scenario Field: 2nd Ann Data

Interaction Method

Voice USSD SMS

Text Notifications

Initial Prompt:

Selection Choice:

Acc Expiry Ext:

No Acc Expiry Ext:

Acc Type Change:

Resultant Message

Text Data Type: Database

Text Location: Account Reference Profile

Text Field: CCS CWTR Name

Exit Branches

1	Success	2	Failure
3	Unsupported	4	Abandon
5	Timeout		

Comments Save Cancel

Configuration screen

Here is an example Configure Select Voucher Scenario screen, showing the fields for a Voice or USSD interaction.

Configuring the node

The configuration fields are used to establish the variable part message/announcement that the subscriber receives.

Review the examples before proceeding with the node configuration.

Follow these steps to configure the node configuration.

Step	Action
1	Select the Scenario Data from the Data Type, Location and Field drop down lists. Note: This where the valid scenarios are located.
2	Select the Interaction Method to use with the subscriber. Either of: <ul style="list-style-type: none"> • Voice • USSD, or

Step	Action
	<ul style="list-style-type: none"> • SMS
	Result: The lists and fields for the selected option are made available.
3	Follow the relevant instructions for the method selected.

Voice or USSD

Voice or USSD method

- Select the announcement from each of the announcement **Set** and **Entry** drop down lists:
 - **Initial Prompt:** Select the first message.
 - **Selection Choice:** Select the scenario selection choices message.
 - **Balance Expiry Ext:** Select the balance expiry will be extended message.
 - **No Bal Expiry Ext:** Select the balance expiry will not be extended message.
 - **Account Expiry Ext:** Select the account expiry will be extended message.
 - **No Account Exp Ext:** Select the account expiry will not be extended message.
 - **Account Type Change:** Select the account type will be changed message.
 - **Final Prompt:** Select the last message to the subscriber.
- Select the **Selected Scenario** profile from the **Data Type**, **Location** and **Field** drop down lists.

Note: This is where the scenario number to use for the voucher redemption will be saved.
- Click **Save**.

SMS

SMS method

- In the **Text Notifications** panel, enter the text fields which will be used to construct a short message to the subscriber.
Type the text for the initial prompt to the subscriber in the **Initial Prompt** field.
- Type the text for the response choices available to the subscriber in the **Selection Choice** field.
- Type the text for any extension on account expiry available to the subscriber in the **Acc Expiry Ext** field.
- Type the text for no extension on account expiry available to the subscriber in the **No Acc Expiry Ext** field.
- Type the text for any account type change available to the subscriber in the **Acc Type Change** field.
- Select the **Resultant Message** profile from the **Data Type**, **Location** and **Field** drop down lists.

Note: This is where the subscriber returned SMS containing the scenario number to use will be saved.
- Click **Save**.

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Example configuration values

This table shows a textual example of the variable parts to be used when configuring the **Voice** and **USSD** announcement fields.

Announcement	Example
Initial Prompt	"Your voucher has several options, please select from the following"
Selection Choice	"Press <choice> for"
Balance Expiry Ext	"with an expiry extension of <days> days"
No Bal Expiry Ext	"with no expiry"
Account Expiry Ext	"with an extension to the account expiry of <days> days"
No Account Exp Ext	"with no extension to the account expiry"
Account Type Change	"with a change of Product Type to "

Note: The available balance types are configured on the Balance Type tab in CCS. The cost strings used to report balance values are configured on the Balance Type Translations tab in CCS. Refer to the Wallet Management chapter in the *CCS User's Guide* for details.

The above example allows the following announcement to be created:

"Your voucher has several options, please select from the following:

- Press 1 for 10 sms with an expiry extension of 10 days.
- Press 2 for 5 dollars and 5 sms with a change of Product Type to Platinum.
- Press 3 for 20 sms with an expiry extension of 5 days."

Example SMS values

This table shows a textual example of the variable parts to be used when configuring the SMS Text Notifications fields.

SMS/Announcement	Example
Initial Prompt	"Your voucher has several options, please select from the following"
Selection Choice	"Text <choice> for"
Acc Expiry Ext	"with an extension to the account expiry of <days> days"
No Acc Expiry Ext	"with no extension to the account expiry"
Acc Type Change	"with a change of Product Type to "

Note: The available balance types are configured on the Balance Type tab in CCS. The cost strings used to report balance values are configured on the Balance Type Translations tab in CCS. Refer to the Wallet Management chapter in the *CCS User's Guide* for details.

The above example allows the following SMS to be created as a single message:

"Your voucher has several options, please select from the following:

- Text 1 for 10 sms with an extension to the account expiry of 10 days.
- Text 2 for 5 dollars and 5 sms with a change of Product Type to Platinum.
- Text 3 for 20 sms with an extension to the account expiry of 5 days."

Warning: This may require careful use of the node in a Control Plan to split the options over several SMS messages to avoid the SMS length limitation.

Example use of node

Voucher redeem options can be varied, for example:

- Voucher redeems for 120 minutes of international calling (180 minutes during our “Talk-Fest July” promo special)
- Voucher redeems for 200 short messages made within a 30 day period (300 SMS during our “Text-Fest August” promo special), or
- Gold customers receive an additional 10% on top of their chosen option.

The potential scenarios are complex enough that CCS cannot be expected to know beforehand what scenarios apply, nor what the final values to the subscriber might be. There may be only one scenario that applies, or two, or three.

CCS requires some guidance from Voucher Management, as shown in the following example interaction for redeeming a voucher:

Step	Action
1	Subscriber requests CCS to redeem a voucher for them.
2	CCS passes request to Voucher Management, indicates no particular scenario.
3	Voucher Management determines that this voucher has multiple scenarios, informing CCS that this is the case, along with some information to help prompt the subscriber.
4	For Voice/USSD interactions: <ul style="list-style-type: none"> • CCS prompts the subscriber to choose the scenario they prefer. For SMS interactions: <ul style="list-style-type: none"> • CCS constructs a short message containing all the scenario options and sends this back to the subscriber.
5	The subscriber re-requests CCS to redeem the same voucher and includes their preferred scenario option.
6	CCS passes request to Voucher Management, this time with scenario selection information.
7	Voucher Management performs redeem and updates balance values.
8	CCS notifies subscriber of success, and announces updated balance values by using the Send Short Message Notification node.
	<p>Note: If you recharge successfully on a UBE domain which has real-time wallet notifications configured for balance changes, CCS will send a notification for the balance change as well as the notification sent from the Send Short Message Notification node. For more information about the real-time wallet notifications, see <i>Real-Time Wallet Notifications</i>.</p>

Note: If there is only one scenario, then steps three to five can be skipped.

Voucher Reserve - FN

Node description

The Voucher Recharge node allows the caller to recharge their account using a voucher number, and to change their product type if required.

Note: When a voucher recharge attempt is made, the voucher's redeemed date is set to the current system date and time. The redeemed field for the voucher is set to one of:

- True for successful attempts
- False for unsuccessful attempts

This allows you to check if a voucher has been redeemed, or if a failed redeem attempt has been made.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and ten exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The voucher recharge has been successful and the caller's account has been credited.
2	Success Product Swap	The caller has successfully exited the node and requested a product type swap.
3	Unsupported	The recharge has not been successful for any of the following reasons: <ul style="list-style-type: none"> • The Domain being used does not support this feature node • The number of menu retries has exceeded the limit • Information routing error • Timeout • Recharge Interface Not Found • Interface can not be used to recharge this voucher • Any other failure or error condition not listed for the other exits.
4	Restricted Product	The caller was unable to recharge the voucher because the caller's product type does not belong to the list of available product types for the voucher.
5	Abandon	This exit is used for many error conditions, including the following: <ul style="list-style-type: none"> • Customer/Retailer (to be recharged/credited) was not found • Customer/Retailer (to be recharged/credited) is not initialized • Customer/Retailer (to be recharged/credited) is deactivated • Customer/Retailer (to be recharged/credited) is suspended on IN • Customer/Retailer (to be recharged/credited) is suspended on Voucher Management • Limit of number of recharge is reached • Bad customer state • Product is not rechargeable • Invalid error code for a recharge subscriber update

Exit	Cause	Description
		<ul style="list-style-type: none"> • No recharge part for this subscriber • One of balances involved in recharge is deactivated • One of balances involved in recharge is missing • Subscriber is locked from Voucher Management • Customer/Retailer credit is too large • The value minimum of the transaction is not reached • The value maximum of the transaction value reached • Recharge value is out of range • Credit out of range • Voucher not found
6	Escape	The caller has selected the Escape option.
7	Frozen	The caller's account status is Frozen, and they are therefore forbidden to use a voucher recharge.
8	Need Scenario Info	This voucher has several potential ways to be recharged. This exit is used to find out which one to use. Must always exit to a <i>Select Voucher Scenario</i> (on page 194) node.
9	Voucher Invalid	The voucher number is invalid, for any of the following reasons: <ul style="list-style-type: none"> • Not enough digits in the source buffer • Unexisting recharge properties • Voucher Bad Found • Tariff Plan Not Exist For This Pack • Bad Voucher Type • Voucher is in pending state • Voucher is in frozen state • Voucher is blocked • Voucher has expired • Voucher is disabled • Voucher type is not applicable • Voucher has a bad brand Id
10	Already Redeemed	The voucher number has already been redeemed.

Configuration screen

Here is an example Configure Voucher Recharge node screen (top part).

Node name: Vchr Rech Help

Source

Interactive Stored

Get voucher number

Profile Data Type: Database

Profile Location: Account Reference Profile

Profile Field: CC Account Code

Announcement Set: (Unspecified Announcement Set)

Announcement Entry: (Unspecified Announcement Entry)

Thankyou

Announcement Set: (Unspecified Announcement Set)

Announcement Entry: (Unspecified Announcement Entry)

Exit Branches

1	Success	2	Success Product Swap
3	Unsupported	4	Restricted Product
5	Abandon	6	Escape
7	Frozen	8	Need Scenario Info
9	Voucher Invalid	10	Already Redeemed

Comments Save Cancel

Configuration screen

Here is an example Configure Voucher Recharge node screen (bottom part).

Configure Voucher Recharge

Node name: Vchr Rechg Help

Limited Product Type Failure

Announcement Set: (Unspecified Announcement Set) ▼
 Announcement Entry: (Unspecified Announcement Entry) ▼

Have scenario selection

Have scenario

Selected Scenario

Selected Scenario Data Type: Database ▼
 Selected Scenario Location: Account Reference Profile ▼
 Selected Scenario Field: Acct Ref DB Id ▼

Scenario Data

Scenario Data Data Type: None Selected ▼
 Scenario Data Location: None Selected ▼
 Scenario Data Field: ▼

Exit Branches

1	Success	2	Success Product Swap
3	Unsupported	4	Restricted Product
5	Abandon	6	Escape
7	Frozen	8	Need Scenario Info
9	Voucher Invalid	10	Already Redeemed

Comments Save Cancel

Configuring the node

Follow these steps to configure the node.

Step	Action
1	<p>Select the Source for the voucher recharge. Either of:</p> <ul style="list-style-type: none"> • Interactive, or • Stored. <p>Result: The related source fields for the selected option become available.</p>
2	<p>Select the Get voucher number options:</p> <ul style="list-style-type: none"> • If Interactive: Select from the announcement drop down lists the announcement to play to prompt the subscriber for the voucher number. • If Stored: Select from the profile Data Type, Location and Field drop down lists containing the voucher number.
3	<p>If Interactive: Select the from the Announcement drop down lists the various announcements to play to the subscriber:</p> <ul style="list-style-type: none"> • Thankyou announcement to play when the redeem process is concluded. • Account Locked announcement to play when the subscriber either is currently frozen, or has become frozen as a result of the voucher redeem.

Step	Action
	<ul style="list-style-type: none"> • Invalid Attempt - Created announcement to play when the voucher being redeemed has been created, but is not yet available for redemption. • Invalid Attempt - Used announcement to play when the voucher being redeemed has already been redeemed. • Invalid Attempt - Unavailable announcement to play when the voucher being redeemed is no longer available (i.e. has been stopped by the telco, or expired). • Invalid Attempt - Invalid Number announcement to play when the subscriber has provided an incorrect voucher number. • Maximum Iterations Reached announcement to play when the number of retries a subscriber is allowed has been reached. • Redeem System Error : Please try later announcement to play when the voucher redeem system is unavailable. • Limited Product Type Failure announcement to play when the subscriber product type is invalid for, or would become invalid due to, the voucher recharge.
	Note: If Stored selected, these options are all grayed out.
4	If the voucher redeem scenario is known, tick the Have scenario selection check box. Result: The Selected Scenario profile fields become available.
5	If available, from the Selected Scenario Data Type, Location and Field drop down lists, select the profile containing the scenario number to use for the voucher redemption.
6	From the Scenario Data Data Type, Location and Field drop down lists, select the profile containing the currently available scenarios for voucher redemption.
7	Click Save .
	Note: This will be greyed out until all the required fields have been completed.

Note: The list of data types is fixed at installation time for each feature node or screen.

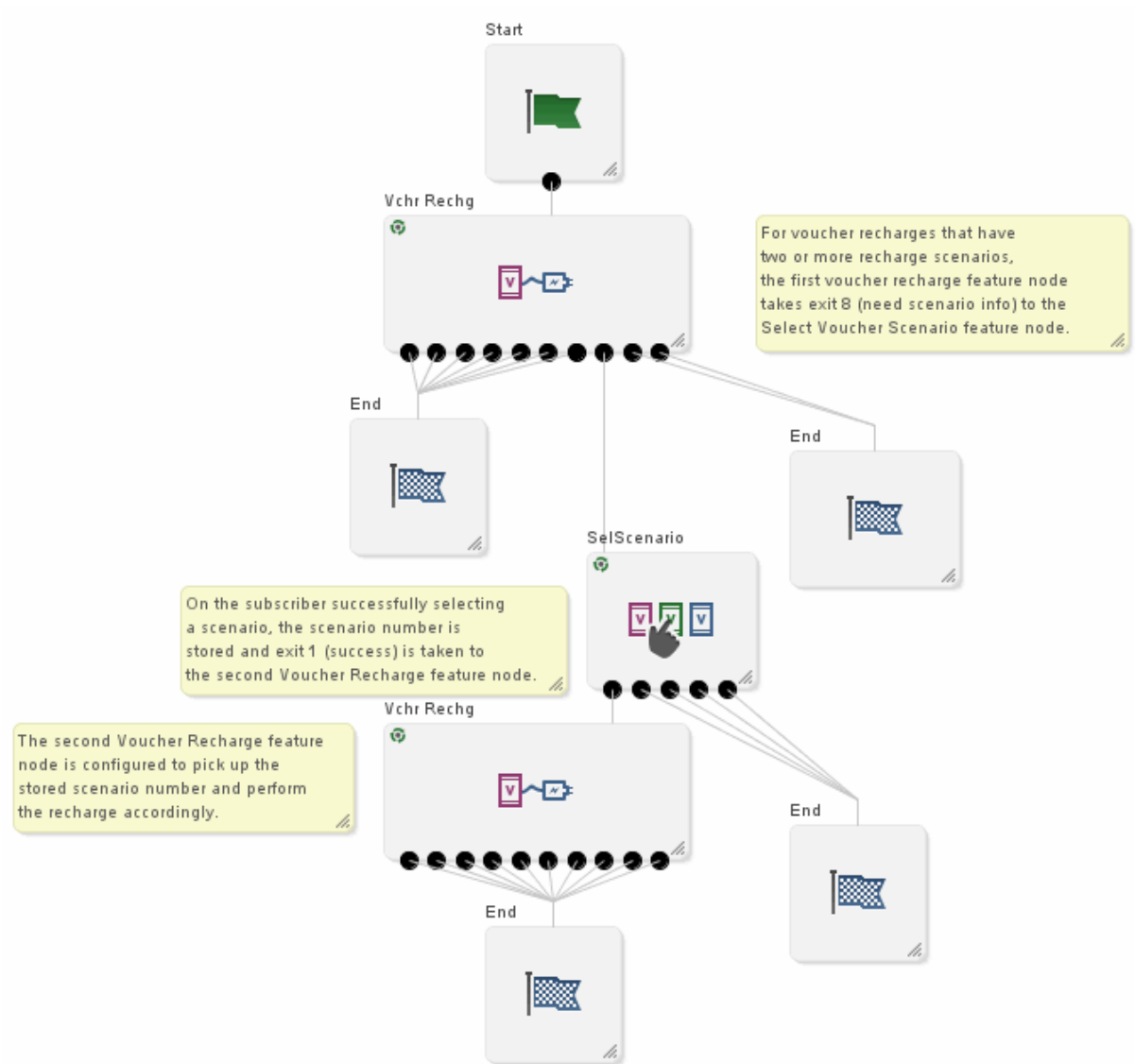
Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Example for voice/USSD

Here is an example control plan showing a basic method of voucher recharge when there are more than one way to redeem the voucher.

This control plan relates to voice or USSD invoked usage.

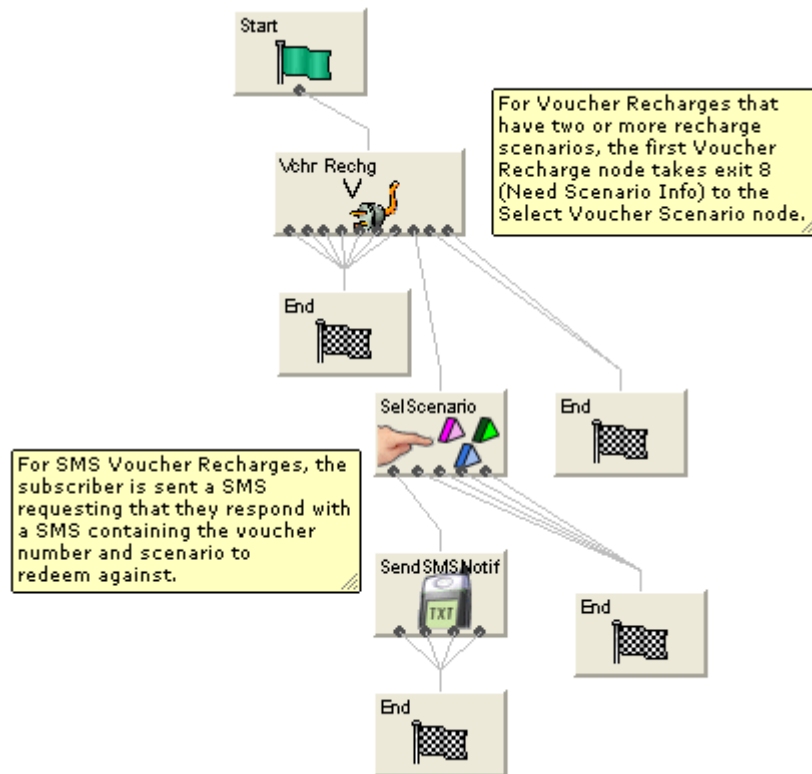


Example for SMS

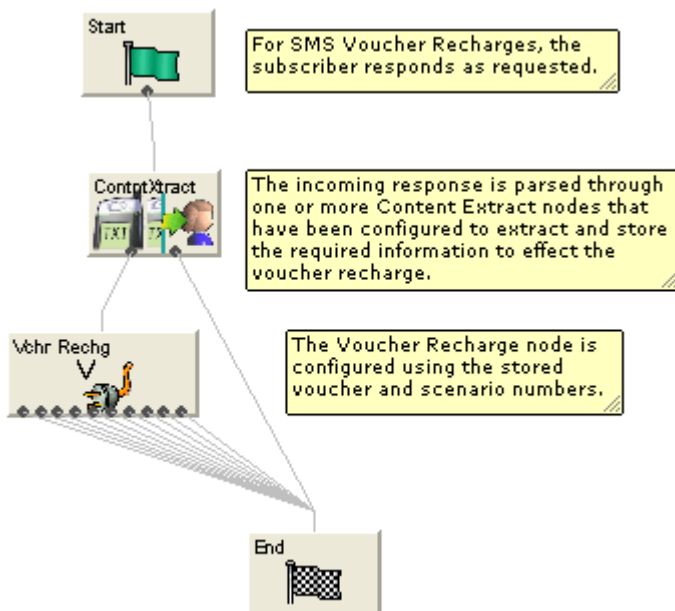
Here are example control plans showing a basic method of voucher recharge when there are more than one way to redeem the voucher.

These control plans relate to SMS invoked recharge usage.

The first control plan sets up the request to the subscriber to supply the redeem scenario by a further SMS.



The second control plan uses the supplied information to extract the scenario number and then to redeem the voucher.



Voucher Redeemed

Node description

Warning: This feature node has now been deprecated and should no longer be used. This feature node will still function in existing control plans. For new control plans please use the **Voucher Recharge** feature node.

The Voucher Redeemed feature node retrieves a voucher number from the specified location.

The number of redeem attempts is only used to determine how the feature node should branch.

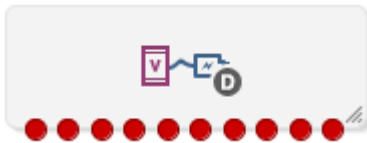
The number of attempts will be recorded each time the control plan passes through the feature node. Each time the control plan executes the feature node, the feature node will attempt only one redemption.

Note: When a voucher recharge attempt is made, the voucher's redeemed date is set to the current system date and time. The redeemed field for the voucher is set to one of:

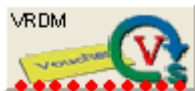
- True for successful attempts
- False for unsuccessful attempts

This allows you to check if a voucher has been redeemed, or if a failed redeem attempt has been made.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan. This node may have a tracking string added.

This node relies on an ACS number buffer containing the voucher digits, therefore it must be placed after a collect digits to buffer type of node.

Node exits

The node has one entry and ten exits. The number of exits cannot be changed.

Note: These exit descriptions are specific to the responses received from an Oracle VWS. For specific information about how responses from other billing engines map to these exits, see the technical guide for the interface for billing engine being used.

Exit	Cause	Description
1	Success	Voucher redeemed and subscriber account updated successfully.
2	Success Product Swap	Voucher redeemed and subscriber product type swapped.
3	Restricted Product	Voucher has a restricted product redemption list.
4	Unknown Wallet	Wallet has been deleted, not replicated correctly or some other

Exit	Cause	Description
		wallet error.
5	Invalid wallet State	Subscriber account has been frozen.
6	Invalid Serial	Voucher number is invalid.
7	Already Redeemed	The voucher number has already been redeemed.
8	Voucher Invalid	The voucher number is invalid (includes not enough digits in the source buffer).
9	Retry Exceeded	The number of redeem attempts has been exceeded (as defined by the Redeem Attempts node parameter).
10	Unsupported	Either error / failure or that the Domain being used does not support this feature node.

Configuration screen

Here is an example Configure Voucher Redeemed node screen.

Configure Voucher Redeemed

Node name: VRDMPVRB [Help]

Voucher Number

Number Source: Dialed Service Number

Redeem Attempts

Redeem Attempts: 0

Number of digits to cut

Number of Digits: 0

Exit Branches

1	Success	2	Success Product Swap
3	Restricted Product	4	Unknown Wallet
5	Invalid Wallet State	6	Invalid Serial
7	Already Redeemed	8	Voucher Invalid
9	Retry Exceeded	10	Unsupported

[Comments] [Save] [Cancel]

Configuration fields

This table describes the function of each field in the Configure Voucher Redeemed node screen.

Field	Description
Number Source	The ACS number buffer containing the voucher number.
Redeem Attempts	Maximum number of voucher number attempts before taking the retry exceed branch.
Number of Digits	The number of digits to remove from the front of the voucher number prior to redemption.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the ACS buffer that contains the voucher number digits from the Number Source drop down list.
2	Type the maximum number of voucher number entry retries in the Redeem Attempts field.
3	Type the number of digits to remove from the front of the voucher digits before attempting to redeem in the Number of Digits field.
4	Click Save .

Voucher Type Balance Information

Node description

The Voucher Type Balance Information node retrieves the balances associated with a Voucher Type and stores them in a selected profile.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Voucher Type Balance Information nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The voucher type balance information has been successfully stored in a profile.
2	Error	The voucher type could not be found or the balance information could not be extracted.

Configuration screen

Here is an example Configure Voucher Type Balance Information screen.

Configuration fields

This table describes the function of each field in the Configure Voucher Type Balance Information node screen.

Field	Description
Voucher Type Source options	Controls what the voucher source will be:
Select Voucher Type From area	Either: <ul style="list-style-type: none"> Specifies the profile to use when From Profile is selected, or The voucher type that balance information will be retrieved for when Manual Definition is selected.
Voucher Scenario Source options	Controls what the voucher scenario source will be:
Select Voucher Scenario From area	Either: <ul style="list-style-type: none"> The default voucher scenario will be used when None is selected, or

Field	Description
	<ul style="list-style-type: none"> Specifies the profile to use when From Profile is selected.
Store Balance In area	Specifies the profile to use to store the balance information.

Configuring the node

Follow these steps to configure the node.

Note: For more information on the Voucher Type Balance Information node configuration fields see *Configuration fields* (on page 211).

Step	Action
1	In the Voucher Type Source area select either: <ul style="list-style-type: none"> From Profile, or Manual Definition.
2	Select the Voucher Type for which balance information will be retrieved. If you selected: <ul style="list-style-type: none"> From Profile, select from the profile Data Type, Location and Field drop down lists that contains the Voucher Type you want, or Manual Definition, select the voucher type from the Voucher Type drop down list.
3	In the Voucher Scenario Source area select either: <ul style="list-style-type: none"> None, or From Profile.
4	If you selected From Profile , in the Select Voucher Scenario From area, select the profile Data Type , Location and Field drop down lists that contains the Voucher Scenario you want.
5	In the Store Balances In area select the profile Data Type , Location and Field drop down lists where the balance information will be stored.

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Voucher Type Branching

Node description

The Voucher Type Branching feature node branches based on the voucher type of the voucher retrieved from one of:

- The context within the control plan. For example, this would be the redeemed voucher if the Voucher Type Branching feature node is placed immediately after a Voucher Recharge feature node
- A profile field containing the voucher number

This feature node has three default branches. You can add up to twenty additional branches that you use to specify the voucher type branching rules.

The fast key for the Voucher Type Branching feature node is VTYB. You can use this value to search for the Voucher Type Branching feature node in your control plans.

Node icon



Restrictions

A control plan can contain as many Voucher Type Branching feature nodes as required.

Node exits

The Voucher Type Branching feature node has 3 to 23 exits. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See Editing node exits.

Exit	Cause	Description
1	Not found	The voucher does not exist.
2	Unsupported/Error	Indicates an internal or general system error.
3	Default	The voucher type does not correspond to a configured branch.
4 to 23	Matched	The voucher type matches one of the branches.

Configuration screen

Here is an example Configure Voucher Type Branching screen.

Configure Voucher Type Branching

Node name: VT Branch [Help]

Voucher Number Source:

Context Profile

Voucher Number Data Type: Database

Voucher Number Location: Account Reference Profile

Voucher Number Field: BF Number

All Voucher Types:

- LO 5 Bronze
- LO 5 Gold
- LO 5 Silver
- P2P1 Bronze
- P2P1 Gold
- P2P1 Silver
- P2P2 Bronze
- P2P2 Gold
- P2P2 Silver

Branch Voucher Types:

Number: 6

- Branch 6 - (unassigned)
 - P2P1 Gold
 - SB1 Gold

Exit Branches:

1 Not Found 2 Unsupported/Error
3 Default

[Comments] [Save] [Cancel]

Configuration fields

This table describes the function of each field.

Field	Description
Context	Select to branch based on the voucher type of the voucher retrieved from the control plan context.
Profile	Select to branch based on the voucher type of the voucher retrieved from the specified profile location.
Voucher Number Data Type	Specifies the data type of the voucher number profile block.
Voucher Number Location	Specifies the profile block that contains the voucher number profile field.
Voucher Number Field	Specifies the profile field where the voucher number is stored. Must be a STRING, NSTRING, or LNSTRING profile field type.
All Voucher Types	Lists all the voucher types defined in the Service Management System > PrePaid Charging > Voucher Management > Voucher Type screens for the current service provider.
Branch Voucher Types	Displays the branch number being configured and the associated voucher types.
Not Found	Provides the branch to take when the voucher number from the profile location does not exist.
Unsupported/Error	Provides the branch to take when an internal error occurs.
Default Branch	Provides the branch to take when the voucher type of the retrieved voucher is not included in any of the branch voucher type rules.

Configuring the node

Follow these steps to configure the Voucher Type Branching feature node.

Step	Action
1	Configure the required number of additional exits. The maximum number of additional exits is 20. See Editing node exits.
2	In the Configure Voucher Type Branching window, select the source for the voucher number on which to base branching. Select: <ul style="list-style-type: none"> • Context to branch based on the voucher type of the voucher number in the control plan context. • Profile to branch based on the voucher type of the voucher number in the specified profile field.
3	If you selected Profile in step 2, select the profile field location where the voucher number is stored from the Voucher Number Data Type , Voucher Number Location , and Voucher Number Field lists.
4	In the Branch Voucher Types area, use the Number up and down arrows to select the exit branch to configure. The voucher types configured for the selected branch appear in the panel below.
5	Add the required voucher types to the selected branch by selecting the voucher types in the All Voucher Types area, and clicking Move to branch >> .
6	To remove a voucher type from the selected branch; for example if you want to make the voucher type available to another branch, select the voucher type and then click <<

Step	Action
	Replace in set.
7	Repeat steps 4 to 6 for each branch.
8	Click Save .

Voucher Type Recharge

Node description

The Voucher Type Recharge node invokes the voucher type recharge billing engine action using the configured name of the voucher type. See *CCS User's Guide* for details on configuring voucher type recharges.

Note: When a voucher recharge attempt is made, the voucher's redeemed date is set to the current system date and time. The redeemed field for the voucher is set to one of:

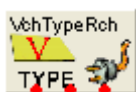
- True for successful attempts
- False for unsuccessful attempts

This allows you to check if a voucher has been redeemed, or if a failed redeem attempt has been made.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Voucher Type Recharge feature nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The billing engine returned a successful voucher type recharge indication.
2	Error	The billing engine returned a failed voucher type recharge indication.
3	Unsupported	The voucher type recharge capability is not supported.

Configuration screen

Here is an example Configure Voucher Type Recharge screen.

Configuring the node

Follow these steps to configure the Voucher Type Recharge feature node.

Step	Action
1	In the Voucher Type Source area select one of: <ul style="list-style-type: none"> • From Profile • Manual Definition
2	Select the voucher type to be recharged. If you selected: <ul style="list-style-type: none"> • From Profile, select the profile field that holds the voucher type from the Data Type, Location and Field lists. • Manual Definition, select the name of the voucher type to recharge from the Voucher Type list.

Note: The feature node always recharges vouchers against the default scenario for the voucher type.

3 Click **Save**.

For more information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Fields* (on page 2).

For more information about profile field configuration, see the discussion on profile tag configuration in *Convergent Charging Controller Advanced Control Services User's Guide*.

CCS Wallet Management Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller CCS Wallet Management feature nodes.

In this chapter

This chapter contains the following topics.

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Available Feature Nodes

CCS Wallet Management Feature Nodes List

This table lists the feature nodes available from the CCS Wallet palette group in the ACS Control Plan Editor.

Node name	Node description
Account Activate (on page 219)	The Account Activate feature node updates any account in pre-use state to the active state.
Account State Branch (on page 220)	The Account State Branch feature node routes the call based on the state of the caller's account.

Node name	Node description
Account Activate (on page 219)	The Account Activate feature node updates any account in pre-use state to the active state.
Account Status SMS (on page 227)	The Account Status feature node plays information regarding the caller's account and balances.
Account Status SMS (on page 227)	The Account Status SMS feature node sends a short message to the caller using templates defined for each language.
Apply Rewards (on page 229)	The Apply Rewards feature node applies the real time rewards that the current subscriber has qualified for.
Copy Balance Details (on page 230)	The Balance Copy feature node allows you to copy one or more values from a balance to profile fields.
Balance State Branch (on page 233)	The Balance State Branch feature node routes the call based on the state of the caller's account balance.
Balance Status (on page 237)	The Balance Status feature node plays announcements to provide the user with information about their account.
Balance Type Cascade Branching (on page 243)	Allows for threshold branching on the values in the subscriber's wallet of chargeable balance types (for example, 'General Cash'), expenditure balance types or cross-balance types.
Balance Type Cascade Branching (on page 243)	Allows for threshold branching on the values of the balances held in the selected balance type cascade.
Periodic Charge State Branch (on page 249)	The Cumulative Balances feature node provides the caller with details of their cumulative balances.
Periodic Charge State Branch (on page 249)	The Periodic Charge State Branching feature node branches on the state of a subscriber's subscription to a periodic charge.
Periodic Charge Subscription (on page 251)	The Periodic Charge Subscription feature node changes the state of a subscriber's periodic charge in one or more ways: <ul style="list-style-type: none"> • To a new specified state • Indicate the subscription request should trigger charging on the VWS for the subscription request • That the pro-rating feature enhancements on the VWS are to be incorporated into the current service • To specify for certain PC charge definitions the subscription month and day of week to be specified in the subscription request • For certain PC charge definitions, to allow the required charge month and day of week to be specified in the PC charge alignment request
Periodic Charge Transfer (on page 254)	The Periodic Charge Transfer feature node allows a subscriber to be moved between related periodic charges.
Play Next Promotion (on page 256)	The Play Next Promotion feature node calculates the subscriber's next promotion based on their current balances and if required, plays the announcement associated with the promotion.
Select Credit Transfer (on page 259)	Plays an announcement for each credit transfer associated with the subscriber's product type. The user can interrupt the announcements to select a service.
SMS Low Balance (on page 261)	The SMS Low Balance feature node sends an SMS to a subscriber when their balance falls below a specified threshold.

Node name	Node description
Account Activate (on page 219)	The Account Activate feature node updates any account in pre-use state to the active state.
Time Remaining (on page 264)	The Time Remaining feature node determines the remaining time available, at call start, based on a subscriber's current cash balance.
Tracker Account State Branch (on page 267)	The Tracker Account State Branch feature node routes the call based on the state of the caller's account. The wallet information will be retrieved from the subscriber's tracking domain if the wallet is distributed across separate tracking and charging domains.
Wallet Life Cycle Period Branching (on page 268)	The Wallet Life Cycle Period Branching feature node allows you to check if the subscriber is assigned to the WLC period of a WLC plan.
Wallet State Update (on page 271)	The Wallet State Update feature node sets the current wallet to the configured state.

Account Activate

Node description

The Account Activate feature node updates any account in pre-use state to the active state.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

This node deals only with the wallet type currently set in the call context. If a different wallet is required, a Set Wallet Type node must be invoked before this node.

For more information, see *Set Wallet Type* (on page 80).

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type **BCD**. See *Charging Control Services User's Guide* for further details on charging domains.

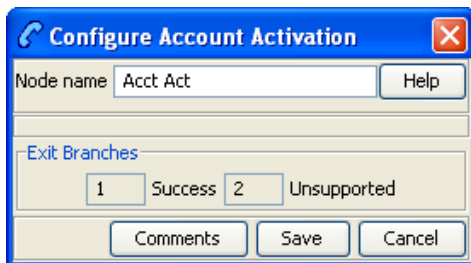
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The caller has successfully exited the node.
2	Unsupported	Either, error / failure, or the domain being used does not support this feature node.

Configuration screen

Here is an example Configure Account Activation node screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Account State Branch

Node description

The Account State Branch feature node routes the call based on the state of the caller's account.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and eight exits. The number of exits cannot be changed.

Note: These exit descriptions are specific to the responses received from an Oracle VWS. For specific information about how responses from other billing engines map to these exits, see the technical guide for the interface for billing engine being used.

Exit	Cause	Description
1	Active	The account is active.
2	Frozen	The account has been Frozen due to dishonesty.
3	Preuse	The account has not yet been used.
4	Suspended	The account is Suspended.
5	Dormant	The account is Dormant.
6	Terminated	The account has been Expired.
7	Unsupported	Either, error / failure, or the Domain being used does not support this feature node.
8	Abandon	The caller has abandoned the call.

Restrictions

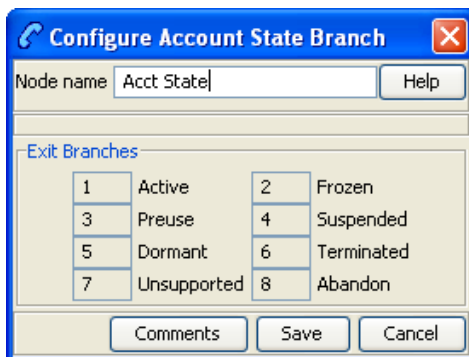
This node may be used any number of times within a control plan.

This node deals only with the wallet type currently set in the call context. If a different wallet is required, a Set Wallet Type node must be invoked before this node.

For more information, see *Set Wallet Type* (on page 80).

Configuration screen

Here is an example Configure Account State Branch node screen.

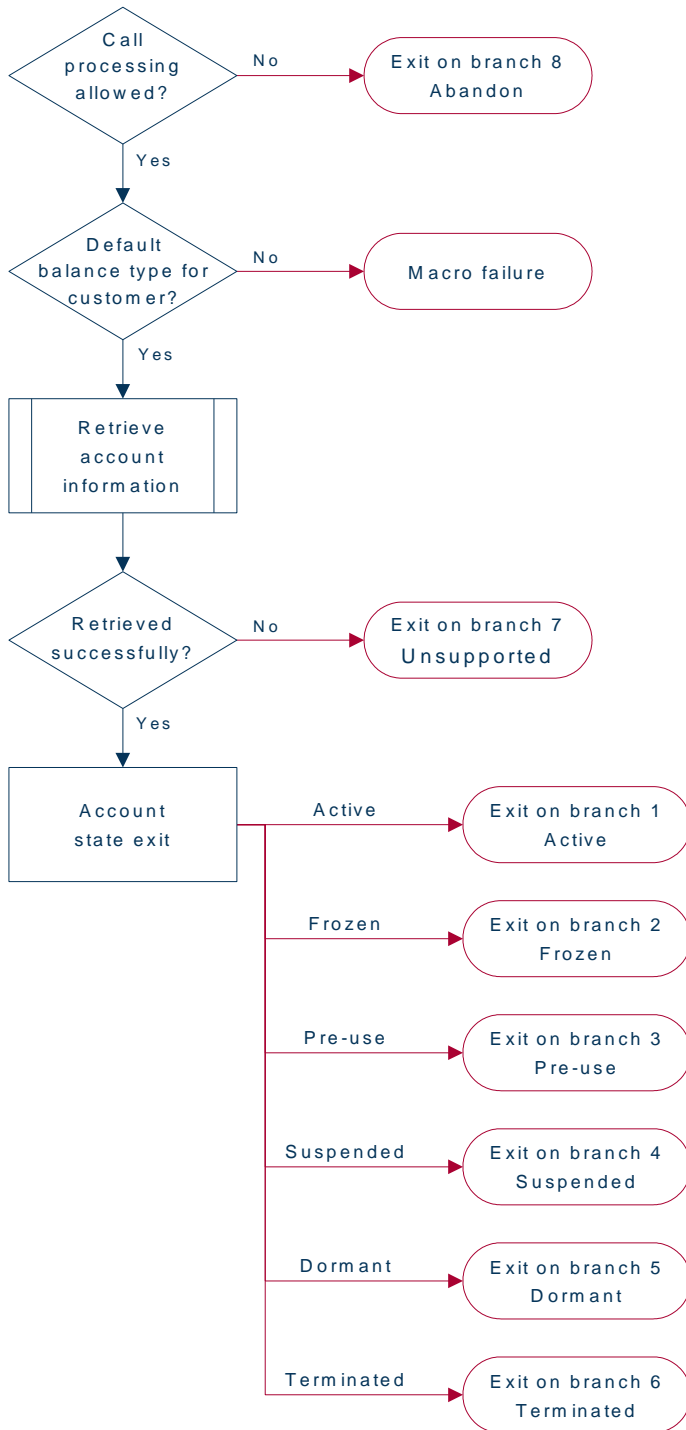


Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Node logic

This diagram shows the internal logic processing of the node.



Account Status

Node description

The Account Status feature node plays information regarding the caller's account and balances. Specifically, it will play a no-credit announcement, if appropriate, and inform the caller of their:

- Account expiry date
- Default balance expiry
- Balance amounts

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

This node deals only with the wallet type currently set in the call context. If a different wallet is required, a Set Wallet Type node must be invoked before this node.

For more information, see *Set Wallet Type* (on page 80).

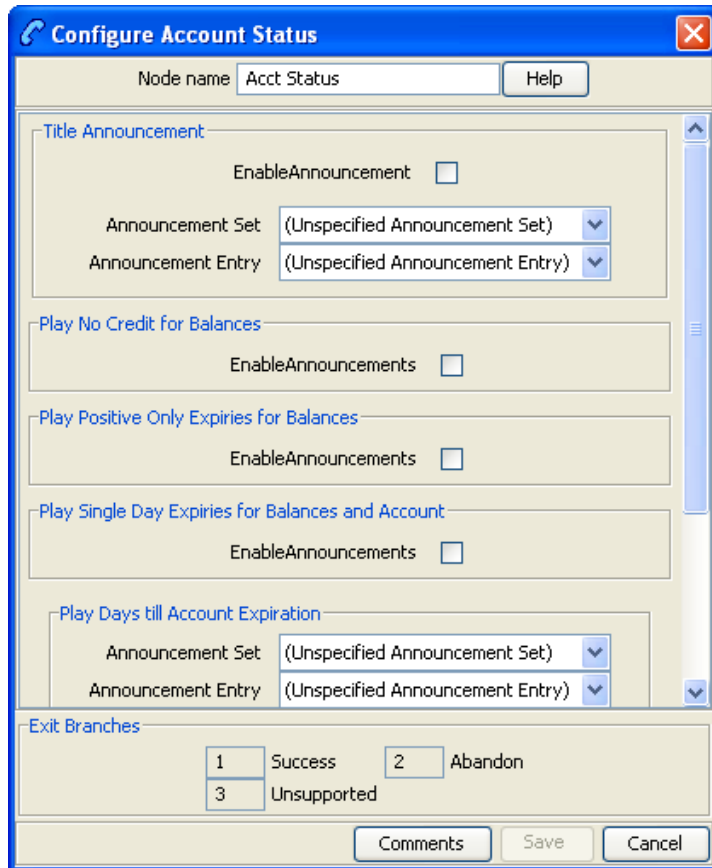
Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	All information has been played successfully.
2	Abandon	The caller has abandoned the call.
3	Unsupported	Either, error / failure, or the domain being used does not support this feature node.

Configuration screen

Here is an example Configure Account Status node screen.



Configuration fields

This table describes the function of each field in the Configure Account Status node screen.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.
EnableAnnouncements	Allows the selected announcement to be played.
SkipAnnouncement	Prohibit playing of the balance announcement.

Configuring the node

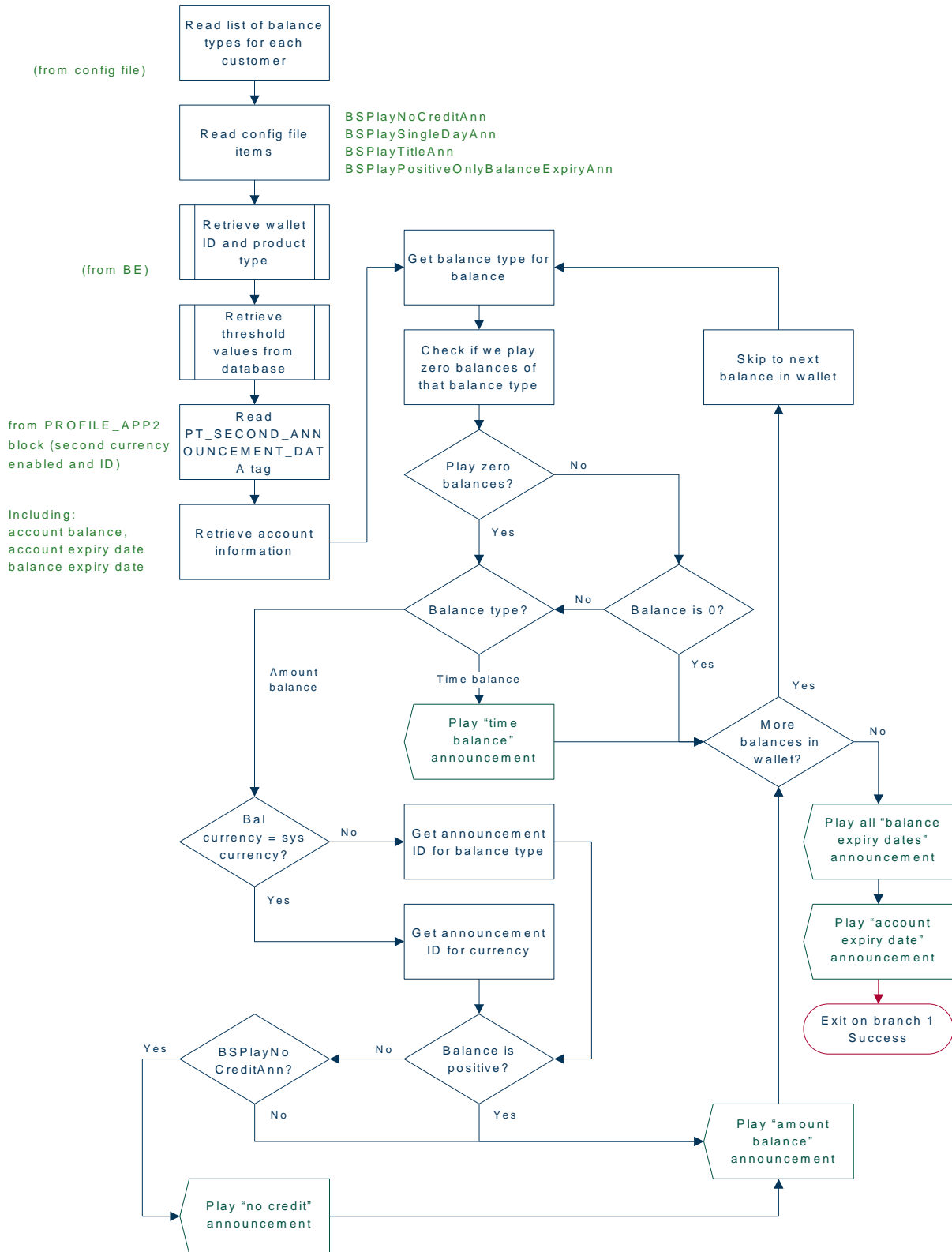
Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	For each relevant announcement, select the Enable Announcement check box as required.
3	Select the Skip Announcement check box as required. When checked, this Skip Balance

Step	Action
	Announcement option will play account status and not include the balance information within the announcement set.
4	Click Save .
	Note: This will be greyed out until all the announcement sets have been selected.

Node logic

This diagram shows the internal logic processing of the node.



Account Status SMS

Node description

The Account Status SMS feature node sends a short message to the caller using templates defined for each language. The balance types played in the messages are stored in `eserv.config`.

The templates available for selection are configured through the **ACS > Configuration > Notification** screens.

The available parameters are:

- Wallet type
- Balances and balance expiries

For more information on the available parameters see *Message parameters* (on page 228).

Note: This node requires an existing short message service.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node deals only with the wallet type currently set in the call context. If a different wallet is required, a Set Wallet Type node must be invoked before this node.

For more information, see *Set Wallet Type* (on page 80).

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either, error / failure, or the domain being used does not support this feature node. A text message has not been sent.
2	Success	A text message has been successfully sent to the short message service.

Configuration screen

Here is an example Configure Account Status Text Message screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Using the drop down lists in the Notification panel, select the Application where the notification type for the SMS is defined. Note: ACS will be used by default.
2	Select the Notification Type from the drop down list.
3	Click Save .

Message parameters

Message parameters included in the notification template message text are searched for and replaced with an appropriate value.

Here is the list of available parameters.

Parameter	Description
\$1	<p>The wallet description.</p> <p>Note: This is configured on the Wallet Name Translations tab in the Wallet Management screen in CCS. You must configure an entry for all languages used for sending notifications. See <i>CCS User's Guide</i> for details.</p>
\$2	<p>The balance details for each balance type reported. Details include:</p> <ul style="list-style-type: none"> • Balance description • Balance amount • Balance expiry (either the number of days to expiry or the no balance expiry text) <p>Note: The balance details string is configured on the Balance Type Translations tab in the Wallet Management screen in CCS. You must configure an entry for all languages used for sending notifications. See <i>CCS User's Guide</i> for details.</p>

Message example

Here is an example template and the corresponding message generated by the Account Status SMS node.

Example

A template of:

A/c type \$2 - balance: \$1
will send the message:

"A/c type: Primary wallet - balance: Eng Gen Bal GBP 1873.56-no expiry"

Apply Rewards

Node description

The Apply Rewards feature node applies the real time rewards that the current subscriber has qualified for.

The node will determine whether or not the subscriber qualifies for a configured reward based on their product type and the current value of their balance. As a result of applying a reward, the subscriber's product type may change.

Note: A reward will not be applied if the current date falls outside the reward period.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Apply Rewards nodes as required.

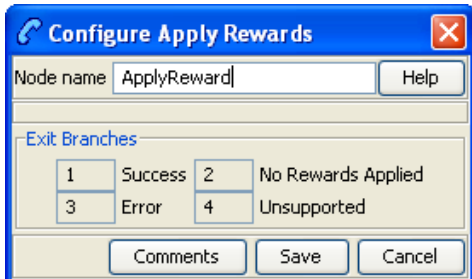
Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The rewards have been successfully applied.
2	No Rewards Applied	The subscriber does not qualify for any rewards.
3	Error	An error/failure occurred when attempting to apply rewards.
4	Unsupported	The Domain being used does not support this type of reward.

Configuration screen

Here is an example Configure Apply Rewards screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Copy Balance Details

Node description

The Copy Balance Details feature node allows you to copy values from a balance to profile fields. You can use the extracted balance information later in the control flow for comparison with other data.

You can copy the following values to a specified profile field:

- Total user balance (copy to any numeric or string profile fields)
- Total system balance (copy to any numeric or string profile fields)
- Unreserved user balance (copy to any numeric or string profile fields)
- Unreserved system balance (copy to any numeric or string profile fields)
- Balance expiry date (copy to any date profile field)

- Maximum credit for limited credit balances (copy to any numeric or string profile fields)
- Balance valid from date (copy to any date profile field)
- Wallet expiry date (copy to any date profile field)

In addition, you can copy balance buckets to a profile field. The values you can select to copy are based on the balance bucket's expiration date. **Earliest expiring bucket** selects the balance bucket that has the earliest future expiration date. **Latest expiring bucket** selects the balance bucket that has the latest (furthest in the future) expiration date. There may be buckets with no expiry date set (meaning they will never expire). The latest expiring bucket is the bucket with the latest set expiry date, even if there are buckets that will never expire. **First future bucket** selects the balance bucket that has the earliest future start date. The feature node copies values only from active buckets.

You can copy the following balance bucket values to a specified profile field:

- Earliest expiring bucket user value (copy to any numeric profile field)
- Earliest expiring bucket system value (copy to any numeric profile field)
- Earliest expiring bucket expiry date (copy to any date profile field)
- Latest expiring bucket user value (copy to any numeric profile field)
- Latest expiring bucket system value (copy to any numeric profile field)
- Latest expiring bucket expiry value (copy to any numeric profile field)
- First future bucket user value (copy to any numeric profile field)
- First future bucket system value (copy to any numeric profile field)
- First future bucket start date (copy to any date profile field)
- First future bucket expiry date (copy to any date profile field)

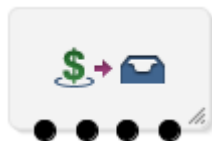
Note:

Buckets that never expire and buckets that are currently inactive are excluded when determining earliest and latest expiring buckets.

When determining the first future bucket, if buckets have the same start date but different expiry dates, the bucket with the earliest expiry date is copied.

If multiple buckets have the same start date and the same expiry date, then the values of those buckets are summed and the total is copied.

Node icon



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Name	Cause
1	Success	All balance data values have been stored in the target profile fields.
2	Not Found	The balance does not exist.
3	Error	An internal error has occurred.
4	Unsupported	Billing engine does not meet the requirements of the balance copy feature node.

Configuration screen

Here is an example Configure Copy Balance Details screen.

The screenshot shows the 'Configure Copy Balance Details' window. At the top, the 'Node name' is 'CopyBalDtls' and there is a 'Help' button. Below this are radio buttons for 'All' (selected), 'Chargeable', 'Expenditure', 'CrossDiscount', and 'Internal'. A 'Balance Type' dropdown menu is set to 'Bad Pin'. The main configuration area contains a checkbox and four dropdown menus: 'Source Field' (Total User Balance), 'Target Data Type' (Database), 'Target Location' (Account Reference Profile), and 'Target Field' (Acct Ref DB Id). At the bottom, there are 'Delete Selected' and 'Add' buttons. Below these is the 'Exit Branches' section, which displays four entries: 1 Success, 2 Not Found, 3 Error, and 4 Unsupported. At the very bottom are 'Comments', 'Save', and 'Cancel' buttons.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Filter the list of available balance types using the All , Chargeable , Expenditure , CrossDiscount , or Internal options. Each option will present different balance types available to copy. For example, All provides no filtering and presents all balance types available to copy. Chargeable presents only those balance types available for charging operations.
2	Select the balance type whose value you want to copy from the Balance Type list.
3	For each balance item that you want to copy, perform the following steps: <ol style="list-style-type: none"> Select the type of balance value to copy from the Source Field list. Select the profile field to which the balance data will be copied from the Target Data Type, Target Location and Target Field lists. Click Save.
4	To add another set of source and target fields, click Add and repeat step 2.
5	Click Save .

Note: To delete a configuration, select the field values corresponding with the existing configuration you want to delete. Then select the check box next to the source and target fields and click **Delete Selected**.

Balance State Branch

Node description

The Balance State Branch feature node routes the call based on the state of the caller's account balance. To calculate the caller's account balance a configurable set of balance types will be checked. The set of balance types to be checked is configured in the SLC **eserv.config** file, see *CCS Technical Guide* for details.

This node reads the caller's Product Type node options configured for the Balance State Branch and determines that if the Use Threshold field is:

- Selected, then the Product Type Threshold is ignored and the Node Balance Threshold is used instead
- Not selected, then the Product Type Value is used

Note: The node will filter out all Expenditure Balance Types and not include them in the balance calculation. See *CCS User's Guide - Balance Types* topic.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

This node deals only with the wallet type currently set in the call context. If a different wallet is required, a Set Wallet Type node must be invoked before this node.

For more information, see *Set Wallet Type* (on page 80).

Node exits

This node has one entry point and seven exits that are set by the system. The number of exit points is fixed and may not be edited by the user.

Exit	Cause	Description
1	Credit OK	The available funds (which may or may not include credit limit and/ or committed reservations) is \geq the threshold.
2	Unsupported	Either, error / failure, or the domain being used does not support this feature node.
3	No Credit	The value being compared (which may or may not include credit limit and/ or committed reservations) is \leq zero.
4	Credit < Threshold	The available credit (which may or may not include credit limit and/ or committed reservations) is less than the threshold used (which is either the product type Balance status warning threshold value or the node value). See Threshold example.
5	Balance Expired	The account balance has expired.
6	Account Expired	The account has expired.
7	Abandon	The caller has abandoned the call.

Configuration screen

Here is an example Configure Balance State Branch node screen.

The screenshot shows a window titled "Configure Balance State Branch". At the top, there is a "Node name" field with the text "Bal State" and a "Help" button. Below this is a section titled "Node Balance Threshold" containing four items: "UseThreshold" with a checked checkbox, "Threshold" with a text box containing the number "5", "Above Credit Limit" with a checked checkbox, and "Excl. Reserved Funds" with a checked checkbox. Below that is a section titled "Exit Branches" containing a list of seven items arranged in two columns: 1 Credit OK, 2 Unsupported, 3 No Credit, 4 Credit < Threshold, 5 Balance expired, 6 Account expired, and 7 Abandon. At the bottom of the window are three buttons: "Comments", "Save", and "Cancel".

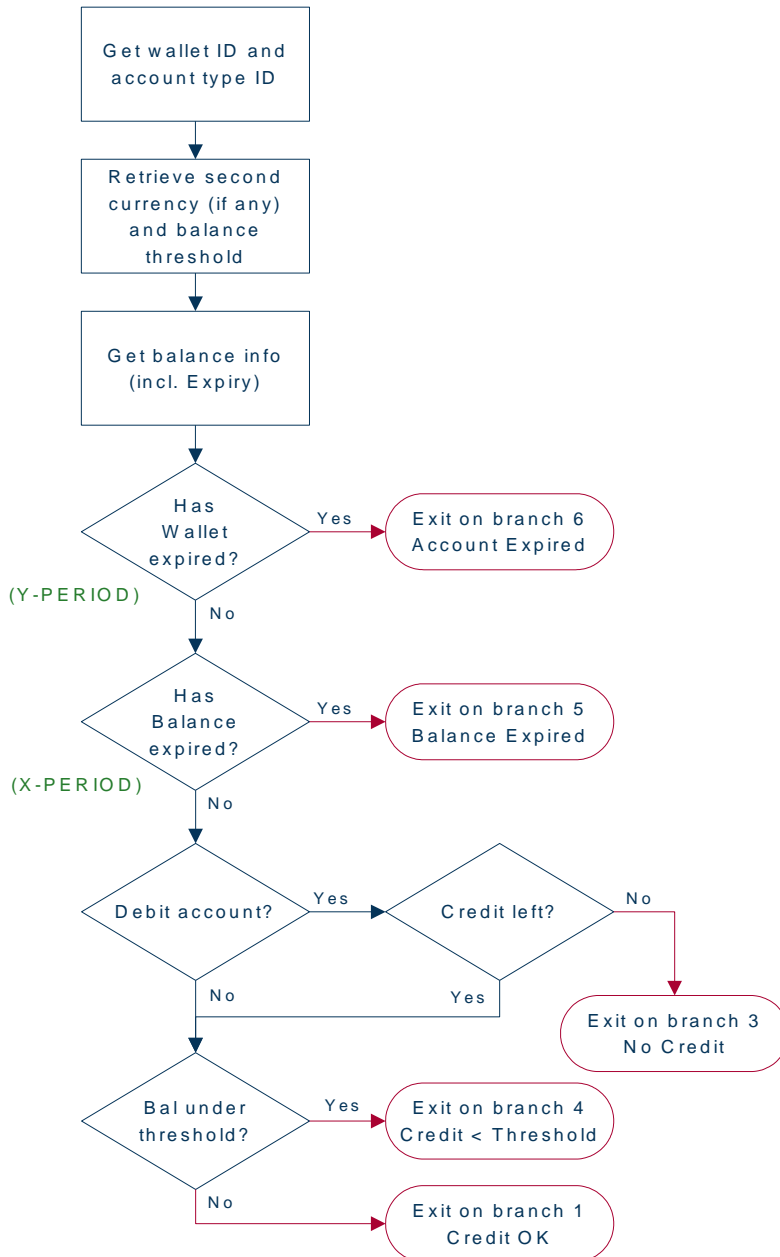
Configuring the node

Follow these steps to configure the node.

Step	Action
1	<p>Select the threshold source value to use:</p> <ul style="list-style-type: none"> Select the UseThreshold check box to use the node threshold value. Deselect the UseThreshold check box to use the Product Type threshold value (this is the Balance status warning threshold value configured at - SMS > Services > Prepaid Charging > Subscriber management > Product Type > Node Options).
2	<p>Type the comparison balance threshold to use in the Threshold field.</p> <p>Note: A value must be entered - even if zero - before the Save button becomes available.</p>
3	<p>Select the additional threshold considerations:</p> <ul style="list-style-type: none"> Select the Above Credit Limit check box to include the subscriber's credit limit. Select the Excl. Reserved Funds check box to ignore any committed reservations. <p>Tip: See Threshold example for how these check boxes work together.</p>
4	<p>Click Save.</p>

Node logic

This diagram shows the internal logic processing of the node.



Threshold example

This example uses the following values:

- Threshold is \$115
- Actual balance is \$20
- Credit limit is \$100
- Outstanding reservation is \$5

This table shows how the comparison value is computed for these values:

Exclude Reservations	Include Credit Limit	
	No	Yes
No	Actual balance = \$20 Exit 4 taken (comparison < threshold)	Actual balance + Credit Limit \$20 + \$100 = \$120 Exit 1 taken (comparison > threshold)
Yes	Actual balance - Reservations \$20 - \$5 = \$15 Exit 4 taken (comparison < threshold)	Actual balance - Reservations + Credit Limit \$20 - \$5 + \$100 = \$115 Exit 1 taken (comparison = threshold)

Balance Status

Node description

The Balance Status feature node plays announcements to provide the user with information about their account. The node plays:

- Individual balances
- A no-credit announcement, if necessary
- Expiry dates for both the user's account and balance(s)

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

This node deals only with the wallet type currently set in the call context.

For more information, see *Set Wallet Type* (on page 80).

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	All announcements have completed successfully.
2	Abandon	The caller has terminated the call.
3	Unsupported	Either, error / failure or the Domain being used does not support this feature node.

Configuration screen

Here is an example Configure Balance Status node screen.

Configuration fields

This table describes the function of each field.

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.
EnableAnnouncements	If check box selected, allows the selected announcement to be played.
Committed Funds	When selected, exclude committed reservations in the available funds played in the announcement.
Unreserved Funds	When selected, exclude uncommitted reservations in the available funds played in announcements (the uncommitted reservation amount is subtracted from the available funds).

This node only deals with information for the balance types specified in the `BSAnnBalanceTypes` array of the `ccsMacroNodes` section of the `eserv.config` file on the SLC.

This node will only play expiry information if the expiry is within the ranges specified in the caller's:

- Product type account expiry warning threshold
- Product type balance expiry warning threshold

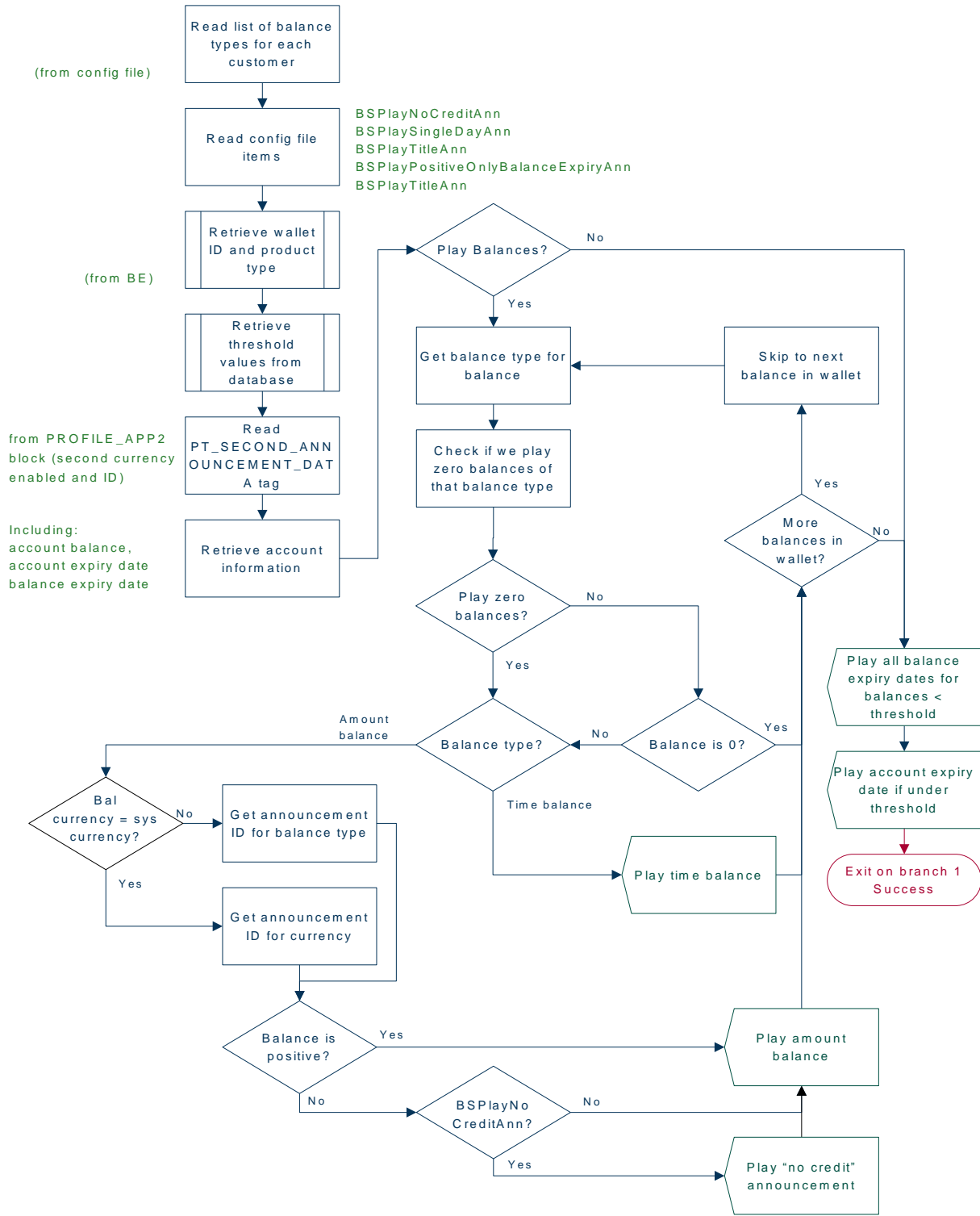
Configuring the node

Follow these steps to configure the node.

Step	Action
1	For each relevant announcement, use the drop down lists to select the pre-recorded announcements that are to be played as prompts to the caller. Select the specific Announcement Set to which the Announcement Entry belongs. Only valid announcements are available from the lists.
2	For each relevant announcement, tick the Enable Announcement check box as required.
3	Select the Funds to Report option: <ul style="list-style-type: none"> • Select Unreserved Funds to exclude uncommitted reservations in the available funds played in announcements, or • Select Committed Funds to exclude committed reservations in the available funds played in the announcement.
4	Click Save .
	Note: This will be greyed out until all the announcement sets have been selected.

Node logic

This diagram shows the internal logic processing of the node.



Balance Type Branching

Node description

Allows for threshold branching on the values in the subscriber's wallet of chargeable balance types (for example, 'General Cash'), expenditure balance types or cross-balance types.

For example, this node could be used to apply a discount to the current call, based on the existing value of a particular balance. The call in progress in the current control plan will not have been billed yet, so will not be considered for such a discount.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

There are no restriction on this node's usage. A control plan may contain as many of these nodes as required.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	>	The available funds are greater than the configured threshold.
2	<	The available funds are less than the configured threshold.
3	=	The available funds are the same as the configured threshold.
4	No Balance Found	The specified balance type was not found in the subscriber's wallet.
5	Unsupported	Any error/failure encountered.

Notes:

- A zero wallet balance could potentially use exits 1, 2 or 3 depending on the threshold, credit limit, reservation combination value.
- Telephony actions are allowed after exits 1 to 4.
- See Threshold example for understanding how the available balance is calculated.

Configuration screen

Here is an example Configure Balance Type Branching screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	<p>Select the Balance Category to limit the balance type list to select from for the branch comparison.</p> <p>One of:</p> <ul style="list-style-type: none"> • All - all balance types for the current ACS customer will be listed. • Chargeable - only those balance types for the current ACS customer that can be used for charging will be listed. For example this will exclude all 'Expenditure' and 'Cross Balance Type Discount' balance types. • Expenditure - only those balance types for the current ACS customer defined as 'Expenditure' balance types (daily, weekly, monthly, yearly, wallet) will be listed. • CrossDiscount - only those balance types for the current ACS customer defined as 'Cross Balance Type Discount' balance types will be listed. • Internal - only those balance types for the current ACS customer defined as 'Internal' balance types will be listed.
2	From the Balance Type drop down list, select the balance type to use in the branch comparison.
3	Type the comparison threshold to use in the Threshold field.
4	<p>Select the additional threshold considerations:</p> <ul style="list-style-type: none"> • Select the Above Credit Limit check box to include the subscriber's credit limit.

Step	Action
	<ul style="list-style-type: none"> Select the Excl. Reserved Funds check box to exclude any committed reservations.
	Tip: See Threshold example for how these check boxes work together.
5	Click Save .

Threshold example

If the:

- threshold is \$115
- actual balance is \$20
- credit limit is \$100, and
- an outstanding reservation for \$5

This table shows how the comparison value is computed for these values:

Exclude Reservations	Include Credit Limit	
	No	Yes
No	Actual balance = \$20 Exit 2 taken (comparison < threshold)	Actual balance + Credit Limit \$20 + \$100 = \$120 Exit 1 taken (comparison > threshold)
Yes	Actual balance - Reservations \$20 - \$5 = \$15 Exit 2 taken (comparison < threshold)	Actual balance - Reservations + Credit Limit \$20 - \$5 + \$100 = \$115 Exit 3 taken (comparison = threshold)

Balance Type Cascade Branching

Node description

Allows for threshold branching on the values of the balances held in the selected balance type cascade.

The summed value of the balances for the unit type configured in the node will be used when determining the appropriate branch to follow.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Balance Type Cascade Branching nodes as required.

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type BCD. See *Charging Control Services User's Guide* for further details on charging domains.

Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	>	The sum of the balances in the balance type cascade of the specified unit is greater than the configured threshold. Telephony actions are allowed after this branch.
2	<	The sum of the balances in the balance type cascade of the specified unit is less than the configured threshold. Telephony actions are allowed after this branch.
3	=	The sum of the balances in the balance type cascade of the specified unit is the same as the configured threshold. Telephony actions are allowed after this branch.
4	No Bal Casc Found	The specified balance type cascade was not found. Telephony actions are allowed after this branch.
5	No Balance Found	There were no balances for the specified unit type in the selected balance cascade. Telephony actions are allowed after this branch.
6	Unsupported	An error/failure was encountered.

Configuration screen

Here is an example Configure Balance Type Branching screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	From the Balance Type Cascade drop down list, select the cascade to use in the branch comparison.
2	Select the Balance Units to use. Only balances types with the selected unit type will be summed and compared against the threshold value. Note: If you selected Units then all balances, except cash or time, will be summed.
3	In the Threshold area type the comparison balance threshold value for the selected balance units. Note: Only the fields relevant to the selected balance units will be enabled.
4	Click Save .

Cumulative Balances

Node description

The Cumulative Balances feature node provides the caller with details of their cumulative balances.

For each cumulative balance category configured for one of:

- Product type
- The selected cumulative balance plan (only available if the cumulative balance plan feature has been activated on your system), the node:
 - Sums the balances of the balance types assigned to the balance category
 - Plays the configured announcements

If there are no balance types assigned to a particular category, then the category is ignored. If the cumulative balance for a category is zero, then the announcement is only played if the Play Zero flag is set for the category.

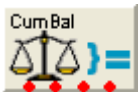
Notes:

- For details on configuring balance category announcements, see the *CCS User's Guide*.
- To have unreserved balances reported for subscriber's cumulative balances, the option must be configured in the **SMS > Services > Prepaid Charging > Wallet Management > Cumulative Balance Plans** tab > **New/Edit > Add Balance Category** button > **Use Unreserved Balances** check box.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

There are no restriction on this node's usage. A control plan may contain as many of these nodes as required.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	All announcements have completed successfully.
2	Abandon	The caller has terminated the call.
3	Unsupported	Either, error / failure, or the domain being used does not support this feature node.
4	Not Found	No announcements can be played because balance categories have not been set up for the product type.

Configuration screen

Here is an example Configure Cumulative Balances screen.

Configuration fields

This table describes the function of each field in the Configure Cumulative Balances node screen.

Field	Description
Balance Plan	<p>List of all the available cumulative balance plans for the current service provider.</p> <p>Notes:</p> <ul style="list-style-type: none"> Cumulative balance plans are configured in the Wallet Management screen in CCS. The special value "Use Product Type" may be used to select the default cumulative balance plan configured for the product type. This field will not be visible in the screen if the cumulative balance plans feature has not been activated on your system.
EnableAnnouncement	<p>Select to enable the selected title announcement to be played.</p> <p>Defaults to disabled.</p>

Field	Description
Announcement Set	List of all the available announcement sets.
Announcement Entry	List of all the announcements belonging to the selected announcement set.
Category Title Announcement	Select EnableAnnouncement to enable playing the category title announcement. Defaults to disabled.
Play No Credit for Balances	Select EnableAnnouncements to enable playing no credit balance announcements for balances that are negative. The announcement that is played will not include any variable parts; for example, the announcement played might be: Your balance is negative, please recharge. Defaults to disabled. Note: Zero balances are treated as negative.
Play Positive Only Expiries for Balances	Select EnableAnnouncements to enable playing announcements for balances with positive expiries only. Defaults to disabled.
Play Single Day Expiries for Balances and Account	Select EnableAnnouncements to enable playing announcements for account and balances with single day expiries. Defaults to disabled.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	<p>From the Balance Plan drop down list select the cumulative balance plan to use. If you select the special value "Use Product Type" then the default balance plan configured for the Product Type will be used.</p> <p>Note: This field will only be visible in the screen if the cumulative balance plan feature has been activated on your system. For more information on activating features in CCS, see the <i>CCS Installation Guide</i>.</p>
2	<p>If you want a title announcement to be played to the caller, in the Title Announcement area tick the Enable Announcement check box. Then use the drop down lists to select the Announcement Set and Announcement Entry to play. Only valid announcements are available from the lists.</p> <p>Note: You must select an announcement set and entry even if you do not enable the announcement.</p>
3	<p>For each announcement you want to play, in the relevant announcement area tick the Enable Announcement(s) check box.</p> <p>Note: The cumulative balance category announcements played are configured in CCS either:</p> <ul style="list-style-type: none"> • using the cumulative balances option on the Product Type screen, or • if the Cumulative Balance Plan feature has been activated, then they are configured on the Cumulative Balance Plan tab in the Wallet Management screen. <p>For more information see the <i>CCS User's Guide</i>.</p>
4	Click Save .

Step	Action
	Note: This will be greyed out until the title announcement and entry has been selected.

Periodic Charge State Branch

Node description

The Periodic Charge State Branching feature node branches on the state of a subscriber's subscription to a periodic charge. The subscriber which is checked is the one associated with the MSISDN which is currently populated in the CLI call context field. The periodic charge to check is specified in the node's configuration.

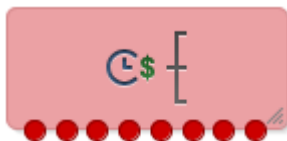
Amongst other uses, the Periodic Charge State Branch node can be used for:

- Checking a subscriber's subscription status before providing a service
- Error checking in BPL tasks used for handling periodic charge subscriptions
- Routing in a periodic charge IVR control plan

For more information about subscribers and periodic charges, see *CCS User's Guide*.

For more information about call context fields, see *CPE User's Guide*.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Periodic Charge Status Branching nodes as required.

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type **BCD**. See *Charging Control Services User's Guide* for further details on charging domains.

Node exits

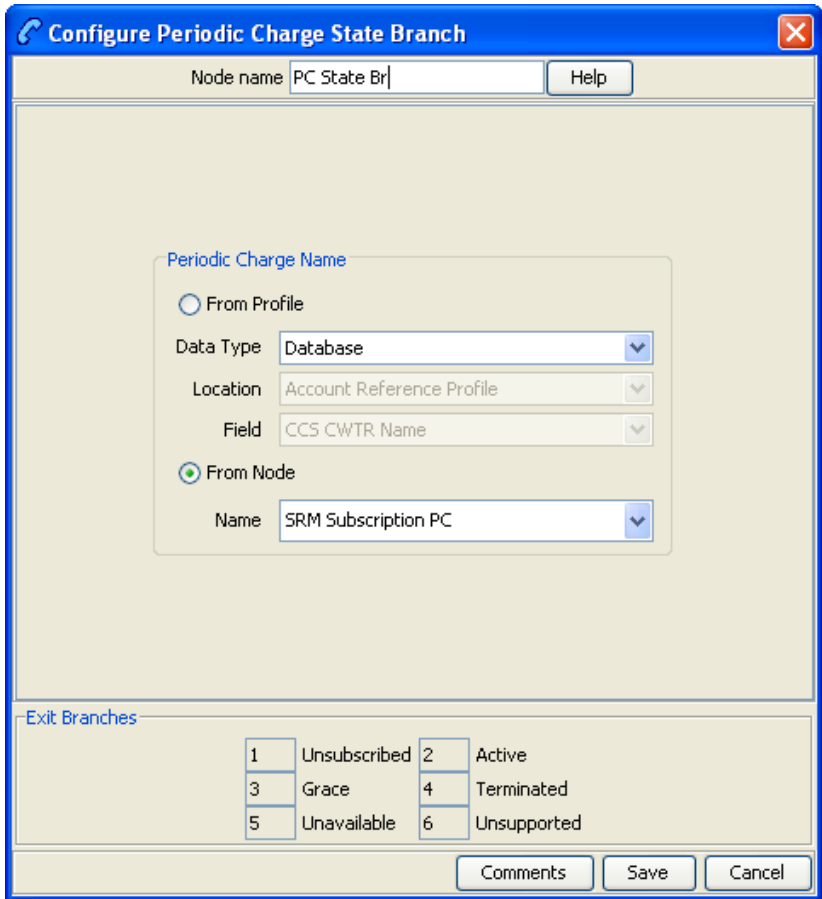
This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsubscribed	Corresponds to the periodic charge "unsubscribed" state and all states not covered by other exit branches.
2	Active	Corresponds to the periodic charge "active" state and active sub-states.
3	Grace	Corresponds to the periodic charge "grace" state and grace sub-states.
4	Terminated	Corresponds to the periodic charge "terminated" state.

Exit	Cause	Description
5	Unavailable	The wallet does not have a bucket of the required type.
6	Unsupported	Exit branch for error conditions.

Configuration screen

Here is an example Configure Periodic Charge Status Branching screen.



Configuring the node

Follow these steps to configure the node.

Step	Action
1	<p>In the Periodic Charge Name section select either the location of the charge name or charge name you want to branch on the state of. Select one of:</p> <ul style="list-style-type: none"> • From Profile (for the location) • From Node (for the name) <p>Result: The relevant fields become available.</p>
2	<ul style="list-style-type: none"> • If From Profile: select the location from the Data Type, Location and Field drop down lists. • If From Node: select the name from the Name drop down list <p>Notes:</p> <ul style="list-style-type: none"> • The profile Field is populated by the records configured on the Periodic Charge tab on

Step	Action
	<p>the Wallet Management screen.</p> <ul style="list-style-type: none"> The name list are all the Periodic Charge names for this subscriber.
3	<p>From the Change State drop down list, select the state the subscriber's periodic charge should be changed to.</p> <p>Examples:</p> <ul style="list-style-type: none"> To subscribe a subscriber to a periodic charge, select Subscribe. To unsubscribe a subscriber from a periodic charge, select Unsubscribe. To trigger a loss of service, select Terminate. To enable the first grace state on the VWS, select Grace.
4	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Periodic Charge Subscription

Node description

The Periodic Charge Subscription feature node changes the state of a subscriber's periodic charge to a new specified state. The affected subscriber is the subscriber who is associated with the MSISDN which is currently populated in the CLI call context field.

Note: If you are using periodic charge groups, you should ensure a subscriber cannot have two concurrent subscriptions to periodic charges within the same periodic charge group. You can use the *Periodic Charge State Branch* (on page 249) to check the state of a specified periodic charge.

For more information about:

- Subscribers and periodic charge configuration, see *CCS User's Guide*
- Call context fields, see *Feature Nodes Reference Guide*

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Periodic Charge Subscription feature nodes as required.

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type **BCD**. See *Charging Control Services User's Guide* for further details on charging domains.

Node exits

This feature node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Any error except billing engine errors.
2	Not Subscribed	Subscriber has no bucket of the correct type for this charge, and the request was for an unsubscribe or a terminate.
3	Success	State changed successfully. Note: This includes successful unsubscribe actions.
4	Failure	Subscription not allowed (for example, the periodic charge is not associated with the subscriber's product type).
5	Error	Billing engine error.

Configuration screen

Here is an example Configure Periodic Charge Subscription screen.

Periodic Charge Subscription Fields

This table describes the configuration fields for the Periodic Charge Subscription feature node.

Field	Description
Name	The name of the subscriber's periodic charge. You configure periodic charges in the Wallet Management screens in the Prepaid Charging UI. For more information, see Convergent Charging Controller <i>Charging Control Services User's Guide</i> .
State Change	(Optional) Lists the states that the subscriber's periodic charge can be changed to. Defaults to <code>Subscribe</code> . The <code>Charge Alignment</code> state is available only if the selected periodic charge is based on service activation or reference date.
Apply Charge check box	You can select to apply charging if State Change is set to: <ul style="list-style-type: none"> • <code>Subscribe</code> and the charge type of the specified periodic charge is one of: <code>Debit</code>, <code>Credit</code>, <code>Debit and Credit</code>, <code>Credit Plan</code>, or <code>Debit and Credit Plan</code> • <code>Unsubscribe</code> and pro-rating has been defined for the specified periodic charge • <code>Charge Alignment</code> and pro-rating has been defined for the specified periodic charge
Pro-Rate Charge check box	You can select to apply pro-rating if all the following conditions are true: <ul style="list-style-type: none"> • Apply Charge is selected • Pro-rating is defined for the specified periodic charge • State Change is set to either <code>Subscribe</code> or <code>Charge Alignment</code>, and the charge type configured for the periodic charge is not <code>Control Plan</code> or <code>Notification Only</code> The Pro-Rate Charge check box is disabled and pre-selected when all the following conditions are true: <ul style="list-style-type: none"> • State Change is set to <code>Charge Alignment</code> or <code>Unsubscribe</code> • Apply Charging is selected • Pro-rating is defined for the specified periodic charge
Set Charge Day check box	You can select to set the periodic charge day if State Change is set to <code>Subscribe</code> and the specified periodic charge is based on service activation. The Set Charge Day check box is disabled and pre-selected if State Change is set to <code>Charge Alignment</code> .
Reference Date profile fields	The profile field location for the date on which to base the schedule for the periodic charge.
Charge Date	If State Change is set to <code>Subscribe</code> or <code>Charge Alignment</code> , and the specified periodic charge is based on service activation or reference date, then you can specify a charge date in the Month of Year , Day of Month , or Day of Week profile fields.
Month of Year (Charge Date) profile fields	The profile field location for the month when the periodic charge will be applied. The period configured for the periodic charge must be one of: quarterly, half yearly or annually.
Day of Month (Charge Date) profile fields	The profile field location for the day of the month when the periodic charge will be applied. The period configured for the specified period charge must be one of: monthly, quarterly, half yearly, annually, or custom months.

Field	Description
Day of Week (Charge Date) profile fields	The profile field location for the day of the week when the periodic charge will be applied. The period configured for the specified periodic charge must be weekly.

Configuring the node

Follow these steps to configure the Periodic Charge Subscription feature node.

Step	Action
1	From the Name list select the name of the periodic charge that you want to update.
2	From the Change State list, select the state that the subscriber's periodic charge should be changed to. Examples: <ul style="list-style-type: none"> To subscribe a subscriber to a periodic charge, select <code>Subscribe</code> To unsubscribe a subscriber from a periodic charge, select <code>Unsubscribe</code> To trigger a loss of service, select <code>Terminate</code> To align charges based on service activation or reference date, select <code>Charge Alignment</code> To enable the first grace state on the VWS, select <code>Grace</code>
3	Complete the feature node configuration by selecting the required options from the enabled fields. The fields that are enabled depend on the configuration specified for the periodic charge and selected State Change . To: <ul style="list-style-type: none"> Apply the charge, select Apply Charge Apply pro-rating to the charge, select Pro-Rate Charge Set the charge day, select Set Charge Day and select the profile field that contains the date you want to use from the Charge Date profile field lists Specify the reference date for the periodic charge schedule, select the profile field that contains the date you want to use from the Reference Date profile field lists For more information about the Periodic Charge Subscription fields, see <i>Periodic Charge Subscription Fields</i> (on page 253)

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Periodic Charge Transfer

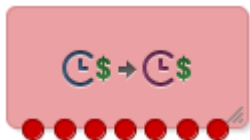
Node description

The Periodic Charge Transfer node transfers one periodic charge subscription to another periodic charge from the same group. The state and charge date remain the same, only the periodic charge subscription is changed.

The change is made for the subscriber with the CLI which matches the current calling logical number buffer in the Call Context profile. The subscription which is terminated, is the subscription which is in the periodic charge group specified in the Periodic Charge Group field.

Warning: If a subscriber is concurrently subscribed to more than one subscription in a group, the transfer will fail. Subscription services should be designed to ensure a subscriber does not have concurrently subscriptions to more than one periodic charge in a periodic charge group.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and seven exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	The target periodic charge is not supported by the VWS.
2	Not Subscribed	The subscriber was not subscribed to a periodic charge in the configured group. One of: <ul style="list-style-type: none"> The subscriber's account did not have a subscription balance for any periodic charge in the group specified in the Periodic Charge Group field The current subscription had a state of Unsubscribed or Terminated
3	Not In Product	The target periodic charge is not associated with the same product type as the subscriber's current periodic charge.
4	Success	The wallet and subscription have been successfully changed, or the subscriber was already subscribed to the target periodic charge.
5	Failure	The wallet or subscription balance update has failed on the VWS.
6	Config Error	The configured group or target periodic charge is not found in the service provider's configuration. The group or periodic charge may have been changed since the control plan was last saved. This exit is also taken if the subscriber has more than one subscription within the periodic charge group. The service may need checking to see if it allows subscribers to subscribe to more than one periodic charge in a periodic charge group.
7	Error	An error not covered by the other exits has occurred.

Restrictions

A control plan may contain as many Periodic Charge Transfer nodes as required.

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type BCD. See *Charging Control Services User's Guide* for further details on charging domains.

Configuration screen

Here is an example Configure Periodic Charge Transfer screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	From the Periodic Charge Group drop down list, select a group the target periodic charge belongs to.
2	From the Transfer Charge drop down list, select the periodic charge the subscriber's subscription will be changed to.
3	Click Save .

Play Next Promotion

Node description

The Play Next Promotion feature node calculates the subscriber's next promotion based on their current balances and if required, plays the announcement associated with the promotion.

Only one promotion will be selected, based on the:

- Available promotions defined for the service provider and associated with the subscriber's product type
- Balance cascade used to identify the qualifying balances
- Promotion period

If more than one promotion qualifies, then the promotion with the smallest difference between the promotion threshold and the current balance value will be selected. Optionally, the name of the selected promotion can be stored in a profile tag field.

Promotion rules

Here are the rules that apply to promotions played by the node.

- 1 The promotion must have one of these event categories:
 - balance recharge
 - balance credit
 - balance expiry
 - tracker threshold
 - tracker expiry
- 2 The subscriber must be eligible for the promotion based on the promotion white or black list.
- 3 The current value for the event balance type must meet the defined conditions.

Note: The promotion details are configured in the Promotion Manager screens.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Play Next Promotion nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	A promotion was successfully selected and either played or stored to a profile tag field.
2	Not Supported	The Domain being used does not support promotions.
3	Error	A promotion could not be selected or an error/failure occurred while attempting to play/store the promotion.

Configuration screen

Here is an example Configure Play Next Promotion screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	If you want to play the title announcement configured in the node, in the Title Announcement area select the Play Announcement check box, then select the announcement set and entry to play from the drop down lists.
2	If you want to play the announcement configured for the promotion in the Promotion Manager screens, select the Play Announcement check box in the Promotion Announcement area.
	Note: The announcements configured for rewards in the Wallet Management screens will be used for licensed versions of Prepaid Charging which are earlier than version 4.3.0.0.
3	If you want to store the promotion name in a profile tag field then in the Destination Profile area, select the Store Promotion check box. Then using the Data Type , Location and Field drop down lists select the profile where the information will be stored.
4	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

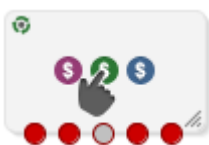
Select Credit Transfer

Node description

Plays an announcement for each credit transfer associated with the subscriber's product type. The user can interrupt the announcements to select a service.

The announcements will be played in credit transfer name order. If a credit transfer does not have an announcement associated with it, then it will be skipped.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Select Credit Transfer nodes as required.

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type BCD. See *Charging Control Services User's Guide* for further details on charging domains.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Either all possible announcements were played or there were no credit transfers available for the subscriber's product type.
2	Selected	The user successfully selected a credit transfer service.
3	Abandon	The user disconnected the call.
4	Error	An error/failure occurred playing the announcements or when selecting a credit transfer service.
5	Unsupported	The Domain does not support credit transfer services.

Configuration screen

Here is an example Configure Select Credit Transfer screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	In the Transfer Type area select the type of credit transfer for which announcements will be played. Select: <ul style="list-style-type: none"> • Any to play both Peer to Peer and Service Bundle announcements • Peer to Peer to only play Peer to Peer announcements, or • Service Bundle to only play service bundle announcements.
2	Select the Save User Selection from the Data Type , Location and Field drop down lists.
3	In the Title Announcement area select the announcement set and entry that will be played first.
4	In the Press 1 to Press 10 areas select the announcement sets and entries to associate with the available credit transfers. Announcements for a maximum of ten credit transfer options may be played to the user.
5	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

SMS Low Balance

Node description

The SMS Low Balance feature node sends an SMS to a subscriber when their balance falls below a specified threshold.

The message delivered by the SMS uses the ACS LowBalanceWarning Notification Type template. This node does not support the inclusion of any parameters in the notification template and therefore will send a low balance text message only.

For more information about configuring Notification Types see the Configuration chapter in the *ACS User's Guide*.

Note: You must configure a Notification Template for all languages that may be used to deliver the low balance warning message.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Either, error / failure, or the Domain being used does not support this feature node. The balance has not been checked.
2	Success	The Balance was equal to or higher than the threshold.
3	Low Balance	The Balance was lower than the threshold. An SMS will be sent from the Notification Interface using the ACS LowBalanceWarning notification type template. For more information on notification type templates, see <i>ACS User's Guide</i> .

Configuration screen

Here is an example Configure SMS Low Balance node screen.

Configuration fields

This table describes the function of the field in the Configure SMS Low Balance node screen.

Field	Description
Threshold	The credit value used to determine when the subscriber gets sent a low credit message.

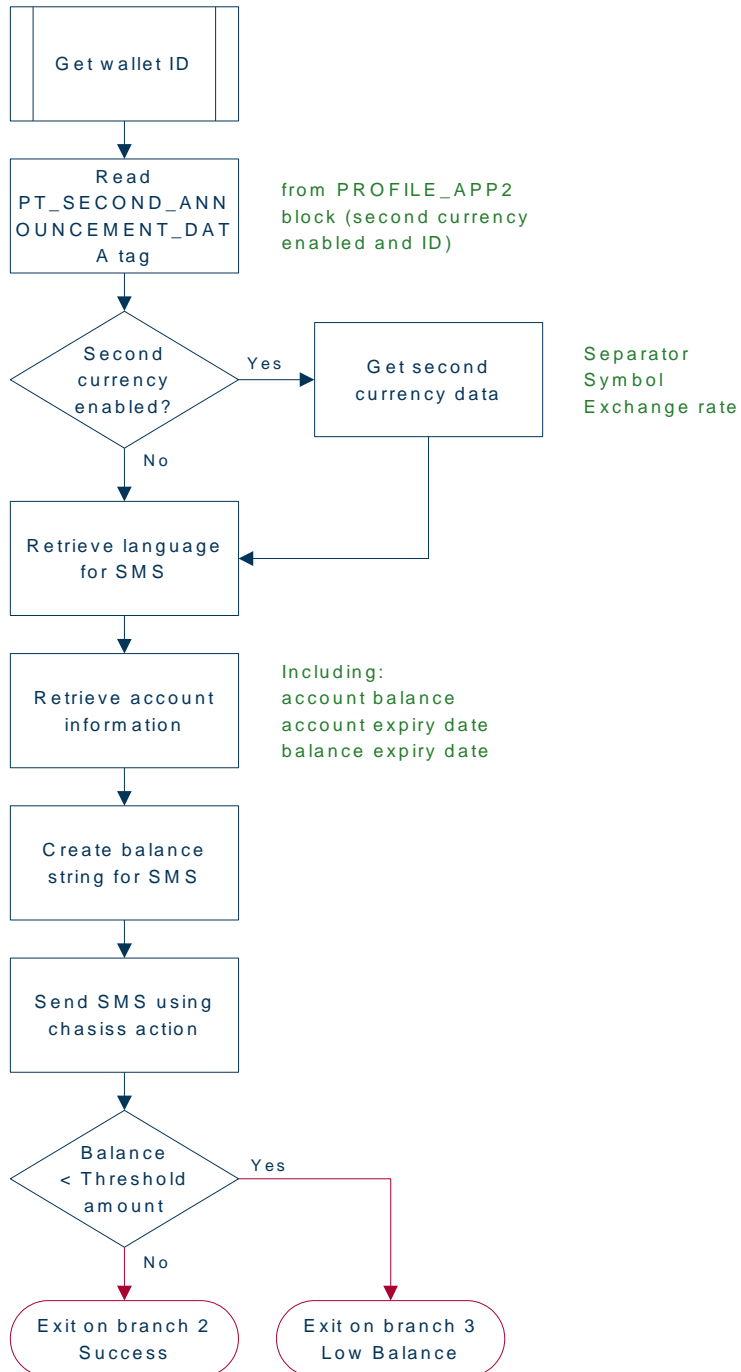
Configuring the node

Follow these steps to configure the node.

Step	Action
1	Type the credit Threshold value for triggering the low credit TXT message.
2	Click Save .

Node logic

This diagram shows the internal logic processing of the node.



Time Remaining

Node description

The Time Remaining feature node determines the remaining time available, at call start, based on a subscriber's current cash balance.

This information is stored in configurable profile fields to be used by subsequent nodes in the control plan.

For Example: The Play Variable Part Announcement node will play the total available reservation duration subsequently in the control plan.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Rate details retrieved successfully and profile tags are populated.
2	Rating Failure	Rate details could not be retrieved from the VWS due to invalid wallet state or incorrect rating configuration.
3	Error	An error occurred when attempting to read the feature node configuration or update a profile tag.
4	Unsupported	Either, error / failure, since the required chassis action is not supported by the VWS.
5	Insufficient Funds	A reservation failed on the VWS either because the subscriber's wallet didn't contain a sufficient balance to meet one of: <ul style="list-style-type: none"> • The minimum call duration • The billing resolution of the associated rating rule

Restrictions

A control plan can have as many Time Remaining nodes as required.

Configuration fields

This table describes the function of each field in the Configure Time Remaining node screen.

Field	Description
(Total Seconds) Data Type	Indicates the type of profile where the total duration value is stored.
(Total Seconds) Location	Indicates the buffer location of the total duration value, in seconds.
(Total Seconds) Field	Indicates the profile tag where the total duration value is stored. The value is stored in seconds.
(Hours) Data Type	Indicates the type of profile where the total hour duration value is stored.
(Hours) Location	Indicates the buffer location of the total hour duration value.
(Hours) Field	Indicates the duration in total hours for the hour portion of the time remaining.
(Minutes) Data Type	Indicates the type of profile where the total minute duration value is stored.
(Minutes) Location	Indicates the buffer location of the total minute duration value.
(Minutes) Field	Indicates the duration in total minutes for the minute portion of the time remaining.
(Seconds) Data Type	Indicates the type of profile where the total second duration value is stored.
(Seconds) Location	Indicates the buffer location of the total second duration value.
(Seconds) Field	Indicates the duration in total seconds for the second portion of the time remaining.

Configuration screen

Here is an example Configure Time Remaining screen.

Configure Time Remaining

Node name: TimeRemain Help

Available Duration

(Total Seconds) Data Type	Any Valid Data
(Total Seconds) Location	Any Valid Profile
(Total Seconds) Field	Account Code Max Len
(Hours) Data Type	Any Valid Data
(Hours) Location	Any Valid Profile
(Hours) Field	Account Code Max Len
(Minutes) Data Type	Any Valid Data
(Minutes) Location	Any Valid Profile
(Minutes) Field	Account Code Max Len
(Seconds) Data Type	Any Valid Data
(Seconds) Location	Any Valid Profile
(Seconds) Field	Account Code Max Len

Exit Branches

1	Success	2	Rating Failure
3	Error	4	Unsupported
5	Insufficient Funds		

Comments Save Cancel

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	<p>For each relevant duration, use the drop down lists to select the profile tags and fields that store the duration value.</p> <p>Select the following for each duration type:</p> <ul style="list-style-type: none"> (Total Seconds) Data Type (Total Seconds) Location (Total Seconds) Field (Hours) Data Type (Hours) Location (Hours) Field (Minutes) Data Type (Minutes) Location (Minutes) Field

Step	Action
	<ul style="list-style-type: none"> • (Seconds) Data Type • (Seconds) Location • (Seconds) Field <p>For more information about the fields on this screen, see <i>Configuration fields</i> (on page 265).</p>
2	Click Save .

Tracker Account State Branch

Node description

The Tracker Account State Branch feature node routes the call based on the state of the caller's account. The wallet information will be retrieved from the subscriber's tracking domain if the wallet is distributed across separate tracking and charging domains.

Note: If the VWS is used for both the tracking and charging domain and an *Account State Branch* (on page 220) node is placed in front of the TASB node in the control plan, then the TASB node is ignored. The call will be routed based on the wallet state returned by the ASB node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and eight exits. The number of exits cannot be changed.

Note: These exit descriptions are specific to the responses received from a VWS. You must specify a VWS domain type when configuring the tracking domain.

Exit	Cause	Description
1	Active	The subscriber account is active.
2	Frozen	The subscriber account has been Frozen due to dishonesty.
3	Preuse	The subscriber account has not yet been used.
4	Suspended	The subscriber account is Suspended.
5	Dormant	The subscriber account is Dormant.
6	Terminated	The subscriber account has been Expired.
7	Unsupported	Either, error / failure, or the Domain being used does not support this feature node.
8	Abandon	The caller has abandoned the call.

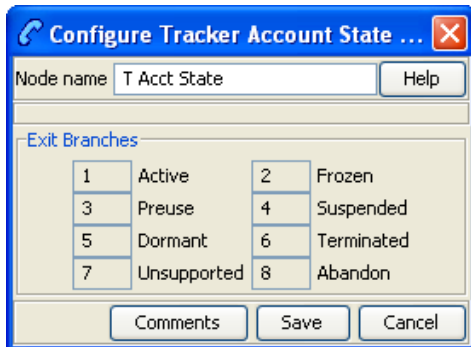
Restrictions

This node may be used any number of times within a control plan.

This node deals only with the wallet type currently set in the call context. If a different wallet is required, a *Set Wallet Type* (on page 80) node must be invoked before this node. The wallet must be on a tracking domain.

Configuration screen

Here is an example Configure Tracker Account State Branch node screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Wallet Life Cycle Period Branching

Node description

The Wallet Life Cycle Period Branching feature node allows you to check if the subscriber is assigned to the WLC period of a WLC plan.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and four exits. You may add exits, to match the periods of the specified Wallet Life Cycle Plan. The maximum number of exits is limited to 20.

Exit	Cause	Description
1	Wrong Plan	Subscriber product type is not associated with the configured Wallet Life Cycle Plan.
2	Not in Period	Subscriber account is not currently residing in any of the Wallet Life Cycle periods configured to exit branches.
3	Unsupported	Not all capabilities are met.
4	Error	General error.

Restrictions

A control plan may contain as many Wallet Life Cycle Period Branching nodes as required.

Configuration screen

Here is an example Configure Wallet Life Cycle Period Branching screen.

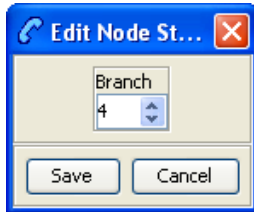
The screenshot shows the 'Configure Wallet Life Cycle Period Branching' dialog box. The window title is 'Configure Wallet Life Cycle Period Branching'. The 'Node name' field is set to 'WLC Period'. There is a 'Help' button next to it. The main area is divided into two panes: 'Wallet Life Cycle' and 'Branch'. The 'Wallet Life Cycle' pane has a dropdown menu showing '<Choose a WLC Plan>' and a 'Periods' list area. Below it is a 'Move to branch >>' button. The 'Branch' pane has a 'Number' spinner set to '5' and a large empty list area. Below it is a '<< Replace in set' button. At the bottom, there is an 'Exit Branches' section with a grid of exit codes and causes: 1 Wrong Plan, 2 Not in Period, 3 Unsupported, and 4 Error. At the very bottom are 'Comments', 'Save', and 'Cancel' buttons.

Configuring the node

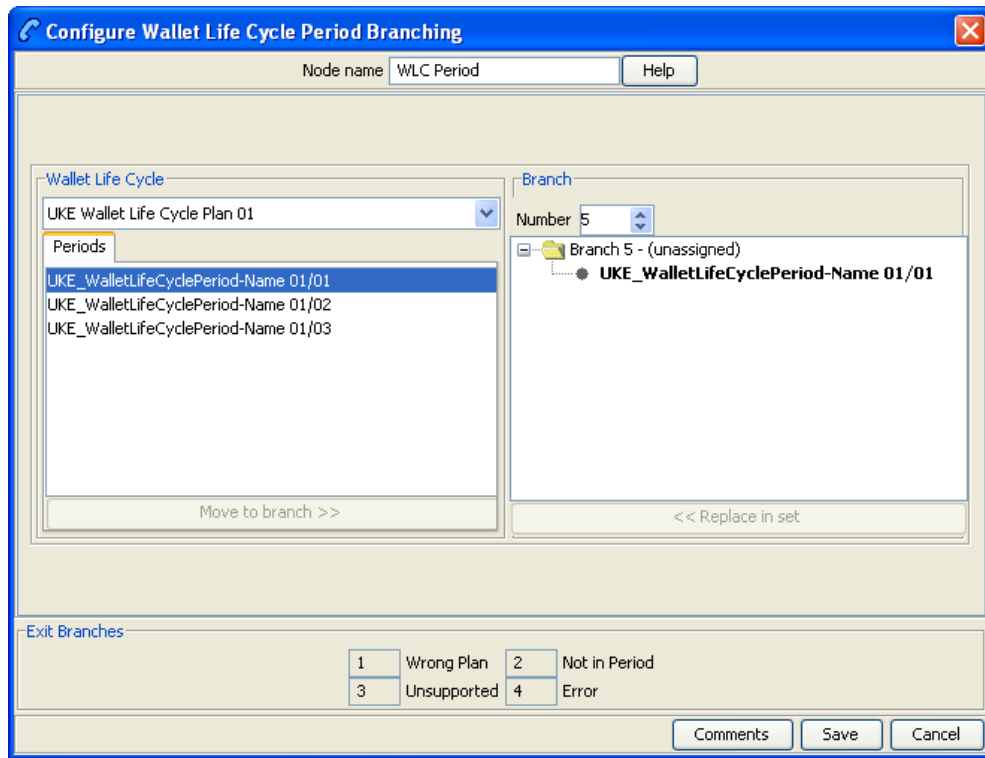
Follow these steps to configure the node.

Step	Action
------	--------

- 1 Select the node you wish to configure.
- 2 Right-mouse click and **Edit Node Exits** to create the number of branches you require.



- 3 **Save** and return to the node.
- 4 Open the node.
Result: You see the Configure Life Cycle Period Branching screen.
- 5 Select a **Wallet Life Cycle** plan from the drop down list of available WLC plans.
- 6 Select the Branch **Number**.
- 7 Select the WLC period and click **Move to branch>>**.



Note: You may associate multiple periods with the same branch, but cannot assign a period to more than one branch.
It is not necessary to assign all periods.

- 8 When you have assigned all the required periods to the branches, click **Save**.

Wallet State Update

Node description

The Wallet State Update feature node sets the current wallet to the configured state.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Wallet State Update nodes as required.

This node deals only with the wallet type currently set in the call context. If a different wallet is required, a Set Wallet Type node must be invoked before this node.

For more information, see *Set Wallet Type* (on page 80).

If no wallet type has been set in the call context, the configured default wallet is used.

Warning: This feature node is unusable when the account details are held on a BRM. That is, when the charging domain of the subscriber is of type **BCD**. See *Charging Control Services User's Guide* for further details on charging domains.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The wallet state was updated.
2	Failure	The wallet state update failed.
3	Unsupported	This exit is taken if the wallet state update capability is not supported.

Configuration screen

Here is an example Configure Wallet State Update screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	From the Wallet State drop down list, select the state to change the wallet to.
2	To exclude the terminated date from the subscriber's SMS notification, select the No terminated date check box.
3	Click Save . Result: The subscriber associated with the wallet may receive a SMS notification, depending on the setting of the notification opt out flag. See <i>CCS User's Guide, Adding Subscribers</i> for configuration instructions.

Data Access Pack Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Data Access Pack (DAP) feature nodes.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	273
DAP Request	274
Send Request	279
DAP VXML	285

Available Feature Nodes

DAP Feature Nodes List

This table lists the feature nodes available from the DAP palette group in the ACS Control Plan Editor and the fast key for each feature node in the list. You can use fast keys to search for feature nodes in the palette or the canvas.

Node name	Node description
Send Request (on page 279)	The DAP Send Request node allows ACS to send DAP requests to a DAP interface for forwarding to an external ASP. Fast key: DAP1
DAP Request (on page 274)	The DAP Request feature node allows ACS to select, configure and then send DAP requests to a DAP interface for forwarding to an external ASP. Fast key: DAP2
DAP VXML (on page 285)	Warning: This feature node has now been deprecated and should no longer be used. This functionality has been replaced by the Diameter Charging Driver features. This feature node plays an announcement based on a text string stored in a profile. Fast key: DAPV

Note: The Send Request node is deprecated and is included for backward compatibility to enable older control plans to compile and run correctly.

Profile Blocks and DAP

In order to read from or write to the profile blocks, the control plan needs to have access to the profile. Profiles are generally handled by ACS, however, some components use the profile loaded by the service library which is handling the call. You can load a new profile using the Load Profile feature node.

Note: The DAP Send Request node has no service loader of its own, and therefore the profiles that can be written are dependent on the type of control plan used. For example, you can write to Application Specific 7 to move data between USSD and Send Request nodes as this is the temporary profile available within USSD GW control plans.

For more information about which profile is loaded by a service library, see the technical documentation for the component that the service library comes from.

For more information about profile blocks, see *ACS User's Guide*.

DAP Request

Node description

The DAP Request feature node allows ACS to select, configure and then send DAP requests to a DAP interface for forwarding to an external ASP.

Request parameters can be configured in three places:

- 1 When importing WSDL files (**SMS > DAP > Import WSDL**), before saving the operation, all errors including parameter configuration values must be resolved.
- 2 After WSDL files have been imported and saved, they appear in the **SMS > DAP > Resources > Operations** dialog, where they may be edited.
- 3 At control plan creation time, within this node.

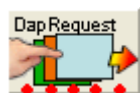
Note:

- If a parameter has been flagged as hidden either when importing or later editing the operation, this parameter will not be seen in the node parameters list. All required configuration is done outside of the node.
- The opposite is that any parameter not set to hidden, must be configured in the node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many DAP Request nodes as required.

Warning: User data in a subscriber's Account Reference Profile can be overwritten when a Copy or Set node is placed *before* the DAP Request node.

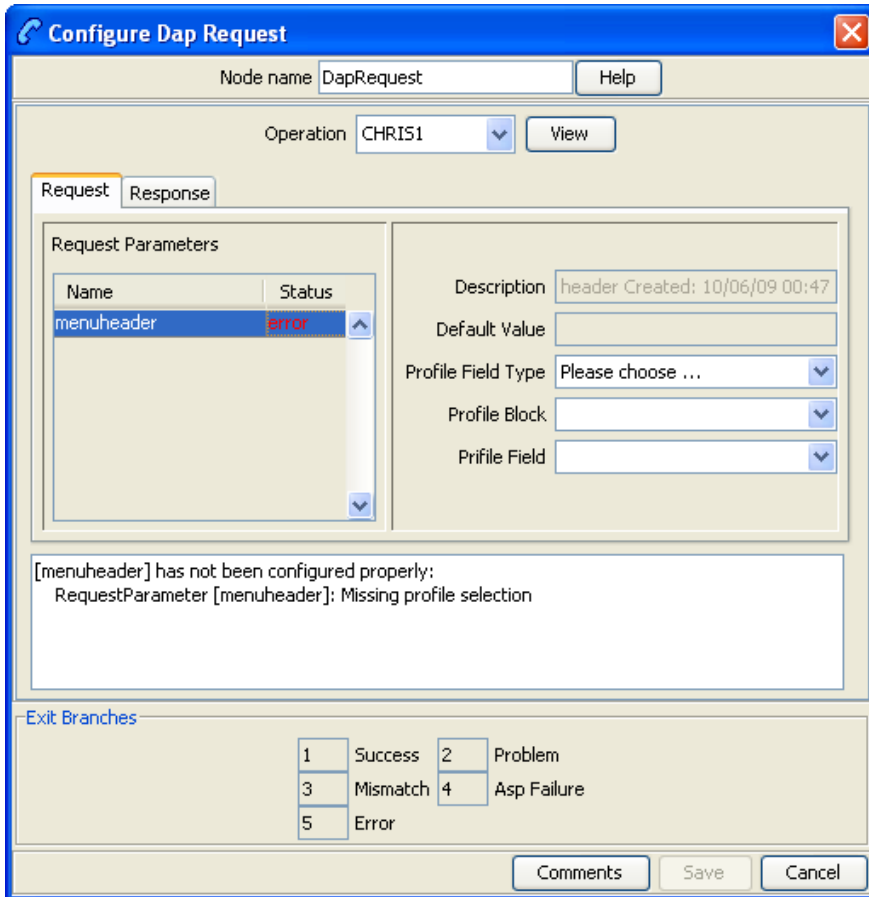
Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	<p>This branch taken for any of the following conditions:</p> <ul style="list-style-type: none"> If the DAP macro node instance receives an indication from the DAP interface indicating that the message has been successfully sent and the outstanding request does not expect parameters to be returned. <p>Note: Any unexpected returned parameters are ignored.</p> <ul style="list-style-type: none"> When all of the expected ASP response parameters have been copied into the stated designated fields or/and profile tag blocks.
2	Parameter Problem	<p>This branch taken for any of the following reasons:</p> <ul style="list-style-type: none"> If there is a problem retrieving the value of a stated profile tag (for example, CCS productTypeID field) and no default value has been specified. If the node could not convert the returned value to a profile tag. If the value cannot be stored in the profile tag.
3	Mismatch	If the outstanding request expects response parameters to be returned from the ASP but the parameters returned from the ASP do not match what is expected.
4	ASP Failure	If the ASP returns a response that is configured as "Indicating Error".
5	Error	<p>This branch taken for any of the following conditions:</p> <ul style="list-style-type: none"> If there is a format problem with the retrieved parameter string. If a DAP interface cannot be determined to send the request to. If an unknown short code is specified for an ACS run time parameter. If the DAP macro node instance receives an indication from the action handler or DAP interface indicating that the message has not been successfully sent. If there is a format problem with the ASP response related parameters. If an unknown short code is specified for an ACS run time parameter within the ASP response parameter information. If an unknown profile application block code is stated within the ASP response parameter information. If the macro node fails to retrieve profile block references.

Configuration screen

Here is an example Configure Dap Request screen showing the errors that must be corrected before the **Save** is enabled.



Configuring the node

Follow these steps to configure the node request parameters.

Step	Action
1	Click the Request tab if not already displayed.
2	Select a parameter to configure from the Request Parameters list (click on the parameter name). Result: Any errors for this parameter are shown in the text box above the Exit Branches. Note: The various configuration fields become available for completion according to how the parameter was defined in the SMS > DAP > Import WSDL or SMS > DAP > Resources > Operations configuration screens: <ul style="list-style-type: none"> • Text - Only the Description and Default Value fields available. • Profileblock - Only the Description, Profile Field Type, Profile Block and Prfile Field fields available. • Either - all fields are available.
3	Enter a description for the parameter in the Description field.
4	If available, optionally enter a default value in the Default Value field.

- | Step | Action |
|------|---|
| 5 | If available, select the type and location of the value from the Profile drop down lists.
Note: <ul style="list-style-type: none"> For information on profiles and how to use them, see Selecting profile locations and fields. If an expected profile field is missing, it can be added via the ACS Configuration screens. See Profile Tag Details. |
| 6 | Repeat steps 2 to 5 for all the parameters in the list.
Note: All errors for all parameters in both tabs must be resolved before the Save button is available. |
| 7 | Click Save . |

Configuration screen

Here is an example Configure Dap Request, **Response** tab screen.

Configure Dap Request

Node name: DapRequest Help

Operation: ((GoogleSearch)GoogleSearchBinding/doSpellingSuggestion View

Request **Response**

Name	Status
\$return	error

Description:

Required:

Indicates Error:

Profile Field Type:

Profile Block:

Profile Field:

[\$return] has not been configured properly:
ResponseParameter [\$return]: Missing profile selection

Exit Branches

1	Success	2	Problem
3	Mismatch	4	Asp Failure
5	Error		

Comments Save Cancel

Configuring response tab - default

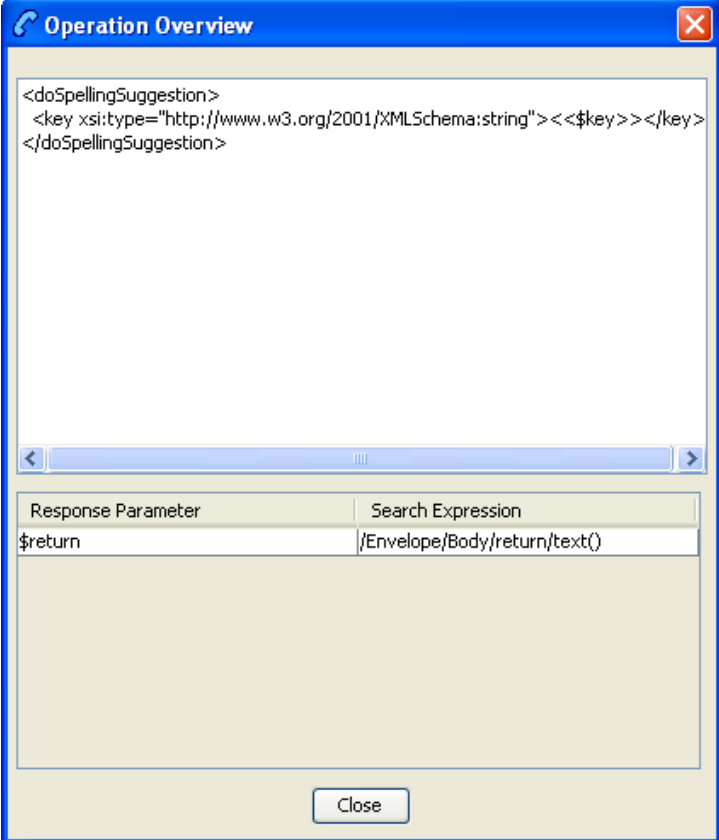
Follow these steps to configure the parameters

Step	Action
1	Click the Response tab if not already displayed.
2	Select the parameter to configure a response for from the Parameter drop down list. Result: Any configuration requirements for this parameter are shown in the text box above the Exit Branches. Note: The various configuration fields become available for completion according to how the parameter was defined in the SMS > DAP > Import WSDL or SMS > DAP > Resources > Operations configuration screens: <ul style="list-style-type: none"> • Text - Just the Description and Default Value fields available. • Profileblock - Just the Description Profile Field Type, Profile Block and Profile Field fields available. • Either - all fields are available.
3	Type a description for the parameter in the Description field.
4	If available, optionally type a default value in the Default Value field.
5	If available, select the type and location of the value from the Profile drop down lists. Note: <ul style="list-style-type: none"> • For information on profiles and how to use them, see Selecting profile locations and fields. • If an expected profile field is missing, it can be added via the ACS Configuration screens. See Profile Tag Details.
6	Repeat steps 2 to 5 for all the parameters in the list. Note: All errors for all parameters in both tabs must be resolved before the Save button is available.
7	Click Save .

View Operation Script

Follow these steps to see the script details behind the parameters this node will use.

Step	Action
1	Click View . Result: You see the Operation Overview screen.

Step	Action
	

2 Click **Close**.

Send Request

Node description

Warning: This feature node has now been deprecated and should no longer be used. This feature node will still function in existing control plans. For new control plans please use the **DAP Request** feature node.

The DAP Send Request feature node allows ACS to send DAP requests to a DAP interface for forwarding to an external ASP.

Optionally following a send, the Send Request node can also read DAP responses received on the DAP interface sent by the ASP.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Send Request nodes as required.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Error	This exit is taken when the receiving system cannot be contacted, or there is a problem with sending the request (for example, when a NACK reply is received from an ASP). Note: This branch will be taken at startup if <code>slee_acs</code> has started to process calls before the DAP interface is available.
2	Success	This exit is taken when either an ACK is received for the message sent, or if the message is successfully sent and the wait flag is not checked.
3	Mismatch	A mismatch has occurred between the configured and actual tags received in the ASP response.
4	Problem	If the associated value received within an ASP response cannot be stored within ACS or profile. For example, incorrect size or invalid storage location.

Configuration screen

Here is an example Configure Send Request screen. It appears like this when you first open a new node, before you select a template.

Configuring the node

Follow these steps to configure the Send Request node.

Step	Action
1	<p>Select the Template to be assigned to the feature node.</p> <p>Note: The templates available in the list are those that have been created using the DAP application screens. Template names suffixed with (c) indicates the template has been created with correlation.</p> <p>Result: The fields in the box below the template selection list will be populated with the data assigned for the selected template using the Operations tab on the DAP Resources screen. The area displays all the variables, but only allows you to select options that were made available by selecting a Node Disposition that is not <code>Hidden</code>, for each parameter.</p>

Step	Action

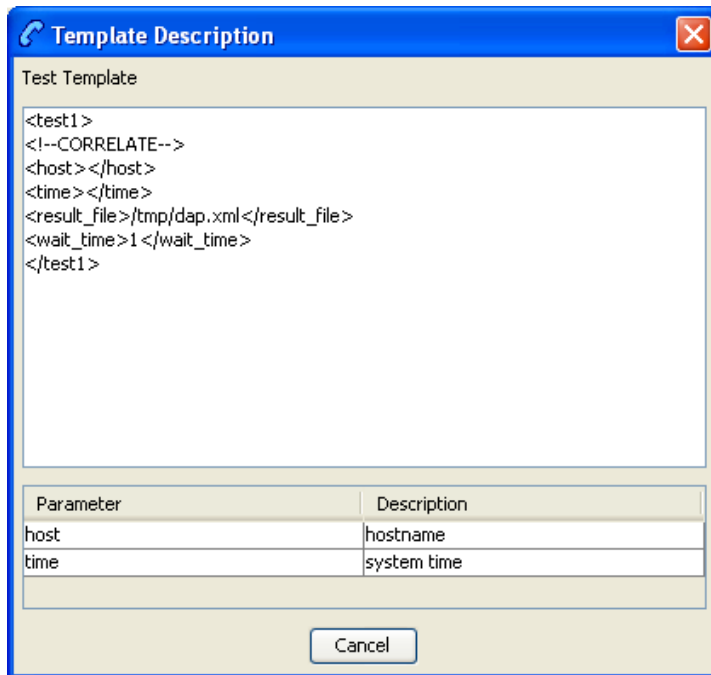
The **Variable** field displays the parameter variable defined in the script for the template. The **Treatment** field displays the permissible treatment options for each variable. Must be one of;

- Either Required. You must either select the **Runtime** or enter **Alternative Text**.
- Text ReadOnly. Displays the alternative text supplied in the template.
- Runtime ReadOnly. Displays the runtime supplied in the template.
- Runtime Required. You must select the **Runtime**.
- Text Required. You must enter **Alternative Text** for the parameter.

Note: **Save** will become available once you have filled in all the required fields in this section.

- 2 Click **Script** to view the script used by the selected template in the Template Description screen. For more information, refer to Script Format.

Step	Action
------	--------



Click **Cancel** to close the screen.

- 3 If a **Runtime** field is active, you can change the selected runtime value that is to be associated with the variable. The parameter will be replaced by the dynamic value at runtime.
- 4 If you select the runtime of `Profile` tag, the screen will display the Profile Block group. Select the **Tag Data Type**, **Tag Location** and **Tag Field** from the lists.

Notes:

- The **Tag Field** is populated with the tags that have a Profile Tag Type of `String`, `Numeric String`, or `Limited Numeric String`, as specified on the **Profile Tag Details** tab of the ACS Configuration screen.
- The Profile Blocks that can be used are dependent upon the other applications installed and the control plan you are using. For more information about how profile blocks are used, see Profile blocks.
- If the selected template specifies a Profile Tag that cannot be defined in this screen, edit the selected template on the **Operations** tab on the DAP Resources screen, so that it is available.

- 5 You create up to 20 return parameters to associate with either an ACS Runtime Variable Part or in a user-defined profile block and ID.

Click **New** to create a return parameter.

Result: The Return Parameter screen appears.

Step	Action
------	--------

6 In the **Tag** text box, enter the name of the XML tag containing the return details.

Note: This must match an existing XML tag that is returned by the ASP.

Example: For an XML script returned from an ASP containing `<return_callingPartyNumber>441473289900</return_callingPartyNumber>`, the tag name to enter is `return_callingPartyNumber`.

7 Select from either the **ACS Runtime** or the three fields in the **Profile Block** frame.

8 To make the return parameter optional, select the **Optional** check box.

- If mandatory, this parameter must be returned from the ASP. If it is not, then it will go to exit branch 3 (Mismatch) and will log a syslog error naming the missing parameter.
- If optional, the node will process the return parameter if it is returned from the ASP. If it is not, then it will still process successfully.

9 Click **Update** to save the return parameter.

Result: The Configure Send Request screen shows the added return parameter.

Step	Action
------	--------

Note: To edit the return parameter, select the record in the table and click **Edit**.

- 10 The **Wait Flag** check box displays whether the system waits for a response from the ASP before returning a DAP response to the client.
- If correlation has:
- Been defined for the template, the **Wait Flag** check box is selected and cannot be modified.
 - Not been defined, you can select the **Wait Flag** check box., if required
- 11 Click **Save**.

DAP VXML

Node description

This feature node plays an announcement based on a text string stored in a profile.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many UIP VXML nodes as required.

Restrictions

A control plan may contain as many DAP VXML feature nodes as required.

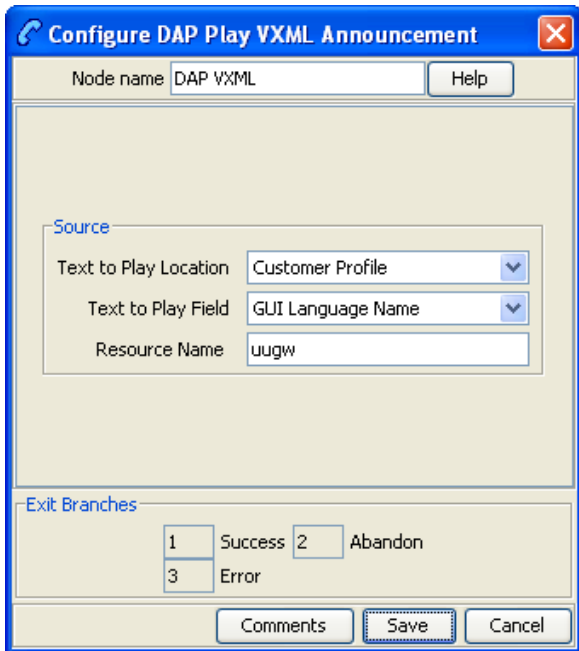
Node exits

This feature node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The announcement was played successfully.
2	Abandon	The caller hung up during the announcement.
3	Error	General Error Handling.

Configuration screen

Here is an example Configure DAP Play VXML Announcement screen.



Configuring the node

Follow these steps to configure the node.

Note:

- For information on profiles and how to use them, see [Selecting profile locations and fields](#).

- If an expected profile field is missing, it can be added via the ACS Configuration screens. See Profile Tag Details.

Step	Action
1	In the Text to Play Location field, select the profile block in which relevant information is stored.
2	In the Text to Play Field field, select the profile tag that identifies the information required by the node.
3	In the Resource Name field, enter the name of the media server which will provide the announcement.

Warning: This string must be set to `uugw`.

Data Operations Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Data Operations feature nodes. Data Operations feature nodes are used to manage and use profile data.

In this chapter

This chapter contains the following topics.

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Calculation	290
Compare Profile Data	292
Copy	295
Delete Profile Field	301
Modify	302
Prefix Branching	304
Prefix Tree Branching	305
Profile Branching	308
Profile Counting	310
Set 312	

Available Feature Nodes

Data Operations Feature Nodes List

This table lists the feature nodes available from the Data Operations palette group in the ACS Control Plan Editor and the fast key for each feature node in the list. You can use the fast key to search for a feature node in the palette or the canvas.

Feature Node Name	Feature Node Description
Calculation (on page 290)	Allows you to perform basic calculations on two input values and stores the result in a profile field. Fast key: MATH
Compare Profile Data (on page 292)	Allows you to compare the value of two profile fields and then branch on the outcome. Fast key: CPF
Copy (see page 295)	Copies data (for example - digits) from one data field to another. Fast key: STTP
Delete Profile Field (see page 301)	Removes the selected profile field if it exists (not just the contents). Fast key: DPF
Modify (see page 302)	Adds, changes or removes digits from the start or end (or both) of a number.

Feature Node Name	Feature Node Description
	Fast key: CUTC
Prefix Branching (on page 304)	Compares the contents of an ACS number buffer against the specified profile field. Fast key: APBN
Prefix Tree Branching (on page 305)	Compares the contents of an ACS number buffer against the specified prefix tree. Fast key: APTB
Profile Branching (see page 308)	Checks the value of a specified profile field against a set value. Fast key: PB
Profile Counting (on page 310)	Sets or increments a profile counter. Fast key: PCNT
Set (see page 312)	Stores a fixed value in a data field. Fast key: SDTN

Calculation

Node description

The Calculation feature node allows basic calculations on two input values. The input values can be retrieved either from profile fields, or from a profile field and a fixed value. The result of the calculation is then stored to another profile field.

You use the Calculation feature node to perform the following operations:

- Addition: Adding two source numbers ($2+2=4$)
- Subtraction: Subtracting the second source number from the first ($5-2=3$)
- Multiplication: Multiplying two source numbers together ($2\times 2=4$)
- Division: Dividing the second source number into the first ($10\div 2=5$)
- Modulus: Finding the remainder when one number is divided into another ($10 \bmod 6=4$)

Node icon



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Name	Cause
1	Success	All calculation results have been stored successfully.

Exit	Name	Cause
2	Error	The unrounded result is too large for the type of target profile tag, or an error occurs (other than divide by zero).
3	Divide by zero	The calculation divides a number by zero.

Configuration screen

Here is an example Configure Calculation Node screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	<p>In the First Number section, specify the input value for your mathematical calculation by performing the following steps:</p> <ol style="list-style-type: none"> From the Profile Value Data Type list, select the type of value for your mathematical calculation. Depending on your selection, different options for Profile Value Location will be available to you. From the Profile Value Location list, select the location of the value for your mathematical calculation. From the Profile Value Field list, select the field that contains the value for your mathematical calculation.

Step	Action
2	In the Operation section, select the mathematical operation you wish to perform (Multiply , Divide , Add , Subtract , or Modulus).
3	In the Second Number section, specify the input value needed to complete your mathematical calculation by performing the following steps: <ul style="list-style-type: none"> a. From the Profile Value Data Type list, select the type of value of the second number needed to complete your mathematical calculation. b. If your profile value data type is a fixed value: In the Profile Value Fixed Value section, enter the number by which you wish to add, subtract, multiply, or divide. Otherwise, leave Profile Value Fixed Value blank.
4	In the Rounding section, select the option for the type of rounding you prefer (Truncate , Ceiling , Median Up , or Bankers).
5	In the Destination section, specify the profile field in which to store the calculation result by performing the following steps: <ul style="list-style-type: none"> a. From the Destination Profile Data Type list, select the type of value of the profile field. b. From the Destination Profile Location list, select the profile, database, or storage associated with your destination profile field. c. From the Destination Profile Field list, select the profile field in which to store the calculation result.
6	Click Save .

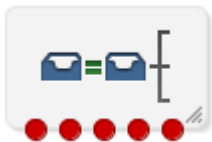
Compare Profile Data

Node description

The Compare Profile Data node allows you to compare the value of two profile fields and then branch on the outcome.

The compare is initially done at the field length level and then at the content level if the two fields are the same length.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Compare Profile Data nodes as required.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	$A < B$	Profile field value A is less than profile field B.
2	$A = B$	Profile field value A is equal to profile field B.
3	$A > B$	Profile field value A is greater than profile field B.
4	Missing Field	Either profile field A or profile field B is missing from their respective profiles.
5	Error	Any of: <ul style="list-style-type: none"> • Invalid field type length • Failed to retrieve profile fields • General Error • Unrecognized field type

Content comparison rules

This table describes how the field contents are compared when the two field lengths are equal.

Profile Field Type	Comparison
BOOLEAN	Integer comparison where false = 0, and true = 1.
BYTE	Integer comparison.
INTEGER	Integer comparison.
DATE	Integer comparison, where the dates are represented as a positive integer (seconds since the Epoch).
STRING, NSTRING, LNSTRING	Lexicographical comparison between the two equal length strings (finding the order of two words as they would appear in a dictionary).
PREFIX, OPREFIX, LOPREFIX	Perform byte by byte comparison of the two compiled prefix trees. Branches based on the difference between the two bytes in the two prefix trees that differ.
PATTERNS, UINTEGER, UINTEGER64	Perform a memory compare between the two fields.

Configuration screen

Here is an example Configure Compare Profile Data screen.

The screenshot shows the 'Configure Compare Profile Data' dialog box. The 'Node name' is 'CompPData'. The 'Profile Field Type' is 'ANNDATA'. The 'Profile Field A' and 'Profile Field B' sections are identical, both with 'Source Data Type' set to 'Any Valid Data', 'Source Location' set to 'Any Valid Profile', and 'Source Field' set to 'Multi Lingual Announcements'. The 'Exit Branches' section contains the following table:

1	A < B	2	A = B
3	A > B	4	Missing Field
5	Error		

Buttons at the bottom include 'Comments', 'Save', and 'Cancel'.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	Select the profile field type for the comparison from the Type drop down list. Note: Not all the list items are valid for comparison. See the Content comparison rules table.
2	Using the drop down lists in the Profile Field A area, select the first profile field to compare.
3	Using the drop down lists in the Profile Field B area, select the other profile field to compare.
4	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

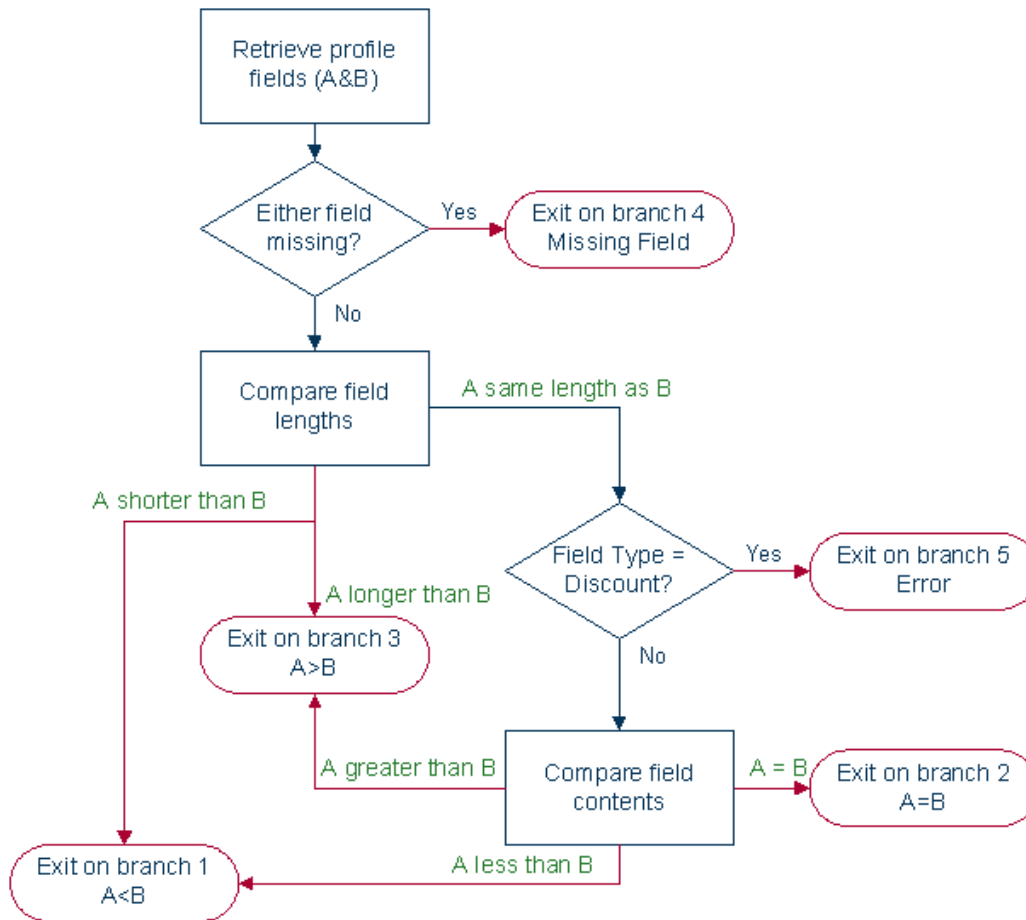
Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Node logic

This diagram shows the internal logic processing of the node.



Copy

Node description

The Copy feature node allows you to copy data (for example - digits) from one profile field to another. You can always copy a profile field to another profile field of the same type. In addition, you can use the Copy feature node to convert between the following profile field types:

- Boolean
- Byte
- Short
- Integer
- Unsigned Integer
- Unsigned 64-bit Integer
- String
- Numeric String
- Limited Numeric String
- Bounded Integer

- Price (from Integer or String)

The Copy feature node first converts the source field to a character string (except when it is already a string or a numeric string field) and then converts the character string to the target type, according to a set of predefined Profile Field Conversion Rules.

If the source profile field type is OPREFIX or LOPREFIX, then the Copy feature node copies the source field content directly into a corresponding prefix tree without any conversion.

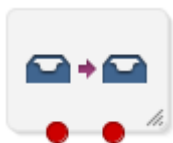
Profile Field Conversion Rules

This table lists the types of conversions and the corresponding conversion rules used by the Copy feature node to convert profile field data to and from character strings.

Type of Conversion	Conversion Rule
Boolean to character string	Interprets the stored bytes as a signed four byte integer that is represented in base 10, and: <ul style="list-style-type: none"> • Converts false to zero (0). • Converts true to a non zero integer (usually either one (1), or 16777216).
Character string to boolean	Converts the following values to true: <ul style="list-style-type: none"> • Non-zero integers. • "true", "t", "yes", "y", and "on". Converts all other values, including an empty string, and zero (0) to false.
Byte to character string	Converts bytes (assumed to be unsigned) to a value in the range of "0" to "255".
Short to character string	Converts shorts (assumed to be unsigned) to a value in the range of "0" to "65535".
Integer to character string	Converts integers (represented in base 10) to a value in the range of "-9223372036854775808" to "9223372036854775807". Note: Integers are either four bytes or eight bytes long.
Unsigned 64-bit integer to character string	Converts unsigned integers (represented in base 10) to a value in the range of "0" to "18446744073709551615".
Character string to one of: <ul style="list-style-type: none"> • Unsigned Integer • Unsigned 64-bit integer • Integer • Short • Byte 	Converts the string to the required number type. If the character string starts with "0x", then the Copy feature node discards the "0x" and interprets the string as a base 16 number. Otherwise the Copy feature node interprets the string as a base 10 number.
Unsigned integer to character string	Converts unsigned integers (represented in base 10) to a value in the range of "0" to "4294967295".
String, limited numeric string, or numeric string to character string. Character string to string, limited numeric string, or numeric string.	No conversion needed. The Copy feature node copies these types of profile fields to another profile field of the same type.

Type of Conversion	Conversion Rule
Bounded integer to character string	The Copy feature node cannot copy a bounded integer to a character string.
Character string to bounded integer	<p>Converts the character string to a four byte integer and puts it in bytes 9, 10, 11 and 12 of the bounded integer.</p> <p>Note: Bytes one to four hold the lower bound, and bytes five to eight hold the upper bound. To successfully copy an integer to a bounded integer, the source integer must be between the two bounds.</p>
Integer <ul style="list-style-type: none"> • INTEGER • UINTEGER • UINTEGER64 to Price	<p>A Price profile tag contains a string with the strict format <i>DDDDDDCC</i>, where <i>DDDDDD</i> are the big units (for example, Euros) with zero padding and <i>CC</i> are the small units (for example, Cents) also zero padded.</p> <p>Conversion from an integer value will assume the value is expressed in small units with the lowest two digits providing the <i>CC</i> part.</p> <p>The conversion (and copy) will fail if the integer value is bigger than 99999999.</p> <p>Example: An integer value 95642 will be converted to "00095642" which equates to 956.42 (Euros).</p>
String <ul style="list-style-type: none"> • STRING • NSTRING • LNSTRING to Price	<p>A Price profile tag contains a string with the strict format <i>DDDDDDCC</i>, where <i>DDDDDD</i> are the big units (for example, Euros) with zero padding and <i>CC</i> are the small units (for example, Cents) also zero padded.</p> <p>Conversion from a string value will accept two forms of input. A string containing a decimal point will be assumed to contain a value already in cost form.</p> <p>A string conversion will fail if the input value is too large (the max is either "999999.99" or "99999999").</p> <p>Behaviors:</p> <ul style="list-style-type: none"> • A string containing "8.71" will be converted to "00000871". • Any decimal places more than 2 will be stripped so "19.563" will be converted to "00001956". • A string containing no decimal point will be assumed to contain a value expressed in small units (like the integer values). So a string containing "11223" will be converted to "00011223" which equates to 112.23.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



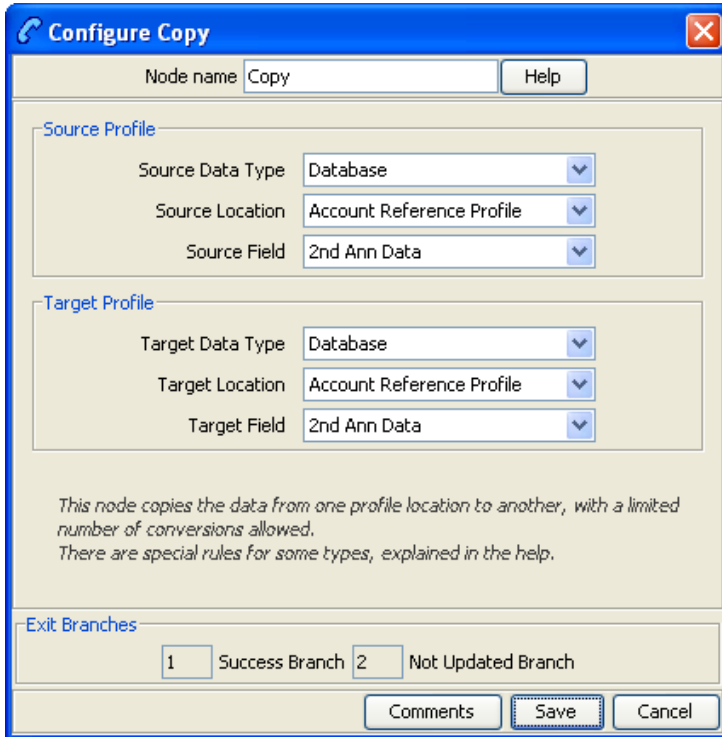
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success Branch	Data successfully saved to the profile.
2	Not Updated Branch	Data could not be saved.

Configuration screen

Here is an example Configure Copy screen.



Include Pending TN Type

The **Include PendingTN Type** check box appears when the **Source Field** selection is CC Pending Termination Number, as shown in this example of part of the screen.

The screenshot shows a configuration window with two main sections: Source Profile and Target Profile. The Source Profile section has three dropdown menus: Source Data Type (Session Data), Source Location (Outgoing Session Data), and Source Field (CC Pending Termination Number). The Target Profile section has three dropdown menus: Target Data Type (Session Data), Target Location (Incoming Session Data), and Target Field (CC Call Duration Seconds). At the bottom of the window, there is a checkbox labeled 'Include PendingTN Type' which is currently unchecked.

Treat Target as Prefix

The **Use Source as Prefix** check box appears when the **Source Field** and **Target Field** selections are of type string or number string, as shown in this example of part of the screen.

The screenshot shows the 'Configure Copy' dialog box. The 'Node name' field contains 'Copy|' and there is a 'Help' button. The Source Profile section has three dropdown menus: Source Data Type (Database), Source Location (CCS Global Profile), and Source Field (CCS CWTR Name). The Target Profile section has three dropdown menus: Target Data Type (Session Data), Target Location (Incoming Session Data), and Target Field (CC Called Location Number). Below the Target Profile section, the 'Use Source as Prefix' checkbox is checked. There is a note below the checkbox: 'This node copies the data from one profile location to another, with a limited number of conversions allowed. There are special rules for some types, explained in the help.' At the bottom, there is an 'Exit Branches' section with two input fields: '1' and '2', followed by 'Success Branch' and 'Not Updated Branch' respectively. At the very bottom, there are three buttons: 'Comments', 'Save', and 'Cancel'.

Use Stored Sub-Tag

The **Use Stored Sub-Tag** check box appears when the **Target Field** selection contains sub-tags (for example, the Speed Dial Block contains the sub-tag list of speed dial numbers. For more information, see *Sub-tags* (on page 5)), as shown in this example of part of the screen.

The screenshot shows a configuration window with two main sections: **Source Profile** and **Target Profile**. Below these are two checkboxes and a dropdown menu.

- Source Profile:**
 - Source Data Type: Session Data
 - Source Location: Outgoing Session Data
 - Source Field: CC Pending Termination Number
- Target Profile:**
 - Target Data Type: Database
 - Target Location: CLI Subscriber Profile
 - Target Field: Speed Dial Block
- Use Stored Sub-Tag
- Include Pending TN Type
- Target Sub-Tag Storage Format: Default

In this example, earlier in the control plan, the sub-tag (e.g. the speed dial number, let's say 50) has been specified using the *Collect Digits To Sub-tag* (see page 339) node. The telephone number, e.g. 08001234567, to associate with it has then been stored in the CC Pending TN buffer using the *Collect Digits to Pending TN* (see page 482) node. Using the Copy node, that number is copied into the Speed Dial block, so that the speed dial number 50 is set to call 08001234567.

Configuring the node

Follow these steps to configure the Copy node.

Step	Action
1	<p>From the drop down lists in the Source Profile area, select the source stored data location.</p> <p>Notes: If you set a customer-specific profile, the profile set in this field must belong to the customer who will be running the Control Plan.</p> <p>If the Control Plan is owned by the Boss user:</p> <ul style="list-style-type: none"> the profile must be set to Control Plan, or a customer id must be specified at an earlier point in the Control Plan.
2	From the drop down lists in the Target Profile area, select the target that the data is to be copied to.
3	<p>If the Include Pending TN Type check box is displayed, then either:</p> <p>tick the node will save the Pending TN to the profile with the Pending TN Type prefixed.</p> <p>clear the node will save just the Pending TN to the profile.</p>
4	<p>If the Use Source as Prefix check box is displayed, then either:</p> <p>tick the node will prefix the target value with the source value.</p> <p>clear the node will copy the source value to the target value.</p>
5	If the Use Stored Sub-Tag check box is displayed, select the required target field format from

Step	Action
	the Target sub-tag Storage Format drop down list. The node will save the sub-tag value with the required format in the target field.
6	Click Save .

Note: **Save** is not available until all the required information has been selected or entered.

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

For information about using the Call Context Profile, refer to *ACS Buffers* (on page 7).

Delete Profile Field

Node description

The Delete Profile Field node allows you to delete the specified profile field from the profile (that is, the field as well as the contents are removed from the profile).

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Delete Profile Field nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The delete was successful.
3	Error	The delete failed.

Configuration screen

Here is an example Configure Delete Profile Field screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	In the Profile Field area, using the drop down lists, select the profile field to delete.
2	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Modify

Node description

The Modify feature node allows you to add, change or remove digits from the start or end (or both) of a number.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Modify nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Modified	The number was modified.
2	Error	Error

Configuration screen

Here is an example Configure Modify screen.

Configuring the node

Follow these steps to edit the node.

Step	Action
1	In the Modify area, using the drop down lists, select the field to modify.

Step	Action
	Note: ACS normalisation will have already been applied to this number.
2	Type the number of digits that are to be stripped from the front of the number. Example: If a value of 2 is entered, 2 digits are removed from the start of the number.
3	Type the number of digits that are to be stripped from the end of the number.
4	Type the characters to prepend to the start of the number.
5	Type the characters to append to the end of the number.
6	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Prefix Branching

Node description

The Prefix Branching node allows you to compare the contents of an ACS number buffer against the specified profile field, and will branch according to whether the profile field content is a prefix of the ACS number buffer value.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Prefix Branching nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Matched	The specified profile field's value was a prefix of the number buffer's value.
2	Not Matched	The specified profile field's value was not a prefix of the number buffer's value.

Configuration screen

Here is an example Configure Prefix Branching screen.

Editing the node

Follow these steps to edit the node configuration.

Step	Action
1	Using the drop down lists in the Number String area, select the source prefix tree.
2	Using the drop down lists in the Number Source area, select the ACS number buffer containing the number to compare with the prefix tree.
3	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

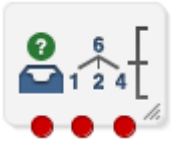
Prefix Tree Branching

Node description

The Prefix Tree Branching node allows you to compare the contents of an ACS number buffer against the specified prefix tree, and will branch according to whether the tree contains a prefix of the number.

If a match is found, the value associated with the matched entry (often the order of a limited prefix tree) will be stored in the specified profile field.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Prefix Tree Branching nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Matched	A prefix of the number was found in the tree.
2	Not Matched	A prefix of the number was not found in the tree.
3	Fully Matched	The number was found in the tree (full match, not a prefix)

Configuration screen

Here is an example Configure Prefix Tree Branching screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	In the Prefix Tree area, using the drop down boxes, select from the list of prefix trees.
2	In the Number Source area, using the drop down boxes, select the source for the number to match.
3	If you want to temporarily store a matched number in a specified field so that the node doesn't change the prefix tree: <ol style="list-style-type: none"> Tick the Enabled check box in the Use Selected Entry area. Then use the drop-down lists in the Selected Entry area to specify where to store the number.
4	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

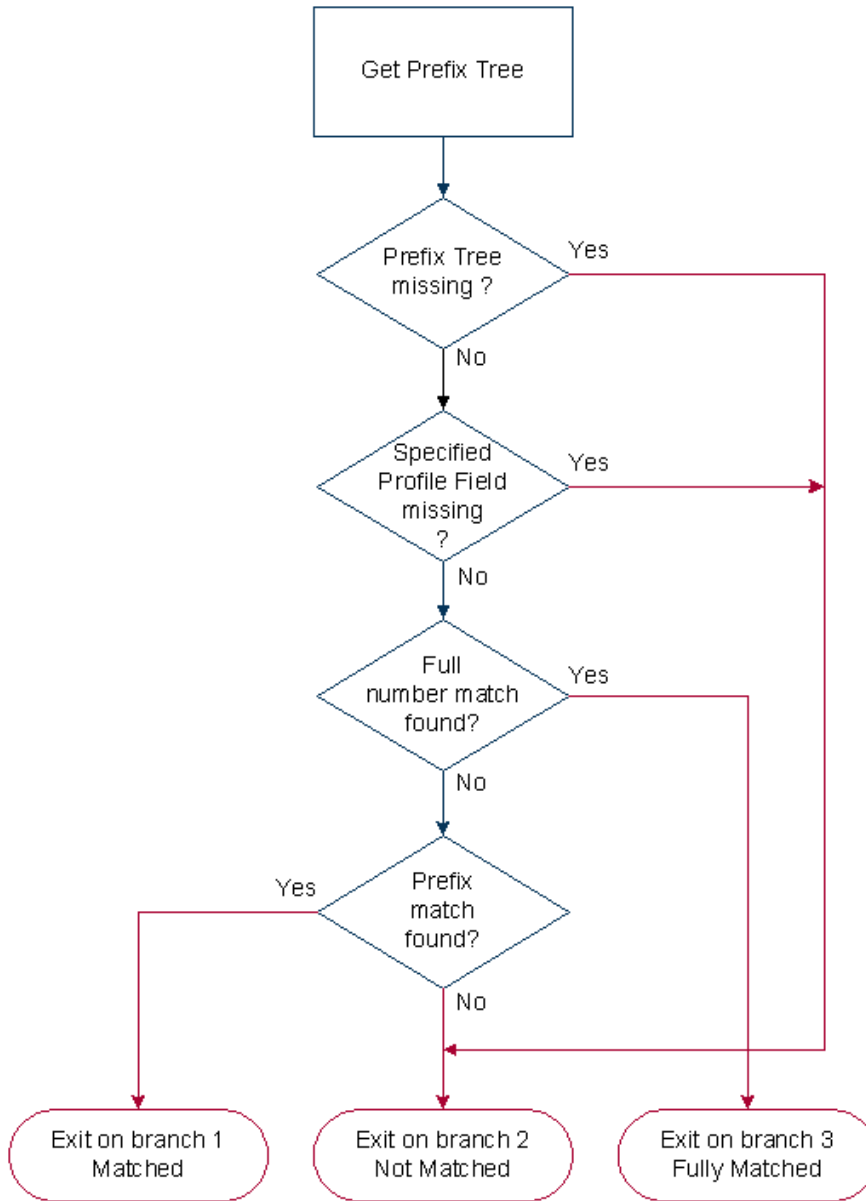
Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Node logic

This diagram shows the internal logic processing of the node.



Profile Branching

Node description

The Profile Branching feature node checks the value of a specified profile field against a set value.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Profile Branching nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Note: These exit descriptions are specific to the responses received from an Oracle VWS billing engine. For specific information about how responses from other billing engines map to these exits, see the technical guide for the interface for billing engine being used.

Exit	Cause	Description
1	True	The result of the comparison is true for the factors set in the node screen.
2	False	The result of the comparison is false for the factors set in the node screen.
3	Data Not Found	Data required by the node has not been found. No comparison has been made.

Configuration screen

Here is an example Configure Profile Branching screen.

Configuring the node

Follow these steps to configure the Profile Branching node.

Note: For information on profiles and how to use them, see *Selecting profile locations and fields*.

Step	Action
1	In the Source Data Type field, select the data type of the source profile block.
2	In the Source Location field, select the profile block in which relevant information is stored.
3	In the Source Field field, select the profile tag that identifies the information required by the node.
4	Select either to compare the Value , or the Length of the source.
5	From the Comparison Operator list, select the type of comparison that is to be made. This field describes the relationship between the value in the specified profile field and the value set as the Constant. Example: In the screen shown above, the value in the specified profile field is required to be greater than 0. Therefore, the Comparison Operator is set to “Greater than” and the Comparison Constant is set to “0”.
6	Type the Comparison Constant that is required. Result: The specified Profile field will be compared with the set constant value.
7	Click Save . Note: The Save button becomes available when the Primary Tag field is populated with a value other than 0.

Profile Counting

Node description

The Profile Counting node resets the configured integer profile field by one of:

- Setting the profile field content with this nodes configured value
- Incrementing the profile field content by this nodes configured value

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Profile Counting nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The profile counting field was updated successfully.
2	Error	General Error.

Configuration screen

Here is an example Configure Profile Counting screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	In the Profile Counter Field area, using the drop down boxes, select the target profile counter field.
2	Type the number to set to or increment the profile counter by in the Value field.
3	To set the profile counter to the value, tick the Set Absolute check box. To increment the profile counter by the value, clear the Set Absolute check box.
4	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

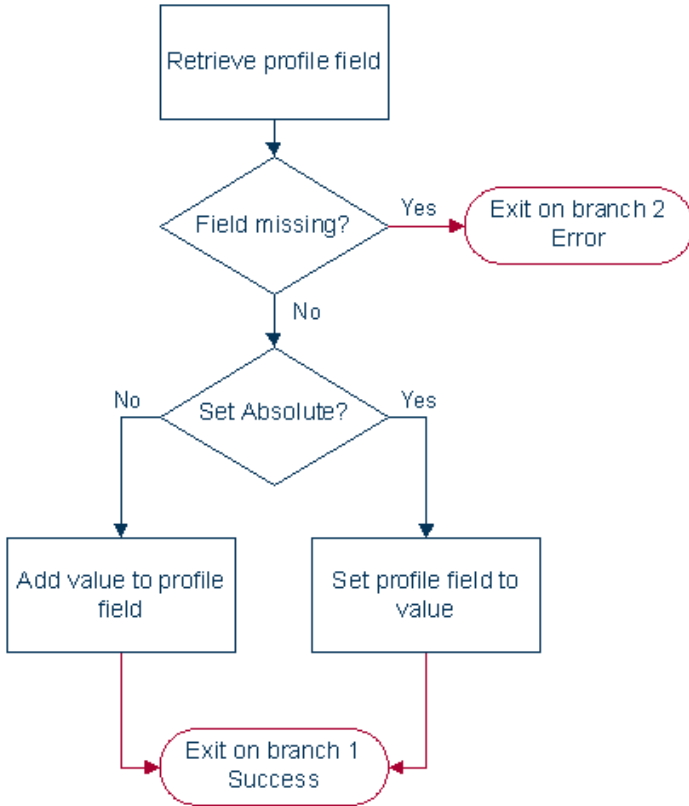
Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Node logic

This diagram shows the internal logic processing of the node.



Set

Node description

This node stores the entered digits in a data field. They may be later collected from this profile and used in the control plan.

A percentage character will have a special meaning during the node processing. If a '%' is entered in the digits field on the node edit screen it will be replaced by the current value of the buffer and the buffer will be updated with that final result. Only the first occurrence of the '%' char will be treated this way. Any other occurrences of the percentage character will be ignored.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Set nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Value has been set in target profile.
2	Error	Error occurred.

Configuration screen

Here is an example Configure Set screen.

Configuring the node

Follow these steps to configure the Set node.

Step	Action
1	In the Value field type the number (in digits) to save in the selected target profile field.
2	In the Target Profile area, using the drop down boxes, select the target profile.
3	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

Chapter 9

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

ENUM Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller ENUM Control Agent feature nodes.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	315
ENUM Call Out	315
ENUM Naptr Response	318
ENUM Query	320

Available Feature Nodes

ENUM Feature Nodes List

This table lists the feature nodes available from the ENUM palette group in the ACS Control Plan Editor and the fast key for each feature node in the list. You can use the fast key to search for a feature node in the palette or the canvas.

Node name	Node description
ENUM Call Out (on page 315)	The ENUM Call Out node performs an ENUM lookup using the ENCA interface. Fast key: enco
ENUM Naptr (on page 318)	The ENUM NAPTR Response node processes a previously retrieved NAPTR response to extract specific records. Fast key: ennr
ENUM Query (on page 320)	The ENUM Query node is used to query the ENUM database. Fast key: enqr

ENUM Call Out

Node description

The ENUM Call Out node performs an ENUM lookup using the ENCA interface.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many ENUM Call Out nodes as required.

Node exits

This node has one entry and ten exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	ENCA return code = 0
2	Too Few Parameters	No number was given in the call-out ENCA request (number is blank).
3	Failed Translation	ENCA DNS response translation failed.
4	DNS Timeout	DNS server(s) failed to respond within the configured time-limit.
5	DNS Format Error	DNS served responded with message: "Format Error".
6	DNS Server Failure	DNS served responded with message: "Server Failure".
7	DNS Name Error	DNS served responded with message: "Name Error".
8	DNS Not Implemented	DNS served responded with message: "Not Implemented".
9	DNS Refused	DNS served responded with message: "Refused".
10	ENCA Fail	ENCA failure (out of resources / bad domain name / any other error).

Configuration screen

Here is an example Configure ENUM Call Out screen.

Node name: ENUM CallOut

Number Source: Profile Freeform

Number Location: CLI Subscriber Profile

Number Field: Account Code Policy

Number:

Convert to FQDN:

Domain Name Source: Profile Freeform

Domain Name: Call Context

Domain Name Field: CC Called Insi

Domain Name: e164.arpa

Exit Branches	
1	Success
2	Too Few Parameters
3	Failed Translation
4	DNS Timeout
5	DNS Format Error
6	DNS Server Failure
7	DNS Name Error
8	DNS Not Implemented
9	DNS Refused
10	ENCA Fail

Comments Save Cancel

Configuring the node

Follow these steps to configure the node.

Step	Action
1	<p>Select where the number to convert will be sourced from, one of:</p> <ul style="list-style-type: none"> • Profile (from a profile block and tag) • Freeform (from this configuration screen) <p>Result: The relevant Number Location fields are made available.</p>
2	<p>Depending on what was selected at step 1, one of:</p> <ul style="list-style-type: none"> • Select the Number Location from the Number Location and Number Field drop down lists • Enter the number in the Number field

Step	Action
3	If the number is to be converted to FQDN format, select the Convert to FQDN check box.
4	Select where the domain name will be sourced from, one of: <ul style="list-style-type: none"> • Profile (from a profile block and tag) • Freeform (from this configuration screen) Result: The relevant Domain Name fields are made available.
5	Depending on what was selected at step 4, one of: <ul style="list-style-type: none"> • Select the Domain Name from the Domain Name Location and Domain Name Field drop down lists, or • Enter the domain name in the Domain Name field.
6	Click Save .

ENUM Naptr Response

Node description

The ENUM NAPTR Response node processes a previously retrieved NAPTR response to extract specific records.

When extracting AUS (Application Unique String) type, the presence of the AUS is detected by a '+' character found, followed by one or more numerical characters terminated with '@' (for example "!^.*\$!+441473289900@oracle.com!")

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many ENUM NAPTR Response nodes as required.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The record was extracted and saved.
2	No Match NAPTR	The required record could not be found.
3	No Match AUS	An AUS format number could not be found.
4	Error	Any other error situation.

Configuration screen

Here is an example Configure ENUM NAPTR Response screen.

Configure ENUM NAPTR Response

Node name:

Search String

Search String:
 Index:

Active Record Save Location

Profile Location:
 Profile Field:
 Overwrite NAPTR:

Regular Expression Substitution

Perform Substitution:
 Incoming Profile Location:
 Incoming Profile Field:
 Use default profile:
 Outgoing Profile Location:
 Outgoing Profile Field:

AUS Processing

Extract AUS:
 Remove +:
 Remove -:

AUS Save Location

Profile Location:
 Profile Field:

Exit Branches

1	Success	2	No Match NAPTR
3	No Match AUS	4	No Match Regex
5	Error		

Configuring the node

Follow these steps to configure the node.

Step	Action
1	In the Search String section, set the search criteria to match records against. <ul style="list-style-type: none"> Enter the record type to extract in the Search String field Enter the record number to extract in the Index field
2	In the Active Record Save Location , identify where the found record is to be saved, one of: <ul style="list-style-type: none"> A new location, select from the Profile Location and Profile Field drop down lists

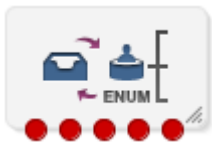
Step	Action
	<ul style="list-style-type: none"> Same location, select the Overwrite NAPTR check box
	Note: selecting this check box over-rides any profile selection.
3	<p>In the Regular Expression Substitution section, to invoke the regular expression substitution, check the Perform Substitution check box, then:</p> <ul style="list-style-type: none"> Identify incoming profile location, one of: Select an incoming AUS value from the Incoming Profile Location and Incoming Profile Field drop down lists Select the Use Default Profile check box Select a save location from the Outgoing Profile Location and Outgoing Profile Field drop down lists
4	<p>In the AUS Processing section, for AUS format numbers extracted:</p> <ul style="list-style-type: none"> Select the Extract AUS check box If required, select the Remove + check box to remove the preceding + If required, select the Remove - check box to remove the preceding -
5	In the AUS Save Location section, for AUS format numbers, select the save location from the Profile Location and Profile Field drop down lists.
6	Click Save .

ENUM Query

Node description

The ENUM Query node is used to query the ENUM database.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many ENUM Query nodes as required.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Subscriber records	Search key found subscriber records that matched the search key (dialed number within a record number range) and may have matched the optional Service criteria. Note: The search key is used to find subscribers/operators. This is a dialed number (for example, 1234567) that is searched for between a range of numbers.
2	Operator records	Search key did not find any subscriber records, but did find operator records that matched the search key (dialed number within a record number range) and may have matched the optional Service criteria.
3	No NAPTR Records	Search key did find subscriber or operator records that matched the search key but did not find any NAPTR records.
4	No SUB/OP info	Search key did not find any subscriber or operator records that matched the search key.
5	Error	Database or I/O error.

Note: The **Service** criteria is an optional delimiter for the NAPTR record returned. By specifying the service you can delimit on the service of a NATPR records (that is, only return records of E2U+sip type). The search key is still the primary search criteria.

Configuration screen

Here is an example Configure ENUM Query screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the Search Key Location , one of: <ul style="list-style-type: none"> Select from the drop down lists Select the Use Default Profile check box
2	To optionally specify a Service Type : <ul style="list-style-type: none"> Select the Specify Type check box Select the Service Type from the drop down list <p>Note: The Service Type list is configured in SMS > Services > ENUM service > NAPTR Record Management > Service tab/screens.</p>
3	Select the Outgoing Destination location using the drop down lists.
4	Click Save .

Events Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Events feature nodes. Event logging feature nodes collect and store data from the call, so that it can be retrieved in report form.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	323
Event Branching	323
Event Counting	325
Event Setting	326

Available Feature Nodes

Events Feature Nodes List

This table lists the feature nodes available from the Events palette group in the ACS Control Plan Editor.

Node name	Node description
Event Branching (see page 323)	Enables alternative control plan branches to be taken, based on the value of a particular event count.
Event Counting (see page 325)	Increments a specified counter by a specified amount each time a call is routed through this node.
Event Setting (see page 326)	Resets an event counter to a specified number each time a call is routed through this node.

Event Branching

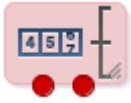
Node description

This node will enable alternative control plan branches to be taken, based on the value of a particular event count. A comparison of the current value of a particular counter may be made against a constant value or another event count.

To configure this node, two statistics counters are specified, or a statistics counter and a constant value. The two counters (or the counter and the constant) are compared according to a specified comparison operation. For example, a constant value of 6 may be specified, with a comparison operation of "greater than". In this case, calls will be routed down the "Comparison is True" branch whenever the first statistics counter registers a value greater than 6. All other calls are routed down the "Comparison is False".

A control plan may contain as many Event Branching nodes as required.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



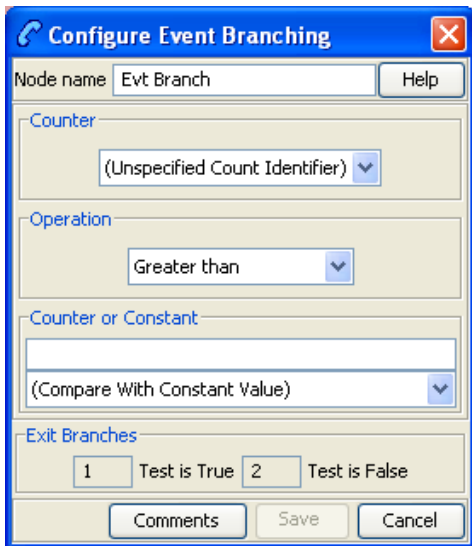
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	True	The result of the comparison is true for the factors set in the node screen.
2	False	The result of the comparison is false for the factors set in the node screen.

Configuration screen

Here is an example Configure Event Branching screen.



Configuring the node

Follow these steps to configure the Event Branching node.

Step	Action
1	From the Counter list, select the counter that is to be monitored by the node. Counters are configured through the Event Counters tab on the ACS Resources screen. For more information, see <i>ACS User's Guide</i>

Step	Action
2	From the Operation list, select the type of comparison that is to be made.
3	From the Counter or Constant list, select a statistics counter or (Compare with Constant Value). If comparing with a constant value, enter the value in the field above the list field.
4	Click Save .

Event Counting

Node description

This node increments a specified counter by a specified amount, each time a call is routed through the node.

The Event Counting Node must be given a statistics counter in which to save the statistics, and an amount by which to increment each time the node has a call routed through it. This is set in the Configure Event Counting screen shown below. The Configure Event Counting screen is available from the **Edit Node Data** option on the shortcut menu.

A control plan may contain as many Event Counting nodes as required.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.

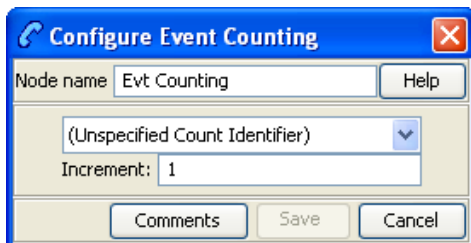


Node exits

This node has one entry and one exit. The number of exits cannot be changed.

Configuration screen

Here is an example Configure Event Counting screen.



Configuring the node

Follow these steps to configure the Event Counting node.

Step	Action
1	Select the event counter from the drop-down list to which this Event Counting node is counting. Event counters are set up in the Event Counters tab on the ACS Resources screen.
2	In the Increment field, enter the number that the counter will increment each time a call is routed through the node. The increment value must be between -99999 and 999999.
3	Click Save .

Event Setting

Node description

This node will reset a event counter to a specified number each time a call is routed through this node.

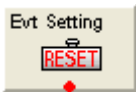
The Event Setting node must have a statistics counter that is to be reset specified and the amount that the statistics counter is to be reset to. These things are set in the Configure Event Setting screen.

A control plan may contain as many Event Setting nodes as required.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.

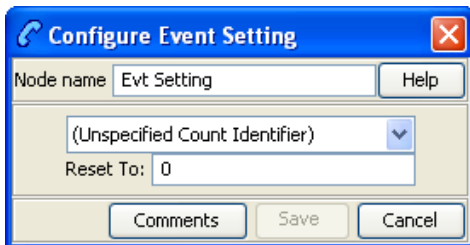


Node exits

This node has one entry and one exit. The number of exits cannot be changed.

Configuration screen

Here is an example Configure Event Setting screen.



Configuring the node

Follow these steps to configure the Event Setting Node.

Step	Action
1	Select the event counter that is to be reset from the drop-down list. Event counters are set up in the Event Counters tab on the ACS Resources screen.
2	Enter the number to which the statistics counter is to be reset. A Statistics Counter may be reset to any value between -99999 and 999999.
3	Click Save .

Interaction Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Interaction feature nodes. Use Interaction feature nodes to play an announcement to the caller, or to prompt for caller interaction, or to relay call information.

In this chapter

This chapter contains the following topics.

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Collect Date to Tag	330
Collect Digits to Buffer	336
Collect Digits to Sub-tag	339
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Play Announcement	343
Play Variable Part Announcement	345
Selection Dependent Routing	347
Send Notification	350
Send Short Message	352

Available Feature Nodes

Interaction Feature Nodes List

This table lists the feature nodes available from the Interaction palette group in the ACS Control Plan Editor and the fast keys for the feature nodes in the list. You can use fast keys to search for feature nodes in the palette or the canvas.

Node name	Node description
Collect Date to Tag (on page 330)	Collects and saves a date and/or time to a profile field. Input is either another profile or subscriber. Fast key: CDTT
Collect Digits to Buffer (see page 336)	Prompts the user to enter digits and will then store the entered digits in a nominated buffer from where they may be later used in the control plan. Fast key: CDB
Collect Digits to Sub-tag (see page 339)	Prompts the user to enter digits and will save digits to the sub tag variable for use in other nodes. Fast key: CDST
PIN Authorisation (see page 341)	Verifies the PIN number, prompting the caller for the PIN if necessary. Fast key: PINA
Play Announcement (see page 343)	Plays a specified announcement to the caller.

Node name	Node description
	Fast key: PLAY Shortcut keys: Alt+P
Play Variable Part Announcement (see page 345)	Plays an announcement to the caller containing up to five variable "parts" containing, for example, numbers and prices. Fast key: PAPV
Selection Dependent Routing (see page 347)	Menu node which prompts the caller to enter a digit and takes an exit based on that digit. Fast key: SD Shortcut keys: Alt+M
Send Notification (on page 350)	This node constructs message text from the given notification template and then sends the message using one of the available transport mechanisms. Fast key: NOTF

Collect Date to Tag

Node description

Collects and saves a date and/or time to a profile field. Input is either another profile or subscriber.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Collect Date to Tag nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The date and /or time was successfully saved in the target location.
2	Error	Any of: <ul style="list-style-type: none"> Maximum number of retries has been reached without getting any valid date and/or time. Equipment failure during interaction with Subscriber
3	Abandoned	Any of: <ul style="list-style-type: none"> The subscriber hung up before completing the date/time request.

Exit	Cause	Description
		<ul style="list-style-type: none"> The subscriber pressed the star key to cancel the selection of the date or time.

Configuration screen

Here is an example Configure Collect Date To Tag screen. The active areas on the screen change depending upon the options selected on it, so the example is split into each section.

Source Profile Tag

Here is an example of part of the Configure Collect Date to Tag screen, showing active fields if the **Profile Tag** option is selected.

The screenshot shows a window titled "Configure Collect Date To Tag". At the top, there is a "Node name" field containing "Collect Date" and a "Help" button. Below this is a "Source Selection" section with two radio buttons: "User Interaction" (unselected) and "Profile Tag" (selected). Underneath is a "Source Profile Tag" section with four dropdown menus: "Source Data Type" (Database), "Source Location" (Account Reference Profile), "Source Field" (CCS CWTR Name), and "Source Tag Mask" (YYYYMMDDHH24MISS).

User Interaction Configuration

Here is an example of part of the Configure Collect Date to Tag screen, showing the **User Interaction Configuration** frame.

The screenshot shows a "User Interaction Configuration" section with three radio buttons: "Collect Date Only" (selected), "Collect Time Only", and "Collect Date + Time". Below the radio buttons is a "Maximum number of retries" field with a spinner box set to "0".

Date configuration

Here is an example of part of the Configure Collect Date to Tag screen, showing active fields if the **User Interaction** and **Collect Date Only** options are selected.

The screenshot displays three configuration sections for date collection:

- Collect Date Main Configuration:**
 - Announcement Set: (Unspecified Announcement Set)
 - Announcement Entry: (Unspecified Announcement Entry)
 - Repetition: 1
 - Duration: 0
- Collect Date Retry Configuration:**
 - Announcement Set: (Unspecified Announcement Set)
 - Announcement Entry: (Unspecified Announcement Entry)
 - Repetition: 1
 - Duration: 0
- Collect Date Confirmation Configuration:**
 - Announcement Set: (Unspecified Announcement Set)
 - Announcement Entry: (Unspecified Announcement Entry)
 - Repetition: 1
 - Duration: 0

At the bottom, the **Date Format** is set to 01/01/1970.

Time configuration

Here is an example of part of the Configure Collect Date to Tag screen, showing active fields if the **User Interaction** and **Collect Time Only** options are selected.

The screenshot displays three configuration sections for time collection:

- Collect Time Main Configuration:**
 - Announcement Set: (Unspecified Announcement Set)
 - Announcement Entry: (Unspecified Announcement Entry)
 - Repetition: 1
 - Duration: 0
- Collect Time Retry Configuration:**
 - Announcement Set: (Unspecified Announcement Set)
 - Announcement Entry: (Unspecified Announcement Entry)
 - Repetition: 1
 - Duration: 0
- Collect Time Confirmation Configuration:**
 - Announcement Set: (Unspecified Announcement Set)
 - Announcement Entry: (Unspecified Announcement Entry)
 - Repetition: 1
 - Duration: 0

Below these sections, the **Time** configuration includes:

- Time Format:** 00:00:00
- Timezone Type:** SCP Local Time
- Unix Timezone:** <Not Selected>

Date +Time configuration

If the **User Interaction** and **Collect Date + Time** options are selected, the fields displayed in the example *Date configuration* (on page 332) and *Time configuration* (on page 332) are active.

Target Selection

Here is an example of part of the Configure Collect Date to Tag screen showing the target selection fields.

Response defaults

When collecting date and /or time from a subscriber, there are defaults used if the complete date or time are not entered.

The defaults for dates are:

- The month value must be entered by the subscriber.
- Missing year is substituted by the current sysdate year value.
- Missing day is substituted by "01".
- When time only collected, date is defaulted to "01/01/1970"

The defaults for times are:

- The hour value must be entered by the subscriber.
- Missing minutes are substituted by "00".
- Missing seconds are substituted by "00".
- When date only collected, time is defaulted to "00240000".

Configuring the node

Follow these steps to configure the node.

Step	Action
1	<p>Select the <i>source profile tag</i> (See example on page 331). The options are:</p> <ul style="list-style-type: none"> • User Interaction • Profile Tag <p>Result: The relevant fields are made available, others are grayed out.</p>
User Interaction	
2	<p>Select what data is to be requested from the subscriber. The options are:</p> <ul style="list-style-type: none"> • Collect Date Only • Collect Time Only • Collect Date + Time <p>Result: The relevant date/time fields are available or grayed out.</p>
3	<p>Select Maximum number of retries from the scroll box.</p> <p>Notes:</p>

Step	Action
	<ul style="list-style-type: none"> Each announcement also has a number of allowed retries, collectively these may be greater than the Maximum number of retries. If there is a timeout, or an invalid date or time selected by the user, the Retry prompt is played to invite the user to provide another date or time. After the announcement Repetition or Maximum number of retries failures, the feature node branches to Error. When the Collect Date + Time option has been selected and the date is valid before running out of allowed retries, then the number of retries for the time selections are set to the Maximum number of retries value.
4	<p>For the option:</p> <ul style="list-style-type: none"> Collect Date Only: Follow the procedure for <i>Configuring the node</i> (on page 334). Collect Time Only: Follow the procedure for <i>Configuring the node</i> (on page 335). Collect Date + Time: <ol style="list-style-type: none"> Follow the procedure for <i>Configuring the node</i> (on page 334). Follow the procedure for <i>Configuring the node</i> (on page 335).
5	Follow the steps for Target Selection .
6	Click Save .

Profile Tag

2	Select the Source Profile Tag from the Data Type , Location and Field drop down lists.
3	Select the date and time format from the Source Tag Mask drop down list.
4	Follow the steps for Target Selection .
5	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Configuring the node

Follow these steps to *configure the date* (See example on page 332) only interaction.

Step	Action
1	Select the date entry announcement to play from the Collect Date Main Configuration drop down lists.
2	Select the maximum number of times to repeat the announcement from the Collect Date Main Configuration Repetition scroll box.
3	Select the maximum duration (in seconds)to wait for user interaction from the Collect Date Main Configuration Duration scroll box.
4	Select the retry announcement to play from the Collect Date Retry Configuration drop down lists.
5	Select the maximum number of times to repeat the announcement from the Collect Date Retry Configuration Repetition scroll box.
6	Select the maximum duration (in seconds)to wait for user interaction from the Collect Date Retry Configuration Duration scroll box.

Step	Action
7	Select the confirmation announcement to play from the Collect Date Confirmation Configuration drop down lists.
8	Select the maximum number of times to repeat the announcement from the Collect Date Confirmation Configuration Repetition scroll box.
9	Select the maximum duration (in seconds) to wait for user interaction from the Collect Date Confirmation Configuration Duration scroll box.
10	Select the Date Format from the drop down list.

Configuring the node

Follow these steps to *configure the time* (See example on page 332) only interaction.

Step	Action
1	Select the time entry announcement to play from the Collect Time Main Configuration drop down lists.
2	Select the maximum number of times to repeat the announcement from the Collect Time Main Configuration Repetition scroll box.
3	Select the maximum duration (in seconds)to wait for user interaction from the Collect Time Main Configuration Duration scroll box.
4	Select the retry announcement to play from the Collect Time Retry Configuration drop down lists.
5	Select the maximum number of times to repeat the announcement from the Collect Time Retry Configuration Repetition scroll box.
6	Select the maximum duration (in seconds)to wait for user interaction from the Collect Time Retry Configuration Duration scroll box.
7	Select the confirmation announcement to play from the Collect Time Confirmation Configuration drop down lists.
8	Select the maximum number of times to repeat the announcement from the Collect Time Confirmation Configuration Repetition scroll box.
9	Select the maximum duration (in seconds) to wait for user interaction from the Collect Time Confirmation Configuration Duration scroll box.
10	Select the Time Format from the drop down list.
11	Select the Timezone type from the drop down list. Options are: <ul style="list-style-type: none"> • SCP Local Time • GMT • Explicit Unix TZ • TZ of Service Number • TZ of Logical CLI • TZ of Network CLI
12	If you selected the type - <code>Explicit Unix TZ</code> , select the Unix Timezone from the drop down list.

Configuring the node

Follow these steps to *select the target* (See example on page 333) where to store the date and time data.

Step	Action
1	Select in the Target Selection frame, the target Data Type , Location and Field drop down lists.

Note: This may require scrolling to the bottom of the screen.

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

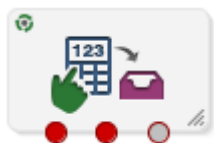
- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Collect Digits to Buffer

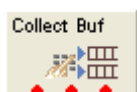
Node description

This node prompts the user to enter digits which it then stores in the nominated buffer or profile location. The digits may be retrieved later and used in the Control Plan. Any buffer may be selected; however some buffers may be used by subsequent nodes that are expecting a different value.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Collect Digits to Buffer nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The correct number of digits was collected successfully.
2	Not Updated	The correct number of digits was not collected after the specified number of retries.
3	Abandoned	The caller abandoned the call.

Configuration screen

Here is an example Configure Collect Digits to Buffer screen.

Configuring the node

Follow these steps to edit the feature node.

Step	Action
1	The Type of Digits to Collect field is only relevant if you are going to select <code>CC Pending Termination Number</code> from the Buffer Field list. See Step 2. If relevant, select a value for this field; otherwise ignore it.
2	From the lists in the Buffer frame, select the location to use to store the collected digits. Notes: <ul style="list-style-type: none"> If you want to copy the type of digits data to Pending TN Type, select the Pending Termination Number buffer. For information on profiles and how to use them, see <i>Selecting profile locations and fields</i>. See <i>ACS Buffers</i> (on page 7) for more information about buffers.
3	From the Main Announcement frame, select:

Step	Action
	<ul style="list-style-type: none"> The announcement set that contains the main announcement you want to play to the caller from the Announcement Set list. The announcement to play from the Announcement Entry list.
4	Set the Repetition field to the number of times to repeat the main announcement while the system waits for the caller to take an action. If set to zero, the announcement will be repeated for the length of the duration set.
5	Set the Duration field to the length of time in seconds that the announcement is to be played. If set to zero, the announcement will be played for its full length.
6	The retry announcement contains the announcement you want to play to the caller if the number of digits collected is not within the range specified. In the Retry Announcement frame, select the: <ul style="list-style-type: none"> Announcement Set that contains the retry announcement. Announcement Entry for the retry announcement you want to play. Then set: <ul style="list-style-type: none"> Repetition to the number of times to repeat the retry announcement. Duration to the length of time, in seconds, that the retry announcement is to be played.
7	In the Number of Retries field, set the number of times that the feature node will attempt to collect data from the caller, before routing the call to the Not Updated branch. This value may be between 0 and 10.
8	In the Minimum Number of digits field, set the minimum number of digits that must be collected. The value set must be between 1 and 32. The minimum number of digits must be less than, or equal to, the maximum number of digits.
9	In the Maximum Number of digits field, set the maximum number of digits that must be collected. The value set must be between 1 and 32. The maximum number of digits must be greater than, or equal to, the minimum number of digits.
10	(Optional) To include a prefix before the digits collected value, enter the prefix in the Digit Prefix field. The prefix may be up to 32 valid characters. Valid characters include 0-9, A-F.
11	From the Cancel Character options, select the character that the caller can use to cancel the digit collection. The switch on the answering device is used by default.
12	From the End Character options, select the character that the caller can use to indicate the end of the digit collection. The switch on the answering device is used by default.
13	(Optional) To check that the collected digits are within the TN ranges for this client, select the Verify Against TN Ranges? check box. This will check the termination number range rules set up for this customer (through the New or the Edit Customer screen in ACS) and verify according to the rules set. For more information, see the discussion on <i>Adding customers</i> in <i>ACS User's Guide</i> .
14	Click Save .

Note: The **Save** button becomes available when you have entered all the required information.

Result: The feature node data will be saved.

Note: The announcement set and announcement entry lists are populated with data that is specified using the **Announcements** tab of the ACS Configuration screen.

For more information about configuring announcement sets and announcement entries, see the *Announcements* topic in *ACS User's Guide*.

Collect Digits to Sub-tag

Node description

This node will prompt the user to enter digits, and will save the digits to a sub-tag. This sub-tag will be a part of a profile block (for example, the speed dial block contains the sub-tag list of speed dial numbers). See *Sub-tags* (on page 5) for a definition.

The node can be used to add digits to a sub-tag in a profile, or to access a previously configured sub-tag in a profile. Consequently, this node is usually used immediately before a profile node.

For information on profiles and how to use them, see *Selecting profile locations and fields*.

Refer to the *Copy node*, *Use Stored Sub-Tag* description for an example of using this node, in conjunction with the *Copy node*, to change a speed dial number.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Collect Digits to Sub-tag nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The digits were entered and collected successfully.
2	Not Updated	The digits could not be collected.
3	Abandoned	The caller abandoned the call.

Configuration screen

Here is an example Configure Collect Digits to Sub-Tag screen.

Configuring the node

Follow these steps to edit the Collect Digits to Sub-Tag node.

Step	Action
1	From the Main Announcement area, select the Announcement Set that contains the main announcement you want to play to the caller. The main announcement will be played to prompt for digits to enter into a sub-tag. Result: The Announcement Entry drop-down box will become available.
2	From the Announcement Entry drop-down list, select the main announcement you want to play to the caller.
3	Set the Repetition field to the number of times to repeat the main announcement while the system waits for the caller to take an action. If set to zero, the announcement will be repeated for the length of the duration set.
4	Set the Duration field to the length of time in seconds that the announcement is to be played. If set to zero, the announcement will be played for its full length.
5	The retry announcement contains the announcement you want to play to the caller if the sub-tag value is not within the range specified in step 7. In the Retry Announcement area, select the: <ul style="list-style-type: none"> • Announcement Set which contains the retry announcement • Announcement Entry for the retry announcement you want to play, and set the • Repetition to the number of times to repeat the retry announcement • Duration to the length of time, in seconds, that the retry announcement is to be played. as described in steps 1 - 4.

Step	Action
6	In the Number of Retries field, set the number of times that the node will attempt to collect data from the caller, before routing the call to the Not Updated branch. This value may be between 0 and 10.
7	In the Minimum Sub Tag Value and Maximum Sub Tag Value fields, set the minimum and maximum sub-tag value to be collected. This is the range of values that the user can set, for example, speed dial numbers between 10 and 20.
8	Click Save .

Note: **Save** is not available until all the required information has been selected or entered.

Note: The announcement set and announcement entry lists are populated with data that is specified using the **Announcements** tab of the ACS Configuration screen.

For more information about configuring announcement sets and announcement entries, see the *Announcements* topic in *ACS User's Guide*.

PIN Authorisation

Node description

This node checks that there is a PIN in the PIN buffer. If there is none there, it prompts the user to enter their PIN and places the received digits in the PIN buffer. It then checks that the PIN is correct. If it is not, then it prompts for PIN entry (maximum of ten times). It then collects the PIN accesses in the station profile (if there is none, it uses the network profile default). A check is made that the attempted action is permitted.

Note: A PIN can be set for a service number or CLI number in ACS. See the *ACS Numbers* topic in *ACS User's Guide* for details.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The valid PIN is entered.
2	Not Allowed	The entered PIN is not recognized.
3	Abandoned	An error has occurred and the PIN has not been collected.

Configuration screen

Here is an example Configure PIN Authorisation screen.

Configuring the node

Follow these steps to edit the PIN Authorisation node.

Step	Action
1	From the Main Announcement area, select the Announcement Set that contains the main announcement you want to play. Result: The Announcement Entry drop-down box will become available.
2	From the Announcement Entry drop-down list, select the main announcement you want to play to the caller to request a PIN.
3	Set the Repetition field to the number of times to repeat the main announcement while the system waits for the caller to take an action. If set to zero, the announcement will be repeated for the length of the duration set.
4	Set the Duration field to the length of time in seconds that the announcement is to be played. If set to zero, the announcement will be played for its full length.
5	The retry announcement contains the announcement you want to play to the caller if an incorrect PIN is entered. In the Retry Announcement area, select the:

Step	Action
	<ul style="list-style-type: none"> • Announcement Set which contains the retry announcement • Announcement Entry for the retry announcement you want to play, and set the • Repetition to the number of times to repeat the retry announcement • Duration to the length of time, in seconds, that the retry announcement is to be played. <p>as described in steps 1 - 4.</p>
6	In the Number of Retries field, set the number of times that the node will attempt to collect the correct PIN from the caller, before routing the call to the Not Allowed branch. This value may be between 0 and 10.
7	Tick the Access Rights Required check boxes that you wish to give right of access to the information that the node requires. These relate directly to the application in which the PIN was stored.
8	Select the profile blocks in which the information that the node requires is located. A profile block must be selected for each of the PIN, the Access Rights, and the default Access. Note: For information about profile blocks, see <i>Profile Blocks and Tags</i> (on page 2).
9	Click Save . Note: Save is not available until all the required information has been selected or entered.

Note: The announcement set and announcement entry lists are populated with data that is specified using the **Announcements** tab of the ACS Configuration screen.

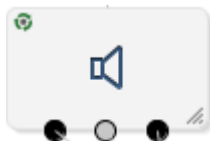
For more information about configuring announcement sets and announcement entries, see the *Announcements* topic in *ACS User's Guide*.

Play Announcement

Node description

This node will play a specified recorded announcement to the caller.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Play Announcement nodes as required.

Shortcut keys

The shortcut keys to add a Play Announcement node are **Alt+P**.

Node exits

This feature node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Completed	The announcement completed playing to the caller without any problems, the caller interrupting (by pressing keys on their telephone or speaking in a voice recognition system), or hanging up.
2	Abandoned	The playing of the announcement was abandoned for some reason. This could be that the caller hung up before the announcement had completed playing, or the announcement could not be played correctly as there was some sort of error.
3	Error	Continue session control after announcement failures and aborts.

Configuration screen

Here is an example Configure Play Announcement screen.

Configuring the node

Follow these steps to edit the Play Announcement node.

Step	Action
1	In the Main Announcement frame, select the Announcement Set which contains the main announcement to play to the caller. Result: The Announcement Entry field becomes available.
2	From the Announcement Entry drop-down list, select the main announcement to play to the caller.
3	Set the Repetition field to the number of times to repeat the main announcement while the system waits for the caller to take an action. If set to zero, the announcement is played for the duration set.
4	Set the Duration field to the length of time, in seconds, that the announcement is to be played. When set to zero, the announcement will be played for its full length.
5	Click Save .

Note: The announcement set and announcement entry lists are populated with data that is specified using the **Announcements** tab of the ACS Configuration screen.

For more information about configuring announcement sets and announcement entries, see the *Announcements* topic in *ACS User's Guide*.

Play Variable Part Announcement

Node description

The Play Variable Part Announcement feature node announces to the user up to five variables that were loaded from the profile block.

The feature node must have an announcement selected with variable parts. This announcement will be played and the variable parts specified will be played in the announcement.

You can configure variable part announcements to comply with the 3GPP CAMEL specification: *3GPP TS 29.078*, by setting the `TypeOfIVR` parameter to CAMEL in the srf (Special Resource Function) configuration in the `acs.conf` configuration file. When set, the Play Variable Part Announcement feature node plays dates sent over the network with a size of four octets in announcements. By default, the feature node plays dates sent over the network with a size of three octets. For more information about srf configuration, see the discussion on `acsChassis srf` configuration in *ACS Technical Guide*.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Play Variable Part Announcement feature nodes as required.

Node exits

This feature node has one entry and two exits. The number of exits cannot be changed.

Note: These exit descriptions are specific to the responses received from an Oracle VWSbilling engine. For specific information about how responses from other billing engines map to these exits, see the technical guide for the interface for billing engine being used.

Exit	Cause	Description
1	Completed	The announcement completed playing to the caller without any problems, the caller interrupting (by pressing keys on their telephone or speaking in a voice recognition system), or hanging up.
2	Abandoned	The playing of the announcement was abandoned for some reason. This could be that the caller hung up before the announcement had completed playing, or the announcement could not be played correctly as there was some sort of error.
3	Error	Continue session control after announcement failures and aborts.

Configuration screen

Here is an example Configure Play Variable Part Announcement screen.

Configuring the node

Follow these steps to edit the Play Variable Part Announcement node.

Step	Action
1	<p>From the Main Announcement frame, select the Announcement Set which contains the main announcement you want to play to the caller.</p> <p>Result: The Announcement Entry list becomes available.</p> <p>Select the main announcement you want to play to the caller from the Announcement Entry drop down list.</p>
2	<p>For each of the variable parts:</p> <ul style="list-style-type: none"> • In the Data Type field, select the profile data type. • In the Location field, select the location where the field is stored. • In the Field field, select the field to be played. • Select the Denormalisation check box, if you wish the number in this field to be denormalized. See <i>ACS Technical Guide, Play Variable Part Announcement Configuration</i> topic, for this node's denormalization rules.
3	<p>Click Save.</p> <p>Note: Save is not available until all the required information has been selected or entered.</p>

Note: The announcement set and announcement entry lists are populated with data that is specified using the **Announcements** tab of the ACS Configuration screen.

For more information about configuring announcement sets and announcement entries, see the *Announcements* topic in *ACS User's Guide*.

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Selection Dependent Routing

Node description

Use the Selection Dependent Routing feature node to play an announcement to the caller and to route the call according to their response. In addition, you can configure a fast timeout period that enables callers to exit directly from the feature node after timing out. For example, you can use this feature to connect calls directly to the operator after timing out.

This feature node routes calls based on a single digit, letter, or character entered on the caller's telephone keypad. You map valid digits, letters, or characters to the feature node exits in the feature node configuration window. Valid digits, letters, and characters are:

- Numbers ranging from 0 (zero) to 9
- Letters ranging from A to F
- Special characters * and #

You configure the fast timeout period (in seconds) by mapping the letter "T" to the required feature node exit and entering a value for the fast timeout period in the Configure Selection Dependent Routing configuration window. When you configure this option, the caller is not prompted for a number after timing out. For details, see *Setting the Fast Timeout Period* (on page 350).

Shortcut keys

The shortcut keys to add a Selection Dependent Routing node are **Alt+M**.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Selection Dependent Routing feature nodes as required.

Node exits

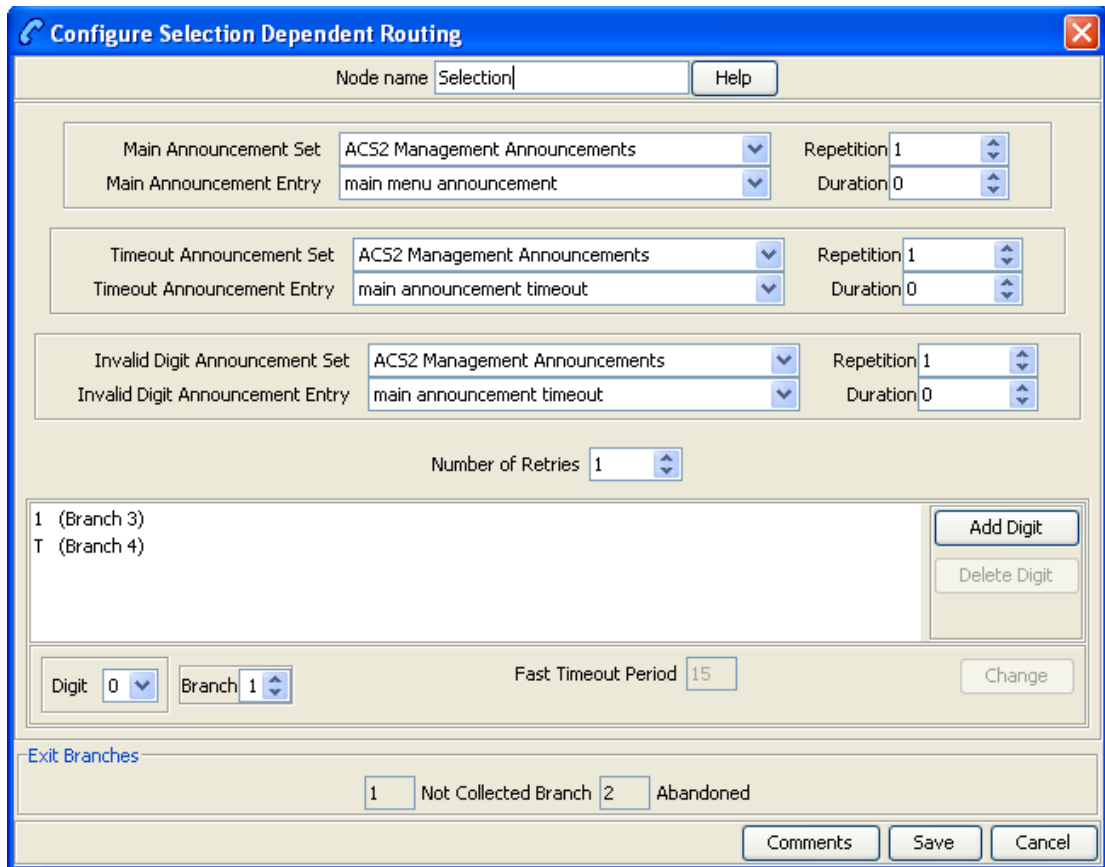
This node has one entry and may have 2 through 20 exits. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See Editing node exits.

There are two cases in which a caller will be sent to a branch other than the branch corresponding to a digit selected by the caller. These are:

Exit	Cause	Description
1	Not Collected	The branch that the call will be sent to after the Timeout Announcement is played to them the number of times set in the Max Iterations field.
2	Hang Up	The branch that the call is to be routed down, when the caller hangs up or there is a network error.

Configuration screen

Here is an example Configure Selection Dependant Routing screen.



Configuring the node

Follow these steps to configure the Selection Dependent Routing node.

Step	Action
1	From the Main Announcement area, select the Main Announcement Set that contains the main announcement to play to the caller.

Note: It is not necessary to have all the announcements that are to be played by this node

Step	Action
	in the same announcement set.
	Result: The Main Announcement Entry drop-down box will become available.
2	From the Main Announcement Entry drop-down list, select the main announcement to play to the caller.
3	Set the Repetition field to the number of times to repeat the main announcement while the system waits for the caller to take an action. If set to zero, the announcement will be repeated for the length of the duration set.
4	The timeout announcement contains the announcement you want to play to the caller when the caller has waited too long before entering a digit. In the Timeout Announcement frame, select the following, as described in steps 2 - 5: <ul style="list-style-type: none"> • Timeout Announcement Set which contains the timeout announcement • Timeout Announcement Entry for the announcement to play • Repetition to the number of times to repeat the announcement • Duration to the length of time, in seconds, that the announcement is to be played.
5	The invalid digit announcement contains the announcement you want to play to the caller when the caller has entered a disallowed digit. In the Invalid Digit Announcement frame, select the following, as described in steps 2 - 5: <ul style="list-style-type: none"> • Invalid Digit Announcement Set which contains the announcement • Invalid Digit Announcement Entry for the announcement to play • Repetition to the number of times to repeat the retry announcement • Duration to the length of time, in seconds, that the retry announcement is to be played.
6	In the Number of Retries field, set the number of times that the node will attempt to collect a number from the caller, before routing the call to the Not Collected branch. This value may be between 0 and 10.
7	In the standard range entry field in the lower half of the screen, map the digits that a caller may enter to an exit branch. To add a digit: <ul style="list-style-type: none"> • Click Add Digit Result: A new default entry appears. • In the Digit drop-down box, select the required digit. • In the Branch drop-down box, select the exit to which calls receiving the entry of that digit are to be routed. • Click Change. Repeat for the required number of mappings.
8	Click Save .
	Note: Save is not available until all the required information has been selected or entered.

Note: The announcement set and announcement entry lists are populated with data that is specified using the **Announcements** tab of the ACS Configuration screen.

For more information about configuring announcement sets and announcement entries, see the *Announcements* topic in *ACS User's Guide*.

Setting the Fast Timeout Period

To configure the Selection Dependent Routing feature node to exit directly after timing out:

Step	Action
1	Open the configuration window for the Selection Dependent Routing feature node.
2	<p>Specify the branch that you want to use for the fast timeout exit by changing the current configuration for a branch to T or by adding T to a branch.</p> <p>To change the current configuration for a branch to T.</p> <ol style="list-style-type: none"> Select the digit and branch combination you want to change from the list in the digit table. Select T from the Digit list and click Change. <p>To add T to a branch.</p> <ol style="list-style-type: none"> Use the Branch arrow keys to select the branch you want. Select T from the Digit list and click Add. <p>The Fast Timeout Period field is enabled and set to the preconfigured default value of 10.</p> <p>Note: If set, the value for the SDRfastTimeoutDefault parameter in the sms.jnlp file overrides the fast timeout period default value. For more information on configuring ACS sms.jnlp parameters, see <i>Advanced Control Services Technical Guide</i>.</p>
3	<p>(Optional) Change the timeout period by performing the following steps:</p> <ol style="list-style-type: none"> In the digit table, select T. In the Fast Timeout Period field, enter the timeout value in seconds and click Change.
4	<p>Click Save.</p> <p>The feature node configuration is saved.</p>

Send Notification

Node description

This node constructs message text from the given notification template and then sends the message using one of the available transport mechanisms.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Send Notification nodes as required.

Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The notification was constructed and sent.
2	Delivery Failure	The notification was constructed, but encountered a problem when attempting to send.
3	No Language	No language was selected in the node configuration.
4	No Template	No template could be found to construct the message.
5	Missing Information	The template expected more information than could be found.
6	Subscriber Opt-out	The subscriber has opted out of receiving any notifications. This option is set in ACS Configuration > Notifications tab > Add/Edit Notification Type panel.

Configuration screen

Here is an example Configure Send Notification screen.

Configure Send Notification

Node name: Notification

Template

ID from profile Data Type: Database Location: Account Reference Profile Field: Acct Ref DB Id

Fixed 1111 GT

Language

Automatically determined Data Type: Database Location: Account Reference Profile Field: Acct Ref DB Id

Profile Data Type: Database Location: Account Reference Profile Field: Acct Ref DB Id

Fixed Arabic

Exit Branches

1 Success	2 Delivery Failure
3 No Language	4 No Template
5 Missing Information	6 Subscriber Opt-out

Configuring the node

Follow these steps to configure the node.

Step	Action
1	In the Template section, do one of: <ul style="list-style-type: none"> • Provide the location of the template by selecting a profile location from the Data Type, Location and Field lists • Select the template to use from the Fixed lists
2	In the Language section, do one of: <ul style="list-style-type: none"> • Select Automatically determined to have the system determine the language • Select the location where the language can be found from the Data Type, Location and Field lists • Select the language to use from the Fixed list
3	Click Save .

Send Short Message

Node description

Warning: This feature node has now been deprecated and should no longer be used. This feature node will still function in existing control plans. For new control plans please use the **Send Notification** feature node.

This feature node sends a short message to the caller when triggered by a nominated application.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Send Short Message nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The short message was successfully sent.
2	Failure	The message could not be sent.

Configuration screen

Here is an example Configure Send Short Message screen.

Configuring the node

Follow these steps to configure the Send Short Message node.

Step	Action
1	From the Application drop down list, select application that will trigger the short message to be sent.
2	From the Message drop down list, select the message that will be sent. Note: Messages are created and maintained through the ACS > Configuration > Notification tab.
3	From the Language drop down list, select the language the message will be sent in. Note: Available languages are maintained through the ACS > Tools > Language tab.
4	Click Save .

Notes:

- The calling number is normalized before it is sent to the notificationIF.
- This node sends a SLEE notification event to the notificationIF.
- The notificationIF will then forward the message to either Messaging Manager or the SMSC interface depending on configuration.
- See *SMSC Technical Guide* for details on how to install and configure the notificationIF.

LCP Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Location Capabilities Pack (LCP) feature nodes. These feature nodes enable you to use Advanced Control Services applications to look up location information for subscribers' mobile devices.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	355
Exits	356
In The Zone	357
Set My Zone	360
Store My Location.....	362
Store My Network ID	364

Available Feature Nodes

LCP Feature Nodes List

This table lists the feature nodes available from the LCP palette group in the ACS Control Plan Editor and the fast key for each feature node in the list. You can use fast keys to search for feature nodes in the palette or the canvas.

Node Name	Node Description
In The Zone (on page 357)	The In The Zone node allows a location-based service to be provided to the end-users to allow differential service depending on the location or MSISDN. Fast key: ITZ
Set My Zone (on page 360)	The Set My Zone node allows a “self-care” service to be provided to the end-users to set a zone of a selected type. Fast key: SMZ
Store My Location (on page 362)	The Store My Location feature node provides an alternative location-based service, by allowing the end-user’s current location or MSISDN to be stored in a context field for later comparison. Fast key: STML
Store My Network ID (on page 364)	The Store My Network Identity node stores the retrieved IMSI or MSRN in a profile tag. Fast key: STMN

Exits

Introduction

All of the LCP feature nodes contain the following two exits:

- No Location Info
- Error

The exit taken by a LCP feature node depends on the communication plug-in used by LCP to communicate with the location servers on the customer's network.

Using MAP ATI Plug-in

If the plug-in selected is `MAP ATI Plugin` and the location application returns one of the results listed below, then the `No Location Info` exit will be followed:

- Unknown subscriber
- Absent subscriber
- System failure
- Unauthorized network
- Unauthorized application
- Position method failure

These conditions are outside the scope of the Location Application (the errors are generated by external entities rather than the Location Application itself).

Using POSREQ Plug-in

If the plug-in selected is `IS41 POSREQ Plugin` and the location application returns one of the results listed below, then:

- `Error` exit is taken:
 - Operation Sequence Problem = 132
 - Parameter Error = 136
 - Invalid Parameter Value = 138
 - Feature Inactive = 139
 - Missing Parameter = 140
- `No Location Info` exit is taken:
 - OSA Unknown Subscriber
 - Unrecognized MIN = 129
 - Unrecognized ESN = 130
 - Unrecognized MDN = 143
 - OSA Absent Subscriber
 - MIN/HLR Mismatch = 131
 - OSA Unauthorized Network
 - Operation Not Supported = 134
 - OSA System Failure
 - System Failure = 137
 - Resource Shortage = 133
 - Trunk Unavailable = 135

Using SRI-MSRN Plug-in

If the plug-in selected is the `SRI-MSRN Plugin`, or `SRI-IMSI Plugin` and the location application returns one of the results listed below, then the `No Location Info` exit will be followed:

- System failure
- Unauthorized network, caused by:
 - Facility not supported
 - OR not allowed
 - Bearer service not provided
 - Tele service not provided
 - CUG reject
 - Call barred
 - Forwarding Violation
- Unknown subscriber, caused by:
 - Unknown subscriber
 - Number changed
 - Absent subscriber
 - Busy subscriber
 - No subscriber reply

These conditions are outside the scope of the Location Application (the errors are generated by external entities rather than the Location Application itself).

In The Zone

Node description

The In The Zone node allows a location-based service to be provided to the end-users to allow differential service depending on the location or MSISDN.

This node denormalizes the number currently held in the MSISDN buffer, using the standard rules defined in `acs.conf` or the default rule configured.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many In the Zone nodes as required.

Warning: This node will only work with the MAP ATI Plugin node. For more information about this plug-in, see Using MAP ATI plug-in.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	In Zone	The current location is in the zone specified.
2	Not In Zone	The current location is outside the zone specified.
3	No Location Info	Unable to obtain the location information.
4	No Zones	There are no zones configured for the current service provider
5	Error	An internal error has occurred.

Note: Refer to *Exits* (on page 356) for a description of errors that will cause the `No Location Info` and `Error` exits to be taken.

Configuration screen

Here is an example Configure In The Zone screen.

Configure In The Zone

Node name: In The Zone | Help

MSISDN source to query

MSISDN Source Data Type: Database

MSISDN Source Location: Account Reference Profile

MSISDN Source Field: 2nd Ann Data

Profile Block: VPN Network

Call Leg: Originating Terminating

Plugin Name: <Default>

Location Info Age (s): Default None

Response Deadline (s): Default

Zone Name: <All>

Exit Branches

1 InZone 2 NotInZone

3 NoLocationInfo 4 NoZones

5 Error

Comments Save Cancel

Configuring the node

Follow these steps to edit the In The Zone node.

Step	Action
1	In the MSISDN source to query section, select the MSISDN that will be used to query the HLR: <ul style="list-style-type: none"> • MSISDN Source Data Type: Select the source data type. • MSISDN Source Location: Select the profile block containing the MSISDN. • MSISDN Source Field: Select the profile field containing the MSISDN.
2	In Profile Block , select where the zone will be read from.
3	Specify the Call Leg to be used for the location query. Select one of the following: <ul style="list-style-type: none"> • Originating (Calling Party) • Terminating (Called Party)
4	In Plugin Name , select which location plug-in to use. The default setting is the locApp configured plug-in.
5	Specify the Location Info Age . This is how old location information is allowed to be (if in cache). Select one of the following: <ul style="list-style-type: none"> • Default: Use the locApp specified time. • None: Never use the cache. • Manual entry text field: Here you need to type a value (in seconds) in the text box beside the option. Minimum value 1, maximum 864000 (10 days).
6	Specify a Response Deadline . This is how long the locApp is allowed (in number of seconds) before a reply is returned (note that if a timeout occurs a timeout result will be returned). Select one of the following: <ul style="list-style-type: none"> • Default: Use the locApp specified default. • Manual entry: Here you need to type a value (in seconds) in the text box beside the option, how long the timeout should be. Minimum value 1, maximum 600 (10 minutes).
7	In Zone Name , select which zone type this node is comparing against, or <All> for all zones. This field is populated by the Zone type entries in the ACS Configuration, Profile Tag Details tab. For more information about this tab, see <i>ACS User's Guide</i> . Note: The location information returned by the HLR is always compared against the zones configured for the A-Party.

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Set My Zone

Node description

The Set My Zone node allows a “self-care” service to be provided to the end-users to set a zone of a selected type.

This node denormalizes the number currently held in the MSISDN buffer, using the standard rules defined in `acs.conf` or the default rule configured.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Set My Zone nodes as required.

Warning: This node will only work with the MAP ATI Plugin node. For more information about this plugin, see Using MAP ATI plug-in.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The action to set a zone completed successfully.
2	Too Many Zone Shapes	The number of zone shapes for the zone type has exceeded the maximum number (the maximum zone types is set to 5).
3	No Location Info	Unable to obtain the location information.
4	Error	An internal error has occurred.

Note: Refer to *Exits* (on page 356) for a description of errors that will cause the `No Location Info` and `Error` exit branches to be taken.

Configuration screen

Here is an example Configure Set My Zone screen.

Configuring the node

Follow these steps to edit the Set My Zone node.

Step	Action
1	In the MSISDN source to query section, select the MSISDN that will be used to query the HLR: <ul style="list-style-type: none"> • MSISDN Source Data Type: Select the source data type. • MSISDN Source Location: Select the profile block containing the MSISDN. • MSISDN Source Field: Select the profile field containing the MSISDN.
2	In Profile Block , select where the zone will be written to.
3	In Zone Name , select which zone to set for this node. This field is populated by the Zone type entries on the ACS Configuration, Profile Tag Details tab. For more information about this tab, see <i>ACS User's Guide</i> .
4	In Plugin Name , select which location plug-in to use. Default setting is to use the locApp configured plug-in.

Step	Action
5	Specify the Location Info Age . This is how old location information is allowed to be (if in cache). Select one of the following: <ul style="list-style-type: none"> • Default: Use the locApp specified time. • None: Never use the cache. • Manual entry text field: Here you need to type a value (in seconds) in the text box beside the option. Minimum value 1, maximum 864000 (10 days).
6	Specify a Response Deadline . This is how long the locApp is allowed (in number of seconds) before a reply is returned (note that if a timeout occurs a timeout result will be returned). Select one of the following: <ul style="list-style-type: none"> • Default: Use the locApp specified default. • Manual entry: Here you need to type a value (in seconds) in the text box beside the option, how long the timeout should be. Minimum value 1, maximum 600 (10 minutes).
7	Specify a Modification Type . Select one of the following: <ul style="list-style-type: none"> • Add: This will add a new zone (the current location) into the selected zone type. • Reset: This will cause the node to delete all the existing zones in the selected zone type and add the current location as the only zone.
8	In Min Radius , specify the minimum radius of a zone. If the locApp returns an uncertainty radius smaller than the minimum radius specified, the min radius (in km) is used.

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Store My Location

Node description

The Store My Location feature node provides an alternative location-based service, by allowing the end-user's current location or MSISDN to be stored in a context field for later comparison.

This feature node can also be used to find the location details or MSISDN of a subscriber; for example, to include in billing for callback when the subscriber is roaming.

The MSISDN used to query the HLR will be denormalized as per the standard denormalization rules specified in the `acs.conf` or the default rule configured.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This feature node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The current location has been stored in the context specified.
2	No Location Info	Unable to obtain the location information.
3	Error	An internal error has occurred.

Note: See *Exits* (on page 356) for a description of the errors that cause the `No Location Info` and `Error` exit branches to be taken.

Configuration screen

Here is an example Configure Store My Location screen.

Configure Store My Location

Node name: StoreMyLoc Help

MSISDN source to query

MSISDN Source Data Type: Database

MSISDN Source Location: Account Reference Profile

MSISDN Source Field: 2nd Ann Data

Store to Buffer: Pending Termination Number

Call Leg: Originating Terminating

Plugin Name: <Default>

Location Info Age (s): Default None 1

Response Deadline (s): Default 1

Exit Branches

1 Success 2 NoLocationInfo

3 Error

Comments Save Cancel

Configuring the node

Follow these steps to configure the Store My Location node.

Step	Action
1	Using the drop down lists in the MSISDN source to query area, select the field containing the MSISDN that will be used to query the HLR.
2	In Store to Buffer , select where the location information will be stored. The following buffers are available in the drop down list: <ul style="list-style-type: none"> • Pending Termination Number • Calling Logical Number • Calling Private Network Address • Calling Network Address • Calling Party ID • Dialed Service Number • Additional Calling Party Number • Leg Cell Id or LAI
3	Choose which Call Leg to use for the location query. Select one of the following: <ul style="list-style-type: none"> • Originating (Calling Party) • Terminating (Called Party)
4	From the Plugin Name drop down list, select which location plug-in to use. Select <Default> to use the locApp configured plug-in.
5	Specify the Location Info Age . This is how old location information is allowed to be (if in cache). Select one of the following: <ul style="list-style-type: none"> • Default: Use the locApp specified time • None: Never use the cache • Manual entry text field: Here you need to type a value (in seconds) in the text box beside the option.
6	Specify a Response Deadline . This is how long the locApp is allowed (in number of seconds) before a reply is returned (note that if a timeout occurs a timeout result will be returned). Select one of the following: <ul style="list-style-type: none"> • Default: Use the locApp specified default • Manual entry: Here you need to type a value (in seconds) in the text box beside the option, how long the timeout should be.

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Store My Network ID

Node description

The Store My Network Identity node stores the retrieved IMSI or MSRN in a profile tag.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The IMSI location information has been successfully retrieved.
2	NoLocationInfo	Unable to retrieve location information.
3	Error	An internal error has occurred.

Configuration fields

This table describes the function of each field in the Configure Store My Network Id node screen.

Field	Description
Node name	The name of the node.
MSISDN Data Type	The MSISDN profile block data type.
MSISDN Location	The profile block containing the MSISDN location.
MSISDN Field	The profile field containing the MSISDN.
IMSI Data Type	The IMSI profile block data type.
IMSI Location	The profile block location for the retrieved IMSI.
IMSI Field	The profile field where the retrieved IMSI will be stored.
Call Leg	Whether to retrieve the IMSI from the originating (caller) or terminating (called) party.
Plugin Name	The name of the plug-in to use to retrieve the IMSI. By default the MAP SRI-MSRN plug-in will be used.
Location Info Age (s)	Maximum age allowed for location information (if in cache). One of the following: <ul style="list-style-type: none"> • Default: Use the plug-in application specified time • None: Never use the cache • A specified number of seconds
Response Deadline (s)	Maximum length of time allowed (in seconds) before receiving a response (if a timeout occurs a timeout result will be returned). One of the following: <ul style="list-style-type: none"> • Default: Use the plug-in application specified default • A specified number of seconds.

Configuration screen

Here is an example Configure Store My Network ID screen.

Configuring the node

Follow these steps to configure the node.

Note: For more information on the configuration fields, see *Configuration fields* (on page 365).

Step	Action
1	From the MSISDN Location area, using the drop down boxes, select the profile containing the MSISDN.
2	From the IMSI Location area, using the drop down boxes, select the profile where the IMSI will be stored.
3	Choose which Call Leg to use for the location query. Select one of the following: <ul style="list-style-type: none"> • Originating (Calling Party) • Terminating (Called Party)
4	In Plugin Name , select which location plug-in to use.
5	Specify the Location Info Age .
6	Specify a Response Deadline .
7	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

NTS Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Number Translation Service (NTS) feature nodes. NTS feature nodes provide teleservice actions.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	369
Account Code Entry.....	369
Activate Control Plan	372
Load Profile	377

Available Feature Nodes

NTS Feature Nodes List

This table lists the feature nodes available from the NTS palette group and the fast key for each feature node in the list. You can use fast keys to search for feature nodes in the palette or the canvas.

Node name	Node description
Account Code Entry (see page 369)	Prompts for an account number to be entered and saves the digits in a buffer. Fast key: ACE
Activate Control Plan (see page 372)	Activates a specified control plan. Fast key: ACP
Load Profile (see page 377)	Loads the specified customer, control plan, service number or CLI profile. Fast key: ALP

Account Code Entry

Node description

The Account Code entry node prompts for an account number to be entered and collects the digits. Collected digits are placed in the Account Code buffer.

The access code entered by the caller is added to the Call Data Record.

Account Codes are also known as access codes. You can set the access code policy for service numbers and CLIs in ACS.

Note: Depending on the Access Code Policy that is selected for the Service Number or CLI, the account code entered using this node may be one of:

- Not required
- Required and verified
- Required and not verified

See the ACS Numbers topic in the *ACS User Guide* for details about Access Mode Management and Access Code Policy.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Account Code Entry nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The Account Code was entered and collected successfully.
2	Not Allowed	The Account Code entered is invalid.
3	Abandoned	The Account Number or Code entered was not found by the system.

Configuration screen

Here is an example Configure Account Code Entry screen.

Configuring the node

Follow these steps to configure the Account Code Entry node, to set or amend the Main Account Number Announcement.

Step	Action
1	<p>The main announcement is the announcement that will be played to prompt for an Account number.</p> <p>In the Main Announcement area, select the Announcement Set which contains the main announcement you want to play to the caller.</p> <p>Result: The Announcement Entry field becomes available.</p>
2	<p>From the Announcement Entry drop-down list, select the main announcement you want to play to the caller.</p>
3	<p>Set the Repetition field to the number of times you wish to repeat the announcement, by increasing or decreasing the value in the spin box. The allowable values are from 1 (default) to 127. If set to zero, the announcement will be repeated for the length of the duration set.</p>
4	<p>Set the Duration field to the length of time in seconds that the announcement is to be played. The allowable values are from 0 (default) to 32767. If set to zero, the announcement will be played for its full length.</p>
5	<p>Amending the Retry announcement on Invalid Entry.</p> <p>The retry announcement will be played if the Account Number entered after the main announcement is not valid.</p> <p>In the Retry Announcement area, select the:</p> <ul style="list-style-type: none"> • Announcement Set which contains the retry announcement • Announcement Entry for the retry announcement you want to play, and set • Repetition to the number of times to repeat the retry announcement

Step	Action
	<ul style="list-style-type: none"> • Duration to the length of time, in seconds, that the retry announcement is to be played. <p>as described in steps 1 - 4.</p>
6	Set the Number of Retries field to the number of times that the node will attempt to collect the correct Account Number from the caller, before routing the call to the Not Allowed branch. This value may be between 0 and 10.
7	Click Save .
	Note: Save is not available until all the required information has been selected or entered.

Note: The announcement set and announcement entry lists are populated with data that is specified using the **Announcements** tab of the ACS Configuration screen.

For more information about configuring announcement sets and announcement entries, see the *Announcements* topic in *ACS User's Guide*.

Activate Control Plan

Node description

This node enables a caller to schedule a control plan using a touch tone phone. It should be used as part of an IVR control plan (for example, the ACS Management Control Plan).

The caller specifies which control plan to schedule by entering the control plan's control plan ID (that is, MF Identifier). The node can also be set up to enable the caller to specify the time and date the control plan will become active. If a time is not specified, the control plan becomes active immediately.

The control plan can be scheduled against either an SN or CLI according to the following rules:

- If the *Load Profile* (see page 377) node most recently triggered in the control plan loaded an SN or CLI profile, the control plan will be scheduled against a number of the same type.
- If neither the SN nor CLI profile has been loaded, the node will schedule against the type of number specified in the pending TN type buffer.

For more information about:

- MF Identifier, see MF Identifier.
- Pending TN type buffer, see *Pending termination number variables* (on page 11).

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Activate Control Plan nodes as required. It must follow either a Load Profile node which loads an SN or CLI profile, or a node which sets the Pending TN Type variable.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The control plan was activated successfully.
2	Not Updated	There was a problem with activating the control plan. In addition to other possible faults, this exit is taken if the node cannot establish whether to schedule the control plan against an SN or a CLI.
3	Abandoned	The caller abandoned the call.

Configuration screen

Here is an example Configure Activate Control Plan screen.

Configure Activate Control Plan

Node name:

Main Announcement

Announcement Set: Repetition:

Announcement Entry: Duration:

Retry Announcement

Announcement Set: Repetition:

Announcement Entry: Duration:

Number of Retries:

Subscriber Prompting

Prompt for Activation Time?

Timezone Type:

Unix Timezone:

Date Announcement

Date Announcement Set: Repetition:

Date Announcement Entry: Duration:

Retry Date Announcement

Date Announcement Set: Repetition:

Date Announcement Entry: Duration:

Exit Branches

1 Success Branch 2 Not Updated Branch

3 Abandoned Branch

Configuring the node

Follow these steps to configure the Activate Control Plan node.

Step	Action
1	<p>From the Main Announcement area, select the Announcement Set which contains the main announcement you want to play to the caller. The main announcement will be played to prompt for a Control Plan ID (MF identifier).</p> <p>Result: The Announcement Entry field becomes available.</p>
2	<p>From the Announcement Entry drop-down list, select the main announcement you want to play to the caller.</p>
3	<p>Set the Repetition field to the number of times to repeat the main announcement while the system waits for the caller to take an action. If set to zero, the announcement will be repeated for the length of the duration set.</p>
4	<p>Set the Duration field to the length of time, in seconds, that the announcement is to be played. If set to zero, the announcement will be played for its full length.</p>
5	<p>The retry announcement contains the announcement you want to play to the caller if an invalid ID is entered after the main announcement.</p> <p>In the Retry Announcement area, select the:</p> <ul style="list-style-type: none"> • Announcement Set which contains the retry announcement • Announcement Entry for the retry announcement you want to play, and set the • Repetition to the number of times to repeat the retry announcement • Duration to the length of time, in seconds, that the retry announcement is to be played <p>as described in steps 1 - 4.</p>
6	<p>Set the Number of Retries field to the number of times that the node will attempt to collect the correct ID from the caller, before routing the call to the Not Updated branch. This value may be between 0 and 10.</p>
7	<p>If you:</p> <ul style="list-style-type: none"> • want to prompt the caller to set an activation date, tick the Prompt for Activation Time? check box. • do not want to prompt the caller to set an activation date, go to step 11.
8	<p>From the Timezone Type drop-down list, select the timezone you want to use.</p> <p>If you select the Explicit Unix TZ option, you need to select a specific region from the Unix Timezone field.</p> <p>For more Time zone information, see <i>Time Zones</i> (on page 542).</p>
9	<p>The Date Announcement area contains the announcement you want to play to the caller. Select the:</p> <ul style="list-style-type: none"> • Date Announcement Set which contains the main announcement • Date Announcement Entry for the main announcement you want to play, and set the • Repetition to the number of times to repeat the announcement • Duration to the length of time, in seconds, that the announcement is to be played. <p>as described in steps 1 - 4.</p>
10	<p>The Retry Date Announcement area contains the announcement you want to be repeat while the system waits for the caller to take an action. Select the:</p> <ul style="list-style-type: none"> • Date Announcement Set which contains the retry announcement • Date Announcement Entry for the retry announcement you want to play, and set the • Repetition to the number of times to repeat the announcement • Duration to the length of time, in seconds, that the announcement is to be played.

Step	Action
	as described in steps 1 - 4.
11	Click Save .
	Note: Save is not available until all the required information has been selected or entered.

Note: The announcement set and announcement entry lists are populated with data that is specified using the **Announcements** tab of the ACS Configuration screen.

For more information about configuring announcement sets and announcement entries, see the *Announcements* topic in *ACS User's Guide*.

Example use of node

Here is an example of using the Activate Control Plan node to activate a control plan for a service number or CLI.

For detailed information on the ACS Management control plan, see the chapter - Dial-up Control Plan Management in ACS, in *ACS User's Guide*.

Stage	Description
1	A customer is set up with an 0800 number and the self management screens.
2	The customer creates 2 control plans.
3	The customer phones a number attached to the ACS management control plan to change which control plan is active for the number.
	Here is an example of a Configure Activate Control Plan screen in ACS management control plan that does this. See the ACS Management Control Plan example in <i><ACS_User_sn></i> to see the other feature nodes required when using this with option 1 (Activate Control Plan - Service Number) and option 2.(Activate Control Plan - CLI).

Configure Activate Control Plan

Node name:

Main Announcement

Announcement Set: ACS2 Management Announcements Repetition: 2
 Announcement Entry: collect control plan ID prompt Duration: 0

Retry Announcement

Announcement Set: ACS2 Management Announcements Repetition: 2
 Announcement Entry: collect control plan ID reprompt Duration: 0

Number of Retries: 2

Subscriber Prompting

Prompt for Activation Time?

Timezone Type: SCP Local Time
 Unix Timezone: <Not Selected>

Date Announcement

Date Announcement Set: ACS2 Management Announcements Repetition: 2
 Date Announcement Entry: Enter Service Start Date Duration: 0

Retry Date Announcement

Date Announcement Set: ACS2 Management Announcements Repetition: 2
 Date Announcement Entry: Retry Service Start Date Duration: 0

Exit Branches

1 Success Branch 2 Not Updated Branch
 3 Abandoned Branch

In this example, the caller is prompted to enter the:

- Control plan ID (MF Identifier)
- Date to activate the control plan

Load Profile

Node description

This node will load the specified profile.

This allows you to read the profile in the database and makes it available to be updated by other nodes that can write back to the profile.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many ACS Load Profile nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success Branch	The profile was loaded successfully.
2	Not Loaded Branch	The profile was not loaded.
3	Abandoned Branch	The caller abandoned the call.

Configuration screen

Here is an example Configure Load Profile screen.

Configuring the node

Follow these steps to configure the Load Profile node.

Step	Action
1	<p>From the Main Announcement area, select the Announcement Set that contains the main announcement you want to play to the caller.</p> <p>Result: The Announcement Entry drop-down box will become available.</p>
2	<p>From the Announcement Entry drop-down list, select the main announcement you want to play to the caller.</p> <p>Note: The announcement set and announcement entry lists are populated with data that is specified using the Announcements tab of the ACS Configuration screen.</p> <p>For more information about configuring announcement sets and announcement entries, see the "Announcements" topic in the <i>ACS User Guide</i>.</p>
3	<p>Set the Repetition field to the number of times to repeat the main announcement while the system waits for the caller to take an action. If set to zero, the announcement will be repeated for the length of the duration set.</p>
4	<p>Set the Duration field to the length of time in seconds that the announcement is to be played. If set to zero, the announcement will be played for its full length.</p>
5	<p>The retry announcement contains the announcement you want to play to the caller if the number of digits collected is not within the range specified.</p> <p>In the Retry Announcement area, select the:</p> <ul style="list-style-type: none"> • Announcement Set which contains the retry announcement • Announcement Entry for the retry announcement you want to play, and set the • Repetition to the number of times to repeat the retry announcement • Duration to the length of time, in seconds, that the retry announcement is to be played. <p>as described in steps 1 - 4.</p>
6	<p>In the Number of Retries field, set the number of times that the node will attempt to collect data from the caller, before routing the call to the Not Updated branch. This value may be between 0 and 10.</p>
7	<p>Using the drop down lists in the Load From Data Type and Load From Location fields, select the profile block from which information is to be loaded onto the node.</p> <p>Note: Only profiles that can be updated are listed.</p>
8	<p>Click Save.</p> <p>Note: Save is not available until all the required information has been selected or entered.</p>

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

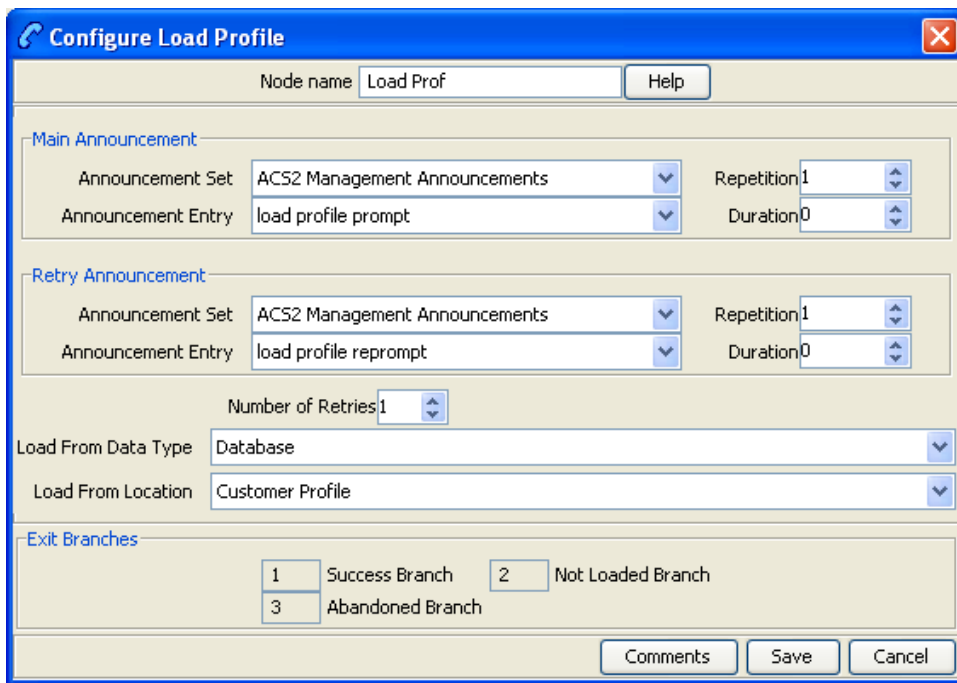
The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Example use of node

Here is an example of using the Load Profile node to load the customer profile, in order to access the Dial-up self management options.

For detailed information on the ACS Management control plan, see the chapter - Dial-up Control Plan Management in ACS, in *ACS User's Guide*.

Stage	Description
1	A customer is set up with an 0800 number and the self management screens.
2	The customer phones a number attached to the ACS Management control plan. Here is an example of a Configure Load Profile screen in an ACS Management control plan that prompts the caller for a Customer Profile. See the ACS Management Control Plan example in <i>ACS User's Guide</i> to see the entire control plan.



In this example, the caller is prompted to enter their management ID.

Network Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Network feature nodes. Use Network feature nodes for decisions and actions relating to INAP protocol.

Note: To use network feature nodes, you should have a good working knowledge of networks, switches and the INAP protocol.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	381
Branch on Bearer Type	382
Branch On Call Forwarding Pending	387
Branch on Event Report Request BCSM Code.....	388
Branch on Indicator	393
Branch on Protocol	395
Branch on Service Key	396
Call Forwarded Branching	399
Call Progression	401
Set Cut and Paste	402
Set Indicator	403
TCAP Handover	406
Transmission Type Branching	410

Available Feature Nodes

Network Feature Nodes List

This table lists the feature nodes available from the Network palette group and the fast key for each feature node in the list. You can use fast keys to search for feature nodes in the palette or the canvas.

Node name	Node description
Branch on Bearer Type (see page 382)	Will route calls to different branches depending on the incoming calling party bearer type and the node configuration. Fast key: BoBT
Branch On Call Forwarding Pending (see page 387)	Branches, depending on the presence or not of a pending call forward, retrieved from the call context. Fast key: BCFW
Branch on Event Report Request BCSM Code (see page 388)	Branches depending on the result of the previous Request Report BCSM Event operation. Fast key: BoEC

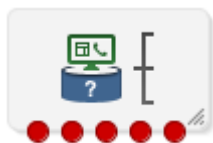
Node name	Node description
Branch on Indicator (see page 393)	Takes an exit based on the: number incomplete, screening, or presentation restricted indicator of a specified number. Fast key: BoCP
Branch on Protocol (see page 395)	Branches on the protocol used by the current call. Fast key: BOP
Branch on Service Key (on page 396)	Compares an ACS IDP service key with a fixed value configured in the node. The node routes calls to different branches depending on the node configuration and whether or not a match is found. Fast key: BoSK
Call Forwarded Branching (see page 399)	Determines which Control Plan branch is taken based on the whether or not the callForwarded flag, is set. Fast key: CFB
Call Progression (see page 401)	Allows the user to change parameters controlling call progression. Fast key: CCPN
Set Cut and Paste (see page 402)	Instructs the switch to remove digits from the called party number, prepend the termination number and terminate to the resulting number. Fast key: CNPA
Set Indicator (see page 403)	Set the number incomplete, screening, or presentation restricted indicator of a specified number. Fast key: SCPT
TCAP Handover (see page 406)	Hand over control of the call to another network element. Fast key: THFN
Transmission Type Branching (see page 410)	Will route the call to different branches depending on the incoming calling party transmission type. Fast key: TTB

Branch on Bearer Type

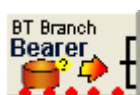
Node description

The Branch on Bearer Type (Bearer Capability) node will route calls to different branches depending on the incoming calling party bearer capability or the high layer characteristic and the node configuration.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Branch on Bearer Type nodes as required.

Node exits

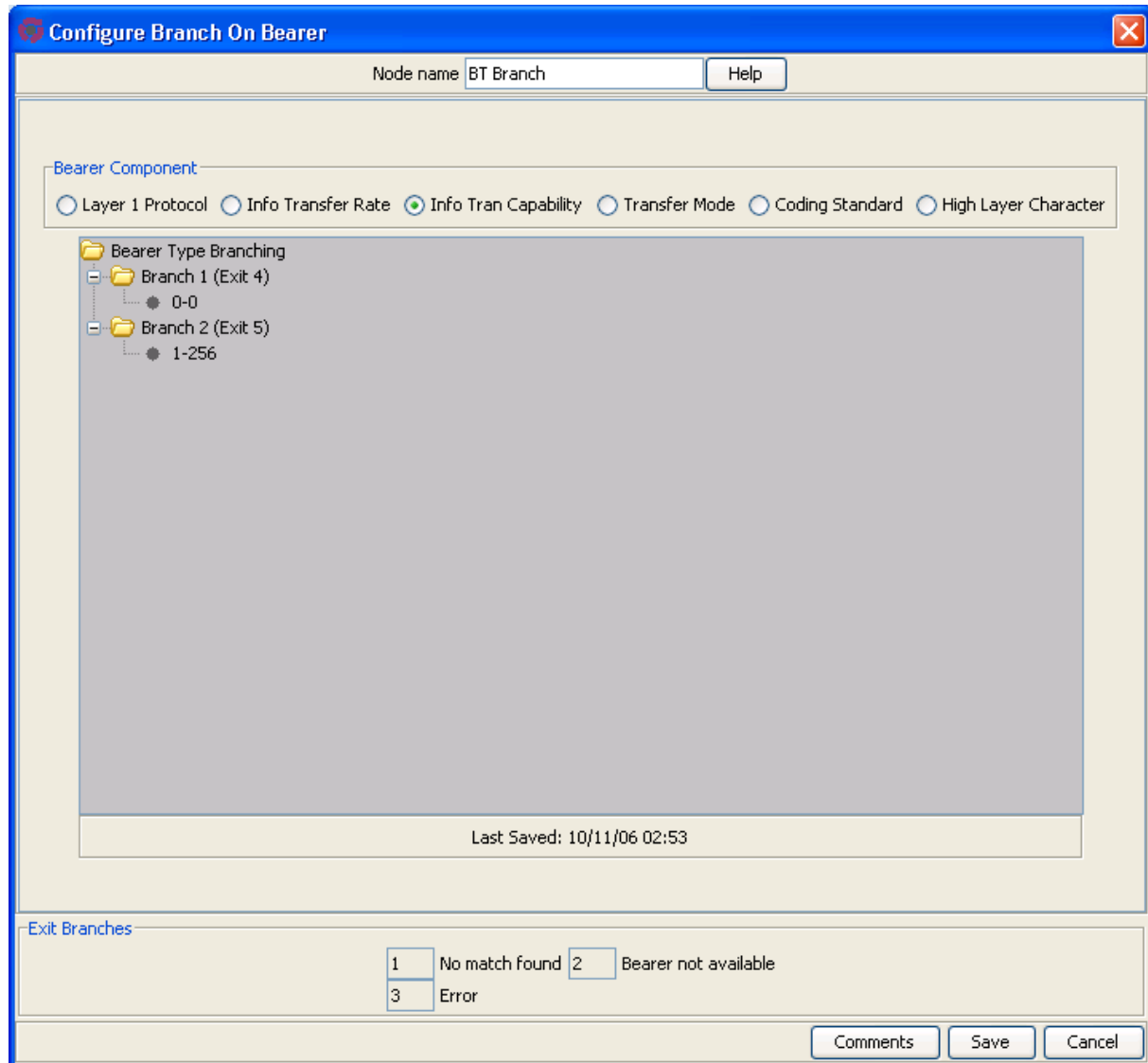
This node has one entry and may have 4 through 10 exits. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See Editing node exits.

Node exits 1 through 3 are set by the system and may not be changed.

Exit	Cause	Description
1	No Match Found	No match was found for any rule in the Bearer Capacity structure extracted from the Initial Detection Point.
2	Bearer Not Available	The bearer specified in the node was not available in the Bearer Capacity structure extracted from the Initial Detection Point.
3	Error	A error occurred.
4 to 10	Exit 4	These exits are followed depending on the rules attached to them.

Configuration screen

Here is an example of the Configure Branch on Bearer screen.

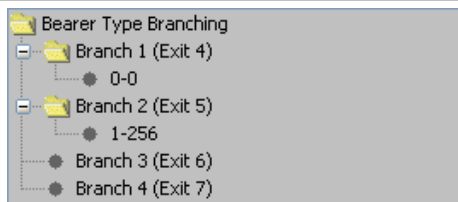


Configuring the node

Follow these steps to edit the Branch on Bearer node.

Step	Action
1	Edit the node exits to add exits as required. See Editing node exits for details. Note: The new number of exits is represented on the node icon, but <i>not</i> on the configuration screen exit list.
2	Open the Configure Branch on Bearer screen. Result: The Bearer Type Branching tree lists all the exits that have been added, as in the example below, showing 7 exits. By default, Branch 1 and Branch 2 are pre-configured.

Step	Action
------	--------

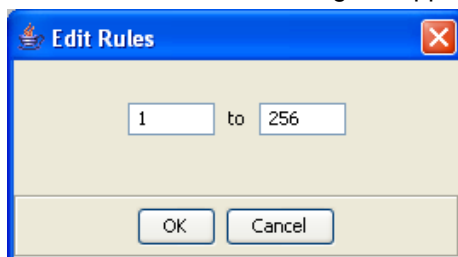


Note: The number of branches to configure will always be the total number of exits configured, minus the three pre-configured branches. In this example node, there are 7 exits, therefore there are 4 configurable branches.

- 3 In the **Bearer Component** frame, select the option on which to branch.
- **Layer 1 Protocol** -
 - **Info Transfer Rate** -
 - **Info Tran capability** -
 - **Transfer Mode** -
 - **Coding Standard** -
 - **High Layer Character** - matches on Octet 4 of the High Layer Characteristics bearer field.

- 4 Branches are made up of rules. A rule is either a range of bearer types or a single value. The maximum number you can enter in the rules is 256. Before you can add rules to any other branches, you must edit the rules for Branch 2 (that is, 1-256) and change 256 to the number appropriate to the branch. This will allow you to add rules to the branches. To edit a rule, right-click on a rule and click **Edit**.

Result: The Edit Rules dialog will appear.



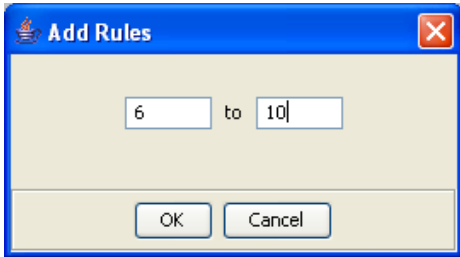
To create a rule:

- Of a single value, you can enter the value in the left hand field only, or the same number in both fields.
- For a range of numbers, enter values in both fields. The 'from' value must be lower than the 'to' value.

Note: The numbers must not overlap any other rule ranges. Make the change and click **OK**.

- 5 To add rules to a branch, right-click on the branch. From the pop-up menu displayed, select **Add**. You see the Add Rules screen.

Step	Action
------	--------

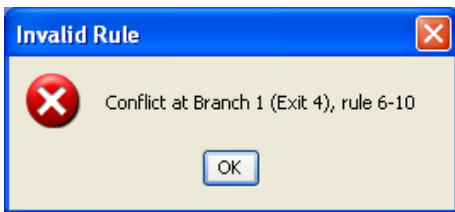


6 Create the rule as required.

7 Click **OK**.

Result: One of the following will occur:

- The new rule will be added to the rule list.
- If a rule conflicts with an existing rule, a warning dialog box will appear providing more detail about the conflict.



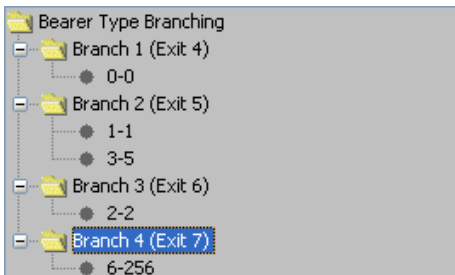
Note: You may create as many rules per Branch as you require.

8 Edit or delete rules under each branch.

To delete a rule, right-click on a rule and click **Delete**.

Result: The rule is deleted from the branch.

9 When rules have been added to all branches as shown in the example below, the **Save** button will become available.



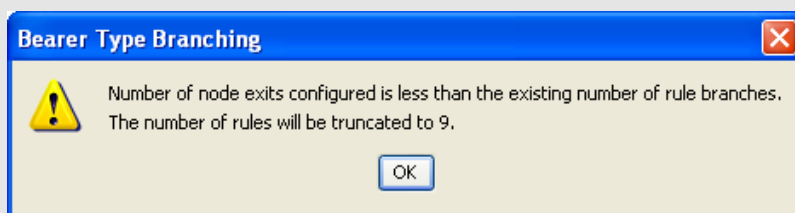
Click **Save**.

Result: The node data is saved.

Notes:

- After configuration, you may add or remove exits for the node using Edit Node Exits, then edit the node branches again.

- If you remove exits, when you open the Configure Branch on Bearer screen again you will see a warning, such as this example.



Click **OK** to continue, then edit the node.

Branch On Call Forwarding Pending

Node description

The Branch On Call Forwarding Pending node branches depending on whether there is a call forward pending or not.

This node uses the `callForwardingSS-Pending` parameter flag to determine which branch to take. See standard 3GPP TS 29.078, version 5.0.0 for full details.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Branch On Call Forwarding Pending nodes as required.

This node is applicable to the CAP protocol and all other protocol usage will result in the Not Pending branch 2 exit being taken.

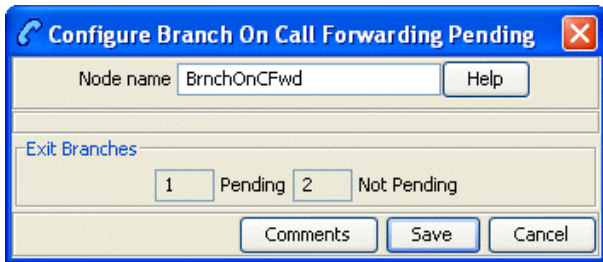
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Pending	There is a call forward pending.
2	Not Pending	There is not a call forward pending.

Configuration screen

Here is an example Configure Branch On Call Forwarding Pending screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Branch on Event Report Request BCSM Code

Node description

The BoEC node branches depending on the result of the previous Request Report BCSM Event operation. The TDP codes that the node recognizes are from these events:

- oDisconnect
- tDisconnect
- oCalledPartyBusy
- tCalledPartyBusy
- RouteSelectFailure

Note: The "o" and "t" indicate Originating and Terminating respectively.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Branch on Event Report Request BCSM Code (BoEC) nodes as required.

Node exits

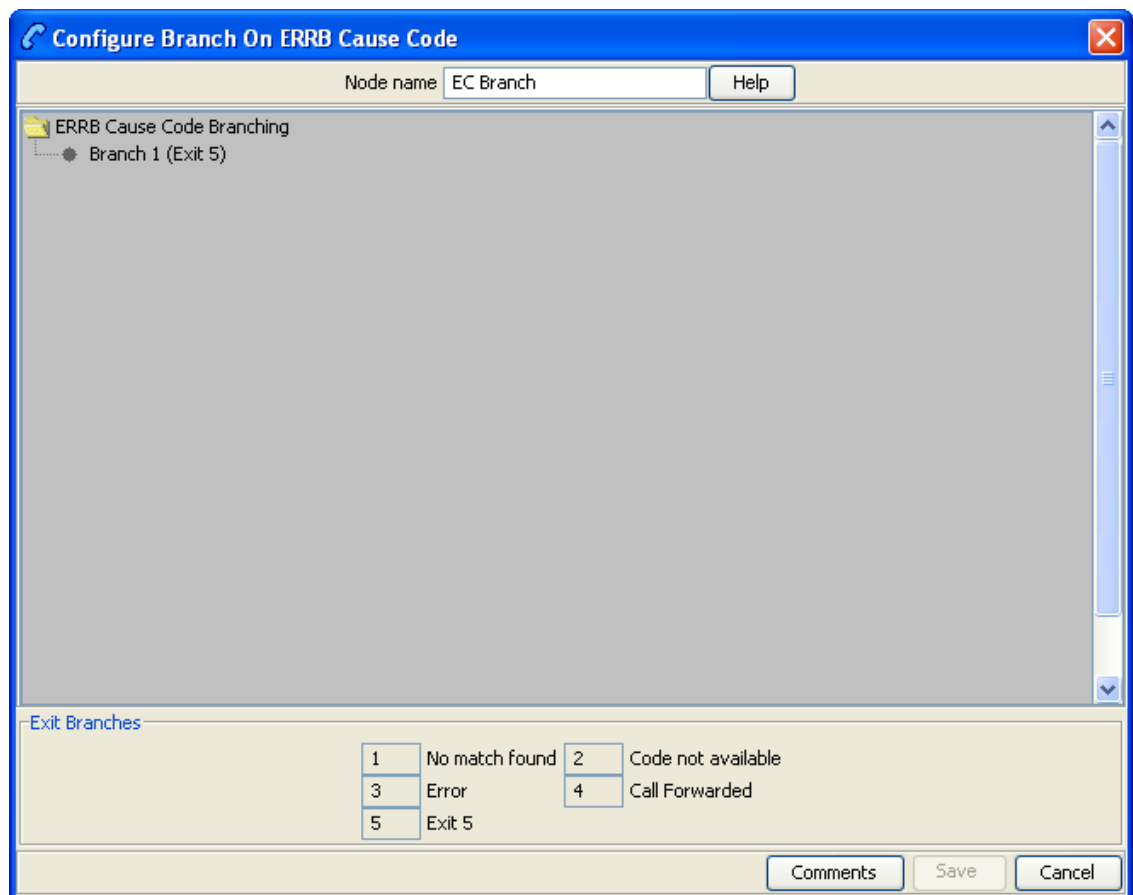
This node has one entry and initially five exits. You can manually add up to another five exits, making a total of 10 exits.

Exit	Label	Cause
1	No match found	The cause code being passed to the node is not defined in any of the node's branch rules.
2	Code not available	ACS did not pass a cause code to the node.
3	Error	A software error occurred.
4	Call Forwarded	ACS has been advised that a terminating call has been forwarded.
5 through 10	Exit 5 through Exit 10	Determined by branch rules specified for the exit.

Note: The call-forwarded exit scenario for this node is identical to that of the Call Forwarded Branching node. Refer to the section on the Call Forwarded Branching node; in particular *Node exits* (on page 399).

Configuration screen

Here is an example of the Configure Branch On ERRB Cause Code screen.



Configuring the node

Branches are made up of Cause code rules. A rule is either a range of Event Report Request BCSM Codes or a single value. Each branch can have as many rules as required, provided that the cause code has not been configured in another rule within this node.

Cause codes are defined in the following two documents.

- ETS 300 374-1
*Intelligent Network (IN);
 Intelligent Network Capability Set 1 (CS1);
 Core Intelligent Network Application Protocol (INAP);
 Part 1: Protocol specification*
 European Telecommunications Standards Institute
 In particular, see `EventSpecificInformationBCSM` on page 47.
- ITU-T Recommendation Q.850
*Usage of Cause and Location
 in the Digital Subscriber Signalling
 System No. 1 and the Signalling
 System No. 7 ISDN User Part*
 International Telecommunications Union

Follow these steps to edit the Branch on ERRB Cause Code node.

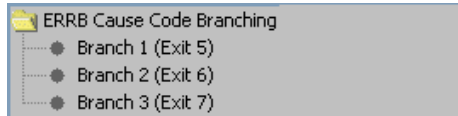
Step	Action
------	--------

1 Edit the node exits to add up to another five exits as required. See Editing node exits for details.

Note: The new number of exits is represented on the node icon, but NOT on the configuration screen exit list.

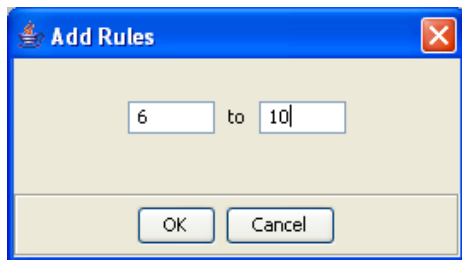
2 Open the Configure Branch on ERRB Cause Code screen.

Result: The ERRB Cause Code Branching tree lists all the exits that have been added, as in the example below, showing 7 exits.



Note: The number of branches to configure will always be the total number of exits configured, minus the 4 pre-configured branches. In this example node, there are 7 exits, therefore there are 3 configurable branches.

3 To add rules to a branch, right-click on the Branch. From the pop-up menu displayed, select **Add**. You see the Add Rules screen.



4 Create the rule as required.

To create a rule:

- of a single value, you can enter the value in the left hand field only, or the same number in both fields.
- for a range of numbers, enter values in both fields. The 'from' value must be lower than the 'to' value.

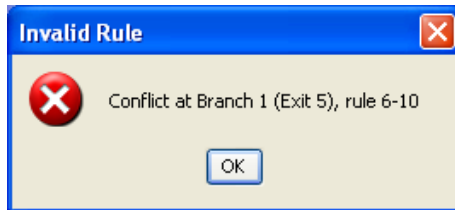
Step	Action
------	--------

Note: The numbers must not overlap any other rule ranges. The maximum value of a rule is 256.

5 Click **OK**.

Result: Either:

- the new rule will be added to the rule list, or
- if a rule conflicts with an existing rule, a warning dialog box will appear providing more detail about the conflict.

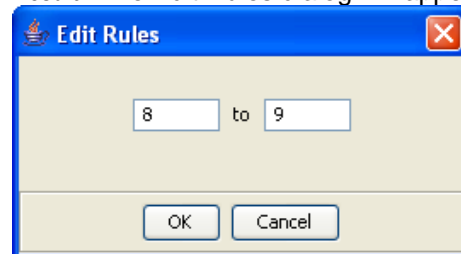


Note: You may create as many rules per Branch as you require.

6 Edit or delete rules under each branch. To:

- edit a rule, right-click on a rule and click **Edit**.

Result: The Edit Rules dialog will appear.

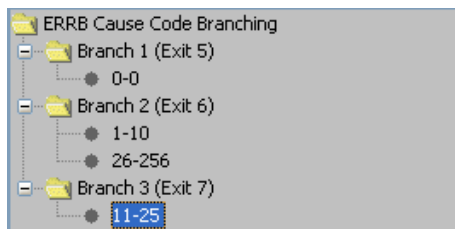


Make the change and click **OK**

- delete a rule, right-click on a rule and click **Delete**.

Result: The rule is deleted from the branch.

7 When rules have been added to all branches as shown in the example below, the **Save** button will become available.

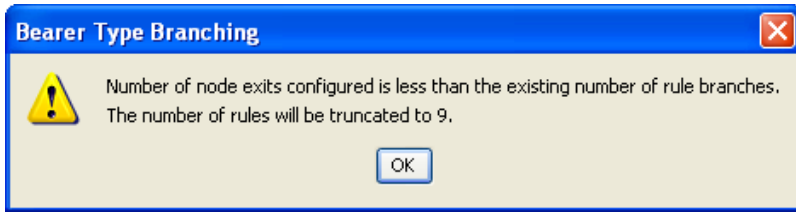


Click **Save**.

Result: The node data is saved.

Note: After configuration, you may add or remove exits for the node using Edit Node Exits, then edit the node branches again.

If you remove exits, when you open the Configure Branch on Bearer screen again you will see a warning, such as this example.



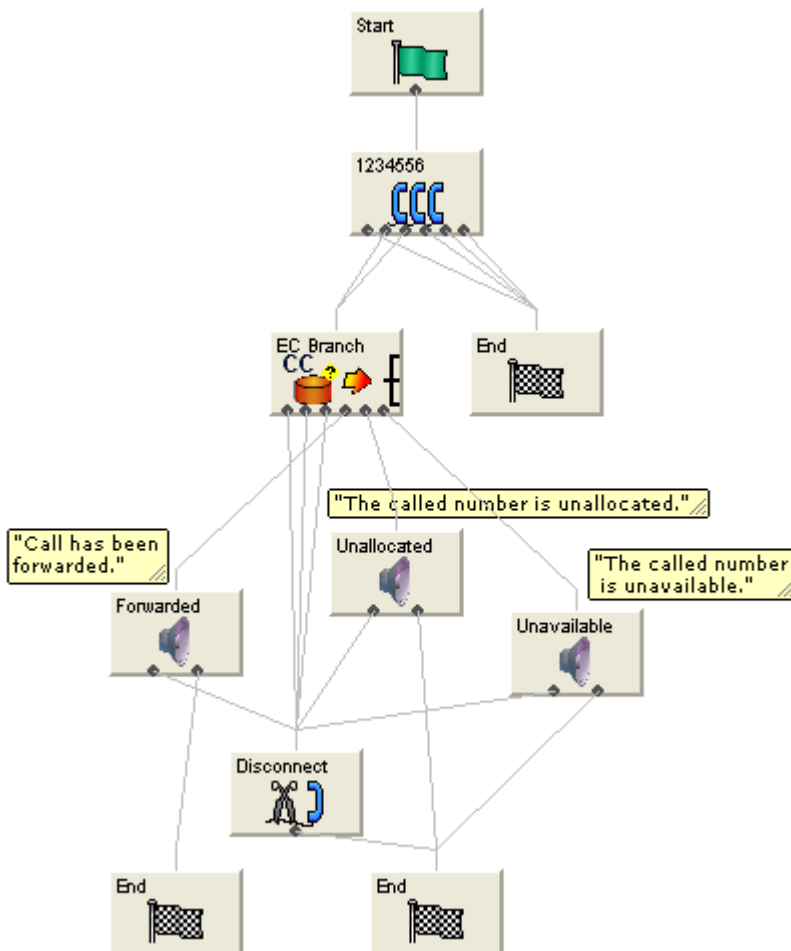
Click **OK** to continue, then edit the node.

Example of the use of the node

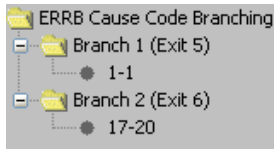
For a terminating call, suppose you want to select the following outcomes, depending on the values of cause numbers.

- If ACS was notified of call-forwarding, you want to play an announcement about call-forwarding.
- For cause number 1, you want to play an announcement about the telephone number being unallocated.
- For cause numbers 17 through 20, you want to play an announcement about the telephone number being either busy, unresponsive, unanswered or unanswerable because the telephone is switched off.
- For all other cause numbers, you want to simply disconnect the call.

To implement this scenario, you could set up the control plan shown below.



You would set up the configurable exits of the branch on ERRB Cause Code node as shown below.



The non-configurable exit branches would remain as shown below.

1	No match found	2	Code not available
3	Error	4	Call Forwarded

Branch on Indicator

Node description

The Branch on Indicator node allows you to take an exit based on one of the indicators of a specified number:

- Number incomplete
- Screening
- Presentation restricted

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Branch on Indicator nodes as required.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Value 0	Bit value of 0
2	Value 1	Bit value of 1
3	Value 2	Bit value of 2
4	Value 3	Bit value of 3
5	Error	Error

The interpretation of the value depends on the indicator selected.

Interpretation of values

This table describes the meaning of each value, depending on the indicator selected.

Value	Presentation Restricted	Screening	Number Incomplete
0	The presentation is allowed	User provided, but not verified	Complete
1	The presentation is restricted	User provided, verified and passed	Incomplete
2	The address is not available	User provided, verify failed	
3	Spare	Network provided	

Configuration screen

Here is an example Configure Branch On Indicator screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	Select the indicator option: <ul style="list-style-type: none"> • Presentation Restricted • Screening • Number Incomplete
2	Select the number from the drop down list. <ul style="list-style-type: none"> • CallingPartyNumber • AdditionalCallingPartyNumber • OriginalCalledPartyID • RedirectingPartyID • LocationNumber • LocationInformationLocationNumber
3	Click Save .

Branch on Protocol

Node description

The Branch on Protocol node allows you to determine the protocol used by the current call and branch accordingly.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



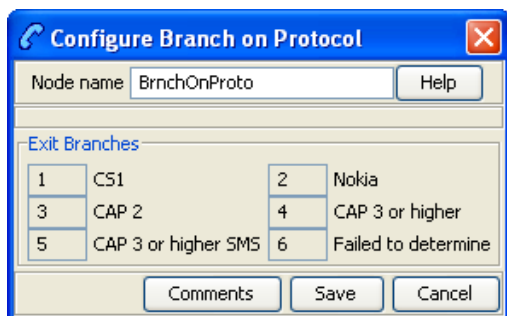
Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	CS1	CS1 Protocol
2	Nokia	(for future use)
3	CAP 2	CAP 2 protocol
4	CAP 3 or higher	CAP 3, or higher, protocol
5	CAP 3 or higher SMS	(for future use)
6	Failed to determine	Unspecified error

Configuration screen

Here is an example Configure Branch on Protocol screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Branch on Service Key

Node description

The Branch on Service Key (BoSK) feature node compares an ACS IDP service key with a fixed value configured in the feature node. The feature node routes calls to different branches depending on the feature node configuration and whether or not a match is found.

You configure the BoSK feature node by allocating a service key number or range of numbers to each exit. The service key number can have up to 10 digits and must be less than or equal to 2147483647.

To increase the number of available exits for which you can specify service key numbers and ranges, edit the feature node structure.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Branch on Service Key nodes as required.

Node exits

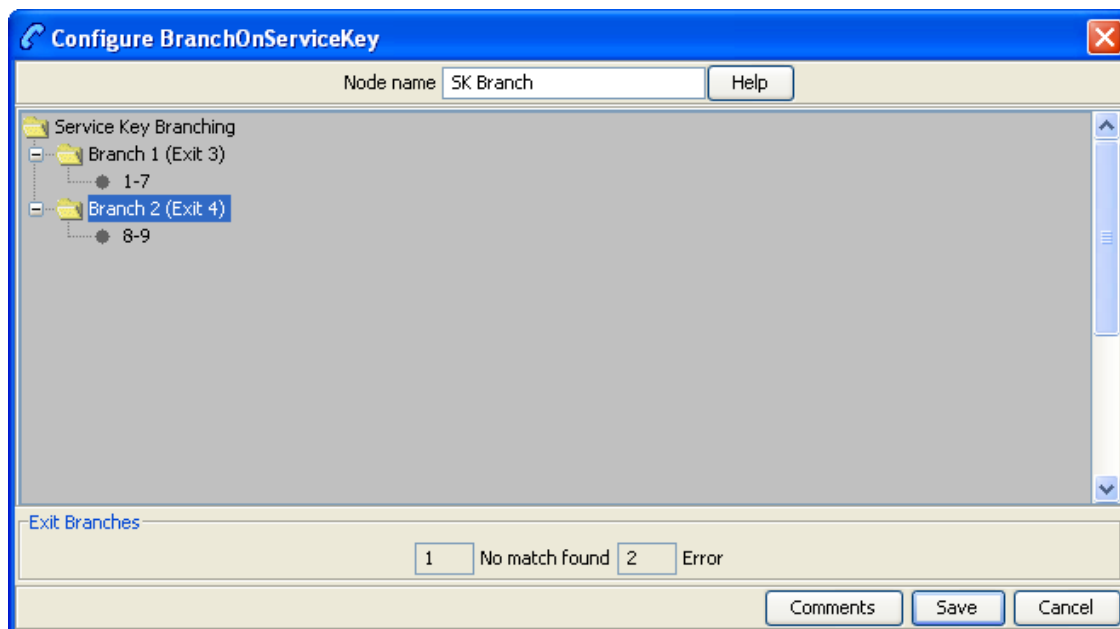
This feature node can have between three and ten exits. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See Editing node exits.

Exits 1 and 2 are set by the system and may not be changed by the user.

Exit	Cause	Description
1	No match found	No match was found for the service key extracted from the Initial Detection Point.
2	Error	The service key rules are incorrectly configured or an internal error has occurred.
3 to 10	Exit 3	These exits are followed depending on the rules attached to them.

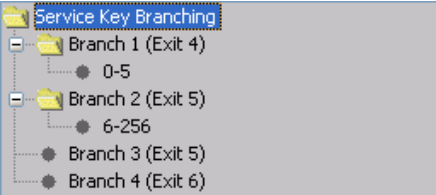
Configuration screen

Here is an example Configure Branch on Service Key screen.



Configuring the node

Follow these steps to edit the feature node configuration.

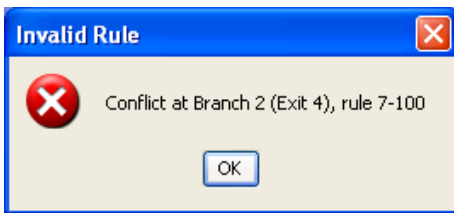
Step	Action
1	<p>Edit the number of feature node exits to create one or more additional exits. See Editing node exits for details.</p> <p>Note: The new number of exits is represented on the feature node icon, but NOT in the exit list in the feature node configuration window.</p>
2	<p>Open the Configure Branch on Service Key window.</p> <p>The Service Key Branching tree displays, listing all the configurable exit branches. This will be the total number of feature node exits, minus the two pre-configured exits. You configure the feature node by specifying the branching rules for each exit, where a rule is either a range of service keys or a single value.</p> <p>For example, the following diagram shows the service key rules configured for two exit branches.</p> 
3	<p>Add the rules to each branch by performing the following steps:</p> <ol style="list-style-type: none"> Right-click on the branch, and select Add from the pop-up menu. The Add Rules dialog displays.

Step	Action
------	--------



- b. Specify the service key values for the rule. To specify:
 - A single value, enter the value in the left hand field only, or the same number in both fields. A service key number can have up to 10 digits and must be less than or equal to 2147483647.
 - A range of numbers, enter values in both fields. The 'from' value must be lower than the 'to' value.
- c. Click **Okay**. The rule is added to the list of rules for the selected branch.

If a rule conflicts with an existing rule or the rule is invalid, an Invalid Rule dialog box appears informing you about the error:

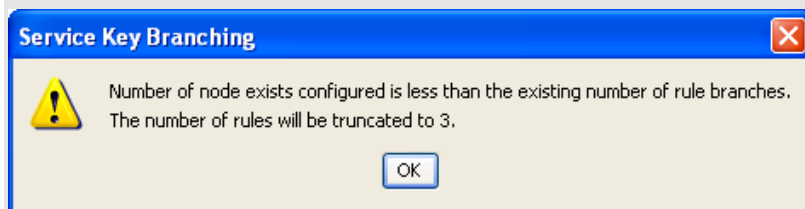


Note: You can add multiple rules to a branch, but you must specify at least one rule for each branch.

- 4 To edit a previously configured rule, perform the following steps:
 - a. Right-click on the rule you want to change and select **Edit** from the pop-up menu. The Edit Rules dialog appears, displaying the previously configured rule values.
 - b. In the text fields enter the new rule values. The numbers for the rule must not overlap any other rule range.
 - c. Click **Okay**.
- 5 To delete a previously configured rule, right-click on the rule and select **Delete** from the pop-up menu.
- 6 Click **Save** to save the feature node configuration.

Note: You must configure at least one rule for each branch before you will be able to save the feature node configuration.

Note: You can configure additional exits for, or remove exits from the feature node, at any time. If you remove an exit then the next time you open the Configure Branch on Service Key window, a warning message displays:



Call Forwarded Branching

Node description

This node branches in either of two directions, depending on whether or not ACS has been advised that a terminating call has been forwarded.

ACS may receive advice about call-forwarding from a Service Switching Point (SSP) that complies with the CAMEL Application Part (CAP) specification. To use the Call Forwarded Branching node, you need to be familiar with the CAP specification. The specification is contained in the following document.

3GPP TS 29.078 v3.7.0
 3rd Generation Partnership Project;
 Technical Specification Group Core Network;
 Customised Applications for Mobile network Enhanced Logic
 (CAMEL) Phase 3
 CAMEL Application Part (CAP) specification
 (Release 1999)

Note: This node can only be used with terminating calls passed to ACS by an SSP that complies with the CAP specification.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Call Forwarded Branching nodes as required.

Note: This node is only available in ACS 2.4.1 and later versions, for users of the CAMEL protocol.

Node exits

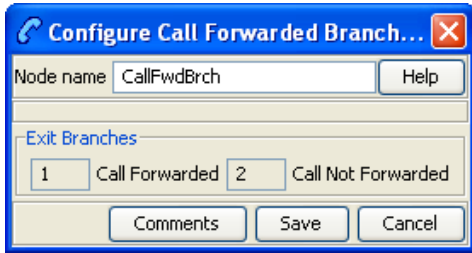
The Call Forwarded Branching node has one entry and two exits. The number of exits is fixed and cannot be changed.

Exit	Label	Cause
1	Call Forwarded	ACS has been advised that a terminating call has been forwarded.
2	Call Not Forwarded	ACS has not been advised that a terminating call has been forwarded.

Note: ACS is advised that a terminating call has been forwarded when an EventReportBCSM is received from the SSP. EventReportBCSM indicates to ACS's tBusy and tNoAnswer detection points that a "call forwarded" has been received.

Configuration screen

Here is an example Configure Call Forwarded Branching screen.



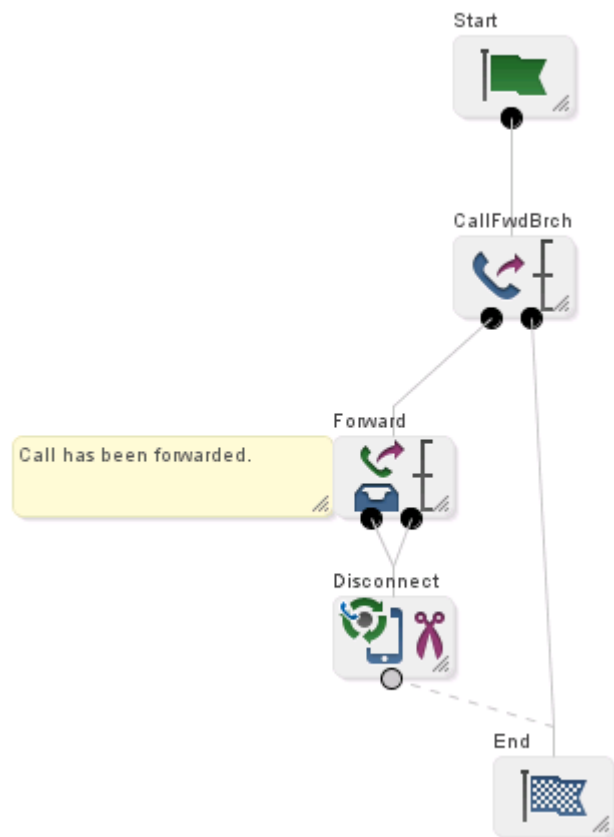
Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Example of the use of the node

For a terminating call, you may want to play an announcement if the call has been call-forwarded and simply terminate the call if it has not been call-forwarded.

To implement this scenario, you could set up the control plan shown below.



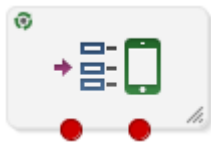
Call Progression

Node description

The Call Progression node allows you to configure the following parameters in the outgoing connect message:

- Suppress Switch Announcements
- Set OCSI Applicable

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may have as many Call Progression nodes as required. A later instance of the node parameters will override the previous ones.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The node parameters have been set.
2	Failure	The node parameters have not been set.

Configuration screen

Here is an example Configure Call Progression screen.



Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	Select the Suppress Ann check box to suppress switch announcements in the outgoing Connect message.
2	Select the OCSIAplicable check box to set the OCSIAplicable parameter in the outgoing Connect message.
3	Click Save .

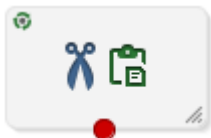
Set Cut and Paste

Node description

The number entered in the node configuration dialog is sent in all following INAP Connect operations as the value of the `cutAndPaste` parameter.

For details about the effect of `cutAndPaste`, see *ETS 300 374-1*.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Set Cut and Paste nodes as required.

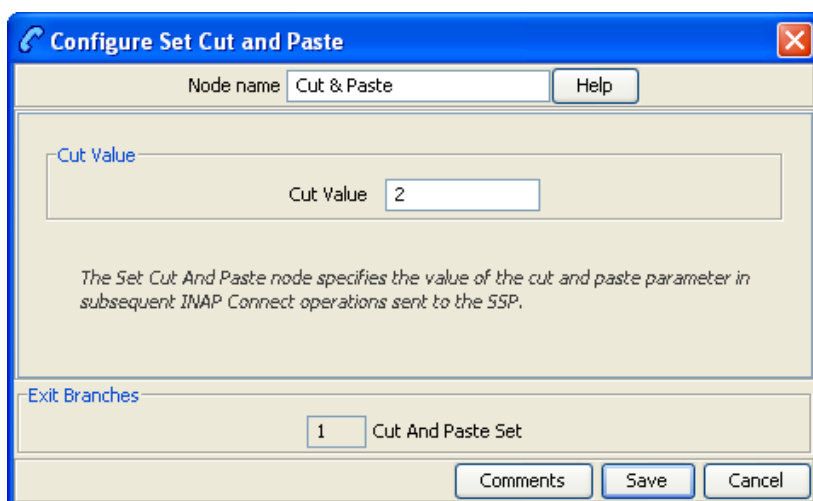
Node exits

This node has one entry and one exit. The number of exits cannot be changed.

Exit	Cause	Description
1	Cut and Paste Set	The cut and paste has been set.

Configuration screen

Here is an example Configure Set Cut and Paste screen.



Configuring the node

Follow these steps to configure the Set Cut and Paste node.

Step	Action
1	In the Cut Value field, enter the value to set the cutAndPaste parameter to in INAP Connect operations sent to the switch from here on. Note: If you set Cut Value to 23 or more, ACS will stop setting the cutAndPaste parameter in INAP Connect operations.
2	Click Save .

Set Indicator

Node description

The Set Indicator node allows you to set the value one of the indicators of a specified number sent in the CONNECT message:

- Number incomplete

- Screening
- Presentation restricted

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



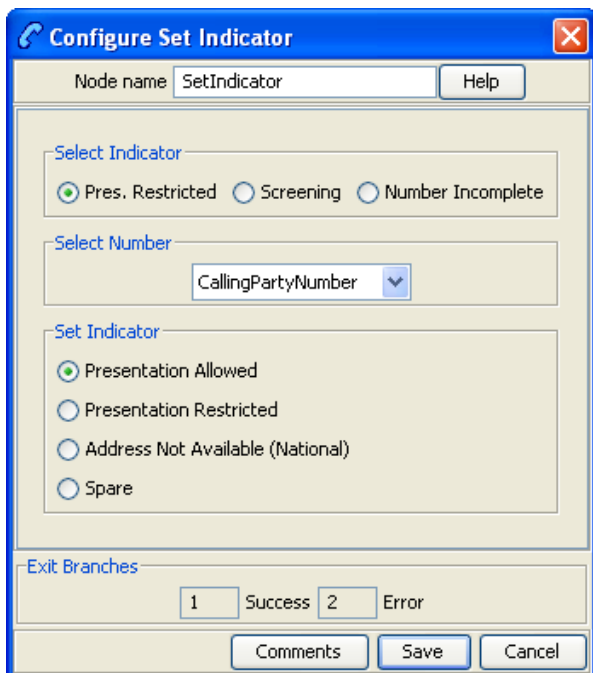
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Value successfully set.
2	Error	Value not set due to error

Configuration screen

Here is an example Configure Set Indicator screen for the Presentation Restricted indicator.



Configuration screen

Here is an example Configure Set Indicator screen for the screening indicator.

The screenshot shows the 'Configure Set Indicator' dialog box. The 'Node name' field is set to 'SetIndicator'. The 'Select Indicator' section has three radio buttons: 'Pres. Restricted', 'Screening' (which is selected), and 'Number Incomplete'. The 'Select Number' section has a dropdown menu set to 'CallingPartyNumber'. The 'Set Indicator' section has four radio buttons: 'User Provided, Not Verified' (selected), 'User Provided, Verified, Passed', 'User Provided, Verified, Failed', and 'Network Provided'. The 'Exit Branches' section has two input fields: '1' for 'Success' and '2' for 'Error'. At the bottom are 'Comments', 'Save', and 'Cancel' buttons.

Configuration screen

Here is an example Configure Set Indicator screen for the Number Incomplete indicator.

The screenshot shows the 'Configure Set Indicator' dialog box. The 'Node name' field is set to 'SetIndicator'. The 'Select Indicator' section has three radio buttons: 'Pres. Restricted', 'Screening', and 'Number Incomplete' (which is selected). The 'Select Number' section has a dropdown menu set to 'CallingPartyNumber'. The 'Set Indicator' section has two radio buttons: 'Complete' (selected) and 'Incomplete'. The 'Exit Branches' section has two input fields: '1' for 'Success' and '2' for 'Error'. At the bottom are 'Comments', 'Save', and 'Cancel' buttons.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	From the Select Indicator options, select the indicator to set: <ul style="list-style-type: none"> • Presentation Restricted • Screening • Number Incomplete.
2	From Select Number drop down list, select the phone number to apply the indicator to. <ul style="list-style-type: none"> • CallingPartyNumber • AdditionalCallingPartyNumber • OriginalCalledPartyID • RedirectingPartyID • LocationNumber • LocationInformationLocationNumber <p>Note: This list contains all the valid phone number options.</p>
3	From the Set Indicator options, select the value to apply to the selected phone number indicator. Refer to the interpretation of values table below.
4	Click Save .

Interpretation of values

This table describes the meaning of each value, depending on the indicator selected.

Value	Presentation Restricted	Screening	Number Incomplete
0	The presentation is allowed	User provided, but not verified	Complete
1	The presentation is restricted	User provided, verified and passed	Incomplete
2	The address is not available	User provided, verify failed	
3	Spare	Network provided	

TCAP Handover

Node description

The TCAP Handover node calls a chassisAction to construct an IDP on the existing SLEE dialog. It then calls the TCAP interface to hand over the SLEE dialog to an external network entity.

The available network entities are defined in **acs.conf** and made available to this node (SCP Name list) through the **acs.jnlp** or **sms.jnlp** files (scfs parameter). These will typically be SLCs, see *ACS Technical Guide*, topic *Customizing the screens* for details.

The following IDP parameters can be configured in the node to use a specific ACS termination number or buffer:

- Calling Party Number

- Called Party Number
- Redirecting Party ID
- Location Number
- Additional Calling Party Number

The available buffers are listed in the Buffer list.

Note: All other fields in the constructed IDP are taken from the calling information for the original call.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The node successfully passed the TCAP dialog to another entity.
2	Bad Destination	The hand over destination defined for the specified network entity could not be found.
3	Failure	The hand over was unsuccessful.

Configuration screen

Here is an example Configure Tcap Handover screen.

Configure Tcap Handover

Node name: TcapHandover

SCP Name: scf

IDP Parameters

callingPartyNumber

Data Type: Session Data
Location: Incoming Session Data
Field: CC Calling Party Id

calledPartyNumber

Data Type: Session Data
Location: Incoming Session Data
Field: CC Service Number

redirectingPartyID

Data Type: Session Data
Location: Incoming Session Data
Field: CC Last Redirecting Party

locationNumber

Data Type: Session Data
Location: Incoming Session Data
Field: CC Location Number

additionalCallingPartyNumber

Data Type: Session Data
Location: Incoming Session Data
Field: CC Additional Calling Party

Preserve Attributes

Exit Branches

1 Success 2 Bad Destination
3 Failure

Specifying values in profile selection fields

For each combo box combination on this screen, there are two methods of entering a value:

- 1 Use the drop down lists in the **Data Type**, **Location** and **Field** boxes, as in this example, to select the relevant values:

callingPartyNumber

Data Type: Session Data

Location: Incoming Session Data

Field: CC Calling Party Id

- 2 Select Fixed Value in the **Data Type** box.

Result: The fields will change, as in this example, and you can type the required value in the **Fixed Value** field.

callingPartyNumber

Data Type: Fixed Value

Fixed Value: [Text Input Field]

Configuring the node

Follow these steps to edit the TCAP Handover feature node.

Step	Action
1	Select the SCP Name of the network entity for the handover destination.
2	In the IDP Parameters area, for each IDP parameter, specify the value. You can specify the following optional IDP parameters: <ul style="list-style-type: none"> • callingPartyNumber • calledPartyNumber • redirectingPartyID • locationNumber • additionalCallingPartyNumber
3	When a TCAP handover is performed it is often desirable to preserve fields from original incoming IDP into fields in outgoing IDP. By default, the original IDP parameter values are preserved - the Preserve Attributes check box is selected. To disable the original IDP parameter values preservation, deselect the check box .
4	Click Save .

For more information on profile blocks and tags, see *ACS User's Guide*.

Transmission Type Branching

Node description

The Transmission Type Branching node allows you to route the call to different branches depending on the incoming calling party transmission type.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and seven exits. The number of exits cannot be changed.

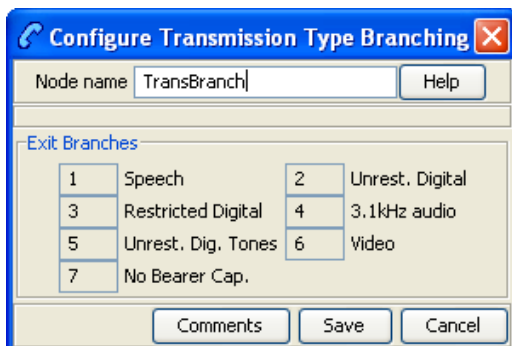
Exit	Cause	Description
1	Speech	
2	Unrest. Digital	Unrestricted Digital
3	Restricted Digital	
4	3.1kHz audio	
5	Unret. Dg. Tones	Unrestricted Digital Tones
6	Video	
7	No Bearer Cap	

Restrictions

A control plan may contain as many Transmission Type Branching nodes as required.

Configuration screen

Here is an example Configure Transmission Type Branching screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Number Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Number feature nodes. Use Number feature nodes to route calls using information about the origin of the call.

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Available Feature Nodes

Number Feature Nodes List

This table lists the feature nodes available from the Number palette group and the fast key for each feature node in the list. You can use fast keys to search for feature nodes in the palette or the canvas.

Node name	Node description
Call Filtering (see page 414)	Checks the number in the selected call-digit buffer to determine whether it matches a number in the allowed or barred list stored in the configured profile location. Fast key: CF
Calling Party (see page 417)	Routes a call based on the number that the call is coming from. Fast key: CP Shortcut keys: Alt+C
Calling Party Category (see page 418)	Routes a call based on the category of phone from which the call originates. Fast key: CPC Shortcut keys: Alt+Shift+C
Dialled Number (see page 421)	Allows branching based on the service number that was dialed by the calling party. Fast key: DN
Geographical	Allows a control plan to be branched, based on the geographic location of the

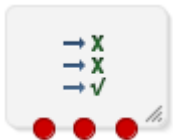
Node name	Node description
Routing (see page 423)	calling party. Fast key: GR Shortcut keys: Alt+Shift+G
Number Lookup and Translation (see page 428)	Takes a number that is entered by the user and translates it to another number that is stored in the database. Fast key: NLT
Number Matching (see page 431)	Allows the user to enter one or more search patterns, against which the selected number is matched. Fast key: MTCH
Number Normalisation (see page 435)	Normalizes the specified number variable, following the rules defined in <code>acs.conf</code> . Fast key: NumN
Table Lookup (see page 436)	Maps a specified prefix or CLI to a geographical routing code, such as a postal code or an exchange code, by looking up the code in a selected table lookup dataset. The feature node stores the resulting code in a profile field. The exit taken from the feature node depends on whether or not a match is found for the prefix or CLI. Fast key: TBLU

Call Filtering

Node description

Use the Call Filtering feature node to check the number in the selected call-digits buffer to determine whether it matches a number in the allowed or barred list stored in the configured profile location.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Call Filtering feature nodes as required.

Node exits

This feature node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Barred	The call is barred, so it is routed down branch 1. This may then be followed by the required functionality, such as a Play Announcement or Disconnect feature node.
2	Allowed	The call is allowed, so it is routed down branch 2. This may then be followed by the required functionality, such as a Termination Unchanged feature node.
3	Data Not Found	No data is found to identify the number as allowed or barred. The call is routed down branch 3. It may then be followed by the required functionality, such as a Play Announcement or Disconnect feature node.

Configuration screen

Here is an example Configure Call Filtering screen.

Configure Call Filtering

Node name:

Compare With Which Buffer

Data Type:

Location:

Field:

Location Of List Type

Data Type:

Location:

Field:

Location Of List Data

Data Type:

Location:

Field:

Location Of Ignore Flag

Data Type:

Location:

Field:

This node matches a specified number against a prefix tree. The prefix tree is designated as either an allowed list (numbers not in the list are barred) or a barred list (numbers in the list are barred). If the ignore flag is true, all numbers are allowed.

Exit Branches

1 Barred Branch 2 Allowed Branch

3 Data Not Found Branch

Configuring the node

To edit the Call Filtering feature node:

Step	Action
1	From the lists in the Compare With Which Buffer area, select the buffer that contains the number to check in the allowed or barred numbers list. You specify the number list to use in the location fields.
2	From the Location Of List Type lists, select the profile field that sets whether the list type is allowed or barred.
3	From the Location Of List Data lists, select the prefix tree profile field that contains the list of allowed or barred numbers.

Step	Action
4	From the Location Of Ignore Flag lists, select the profile field that sets whether the list should be used or ignored. When the value in the profile field is set to true, the list is ignored and all numbers are allowed.
5	Click Save .

Calling Party

Node description

This node routes calls based on the telephone number from which the call is made. This allows callers whose phone numbers have specified prefixes to be routed to different exits. Calls are routed to the exit that is mapped to the best match between the calling party number and the prefixes that are in the node data.

Example: If the prefixes entered into the node data are 04, 09, 04477 and 044, a caller from 044773384 will be routed down the branch associated with 04477, as this is the best match found for the calling party number.

For calls where there is no match found in the prefix list, the call is routed down the default exit.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Shortcut keys

The shortcut keys to add a Calling Party node are **Alt+C**.

Restrictions

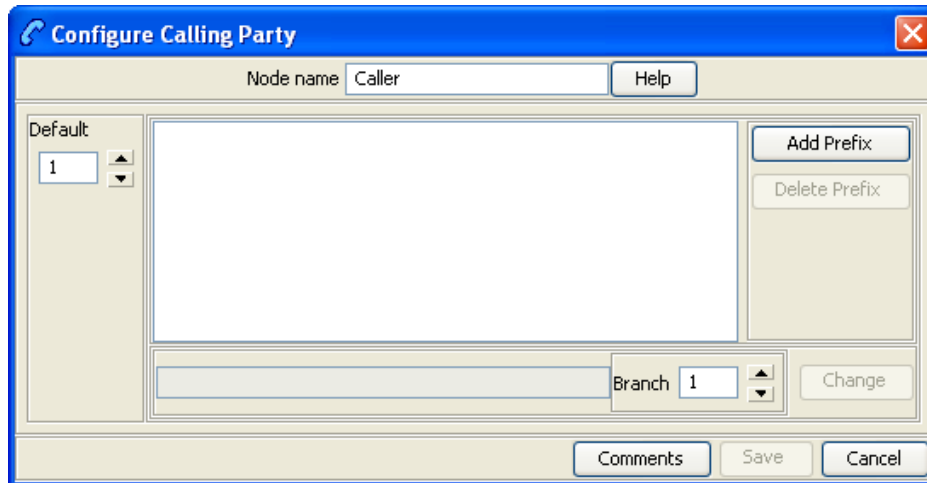
A control plan may contain as many Calling Party nodes as required.

Node exits

This node has one entry and may have two through 20 exits. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See Editing node exits.

Configuration screen

Here is an example Configure Calling Party screen.



Configuring the node

Follow these steps to configure the node.

Step	Action
1	Edit the node exits to add up to another eighteen exits as required. See Editing node exits for details.
2	Click Add Prefix . Result: A highlighted entry appears in the display grid. This creates the new Prefix entry, and is edited in the following steps.
3	Type the prefix in the entry field to the left of the Branch box. Calls made from numbers with this prefix are routed to the exit specified in this step.
4	Use the Branch box to select the exit these calls should be routed to.
5	Click Change . Result: The Prefix appears in the display grid, with the exit displayed in brackets.
6	Repeat Steps 1 – 4 for as many prefix additions as required.
7	Set the default branch for all calls which do not match a specified prefix.
8	Click Save .

Note: **Save** is not available until all the required information has been selected or entered.

Calling Party Category

Node description

This node routes a call based on the category of phone from which the call originates. A category number identifies calls within the system, indicating the type of telephone from which the call is made (for example, pay phones, hotels or prisons).

This node is used by System Administrators only, for advanced editing. It will only work if the Telco's system is set up to provide the IDP calling party category information. This configuration must be configured on the switch at system level.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Shortcut keys

The shortcut keys to add a Calling Party Category node are **Alt+Shift+C**.

Restrictions

A control plan may contain as many Calling Party Category nodes as required.

Node exits

This node has one entry and may have two through seven exits. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See Editing node exits.

Configuration screen

Here is an example Configure Calling Party Category screen.

Configuring the node

Follow these steps to edit the Calling Party Category node.

Step	Action
1	Edit the node exits to add up to another five exits as required. See Editing node exits for details.
2	Select the default branch. Where the system is not configured to process calling party category data, the system will

Step	Action
	use the default branch for any calls using a Control Plan containing this node.
3	Click Add Entry . Result: A highlighted entry appears in the display grid. This creates the new entry, and is edited in the following steps.
4	Use the Calling Party Type spin box to select the category number of the required type of phone. Any value from 0 – 255 may be used to indicate any given category of phone. These values are network-specific, so they may be set to reflect the needs of the market. The table below details the standard values used for ISUP. Result: Calls from phones of the selected calling party type will route down the selected branch. Example: If values are selected from the ITU/ETSI CS1 standards, category 4 represents calls from the Russian language operator, and category 15 represents calls from payphones. If the incoming call is from an undefined category, or if the system is not configured to process calling party category data, the call will be routed down the default branch.
5	Use the Branch spin box to select the exit. This is the exit to which calls made from phones of this category are routed.
6	Click Change . Result: The Category appears in the display grid, with the exit displayed in brackets.
7	Repeat Steps 1 – 4 for as many category additions as required.
8	Click Save . Note: Save is not available until all the required information has been selected or entered.

ISUP: Enumerated Values for Calling Party Category

The table below detail the standard values.

Integer value	Station type
-1	Unknown (not provided)
0	Unknown
1	Operator, language French
2	Operator, language English
3	Operator, language German
4	Operator, language Russian
5	Operator, language Spanish
6 - 8	Available to administration for selecting a particular language by mutual agreement
9	Reserved
10	Ordinary Calling subscriber
11	Calling subscriber with priority
12	Data call (voice band data)
13	Test call
14	Spare
15	Payphone

Integer value	Station type
16 - 223	Spare
224 - 254	Reserved for national use
255	Spare
In IS-41 NP(MSID) type	
0	Mobile Identification Number
1	International Mobile Station Identity

For more information about the Calling Party Category, see *ITU-T standard Q763*.

Dialled Number

Node description

The Dialled Number node allows branching, based on the service number (SN) that was dialed by the person making the call. This allows several service numbers to use the same control plan and be routed down different branches, based on the service number that the caller used.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

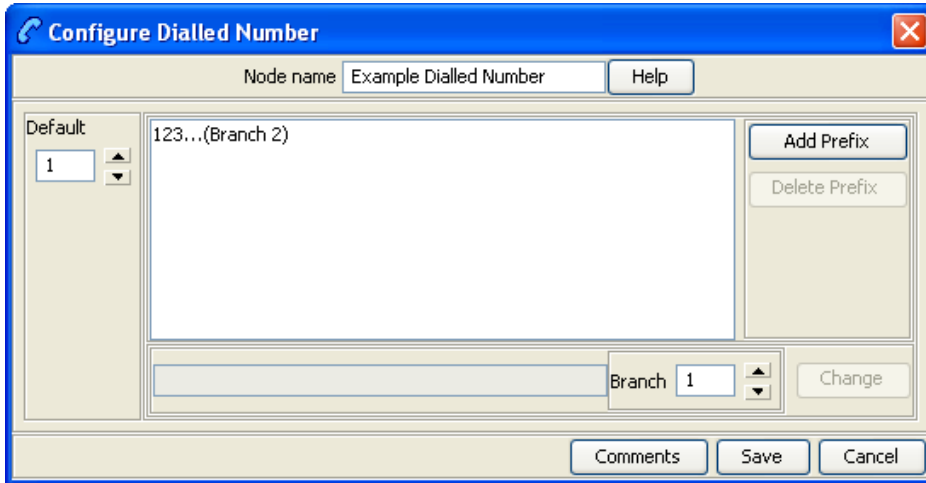
A control plan may contain as many Dialled Number nodes as required.

Node exits

This node has one entry and may have 2 through 20 exits. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See Editing node exits.

Configuration screen

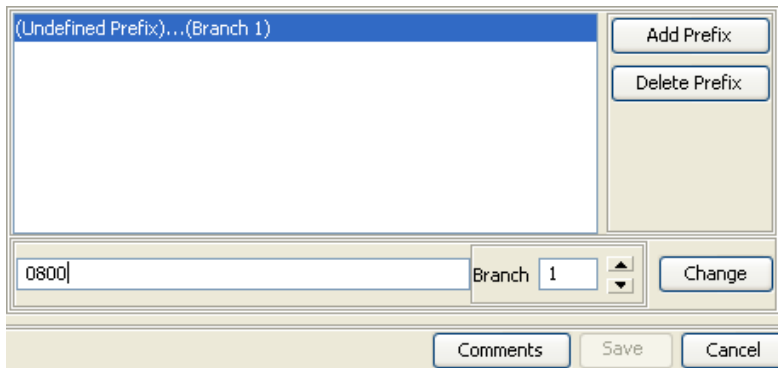
Here is an example Configure Dialed Number screen.



Configuring the node

Follow these steps to add a prefix to the node data, using the Configure Dialed Number screen.

- | Step | Action |
|------|---|
| 1 | Edit the node exits to add up to another eighteen exits as required to accommodate the numbers you are planning to configure. See Editing node exits for details. |
| 2 | Click Add Prefix . |
| 3 | Enter the prefix into the field to the left of the Branch field, as shown below. |

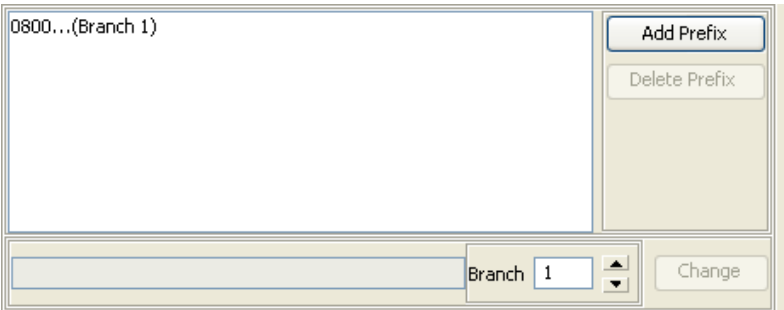


To determine the routing, prefixes (or the entire number) must be entered into the node data. The routing will be based on the best match between the dialed number and the prefixes that are in the node data. The dialed number list takes up to 1500 characters in total, which limits the number of entries in the list. It is recommended that a maximum of 50 entries be made in the list.

Example: If 0800447732 is dialed and the prefixes entered into the node data are 0800, 0900, 0800447 and 080044, the call will be routed down the branch associated with 0800447 because this is the best match found for the number dialed.

- | | |
|---|--|
| 4 | In the Branch field, select the branch down which calls whose dialed number best matches this prefix are to route. When the entry is correct, click Change . |
|---|--|

Example:

Step	Action
	

- 5 Repeat steps 1-4 until you have specified the dialed number ranges required.
- 6 From the **Default** box, select the branch that dialed numbers that do not match any prefix entered into the node will route down.
- 7 Click **Save**.

Geographical Routing

Node description

This node allows a control plan to branch based on the geographic location of the calling party. This node may be used to offer different service to calls from certain locations. For example, routing to a local office.

A control plan may contain as many Geographical Routing nodes as required.

Shortcut keys

The shortcut keys to add a Geographical Routing node are **Alt+Shift+G**.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and may have two through 20 exits. Although this node accepts up to 20 exits, it is recommended that this number is restricted to a maximum of 10. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See Editing node exits.

Geographic routing

A geography set is made up of multiple nested geography entries. Each entry is mapped to a unique prefix, and may also be connected to a (or several) region. A region is a group of geography entries. The entries contained in a single region may come from different branches and different nested levels, or may contain whole branches.

Routing may be based on either region or geography entry prefix. A geography entry may only appear once on a branch. That is, it may not appear on two branches.

The routing will be based on the best match between the calling party number (or other selected buffer) and the number prefix that has been set for the region in the **Geography** tab of the configuration screens.

Nested subtrees

If an entire nested subtree within a geography set is allocated to a branch then the root of the subtree should be allocated to the branch.

Example: If the number prefix entered for a region used in this node was 0447 and the number prefix for another region used in this node was 04477, a caller from 044773384 will be routed down the branch associated with 04477 because this is the best match found for the calling party number.

Allocating individual prefixes vs allocating folders

It can be visually clearer to allocate every individual prefix to a branch in the **All Geo Areas** frame but this is not necessary. When allocating a folder to a branch all prefixes (and sub-folder prefixes) will route down that branch even though the **Branch Geo Area** (right side) does not list each prefix. However if any prefixes or sub-folders in the root folder are allocated to another branch then calls to those prefixes will route down the new branch instead. You will notice that the prefixes or sub-folders will not be highlighted in the **All Geo Areas** (left side) of the root folder when allocated to other branches.

Example:

The geography set has a folder called Eastern Province which contains 3 prefixes, 2 of which are in a sub-folder called Northern District.

If the Eastern Province folder is allocated to a branch then all matched prefixes will go down that branch (even though the **Branch Geo Areas** frame will only display the Eastern Province folder name).

If the sub-folder, Northern District, is now allocated to another branch then all calls that best match the prefixes in this sub-folder will go down the new branch.

While the third prefix, Southern District (Prefix 12), will still go down the branch allocated to the root folder Eastern Province.

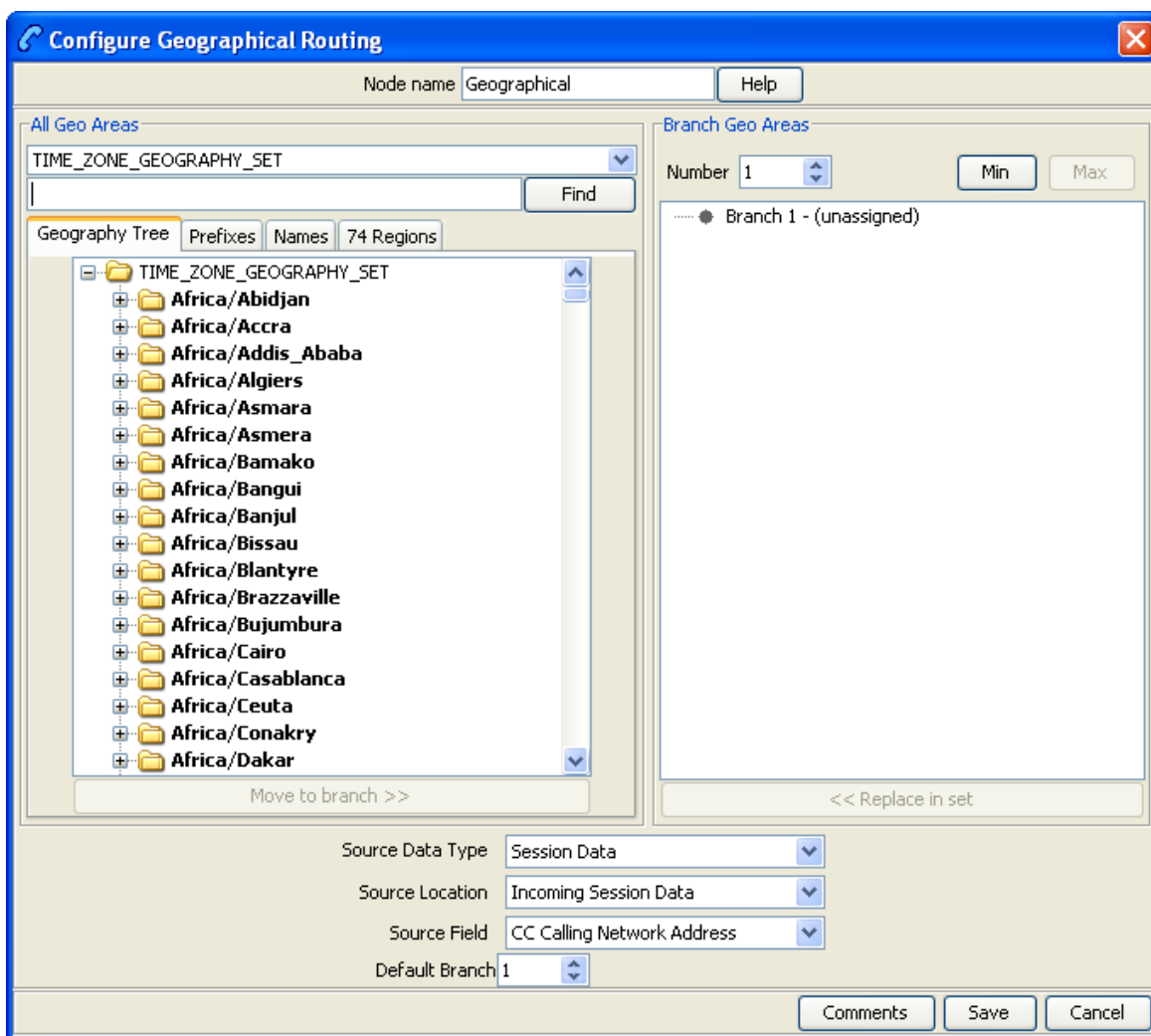
The Northern District folder will not be highlighted in the **All Geo Areas** frame indicating it is allocated on another branch instead.

Default branch

For calls where there is no match found for the allocated prefixes in the **Branch Geo Areas** frame, the call will be routed down the default exit branch, as specified by the **Default Branch** field.



Configuration screen

Here is an example Configure Geographical Routing screen.



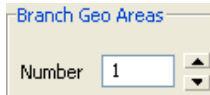
Add a geographic entry or Region to an exit branch

Follow these steps to add a geographic entry or region to an exit branch.

Step	Action
1	Select the location of the number data from the Source Data Type , Location and Field drop down lists. Note: For information on profiles and how to use them, see <i>Selecting profile locations and fields</i> .
2	Select the required geography set from the list. The list will display all the Geography sets that the customer has access to. To the left of the screen is the full tree structure of the geography set. Branches of the tree may be condensed and expanded by: <ul style="list-style-type: none"> • Using the left and right arrow keys • Clicking on the  and 
3	Enter the branch number to which the geographic entry or region is to be routed in the Number field.

Step	Action
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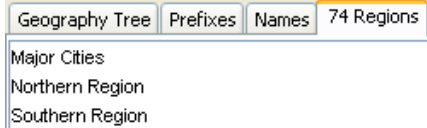
Example:



4 Select the entry that is to be routed to that branch from the geography tree at the left.

Notes:

- You can select the root branch by pressing **Alt+S**, and navigate around the tree using the arrow keys. You can also select any of the first nine entries by pressing **Ctrl** and the corresponding number key.
- To route based on geography regions select the **74 Regions** tab.



- When routing to exit branches using regions the entries that belong to the region will be assigned to the exit branch.
- It is important to ensure that an entry is only routed to one exit branch.

5 Either press **Ctrl+B** or click **Move to Branch >>**. The entry will be added to the tree structure for the specified branch. If a condensed branch of the geography tree is added to the branch sub-tree, the entry selected and all levels below that will be added to the branch sub-tree. To add geography entries to another branch, select a new branch and use **Move to Branch >>** or **<< Replace in Set** to add and remove geography tree entries.

6 Add entries and regions to all branch exits as required.

7 Select the **Default Branch**.

8 When you have finished all editing, click **Save**.



Note: **Save** is not available until changes have been made.

Remove geography entries from a branch subtree

Follow these steps to remove Geography Entries from a Branch sub-tree.

Step	Action
------	--------

1 Select the geography set that is required from the list. The list will display all the geography sets that the customer has access to. To the left of the screen is the full tree structure of the geography set. Branches of the tree may be condensed by:

- Using the left and right arrow keys
- Clicking on the  and expanded by clicking on the 

2 Select the branch to which a geography tree branch is currently routed by entering a number into the **Branch** field.

3 From the **Branch Geo Areas** frame, select the entry that is to be removed.

Note: You can select the root branch by pressing **Alt+B**, and navigate around the tree using the arrow keys. You can also select any of the first nine entries by pressing **Ctrl** and the corresponding number key.

4 Either press **Ctrl+S** or click **<< Replace in Set**.

Result: The geography entry is replaced in the full geography set tree. This entry may now be added to another branch sub-tree if required.

5 When finished all editing, click **Save**.

Step	Action
------	--------

Note: Save is not available until changes have been made.

Finding a number in the geographic tree

Follow these steps to find where a specific telephone number or prefix is in the geography tree.

Step	Action
------	--------

1 In the Configure Geographical Routing screen, press **Ctrl+R** to place your cursor into the field next to the **Find** button.

2 Type the number or prefix you want to search for and press **Ctrl+F** to activate the **Find** button.

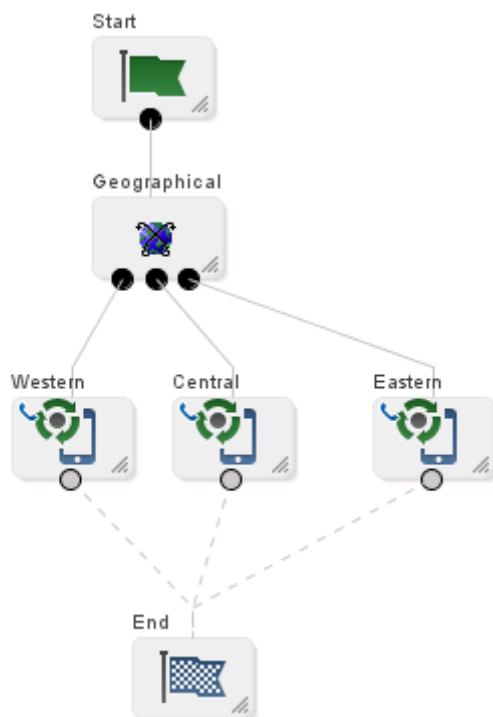
Result: The **All Geo Areas** tree will expand and highlight the best match for your query.

Example control plan

Here is an example control plan containing a Geographical Routing feature node.

This control plan will route calls to different service centers based on where the call originates from (for example, routes to the nearest Pizza shop).

This control plan is triggered when the caller dials a certain termination number (for example 0800 PIZZA).



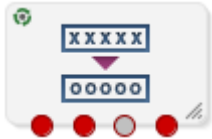
Number Lookup and Translation

Node description

This node takes a number that is either entered by the user or is held as a data item, and translates it to another number.

The new number is stored in a field in a specified location for later use, for example, as a pending termination number.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Number Lookup and Translation nodes as required.

The number translation data and announcements must be set up before this node can be configured correctly.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The number has been successfully translated.
2	Not Translated	The number has not been translated.
3	Abandoned	The caller has abandoned the call.
4	Not Updated	The number could not be updated.

Configuration screen

Here is an example Configure Number Lookup and Translation screen.

Configuring the node

Follow these steps to configure the node.

Note: For information about profiles and how to use them, see [Selecting profile locations and fields](#).

Step	Action
1	In the Read number translation list from field, select the location in which the number translations are stored. The Control Plan designer must verify that this field contains the correct selection. Note: If this number translation has been established by using the ACS > Resource > Number Translation screen, the information will always be in Customer Profile, Sub-field 1.
2	In the Sub-field field, enter the sub-tag that selects a group of number translations. This

Step	Action
	field entry does not have a default value. See <i>Sub-tags</i> (on page 5) for a definition of sub-tags. The list that is stored under the sub-field is a prefix tree data structure, which allows the input number to be quickly looked up and verified. Example: <ul style="list-style-type: none"> • Sub-field 1 could be Marketing translations between account codes and phone numbers. • Sub-field 2 could be Sales Department quick dial numbers.
3	Select the method of obtaining the number: <ul style="list-style-type: none"> • Retrieve stored number Result: The Retrieve number from location and Retrieve number from field fields are activated. Go to Step 4. • Prompt and collect number Result: The Announcement areas are activated. Go to Step 6.
4	If you selected the Retrieve stored number option, in the Retrieve number from location and Retrieve number from field drop down lists, select the location of the data to retrieve.
5	Go to Step 12.
6	If you selected the Prompt and collect number option, from the Main Announcement area, select the Announcement Set that contains the main announcement you want to play to the caller. Result: The Announcement Entry drop-down box will become available.
7	From the Announcement Entry drop-down list, select the main announcement you want to play to the caller. Note: All announcements are established in the ACS > Configuration > Announcements screens.
8	Set the Repetition field to the number of times to repeat the main announcement while the system waits for the caller to take an action. If set to zero, the announcement will be repeated for the length of the duration set.
9	Set the Duration field to the length of time in seconds that the announcement is to be played. If set to zero, the announcement will be played for its full length.
10	The retry announcement contains the announcement you want to play to the caller if the digits they enter are not recognised. In the Retry Announcement area, select the: <ul style="list-style-type: none"> • Announcement Set which contains the retry announcement • Announcement Entry for the retry announcement you want to play, and set the • Repetition to the number of times to repeat the retry announcement • Duration to the length of time, in seconds, that the retry announcement is to be played. as described in steps 5 - 9.
11	In the Number of Retries field, set the number of times that the node will attempt to collect data from the caller, before routing the call to the Not Translated branch. This value may be between 0 and 10.
12	From the Store translated number to Location and Store translated number to Field drop down lists, select where to store the translated number.
13	Click Save . Note: Save is not available until all the required information has been selected or entered.

Note: The announcement set and announcement entry lists are populated with data that is specified using the **Announcements** tab of the ACS Configuration screen.

For more information about configuring announcement sets and announcement entries, see the *Announcements* topic in *ACS User's Guide*.

Example

The following have been set up in the **ACS > Resource > Number Translation** screens (list of Sub-field 1 numbers):

Input Number	Termination Number
08004567	041234567
08009876	063456789

The number to translate is compared to the Input Number list.

When a match is found, the matching termination number is stored in the configured location.

Number Matching

Node description

The Number Matching node finds numbers that match:

- One or more search patterns
- A profile block and field

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan can contain one or more Number Matching nodes.

When entering a search pattern list, the maximum length of the list is 2000 characters per node instance.

The node can search for profiles with a String data type only.

Node exits

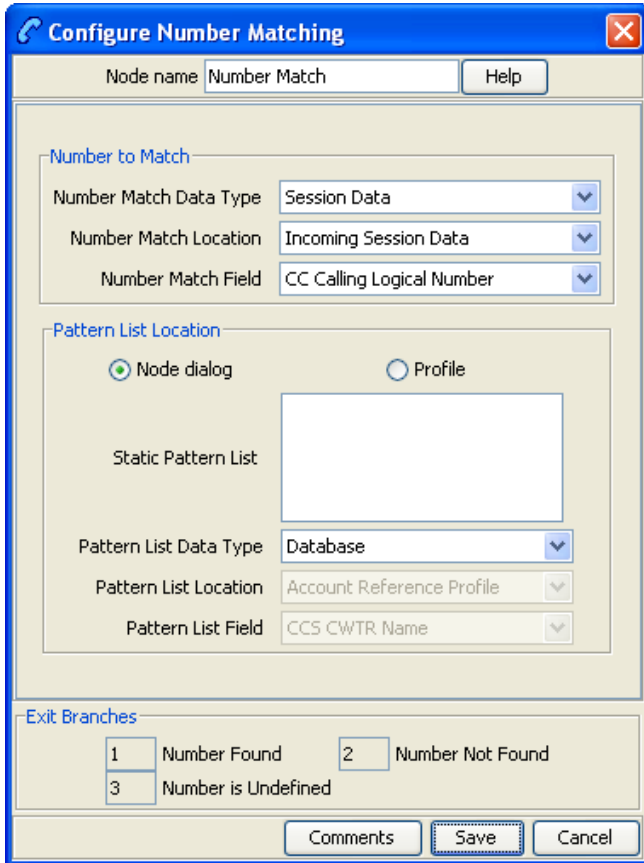
This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Number Found	The selected number matches a search pattern.

2	Number Not Found	The selected number does not match a search pattern.
3	Number is Undefined	One of: <ul style="list-style-type: none"> • The buffer to compare is empty • There is no number list found at the profile and field combination provided

Configuration screen

Here is an example Configure Number Matching screen.



Search patterns

The Number Matching feature node allows you to enter one or more search patterns in the **Static Pattern List** field.

The search patterns are entered using regular expressions. Some characters have special meaning when used in a regular expression; other characters stand for themselves. Under ACS, telephone number matching is customized for patterns of telephone numbers. The "number" character set is represented by digits zero through nine, asterisk, pound sign (hash mark), and the letters A through F.

The control plan compiler notifies you if the pattern entered is invalid.

Special characters

Here are the definitions of special characters used in search patterns.

Special Character	Definition
c	For the purposes of this feature node, the character c refers to the "number" character set as defined above.
?	Any single character in the pattern.
(r)	The regular expression r. For example, (r)x(y)z is the combination of regular expressions rxyzy. This is typically used to group number sequences as distinct units.
r%	Zero or more successive occurrences of the regular expression r. The longest left-most match is chosen.
rx	The occurrence of regular expression r, followed by the occurrence of regular expression x.
r<m:n>	Any number of m through n successive occurrences of the regular expression r. The regular expression r<m> matches exactly m occurrences; r<m:> matches at least m occurrences. The occurrence counting angle brackets allows only numbers and a colon within the brackets. The angle brackets and colon have no meaning outside of this context.
[s]	Any character in the set s, where s is a sequence of characters and/or a range of characters, for example [0-9]. When used in square brackets, the dash denotes a range, for example [cc]. Note: The dash has no special meaning if it occurs immediately after the open bracket, or before the closing bracket: for example, ([-c] or [c-]).
[^s]	Any character not in the set s, where s is defined as in the previous entry. The circumflex has the meaning "complement of", where it immediately follows the open bracket for example, [^s]. A circumflex is not part of a telephone number, so a match will never be found for a pattern where the circumflex does not immediately follow the open bracket.

Examples:

Here are some examples of search patterns.

Search Pattern	Definition
123	Match digit sequence '123' exactly
123%	Match digit sequence '12' followed by none or more '3' digits {matches 12, 123, 1233, 12333}
123<1:>	Match digit sequence '12' followed by one or more '3' digits {matches 123, 1233, 12333, ..}
(123)%	Match none or more entire sequences of '123' {matches nothing, 123, 123123, 123123123, ...}
(123)<1:2>	Match on at least one and no more than two sequences '123' {matches ONLY 123 and 123123}
021?<6:7>	Match on prepaid (at least 6 of any digits) & subscriber (most 7 digits)
025?<6:>	Match on at least 6 of any digit, no upper limit of digits
02[15]?<6:>	Match on a number that starts with 02, is directly followed by a single digit 1 or 5, and followed by at least 6 occurrences of any digit
123?%	Match on a number where 123 is followed by anything or nothing
??123???	Match on any 8-digit number where the 3rd to 5th digits are 123

Search Pattern	Definition
?%123	Match on any number ending in 123, including 123

Configuring the node

Follow these steps to configure the node.

Step	Action
1	In the Number to Match frame, using the drop down lists, specify the number to match.
2	Select the pattern list location. If you select: <ul style="list-style-type: none"> • Node dialog, the Static Pattern List field is active. • Profile, specify the data type, location, and field.
3	If you selected Node dialog , fill in the Number Match Pattern List field. See <i>Search patterns</i> (on page 432) for a list of example patterns. <p>Warning: Do not leave this field empty. If you leave this field empty, exit 2 will be taken, as there is nothing to match against.</p> <p>If you selected Profile, select from the drop-down lists:</p> <ul style="list-style-type: none"> • Pattern List Data Type <p>Note: Only String data types are accepted. To be able to find a profile with an Integer data type, you must add a Copy node to your control plan just before the Number Matching Node. Configure the Copy node to temporarily change the profile data type from Number to String.</p> • Pattern List Location • Pattern List Field containing the pattern to match against
4	Click Save .

Note: If any control plan containing Number Matching nodes were exported prior to the profile block functionality being introduced and you import them again, you will need to re-save to allow the control plan to recompile.

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Example

This example is based on the configuration screen shown for this node:

- The number to match against is held in the Calling Logical Number field in the call context.
- The search pattern looks for the digits 123, starting in position 3, in an eight digit number.

The exit taken is shown in this table for the various Calling Logical Number examples:

CLN	Exit taken	Why
	3 - Number is Undefined	No number found at configured location - Logical Calling Number buffer is empty.
04123678	1 - Number Found	123 found, starting at position 3, in an eight digit number.

CLN	Exit taken	Why
0412367	2 - Number Not Found	Not an eight digit number - only 7 digits.
12345678	2 - Number Not Found	123 not at position 3 - occurs at position 2.
0212345678	2 - Number Not Found	Not an eight digit number - 9 digits.

Number Normalisation

Node description

The Number Normalisation node normalizes the number currently held in the selected buffer, following the rules defined in `acs.conf`.

Note: Any changes made to `acs.conf` will necessitate a SLEE restart for the changes to be registered with this node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Number Normalisation nodes as required.

Node exits

This node has one entry and one exit. The number of exits cannot be changed.

Exit	Cause	Status	Description
1	Success	T	The caller has successfully exited the node.

Configuration screen

Here is an example Configure Number Normalisation screen.

Configuring the node

Follow these steps to edit the node configuration.

See the *ACS technical Guide*, topic *acsChassis Normalisation Parameters (SCP)* for information on number normalisation.

Step	Action
1	Using the drop down lists in the Number Buffer area, specify the buffer containing the number to normalise.
2	Type the Source NOA value.
3	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Table Lookup

Node description

The Table Lookup feature node maps a specified prefix or CLI to a geographical routing code, such as a postal code or an exchange code, by looking up the code in a selected table lookup dataset. The feature node stores the resulting code in a profile field. The exit taken from the feature node depends on whether or not a match is found for the prefix or CLI.

About table lookup datasets

A table lookup dataset contains a group of related codes, for example, for a specific geographic area or suburb.

A table lookup dataset can be public or private. A private table lookup dataset belongs to a specific customer. It is only available to that customer and the parent customers linked to that customer in the customer hierarchy. A public table lookup dataset is available to all customers.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Table Lookup feature nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Name	Cause
1	Matched	A prefix has been mapped to a code.
2	No Match	No matching prefix was found in the dataset
3	Error	An internal error has occurred.

Configuring the node

To configure the Table Lookup feature node:

Step	Action
1	Open the configuration window for the Table Lookup feature node.
2	In the Lookup Input source area select the location of the prefix or CLI that you want the feature node to look up from the Source Data Type , Source Location and Source Field lists.
3	In the Lookup Result target area select the location to store the resulting code from the Target Data Type , Target Location and Target Field lists.
4	From the Dataset list, select the dataset that corresponds to the type of code you want. You can select a publicly owned dataset or a dataset that belongs to the customer. For more information about table lookup datasets, see <i>About table lookup datasets</i> (on page 437).
5	Click Save .

OSD Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Open Services Development (OSD) feature node. If any additional custom feature nodes have been created and installed to fit your specific customer requirements, they will not appear in this list.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	439
Iterator	440

Available Feature Nodes

OSD Feature Node List

This table lists the feature node available from the OSD palette group and the feature node fast key. You can use the fast key to search for the feature node in the feature palette or the canvas.

Node name	Node description
Iterator (on page 440)	The Iterator node allows iterating through prefix tree, ordered prefix trees, or array elements, extracting the content of each entry or element and copying it to temporary storage variables. Fast key: ITRT

Disconnect Nodes Release Causes

This table lists the release causes you should use in Disconnect feature nodes that you include in your OSD control plans.

Cause	OSD Meaning
1	No such subscriber
3	Missing parameter
4	Mis-typed parameter
5	System error

Each cause is translated into a SOAP cause that is returned to the WSDL origin. This means that anyone trying to identify a fault with the control plan will be using accurate information.

Iterator

Node description

The Iterator node allows iterating through prefix tree, ordered prefix trees, or array elements, extracting the content of each entry or element and copying it to temporary storage variables.

Prefix trees and ordered prefix trees are defined in profile blocks. For more information on how to define these types of structures, see *ACS User's Guide*.

A telco or a third party (for example, an ASP) may require access to the Convergent Charging Controller platform from a WEB application (for example to transfer money from user A's account to user B's account, send a short message to user B and then tell user A what the balance and expiry date of all his balances are).

A control plan using the iterator node can perform part of this logic that deals with which parameters come in / go out through XML.

When the control plan is saved, a WSDL file is produced which can then be given to the third party or client ASP.

A SOAP request conforming to this WSDL and sent to the appropriate address and port will result in the control plan being run and a SOAP response containing the balances and expiry dates being sent back to the application.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Iterator nodes as required.

Warning: An Iterator node must never be placed within the loop of another Iterator node. See *Iterator examples* (on page 441) below

Node exits

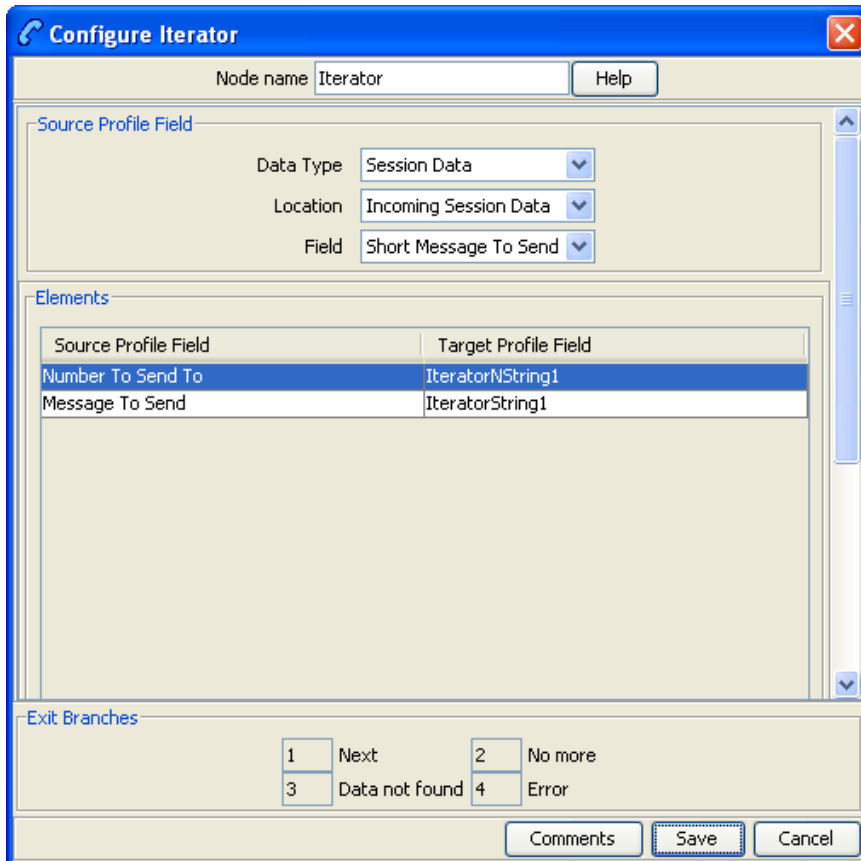
This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Next	A sub tag has been successfully processed, but there is at least another sub tag to process.
2	No more	A sub tag has been successfully processed and there are no more sub tags.
3	Data not found	Data could not be found at the profile filed (prefix tree) location.

Exit	Cause	Description
4	Error	The node detected that two or more feature nodes are used simultaneously, which could result in each node attempting to copy into the same fields in Temporary Storage.

Configuration screen

Here is an example Configure Iterator screen.



Configuring the node

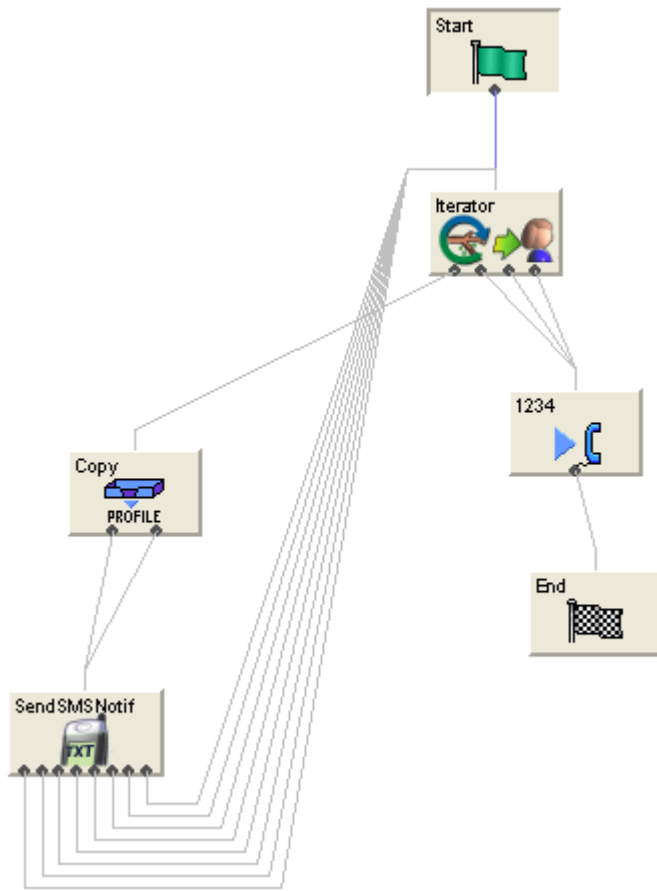
Follow these steps to configure the Iterator node.

Step	Action
1	In the Source Profile Field section of the Configure Iterator node screen, select the Data Type , Location , and Field from the drop down lists for the node to iterate over. Result: The Elements section is populated with the sub tags and their storage location after the Iterator node has finished processing the selected profile field.
2	Click Save .

Iterator examples

This example shows a basic iteration over an array, with each iteration sending a SMS message. The actual content of the array elements can be any data type.

Here is an example control plan using the Iterator node.



Others Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Others feature nodes. These feature nodes provide specialized functions, not easily matched to an existing category.

In this chapter

This chapter contains the following topics.

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Available Feature Nodes

Others Feature Nodes List

This table lists the feature nodes available from the Others palette group and the fast key for each feature node in the list. You can use fast keys to search for feature nodes in the palette or the canvas.

Node name	Node description
Call Initiation (see page 444)	Enables a call attempt to be initiated from within the control plan. The node simulates an Initiate Call Attempt (ICA) to an IN switch to create a call that can be processed by ACS as if it had been a standard dialed call. Fast key: CI
Change CDR (see page 448)	Allows control plan designers to alter and add CDR tags to ACS CDRs during call flow. Fast key: CCCR
Copy Hunting List (on page 450)	Prompts the user for a hunting list and copies the hunting list contents to the Pending TN and Additional Pending TNs buffers. Fast key: ACHL

Node name	Node description
Get Hunting List (on page 453)	Reads hunting list from subscriber's profile, and copies hunting list contents to the additional pending TN buffers. Fast key: AGHL
Loop Limit (on page 455)	The Loop Limit feature node allows ACS to traverse an instance of the node up to a specified number of times during the control plan processing. Fast key: LLIM
Service Handover (see page 465)	Allows the call to be passed to another service that runs a control plan as if it were a new call. Fast key: SHO
Set Carrier Code (see page 466)	Allows the user to set a carrier code for a control plan that can execute an Attempt Terminate node. The carrier code is a string of digits, which is used to determine the carrier for the call. Fast key: SCC
Set Tariff Code (see page 468)	Sets the tariff code for the current call, to set the billing information that is sent to the switch. Fast key: STC
Statistic Increment (see page 471)	Increments the value of a specified statistic. Fast key: STIN
Sub Control Plan (see page 473)	Merges another compiled control plan into this control plan. The number of exits from this node match the End nodes from the merging control plan. Fast key: SCPN

Call Initiation

Node description

The Call Initiation feature node enables a call attempt to be initiated from within the control plan. The feature node initiates a call attempt (ICA) to an IN switch to create a call that can be processed by ACS as if it had been a standard dialed call.

Note: The Call Initiation feature node will work with CS1 and CAP4 protocols.

When the response (answered, noAnswer, busy, or Route Selection Failure) to the call is received, the feature node performs both the following actions:

- Process the current control plan as normal by taking the appropriate exit
- Transfer the new dialog (on which the ICA was sent) back into ACS as an IDP. The new call is processed in the normal way, executing a new control plan based on the standard service loading rules.

If the customer has a restricted termination range policy, the available termination ranges will be displayed in the top left hand corner of the configuration screen.

Notes:

- The IDP is constructed from information supplied in the Configure Call Initiation screen, the standard control plan number buffers and the call information from the initiating call.
- The available network switches are defined in `acs.conf` and made available to this feature node (Switch Name list) through the `acs.jnlp` or `sms.jnlp` files (ssfs parameter). See *ACS Technical Guide*, topic *Customizing the screens* for details.

- The destination for the ICA is configurable within the feature node. The SLEE interface for the ICA network is configurable in `acs.conf`. See *ACS Technical Guide* for details.
- This feature node may not be available, depending on the license agreement with Oracle.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Call Initiation nodes as required.

Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The response the ICA received was 'Answer'.
2	Busy	The response the ICA received was 'Busy'.
3	No Answer	The response the ICA received was 'No Answer'.
4	Route Select Failure	The response the ICA received was 'Route Select Failure'.
5	Transient Failure	Either the node cannot find the network entity for the specified name, or it cannot find the service interface.
6	Permanent Failure	No response was received for the ICA.

Configuration screen

Here is an example Configure Call Initiation screen.

Configure Call Initiation

Node name: Call Init | Help

All Termination Ranges Available

Switch

Name: [Dropdown]

Calling Party

Data Type: Session Data [Dropdown]
 Location: Incoming Session Data [Dropdown]
 Field: CC Calling Party Id [Dropdown]

Prefix Calling Party: [Text]

Party to call

Data Type: Session Data [Dropdown]
 Location: Incoming Session Data [Dropdown]
 Field: CC Service Number [Dropdown]

No Answer Timeout (s): 15

Controller

Service Key: 0

callingPartyNumber

Data Type: Session Data [Dropdown]
 Location: Incoming Session Data [Dropdown]
 Field: CC Calling Party Id [Dropdown]

Exit Branches

1	Success	2	Busy
3	No Answer	4	Route Select Failure
5	Transient Failure	6	Permanent Failure

Comments | Save | Cancel

Note: There is a brief explanation of how to use the node at the bottom of the fields. You may need to scroll to view it.

Specifying values in profile selection fields

For each combo box combination on this screen, there are two methods of entering a value:

- 1 Use the drop down lists in the **Data Type**, **Location** and **Field** boxes, as in this example, to select the relevant values:

callingPartyNumber

Data Type: Session Data [Dropdown]
 Location: Incoming Session Data [Dropdown]
 Field: CC Calling Party Id [Dropdown]

- 2 Select Fixed Value in the **Data Type** box.

Result: The fields will change, as in this example, and you can type the required value in the **Fixed Value** field.

The screenshot shows a configuration window for the field 'callingPartyNumber'. It contains two rows: 'Data Type' with a dropdown menu currently showing 'Fixed Value', and 'Fixed Value' with an empty text input box.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	In the Switch area, select the Name of the network entity for the ICA destination from the drop down list .
2	(Optional) In the Calling Party frame, specify the value for the Calling Party ICA. Specify either an ACS termination number or an ACS buffer.
3	(Optional) In the Prefix Calling Party field, type a prefix for the calling party. This could be used, for example, so that the switch will not be re-triggered on the terminating leg.
4	(Required) In the Party to call frame, specify the value for the Called Party ICA. Specify either an ACS termination number or an ACS buffer.
5	In the No Answer Timeout field, type the number of seconds the switch should wait for the called party to accept the connection before assuming there was no answer. The No Answer Timeout value must be greater than zero.
	Note: The wait time is automatically increased by a configurable amount defined in acs.conf . See <i>ACS Technical Guide</i> for details.
6	(Optional) In the Controller area, enter the Service Key for the IDP.
7	For each IDP, specify the values for the following optional fields: <ul style="list-style-type: none"> • callingPartyNumber • calledPartyNumber • redirectingPartyID • locationNumber • additionalCallingPartyNumber
8	Click Save .

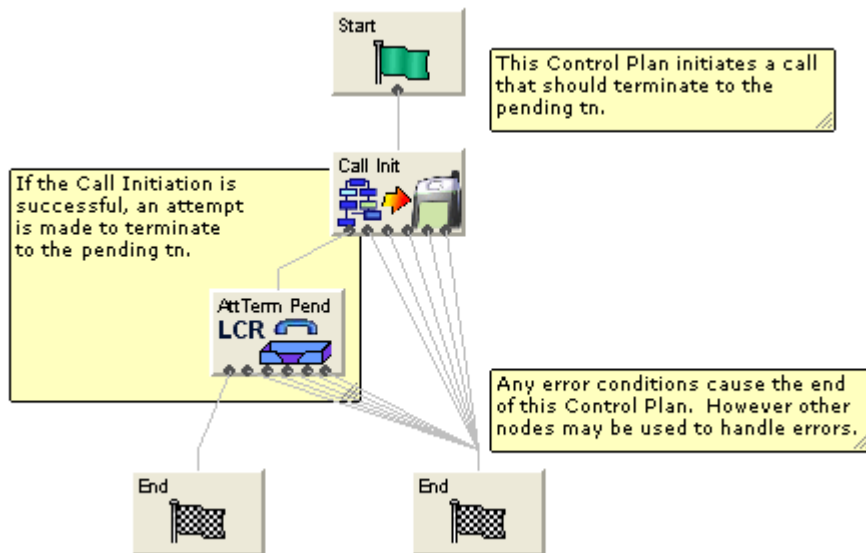
Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Example

Here is an example control plan showing how a Call Initiation node may be used.



Change CDR

Node description

The **Change CDR** node allows control plan designers to alter and add EDR tags to ACS EDRs during call flow. The EDR tag and value can be defined as whatever the designer requires within the rules listed in the Configuring the node procedure.

Note: The Change CDR node alters the EDR at the point in the control plan where it is placed, future events may further alter the EDR, either through external events (such as, the end of a call) or through other Change CDR nodes.

System generated EDR tags

This is a list of the system generated tags. These may be used in the Change CDR node, but their values will not be changed, a new tag of the same name will be added to the end of the EDR instead.

CID, OA, OTI, CUST, SN, TN, CGN, CLI, SK, TCS, TCE, LPN, LAC, CS, CPC, CC, CPNI, PCNA, TPNI, PTNA, CGNA, TGNA, TFN, LGID, CPN, CAET, CCET, CA, RELC, OCPI, CPNN, CGNN, CPPI, NOAT, CBAT, FATS, CCTS, HTS, AIDL, EXT n

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Change CDR nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The EDR has been successfully updated with the details specified for the CDR tag and new CDR value.
2	Error	This branch is taken only in the event that node configuration is incorrect. Technical limitations limit the validation done on the node configuration at compile time, and therefore must be done at run time. The following situations will cause the Error branch to be taken: <ul style="list-style-type: none"> • The CDRTag field is left empty • The CDRValue field is left empty

Configuration screen

Here is an example Configure Change CDR screen.

The screenshot shows the 'Configure Change CDR' dialog box. The 'Node name' field is set to 'ChangeCDR'. The 'ForceAppend' checkbox is checked. The 'CDR Tag' field contains 'ABCD'. The 'New CDR Value' field is empty. The 'Tag Value' section has 'Profile Value' selected. The 'Profile Tag Selection' section has 'Database' for 'ProfileTag Data Type', 'Account Reference Profile' for 'ProfileTag Location', and 'Acct Type Id' for 'ProfileTag Field'. The 'Exit Branches' section shows '1' for 'Success' and '2' for 'Error'. The 'Save' button is highlighted.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	<p>Select the ForceAppend check box to force the specified EDR tag to be appended to the EDR. If the tag already exists in the EDR, it will not be altered and the EDR will end up with the same tag in multiple places. The tag values in this case will not necessarily be the same.</p> <p>If this box is not selected and the EDR already includes the tag configured in the node, then the tag in the EDR is modified to have the value defined in the node. If the tag does not exist in the EDR, then the tag/value pair is added to the EDR. This means the tag defined in the node is always included in the EDR..</p>
2	<p>The value in the CDRTag field must be between 1 - 50 characters long.</p> <p>It defines the EDR tag to modify or add to the EDR. Any character may be used in this field, however the following rules apply:</p> <ul style="list-style-type: none"> • Use only uppercase A-Z characters. • Do not use the characters and = <p>Warning: The use of any of the <i>system generated tags</i> causes the original to remain unchanged and a second tag added to the end of the EDR, as if ForceAppend had been selected.</p>
3	<p>Select the Tag Value source, Options are:</p> <ul style="list-style-type: none"> • Fixed Value - from CDRValue field when this option selected. • Profile Value - from profile location when this option selected.
4	<p>If Fixed Value selected, enter the CDRValue field, this must be between 1 - 50 characters long.</p> <p>It specifies the EDR value for the defined EDR tag. You may use any character in this field, except the characters and =.</p> <p>Note: If the profile value is selected, this field is grayed out.</p>
5	<p>If Profile Value selected, select the location from the Data Type, Location and Field drop down lists.</p> <p>Note: If the fixed value is selected, these fields are grayed out.</p>
6	<p>Click Save.</p>

Copy Hunting List

Node description

This node prompts the user for a hunting list and copies the hunting list contents to the pending TN buffers. The hunting list can be one of:

- Identified by name
- The hunting list selected by the hunting planner

Only the first ten numbers in the list are used. The first number in the list is copied to the pending TN and the next nine numbers are copied to the additional pending TNs. Any further numbers are discarded.

Note: To use this node either VPN or FMC must be activated on your system. If you are using this node with VPN then the hunting lists and hunting planner must be formatted according to the format used by the VPN product and must be located within the VPN_PT_HUNTING_CONFIG profile tag. See *VPN Technical Guide* for more details.

The node also gives the user the option to override the no answer timer with one of:

- A fixed value held in a user defined profile field
- The highest timer found within the hunting list

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Copy Hunting List to Pending TNs as required.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The hunting list numbers have been successfully copied.
2	Success Trunct	The hunting list contains more than ten numbers. Only the first ten numbers have been copied.
3	Failure No Planner	The node has been configured to copy the list selected by the hunting planner but no hunting planner was defined.
4	Failure No List	The specified list name does not match an existing hunting list.

Configuration screen

Here is an example Configure Copy Hunting List screen.

Configuring the node

Follow these steps to configure the node.

- | Step | Action |
|------|--|
| 1 | In the Hunting list panel set the hunting list to be copied, to copy: <ul style="list-style-type: none"> the hunting list chosen by the hunting planner, select the Use planner list option a specified list, select the Use list below option and type the hunting list name in the List name box. |
| 2 | If required, set the override for the No answer timeout. To use: <ul style="list-style-type: none"> the current No Answer Timeout value, ensure Leave unchanged is selected the highest timer within the hunting list, select the Use max from list option, or a value from a profile tag, select the Read from profile option and set the Data Type, Location and Field holding the timer using the drop down lists. <p>Note: If you selected Read from profile and the node cannot find the specified profile field, then the No Answer Timeout will not be overridden.</p> |
| 3 | Click Save . |

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Get Hunting List

Node description

Reads hunting list from subscriber's profile, and copies hunting list contents to the additional pending TN buffers.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Get Hunting List nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unsupported	Any outcome other than success, for instance: <ul style="list-style-type: none"> • List could not be found • Software error
2	Success	The hunting list numbers were retrieved and passed to the ACS Context.

Configuration screen

Here is an example Configure Get Hunting List screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	In the Hunting list area set the hunting list to use from the Hunting List Data Type, Location and Field drop down lists.
2	Set the Timeout. To use: <ul style="list-style-type: none"> a value from a profile tag, select the Read from profile option and set the Data Type, Location and Field holding the timer using the drop down lists, or a node configured value, select the Use default value option and enter the value in the Default Timeout field.
	Note: If you selected Read from profile and the node cannot find the specified profile field, then the No Answer Timeout will not be overridden.
3	Click Save .

Note: The drop down lists display Limited Order Prefix Tree profiles.

For more information on profile blocks and tags, see *ACS User's Guide*.

Loop Limit

Node Description

The Loop Limit feature node allows ACS to traverse an instance of the node up to a specified number of times during the control plan processing.

This node can be used in the control plan to create loops composed of other nodes not using telephony.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain a maximum of 12 instances of the Loop Limit node.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Below Limit	The traverse limit has not been reached.
2	Limit Reached	This node cannot be traversed any more for this instance of the control plan.

Configuration screen

Here is an example Configure Loop Limit screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	In the Value field type the number of iterations for the loop. The value must be between 1 and 1000.
2	Click Save .

NP Destination Selection

Node description

The NP Destination Selection node determines the owner of the called number (that is, is the number ported or non ported?). Based on the porting status and whether the number is owned by the operator (internal) or owned by another operator (external), it can be configured how the call number is modified.

Optionally, the NP Least Cost Routing node can be used after the NP Destination Selection node to select the most appropriate route towards the operator that owns the number based on rules configured in nodes within the control plan. If the control plan has been triggered by receiving a MAP message, then the NP MTA node must follow the NP DS node (or NP LCR node if used). However it is possible to have non telephony in between.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

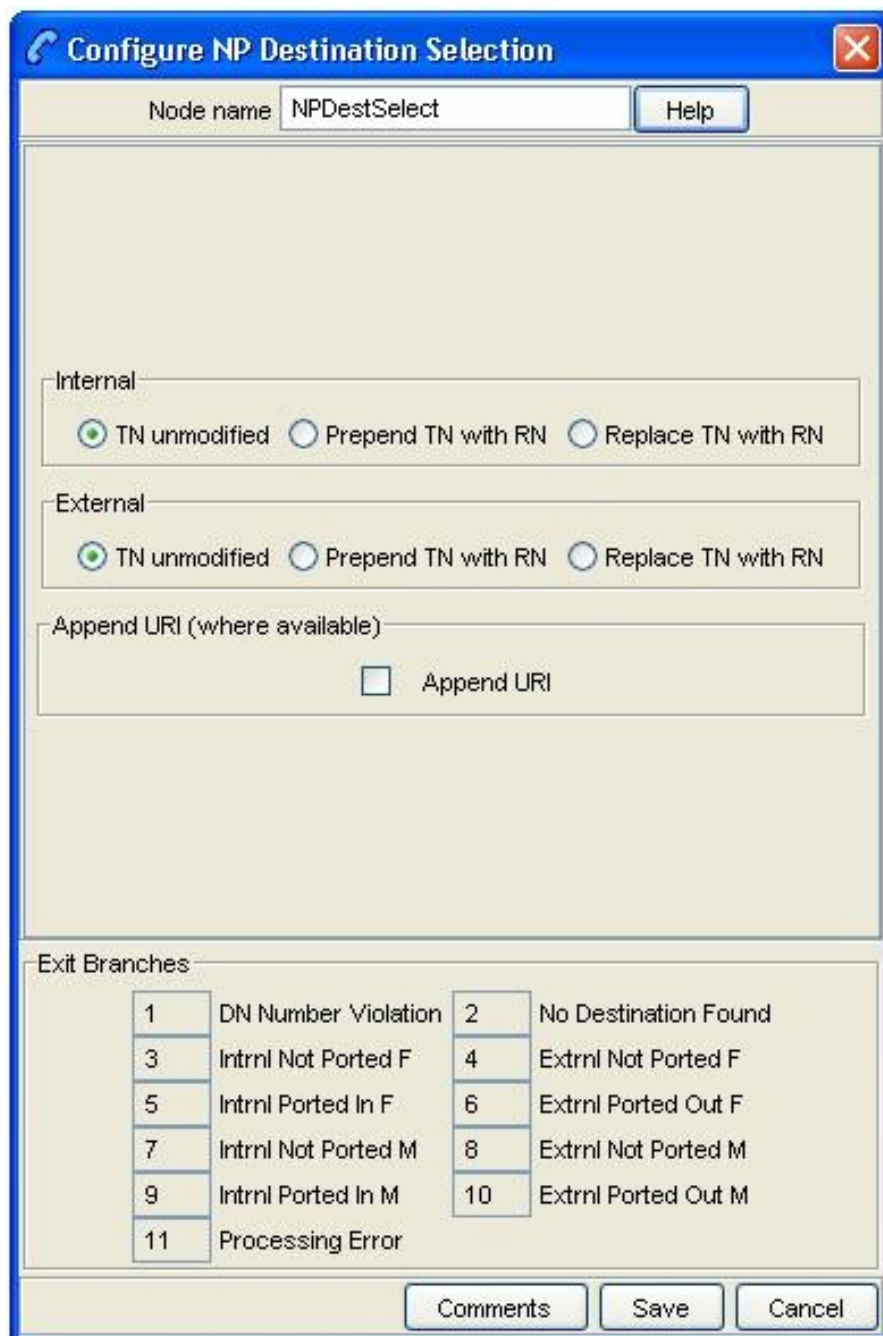
This node has one entry and 11 exits. The number of exits cannot be changed.

Exit	Cause	Description
1	DN Number Violation	The Destination Number is not valid.
2	No Destination Found	There is no matching Routing Destination for the called party number.
3	Internal Not Ported F	The node has successfully selected an internal destination on your network where the Routing Number (for a fixed destination call) matches an operator entry in NP_DN_RANGES or a PQYZ entry (depending on the runtime configuration).
4	External Not Ported F	The node has successfully selected an external destination (one that belongs to another operator) where the Routing Number (for a fixed destination call) matches an operator entry in NP_DN_RANGES or a PQYZ entry (depending on the runtime configuration).
5	Internal Ported In F	The Routing Number (for a fixed destination call) has been ported in to your network from another operator and has an associated subscriber match within the NP_DN_RANGES table.
6	External Ported Out F	The Routing Number (for a fixed destination call) has an associated subscriber match within the NP_DN_RANGES table and has been ported out from your network to another operator.
7	Internal Not Ported M	The node has successfully selected an internal destination on your network where the Routing Number (for a mobile destination call) matches an operator entry in NP_DN_RANGES or a PQYZ entry (depending on the runtime configuration).
8	External Not Ported M	The node has successfully selected an external destination (one that belongs to another operator) where the Routing Number (for a mobile destination call) matches an operator entry in NP_DN_RANGES or a PQYZ entry (depending on the runtime configuration).
9	Internal Ported In M	The Routing Number (for a mobile destination call) has been ported in to your network from another operator and has an

Exit	Cause	Description
		associated subscriber match within the NP_DN_RANGES table.
10	External Ported Out M	The Routing Number (for a mobile destination call) has an associated subscriber match within the NP_DN_RANGES table and has been ported out from your network to another operator.
11	Processing Error	An internal error has occurred.

Configuration screen

Here is an example NP Destination Selection screen.



Configuration fields

This table describes the function of each field.

Field	Description
TN unmodified (Internal or External)	Do not change the pending Termination Number.
Prepend TN with RN (Internal or External)	Prefix the pending Termination Number with the Additional Routing Number. If this is not available use the Routing Number.
Replace TN with RN (Internal or External)	Replace the pending Termination Number with the Additional Routing Number. If this is not available use the Routing Number.
Append URI	Include the URI associated with the Called Party Number in an Extension field that will be sent in the INAP CONNECT operation to the client interface.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the required Internal option.
2	Select the required External option.
3	Select the Append URI check box if required.
4	Click Save .

NP Home Routing

Node description

The NP Home Routing node is used to determine the routing destination for a call within the network.

The node looks up the called number in the subscriber list. If the called number is:

- A regular subscriber, then the node retrieves the destination from the DN range that matches the called number. Least cost routing can then be used to select an appropriate carrier for the call.
- A special number, then no routing destination is set and the Special Number node exit is used. Otherwise the No Destination exit is used.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

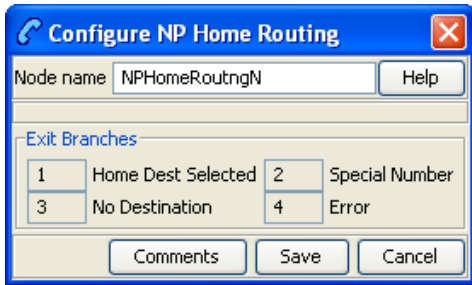
Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Home Dest Selected	The node has successfully matched the called number to a home routing number.
2	Special Number	The node has successfully matched the called number to a special number.
3	No Destination	The called number is not your subscriber. The destination could not be found.
4	Error	An internal error has occurred.

Configuration screen

Here is an example Configure NP Home Routing screen.



Configuring the node

This node requires no configuration data. You may change the node name, if required.

NP Least Cost Routing

Node description

The NP Least Cost Routing node is used to determine which carrier to use during call processing based on least cost rules.

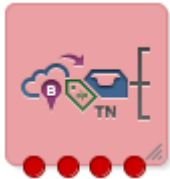
The routing destination set by the Destination Selection node or the Home Routing node determines which list of carriers to try from the rule set. An attempt is made to connect the call to the carriers in sequence until one of:

- The call is successfully connected
- No more carriers are available

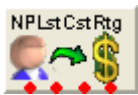
Prior to each connection attempt, the pending calling and called numbers of the call will be modified in accordance with the preferred number format of the carrier, their country code, optional override NOA and called party prefix.

Note: Standard ACS feature nodes, such as the Time of Day, or Day of Week routing nodes may be used to select different rule sets for different scenarios.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node is expected to be used in conjunction with an Attempt Termination node and after the Destination Selection or the Home Routing node. However, if the control plan was triggered using MAP through the MTA, then this node should be followed by the MTA node and then an unconditional termination type node.

This node may be used any number of times within a call plan to facilitate the use of different rule sets depending on circumstances.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Route not found	The node could not find the route specified for the carrier.
2	Carrier Available	The call has been successfully connected to the selected carrier.
3	No More Carriers	Attempts to connect to each carrier in the Rule Set were unsuccessful.
4	Error	An internal error has occurred

Configuration screen

Here is an example Configure NP Least Cost Routing screen.

Configuration fields

This table describes the function of the field on this screen.

Field	Description
Rule Set	Defines the list of rules available for least cost routing that determine which carrier and routing destination will be used.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the Rule Set from the drop down list of carriers to use for least cost routing.
2	Click Save .

NP Map Trigger

Node description

The NP Map Trigger node is used to determine the appropriate response to the Map message that triggered the IN service.

For example, in an MNP environment the MAP message can be one of:

- Acknowledged with the MAP response message
- Acknowledged with the MAP error message (TCAP_ERROR message being returned)
- Aborted at the TCAP level (TCAP_U_ABORT message being returned)
- Relayed at the SCCP level to the appropriate HLR for processing

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

This node must be placed after the NP Destination Selection node (or LCR node if used) in the control plan. The control plan must end with an Unconditional Termination node.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Config Applied	SCI successfully configured.
2	Processing Error	Unable to apply configuration.

Configuration screen

Here is an example Configure NP Map Trigger screen.

Configuration fields

This table describes the function of each field.

Note: The DRA is the `destinationRoutingAddress` field in the INAP CONNECT and is derived from the pendingTN buffer.

Field	Description
Map with DRA	Sends MAP response and puts the Destination Routing Address (DRA) in the configured MAP field (NOA value for configured MAP field).
Map Error	Sends MAP Error where the error cause is set to the MAP Error field value.
TCAP Abort	Sends TCAP_ABORT - U_ABORT with the cause value set to the TCAP Error field value. (Cause value mapped to appropriate alarm by MAP trigger application).
SCCP Relay 1	Updates the SCCP called Global Title (GT) with the DRA, performs GT Translation on the DRA, and sets Routing Information = route on PC (NOA value for the SCCP called GT NOA).
SCCP Relay 2	Updates the SCCP called GT with the DRA, does not perform GT Translation on the DRA, and Routing Information = route on GT (NOA value for the SCCP called GT NOA).
SCCP Relay 3	No change to SCCP called GT digits, performs GT Translation on the DRA, and Routing Information = route on Point Code (NOA value for the SCCP called GT NOA).

Field	Description
NOA	Sets the Nature of Address value for one of these options: <ul style="list-style-type: none"> • Map with DRA • SCCP Relay 1 • SCCP Relay 2 • SCCP Relay 3 Valid values are in the range 0-127, and 255.
TCAP Error	Sets the TCAP Error cause value for the TCAP Abort option.
Map Error	Sets the Map Error value for the Map Error option.

Configuring the node

Follow these steps to configure the node.

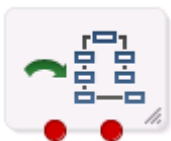
Step	Action
1	Select the required option.
2	If you selected one of these options: <ul style="list-style-type: none"> • Map with DRA • SCCP with GTT • SCCP no GTT, or • SCCP with GT digits then in the NOA field, set the NOA.
3	If you selected the MAP Error option then select the map error message to use from the Map Error drop down list.
4	If you selected the TCAP Abort option then in the TCAP Error field, type the cause value.
5	Click Save .

Service Handover

Node description

The Service Handover feature node allows the call to be passed to another service that runs a control plan as if it were a new call.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Service Handover nodes as required.

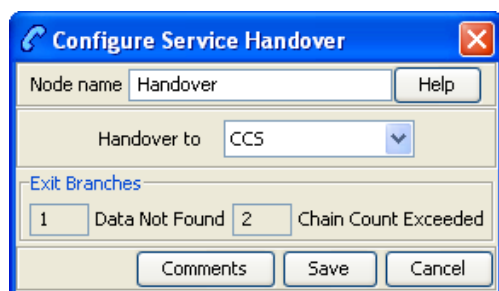
Node exits

This node has one entry and two exits. The number of exits cannot be changed. Since this node passes the call to another control plan, a Success exit is not required.

Exit	Cause	Description
1	Data Not Found	The control plan selected for handover is not found.
2	Chain Count Exceeded	The chain count limit has been exceeded, and the call may not be passed to another control plan. Note: The chain count limit is set in the acsChassis section of the <code>acs.conf</code> - refer to <i>ACS Technical Guide</i> .

Configuration screen

Here is an example Configure Service Handover screen.



Configuring the node

Follow these steps to configure the Service Handover node.

Step	Action
1	In the Handover to list, select a service. Calls passing through this node will be transferred to this service.
2	Click Save .

Set Carrier Code

Node description

This node sets the identity of the carrier for the call. The carrier code is a string of digits that are prefixed onto the Destination Routing Address (DRA) of the connect sent by following Termination feature nodes.

The carrier code can be set in any of the available profile blocks (for example, the Service Number Profile).

Note: This node has no effect if the CarrierCodeDisposal parameter in `acs.conf` is set to 1. For more information, see *ACS Technical Guide*.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Set Carrier Code nodes as required.

This node is only meaningful when used in a control plan containing a termination node, for example, the Attempt Terminate node.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	CC Set Branch	Used when the data is found and the carrier code is set.
2	CC Not Set Branch	Used when profile-based data is not found. Is also used if the length of the number string in the profile field specified for the carrier code is greater than the allowable length of the carrier code.

Configuration screen

Here is an example Configure Set Carrier Code screen.

Configuring the node

Follow these steps to configure the Set Carrier Code node.

Step	Action
1	<p>Select the option of:</p> <ul style="list-style-type: none"> using the carrier number entered into this screen, or reading the carrier number from a profile block. <p>The fields relating to the non-selected option are disabled and cannot be edited.</p>
2	<p>Where the following option is selected:</p> <ul style="list-style-type: none"> Use This Carrier Number <p>Type the carrier code in the Use This Carrier Number field. Carrier codes may include any hexadecimal character (0-9, a-f, A-F, and # and *). You can enter up to 20 characters.</p> <p>Note: If this option is selected and the text field is empty, then the carrier code field will be cleared when this node is triggered. Use to clear a carrier code set by an earlier Set Carrier Code node.</p> <ul style="list-style-type: none"> Read from Profile Block <p>Select the profile field to read the carrier code from using the Read From Data Type, Read from Location and Read From Field drop down lists.</p> <p>Note: If the length of the number string in the profile field specified for the carrier code is greater than the allowable length of the carrier code, an alarm is raised and the “CC Not Set Branch” is taken.</p>
3	<p>Click Save.</p> <p>Note: Save is not available until all the required information has been selected or entered.</p>

Note: If you import a previously exported control plan which contains Set Carrier Code nodes prior to the profile block functionality being introduced, then you will need to re-save in order to allow the control plan to recompile.

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Set Tariff Code

Node description

This feature node sets the billing information that is sent to the switch. This may be a Furnish Charging Information (FCI) request or a Send Charging Information (SCI) request.

Note: The SCI operation may contain a tariff code.

It is used in conjunction with the optional **Tariff Codes** tab of the ACS Resources screen. Where the **Tariff Code** tab has not been purchased as part of ACS, this node is not available for use within a control plan. For more information about configuring tariffs, see *ACS User's Guide*.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

The node must be placed before a terminating node for an FCI to be sent. A control plan may contain as many Set Tariff Code nodes as required.

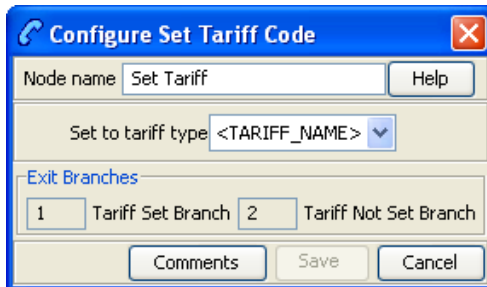
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Tariff Set	A failure has occurred and a text message has not been sent.
2	Tariff Not Set	A text message has been successfully sent.

Configuration screen

Here is an example Configure Set Tariff Code screen.



Configuring the node

Follow these steps to set the tariff code.

Step	Action
1	Use the drop-down list to select the type tariff applied to the current call. The tariff code names available in the list are set on the Tariff Codes tab of the ACS Resources screen.
2	Click Save .

Note: **Save** is not available until all the required information has been selected or entered.

Sleep

Node description

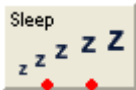
The Sleep node allows time for background tasks to complete before proceeding to the next step in the control plan.

The value used should be large enough for the background task to finish, but short enough to avoid holding up the Control Plan unnecessarily.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

There are no restriction on this node's usage. A control plan may contain as many of these nodes as required.

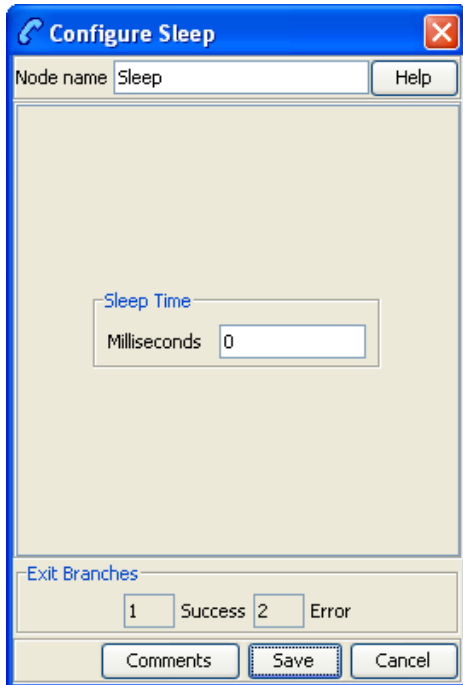
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The control plan slept for the configured amount of time.
2	Error	In theory, should never be able to take this branch.

Configuration screen

Here is an example Configure Sleep screen.



Configuring the node

Follow these steps to configure the node.

Step	Action
1	Enter the Sleep Time Value in milliseconds the node is to wait before branching down the Success branch. Note: There is a maximum sleep time allowed of 600000ms (ten minutes)
2	Click Save .

Statistic Increment

Node description

This node allows you to use statistics that you wish to track for a specific application or statistic within an application.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Statistic Increment nodes as required.

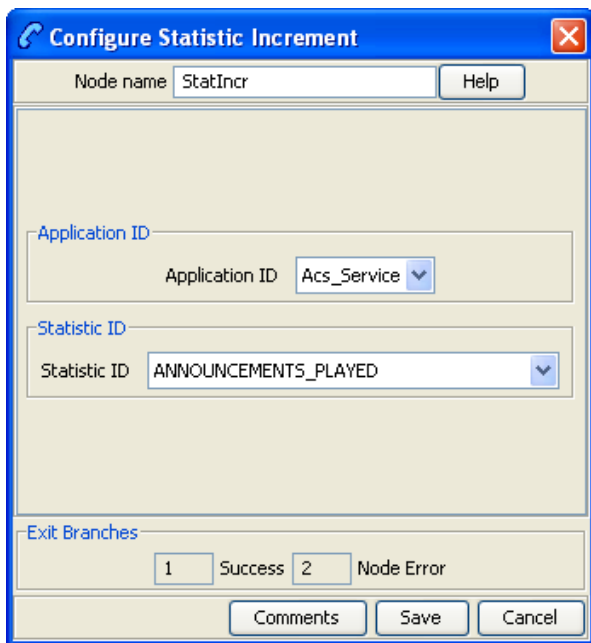
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Statistic was successfully incremented.
2	Node Error	General case for an un-handled state in this node.

Configuration screen

Here is an example Configure Statistic Increment screen.



Configuring the node

Follow these steps to configure the Statistic Increment node.

Step	Action
1	(Required) Select the Application ID using the Application ID field drop down list.
2	(Required) Select the Statistic ID using the Statistic ID field drop down list.
<p>Note: This list is populated from entries made in the Statistic Management screens. See <i>SMS User's Guide</i> for more information.</p>	

You can produce reports on the statistic from the Service Management System Operator Functions, Report Functions menu option. See *SMS User's Guide* for more information.

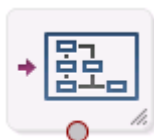
Sub Control Plan

Node description

The Load Sub Control Plan node executes a successfully compiled control plan.

When this control plan is compiled, this node is effectively replaced by the other plan to create a single run time control plan. In the CPE this plan shows the Load Sub Control Plan node with the relevant exits that apply for the other plan.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain a maximum of 127 sub control plan nodes.

These are the other restrictions:

- The Sub Control Plan node can only access successfully-compiled control plans.
- The Sub Control Plan node cannot access a control plan that has more than 20 End nodes. If you try to access such a control plan, the control plan editor displays a Control Plan Validation Failure dialog box.
- A Sub Control Plan node cannot access itself; that is, sub control plans cannot be used recursively.

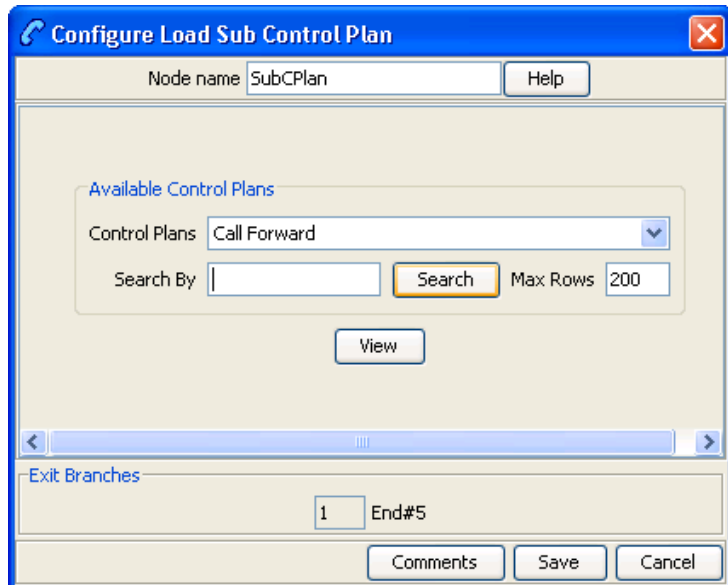
Warning: The maximum number of nodes allocated to any customer's control plan is calculated across all control plans. You cannot exceed the allocation by the use of sub control plans. The maximum number of nodes is set in the ACS Customer screen, the absolute maximum is 2000 nodes. Refer to the Customer Resource Limits section of *ACS User's Guide*.

Node exits

This node has one entry and a varying number of exits that are set as a result of the sub control plan. A user cannot change the number of exits.

Configuration screen

Here is an example Configure Load Sub Control Plan screen.



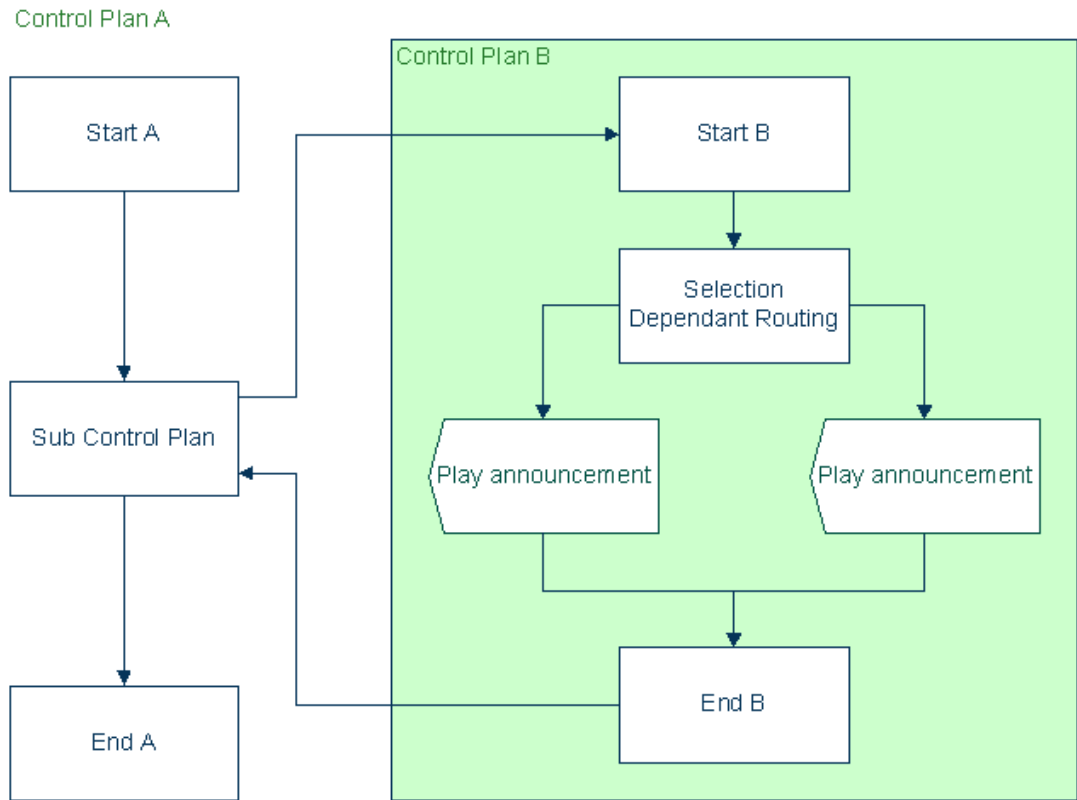
Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	<p>(Optional) In the Search By field enter the control plan name prefix to use to filter the list of available control plans. You can enter the following wildcards in the search string:</p> <ul style="list-style-type: none"> • % (percent) to match any string of any length • _ (underscore) to match a single character <p>Tip: You can limit the number of control plans found by entering a value in Max Rows.</p>
2	From the Control Plans list, select the control plan to load into the main control plan as a sub-control plan.
3	<p>(Optional) To view the selected control plan, click View.</p> <p>The selected control plan opens in a new Control Plan Editor window. The control plan structure will be read-only, but you will be able to edit the control plan data, and save it to a new version of the control plan, if required.</p> <ul style="list-style-type: none"> • To save any changes to the control plan data, select Save from the File menu. In the Save Data/Structure dialog box, enter a new name in the Control Plan Data field, and click Save. • To close the control plan, click the close window button in the top right corner of the Control Plan Editor window.
4	Click Save .

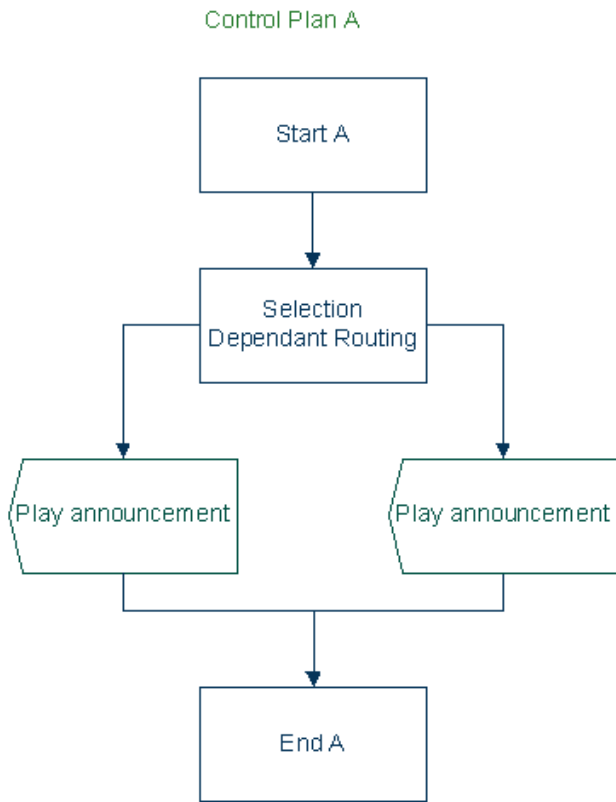
Node logic

This diagram shows the internal logic processing of the node as configured in the CPE, where the sub control plan node has been configured to run "Control Plan B".



Node logic as compiled

This diagram shows the internal logic processing of the node at run time, where the sub control plan node has been replaced by the contents of Control Plan B (less the Start and End nodes from Control Plan B).



Pending TN Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Pending TN feature nodes. Use Pending TN feature nodes to record and manipulate digits for use later in the control plan.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	477
Attempt Terminate to Pending TN.....	478
Attempt Terminate to Pending TN with Duration.....	480
Collect Digits to Pending TN.....	482
Get Hunting Number.....	485
Set Pending TN from Profile.....	487
Terminate to Pending TN	489
Test Pending TN Type.....	490

Available Feature Nodes

Pending TN Feature Nodes List

This table lists the feature nodes available from the Pending TN feature group and the fast key for each feature node in the list. You can use fast keys to search for feature nodes in the palette or the canvas.

Node name	Node description
Attempt Terminate to Pending TN (see page 478)	Attempts to terminate to the number currently held in the Pending TN buffer. Fast key: ATTP Shortcut keys: Alt+Shift+A
Attempt Terminate to Pending TN with Duration (see page 480)	Connects the call up to a maximum duration without charging the caller, for example connecting to a customer services representative. Fast key: ATPD
Collect Digits to Pending TN (see page 482)	Prompts the user to enter digits and will then store the entered digits in the Pending TN buffer from where they may be later used in the Control Plan. Fast key: CDPT
Get Hunting Number (see page 485)	Used to search a list of termination numbers and timeout pairs within any available profiles. Fast key: AGHN
Set Pending TN from Profile (see page 487)	Takes a number from the profile and places it in the Pending TN Buffer. This node can also be used to set the NoAnswer timeout. Fast key: SEPP

Node name	Node description
Terminate to Pending TN (see page 489)	Terminates unconditionally to the number currently held in the Pending TN Buffer. May also be known as Unconditional Terminate to pending TN. Fast key: UTTP Shortcut keys: Alt+Shift+U
Test Pending TN Type (see page 490)	Looks at the pending TN Type variable and routes the call depending on the type of number that is in the buffer. Fast key: TPTT

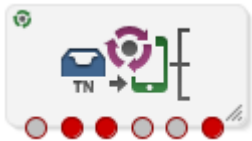
Attempt Terminate to Pending TN

Node description

The Attempt Terminate to Pending TN node attempts to terminate to the number currently held in the PendingTN variable.

For information about the PendingTN variable, see *Pending termination number variables* (on page 11).

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Attempt Terminate to Pending TN nodes as required.

Shortcut keys

The shortcut keys to add an Attempt Termination to Pending TN node are **Alt+Shift+A**

Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Some nodes require telephony (that is, Play Announcement, Unconditional Termination, Disconnect, Attempt Termination, Selection Dependant Routing, Unconditional Terminate to Pending TN). Such nodes may follow Exits 2 and 3 of the Attempt Terminate to Pending TN node. They may not follow exits 1, 4, 5 and 6.

Exit	Cause	Description
1	Success	The call was successfully connected to the specified termination number.
2	Busy	The Termination Number held in the Pending TN Buffer was busy (that is, in use), so the call was routed to Exit 2.

Exit	Cause	Description
1	Success	The call was successfully connected to the specified termination number.
3	No Answer	The call was routed to the Termination Number specified in the Pending TN Buffer and that phone rang for the specified Timeout time and then was routed down Exit 3.
4	Abandoned	The person placing the call hung up, so the call was routed to Exit 4.
5	Abort	The call will be sent to this exit in the case of network failure.
6	Routing Failure	Due to congestion, the call was forwarded to this exit.

Configuration screen

Here is an example Configure Attempt Terminate to Pending TN screen.

Configuring the node

Follow these steps to configure the Attempt Terminate to Pending TN node.

Step	Action
1	<p>From the National/International Prefix Location drop down lists, select the profile Data Type and Location to read Least Cost Routing configuration from.</p> <p>The location list displays all available fields for the data type selected.</p> <p>For more information about profile blocks, see <i>Profile Blocks and Tags</i> (on page 2).</p> <p>If you do not want to use Least Cost Routing on this destination number, select None Selected.</p> <p>For more information about Least Cost Routing, see the <i>ACS User Guide</i>.</p>
2	<p>You must set the Timeout value for the node. This is the number of seconds that is allowed to pass before the call is routed down the No Answer branch. The Timeout value may be between 0 and 180 seconds.</p>
3	<p>Click Save.</p>

Attempt Terminate to Pending TN with Duration

Node description

This node is used to connect the call up to a maximum duration and without charging the caller, for example connecting to a subscription weather service announcement.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Attempt Terminate to Pending TN with Duration nodes as required.

Node exits

This node has one entry and eight exits. The number of exits cannot be changed.

Note: These exit descriptions are specific to the responses received from an Oracle VWS billing engine. For specific information about how responses from other billing engines map to these exits, see the technical guide for the interface for billing engine being used.

Exit	Cause	Description
1	Busy	The Destination Party was busy and the call could not be connected.
2	No Answer	Destination Party did not answer.
3	RS Failure	Route Select Failure. The network could not connect the Caller to the Destination Party.
4	Disconnect A-Party	The Caller hangs up to end the call.
5	Disconnect B-Party	The Destination Party hangs up to end the call.
6	Abort	The call was aborted at some time during the processing of this node.
7	Abandon	The call was abandoned.
8	Node Error	General case for an un-handled state in this node.

Configuration screen

Here is an example Configure Attempt Terminate to Pending TN with Duration screen.

Node name:

No Answer Timeout
No Answer Timeout:

Maximum Call Duration
Max Call Duration:

Record Call in CDR
Record Call in CDR:

National/International Prefix Location
Profile Identifier Data Type:
Profile Identifier Location:

Exit Branches

1	Busy	2	No Answer
3	RS Failure	4	Disconnect A-Party
5	Disconnect B-Party	6	Abort
7	Abandon	8	Node Error

Configuring the node

Follow these steps to configure the node.

Step	Action
1	In the No Answer Timeout field, specify the number of seconds the switch should wait for the called party to accept the connection before assuming there was no answer. Value range: 0-2047
2	In the Maximum Call Duration field, specify the maximum number of 'deci-seconds' before the call is disconnected.
3	Tick Record Call in CDR if you wish to generate a 'Call Information' report at the end of the call. This call information can then be used in the EDR. Note: Selecting this option may impact other nodes within this control plan. If the Record Call in CDR check box is ticked, all subsequent attempt termination nodes will request a CIR.
4	From the Profile Identifier Data Type and Location drop down lists, select the profile to read Least Cost Routing configuration from. The location list displays all available fields for the data type selected.

Step	Action
	For more information about profile blocks, see <i>Profile Blocks and Tags</i> (on page 2). If you do not want to use Least Cost Routing on this destination number, select None Selected . For more information about Least Cost Routing, see the <i>ACS User Guide</i> .
5	Click Save .

Collect Digits to Pending TN

Node description

This node prompts the caller to enter digits which it then stores in a buffer (the Pending TN Buffer). The digits may be retrieved later and used in the control plan. The nodes that read from this buffer are:

- *Terminate to Pending TN* (see page 489)
- *Attempt Terminate to Pending TN* (see page 478)

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Collect Digits to Pending TN nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The correct number of digits was collected successfully.
2	Not Updated	The correct number of digits was not collected after the specified number of retries.
3	Abandoned	The caller abandoned the call.

Configuration screen

Here is an example Configure Collect Digits to Pending TN screen.

Configuring the node

Follow these steps to edit the feature node.

Step	Action
1	Select the Type of Digits to Collect from the drop-down list. The type may be: <ul style="list-style-type: none"> • Off Net • On Net • Speed Dial • Service Number • CLI
2	From the Main Announcement frame, select the Announcement Set that contains the main announcement you want to play to the caller. Result: The Announcement Entry drop-down box will become available.
3	From the Announcement Entry drop-down list, select the main announcement you want to play to the caller.

Step	Action
4	Set the Repetition field to the number of times to repeat the main announcement while the system waits for the caller to take an action. If set to zero, the announcement will be repeated for the length of the duration set.
5	Set the Duration field to the length of time in seconds that the announcement is to be played. If set to zero, the announcement will be played for its full length.
6	The retry announcement contains the announcement you want to play to the caller if the number of digits collected is not within the range specified. In the Retry Announcement frame, select the: <ul style="list-style-type: none"> • Announcement Set which contains the retry announcement • Announcement Entry for the retry announcement you want to play • Set the Repetition to the number of times to repeat the retry announcement • Set the Duration to the length of time, in seconds, that the retry announcement is to be played. as described in steps 2 - 5.
7	In the Number of Retries field, set the number of times that the node will retry collecting data from the caller (after an initial failure), before routing the call to the Not Updated branch. This value may be between 0 and 10.
8	In the Minimum Number of digits field, set the minimum number of digits that must be collected. This box accepts values between 1 and 32. The minimum number of digits must be less than, or equal to, the maximum number of digits.
9	In the Maximum Number of digits field, set the maximum number of digits that must be collected. This box accepts values between 1 and 32. The maximum number of digits must be greater than, or equal to, the minimum number of digits.
10	If a prefix is to be included before the digits collected, enter this in the Digit Prefix field. The prefix may be up to 32 valid characters. Valid characters include 0-9, A-F.
11	From the Cancel Character options, select the character which the caller can use to cancel the digit collection. The default option will use the switch on the answering device. Notes: <ul style="list-style-type: none"> • If the caller uses this digit and the maximum number of retries has not been met, it will return the caller to the retry prompt and add one to the retry count. • If the caller uses this digit and the maximum number of retries has been met, it will take the Not Updated branch.
12	From the End Character options, select the character which the caller can use to indicate the end of the digit collection. The default option will use the switch on the answering device.
13	If you want to check that the collected digits are within the TN ranges for this client, tick the Verify Against TN Ranges? check box. This will check the Termination Number Range Rules set up for this customer (via the New/Edit Customer screen in ACS) and verify according to the setting. For more information, refer to Adding customers in the <i>ACS User Guide</i> .
14	Click Save . Note: Save is not available until all the required information has been selected or entered. Result: The node data will be saved.

Note: The announcement set and announcement entry lists are populated with data that is specified using the **Announcements** tab of the ACS Configuration screen.

For more information about configuring announcement sets and announcement entries, see the *Announcements* topic in *ACS User's Guide*.

Get Hunting Number

Node description

The Get Hunting Number node is used to search a list of termination numbers and timeout pairs within any available profiles.

On each iteration the node sets the PendingTN and timeout using the next number on the list until no numbers remain.

Notes:

- There are no data provisioning screens in ACS for this node. Provisioning the data required by this node requires a custom product like VPN.
- The information for the node is stored in a profile, with the node searching all the profiles it has, in turn, until it finds the hunting information.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Get Hunting Number nodes as required.

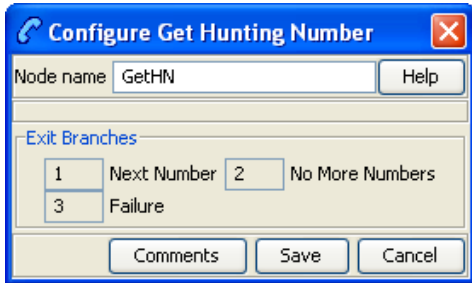
Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Next Number	A number is found
2	No More Numbers	No numbers remain
3	Failure	General failure

Configuration screen

Here is an example Configure Get Hunting Number screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Example

As an example, assuming that the following hunting configuration data has been placed in a profile block:

```
0x030020 Hunting Config
  SubTags (2):
    0x000001 356   Hunting Lists (tag 1):
      Hunting List ID 1 (name = 'Hunting List 1'):
        Rank 1 termination number:
          Digits: 04111222
          On network ID: 5
          Timeout: 10
        Rank 2 termination number:
          Digits: 1234
          Off network number
          Timeout: 20
      Hunting List ID 2 (name = 'Hunting list 2'):
        Rank 1 termination number:
          Digits: 04333444
          On network ID: 5
          Timeout: 30
        Rank 2 termination number:
          Digits: 4321
          Off network number
          Timeout: 40
    0x000002 380   Hunting Planner (tag 2):
      Time Data 0:
        Location pattern: ^7777
        CLI pattern: ^77777
        Time of Day
        Start Time: 04:15
        End Time: 08:17
        Hunting List ID: 1
      Time Data 1:
        Location pattern: ^6666
        CLI pattern: ^76666
        Day of Week and Time of Day
        Start Time: Sunday 05:00
        End Time: Monday 06:00
        Hunting List ID: 2
      Time Data 2:
        Location pattern: ^5555
```

```

CLI pattern: ^75555
Day of Year and Time of Day
Start Time: 28 December 01:12
End Time: 29 December 02:15
Hunting List ID: 1
Default Hunting List ID: 1

```

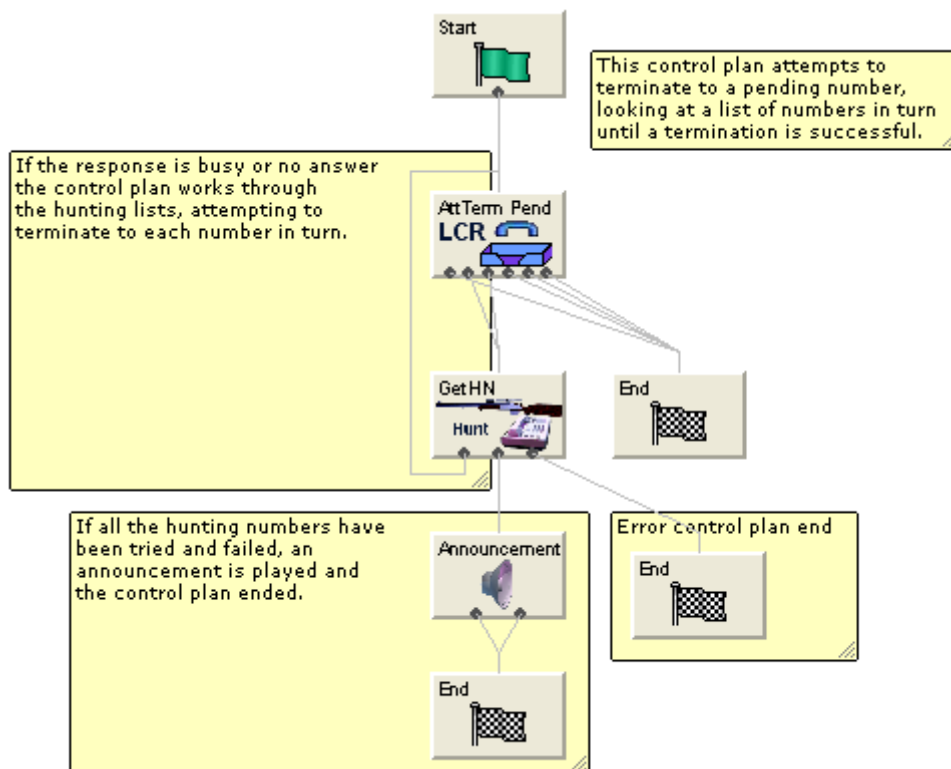
When the node is used for the first time in a call, it works out which hunting list to use from the hunting planner information, based on time of day, and other factors. The hunting list is an ordered list of termination numbers to try, and a no answer timeout. So, the first list in the example above says try private number 04111222 on network 5 for 10 seconds. The second list says try public number 1234 for 20 seconds.

Each time the get hunting number node is executed, it puts a new number from the list in the pending termination number buffer and the corresponding timeout value in the no answer timer variable in call context. If the end of the list is reached, the get hunting number node exits down branch 2.

The idea is that there is a loop back from the no answer branch of an attempt terminate to pending TN node to a Get Hunting Number node.

Example control plan

Here is an example illustrating how the Get Hunting Number node can be used in a control plan.



Set Pending TN from Profile

Node description

The Set Pending TN from Profile feature node takes a number from the profile and places it in the pending termination number buffer.

This node can also be used to set the NoAnswer timeout.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Set Pending TN from Profile nodes as required.

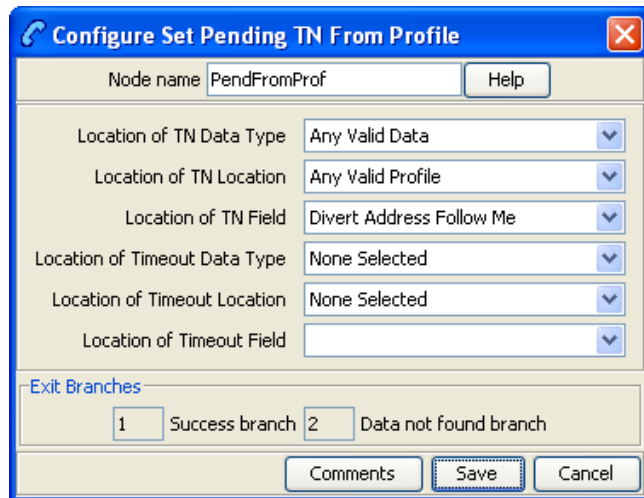
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The number has been placed in the Pending TN buffer.
2	Data Not Found	The number has not been placed in the Pending TN buffer.

Configuration screen

Here is an example Configure Set Pending TN From Profile screen.



Configuring the node

Follow these steps to configure the Set Pending TN from Profile node.

Step	Action
1	Using the drop down lists in the Location of TN Data Type , Location and Field boxes, select where the number is to be read from. Notes: <ul style="list-style-type: none"> • If you set a customer-specific profile, the profile set in this field must belong to the customer who will be running the control plan. • If the control plan is owned by the Boss user then the profile must be set to control plan, or a customer ID must be specified at an earlier point in the control plan.
2	Using the drop down lists in the Location of Timeout Data Type , Location and Field fields, select where the timeout period is to be read from.
3	Click Save . Note: Save is not available until all the required information has been selected or entered.

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Terminate to Pending TN

Node description

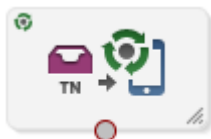
The Terminate to Pending TN node terminates unconditionally to the number assigned to the PendingTN variable. For information about the PendingTN variable, see *Pending termination number variables* (on page 11).

This node is sometimes called Unconditional Terminate to Pending TN.

Shortcut key

The shortcut key to add a Terminate to Pending TN node is **Alt+Shift+U**.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Terminate to Pending TN nodes as required.

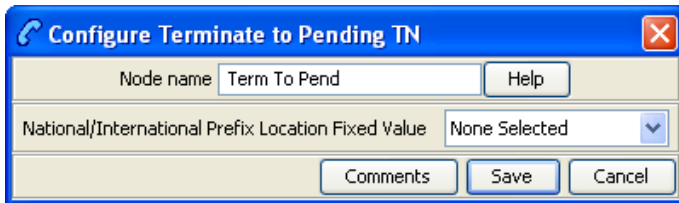
The Terminate to Pending TN node may not be followed by any node that requires telephony (that is, Play Announcement, Unconditional Termination, Disconnect, Attempt Termination, Selection Dependant Routing, Attempt Terminate to Pending TN).

Node exits

This node has one entry and one exit. The number of exits cannot be changed.

Configuration screen

Here is an example Configure Terminate to Pending TN screen.



Configuring the node

Follow these steps to configure the Terminate to Pending TN node.

Step	Action
1	<p>From the National/International Prefix Location Fixed Value drop down list, select the profile to read least cost routing configuration from. The list displays a list of all profiles which can be read from.</p> <p>For more information about profile blocks, see <i>Profile Blocks and Tags</i> (on page 2).</p> <p>If you do not want to use least cost routing on this destination number, select <code>None Selected</code>.</p> <p>For more information about Least Cost Routing, see <i>ACS User's Guide</i>.</p>
2	Click Save .

Test Pending TN Type

Node description

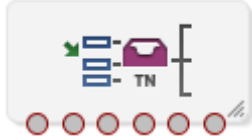
The Test Pending TN Type node branches in one of six ways depending on the value assigned to the PendingTNType variable.

The PendingTNType variable classifies an associated termination number as any one of:

- A number of an unknown type
- A number that accesses the PSTN directly (sometimes called an Off-Net number)
- A number that passes through a private network on its way to the PSTN (sometimes called an On-Net number)
- A speed-dial number
- A service number
- A calling line identification (CLI)

For more information about the PendingTNType variable, see *Pending termination number variables* (on page 11).

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



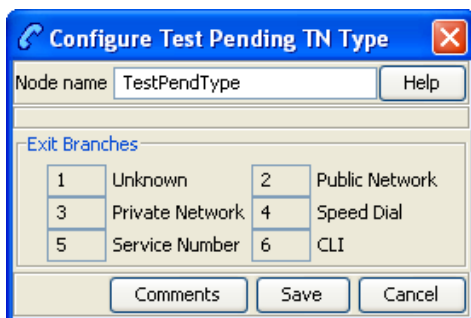
Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Unknown	Number type is unknown.
2	Public Network	Number type is public network.
3	Private Network	Number type is private network.
4	Speed Dial	Number type is speed dial.
5	Service Number	Number type is service number.
6	CLI	Number type is CLI.

Configuration screen

Here is an example Test Pending TN Type screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Prefix Trees Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Prefix Trees feature nodes. Use Prefix Trees feature nodes to manipulate prefix digits for use later in the control plan.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	493
About Prefix Tree Feature Nodes.....	494
Change Ordered Prefix Tree Entry.....	496
Check Limitations	498
Check Prefix Tree Capacity.....	501
Create Prefix Tree	504
Play Ordered Prefix Tree Entry	507
Prefix Tree Entry Extraction.....	512

Available Feature Nodes

Prefix Trees Feature Nodes List

This table lists the feature nodes available from the Prefix Trees palette group and the fast key for each feature node in the list. You can use fast keys to search for feature nodes in the palette or the canvas.

Node name	Node description
Change Ordered Prefix Tree Entry (see page 496)	Changes a single entry within an ordered prefix tree. Fast key: OP1
Check Limitations (see page 498)	Compares the contents of a number profile block against the limitations for a specified limited type. Fast key: LOP3
Check Prefix Tree Capacity (see page 501)	Checks the capacity of a prefix tree for a selected capacity type: <ul style="list-style-type: none"> • The number of entries available • The number of entries used • The maximum number of entries for the tree Fast key: LOP1
Create Prefix Tree (on page 504)	The Create Prefix Tree node creates a prefix tree from a delimited input string. Fast key: CPTS
Play Ordered Prefix Tree Entry (see page 507)	Plays a single selected entry in an ordered prefix tree to the caller. Fast key: LOP2

Node name	Node description
Prefix Tree Entry Extraction (on page 512)	The Prefix Tree Entry Extraction feature node enables one or more entries in a profile prefix tree to be extracted and stored in other profile fields. Fast key: LOP4

About Prefix Tree Feature Nodes

Introduction

Prefix tree feature nodes enable you to maintain prefix trees and numeric strings stored in subscriber profiles, such as the prefix tree used to store a subscriber's list of friends and family numbers.

Processing limited types

When processing of limitations is mentioned, the following behavior occurs.

The limitations are sourced from the same tag as the actual limited profile field, the limitation tag will be either from the product type or the service provider profile.

Limitation source

Limitation values are configured through the CCS product type configuration screens. See *CCS User's Guide*, Subscriber Management - Product Type topic.

The limitations will be sourced as follows:

Profile	Source
Product Type	The CCS service library makes this available in Application Specific Profile 2 (Product Type).
Service Provider	The CCS service library makes this available as the ACS Customer Profile.

The product type limitations generally take precedence over the service provider limitations.

Limitations

The limitations are stored in a profile block at the same tag as the associated limited profile field.

This table describes the limitations.

Limitation	Description	Tag	Profile Field Types
Ignore Limitations	If set, all limitations for this profile field in the applicable profile (either product type or service provider) will be ignored. Possible values are: <ul style="list-style-type: none"> 0 – Do not ignore 1 – Ignore Note: If the ignore flag is set for the product type, the service provider limitations will be used.	0x1	LOPREFIX, LNSTRING
Maximum Number of Entries	The maximum number of entries that may be placed in a limited prefix tree.	0x2	LOPREFIX
Minimum	The minimum length a string must be to be stored in a	0x3	LOPREFIX,

Limitation	Description	Tag	Profile Field Types
Number Length	limited profile field.		LNSTRING
Maximum Number Length	The maximum length a string may be to be stored in a limited profile field.	0x4	LOPREFIX, LNSTRING
Limitation Prefix Tree Type	The type of the limitation prefix tree used to filter values that may be stored in a limited profile field. Possible values are: <ul style="list-style-type: none"> • 0 – Allowed List • 1 – Barred List 	0x5	LOPREFIX, LNSTRING
Limitation Prefix Tree	A prefix tree used to filter values that may be stored in a limited profile field.	0x6	LOPREFIX, LNSTRING

When are limitation defaults used

The default values for product type limitations are used in the following circumstances:

- The limitations profile field is missing from a profile (either service provider, product type or both)
- No limitations are present in either profile
- Both profiles have the ignore flag set to true

Limitation default values

This table describes the limitation function defaults.

Limitation	Default
Ignore Limitations	Ignore. This will force all other limitations to be ignored for this profile. Note: If the product type is missing the ignore flag, the service provider limitations will be used (if they exist).
Maximum Number of Entries	100
Minimum Number Length	0
Maximum Number Length	255
Limitation Prefix Tree Type	Barred List
Limitation Prefix Tree	Empty Tree

Ordered prefix trees

Prefix trees have an order value associated with each entry that is used for maintaining the prefix tree sequence. This value starts at zero for the first entry.

New entries are added to the end of a prefix tree, being assigned an order value equal to the size of the tree before the addition. Similarly, a deleted entry will cause all entries with a higher order value to have their order values reduced by one.

When maintaining ordered tree entries (select/ change/ delete) the order value should be used to locate the right entry.

Change Ordered Prefix Tree Entry

Node description

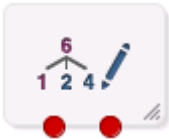
The Change Ordered Prefix Tree Entry node changes the contents of an ordered prefix tree.

This table describes the valid actions.

Action	Description
Add a new entry	This will add the contents of an ACS number buffer to the end of an ordered prefix tree. Note: If the prefix tree is missing a profile field will be created as a prefix tree with the new entry in it.
Change an existing entry	The feature node will replace the specified entry in the tree with the contents of an ACS number buffer.
Delete an existing entry	The specified entry will be removed from the tree.

Note: All of these operations will maintain the ordering of the tree entries (see *Ordered prefix trees* (on page 495)).

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Change Ordered Prefix Tree Entry nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The change was successful.
2	Error	The change failed, due to one of: <ul style="list-style-type: none"> Specified entry not present in the prefix tree (change or delete action) Entry profile field not set (change or delete action) General node processing error (including add action failure)

Configuration screen

Here is an example Configure Change Ordered Prefix Tree Entry screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action									
1	<p>Select the Operation Type option:</p> <ul style="list-style-type: none"> • Add Entry • Update Entry • Remove Entry <p>Result: The field availability changes as listed:</p> <table border="1"> <thead> <tr> <th>Add</th> <th>Update</th> <th>Remove</th> </tr> </thead> <tbody> <tr> <td>Ordered Prefix Tree fields</td> <td>Ordered Prefix Tree fields</td> <td>Ordered Prefix Tree fields</td> </tr> <tr> <td>Number Source fields</td> <td>Entry to be Updated/Removed fields Number Source fields</td> <td>Entry to be Updated/Removed fields</td> </tr> </tbody> </table>	Add	Update	Remove	Ordered Prefix Tree fields	Ordered Prefix Tree fields	Ordered Prefix Tree fields	Number Source fields	Entry to be Updated/Removed fields Number Source fields	Entry to be Updated/Removed fields
Add	Update	Remove								
Ordered Prefix Tree fields	Ordered Prefix Tree fields	Ordered Prefix Tree fields								
Number Source fields	Entry to be Updated/Removed fields Number Source fields	Entry to be Updated/Removed fields								
2	In the Ordered Prefix Tree area, using the drop down lists, select the Prefix Tree.									

Step	Action
3	For Update or Remove options, in the Entry to be Updated/Removed area, using the drop down lists, select the required Prefix Tree entry.
4	For Add or Update options, in the Number Source area, using the drop down lists, select the entry value to use.
5	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

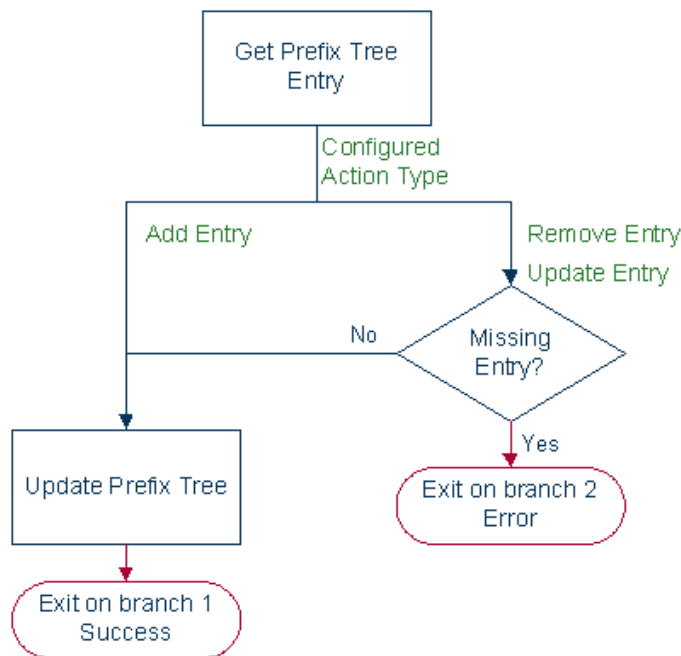
Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Node logic

This diagram shows the internal logic processing of the node.

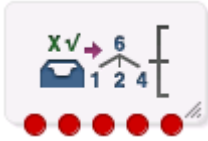


Check Limitations

Node description

The Check Limitations node compares the contents of a number profile block against the limitations for a specified limited type. See *About Prefix Tree Feature Nodes* (on page 494) for information on limitations.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Check Limitations nodes as required.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exits 2 through 4 are all types of "Error".

Exit	Cause	Description
1	Number Allowed	The number meets all criteria for acceptance.
2	Number Barred	The entered number was either included in the barred list, or excluded from the allowed list, depending on the limitation prefix tree type.
3	Number Too Short	The entered number was not long enough for the given profile field.
4	Number Too Long	The entered number was too long for the given profile field.
5	Error	General Error.

Configuration screen

Here is an example Configure Check Limitations screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	From the Source Primary Tag drop down list, select the limitation to use. Note: The available limitation types for this feature node are: <ul style="list-style-type: none"> Limited Ordered Prefix Tree Limited Number String
2	From the drop down lists in the Number Source area, select the Source Data Type , Location and Field containing the number to compare against the selected limitation type.
3	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Check Prefix Tree Capacity

Node description

The Check Prefix Tree Capacity node enables you to:

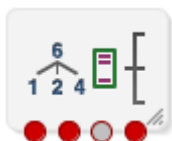
- Check how many entries there are in a prefix tree
- Optionally, for a limited ordered prefix tree, play the configured capacity type value (if played, the value is stored in the profile field configured in the node)

The capacity type value which can be played is one of the following:

- The number of entries available (only for limited ordered)
- The number of entries used (all types)
- The maximum number of entries for the tree (only for limited ordered)

If the prefix tree profile field is missing from the profile, the node assumes it is a tree with zero entries.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Check Prefix Tree Capacity nodes as required.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Free Entries	The prefix tree is not full.
2	Full	The prefix tree is full.
3	Abandon	The user hung up during the announcement.
4	Error	General error handling

Configuration screen

Here is an example Configure Check Prefix Tree Capacity screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	Select the Play Announcement check box to play the capacity result. Result: The Play Capacity Announcement Set and Announcement Entry fields become available and the Save button becomes unavailable.
2	Select the Prefix Tree Type. Result: If you selected: <ul style="list-style-type: none"> • Normal, the Source fields in the Source Prefix Tree area and the Target fields in the Capacity Storage area become available. Go to step 4. • Limited Order, in addition, the Capacity Type options and the rest of the fields in the Source Prefix Tree area become available. Go to step 3.

Step	Action
3	Select the Capacity Type option to use for capacity calculations: <ul style="list-style-type: none"> • Entries count - the number of entries available, • Entries left - the number of entries used, or • Capacity - the maximum number of entries for the tree.
4	In the Source Prefix Tree area select the source limited ordered prefix tree to query using the Source drop down lists.
5	If you selected Limited Order: <ul style="list-style-type: none"> • From the Limit drop down lists, select where the limit (value of the maximum capacity of prefix trees) is stored. • From the Alternate Limit drop down lists, select an alternate location if the limit is empty (optional fields).
6	In the Capacity Storage area, using the drop down lists, select the capacity store target.
7	In the Play Capacity area, select the announcement to play for the selected capacity type. Result: The Save button becomes available.
8	Click Save .

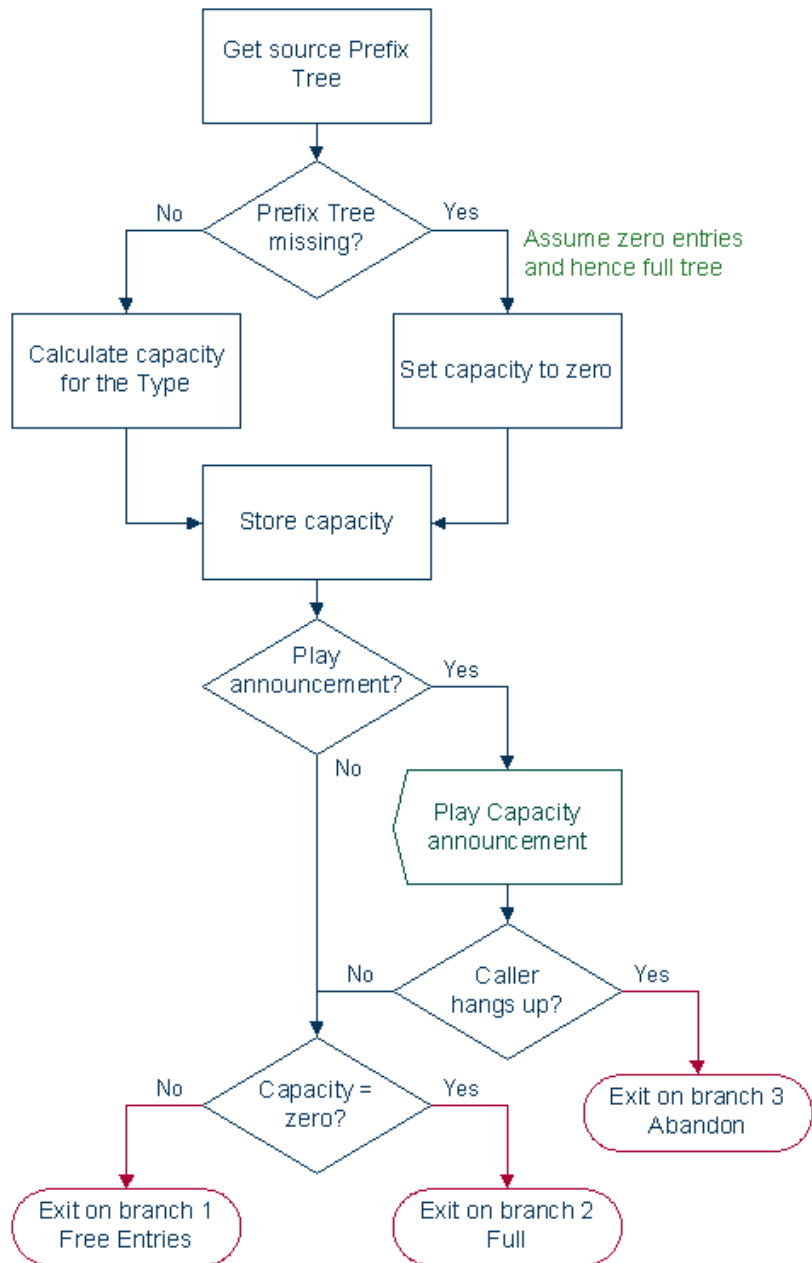
Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).
- The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Node logic

This diagram shows the internal logic processing of the node.



Create Prefix Tree

Node description

The Create Prefix Tree node creates a prefix tree from a delimited input string. Each entry in the input string is checked against the limitation profile tag field specified in the node. This checks whether the entry is one of:

- Allowed
- Barred

- Too long
- Too short

Delimiters

This table lists the delimiters allowed between entries in the input string.

Delimiter	Description
" "	Space
","	Comma
":"	Colon
" "	Pipe

Note: Delimiter characters may be combined, for example, so that spaces and commas can be used between entries.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Create Prefix Tree nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The node has successfully inserted all the entries from the source string into the selected prefix tree.
2	Entries Limited	The limitations set in the node prevented one or more source entries from being inserted into the selected prefix tree.
3	Error	Indicates none of the source entries were inserted into the selected prefix tree or an error/failure occurred.

Configuration screen

Here is an example Configure Create Prefix Tree from String screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	From the drop down lists in the Source String area, select the profile tag field containing the string you want to use to create the prefix tree.
2	From the drop down lists in the Destination Profile area, select the profile tag field where the prefix tree will be stored.
3	To limit the allowable entries in the source string, tick the Use Limitations check box. Then, from the Limitation Primary Tag drop down list, select the profile tag field to use.
	Note: The Product Type profile will be used if available, otherwise the Service Provider profile will be used.
4	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

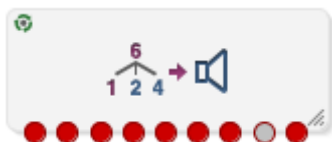
Play Ordered Prefix Tree Entry

Node description

The Play Ordered Prefix Tree Entry node plays a single selected entry from an ordered prefix tree to the caller.

If the entry number profile field is not present, the first prefix tree entry (entry number zero) is used in the announcement.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Selection keys

Selection keys (digits 0 to 9) to cater for “Forward”, “Backward”, “Select”, and “Exit” operations can be optionally configured to enable scrolling through a prefix tree.

When configured, the announcement is played as a prompt and collect operation. If an incorrect digit is collected, the Invalid Key error branch is taken.

When not configured, the announcement is played as a variable announcement with two parts in the following order:

- 1 Entry Number
- 2 Prefix Tree Entry

Restrictions

A control plan may contain as many Play Ordered Prefix Tree Entry nodes as required.

For the Next and Previous operations to work correctly, these exits should go to a node that can increment/ decrement the field entry value, i.e. a Profile Counter node.

Node exits

This node has one entry and nine exits. The number of exits cannot be changed.

Exits 1 through 5 are optional and therefore available only when configured.

Exit	Cause	Description
1	Next	The caller entered the “Next” key (digit 0 to 9). Note: Checks (listed under exit 6 below) are made before branching which could result in exit 6 being taken instead, see exit 6 below.
2	Previous	The caller entered the “Previous” key (digit 0 to 9).

Exit	Cause	Description
3	Exit	The caller entered the "Exit" key (digit 0 to 9).
4	Selected	The caller entered the "Select" key (digit 0 to 9).
5	Timed Out	The user did not enter a digit within the configured menu timeout period.
6	Last Played	One of the following occurred. <ul style="list-style-type: none"> • The last entry was played in the tree. • The next entry in the tree is outside the maximum number of entries (and Check Limitations was set). • The entry number was not valid for this tree (in which case the last entry (or last applicable entry in the case of limitations being applied) will have been played). • The prefix tree is not present in the profile. • The prefix tree has no entries.
7	Invalid Key	The caller entered an invalid key.
8	Abandoned	The caller hung up during the announcement.
9	Error	General Error Handling.

Configuration fields

This table describes the function of each field.

Field	Description
Check Limitations	When selected, restricts the maximum number of entries that may be played to the maximum number of entries for the source prefix tree.
Announcement Set	List of all the announcement sets (configured in the ACS Configuration screen in ACS).
Announcement Entry	List of all the announcements belonging to the selected announcement set.
Source Data Type	The source data type for the prefix tree.
Source Location	The profile block containing the prefix tree location.
Source Field	The prefix tree location field within the profile block. The available field types listed are: <ul style="list-style-type: none"> • Limited Ordered Prefix Tree • Ordered Prefix Tree
Entry Data Type	The data type of the prefix tree entry number to play.
Entry Location	Profile block that contains the prefix tree entry number to play.
Entry Field	Profile field containing the entry number to play.
Forward	Sets the key for "Next" operation. This is optional, and if not set, no next option will be available to the caller. Single 0 to 9 digit not configured else where.
Backward	Sets the key for "Previous" operation. This is optional, and if not set, no previous option will be available to the caller. Single 0 to 9 digit not configured else where.
Exit	Sets the key for "Exit" operation. This is optional, and if not set, no exit option will be available to the caller. Single 0 to 9 digit not configured else where.
Select	Sets the key for "Selected" operation. This is optional, and if not set, no selected option will be available to the caller. Single 0 to 9 digit not

Field	Description
	configured else where.
Menu Timeout	Seconds to wait for a key entry (when selection keys are configured) before branching "Timed out". Range is 0 to 99 seconds. Note: The lower this value is the more likely a timeout is going to occur (that is, 0 would result in 100% certain timeout).

Configuration screen

Here is an example Configure Play Ordered Prefix Tree Entry screen.

Configure Play Ordered Prefix Tree Entry

Node name: PlayPrefTree Help

Check Limitations
 Check Limitations

Play Entry
 Announcement Set: CCS Announcements
 Announcement Entry: Ann 10

Source Prefix Tree
 Source Data Type: Database
 Source Location: Account Reference Profile
 Source Field: SRM Friend List

Entry Number to be Played
 Entry Data Type: Database
 Entry Location: Account Reference Profile
 Entry Field: Acct Ref DB Id

List Management Keys
 Forward:
 Backward:
 Exit:
 Select:
 Menu Timeout: 0

Exit Branches

1	Next	2	Previous
3	Exit	4	Selected
5	Timed out	6	Last Played
7	Invalid Key	8	Abandoned
9	Error		

Comments Save Cancel

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	Tick the Check limitations check box to restrict the maximum number of entries to play to the source prefix tree maximum number of entries. Non-selection will allow all the available entries to be played.
2	In the Play Entry area, using the drop down boxes, select the Announcement Set and Announcement Entry for the prefix tree entry announcement to play.
3	In the source Prefix Tree area, using the drop down boxes, select the prefix tree.
4	In the Entry Number to be Played area, using the drop down boxes, select the prefix tree number to play.
5	In the Forward field, enter the unique digit (0 to 9) the caller must enter to use the forward function. This is optional.
6	In the Backward field, enter the unique digit (0 to 9) the caller must enter to use the backward function. This is optional.
7	In the Exit field, enter the unique digit (0 to 9) the caller must enter to use the exit function. This is optional.
8	In the Select field, enter the unique digit (0 to 9) the caller must enter to use the select function. This is optional.
9	In the Menu Timeout field, optionally enter a number of seconds (0 to 99). This is the amount of time to wait for a response from the caller before taking the Timed out exit. Note: The lower this value is, the more likely a timeout is going to occur. 0 results in 100% certain timeout.
10	Click Save .

Note: In steps 5 to 8, the digit must be unique for this configuration. Any conflicts will be reported and must be resolved before saving.

Note: The list of data types is fixed at installation time for each feature node or screen.

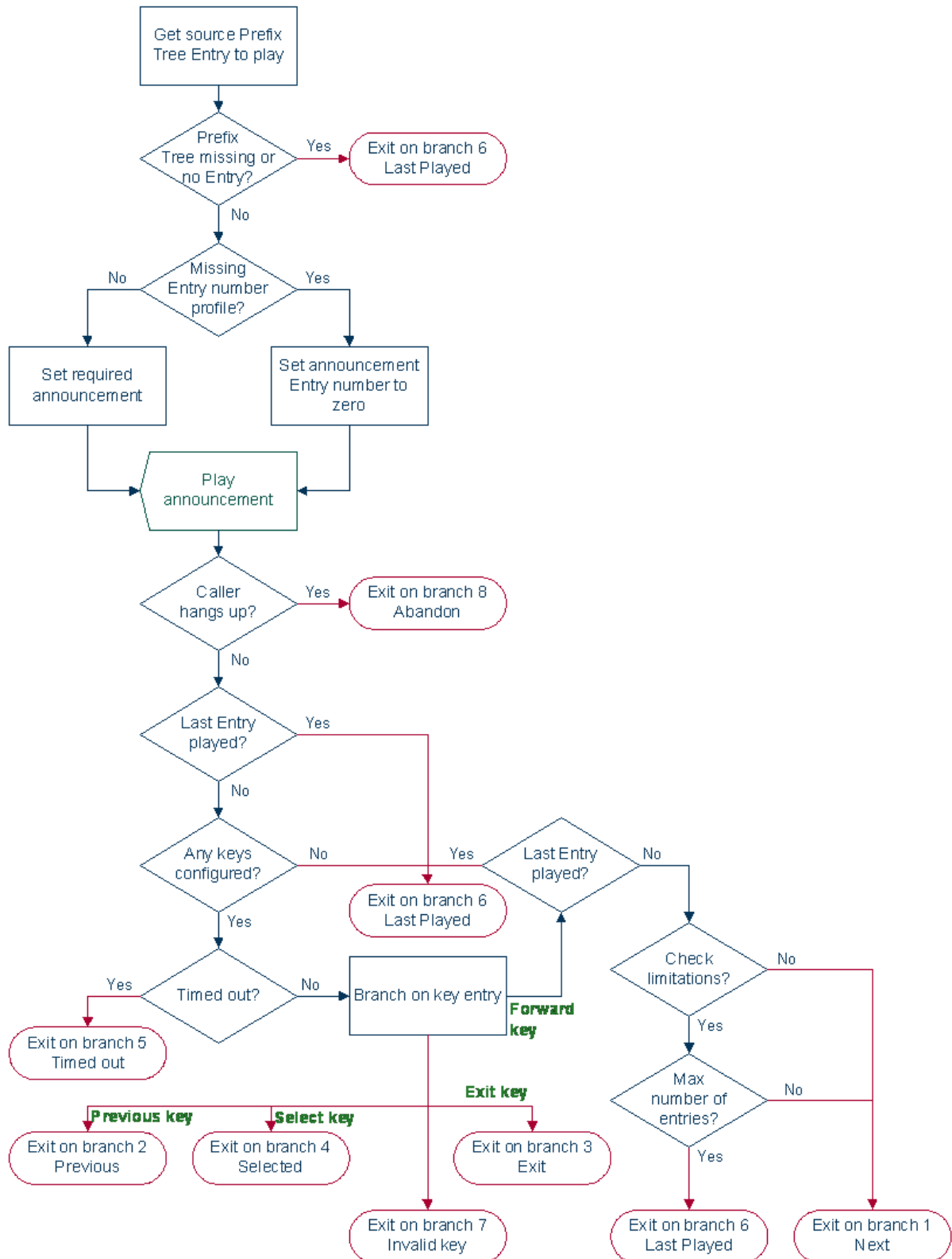
Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Node logic

This diagram shows the internal logic processing of the node.

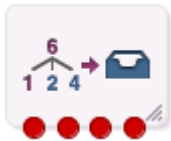


Prefix Tree Entry Extraction

Node description

The Prefix Tree Entry Extraction feature node enables one or more entries in a profile prefix tree to be extracted and stored in other profile fields.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Looping

If there is more than one entry in the prefix tree that requires processing then the Prefix Tree Entry Extraction node should be set up in a loop in the control plan. If no external data will be supplied to the Prefix Tree Entry Extraction node, then the following additional nodes will be required in the control plan:

- Set feature node
- Loop Limit feature node
- Profile Counting feature node

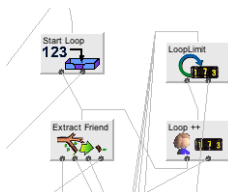
Loop process

This process describes how a loop can be used to process multiple entries from the prefix tree specified in the Prefix Tree Entry Extraction (PTEE) node in the control plan.

- 1 The Set node is used to initialize the first entry position for the PTEE node. This means it must be placed in the control plan before the PTEE node.
- 2 The PTEE node will extract the initial entry and follow the More Entries path (if more entries exist).
- 3 Following any required processing, the Loop Limit node will be checked to ensure the maximum number of iterations has not been reached and its counter will be incremented.
- 4 The Profile Counting node must be placed after the Loop Limit node in the control plan. It will increment the entry position to be used by the PTEE node.
- 5 The PTEE node will extract the entry indicated by the Profile Counting node and if more entries exist it will exit through the More Entries path.
- 6 This processing will continue until there are no more entries in the prefix tree or the loop limit is reached. The loop will then be exited following any required processing.

Example

Here is an example diagram showing how to implement a loop in the control plan.



Restrictions

A control plan may contain as many Prefix Tree Entry Extraction nodes as required.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	More Entries	There are some more entries to extract.
2	No More Entries	The entry position is pointing to the last entry indicating that there are no more entries to extract.
3	Invalid Position	The entry position is either 0 or greater than the limit.
4	Error	The specified profile does not exist.

Configuration fields

This table describes the function of each field.

Field	Description
Source Data Type	The data type of the source profile block.
Source Location	The profile block containing the prefix tree.
Source Field	The prefix tree field within the profile block. The available field types listed are: <ul style="list-style-type: none"> Limited Ordered Prefix Tree Ordered Prefix Tree
Entry Data Type	The data type of the entry profile block.
Entry Location	The profile block that contains the prefix tree entry number to extract.
Entry Field	The profile field containing the entry number to extract. This will be an integer field.
Destination Data Type	The data type of the profile to use to store the extracted data.
Destination Location	The profile block location for the extracted data.
Destination Field	The profile field where the extracted data will be stored. This will be an integer field.

Configuration screen

Here is an example Configure Prefix Tree Entry Extraction screen.

The screenshot shows the 'Configure Prefix Tree Entry Extraction' dialog box. The 'Node name' field is set to 'ExtrPrefTree'. The 'Source Prefix Tree' section has 'Source Data Type' set to 'Database', 'Source Location' set to 'Account Reference Profile', and 'Source Field' set to 'MMX Autoreply Replied Address List'. The 'Entry Position to be Extracted' section has 'Entry Data Type' set to 'Database', 'Entry Location' set to 'Account Reference Profile', and 'Entry Field' set to 'Acct Ref DB Id'. The 'Destination Profile Field' section has 'Destination Data Type' set to 'Database', 'Destination Location' set to 'Account Reference Profile', and 'Destination Field' set to 'CMX42_VOUCHER'. The 'Exit Branches' section has four buttons: '1 More Entries', '2 No More Entries', '3 Invalid Position', and '4 Error'. At the bottom are 'Comments', 'Save', and 'Cancel' buttons.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	From the Source Prefix Tree area, using the drop down boxes, select the prefix tree.
2	From the Entry Position to be Extracted area, using the drop down boxes, select the prefix tree number to extract.
3	From the Destination Profile Field area, using the drop down boxes, select the destination profile field for the extracted data.
4	Click Save .

For more information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Fields* (on page 2).

For more information about profile field configuration, see the discussion on profile tag configuration in *Convergent Charging Controller Advanced Control Services User's Guide*.

Presence Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Presence feature nodes. Use Presence feature nodes to check for and set a subscriber's availability at a number of predefined locations.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	515
Presence Branching	515
Set Presence	518

Available Feature Nodes

Presence Feature Nodes List

This table lists the feature nodes available from the Presence palette group in the ACS Control Plan Editor.

Node name	Node description
Presence Branching (on page 515)	Prompts the user to select the location to check for the presence and availability of the entity referenced in either a specified ACS buffer or profile tag, and then branches accordingly.
Set Presence (on page 518)	Sends a request to the presence server to set the availability at a selected location of a specified subscriber or presence entity.

Presence Branching

Node description

This node sends a request via ACS to a third party presence server to query a selected location for the presence and availability of a specified subscriber or presence entity. It then branches accordingly.

Note: The node relies on a protocol specific presence querying chassis action to process the request. The library used is delivered separately by another package, such as scaScp.

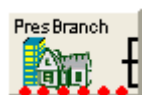
This table lists the standard set of locations and availabilities, delivered at installation, that may be queried.

Standard Locations	Standard Availabilities
<ul style="list-style-type: none"> • Home, • Office, • PlaceOther 	<ul style="list-style-type: none"> • Available, • Away, • Busy, • N/A

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Presence Branching nodes as required.

This node can only be used if a library for the presence querying chassis action has been installed.

Node exits

This node has one entry and up to eight exits depending on which availabilities the user configures for the selected query location.

Exits 1 through 4 are determined by the system and cannot be changed.

Exit	Cause	Description
1	No presence entity	The specified presence entity could not be found.
2	No presence domain	The presence domain profile tag does not exist and no default presence domain has been configured.
3	No match	The availability retrieved by the presence server does not match any of the configured availabilities.
4	Error	The presence server has reported an error.
5	Available	At the configured location the presence entity is: <ul style="list-style-type: none"> • Available
6	Away	<ul style="list-style-type: none"> • Away
7	Busy	<ul style="list-style-type: none"> • Busy
8	N/A	<ul style="list-style-type: none"> • Not available

Note: Exits 5 through 8 will be in the order configured, and therefore not necessarily in the order shown here.

Configuration screen

Here is an example Configure Presence Branching screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	From the drop down lists in the Presence Entity panel, select the Data Type, Location and Field where the presence entity name or number is held. Note: The selected Field must be of type STRING.
2	If required, set the Domain Name field to the name of the domain to append to the presence entity name or number. Note: The domain will not be appended to the presence entity if it is already present in the Field selected in the Presence Entity panel.
3	From the drop down lists in the Presence Domain panel, select the Data Type, Location and Field that identifies the presence query chassis action protocol. The selected Field must be of type INTEGER. Note: Currently only the SIP protocol is supported.

Step	Action
4	Set the action to be taken if the presence domain cannot be found. Select: <ul style="list-style-type: none"> • Error - to report an error, or • Use default below - to use the default presence domain. Select the default presence domain from the drop down list.
5	Set the Location to query for the presence entity.
6	Set the Availabilities to query for the selected location. <ul style="list-style-type: none"> • To add an availability to the location query, select it in the drop down list and click Add branch. • To remove an availability from the location query, select it in the drop down list and click Remove branch. <p>Note: Each time you add or remove an availability, an exit is either added or removed from the node.</p>
7	Click Save .

Set Presence

Node description

This node sends a request through ACS to a third party presence server to set the availability at a selected location of a specified subscriber or presence entity.

Before sending the request, the node prompts the user to select the following:

- The number and domain name for the presence entity to set
- An availability and location
- The implementation of the presence setting chassis action to invoke. Currently only SIP is supported.

The presence entity number can be specified using fields which may contain (for example) the:

- Called number
- Calling party number
- Subscriber phone number
- Subscriber name

Notes:

The node relies on a protocol specific presence setting chassis action to process the request. The library for the presence setting chassis action is delivered separately by another package, such as scaScp.

Only one availability per location may be set for a presence entity. Each time you specify a new availability for a particular location, the previous one is overwritten.

This table lists the standard set of locations and availabilities that are delivered at installation and that may be set for a presence entity.

Standard Locations	Standard Availabilities
<ul style="list-style-type: none"> • Home • Office • PlaceOther 	<ul style="list-style-type: none"> • Available • Away • Busy • N/A

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Set Presence nodes as required.

This node may only be used if a library for the presence setting chassis action has been installed.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	No presence entity	The specified presence entity could not be found.
2	No presence domain	The presence domain does not exist and no default presence domain has been configured.
3	Error	The presence server has reported an error.
4	Success	The presence entity was successfully set to the configured location and availability.

Configuration screen

Here is an example Configure Set Presence screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	From the drop down lists in the Presence Entity panel, select the Data Type , Location and Field where the presence entity name or number is held.
2	If required, set the Domain Name field to the name of the domain to append to the presence entity name or number. Note: The domain will not be appended to the presence entity if it is already present in the Field selected in the Presence Entity panel.
3	From the drop down lists in the Presence domain panel, select the Data Type , Location and Field where the presence setting chassis action information is held. Note: Currently only SIP presence setting is supported.
4	Set the action to be taken if the presence domain cannot be found. Select: <ul style="list-style-type: none"> • Error – to report an error, or

Step	Action
	<ul style="list-style-type: none"><li data-bbox="406 262 1435 336">• Use default below – to use the default presence domain. Select the default presence domain from the drop down list.
5	Set the Location for the presence entity.
6	Select the Availability that will be set by the node for the selected location.
7	Click Save .

RIMS Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller RIMS feature nodes. You use RIMS feature nodes in Messaging Manager Navigator control plans. If any additional custom feature nodes have been created and installed to fit your specific customer requirements, they will not appear in this list.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	523
RIMS Nodes Use Cases.....	523
IS41 RIMS Query	524
MAP RIMS Query	526

Available Feature Nodes

RIMS Feature Nodes List

This table lists the feature nodes available from the RIMS palette group in the Control Plan Editor.

Node name	Node description
<i>IS41 RIMS Query</i> (on page 524)	Supports IS-41 messages and queries the IMSI/MIN or IMSI/MIN & VMSC/SGSN address of any ACS number field.
<i>MAP RIMS Query</i> (on page 526)	Supports MAP messages and queries the IMSI/MIN or IMSI/MIN & VMSC/SGSN address of any ACS number field.

RIMS Nodes Use Cases

Introduction

In order to retrieve the requested values from Messaging Manager Navigator and store them in the chassis and engine fields, each node has two states.

- The first state sets up an `xmsRimsChassisAction` and passes the data needed to generate the RIMS query message.
- The second state receives information determining which exit branch to take from the chassis action.

The only difference between the MAP and IS41 nodes are the data fields in the UI that will be used to populate the query message, thus the following section will apply to both MAP and IS41 nodes unless specified.

Query

The first state in each node will construct an `xmsRimsChassisAction` and send it the node data needed to construct the RIMS query message.

The node will then set the next state to be State 2, and will return `ACS_ENGINE_MACRO_STAY_HERE`, passing control to ACS until a response is received.

Response

The second state of the node will be entered once the `xmsRimsChassisAction` has determined the validity of the response message from RIMS, and stored the values in the chassis and engine contexts if they are successful. The chassis action will return an enum denoting which exit branch the node should take based on this.

Therefore, all the second state will need to do is follow the specified exit.

IS41 RIMS Query

Node description

The IS41 RIMS Query node supports IS-41 messages and queries the IMSI/MIN or IMSI/MIN & VMSC address of any MDN stored in an ACS number field.

The results can then be placed into ACS chassis and engine parameters.

This node allows you to override the SCCP Destination address digits used by the RIMS interface when sending IS41 SMSRequest messages to the HLR. The SCCP Calling Party address can also be overridden, allowing different addresses to be selected inside the control plan.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Query was successful.
2	Transient Failure	A transient failure status was returned.
3	Permanent Failure	A permanent failure status was returned.
4	Node Failure	General case for an unhandled state in this node.
5	RIMS Timeout	Response time exceeded timeout.

Restrictions

The HLR SCCP Address area in this node specifies a full SCCP destination address, not just the prefix. Therefore, this node is expected to be used in conjunction with, and after a Copy and/or a Modify node when a composite address is required by the control plan, for example, prefix + MDN.

This node may be used any number of times within a control plan.

Configuration screen

Here is an example Configure IS41 RIMS Query screen.

Configuring the node

Follow these steps to configure the IS41 RIMS Query node.

Step	Action
1	Select the value in MDN source to query to send as the MDN key in the query message to RIMS.
2	In the Party for Results area, select the option to store the values in the response from RIMS in either calling or called engine and chassis fields.

Step	Action
3	In the Type of Query area, select the return option to control the contents of the requested results field in the query message.
4	In the HLR SCCP Address area, select the Override check box to optionally edit the following fields: <ul style="list-style-type: none"> • Digits Location: the profile block where the global title SCCP Destination address digits are stored. • Digits Field: the profile tag where the global title SCCP Destination address digits are stored. • Translation Type: the translation type applicable to this global title. <p>Note: This area is used to specify the SCCP Destination address digits for the RIMS interface to use while sending IS41 SMSRequest messages to the HLR. This will be based on the data stored in the profile.</p>
5	In the SCCP Calling Party area, select from the drop down list the Return Address of the SCCP originating address. This field is populated from the <code>scf</code> parameter in the <code>sms.html</code> file and the <code>acs.conf</code> file. For more information about this parameter, see <i>ACS Technical Guide</i> . Note: It is recommended to select the Return Address value as <code>Default</code> . The default value is configured in the <code>RIMS.IS41</code> section of the <code>eserv.config</code> file.
6	Click Save .

MAP RIMS Query

Node description

The MAP RIMS Query node supports MAP messages and queries the IMSI/MIN or IMSI/MIN & VMSC/SGSN address of any MDN stored in an ACS number.

The results can then be placed into ACS chassis and engine parameters.

This node allows you to override the SCCP Destination address digits used by the RIMS interface when sending MAP SendRoutingInfoForSM messages to the HLR. The SCCP Calling Party address can also be overridden, allowing different addresses to be selected inside the control plan.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success - VMSC	VMSC or only the IMSI, are successfully returned.
2	Success - SGSN	SGSN successfully returned.
3	Transient Failure	A transient failure status was returned.
4	Permanent Failure	A permanent failure status was returned.
5	Node Failure	General case for an unhandled state in this node.
6	RIMS Timeout	Response time exceeded timeout.

Restrictions

The HLR SSCP Address area in this node specifies a full SCCP Destination address, not just the prefix. Therefore, this node is expected to be used in conjunction with, and after a Copy and/or a Modify node when a composite address is required by the control plan, for example, prefix + MSISDN.

This node may be used any number of times within a control plan.

Configuration screen

Here is an example Configure Map RIMS Query screen.

Configure Map RIMS Query

Node name:

MSISDN Source

MSISDN source to query:

Party for Results

Store results in calling fields
 Store results in called fields

Type of Query

Return IMSI only
 Return IMSI and MSC address
 Return IMSI and SGSN/MSC address (prefer SGSN)

Priority

Priority Request

HLR SCCP Address

Override:
 Digits Location:
 Digits Field:
 Translation Type:

SCCP Calling Party

Return Address:

Exit Branches

1	Success - VMSC	2	Success - SGSN
3	Transient Failure	4	Permanent Failure
5	Node Failure	6	RIMS Timeout

Configuring the node

Follow these steps to configure the Map RIMS Query node.

Step	Action
1	Select the value in MSISDN source to query to send as the MSISDN key in the query message to RIMS. Note: If you select an IMSI, RIMS will treat this value as an MSISDN and may return a non-intuitive number.
2	In the Party for Results area, select the option to store the values in the response from RIMS in either calling or called engine and chassis fields.

Step	Action
3	<p>In the Type of Query area, select the return option to control the contents of the requested results field in the query message.</p> <p>Note: If you select the Return IMSI and SGSN/MSC address option, but only the VMSC address is returned, the exit used will be "Success - VMSC".</p>
4	<p>Select the Priority Request check box if you wish to set RIMS query message to priority, rather than normal.</p>
5	<p>In the HLR SSCP Address area, select the Override check box to optionally edit the following fields:</p> <ul style="list-style-type: none"> • Digits Location: the profile block where the global title SSCP DEST address digits are stored. • Digits Field: the profile tag where the global title SSCP DEST address digits are stored. • Translation Type: the translation type applicable to this global title. <p>Note: This area is used to specify the SSCP Destination address digits which the RIMS interface will use while sending MAP SendRoutingInfoForSM messages to the HLR. This will be based on the data stored in the profile.</p>
6	<p>From the SSCP Calling Party area, select from the drop down list the Return Address of the SSCP originating address.</p> <p>This field is populated from the <code>scf</code> parameter in the <code>sms.html</code> file and the <code>acs.conf</code> file. For more information about this parameter, see <i>ACS Technical Guide</i>.</p> <p>Note: It is recommended to select the Return Address value as <code>Default</code>. The default value is configured in the <code>RIMS.MAP</code> section of the <code>eserv.config</code> file.</p>
7	<p>Click Save.</p>

SES Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Subscriber Event Service (SES) feature nodes.

You use SES feature nodes to check which subscribers are entering or leaving a network using SES, and to configure which messages should be sent to these subscribers.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	531
In-Roamer Contact Check	532
In-Roamer Messages Selection	533
Out-Roamer Contact Check	535
Out-Roamer Messages Selection	536

Available Feature Nodes

SES Feature Nodes List

Use SES feature nodes in your control plans to determine if a subscriber qualifies for messages, and to configure the selection of the messages to send.

This table lists the feature nodes available from the SES palette group and the fast key for each feature node in the list. You can use fast keys to search for feature nodes in the palette or the canvas.

Node name	Node description
<i>In-Roamer Contact Check</i> (on page 532)	This feature node checks for the last time the subscriber was contacted on entering the network. Fast key: IRCC
<i>In-Roamer Messages Selection</i> (on page 533)	This feature node configures which messages to send to an inbound subscriber. Fast key: IRMS
<i>Out-Roamer Contact Check</i> (on page 535)	This feature node checks for the last time the subscriber was contacted on leaving the network. Fast key: ORCC
<i>Out-Roamer Messages Selection</i> (on page 536)	This feature node configures which messages to send to an outbound subscriber. Fast key: ORMS

In-Roamer Contact Check

Node description

When a roaming subscriber enters your network, this node checks the duration since any previous inbound roaming contact with the subscriber, by looking up the contact history, and compares the duration with the period of days configured in the node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many In-Roamer Contact Check nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Contacted	The subscriber has been contacted within the configured number of days.
2	Not Contacted	The subscriber has not been contacted within the configured number of days (includes never been contacted and any system failures).

Configuration screen

Here is an example Configure In-Roamer Contact Check screen.

Using the node

For descriptions of how this node is used, refer to the following topics in *SES User's and Technical Guide*:

- Example Control Plan - In-Roamer
- Example scenarios

Configuring the node

Follow these steps to edit the node.

Step	Action
1	Type a value in days in the Period field. Note: Blank or zero means the subscriber will be contacted every time they enter the network.
2	Click Save .

In-Roamer Messages Selection

Node description

This node selects the messages for sending to the subscriber, based on the message priority, the number of messages to be sent, and the message selection option used. For more information, see *SES User's and Technical Guide, System Overview* chapter.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many In-Roamer Messages Selection nodes as required, however they *should* be placed after an In-Roamer Contact Check node to ensure they do not get messages every time.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	No Messages Selected	No messages were selected (includes system failures).

Exit	Cause	Description
2	Messages Selected	At least one message was selected.

Configuration screen

Here is an example Configure In-Roamer Messages Selection screen.

Using the node

For descriptions of how this node is used, refer to the following topics in *SES User's and Technical Guide*:

- Example Control Plan - In-Roamer
- Example scenarios

Editing the node

Follow these steps to edit the In-Roamer Messages Selection node.

Step	Action
1	Type the maximum number of messages to send to the subscriber in the Number field. Note: Currently the maximum is about 2 billion.
2	Select either the Random or Latest message Selection Method. Note: Messages are configured to be priority, or non priority (see <i>SES User's and Technical Guide</i> , SES Configuration - Messages Tab). For either option, the priority messages are used to fulfill the Number parameter before the non priority messages. See <i>SES User's and Technical Guide</i> , SES Example scenarios. Note: Latest is the message with the most recent availability date.
3	Click Save .

Out-Roamer Contact Check

Node description

When a roaming subscriber leaves your network, this node checks the duration since any previous out-roaming contact with the subscriber, by looking up the contact history, and compares the duration with the period of days configured in the node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Out-Roamer Contact Check nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Opted Out	The subscriber has opted out of being contacted on leaving the network. Note: This flag is configurable. Refer to <i>SES User's and Technical Guide</i> , <code>macroNodes</code> configuration, for the value of the tag used.
2	Contacted	The subscriber has been contacted within the configured number of days.
3	Not Contacted	The subscriber has not been contacted within the configured number of days (includes never been contacted and any system failures).

Using the node

For descriptions of how this feature node is used, see the following topics in *Subscriber Event Service User's and Technical Guide*:

- Example Control Plan - Out-Roamer
- Example scenarios

Configuration screen

Here is an example Configure Out-Roamer Contact Check screen.

Configuring the node

Follow these steps to edit the node.

Step	Action
1	Type a value in days in the Period field. Note: Blank or zero means the subscriber will be contacted every time they exit the network.
2	Click Save .

Out-Roamer Messages Selection

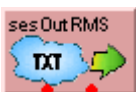
Node description

This node selects the messages for sending to the subscriber, based on the message priority, the number of messages to be sent, and the message selection option used. For more information, see the discussion of system overview in *Subscriber Event Service User's and Technical Guide*.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Out-Roamer Messages Selection nodes as required, however they *should* be placed after an Out-Roamer Contact Check node to ensure they do not get messages every time.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	No Messages Selected	No messages were selected (includes system failures).
2	Messages Selected	At least one message was selected.

Configuration screen

Here is an example Configure Out-Roamer Messages Selection screen.

Using the node

For descriptions of how this feature node is used, see the following topics in *Subscriber Event Service User's and Technical Guide*:

- Example Control Plan - Out-Roamer
- Example scenarios

Configuring the node

Follow these steps to edit the Out-Roamer Messages Selection node.

Step	Action
1	Type the maximum number of messages to send to the subscriber in the Number field. Note: Currently this is about 2 billion.

Step	Action
2	<p>Select either the Random or Latest message Selection Method.</p> <p>Note: Messages are configured to be priority or no priority (see SES Configuration - Messages Tab). For either option, the priority messages are used to fulfill the Number parameter before the no priority messages. See SES Example scenarios.</p> <p>Note: Latest is the message with the most recent availability date.</p>
3	Click Save .

SMCB Feature Node

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller SMCB Macro feature node available from the SMCB palette group in the ACS Control Plan Editor.

In this chapter

This chapter contains the following topics.

Short Message Charging..... 539

Short Message Charging

Node description

This node provides the charging mechanism in an ACS service plan where ever it is required.

This allows a flexible approach to call logic and functionality.

For example, a CCS Friends and Family feature node could be used before the Short Message Charging feature node to provide a discount for sending short messages to friends and family numbers.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

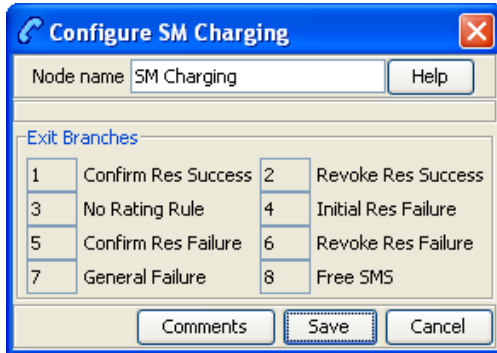
This node has one entry and eight exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Confirm Res Success	Confirm reservation success (debitUnitRes)
2	Revoke Res Success	Reservation revoked success (releaseRes)
3	No Rating Rule	No rating rule found (no billing at all)

Exit	Cause	Description
4	Initial Res Failure	SMS forward denied (reserveUnitErr)
5	Confirm Res Failure	Confirm reservation failure (debitUnitErr)
6	Revoke Res Failure	Reservation revoked failure (not sure this is possible in MOX)
7	General Failure	An error occurred. Can be anything, for example: <ul style="list-style-type: none"> • Failure to communicate with the billing engine • Actions not supported for this service domain (failure to talk to the billing engine or actions not supported for this service domain)
8	Free SMS	Free Short Message (no billing at all)

Configuration screen

Here is an example Configure SM Charging screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Time Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Time feature nodes. Use Time feature nodes to route calls according to when the call is made.

In this chapter

This chapter contains the following topics.

Available Feature Nodes	541
Time Zones.....	542
Day of Week	542
Day of Year.....	544
Profile Date Compare	548
Profile Date Store	549
Time of Day	553

Available Feature Nodes

Time Feature Nodes List

This table lists the feature nodes available from the Time feature group in the Control Plan Editor.

Node name	Node description
Day of Week (see page 542)	Allows branching based on the day of the week on which the call is placed. Shortcut keys: Alt+W
Day of Year (see page 544)	Allows control plan branches to be taken, based on the current day of the year. Shortcut keys: Alt+Y
Profile Date Compare (see page 548)	Compares the selected profile date with the current system date.
Profile Date Store (see page 549)	Takes the current system date and extends it by the date extension number configured in the node. The extended date is stored within the requested profile, for future use. If a date extension is not specified, then the current system date is stored.
Time of Day (see page 553)	Allows branching based on the time of day that the call is placed. Shortcut keys: Alt+T

Time Zones

Time zone list

The Time feature nodes use the timezone set in the feature node to determine when a call should be processed. You can also set the timezone in the *Activate Control Plan* (see page 372) feature node.

This table lists the available time zones:

Time Zone	Description
SCP local time	The time according to the TZ variable on the SLC which handles the call.
Explicit Unix TZ	The explicit time zone configured on the Geography tab for the ACS <code>TIME_ZONE_GEOGRAPHY_SET</code> public geography set in the ACS Configuration window. This value is one of the configured top level entries. Tip: This time zone list is available in a separate drop down list when this option is selected.
GMT	Greenwich Mean Time time zone.
TZ of Service Number	Similar to Explicit Unix TZ, however the time zone is automatically selected based on the buffer containing the service number.
TZ of Logical CLI	Similar to Explicit Unix TZ, however the time zone is automatically selected based on the buffer containing the logical CLI number.
TZ of Network CLI	Similar to Explicit Unix TZ, however the time zone is automatically selected based on the buffer containing the network CLI number.

To enable the correct working of the feature nodes requiring time zone information, you should ensure that the `TIME_ZONE_GEOGRAPHY_SET` geography set has been configured.

MoLI codes

The MoLI digits (**M**obile **L**ocation **I**dentification) can also be used in the same way as for geographic routing.

For example, if the MOLI prefix is "*" and "*034" in the `TIME_ZONE_GEOGRAPHY_SET` is associated with the time zone "Australia/Victoria" then mobile calls from Melbourne will use the appropriate time zone as long as "TZ of Network CLI" is selected.

Day of Week

Node description

The Day of Week node allows branching based on the day of the week on which the call is placed. This branching decision is made according to the data that is entered into the node through the Configure Day of Week Node edit screen.

To configure this node, the user adds a day of week range and maps that range to a specified exit. Calls made on any day of the week within the range are routed down that exit, to be processed according to the nodes that follow.

Shortcut keys

The shortcut keys to add a Day of Week node are **Alt+W**.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

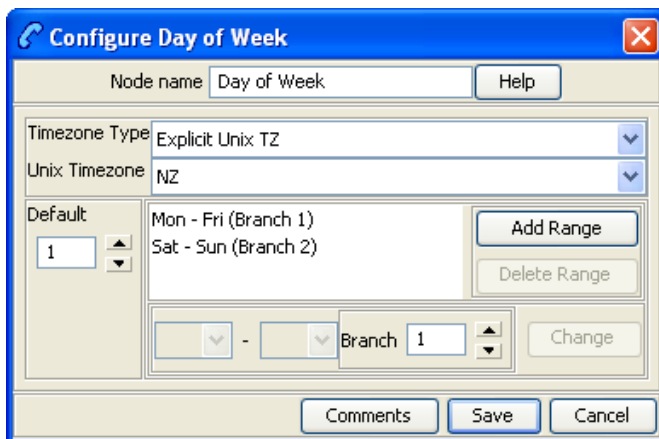
A control plan may contain as many Day of Week nodes as required. There are no restrictions on where they are placed, as long as all entry and exit points are connected to other nodes.

Node exits

The Day of Week node has one entry and may have 2 through 7 exits. Each exit is mapped to a day of week range, and must be connected to an appropriate node. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See [Editing node exits](#).

Configuration screen

Here is an example Configure Day of Week screen.



Configuring the node

Follow these steps to configure the day of week node.

Step	Action
1	Edit the node exits to add up to another five exits as required to accommodate the dates you are planning to configure. See Editing node exits for details.
2	From the Timezone Type field, select the timezone to use. If you select <code>Explicit Unix TZ</code> , you must select a specific region from the Unix Timezone field.

Step	Action
	<p>Note: The GMT+ and GMT- time zone names adhere to POSIX Unix conventions, which use positive (+) signs for West of Greenwich and negative (-) signs for East of Greenwich. For example, GMT+4 corresponds to 4 hours behind GMT.</p> <p>For more time zone information, see <i>Time Zones</i> (on page 542).</p>
3	Select the Default branch in the box on the left of the screen. Any calls made on a day not specified in an allocated range route down the default branch.
4	Map the required day of week ranges to the appropriate exits, as detailed below.
5	Once all the data is correct, click Save . The Save button will not be available if a range has not been accepted, or if the ranges overlap.

Adding a branch/range mapping

Follow these steps to map a day of week range to an exit, using the Configure Day of Week screen.

Step	Action
1	Click Add Range . To the left of the Branch field, the drop-down lists will be populated.
2	Select the day required in each list, to show the first and last day in the range. A range of: <ul style="list-style-type: none"> Wed – Wed affects only calls made on Wednesday of each week. Mon – Thur affects calls made on any day from Monday to Thursday. <p>Note that the range may not overlap any existing range. The ranges specified do not need to include all possibilities. Any calls made on a day not specified in an allocated range routes down the default branch.</p>
3	Select the branch that is to be mapped to the specified range. Calls made within that range are routed down the exit selected in the branch list. It is possible to have several ranges routing down the same branch or to have branches that no calls will ever take.
4	Click Change . Result: The branch/range mapping will appear in the display field. To delete a mapping, select the entry and click Delete Range .

Day of Year

Node description

This node allows control plan branches to be taken based on the current day of the year.

Dates may be specified as individual days or as named holidays, as set in the **Holidays** tab on the ACS Configuration screen. Multiple dates and ranges of dates can be specified for each branch from the node.

To configure this node, the user adds a day of year range and maps that range to a specified exit. Calls made on any day of the year within the range are routed down that exit, to be processed according to the nodes that follow.

For more information about configuring holiday sets, see *ACS User's Guide*.

Shortcut keys

The shortcut keys to add a Day of Year node are **Alt+Y**.

Restrictions

A control plan may contain as many Day of Year nodes as required.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

The Day of Year node has one entry and may have 2 through 20 exits. Although this node accepts up to 20 exits, it is recommended that this number is restricted to a maximum of 10, due to the width restraints of the node. The default number of exits is 2.

There are three types of exit:

- A specific date or date range (which can be mapped to any free branch)
- A default branch (if the current date is not specified in any of the dates or date ranges, this branch will be followed)
- Any holiday in set (if it matches any of the dates in the chosen set that have not been specifically assigned a branch, this branch will be followed)

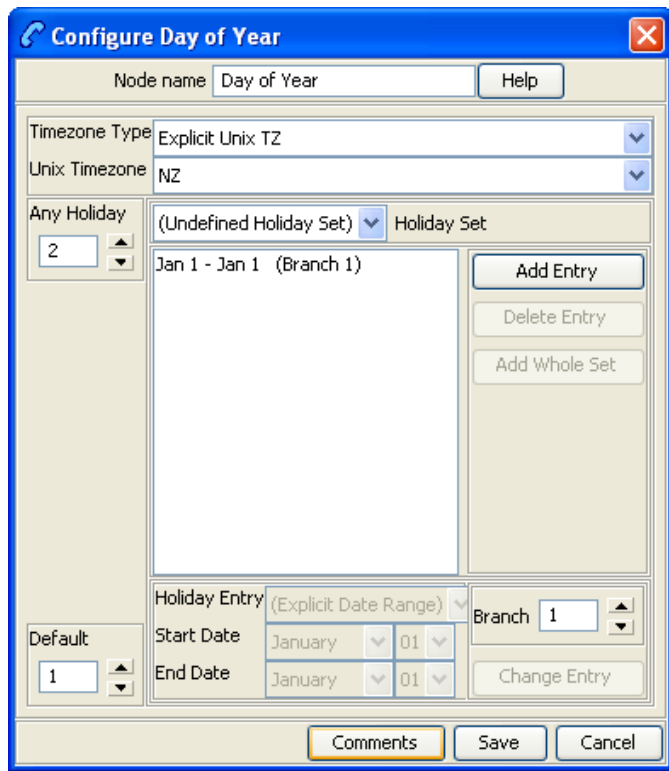
You cannot map two dates or date ranges to the same branch. Ensure you do not specify the same day twice (either in a holiday set or on a specified branch), as your control plan data will not compile successfully.

If you do not want to use the Any Holidays branch, set it to the same exit as the default.

You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See Editing node exits.

Configuration screen

Here is an example Configure Day of Year screen.



Adding a branch/range mapping

Dates may be entered in this node in two forms, as one of the following:

- Holiday entries as entered in a specified holiday set
- Explicit date ranges

If a date is included as a holiday set, but is not specifically assigned a branch, the call is routed down the Any Holiday exit.

For calls where there is no match found to any specified date, the call is routed down the default exit.

Configuring the node

Follow these steps to configure the day of year node.

Step	Action
1	Edit the node exits to add up to another eighteen exits as required to accommodate the dates you are planning to configure. See Editing node exits for details.
2	From the Timezone Type box, select the timezone you want to use. If you select the Explicit Unix TZ option, you must choose a specific region from the Unix Timezone box. For more Time zone information, see <i>Time Zones</i> (on page 542).
3	Specify the exit for dates which match a date within the specified Holiday Set, but do not match a date entry with a specific branch assigned to it.
4	Enter the holiday details by either: <ul style="list-style-type: none"> • specifying each date or date range explicitly, or

Step	Action
	<ul style="list-style-type: none"> mapping the entries from a holiday set to the appropriate branches. <p>More information about entering dates is provided on the next two pages.</p>
5	Select the Default branch in the box on the left of the screen. Any calls made on a day not specified in an allocated range route down the default branch.
6	Once all the data is correct, click Save .
	Note: The Save button will not be available if a range has not been accepted, or if the ranges overlap.

Adding holiday set entries

Follow these steps to add holiday set entries, using the Configure Day of Year Node screen.

Step	Action
1	Select the holiday set required from the drop-down box.
2	<p>If the selected holiday set has:</p> <ul style="list-style-type: none"> More than one entry in it, you can add them all by clicking Add Whole Set. Only one entry or if you only want to add the first entry from the set, click Add Entry. <p>Result: The chosen entries will be added to the display list.</p>
3	In the list box below the display area, select the holiday entry that is required.
4	In the Branch field, select the branch the specified days should route to.
5	Click Change .
	Result: The selected default entry in the display area will be changed to the holiday entry and branch selected.
6	Repeat steps 3 and 4 until all the holiday entries have been mapped to different branches. (They must be mapped to different branches or the control plan will not compile.)
7	Click Save .

Adding explicit date ranges

Follow these steps to add explicit date ranges, using the Configure Day of Year Node screen.

Step	Action
1	Click Add Entry .
	Result: A default entry will be added to the display list, as a selected entry.
2	Select the (Explicit Date Range) option in the Holiday Entry selection box.
	Result: The Start and End Date fields will become available.
3	Select the date range required.
	Note: The date ranges are inclusive. For example, a date range of January 1 to January 12 will route calls made on 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 January down the selected branch.
	To specify a single date, set both the Start and End Date fields to the same day.
4	Select the branch to be taken by calls within that range.
5	Click Change Entry .

Step	Action
	Result: The selected default entry in the display area will be changed to the explicit date range and branch selected.
6	Select a holiday data set. This information will not be used, but is required for the Control Plan data to compile correctly.
7	Click Save .

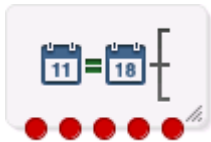
Profile Date Compare

Node description

The Profile Date Compare node compares the selected Profile Date with the current system date, and branches according to the following rules:

- the stored date is in the past (stored date is less than current date),
- the stored date is in the future (stored date is greater than current date),
- the stored date is today's date (stored date equals current date).

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Profile Date Compare nodes as required.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Failure	There was an internal error.
2	Not Found	The selected Profile Date could not be found.
3	Past	The selected Profile Date is earlier than the current system date.
4	Today	The selected Profile Date is the same as the current system date.
5	Future	The selected Profile Date is later than the current system date.

Configuration screen

Here is an example Configure Profile Date Compare screen.

Configuring the node

Follow these steps to edit the Profile Date Compare node.

Step	Action
1	From the drop down lists in the Location of Date area, select the profile Data Type , Location and Field that holds the stored Profile Date you want to be compared against the current system date.
2	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Profile Date Store

Node description

The Profile Date Store feature node stores a date extension number depending on the type of extension selected. The extended date is stored within the requested profile, for future use.

The stored date is either:

- The current system date plus the date extension (not specified = current system date).
- The date retrieved from the store location plus the date extension.
- The best date of either the first two options.

Note: Only whole days may be stored.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Profile Date Store feature nodes as required.

Node exits

The Profile Date Store feature node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Failure	The date could not be stored for one or more of the following reasons: <ul style="list-style-type: none"> • The date was invalid • The profile date was missing from the selected Profile when a date was expected • There was an general error
2	Success	The date has been stored to the selected profile date for the selected profile.

Configuration screen

Here is an example Configure Profile Date Store screen.

Configuring the node

Follow these steps to edit the Profile Date Store feature node.

Step	Action
1	From the drop down lists in the Store Date To area, select the Data Type , Location and Field where you want to retrieve and/or store the Profile Date. Note: The available profile data is the same for all service providers on the system.
2	In the Units area select whether to add Days , Months or Years to the stored date.
3	In the Number to add area, configure the number of units of the selected type to add to the stored date. Do one of the following: <ul style="list-style-type: none"> In the Time to add field enter the number of units to add.

Step	Action
	<ul style="list-style-type: none"> Tick the Use Profile check box and select the profile Data Type, Location and Field where the number you want to add is stored. <p>The feature node checks the extended date to ensure that it is not greater than the maximum Unix time defined for the system.</p> <p>Note: If you do not specify a value here, then a value of zero is assumed.</p>
4	<p>If you chose Months in the Units area, then in the End month algorithm area select the required option for adjusting end of month dates.</p> <p>Adjust up Adding a month to the end of the current month sets the date to the last day in the following month. Also sets the date to the last day in the following month if the current date is the day before the last day in the month and the following month has fewer days.</p> <p>Adjust down Adding a month to the end of the current month sets the date to the last day in the following month for months which have the same or fewer days than the current month. Where the following month has more days than the current month, it sets the date to the same day number in the month.</p> <p>Add # days in month Adds the number of days in the current month to the selected Extend From date.</p> <p>For further clarification, see <i>Adding months example</i> (on page 552).</p>
5	<p>Select the type of extension required from the Extend From options.</p> <ul style="list-style-type: none"> Today – To add the specified number of units to the current system time. Profile – To add the specified number of units to the date currently stored. Later of the two – To store the later date out of the Today and Profile options.
6	In the Timezone area select the required time zone from the drop down lists.
7	Click Save .

Note: The list of data types is fixed at installation time for each feature node or screen.

Further reference:

- For information about profile blocks (data type, location, and field) and how to use them, see *Profile Blocks and Tags* (on page 2).

The primary tag lists are configured in the **SMS > Services > ACS Service > Configuration > Profile Tag Details** and **Profile Tag Mapping** tabs (see *ACS User's Guide, Profile Tag Details* for more information).

Adding months example

This table shows some example month end adjustment results after adding one month to the current date.

Current Date	Adjust up	Adjust down	Add # days in month
30 January	28 February	28 February	2 March
30 April	31 May	30 May	30 May

Time of Day

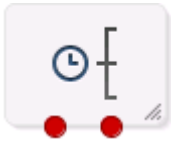
Node description

The Time of Day node allows branching based on the time of day that the call is placed. The branching decision is made according to the data that is entered into the node.

Shortcut keys

The shortcuts key to add a Time of Day node are **Alt+T**.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and may have 2 through 20 exits. You can configure the number of exits within this range as required, using the **Edit Node Exits** option on the shortcut menu. See Editing node exits.

Restrictions

A control plan may contain as many Time of Day nodes as required.

Configuration screen

Here is an example Configure Time of Day screen.

Configuring the node

Follow these steps to add a time range to the node data.

Step	Action
1	From the Timezone Type drop down list, select the timezone to use. If you select <code>Explicit Unix TZ</code> , you need to select a specific region from the Unix Timezone drop down list. For more time zone information, see <i>Time Zones</i> (on page 542).
2	From the Default field, select the branch calls that do not match a time of day range should be routed to.
3	Click Add Range and make the changes necessary to the time range given, then choose the branch down which calls made in this time range are to route.
4	Enter the time range in the boxes to the left of the Branch field and click Change .
5	To add another range, repeat steps 3 and 4.
6	Click Save .

UIS Portal Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller UIS Portal feature nodes.

In this chapter

This chapter contains the following topics.

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User Input	561
User Selection	566
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Available Feature Nodes

UIS Portal feature nodes list

This table lists the USSD Gateway feature nodes available from the UIS Portal palette group and the fast key for each feature node in the list. You can use fast keys to search for feature nodes in the palette or the canvas.

Note: If any custom feature nodes have been created and installed to fit your specific customer requirements, they will not appear in this list.

Node name	Node description
<i>Language Setting</i> (on page 556)	Enables the caller to select the language they want to use for this service. Fast key: UPC3
<i>Send Buffer</i> (on page 559)	Sends data to the SMSC. Fast key: UPC5
<i>User Input</i> (on page 561)	Collects input from the calling party. Fast key: UPC4
<i>User Selection</i> (on page 566)	Enables user selection from a menu. Fast key: UPC2
<i>Version Branching</i> (on page 570)	Branches on the Version of MAP used. Fast key: UPC1

Language Setting

Node description

The Language Setting node enables the subscriber to select one of a set of configured languages.

This node plays an announcement to the user, prompting them to select a language to use for the USSD call. This user's temporary profile is updated with the selected language.

Note: The selection only lasts for the duration of the call.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

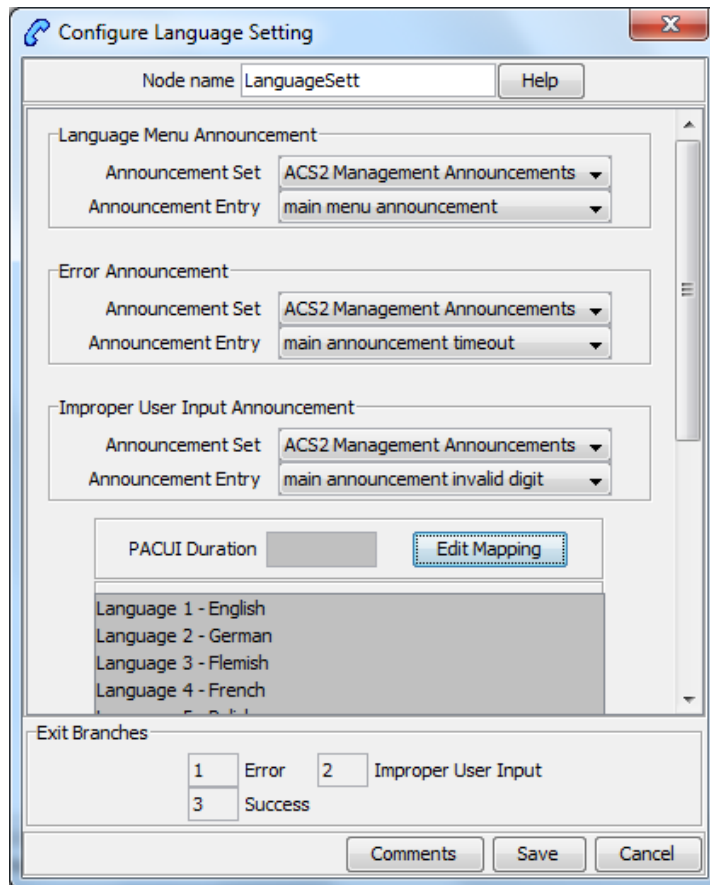
Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Error	Node encountered an error during execution. The Error or Timeout announcement will be played.
2	Improper User Input	User entered a digit which does not map to a language.
3	Success	Temporary profile updated with selected language.

Configuration screen

Here is an example Configure Language Setting screen.

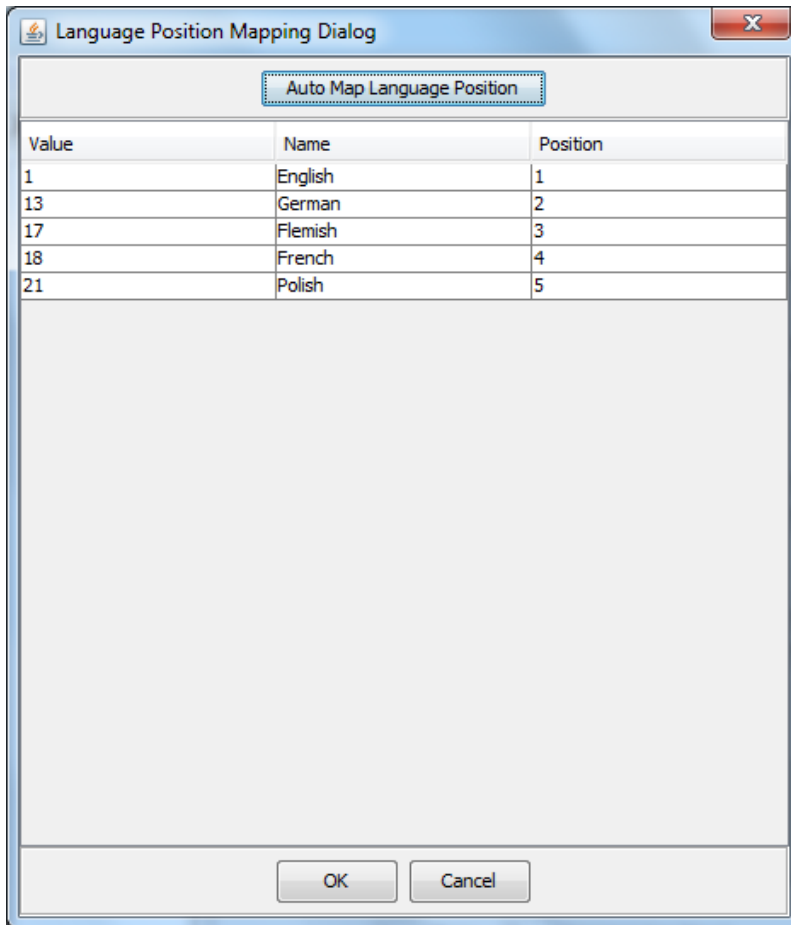


Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	In the Language Menu Announcement area, select the Announcement Set which contains the language menu announcement you want to play to the caller. Result: The Announcement Entry field is populated with the entries for the selected set.
2	From the Announcement Entry drop-down list, select the announcement you want to play to the caller.
3	In the Error Announcement area, select the Announcement Set and Announcement Entry you wish to play for an error.
4	In the Improper User Input Announcement area, select the Announcement Set and Announcement Entry you wish to play if the user has input incorrectly.
5	In the PACUI Duration field type the number of seconds' duration to play announcement and collect user information.
6	Click Edit Mapping . Result: You see the Language Position Mapping Dialog.

Step Action



7

Use the Language Position Mapping Dialog screen to construct a list of ordered languages. This screen displays a grid populated with all of the available languages. The grid has three columns:

- Value - This column contains the language id / value that is sent to the gateway interface. This value will be a number between 0 and 19. Any changes you make to this column will be ignored.
- Name - The language name, for example English, French, or German. Any changes you make to this column will be ignored.
- Position - The position column is used to determine which languages will be included in the list and in what order.

A valid list will contain:

- At least one language (starting at position 1)
- The positions numbered consecutively, for example. 1, 2 and 3
- No more than one language for any given position. If more than one language is mapped to the same position then an error will be generated when **OK** is clicked

You can map the positions of the languages in one of the following ways:

- Manually
- Automatically

Step	Action
8	<p>To manually map the languages:</p> <ol style="list-style-type: none"> Click on the Position cell in the row for the language. Type the number in the cell Repeat for each language. <p>To automatically map the language positions:</p> <ol style="list-style-type: none"> Click Auto Map Language Position. <p>Result: A list will be generated which contains all of the available languages, positioned in the order that they are stored in the system database. You can subsequently manually edit this configuration if required.</p>
9	<p>Click OK.</p> <p>Result: Validation checks are carried out to determine whether or not the criteria detailed above has been met. If not, you will be informed via an error dialog. If the validation checks are successful, then the dialog box will close, and the language list on the Configure Language Setting screen will be updated.</p>

Send Buffer

Node description

The Send Buffer node sends the final selection buffer that has been built through the various Menu Selection and User Entry macro nodes to an SMSC through the UCP Interface.

Once the final selection buffer has been sent, the Send Buffer node writes an EDR to record the transaction.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Both the final selection buffer, and the CDR have been successfully sent.

Exit	Cause	Description
2	Error	Node encountered an error receiving or sending data.
3	Empty Buffer	Final selection buffer retrieved from the configured ProfileTag has been allocated but is empty. This situation will occur if the previous node in the call plan was a menu selection node that was set to clear the buffer.
4	No Buffer	Final selection buffer does not exist. Suggests a configuration error in the CPE.
5	Length Exceeded	Received buffer length exceeded 255 characters.

Configuration screen

Here is an example Configure Send Buffer screen.

Configure Send Buffer

Node name: SendBuffer Help

Originating Address
Called Party Number: 1

Destination Address
Called Party Number: 1

Generate CDRs Charge CDR

Strip Last Space

UCP Interface Name: _____

Send Text

Send Buffer ID: 1

Message Class: Not Set

Exit Branches

1	Success	2	Error
3	Empty Buffer	4	No Buffer
5	Length Exceeded		

Comments Save Cancel

Configuring the node

Follow these steps to edit the node configuration.

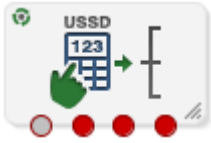
Step	Action
1	<p>In the Originating Address field, select an address from the list:</p> <ul style="list-style-type: none"> ▪ Called Party Number ▪ Calling Party Number ▪ Normalised Called Party Number ▪ Normalised Calling Party Number ▪ Pending TN Buffer ▪ Application Buffer ▪ Manually Inserted <p>For details on normalization, refer to either the <i>USSD Gateway</i>, or the <i>ACS Technical Guide</i>.</p>
2	<p>If you selected:</p> <ul style="list-style-type: none"> • Application Buffer, select the buffer value from the drop down list to the far right of the field. • Manually Inserted, type the originating address in the text field to the right of the field. Maximum of 31 characters.
3	<p>In the Destination Address field, select an address from the list. This will normally contain the MSISDN of the subscriber using the service.</p> <p>The available options are the same as for the originating address.</p>
4	<p>Select the Generate CDRs check box if you wish to generate CDRs.</p> <p>Note: You can view these CDRs on the UPC CDR Viewer Screen.</p>
5	<p>Select the Charge CDR check box if you wish to charge CDRs.</p>
6	<p>Select the Strip Last Space check box if you wish to strip the last space from the buffer.</p>
7	<p>Type the name of the UCP interface to be used.</p> <p>This alphanumeric field can be populated with up to 19 characters.</p>
8	<p>The Send Text option allows you to enter hard coded text, in the text field, which is sent to the UCP interface at run time.</p>
9	<p>The Send Buffer ID option allows you to select the buffer, in the drop down box, in which data is collected.</p>
10	<p>The Message Class drop-down menu selects "Not Set".</p> <p>Note: This feature is for future enhancements.</p>
11	<p>Click Save.</p>

User Input

Node description

This node plays an announcement to the subscriber which prompts them for input. It then collects the input and appends it to the configured selection buffer.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Error	Node encountered an error during execution.
2	Improper User Input	There was a problem with the user's input.
3	Success	Node executed correctly.
4	VA type non-digit	Problem using the Variable Part Announcements configuration.

Configuration screen

Here is an example Configure User Input screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	In the Service IF field, select the service from the drop down list. Note: The list is populated with all the Service Interface names created by the USSD Gateway Base Configuration screen, Service Interface tab.
2	In the Menu field, select the menu from the drop down list. The list is populated with all the Menu names created by the USSD Gateway Menu Configuration screen, Menu Info tab which was created for a particular Service Interface. Note: If the menu has been set up containing variable parts, but a different number of variables have been set up in the text for MAP 1 and MAP 2, you will see an error, for

example:



In this example, the MAP 1 menu has 3 variables, but the MAP 2 has only 2.

You must correct this using the Menu Language tab before you can select the menu.

- 3 The field to the right of the Variable Parts button displays the number of variable parts contained within the selected menu.

If the value displayed in the field is not 0, then the menu item contains variable parts. These are displayed in the MAP 1 and MAP 2 text display boxes, as pairs of percentage symbols (%%). See *Menu Language* for details.

You must click **Variable Parts** to open the Variable Part Announcement screen and insert substitutions for each variable part in the message. See *Setting Variable Part Announcements* (on page 565).

- 4 Select the option of where to store the user input:

- Profile - This allows you to select Profile Blocks and Primary Tags
- Buffer - This allows you to enter information into a buffer.

- 5 If you selected:

- Profile option, select the:
 - **Pattern List Profile Block** and
 - **Pattern List Primary Tag**.

For the USSD Gateway service, the following profiles are writable to the database:

- Customer
- Call Plan
- CLI Subscriber
- Service Number

In addition the following is specified as a temporary profile, stored in memory:

- Application Specific 7

For more information on Profile Blocks and tags, refer to the *CPE User's Guide*.

- Buffer option - fill in the following field:
 - **Buffer ID** - This drop-down menu allows you to select which buffer to use to store the user input.

Note: The USSD Gateway Portal run-time system uses ten data buffers to store data.

- 6 In the **Duration** field, set the length of time, in seconds that the user has to enter their selection.

Note: Optional

- 7 In the **Min Digits** and **Max Digits** fields, set the minimum and maximum number of digits the user is required to input.

- 8 Ticking the **Add Space** check box will add a space at the end of the string entered into the buffer.

- 9 Ticking the **Clear Buffer** check box will clear any value entered into the buffer before any selection has been entered.

- 10 In the **Language** field, select the language to use.
This is populated with the language names created by the USSD Gateway Base Configuration screen, Language tab.
The **MAP 1** and **MAP 2** fields will display the text information presented to the user using a MAP1 or MAP2 version device, in the selected language.
- 11 Click **Save**.

Setting Variable Part Announcements

If the menu contains one or more variable announcement parts, use the Variable Part Announcement screen to define each variable part.

Here is an example Variable Part Announcement Dialog.

This example contains four variable parts, each illustrating a different option from the list of buffers.

Buffers

Here are the buffers available in the Variable Part Announcements Dialog and the action to perform when the buffer is selected.

Buffer	Action
Called Party Number Calling Party Number Normalised Called Party Number Normalised Calling Party Number Pending TN Buffer	No further action required
Application Buffer	Select the buffer used to store the user input in the drop down list
Manually inserted	Type a value in the text field.

Buffer	Action
Profile Location.	Select the: <ul style="list-style-type: none"> • Pattern List Profile Block and • Pattern List Primary Tag. For more information on Profile Blocks and tags, refer to <i>CPE User's Guide</i> .

For a description of the buffers, refer to *CPE User's Guide*.

User Selection

Node description

The User Selection node displays a menu and collects the user's choice. The node matches the choice to a keyword in the UPC menu string. If a keyword matches, it is appended to the final selection buffer.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

Node exits

The User Selection node has one entry and may have 5 through 25 exits. Each exit is mapped to a day of week range, and must be connected to an appropriate node. You can configure the number of exits using the *Editing the number of exit branches* (on page 568).

Exit	Cause	Description
1	Error	Node encountered an error during execution.
2	Improper User Input	User Selection doesn't match keyword choice.
3	VA type non-digit	Problem using the Variable Part Announcements configuration.
4	0	User selected 0.
5	*	User selected *.

Configuration screen

Here is an example Configure User Selection screen.

Configure User Selection

Node name: UserSelectio

Service IF: ACS

Menu: 2nd Menu

Buffer ID: 1 Duration:

Add Space Clear Buffer Num Selections: 5

Parts: 0

Supplementary Information

Language: English

Exit 6:
Exit 7:
Exit 8:
Exit 9:

MAP 1 MAP 2

Enter team Map 1

Exit Branches

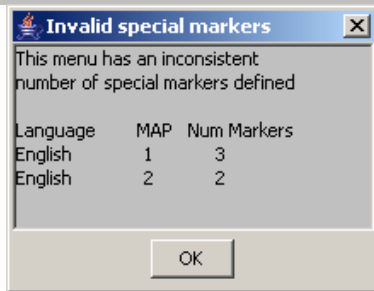
1	Error	2	Improper User Input
3	VA type non-digit	4	0
5	*		

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	In the Service IF field, select the service from the drop down list. Note: The list is populated with all the Service Interface names created by the USSD Gateway Base Configuration screen, Service Interface tab.
2	In the Menu field, select the menu from the drop down list. The list is populated with all the Menu names created by the USSD Gateway Menu Display screen, Menu Language tab which was created for a particular Service Interface. Note: If the menu has been set up containing variable parts, but a different number of variables have been set up in the text for MAP 1 and MAP 2, you will see an error, for example:

Step	Action
------	--------



In this example, the MAP 1 menu has 3 variables, but the MAP 2 has only 2.

You must correct this using the Menu Language tab before you can select the menu.

- 3 Fill in the **Buffer ID** field. This drop-down menu allows you to select which buffer that the user input has been stored in.

Note: The USSD Gateway Portal run-time system uses ten data buffers to store data.

- 4 In the **Duration** field, set the length of time, in seconds that the user has to enter their selection.

Note: Optional

- 5 Ticking the **Add Space** check box will add a space at the end of the string entered into the buffer.

- 6 Ticking the **Clear Buffer** check box will clear any value entered into the buffer before any selection has been entered.

- 7 The field to the left of the Parts button displays the number of exits listed in the field below the **Language** field, which displays the Exit-Keyword mapping set up in the User Selection tab.

Note: To make these exits available, you must add the required number of exits to the node. See *Editing the number of exit branches* (on page 568).

- 8 The field to the right of the Parts button (**Num Selections**) displays the number of variable parts contained within the selected menu.
If the value displayed in the field is not 0, then the menu item contains variable parts. These are displayed in the MAP 1 and MAP 2 text display boxes, as pairs of percentage symbols (%%). See Menu Language for details.

You must click **Parts** to open the Variable Part Announcement screen and insert substitutions for each variable part in the message. See *Setting Variable Part Announcements* (on page 569).

- 9 In the **Language** field, select the language to use.

This is populated with the language names created by the USSD Gateway Base Configuration screen, Language tab.

- 10 Selecting the **MAP 1** and **MAP 2** options will display, in the field below, the text information presented to the user using a MAP1 or MAP2 version device, in the selected language.

- 11 Click **Save**.

Editing the number of exit branches

Follow these steps to edit the number of exit branches of a node.

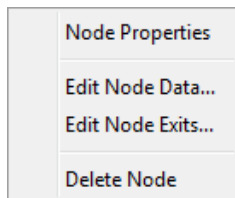
Step	Action
------	--------

- 1 Ensure Call Plan Editor is in Graphical mode.

- 2 Right-click on node you want to change the number exits for.

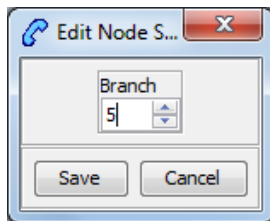
Step	Action
------	--------

Result: You see a shortcut menu.



3 Click **Edit Node Exits**.

Result: You see the Edit Node Structure screen.



4 Use the arrows to change the number displayed. The up arrow will increase the displayed number and the down arrow will decrease the displayed number.

The number of exits on the node will now reflect the number that was entered into the Edit Node Structure screen.

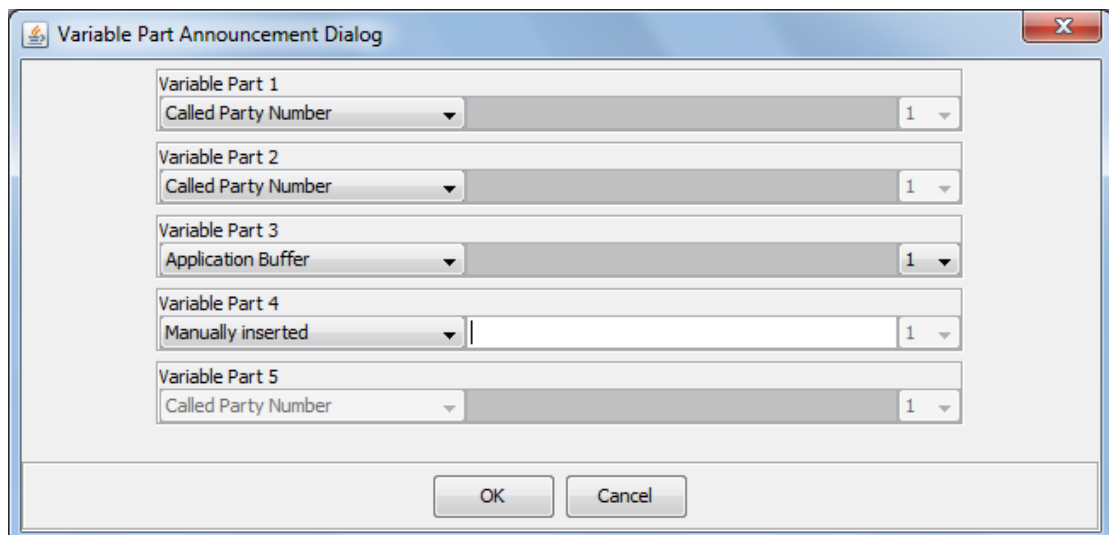
5 Click **Save**.

Result: The Edit Node Structure screen will close.

Setting Variable Part Announcements

If the menu contains one or more variable announcement parts, use the Variable Part Announcement screen to define each variable part.

Here is an example Variable Part Announcement Dialog.



This example contains four variable parts, each illustrating a different option from the list of buffers.

Buffers

Here are the buffers available in the Variable Part Announcements Dialog and the action to perform when the buffer is selected.

Buffer	Action
Called Party Number Calling Party Number Normalised Called Party Number Normalised Calling Party Number Pending TN Buffer	No further action required
Application Buffer	Select the buffer used to store the user input in the drop down list
Manually inserted	Type a value in the text field.

For a description of the buffers, refer to *CPE User's Guide*.

Version Branching

Node description

The Version Branching node attempts to determine which version of MAP is being used for the call. It branches on MAP version or takes a default exit if a version cannot be determined.

The node determines the subscriber's MAP version by querying the Additional Calling Party Number using the IDP Query action.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

This node may be used any number of times within a control plan.

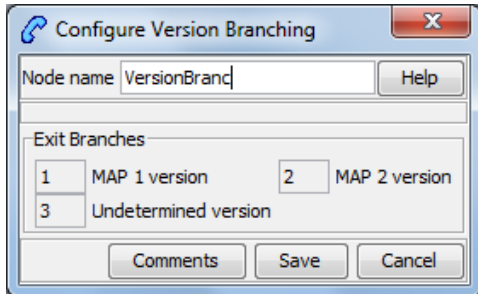
Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	MAP 1 version	Call is using MAP1.
2	MAP 2 version	Call is using MAP2.
3	Undetermined version	MAP version could not be determined.

Configuration screen

Here is an example Configure Version Branching screen.



Configuring the node

This node may have a Tracking String added. It does not require any other configuration.

Click **Save** to save the node.

VPN Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller VPN feature nodes.

In this chapter

This chapter contains the following topics.

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VPN Set Tariff Code From Profile	598
VPN Subscriber Lookup	599
VPN Terminating CUG	601
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Available Feature Nodes

VPN Feature Nodes List

This table lists the Convergent Charging Controller feature nodes available from the VPN palette group in the Control Plan Editor. If any custom feature nodes have been created and installed to fit your specific customer requirements, they will not appear in this list.

Node Name	Node Description
<i>VPN Analyze</i> (on page 579)	Used to break down the digits contained in the Pending TN Buffer.
<i>VPN Load Station</i> (on page 586)	Used to load an alternate calling station profile.
<i>VPN Lookup</i> (on page 588)	Used to translate an OnNet number to the corresponding Network address from VPN_STATION in the database.
<i>VPN CLI Lookup</i> (on page 583)	Used to set the Originating Network ID for the current service interaction.
<i>VPN Mobile Analyze</i> (on page 590)	Used to break down the digits contained in the Pending Termination Number Buffer.

Node Name	Node Description
<i>VPN Caller is On-Net</i> (on page 582)	Used to check if the incoming caller is on-net.
<i>VPN Get Hunting Number</i> (on page 585)	Used to search a list of termination numbers and timeout pairs.
<i>VPN Redirection Counter Branching</i> (on page 594)	Allows comparison of the Redirection Information Counter received in the invoking message.
<i>VPN Set Redirection Counter</i> (on page 596)	Allows an integer constant to be set as the redirection information counter.
<i>VPN Set Tariff Code From Profile</i> (on page 598)	Used to add network charging data to the next outgoing TCAP primitive.
<i>VPN Subscriber Lookup</i> (on page 599)	Allows you to look up a number buffer and load the VPN network and station profiles associated with that number.
<i>VPN Voice Mail Number Configuration</i> (on page 604)	Allows modification of the Pending Termination Number to provide compatibility with voicemail systems.
<i>VPN Originating CUG</i> (on page 593)	Analyzes the calling and called numbers contained in the Calling Private Network or Logical Calling Buffer, and the PendingTN Buffer, respectively.
<i>VPN Terminating CUG</i> (on page 601)	Analyzes the calling and called numbers contained in the Calling Private Network or Logical Calling Buffer, and the PendingTN Buffer respectively.

Profile Blocks and Fields

Nodes using profile blocks

The following VPN nodes use the profile blocks listed below:

- *VPN Analyze* (on page 579)
- *VPN Mobile Analyze* (on page 590)
- *VPN Set Tariff Code From Profile* (on page 598)

Profile block availability

The service loader you are using determines the profile blocks that are available to the control plan and whether they are read-only or can be updated. All service loaders include the Global Profile.

For example, you can read the VPN Network Profile, VPN Station Profile and Customer Profile if the VPN service loader is used.

The VPN service loader specifies the Station Profile as updateable and the Network Profile as read-only. This means that any nodes that can write back to a profile can update the VPN Station Profile in the database.

The service loader also specifies the uses of Application Specific profiles 1-8. Some of these will be specified as temporary profiles, which are never written back to the database and are cleared at the end of the call. They can be used for such things as moving data from one application to another within the control plan (for example between a USSD node and a DAP node).

Profile block list

Here are the profile blocks.

Name	Description
VPN Network Profile	Contains most of the information you can specify in the VPN edit network, for example: <ul style="list-style-type: none"> • Account code maximum length • Outgoing barred/allowed list type • Incoming barred/allowed list type • VPN network SD no check • VPN present private address Note: Only relevant if you have the VPN service installed.
VPN Station Profile	Contains most of the information you can specify in the VPN edit station, for example: <ul style="list-style-type: none"> • Outgoing barred/allowed list type • Incoming barred/allowed list type • VPN bar all incoming • VPN bar off network incoming Note: Only relevant if you have the VPN service installed.
Customer Profile	Contains customer information, for example: <ul style="list-style-type: none"> • Incoming barred/allowed list type • Incoming barred/allowed list • PIN rights • Default language • Incoming barred/allowed ignore • Termination number ranges • Termination number range policy
Control Plan Profile	This profile contains current switch node exits only.
Global Profile	Contains global information, for example: <ul style="list-style-type: none"> • PIN rights • Multi-lingual announcements • Default language • Control plan version hiding
CLI Subscriber Profile	Contains most of the information you can specify in the CLI tab of the Numbers screen, for example: <ul style="list-style-type: none"> • Account Code • Language • Follow me number Note: Only relevant to the 0800 service.

Name	Description
Service Number Profile	<p>Contains most of the information you can specify in the Service Number tab of the Numbers screen, for example:</p> <ul style="list-style-type: none"> • Account code • Language • Follow me number <p>Note: Only relevant to the 0800 service.</p>
App Specific Profile 1 App Specific Profile 2 App Specific Profile 3 App Specific Profile 4 App Specific Profile 5 App Specific Profile 6 App Specific Profile 7 App Specific Profile 8	<p>Contains information specific to an application (for example, Messaging Manager or CCS).</p> <p>Note: Unless it is in use by a specific application, these profiles, for example, App Specific Profile 7 can be specified as a temporary profile (where nothing is written back to the database) in order to pass information from one application to another, for example between USSD and DAP).</p>
Any Valid Profile	Allows you to search for tags in all profiles that have been loaded.

ACS primary tags

Here is a list of ACS primary tags.

Description	Hex	Decimal
DO NOT USE	0x0000	0
PIN Prefix	0x0001	1
PIN Length	0x0002	2
Account Code Prefix	0x0003	3
Account Code Max Length	0x0004	4
A/S Prefix	0x0005	5
A/S Length	0x0006	6
Off Net Prefix	0x0007	7
S/D Prefix	0x0008	8
Outgoing Barred/Allowed List Type	0x0009	9
Outgoing Barred/Allowed List	0x000a	10
Incoming Barred/Allowed List Type	0x000b	11
Incoming Barred/Allowed List	0x000c	12
Account Code Values	0x000d	13
Account Code Policy	0x000e	14
-RESERVED-	0x000f	15
Divert RSF	0x0010	16
Divert Busy	0x0011	17
Divert No Answer	0x0012	18
Divert Follow Me	0x0013	19
Divert TOW Schedule	0x0014	20
PIN Digits	0x0015	21

Description	Hex	Decimal
PIN Rights	0x0016	22
Off Net Bar	0x0017	23
Follow on Break Out Sequence	0x0018	24
Station is Manager	0x0019	25
Speed List	0x001a	26
Divert Barred/Allowed List Type	0x001b	27
Divert Barred/Allowed List	0x001c	28
Divert Locations	0x001d	29
Break Limit	0x001e	30
LCR Old National	0x001f	31
LCR New National	0x0020	32
LCR Old International	0x0021	33
LCR New International	0x0022	34
Multi Lingual Announcements	0x0023	35
Number Lists	0x0024	36
Language	0x0025	37
Switch Configuration	0x0026	38
Virtual Message List	0x0027	39
Number Of Messages	0x0028	40
GUI Language	0x0029	41
Carrier Code	0x002a	42
Barred Categories	0x002b	43
Outgoing Barred/Allowed Ignore	0x002c	44
Incoming Barred/Allowed Ignore	0x002d	45
Divert Barred/Allowed Ignore	0x002e	46
Account Code Minimum Length	0x002f	47
Timezone Geographical Map	0x0030	48
PIN Encryption Method	0x0031	49
Silent Disconnect	0x0032	50
Postpaid Flag	0x0033	51
Hunt On Busy	0x0034	52
Hunt On No Answer	0x0035	53
Hunt Always	0x0036	54
Hunt RESERVED	0x0037	55
Help Line Address	0x0038	56
Legacy	0x0039	57
Disable	0x003a	58
VARs	0x003b	59
VARs Mapping	0x003c	60
Toll Free Beep ID	0x003d	61
Toll Free Beep Type	0x003e	62

Description	Hex	Decimal
Termination Number Ranges	0x003f	63
Termination Number Range Policy	0x0040	64
Control Plan Version Hiding	0x0041	65
Toll Free Beeps Required	0x0042	66
Bar Pay Phone Callers	0x0043	67
Bar Cell Phone Callers	0x0044	68

Note: Each service may have its own specific tags in a separate tag range.

VPN primary tags

Here is a list of the VPN primary tags, used in the VPN service.

Description	Hex	Decimal
Network SD No Check	0x30001	196609
Present Private Address	0x30002	196610
Bar All Incoming	0x30003	196611
Bar Off Network Incoming	0x30004	196612
PIN Prefix	0x30005	196613
Account Code Prefix	0x30006	196614
Alternate Station Prefix	0x30007	196615
Off Network Prefix	0x30008	196616
Speed Dial Prefix	0x30009	196617
PIN Length	0x3000a	196618
Account Code Length	0x3000b	196619
Station Length	0x3000c	196620
Off Network Call Barred	0x3000d	196621
Station Is Manager	0x3000e	196622
Restrict Calling Address	0x3000f	196623
Allow Short Extensions	0x30010	196624
Hunting List 1	0x30011	196625
Hunting List 2	0x30012	196626
Hunting List 3	0x30013	196627
Hunting List 4	0x30014	196628
Hunting List 5	0x30015	196629
Hunting List Default	0x30016	196630
Hunting To List 1	0x30017	196631
Hunting To List 2	0x30018	196632
Hunting To List 3	0x30019	196633
Hunting To List 4	0x3001a	196634
Hunting To List 5	0x3001b	196635
Hunting To List Default	0x3001c	196636
Send Identical CPN	0x3001d	196637
Match Undefined Extensions	0x3001e	196638

Description	Hex	Decimal
Hunting Configuration	0x30020	196640
Hunting Scheduling	0x30060	196704
SCI ID	0x30100	196864
SCI Data	0x30101	196865
Dialing Prefix Length	0x30200	197120
Calling On Network List	0x30310	197392
Calling On Network List Type	0x30311	197393
Calling Off Network List	0x30320	197408
Calling Off Network List Type	0x30321	197409
Calling PIN Always List	0x30330	197424
Calling PIN Always List Type	0x30331	197425
Calling PIN Never List	0x30340	197440
Calling PIN Never List Type	0x30341	197441
Called On Network LIST	0x30350	197456
Called On Network List Type	0x30351	197457
Called Off Network List	0x30360	197472
Called Off Network List Type	0x30361	197473
Called PIN Always List	0x30370	197488
Called PIN Always_List Type	0x30371	197489
Called PIN Never List	0x30380	197504
Called PIN Never List Type	0x30381	197505

Zones

VPN work zone functionality relies on profile fields of the zone type being set up in ACS. For more information about zone profile fields, see *ACS User's Guide* and *Location Capabilities Pack User's Guide*.

VPN Analyze

Node description

The VPN Analyze node allows you to break down the digits contained in the Pending TN Buffer. It parses the optional VPN prefix fields, placed into dedicated buffers, and the content and type of the actual termination number, placed in Pending TN Buffer. Depending on the outcome, it may replace the original content of the Pending TN Buffer.

VPN Analyze checks the following:

- VPN Network Site Code
- Mapped Network Prefix
- Optional Prefixes
- Termination Number

Node description

VPN Network Site Code

The first digits in the Pending TN Buffer are compared with the site codes for all defined VPNs. If a match is found, then the network id for the VPN of the matched site code is compared with the network id for the current VPN. If the ids are the same, then the Pending TN Type is set to 'Private' (called number is on-net). If they are different, then the Pending TN Type is set to 'Public' (called number is off-net).

Mapped Network Prefix

If no match is found for the VPN site code, then VPN Analyze tries to match the first digits of the Pending TN Buffer against all the mapped network prefixes of the owning VPN. If a match is found then the site code of the VPN of the matched network prefix is replaced in the Pending TN Buffer by the mapped network prefix. The network id of the VPN for the matched network prefix is compared with the network id for the current VPN. If the ids are the same, then the Pending TN Type is set to 'Private' (called number is on-net). If they are different, then the Pending TN Type is set to 'Public' (called number is off-net).

Optional Prefixes

The dialed digits can be prefixed with one or more of the following components. They can appear in any order.

PIN Number:	Indicated by the PIN Prefix. If present, this is placed in the PIN Buffer.
Account Code:	Indicated by the Account Code prefix. If present, this is placed in the Account Code Buffer.
Alternate Station ID:	Indicated by the Alternate Station prefix. If present, this is placed in the Calling OnNet Address Buffer.

Termination Number

Only one of the following must be present. This must be the last item in the digits string.

Speed Dial:	Indicated by the Speed Dial prefix. There must be at least one and at most three digits remaining. The remaining digits are taken as the speed dial number and are copied into the Sub-Tag Buffer as a numeric value.
Off-Net:	Indicated by the Off Net prefix. The remaining digits are taken off net number and are copied into the Pending TN Buffer.
On-net:	In the absence of either of the above prefixes, the remaining digits are considered to be an On-Net address and are copied into the Pending TN Buffer.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

Available in VPN.

Restrictions

Telephony is not permitted after the CollectFail branch.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The decode did not fail and no alternate station was found.
2	AltStation	An alternate station has been found
3	DecodeFail	A decode failure has occurred.
4	CollectFail	A collect info failure has occurred.

Configuration screen

Here is an example Configure VPN Analyze screen.

Configure VPN Analyze

Node name: VpnAnalyze Help

Exclude Flags: 0

Profile Block: VPN Network Profile

Collect Info: Get More Digits

Speed Dial Buffer: Buffer ID

Exit Branches: 1 Success, 2 AltStation, 3 DecodeFail, 4 CollectFail

Comments Save Cancel

Configuring the node

Follow these steps to set prefix numbers.

Step	Action
1	Options can be excluded using the following values in the Exclude Flags box. Exclude: <ul style="list-style-type: none"> • Alternate Station = 0x1 • PIN number = 0x2 • Account Code = 0x4 • Off-Net number = 0x8 • Speed-Dial number = 0x10
2	The Get More Digits box lets you specify that CollectInformation should be used if there are insufficient digits for parsing.
3	The Buffer ID value for the Speed Dial Buffer must be 5, to match the Collect To SubTag buffers (which are currently fixed at 5 and cannot be modified).
4	Click Save .

Note: Decode failure occurs when:

- Insufficient digits are present to decode an optional prefix.
- Field already parsed.
- Excluded fields are present.

VPN Caller is On-Net

Node description

The VPN Caller is On-Net node allows you to check if the incoming caller is on-net.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

Available in VPN.

Restrictions

A control plan may contain as many VPN Caller is On-Net nodes as required.

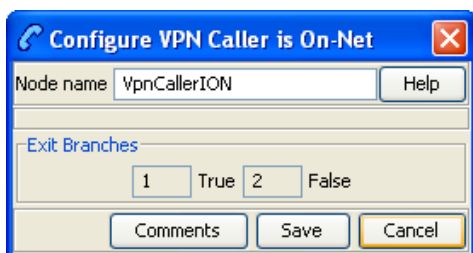
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Yes	A private calling and called address is defined and the calling network ID matches the called network ID.
2	No	no match

Configuration screen

Here is an example Configure VPN Caller is On-Net screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

VPN CLI Lookup

Node description

The VPN CLI Lookup node allows you to set the Originating Network ID for the current service interaction. The node matches a calling number buffer with the physical address of a VPN station.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

Available in VPN.

Restrictions

A control plan may contain as many VPN CLI Lookup feature nodes as required.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	On This Net	The value matched the physical address of a VPN station in this network.
2	On Another Net	The value matched the physical address of a VPN station in another network.
3	Off Net	The value did not match any known VPN station physical address.
4	Macro Fail	There was a failure.

Configuration screen

Here is an example Configure VPN CLI Lookup screen.

Configuring the node

Follow these steps to configure the VPN CLI Lookup.

Step	Action
1	<p>You can set the node to check the:</p> <ul style="list-style-type: none"> • Calling Logical number buffer, • Calling Network value, or • Calling Party ID

Step	Action
	from the invoking message.
	Note: If multiple buffers have been selected, the first will be used.
2	Click Save .
	Result: The node will then branch based on the result.

VPN Get Hunting Number

Node description

Warning: This feature node has now been deprecated and should no longer be used. This feature node will still function in existing control plans. For new control plans please use the **Get Hunting Number** feature node.

The VPN Get Hunting Number feature node allows you to search a list of termination numbers and timeout pairs. On each iteration, the node sets the PendingTN and timeout using the next number on the list until no numbers remain.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

Available in VPN.

Restrictions

None.

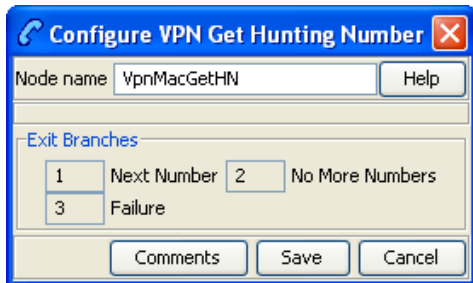
Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Next Number	A number is found
2	No More Numbers	No numbers remain
3	Failure	General failure

Configuration screen

Here is an example Configure VPN Get Hunting Number screen.



Configuring the node

The hunting numbers and timeouts are set for every station through the VPN Station Hunting Planner screen.

This node requires no configuration data. You may change the **Node name**, if required.

VPN Load Station

Node description

The VPN alternate station allows you to load an alternate calling station profile.

If defined, the network address of the station to call is in Calling On-Net Address. If it is not defined, then the VPN alternate station node prompts you to enter a station ID, using the specified announcements. You are prompted up to a defined maximum number of times before following the Not Loaded exit.

Node description

The Load Station process is described below.

Stage	Description
1	Calling on-net address is defined? If there is a value currently defined in the calling on-net address, then skip directly to stage 3.
2	Prompt for Input. <ul style="list-style-type: none"> • Check if max iterations reached (follow Not Loaded). • Collect a digit string, between 2 and 16 digits in length. • On input failure, increment the iteration counter and restart this stage (stage 2). • Also check here for Canceled (follow Not Loaded) or Abandoned (follow Abandoned).
3	Load the profile? <ul style="list-style-type: none"> • Load the specified station profile from the database. • Go to stage 4 on success. • If the data is not found and max iterations are reached then follow the Not Loaded branch. • Otherwise return to stage 2 for re-prompt.
4	Success. Update the callingOnNetAddress in the engine context to correspond to the new station

profile.

Notes:

- If you were prompted, then the collected digits are not placed in the engine context callingOnNetAddress buffer until the profile has been successfully loaded.
- If max iterations is set to 0, then the you should never be prompted. In this case the announcement ids may not actually be defined. This is permitted by the editor and compiler.
- This feature does not check the PIN for the remote profile, or any specific access rights. A subsequent PIN authorization feature node is typically required.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

Available in VPN.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	See node description.
2	Not Loaded	See node description.
3	Abandoned	See node description.
4	Collected	See node description.

Restrictions

Telephony is not permitted after the Abandoned branch.

Configuration screen

Here is an example Configure VPN Load Station screen.

Configuring the node

Follow these steps to edit the node

Step	Action
1	Select the Initial and Reprompt Announcements to set the initial prompt and re-prompt announcement.
2	Set the Max Iterations value to the number of retries.
3	Click Save .

VPN Lookup

Node description

The VPN Lookup allows you to translate an On-Net number to the corresponding Network address from VPN_STATION in the database. The node uses the PendingTN type to determine if a lookup should be performed.

The VPN Lookup process is described below.

Stage	Description
1	If the PendingTN type is:

Stage	Description
	<ul style="list-style-type: none"> • OffNet, or Unknown, return Success • SpeedDial, return Failure • OnNet, then go to stage 2
2	Look up the corresponding NETWORK address from VPN_STATION in the database using the current network ID. If: <ul style="list-style-type: none"> • Found, replace the pending TN with that OffNet address, and return Success • Otherwise, return Failure

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

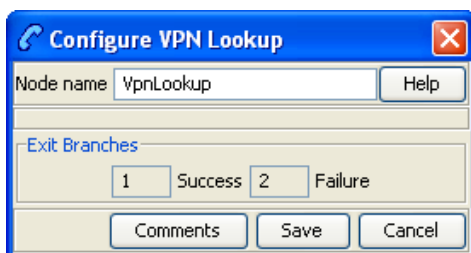
Available in VPN.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	See node description.
2	Failure	See node description.

Configuration screen



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

VPN Mobile Analyze

Node description

The VPN Mobile Analyze node allows you to break down the digits contained in the Pending Termination Number Buffer. This node differs from the VPN Analyze node in that it does not use the network defined prefixes to analyze the type of call being made, unless the option to strip prefixes is enabled in the configuration file.

The logic of the node is to check, in order:

- Network Site Code
- Mapped Network Prefix
- Global Special Numbers
- Network Speed Dial
- Station Speed Dial
- Network Station Extensions.

If a match is:

- Found, the number type is set accordingly and the node exits through the appropriate exit.
- Not found, the number of digits needed to make the shortest possible match is used to collect more digits and the whole process is started again.

This matching process is repeated until a valid match is found. If no match is found, then the number is assumed to be off-net and the off-net branch is taken.

Node description

Network Site Code

VPN Mobile Analyze compares the first digits in the pending TN buffer with the site codes for all defined VPNs. If a match is found, then the network ID of the VPN for the matched site code is compared with the network ID of the current VPN. If the IDs are the same, then the pending TN type is set to 'Private' (on-net), if they are different, it is set to 'Public' (off-net).

Mapped Network prefix

If there is no match for the network site code, then the first digits of the pending TN buffer are compared with all the mapped network prefixes of the owning VPN. If a match is found, then the site code of the VPN for the matched network prefix is replaced in the pending TN buffer by the mapped network prefix. In addition, the network ID of the VPN for the matched network prefix is compared with the network ID for the current VPN. If the IDs are the same, then the pending TN type is set to 'Private' (on-net), otherwise it is set to 'Public' (off-net).

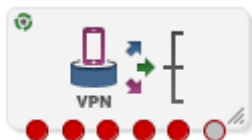
Stripping off number prefixes

When the corresponding configuration option in the `eserv.config` file is enabled, the node strips off the VPN network speed dial or off-net prefix prior to number matching. If a match is found, the node exits via the appropriate branch, depending on the applicable number match.

Global Special Numbers

The global special number check, network speed dial check, and station speed dial checks can be enabled and disabled using the check boxes in the node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

Available in VPN.

Restrictions

Telephony is not permitted after the Error branch.

Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Global Special	Match has been made with Global Special number.
2	Network Speed Dial	Match has been made with Network Speed Dial number.
3	Station Speed Dial	Match has been made with Station Speed Dial number.
4	On Net	Match was made with extension number of a VPN station on the same VPN Network as the caller.
5	Off Net	No match was made.
6	Error	General failure

Configuration screen

Here is an example Configure VPN Mobile Analyze screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the following check boxes to enable or disable the check comparisons against specific number lists: <ul style="list-style-type: none"> • Global Special • Network Speed Dial • Station Speed Dial
2	Enter the decimal value of the tag for the profile block in the text box below any selected box. Note: The tag for Speed Dial is 26. Refer to <i>Profile Blocks and Tags</i> (on page 2).
3	Click Save

VPN Originating CUG

Node description

The Originating CUG node analyzes the calling and called numbers contained in the calling private network or logical calling buffer, and the pending TN buffer, respectively.

It determines whether the calling and called numbers are in the same logical CUG, and it determines the CUG type. The following rules apply:

- If the calling number is in a restricted CUG, then the called number must be in the same CUG. If it is not in the same CUG, then the CUG failure branch of the node is followed.
- If a VPN station is in more than one CUG, one of which is non-restricted, then the VPN station is also deemed to be non-restricted.
- If the calling number is not in a CUG or it is in a non-restricted CUG, then the success branch of the node is followed.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

Available in VPN.

Restrictions

None.

Node exits

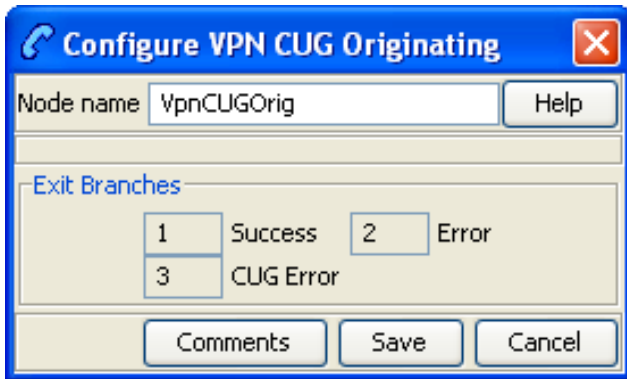
This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Decode succeeded as follows: <ol style="list-style-type: none"> 1 Calling number is not in CUG or it is in a non-restricted CUG. 2 Calling number is in a restricted CUG, called number is on-net and both numbers are in the same CUG.
2	Error	General errors: <ol style="list-style-type: none"> 1 ACS engine pending context PendingTN or Logical Address buffer may not contain enough digits. 2 Error returned from Oracle.
3	CUG Error	Decode failed as follows: <ol style="list-style-type: none"> 1 Calling number is in a restricted CUG, called number is on-net and

Exit	Cause	Description
		the numbers are in different CUGs.
2		Calling number is in a restricted CUG and called number is not in the same CUG (the called number may be on-net, off_net, on a different VPN, or a non VPN number).

Configuration screen

Here is an example Configure VPN CUG Originating screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

VPN Redirection Counter Branching

Node description

The Redirection Counter branching node allows you to compare the Redirection Information Counter received in the invoking message. The node lets you define an integer constant for the comparison. One of the following branches is taken, as appropriate:

- Less than
- Equal to
- More than

Note: If no value is supplied for the redirection counter, then the error branch is taken.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

Available in VPN.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Less Than	The redirection counter was less than the value.
2	Equal To	The redirection counter was equal to the value.
3	More Than	The redirection counter was more than the value.
4	Fail	The redirection counter was not supplied.

Configuration screen

Here is an example Configure Redirection Counter Branching screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Enter the number in the Compare with value field, against which the Redirection Information is compared.

Step	Action
2	Click Save .

VPN Set Redirection Counter

Node description

The Set Redirection Counter node allows you to set an integer constant as the redirection information counter. This value is then used as the redirection information counter in the next Connect message sent by the system.

You can also configure the following redirection information for inclusion in the Connect message:

- Indicator (for example, call was diverted)
- Original reason (for example, no reply)
- Redirection reason (for example, mobile subscriber busy)

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

Available in VPN.

Restrictions

A control plan may contain as many Set Redirection Counter feature nodes as required.

Node exits

The VPN Set Redirection Counter feature node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Redirection succeeded
2	Failure	Redirection failed

Configuration screen

Here is an example Configure Set Redirection Counter screen.

Configuring the node

Follow these steps to configure the Set Redirection Counter feature node.

Step	Action
1	From the Redirection Counter list, select the number of redirections to send in the connect message.
2	From the Redirection Indicator list, select the redirection indicator to send in the connect message.
3	From the Original Redirection Reason list, select the original reason for the redirection to send in the connect message.
4	From the Redirection Reason list, select the redirection reason to send in the connect message.
5	Click Save .

VPN Set Tariff Code From Profile

Node description

The Set Tariff Code node allows you to add network charging data to the next outgoing TCAP primitive. The node first looks at the station profile, then the network profile and finally the customer profile, and selects the network charging data, based on the first successful match.

The SCI/FCI data for the Customer/Network/Station can be accessed and set through the VPN Customer/Network/Station provisioning screens.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

Available in VPN.

Restrictions

A control plan may contain as many VPN Set Tariff Code from Profile nodes as required.

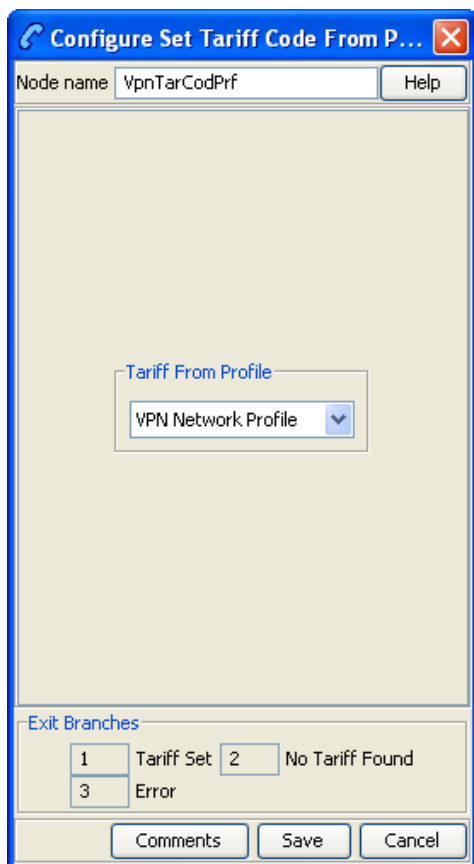
Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Tariff Set	Tariff successfully set
2	No Tariff Found	Tariff not found
3	Error	General failure message

Configuration screen

Here is an example Configure Set Tariff Code From Profile screen.



Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the Tariff From Profile from the list.
2	Click Save .

VPN Subscriber Lookup

Node description

The VPN Subscriber Lookup node allows you to look up a number buffer and load the VPN network and station profiles associated with that number. This will store them in chassis context so that other nodes (for example, Set Pending TN from Profile, Profile Branching) can use the information.

Note: This can be used with any service library, not just VPN.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many VPN Subscriber Lookup nodes as required. This node may be made available in Non-Graphical Editing mode (see *CPE User's Guide* for further explanation).

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Profile was successfully retrieved from the database.
2	Failure	Profile was not retrieved from the database.

Configuration screen

Here is an example Configure VPN Subscriber Lookup screen.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	Select the number buffer from the Which Number? drop down list. Available buffers are: <ul style="list-style-type: none"> • Dialed Service Number • Calling Logical Number • Calling Network Address • Calling Party ID • Pending Termination Number • Original Called Number
2	Click Save .

Note: For more information on number buffers, refer to the *CPE User's Guide*.

VPN Terminating CUG

Node description

The VPN Terminating CUG node analyzes the calling and called numbers contained in the Calling Private Network or Logical Calling Buffer, and the PendingTN Buffer respectively.

The node determines whether the calling and called numbers are in the same logical CUG, and also determines the CUG type. If required, it also collects the PIN for the called number's CUG. The following rules apply:

- If the CUG PIN is required, and the called number is in a CUG, and the calling number is not in a CUG, and the maximum number of retry attempts is reached, then the CUG PIN failure branch of the node is followed.
- If the called number is in a CUG, and the calling number is not in a CUG, and the correct PIN has been entered, then the success branch of the node is also followed.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

Available in VPN.

Restrictions

None.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Decode succeeded as follows: <ol style="list-style-type: none"> 1 Called number is not in a CUG. 2 Calling and called numbers are in the same CUG. 3 Called number is in a CUG, calling number is not in a CUG and correct PIN has been collected.
2	Error	General errors: <ol style="list-style-type: none"> 1 ACS Engine context PendingTN or Logical Address buffer may not contain enough digits. 2 Error returned from Oracle.
3	CUG Error	Decode failed as follows: <ol style="list-style-type: none"> 1 Available for future enhancements.
4	CUG PIN Error	Decode failed as follows: <ol style="list-style-type: none"> 1 Called number is in a CUG, calling number is not in a CUG and number of retry attempts for collecting the PIN has been exceeded.

Configuration screen

Here is an example Configure VPN CUG Terminating screen.

Configure VPN CUG Terminating

Node name:

Number of PIN Attempts

Collect PIN Introduction
 Announcement Set: (Unspecified Announcement Set) ▼
 Announcement Entry: (Unspecified Announcement Entry) ▼

Invalid PIN Entered
 Announcement Set: (Unspecified Announcement Set) ▼
 Announcement Entry: (Unspecified Announcement Entry) ▼

Maximum PIN Attempts Reached
 Announcement Set: (Unspecified Announcement Set) ▼
 Announcement Entry: (Unspecified Announcement Entry) ▼

Exit Branches

1	Success	2	Error
3	CUG Error	4	CUG PIN Error

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Enter the number of retry attempts for collecting the PIN in the Number of PIN Attempts field.
2	Select the Collect PIN Introduction announcement from the lists.
3	Select the Invalid PIN Entered announcement from the lists.
4	Select the Maximum PIN Attempts Reached announcement from the lists.
5	Click Save .

VPN Voice Mail Number Configuration

Node description

The Voice Mail Number Configuration node allows you to modify the Pending Termination Number to provide compatibility with voicemail systems. The node allows you to modify a selected number buffer by inserting some defined digits at an offset, also defined in the feature node.

Example:

Insert At Position: 5
 Insert What (Pattern): 888
 Buffer (Call Context Number): pendingTN (01473200)

In this case the final number would be 01473888200.

The final number is copied to the pendingTN buffer and the node is exited through the SUCCESS branch.

If the length of the final number is too long (typically 32 digits or more), or if there is no number available for the selected buffer under the processing call, then no number is copied to the pendingTN buffer and the node is exited though the ERROR branch.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Availability

Available in VPN.

Restrictions

A control plan may contain as many VPN Voice Mail Number Configuration nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	See node description.
2	Error	See node description.

Configuration screen

Here is an example Configure Voice Mail Number Configuration screen.

The screenshot shows a configuration window titled "Configure Voice Mail Number Configuration". At the top, there is a "Node name" field containing "VpnVMailConf" and a "Help" button. Below this is a section labeled "Insert At Position" with a text input field containing the number "0". Underneath is the "Insert What" section, which includes a large empty text area labeled "Pattern List" and a "Call Context Number" dropdown menu currently set to "Calling Logical Number". At the bottom of the window, there is an "Exit Branches" section with two fields: "1" labeled "Success" and "2" labeled "Error". Finally, there are three buttons at the very bottom: "Comments", "Save", and "Cancel".

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Enter the offset where the pattern list should be inserted in the Insert At Position field.
2	Enter the string to be inserted in the Pattern List field.
3	Select the buffer to use to form the final voice mail number from The Call Context Number drop down list.

Note: For a definition of each buffer, refer to the *CPE User's Guide*.

4	Click Save .
---	---------------------

XMS Content Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Messaging Manager XMS Content feature nodes.

In this chapter

This chapter contains the following topics.

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Keyword Search and Replace	616
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Text Content Branching.....	619

Available Feature Nodes

XMS Content Feature Nodes List

This table lists all the available Messaging Manager feature nodes in the XMS Content feature group. If any custom feature nodes have been created and installed to fit your specific customer requirements, they will not appear in this list.

Note: For information about the available Messaging Manager profile fields, see *Messaging Manager Profile Fields* (on page 12).

Node Name	Node Description
Extract Content (see page 608)	The Extract Content feature node extracts a part of a profile field, or incoming SMS message, and stores it in a specified profile field.
Extract Number (on page 611)	The Extract Number feature node extracts the MSISDN from business card data held in either the SMS TEXT context or configured profile field, and then stores the MSISDN in a profile field.
Format Text (see page 614)	The Format Text feature node enables a buffer to be populated with a formatted string based on a static string that may include place holders for the contents of other selectable buffers.
Keyword Search and Replace (see page 616)	The Keyword Search and Replace node branches, depending on whether or not a particular word was matched in the message.
Message Data Branching (on page 618)	The Message Data Branching node branches depending on whether the current message contains text or data, according to the data coding scheme.
Text Content Branching	The Text Content Branching node branches depending on the content of the

Node Name	Node Description
(see page 619)	short message.

Extract Content

Node description

The Extract Content feature node extracts a part of a profile field, or incoming SMS message, and stores it in a specified profile field.

Note: The part extracted is a string (that can represent a number or text) delimited by a white space character. For the various white space characters used by the supported alphabets see www.unicode.org.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Extract Content nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The required section of the SMS was extracted and stored.
2	Error	The section of SMS could not be extracted, for the following reasons: <ul style="list-style-type: none"> • The input type expected was numeric but the extracted section contained non numeric digits for the alphabet in use. • The input type expected was numeric but "+" found after the start of the extracted section. • The content did not match the expected content type. • There are not enough words in the source to match the word number extraction criteria.

Configuration screen

Here is an example Configure Extract Content screen.

The screenshot shows the 'Configure Extract Content' dialog box. The 'Node name' is 'ExtractCont'. The 'Source Buffer' section is configured with 'Source Location' set to 'Any Valid Profile', 'Source Field' set to 'CCS CWTR Name', and the 'Use SMS Payload' checkbox checked. The 'Input data' section has 'Word number/range' set to '1:3' and the 'Numeric' checkbox unchecked. The 'Destination profile' section has 'Location' set to 'App Specific 1' and 'Field' set to 'CCS CWTR Name'. The 'Exit Branches' section has two boxes labeled '1' and '2' with 'Success' and 'Error' respectively. The 'Comments', 'Save', and 'Cancel' buttons are at the bottom.

Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	<p>For the source, you can select either a profile, or the SMS buffer. To select:</p> <ul style="list-style-type: none"> • A profile, select the Source Location and Source Field • SMS buffer content, select the Use SMS Payload check box

Step	Action
2	<p>In the Word number field, enter the number of the word, or range of words, to extract from the source.</p> <p>Note: The Word number can be positive, zero or negative.</p> <p>Suppose the message reads "It was the best of times".</p> <ul style="list-style-type: none"> A positive number means that you count from the left-hand side, or start, of the message. Example: 3 would extract "the". 0 or 1 means select the first word on the left-hand side, or start, of the message. Example: 1 would extract "It". A negative number means count back from the right-hand side, or end, of the message. Example: -2 would extract "of". a number followed by a colon means from that numbered word to the end. Example: 3: would extract "the best of times". A colon followed by a number means from the beginning (word 1) to the number word specified. Example: :4 would extract "It was the best" A negative followed by a colon means count back from the right then all to the end. Example: -3: would extract "best of times". Two numbers separated by a colon means a range of first specified word to the last specified. Example: 3:5 would extract "the best of". Two negative numbers separated by a colon mean first number from the right to the second number from the right. Example: -4:-2 would extract "the best of" Just a colon (that is, ":") means the entire string. <p>Note: Some ranges, such as 3:-7 for this example will just produce a blank string in the target field and will exit from the Error branch because there are not enough words.</p>
3	If the extracted word needs to be validated as a number, select the Numeric check box. The node will exit from the Error branch if the selection is not numeric.
4	Select the extracted content store location from the Location drop down list.
5	Select the store location field from the Field drop down list.
6	Click Save .

Example

Here is an example of the process, using the Extract Content node to extract the email forwarding address.

Stage	Description
1	Users can enable forwarding by sending an SMS, for example: Fwd on joe.bloggs@telco.com
2	The control plan would use the Format Text node to check if it was a valid message.
3	The Extract Content node is configured as shown below.

Result: This node would store the third word (that is, 'joe.bloggs@telco.com') in the user's profile under the 'Email Address' tag.

Extract Number

Node description

The Extract Number feature node extracts the MSISDN from business card data held in either the SMS TEXT context or configured profile field, and then stores the MSISDN in a profile field.

The node will process the provided text to extract a valid MSISDN. Non-numeric numbers will be ignored unless they constitute part of the number.

The following examples demonstrate valid formats:

- "(012) 345 6789"
- "0123,456,789"
- "+44-123-456"
- "+44 123 456789"
- "(+44)123-456789"

Note: The business card data must contain only one MSISDN. The MSISDN will be extracted without normalization.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Extract Number nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	MSISDN successfully extracted and stored in the specified profile field
2	Too Many Numbers	Unable to extract the MSISDN as there was more: <ul style="list-style-type: none"> • Than one number in the SMS context/profile field • Digits than the maximum allowed
3	Error	Either of the following: <ul style="list-style-type: none"> • An error occurred reading the business card data, for example. The business card did not contain an MSISDN or it was an invalid number. • Less than the minimum expected digits

Configuration screen

Here is an example Configure Extract number from business card screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the Business Card Source : <ul style="list-style-type: none"> • From Profile to locate the card in a profile • From SMS to locate the card in a message (the Source Profile section will be grayed out)
2	For a profile location, select the Source Profile from the Source Data Type, Location and Field drop down lists.
3	select the Destination Profile where the extracted MSISDN will be stored from the Destination Data Type, Location and Field drop down lists.
	Warning: Unexpected behavior encountered if the source and destination profiles are the same.
4	In the Minimum field, type the minimum length allowed for the MSISDN.
	Note: The error branch will be followed if the length of the extracted MSISDN is less than the defined minimum length.

Step	Action
5	In the Maximum field, type the maximum length allowed for the MSISDN. Note: The too many numbers branch will be followed if the length of the extracted MSISDN is greater than the defined maximum length.
6	Click Save .

Format Text

Node description

The Format Text feature node enables a buffer to be populated with a formatted string based on a static string that may include place holders for the contents of other selectable buffers.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Format Text nodes as required.

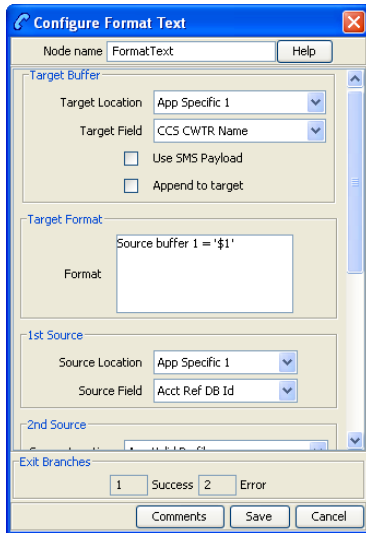
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The formatting was successful.
2	Error	There is something wrong with the format string and it cannot be formatted. The output buffer will be unchanged.

Configuration screen

Here is an example Configure Format Text screen.



Configuring the node

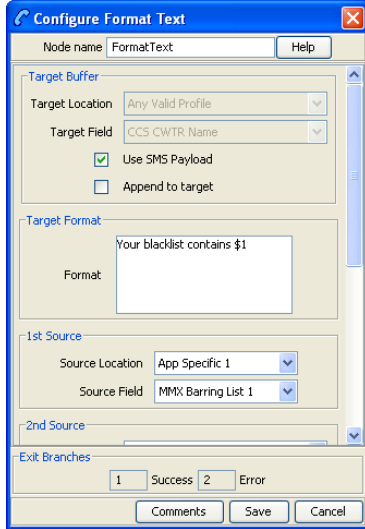
Follow these steps to configure the node.

Step	Action
1	<p>In the Target Buffer area, select the buffer to store the formatted string. You can:</p> <ul style="list-style-type: none"> • Select a Target Location and Target Field • Select the Use SMS Payload check box to populate the SMS buffer
2	<p>If you wish to add the text created in this node to the end of the existing contents of the target buffer, select the Append to target check box.</p>
3	<p>The Format field is where you supply the format of the string. This is free-form and allows any text. The variables starting with \$ will be substituted at run time by the text in the source buffer specified by the number, for example \$1 is the 1st Source, \$2 the 2nd Source.</p> <p>Note: The only valid characters to follow the \$ are 1, 2, 3, 4, 5, and \$. Anything other than these values will result in the node exiting the Error exit.</p> <p>If you wish to use the dollar sign in the string, you must prefix it with \$, that is, \$\$.</p>
4	<p>There are 5 source areas available. In each of the required source areas, select the Source Location and Source Field. These buffers can be strings, integers, prefix trees, or dates.</p> <p>Note: If the source buffer is a date, then a date format can be supplied. This is in the format <i>field</i> followed by {} containing the formatting values, for example, \$4{%d/%m/%y}. If no format is specified then the system locale date format will be used.</p>

Example

Here is an example of the process, using the Format Text node to store the blacklist contents of a user's profile to send to them.

Stage	Description
1	The user's blacklist contains the following numbers: 1230001 1230015 1230004
2	You can use the Format Text node to create a string containing the blacklist by configuring the node as shown below.



Result: The formatted string is:
"Your blacklist contains 1230001 1230015 1230004"

This is stored in the SMS payload target buffer. It can then be sent using another node in the control plan.

Keyword Search and Replace

Node description

The Keyword Search and Replace node branches, depending on whether or not a particular word was matched in the message.

The node allows up to five different keywords to be searched for in the short message and will branch according to the word that was matched. It is also possible to replace the word that was matched in the message with something else.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and seven exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Matched 1	The keyword specified as Pattern 1 was matched in the message.
2	Matched 2	The keyword specified as Pattern 2 was matched in the message.
3	Matched 3	The keyword specified as Pattern 3 was matched in the message.
4	Matched 4	The keyword specified as Pattern 4 was matched in the message.
5	Matched 5	The keyword specified as Pattern 5 was matched in the message.
6	Not Matched	None of the patterns specified in the node were matched
7	Bypass	

Configuration screen

Here is an example Configure Keyword Search and Replace screen.

Configure Keyword Search and Replace

Node name: xmsTextRepl Help

Options

- Case Sensitive
- Bypass Concatenated

Pattern 1

Pattern: Sport Replacement: Service1

Pattern 2

Pattern: Weather Replacement: Service2

Pattern 3

Pattern: News Replacement: Service3

Pattern 4

Pattern: Traffic

Exit Branches

1	Matched 1	2	Matched 2
3	Matched 3	4	Matched 4
5	Matched 5	6	Not Matched
7	Bypass		

Comments Save Cancel

Configuring the node

Follow these steps to edit the Keyword Search and Replace node.

Step	Action
1	Enter the patterns that are to be searched for in the message.
2	Enter the replacement values for each searchable pattern.
3	Select the Case Sensitive check box to make search patterns case sensitive.
4	Select the Bypass Concatenated check box to not check for the patterns in concatenated messages.
5	Click Save .

Note: The node will search the message for the patterns to be matched in order, and once a match is made will not search any further.

Message Data Branching

Node description

The Message Data Branching node branches depending on whether the current message contains text or data, according to the data coding scheme.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



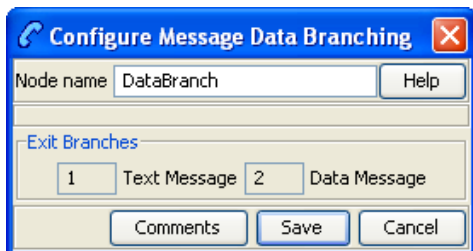
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Text Message	The message is text encoded.
2	Data Message	The message is data encoded.

Configuration screen

Here is an example Configure Message Data Branching screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Text Content Branching

Node description

The Text Content Branching node branches depending on the content of the short message.

It takes the regular expressions entered into the node and tries to match these expressions to the content of the short message. Matches are done in the order that they appear in the node, as soon as a match is made the branch corresponding to that expression will be taken. The node does not do a "best match", but looks for and takes the first match found.

When a match is found, it branches accordingly; if no match is found the node exits the "Not Matched" exit.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A service control plan may contain as many Text Content Branching nodes as required.

The Text Content Branching node makes use of the internal regular expression functions, for best results it is recommended that you avoid the use of recursive regular expressions. The use of `*` and `+` operators placed inside of parentheses `()` and other `*` and `+` operators is likely to result in erroneous branching.

This is an example of a bad regular expression: `^(*[0-9]+)+ *$`

While this is a good version of the same expression: `^[*][0-9][0-9]* *$`

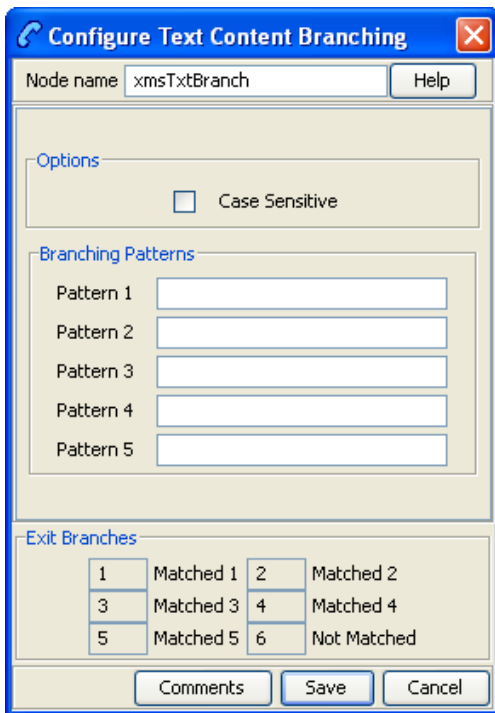
Node exits

This node has one entry and six exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Match 1	Short message received matches regular expression 1.
2	Match 2	Short message received matches regular expression 2.
3	Match 3	Short message received matches regular expression 3.
4	Match 4	Short message received matches regular expression 4.
5	Match 5	Short message received matches regular expression 5.
6	Not Matched	None of the regular expressions matched the short message.

Configuration screen

Here is an example of the Configure Text Content Branching screen.



Configuring the node

Follow these steps to edit the Text Content Branching node.

Step	Action
1	Determine whether the regular expressions that are to be matched against the short messages are to be case sensitive; if so, select the check box.
2	Enter up to five regular expressions that the short message is to be matched against.
3	Click Save .

XMS Control Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Messaging Manager XMS Control feature nodes.

In this chapter

This chapter contains the following topics.

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Send USSD Notification	643
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Available Feature Nodes

XMS Control Feature Node List

This table lists all the available Messaging Manager feature nodes in the XMS Control feature group. If any custom feature nodes have been created and installed to fit your specific customer requirements, they will not appear in this list.

Note: For information about the available Messaging Manager profile fields, see *Messaging Manager Profile Fields* (on page 12).

Node name	Node description
Accept (see page 622)	The Accept node is used to instruct Messaging Manager to perform an Accept action. This node should be used in preference to the Disconnect Call node specifying 127.
Attempt Delivery Pending (see page 623)	The Attempt Delivery Pending (ADP) feature node attempts to deliver the message. This feature node has no billing engine interaction, and will attempt the delivery of the short message with no account balance check.
Branch on Domain (see page 625)	The Branch on Domain node allows a service plan to act differently depending on the domains assigned to the message origination or destination domains.
Discard (see page 626)	The Discard node is used to tell Messaging Manager to perform a discard

Node name	Node description
626)	action.
MMX EDR (on page 627)	The MMX EDR node takes a literal string for the EDR tag, and a profile buffer for the EDR value.
Reject (see page 629)	The Reject node is used to send a specified (in this node) ACS release cause to Messaging Manager. This node should be used in preference to the Disconnect Call node specifying the release cause.
Send Short Message Notification (see page 631)	Use the Send Short Message Notification (SSMN) feature node to construct and send an INTERNAL short message from Messaging Manager that you specify either in the feature node, or by using a notification template defined in ACS.
Send USSD Message (see page 637)	The Send USSD Message node is used to send a message to the USSD application.
Send USSD Notification (on page 643)	The Send USSD Notification node is used to send a USSD Notification message to the MSC/handset.
Set Message Routing (see page 651)	The Set Message Routing node allows a control plan to set routing parameters which determine the routing rule to use, and hence guides outbound path selection.
Set Originating Address (see page 653)	The Set Originating Address node allows you to set the originating address for all messages that pass through the node to the address specified in the node.

Accept

Node description

The Accept node is used to instruct Messaging Manager to perform an Accept action. This node should be used in preference to the Disconnect Call node specifying 127.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Accept nodes as required.

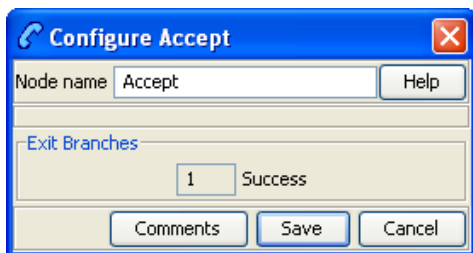
Node exits

This node has one entry and one exit. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The Release Code has been sent.

Configuration screen

Here is an example Configure Accept screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Attempt Delivery Pending

Node description

The Attempt Delivery Pending (ADP) feature node attempts to deliver the message. This feature node has no billing engine interaction, and will attempt the delivery of the short message with no account balance check.

This feature node also monitors for message delivery and returns a message delivery status.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A service control plan may contain as many Attempt Delivery Pending nodes as required.

Node exits

This feature node has one entry and five exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Delivery Failure	SMS delivery failed.
2	Queued	SMS sent to SMSC, no further monitoring.
3	Notified	Successful delivery of the message to an SME.
4	Abort/Abandon	An abort was received from the network, or message abandoned.
5	Node Failure	Failure due to an internal error, or result message being either unknown, or not of the right type.

Configuration screen

Here is an example Configure Attempt Delivery Pending screen.

Configure Attempt Delivery Pending

Node name: xmsADP Help

Action:

Route Relay Route Unchanged

Exit Branches:

1	Delivery Failure	2	Queued
3	Notified	4	Abort/Abandon
5	Node Failure		

Comments Save Cancel

Editing the node

Follow these steps to configure the Attempt Delivery Pending feature node.

Step	Action
1	<p>Select the action for Messaging Manager to take. To cause a:</p> <ul style="list-style-type: none"> • Route action, select Route • Relay action, select Relay

Step	Action
	<ul style="list-style-type: none"> Route Unchanged, select Route Unchanged <p>For more information about the different actions, see the discussion on triggering rules in <i>Messaging Manager User's Guide</i>.</p>
2	Click Save .

Branch on Domain

Node description

The Branch on Domain node allows a service plan to act differently depending on the domains assigned to the message origination or destination domains.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

There is a maximum of one Branch on Domain node in a control plan.

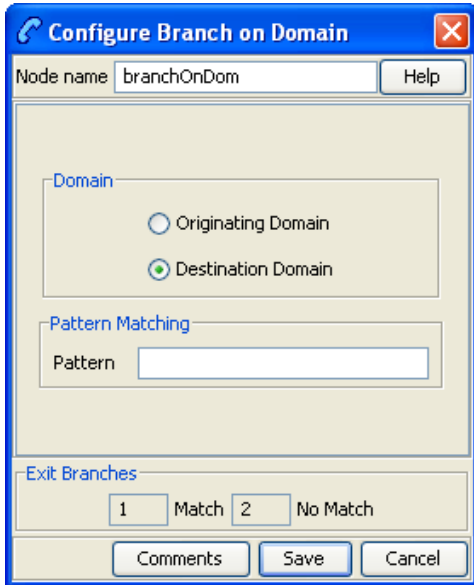
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Match	The configured regular expression matches the indicated domain.
2	No Match	The regular expression does not match the domain.

Configuration screen

Here is an example Configure Branch on Domain screen.



Configuring the node

Follow these steps to edit the Branch on Domain node.

Step	Action
1	Select which Domain to match on.
2	Enter the Pattern to match against.
3	Click Save .

Discard

Node description

The Discard node is used to tell Messaging Manager to perform a discard action.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Discard nodes as required.

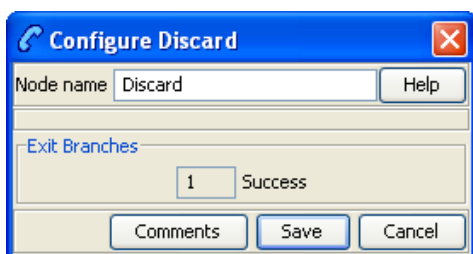
Node exits

This node has one entry and one exit. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The Release Code has been sent.

Configuration screen

Here is an example Configure Discard screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

MMX EDR

Node description

The MMX EDR node takes a literal string for the EDR tag, and a profile buffer for the EDR value. Thus, any profile buffer can be written to an MMX EDR. The node stores the string as a profile buffer. This buffer will then be examined by the service loader, and passed back to Messaging Manager as an extension with the tag `SM_TAG_CDR_INFO`.

EDRs specified by the MMX EDR nodes will appear in the final EDR in alphabetical order instead of following the processing order in the control plan.

The MMX EDR node does not interact with EDR tags from other sources and will not affect or overwrite any of these EDR tags. Therefore, the final EDR record may have duplicated EDR tags if the same EDR tag is defined and used by the MMX EDR node and other different sources.

Supported profile data types

The profile data types supported by the MMX EDR node are limited to the following types:

- STRING
- NSTRING
- LNSTRING
- SHORT
- UINTEGER
- INTEGER

- BYTE

For other types, you need to use the *Format Text* (see page 614) node to format the data and save the formatted string into a profile buffer, then configure the profile buffer as the source buffer in the MMX EDR node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many MMX EDR nodes as required.

Node exits

This node has one entry and three exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Value successfully retrieved from profile.
2	Value not Found	Value not found in profile.
3	Failure	General failure condition.

Configuration screen

Here is an example Configure MMX EDR screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Enter an EDR Tag in the field. Note: When using the MMX EDR node to build a control plan, you need to make sure all given EDR tags are unique across the control plan. If there are any duplicated EDR tags, the last occurrence will overwrite previous ones.
2	Select a profile location and field to retrieve.
3	Click Save .

Reject

Node description

The Reject node is used to send a specified (in this node) ACS release cause to Messaging Manager. This node should be used in preference to the Disconnect Call node specifying the release cause.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Reject nodes as required.

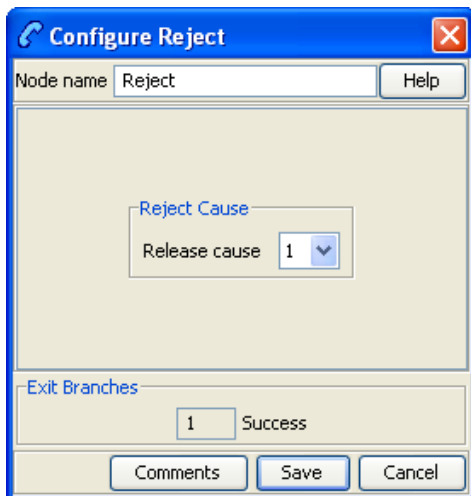
Node exits

This node has one entry and one exit. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The ACS release cause has been sent to MM.

Configuration screen

Here is an example Configure Reject screen.



Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	Select the Reject cause to use from the Release cause drop down list.
2	Click Save .

Send Short Message Notification

Node description

Use the Send Short Message Notification (SSMN) feature node to construct and send an INTERNAL short message from Messaging Manager that you specify either in the feature node, or by using a notification template defined in ACS.

You select the message originator and destination from the following options:

- A fixed number or alphanumeric address. If the address is alphanumeric, the message must be routed through the protocol that supports it, such as EMI, SMPP, or SIP.
- Any existing ACS context digit field, including:
 - The caller or message originator of the current call or SMS.
 - The called party or message destination of the current call or SMS.
- A profile tag containing a comma separated list of destinations.

If required, you can override NPI and TON values in the outgoing message by using a Set, or a Copy feature node before the SSMN feature node in the control plan. You use the Set, or the Copy feature node to set the override values in one or more of the following profile fields:

- SSMN Originating TON Override
- SSMN Destination TON Override
- SSMN Originating NPI Override
- SSMN Destination NPI Override

See *NPI and TON Override Profile Fields* (on page 19) for more information.

Note: You can use the SSMN feature node in any service control plan. Although the SSMN feature node is installed with Messaging Manager, you can use it in non-Messaging Manager service control plans. The SSMN feature node does not require the use of the Messaging Manager service library.

Important: To use this feature node in a service control plan, an INTERNAL adapter must be configured in the system.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Send Short Message Notification feature nodes as required.

Node exits

This feature node has one entry and eight exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Message sent successfully.
2	Send Failure	Cannot send SLEE event to wrapper.
3	Params Unavailable	The token specified cannot be found. For example <SMS_TEXT> token, if message text is not available or cannot be converted to Latin-1.
4	Node Failure	Internal node error. Message not sent.
5	Timeout	Did not get the expected response within the Timeout number of seconds.
6	Temporary Error	The returned cause code maps to a temporary error.
7	Permanent Error	The returned cause code maps to a permanent error.
8	Abort	The returned cause code maps to an abort error.

Note: The temporary, permanent and abort errors are all configured in the Messaging Manager Action and Error Codes screens. From the main SMS screen, see **Services > Messaging Manager > Action and Error Codes** and the **Error Type** column.

Configuration screen

Here is an example Configure Send Short Message Notification screen.

The screenshot shows the 'Configure Send Short Message Notification' dialog box. The 'Node name' is 'SendSMSNotif'. The 'Message Addresses' section has two sub-sections: 'Source' and 'Destination'. Both have 'Type' set to 'Fixed Address', 'Profile Block' set to 'VPN Network Profile', and 'Tag' is empty. The 'Options' section has 'Flash Message', 'Wait For Response', and 'Copy Current Message' unchecked, and 'Timeout' set to '0'. The 'Alphabet' is set to 'ASCII7Bit, 7-Bit packed'. The 'Message' section has 'Use Notification Template' selected and 'Application' set to 'CCS'. The 'Exit Branches' section contains the following table:

1	Success	2	Send Failure
3	Params Unavailable	4	Node Failure
5	Timeout	6	Temporary Error
7	Permanent Error	8	Abort

Configuring the node

Follow these steps to edit the Send Short Message Notification feature node.

Step	Action
Message Addresses - Source	
1	Select the Type of source address from the list. Result: The fields requiring data for the type selected are made available.
2	If available, enter the characters or digits for the source address in the Chars/Digits field. Tip: This is a text string representing the sender of the notification. It can be either a

Step	Action
	<p>telephone number or an alphanumeric address.</p> <p>If it contains any characters other than 0-9, it will be regarded as an alphanumeric address and will have TON (type of number) set to alphanumeric, otherwise TON will be set to unknown. NPI (number plan indicator) will always be set to unknown.</p>
3	<p>If available, from the Profile Block drop down list, select the profile block for the source address.</p>
4	<p>If available, enter in the Tag field, the location of the source address within the selected profile block.</p> <p>Tip: Valid tags for the profile block can be found in the ACS configuration screens. From main SMS screen, select menu options Services > ACS Services, then Configuration. The profile block and tag names are available under the Profile Tag Mapping tab, and the tag value for the tag name under the Profile Tag Details tab (Profile Tag column).</p>

Message Addresses - Destination

5	<p>Select the Type of destination address from the list.</p> <p>Result: The fields requiring data for the type selected are made available.</p>
6	<p>If available, enter the characters or digits for the destination address in the Chars/Digits field.</p> <p>Tip: This is a text string representing the sender of the notification. It can be either a telephone number or an alphanumeric address.</p> <p>If it contains any characters other than 0-9, it will be regarded as an alphanumeric address and will have TON set to alphanumeric, otherwise TON will be set to unknown. NPI will always be set to unknown.</p>
7	<p>If available, from the Profile Block drop down list, select the profile block for the destination address(es).</p>
8	<p>If available, enter in the Tag field, the location of the destination address(es) as a comma separated list of destinations within the selected profile block.</p> <p>Tip: Valid tags for the profile block can be found in the ACS configuration screens. From main SMS screen, select menu options Services > ACS Services, then click Configuration. The profile block and tag names are available under the Profile Tag Mapping tab, and the tag value for the tag name under the Profile Tag Details tab (Profile Tag column).</p>

Options

9	<p>To send the message as a flash message, select the Flash Message check box.</p> <p>Tip: Flash messages are displayed immediately on the subscriber's handset, rather than going to their in box.</p>
10	<p>If a response is expected, to avoid missing the response, select the Wait for Response check box and then enter the number of seconds to wait for the response in the Timeout field.</p> <p>Tip: If the check box is deselected, then the node will exit the Success exit immediately.</p>
11	<p>To preserve the parameters set for the original message that triggered the control plan, select the Copy Current Message check box.</p> <p>Result: The current message is copied and the parameters supplied in this node are applied to the internal message being constructed by this node.</p> <p>Example: If the destination domain has been specified in the Set Message Routing node earlier in the control plan, this will be copied to the new message.</p>

Step	Action
Alphabet	
12	Select a character encoding for the SMS message, click on the arrow against the Alphabet text box and pick an encoding from the drop-down list. Example: To send SMS text using Arabic characters, you would pick ISO88596, Arabic.
Message	
13	Select one of the following <ul style="list-style-type: none"> • Use Notification Template to send the message using a notification template. Then select the Application, Type and Language for the template from the drop down lists, or • Use Message to specify the message in the feature node. Then type the text of the notification message in the Message field. See <i>Message content</i> (on page 635) for a description of how to construct messages.
14	Click Save .

Message content

The **Message** field is a (UTF-8) text field. This field is tokenized when the node is initialized, so that fast construction of the message can be done during message processing. For a list of tokens, see *Message tokens* (on page 636).

Tokens are searched for in the message text, and replaced with an appropriate value. If the value (at call-time) is null, the token is removed from the message text.

The SMS is sent to MM with the specified UTF-8 encoded text, and the desired alphabet set from the Alphabet drop down list.

Warning: Tokens are case sensitive.

Machine environment information

In addition, there is access to some of the machine's environment information, using the following tokens.

Token	Description
<DATE>	The current system time on the SLC (after conversion to GMT). Output format is described in the Configuration section. This variable may have a modifier, in number of hours to add to the time. For example: "<DATE+2:30>".
<TIME>	As above, but with a different output format. The am/pm requirement is possible through the strftime format string.
<TIME24>	As above, but with a different output format.

Example message

An SMS text is:

```
"Your call to <SERVICE_NUMBER> was sent on <DATE>"
```

This will appear (at the receiving handset) as:

```
"Your call to 043345335 was sent on Monday 10th December 2012".
```

Message tokens

Tokens are searched for in the message text, and replaced with an appropriate value. If the value (at call-time) is null, the token is removed from the message text. The token values are extracted from the ACS engine context, so a value is always expected to be available.

Here is the list of tokens:

Token	Description
<ACCOUNT_ID>	Currently only set if the service control plan was triggered with the CC service library. The format is an integer that is the CCS Account Reference ID (stored in the SMF database).
<ACCOUNT_NUMBER>	The normalized calling or called number. For Messaging Manager triggered service control plans, this is the calling number for XMS_Originating, and the called number for the XMS_Terminating service. For ACS_CB triggered service control plans this is the normalized calling or called number, whichever party is to be billed for the message.
<CALLED_NUMBER>	The unnormalized called number.
<CALLED_PARTY_ID>	Exactly the same as <CALLED_NUMBER>.
<CALLING_NUMBER>	The calling party's MSISDN.
<CALLING_PARTY_ID>	Exactly the same as <CALLING_NUMBER>.
<CALLING_PRIVATE_NETWORK>	Only set for service control plans that are triggered via the VPN service. In this case it will be the calling number in the private network.
<CALL_DURATION>	The current call length (set for example by the ccsATB and ccsUATB nodes).
<CALL_TIME>	Ultimately comes from the SLC time at the start of triggering to ACS. The format is determined by the node configuration for the time format.
<CALL_START_DATE>	Exactly the same as the <CALL_TIME>.
<LOCATION_NUMBER>	The location number from the IDP used to trigger ACS. For Messaging Manager triggered calls this will be the SourceLocationInformation (that is, the originating address).
<LOGICAL_CALLING_NUMBER>	A normalized version of the logical calling number. For Messaging Manager triggered service control plans this will be the MIN or MDN, depending on the switch involved.
<NETWORK_CALLING_NUMBER>	This is the MIN or MDN, depending on the switch.
<NORM_CALLED_NUMBER>	Normalized version of <CALLED_NUMBER>.
<NORM_CALLING_NUMBER>	Normalized version of <CALLING_NUMBER>.
<ORIGINAL_CALLED_NUMBER>	This is the getOriginalCalledPartyID from the IDP, which is the called party number (before any changes made by ACS).
<PIN>	Only available if a prior node in the service control plan has set the PIN (for example, the PIN Authorisation Node).
<PENDING_TERMINATION_NUMBER>	Only available if a termination attempt has previously been made in the current service control plan.

Token	Description
<PROFILE_CHAR_BLOCKnumber_TAG<tag number>> <PROFILE_INT_BLOCKnumber_TAG<tag number>>	Data stored in Profile blocks is retrieved during call processing using one of the profile tag tokens: PROFILE_CHAR_BLOCK - if value is string format PROFILE_INT_BLOCK - if value is an integer The required values are defined as: <ul style="list-style-type: none"> <i>number</i> is an integer for the block number; <i>tag number</i> is the decimal value of the profile tag. Example: <PROFILE_CHAR_BLOCK19_TAG7671818> is replaced by a string value taken from the field with tag 7671818 from profile block 19. For more information about profile blocks, see <i>Profile Block list</i> (on page 648).
<REDIRECTION_NUMBER>	The redirecting party ID from the IDP used to trigger ACS. For Messaging Manager triggered service control plans, this is the SMSCAddress (DA serviceCentre).
<SERVICE_NUMBER>	The normalized called number (that is, the same as <NORM_CALLED_NUMBER>).
<SMS_TEXT>	The original incoming SMS text message.
<TERMINATION_NUMBER>	Will be set after a node which has attempted termination, for example, the ccsATBNode.
<TERMINATION_PRIVATE_NETWORK>	Will only be set if using the VPN. It is the termination number for the private network.
<USSD_RESPONSE>	Text returned from the Send USSD Message node.

Extra configuration

The Send Short Message Notification feature node requires extra configuration in both of these sections of the `eserv.config` file:

- `macroNodes`
- `Internal adapter`

For more information about these sections, see *MM Technical Guide*.

Send USSD Message

Node description

The Send USSD Message node is used to send a message to the USSD application.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A service control plan may contain as many Send USSD Message nodes as required.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Message sent successfully
2	USSD Failure	USSD operation sent, but an error was received from the target system.
3	Timeout	USSD operation sent, but no response received from the target system before the timeout period was reached.
4	Node Failure	Node error, the message was not sent.

Configuration screen

Here is an example Configure Send USSD Message screen.

Configuration fields

This table describes the function of each field in the Configure Send USSD message screen.

Field	Description
Source MSISDN	This section is used to set the number that Messaging Manager pretends to be, for the purposes of sending the USSD operation.
Type	List of numbers contained in the call context.
Nature of Address	Sets the nature of address to be used. This is only available for number types that do not contain a nature of address.
SSN	Subsystem Number to use.
Digits	Used to set the digits. This is only available for the Fixed Address number type.
Target System	This section is used to set the Global Title of the system that the USSD operation is to be sent to.
GT Type	Select the Global Title Type from the list, as specified in the SCCP Q713

Field	Description
	standard, section 3.4.2.3. The GT may be defined in any of the following formats: <ul style="list-style-type: none"> • "1,<i>noa</i>,<i>BCD_address_digits</i>" • "2,<i>Trans_Type</i>,<i>BCD_address_digits</i>" • "3,<i>Trans_Type</i>,<i>Num_Plan</i>,<i>BCD_address_digits</i>" • "4,<i>Trans_Type</i>,<i>Num_Plan</i>,<i>noa</i>,<i>BCD_address_digits</i>"
Message Template	This field is simply a text field. This field is tokenized when the node is initialized, so that fast construction of the message can be done during message processing. For a list of tokens, see <i>Message tokens</i> (on page 636). Note: Tokens are case sensitive.
Separators	This section determines the separators that are used in the message
USSD Separators	The separators that are to be used in the USSD message. They will be substituted for the Input Separators used.
Input Separators	The separators in the input message that are to be substituted by the USSD Separator.
USSD Terminator	The symbol that is to be placed at the end of the USSD message if the Add Terminator check box is selected.
Add Terminator	Select this check box if the USSD Terminator is to be added to the end of USSD messages that do not already contain this symbol.
Timeout	The period in seconds that the node will wait for a response before taking the Timeout branch.

Configuring the node

Follow these steps to edit the Send USSD Message node.

Step	Action
1	Select the Type of source address from the list.
2	If you select the type - <i>Fixed Address</i> , you need to fill in the Digits field. This is a text string representing the sender of the USSD operation. It can be either a telephone number or an alphanumeric address. If it contains any characters other than 0-9, it will be regarded as an alphanumeric address and will have TON (Type Of Number) set to alphanumeric, otherwise TON will be set to unknown. NPI (Number Plan Indicator) will always be set to unknown.
3	Set the Global Title of the destination address. Depending on the Type and GT Type selected, other fields in this section will be available, if required.
4	Set the Subsystem Number to the required value in the SSN field.
5	Type the text of the message in the Message field. See Message content for a description of how to construct messages.
6	Add the separators required.
7	Set the timeout period for the node.
8	Click Save .

Message content

The **Message** field is a (UTF-8) text field. This field is tokenized when the node is initialized, so that fast construction of the message can be done during message processing. For a list of tokens, see *Message tokens* (on page 636).

Tokens are searched for in the message text, and replaced with an appropriate value. If the value (at call-time) is null, the token is removed from the message text.

The SMS is sent to MM with the specified UTF-8 encoded text, and the desired alphabet set from the Alphabet drop down list.

Warning: Tokens are case sensitive.

Message tokens

Tokens are searched for in the message text, and replaced with an appropriate value. If the value (at call-time) is null, the token is removed from the message text. The token values are extracted from the ACS engine context, so a value is always expected to be available.

Here is the list of tokens:

Token	Description
<ACCOUNT_ID>	Currently only set if the service control plan was triggered with the CC service library. The format is an integer that is the CCS Account Reference ID (stored in the SMF database).
<ACCOUNT_NUMBER>	The normalized calling or called number. For Messaging Manager triggered service control plans, this is the calling number for XMS_Originating, and the called number for the XMS_Terminating service. For ACS_CB triggered service control plans this is the normalized calling or called number, whichever party is to be billed for the message.
<CALLED_NUMBER>	The unnormalized called number.
<CALLED_PARTY_ID>	Exactly the same as <CALLED_NUMBER>.
<CALLING_NUMBER>	The calling party's MSISDN.
<CALLING_PARTY_ID>	Exactly the same as <CALLING_NUMBER>.
<CALLING_PRIVATE_NETWORK>	Only set for service control plans that are triggered via the VPN service. In this case it will be the calling number in the private network.
<CALL_DURATION>	The current call length (set for example by the ccsATB and ccsUATB nodes).
<CALL_TIME>	Ultimately comes from the SLC time at the start of triggering to ACS. The format is determined by the node configuration for the time format.
<CALL_START_DATE>	Exactly the same as the <CALL_TIME>.
<LOCATION_NUMBER>	The location number from the IDP used to trigger ACS. For Messaging Manager triggered calls this will be the SourceLocationInformation (that is, the originating address).
<LOGICAL_CALLING_NUMBER>	A normalized version of the logical calling number. For Messaging Manager triggered service control plans this will be the MIN or MDN, depending on the switch involved.
<NETWORK_CALLING_NUMBER>	This is the MIN or MDN, depending on the switch.

Token	Description
<NORM_CALLED_NUMBER>	Normalized version of <CALLED_NUMBER>.
<NORM_CALLING_NUMBER>	Normalized version of <CALLING_NUMBER>.
<ORIGINAL_CALLED_NUMBER>	This is the getOriginalCalledPartyID from the IDP, which is the called party number (before any changes made by ACS).
<PIN>	Only available if a prior node in the service control plan has set the PIN (for example, the PIN Authorisation Node).
<PENDING_TERMINATION_NUMBER>	Only available if a termination attempt has previously been made in the current service control plan.
<PROFILE_CHAR_BLOCK $number_TAG$ <tag number>> <PROFILE_INT_BLOCK $number_TAG$ <tag number>>	Data stored in Profile blocks is retrieved during call processing using one of the profile tag tokens: PROFILE_CHAR_BLOCK - if value is string format PROFILE_INT_BLOCK - if value is an integer The required values are defined as: <ul style="list-style-type: none"> $number$ is an integer for the block number; $tag\ number$ is the decimal value of the profile tag. Example: <PROFILE_CHAR_BLOCK19_TAG7671818> is replaced by a string value taken from the field with tag 7671818 from profile block 19. For more information about profile blocks, see <i>Profile Block list</i> (on page 648).
<REDIRECTION_NUMBER>	The redirecting party ID from the IDP used to trigger ACS. For Messaging Manager triggered service control plans, this is the SMSCAddress (DA serviceCentre).
<SERVICE_NUMBER>	The normalized called number (that is, the same as <NORM_CALLED_NUMBER>).
<SMS_TEXT>	The original incoming SMS text message.
<TERMINATION_NUMBER>	Will be set after a node which has attempted termination, for example, the ccsATBNode.
<TERMINATION_PRIVATE_NETWORK>	Will only be set if using the VPN. It is the termination number for the private network.
<USSD_RESPONSE>	Text returned from the Send USSD Message node.

Machine environment information

In addition, there is access to some of the machine's environment information, using the following tokens.

Token	Description
<DATE>	The current system time on the SLC (after conversion to GMT). Output format is described in the Configuration section. This variable may have a modifier, in number of hours to add to the time. For example: "<DATE+2:30>".
<TIME>	As above, but with a different output format. The am/pm requirement is possible through the strftime format string.
<TIME24>	As above, but with a different output format.

Example message

An SMS text is:

"Your call to <SERVICE_NUMBER> was sent on <DATE>"

This will appear (at the receiving handset) as:

"Your call to 043345335 was sent on Monday 10th December 2012".

Send USSD Notification

Node description

The Send USSD Notification node is used to send a USSD Notification message to the MSC/handset.

Tip: This node is closely related to the *Send USSD Message* (on page 637) node.

The originator and destination for a message are selectable from one of:

- A fixed number or alpha-numeric address
- Any existing ACS context digit field, including one of:
 - The caller/message originator of the current call or SMS
 - The called party/message destination of the current call or SMS

Note: The node can be used on any service control plan. It needs to be installed with Messaging Manager, but can be used on non-Messaging Manager service plans, and does not require the use of the Messaging Manager service library.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A service control plan may contain as many Send USSD Notification nodes as required.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	Message sent successfully.
2	USSD Failure	USSD notification sent, but an error was received from the target system.
3	Timeout	USSD notification sent, but no response received from the target system before the timeout period was reached.
4	Node Failure	Node error, the USSD notification was not sent.

Configuration screen

Here is an example Configure Send USSD Notification screen.

Configuration fields

This table describes the function of each field in the Configure Send USSD Notification node screen.

Field	Description
Target MSISDN	This section is used to set the destination the USSD Notification is to be sent to.
Type	The list of numbers contained in the call context.
Nature of Address	Sets the nature of address to be used. This is only available for number types that do not contain a nature of address.
Digits	Sets the digits for the destination address. This is only available if Type is set to Fixed Address.
Type	The list of numbers used in the call context.

Field	Description
GT Type	Select the Global Title Type from the list, as specified in the SCCP Q.713 standard, section 3.4.2.3.
Translation Type	The translation type for the system which is sending the notification. For more information about valid types, see Q.713.
Number Plan	Number plan for source.
Nature of Address	Sets the nature of address for source. This is only available for number types that do not contain a nature of address.
SSN	Subsystem number for source address.
Digits	Sets the digits for the source address. This is only available if Type is set to Fixed Address.
Message Template	This field is simply a text field. This field is tokenized when the node is initialized, so that fast construction of the message can be done during message processing. For a list of tokens, see <i>Message tokens</i> (on page 636). Warning: Tokens are case sensitive.
Timeout	The period in seconds that the node will wait for a response before taking the Timeout branch.

Configuring the node

Follow these steps to edit the Send USSD Notification node.

Step	Action
1	In the Target MSISDN area, select the type of number the destination address will be from the Type drop down list.
2	If you have selected a type which does not set an NOA, select a nature of address from the Nature of Address drop down list.
3	If you have selected <i>Fixed Address</i> from the Type drop down list, enter the address to send the notification to in the Digits field. It can be either a telephone number or an alphanumeric address.
4	In the Source System area, select the type of number the source address will be from the Type drop down list. Depending on the Type and GT Type selected, other fields in this section will be available, if required.
5	From the GT Type drop down list, select the Global Title of the source address. For more information about how these GTs are specified, see section 3.4.2.3 in the SCCP Q713 standard.
6	In the Translation Type field, enter the translation type for the system which is sending the notification. For more information about valid types, see Q7.13.
7	If you have selected Fixed Address or one of the Extension Digits options from the Type drop down list, select a number plan from the Number Plan drop down list.
8	If you have selected a type which does not set an NOA, select a nature of address from the Nature of Address drop down list.
9	In the SSN field, enter the sub system number which will be used to identify MM in sent messages.
10	If you have selected Fixed Address from the Type drop down list, enter the source

Step	Action
	address in the Digits field. This is a text string representing the sender of the USSD notification. It can be either a telephone number or an alphanumeric address. If it contains any characters other than 0-9, it will be regarded as an alphanumeric address and will have TON (Type Of Number) set to alphanumeric, otherwise TON will be set to unknown. NPI (Number Plan Indicator) will always be set to unknown.
11	In the Message Template field, enter the text of the message. See <i>Message content</i> (on page 635) for a description of how to construct messages. Tip: If the text (taking into account the length specifier in any PT tokens) exceeds 160 characters, the Save button will be disabled.
12	In the Timeout field, set the number of seconds MM will wait for a response from the MSC/handset before taking the Timeout exit.
13	Click Save .

Message content

The **Message** field is a (UTF-8) text field. This field is tokenized when the node is initialized, so that fast construction of the message can be done during message processing. For a list of tokens, see *Message tokens* (on page 636).

Tokens are searched for in the message text, and replaced with an appropriate value. If the value (at call-time) is null, the token is removed from the message text.

The USSD notification is sent to MM with the specified UTF-8 encoded text.

Warning: Tokens are case sensitive.

Message tokens

Tokens are searched for in the message text, and replaced with an appropriate value. If the value (at call-time) is null, the token is removed from the message text. The token values are extracted from the ACS engine context, so a value is always expected to be available.

Here is the list of tokens:

Token	Description
<ACCOUNT_ID>	Currently only set if the service control plan was triggered with the CC service library. The format is an integer that is the CCS Account Reference ID (stored in the SMF database).
<ACCOUNT_NUMBER>	The normalized calling or called number. For Messaging Manager triggered service control plans, this is the calling number for XMS_Originating, and the called number for the XMS_Terminating service. For ACS_CB triggered service control plans this is the normalized calling or called number, whichever party is to be billed for the message.
<CALLED_NUMBER>	The unnormalized called number.
<CALLED_PARTY_ID>	Exactly the same as <CALLED_NUMBER>.
<CALLING_NUMBER>	The calling party's MSISDN.
<CALLING_PARTY_ID>	Exactly the same as <CALLING_NUMBER>
<CALLING_PRIVATE_NETWORK>	Only set for service control plans that are triggered via the VPN service. In this case it will be the calling number in the private network.

Token	Description
<CALL_DURATION>	The current call length (set for example by the ccsATB and ccsUATB nodes).
<CALL_TIME>	Ultimately comes from the SLC time at the start of triggering to ACS. The format is determined by the node configuration for the time format.
<CALL_START_DATE>	Exactly the same as the <CALL_TIME>
<LOCATION_NUMBER>	The location number from the IDP used to trigger ACS. For Messaging Manager triggered calls this will be the SourceLocationInformation (for example, the originating address).
<LOGICAL_CALLING_NUMBER>	A normalized version of the logical calling number. For Messaging Manager triggered service control plans this will be the MIN or MDN, depending on the switch involved.
<NETWORK_CALLING_NUMBER>	This is the MIN or MDN, depending on the switch.
<NORM_CALLED_NUMBER>	Normalized version of <CALLED_NUMBER>
<NORM_CALLING_NUMBER>	Normalized version of <CALLING_NUMBER>
<ORIGINAL_CALLED_NUMBER>	This is the getOriginalCalledPartyID from the IDP, which is the called party number (before any changes made by ACS).
<PIN>	Only available if a prior node in the service control plan has set the PIN (for example, the PIN Authorisation Node).
<PENDING_TERMINATION_NUMBER>	Only available if a termination attempt has previously been made in the current service control plan.
<PT BLOCK TAG FORMAT>	<p>Data stored in Profile blocks is retrieved during call processing using the profile tag token.</p> <p>Format: <PT <i>block tag format[length_limit]</i>></p> <p>Where:</p> <ul style="list-style-type: none"> • <i>block</i> is an integer which specifies the profile block to use • <i>tag</i> is the profile tag to use (specified in decimal) • <i>format</i> specifies the format to display the value (for example "I" for integer, "L" for length (time duration), "S" for string), and • <i>length_limit</i> is an optional length specifier which limits the number of characters used to display the value. If the profile tag value is greater than this limit, the value will be truncated by removing trailing characters. <p>Example: <PT 8 28200002 I5> will be replaced by an integer value taken from the field with tag 2820002 in profile block 8 and the displayed value will be 5 characters long. If the profile tag value is greater than 5 characters, the first five characters will be displayed and the rest will be truncated.</p> <p>For more information, see <i>Profile Block list</i> (on page 648).</p>
<REDIRECTION_NUMBER>	The redirecting party ID from the IDP used to trigger ACS. For Messaging Manager triggered service control plans, this is the SMSCAddress (DA serviceCentre).

Token	Description
<SERVICE_NUMBER>	The normalized called number (for example the same as <NORM_CALLED_NUMBER>).
<TERMINATION_NUMBER>	Will be set after a node which has attempted termination, for example, the ccsATBNode.
<TERMINATION_PRIVATE_NETWORK>	Will only be set if using the VPN. It is the termination number for the private network.

Profile Block list

Here are the profile blocks accessible using the <PT> message token.

Name	Integer	Description
VPN Network Profile	1	<p>Contains most of the information you can specify in the VPN edit network, for example:</p> <ul style="list-style-type: none"> • Account Code maximum length • Outgoing barred/allowed list type • Incoming barred/allowed list type • VPN network SD no check • VPN present private address <p>Note: Only relevant if you have the VPN service installed.</p>
VPN Station Profile	2	<p>Contains most of the information you can specify in the VPN edit station, for example:</p> <ul style="list-style-type: none"> • Outgoing barred/allowed list type • Incoming barred/allowed list type • VPN bar all incoming • VPN bar off network incoming <p>Note: Only relevant if you have the VPN service installed.</p>
Customer Profile	3	<p>Contains customer information, for example:</p> <ul style="list-style-type: none"> • Incoming barred/allowed list type • Incoming barred/allowed list • PIN rights • Default language • Incoming barred/allowed ignore • Termination number ranges • Termination number range policy
Control Plan Profile	4	This profile contains current switch node exits only.
Global Profile	5	<p>Contains global information, for example:</p> <ul style="list-style-type: none"> • PIN rights • Multi-lingual announcements • Default language • Control plan version hiding

Name	Integer	Description
CLI Subscriber Profile	6	Contains most of the information you can specify in the CLI tab of the Numbers screen, for example: <ul style="list-style-type: none"> • Account code • Language • Follow me number Note: Only relevant to the 0800 service.
Service Number Profile	7	Contains most of the information you can specify in the Service Number tab of the Numbers screen, for example: <ul style="list-style-type: none"> • Account code • Language • Follow me number Note: Only relevant to the 0800 service.
App Specific Profile 1	8	Contains information specific to an application, for example, Messaging Manager. Note: Unless it is in use by a specific application, these profiles (for example, App Specific Profile 7 can be specified as a temporary profile (where nothing is written back to the database) in order to pass information from one application to another, for example between USSD and DAP).
App Specific Profile 2	9	
App Specific Profile 3	10	
App Specific Profile 4	11	
App Specific Profile 5	12	
App Specific Profile 6	13	
App Specific Profile 7	14	
App Specific Profile 8	15	
Any Valid Profile	16	Allows you to search for tags in all profiles that have been loaded.

MOX tokens

MOX tokens are only available in some circumstances. A MOX request of the appropriate type must have been sent as the last MOX message. Also, the beServer that replied to this MOX message must be of a type that fills out the requested information (for example, balances are not available in some VWS protocols).

Token	Description
<MOX_BALANCE n >	Only available if the last message received from the BeClient was a RetrieveSubscriberProfileRes. Some service libraries (for example, ACS_CB) perform this on triggering to ACS; Messaging Manager does not. For MM the RSINode should be placed immediately before the SSMNode to ensure an RSP is available.
<MOX_CURRENCY n >	Only available if the last message received from the BeClient was a RetrieveSubscriberProfileRes. Some service libraries (for example, ACS_CB) perform this on triggering to ACS; Messaging Manager does not. For MM the RSINode should be placed immediately before the SSMNode to ensure an RSP is available.
<MOX_CALL_COST n >	Only available if there is a DebitUnitReq ready to send to the BeClient. This is only true if the last node using MOX was an attempt terminate with Billing (for example, cbATBNode or xmsADPBNode). The number format has two decimal places (for example, 19.19, 19.00), followed by the unit (which comes from the configured unit mappings).

Token	Description
<MOX_VOUCHER_NUMBER>	Only available if the last message received from the BeClient was a VoucherReserveRes. Currently, there are no call plan nodes that perform this so this token is unavailable.
<MOX_VOUCHER_REDEEMED_DATE>	Only available if the last message received from the BeClient was a VoucherReserveRes. Currently, there are no call plan nodes that perform this so this token is unavailable.
<MOX_VOUCHER_AMOUNT <i>n</i> >	Only available if the last message received from the BeClient was a VoucherReserveRes. Currently, there are no call plan nodes that perform this so this token is unavailable.
<MOX_VOUCHER_RECHARGE_ACCOUNT_TO_CREDIT>	Only available if the last message received from the BeClient was a VoucherReserveRes. Currently, there are no call plan nodes that perform this so this token is unavailable.
<MOX_VOUCHER_RECHARGE_REDEEMING_ACCOUNT>	Only available if the last message received from the BeClient was a VoucherReserveRes. Currently, there are no call plan nodes that perform this so this token is unavailable.
<MOX_CALL_START_DATE>	Only available if there is a DebitUnitReq ready to send to the BeClient. This is only true if the last node using MOX was an Attempt Terminate with Billing (for example, cbATBNode or xmsADPBNODE). This time value is the same as <CALL_TIME>. The format (expressed using the time configuration format for this node) is "%G-%m-%d %T0".
<MOX_CALL_ANSWER_DATE>	Only available if there is a DebitUnitReq ready to send to the BeClient. This is only true if the last node using MOX was the cbATBNode. This is the attemptTerminateResultTime. The format is the same as for <MOX_CALL_START_DATE>, that is, "%G-%m-%d %T0".
<MOX_REDIRECTION_NUMBER>	The cbContext.normRedirectionNumber. This is the ctd_redirection_num and only available if the call plan was triggered with the ACS_CB service library.

Note: Replace the *n* in the token with the index of a balance. For example, to retrieve the first balance in a set use <MOX_BALANCE0>.

Machine environment information

In addition, there is access to some of the machine's environment information, using the following tokens.

Token	Description
<DATE>	The current system time on the SLC (after conversion to GMT). Output format is described in the Configuration section. This variable may have a modifier, in number of hours to add to the time. For example: "<DATE+2:30>".
<TIME>	As above, but with a different output format. The am/pm requirement is possible through the strftime format string.
<TIME24>	As above, but with a different output format.

Example notification

A USSD notification text is:

"Your call to <SERVICE_NUMBER> was sent on <DATE>"

This will appear (at the receiving handset) as:

"Your call to 043345335 was sent on Monday 10th December 2012".

Extra configuration

The Send USSD Notification node requires extra configuration in the `macroNodes` section in the `eserv.config` file. For more information, see Send Short Message configuration.

Set Message Routing

Node description

The Set Message Routing node allows a control plan to set routing parameters which determine the routing rule to use, and hence guides outbound path selection.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

There may be any number of Set Message Routing nodes as required in a service control plan.

Node exits

This node has one entry and one exit. The number of exits cannot be changed.

Exit	Cause	Description
1	Message Routing Set	Message has had the new routing attributes applied.

Configuration screen

Here is an example Configure Set Message Routing screen.

The screenshot shows a window titled "Configure Set Message Routing" with a close button in the top right corner. The window contains the following elements:

- Node name:** A text field containing "SetMsgRout" and a "Help" button to its right.
- Routing Class:** A section with a checked checkbox labeled "Leave Unchanged" and a "New Routing Class" dropdown menu.
- Destination Domain:** A section with a checked checkbox labeled "Leave Unchanged" and a "New Domain" text input field.
- Originating Domain:** A section with a checked checkbox labeled "Leave Unchanged" and a "New Domain" text input field.
- Message Centre:** A section with a checked checkbox labeled "Leave Unchanged" and a "New Message Centre" text input field.
- Exit Branches:** A section with a list containing one item: "1 Message Routing Set".
- Buttons:** "Comments", "Save", and "Cancel" buttons at the bottom of the window.

Configuring the node

Follow these steps to edit the node.

Step	Action
1	To set the routing class for the message: <ul style="list-style-type: none"> • Select the Leave Unchanged check box • Select the New Routing Class to use from the drop-down list
2	To set the destination domain for the message: <ul style="list-style-type: none"> • Deselect the Leave Unchanged check box • Enter the name of the Domain that the Destination is to be set to in the New Domain field. <p>Note: This must be an exact match with a Messaging Manager domain name.</p>
3	To set the originating domain for the message: <ul style="list-style-type: none"> • Deselect the Leave Unchanged check box • Enter the name of the Domain that the Origination is to be set to in the New Domain field. <p>Note: This must be an exact match with a Messaging Manager domain name.</p>
4	To set the message centre for the message: <ul style="list-style-type: none"> • Deselect the Leave Unchanged check box • Enter the name of the Message Center that is to be set for the message in the

Step	Action
	New Message Centre field.
	Note: This must be an exact match with a Messaging Manager Message Center name.
5	Click Save .

Set Originating Address

Node description

The Set Originating Address node allows you to set the originating address for all messages that pass through the node to the address specified in the node.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

There may be any number of Set Originating Address nodes as required in a service control plan.

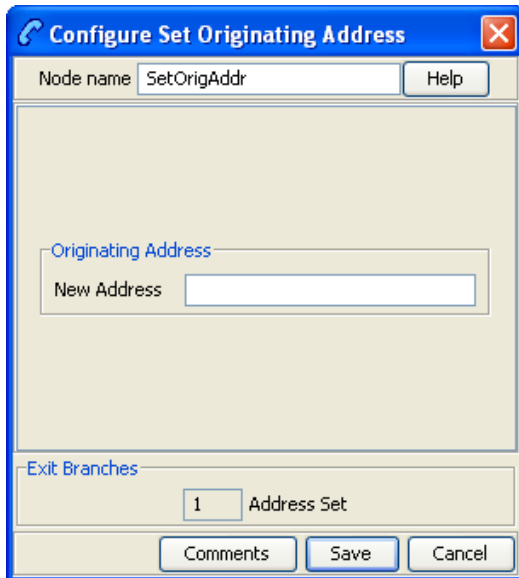
Node exits

This node has one entry and one exit. The number of exits cannot be changed.

Exit	Cause	Description
1	Address Set	The originating address for the message has been set to the specified value.

Configuration screen

Here is an example Configure Set Originating Address screen.



Configure Set Originating Address

Node name: SetOrigAddr Help

Originating Address

New Address:

Exit Branches

1 Address Set

Comments Save Cancel

Configuring the node

Follow these steps to edit the node.

Step	Action
1	Enter the address that all messages passing through the node will have set as their originating address. This field will accept numeric values, as well as the * and # symbols.
2	Click Save .

XMS Parameters Feature Nodes

Overview

Introduction

This chapter describes the Oracle Communications Convergent Charging Controller Messaging Manager XMS Parameters feature nodes.

In this chapter

This chapter contains the following topics.

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Available Feature Nodes

XMS Parameters Feature Nodes List

This table lists all the available Messaging Manager feature nodes in the XMS Parameters feature group. If any custom feature nodes have been created and installed to fit your specific customer requirements, they will not appear in this list.

Note: For information about the available Messaging Manager profile fields, see *Messaging Manager Profile Fields* (on page 12).

Node name	Node description
Alphabet Branching (see page 656)	The Alphabet Branching node determines if the message text is using the alphabet specified in this node and branches accordingly.
Content Size Branching (see page 657)	The Content Size Branching node branches depending on the size of the short message (in bytes). It takes the threshold entered into the node and chooses either the small or large branch.
Message Attribute Branching (on page 658)	Branches on the value of a message attribute.
Segment Number Branching (see page 663)	The Segment Number Branching node branches, depending on if the current message is the last (or only) component in a concatenated, multi-part, message. It compares the current segment number with the total number of segments and takes the appropriate exit.
Set Data Coding (see	The Set Data Coding node sets the character set of the message to be used

Node name	Node description
page 664)	when the ACS Control Plan passes the message on to Messaging Manager for delivery.
Set Message Attribute (on page 665)	Allows the modification various attributes of the message data by overriding the options requested by a caller.
Set Time Zone Message Attribute (on page 668)	Sets the message time zone attribute to the user's time zone.
Test Data Coding (see page 669)	The Test Data Coding node checks the message for compatibility with the specified (in this node) destination alphabet.

Alphabet Branching

Node description

The Alphabet Branching node determines if the message text is using the alphabet specified in this node and branches accordingly.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Alphabet Branching nodes as required.

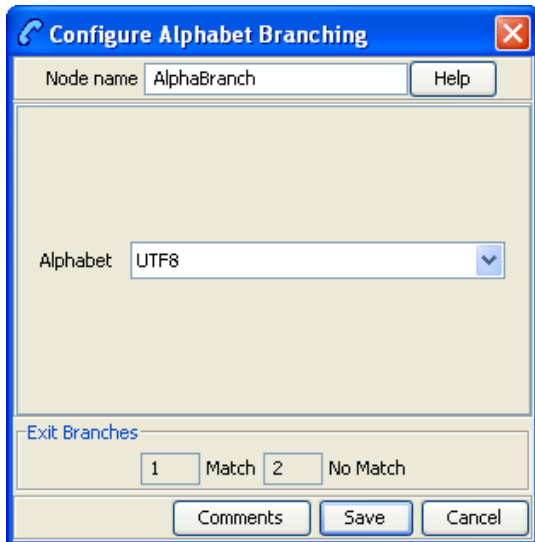
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Match	The message uses the current alphabet specified.
2	No Match	The message does not use the current alphabet specified.

Configuration screen

Here is an example Configure Alphabet Branching screen.



Configuring the node

Follow these steps to configure the node.

Step	Action
1	Select the alphabet to compare the message against from the Alphabet drop down list.
2	Click Save .

Content Size Branching

Node description

The Content Size Branching node branches depending on the size of the short message (in bytes). It takes the threshold entered into the node and chooses either the small or large branch.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



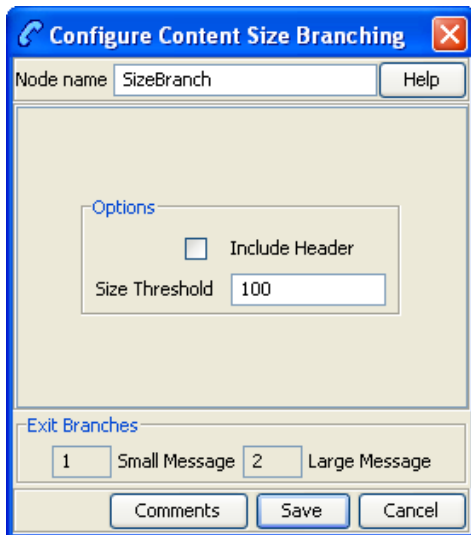
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Small Message	The message is smaller than the specified number of bytes.
2	Large Message	The message is equal to, or larger than the specified number of bytes.

Configuration screen

Here is an example Configure Content Size Branching screen.



Configuring the node

Follow these steps to edit the node.

Step	Action
1	Specify the message size threshold, in number of bytes.
2	If you select the Include Header check box, then the length of the user data header is included in the message length.
3	Click Save .

Message Attribute Branching

Node description

Branches on the value of a message attribute. Branching is based on the result of a logical comparison between a value and the value in the corresponding message attribute.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Message Attribute Branching nodes as required.

Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Less Than	The value in the message is lower than the value configured in the node.
2	Equals	The value in the message is the same as the value configured in the node.
3	Greater Than	The value in the message is greater than the value configured in the node.
4	Not Found	An error occurred during the comparison.

Note: Strings are evaluated against ASCII order, on a character-by-character basis starting with the left-hand character.

Configuration screen

Here is an example Configure Message Attribute Branching screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Configure this record by entering data in the fields on the Configure Set Message Attribute screen. For more information about the fields on this screen, see <i>Configuration fields</i> (on page 660).
2	Click Save .

Configuration fields

This table describes the function of each field.

Field	Description
Attribute	The message attribute to compare.
Value Type	The type of value the attribute will be compared with.
Fixed	The value the message attribute will be compared with. Note: This field is only available if the Value Type field is set to <code>Fixed</code> .
Enumerated	The value the message attribute will be compared with. Notes: <ul style="list-style-type: none"> This field is only available if the Value Type field is set to <code>Enum</code>. The drop list is populated by the application. The available options cannot be

Field	Description
	changed. For more information about the available values, see <i>Enumerated fields</i> (on page 661).
Source Location	<p>The profile block which stores the value the message attribute will be compared with.</p> <p>Notes:</p> <ul style="list-style-type: none"> This field is only available if the Value Type field is set to <code>Profile</code>. The drop down list is populated by the records on the Profile Tag Details tab of the ACS Configuration screen.
Source Field	<p>The profile field which stores the value the message attribute will be compared with.</p> <p>Notes:</p> <ul style="list-style-type: none"> This field is only available if the Value Type field is set to <code>Profile</code>. The drop down list is populated by the records on the Profile Tag Details tab of the ACS Configuration screen. The available profile fields are dependant on the profile selected in the Source Location drop down list.

For more information about profiles, see *Selecting profile locations and fields*.

Enumerated fields

This table describes the list of enumerated values which are available to the Message Attribute nodes.

Group Name	Value	Description
ATTRIBUTE	SRR	Status report (delivery receipt) request
	RRR	Read-reply report request
	SMS_CLASS	SMS Message class
	MW_TYPE	Message waiting type
	MW_SENSE	Message waiting sense
	MW_GROUP	Message waiting group
	PRIORITY	
	SINGLE_SHOT	Single-shot
	RECIPIENTS	Number of recipients
	RECIPIENT	Current recipient
	SIZE	Message size
	MMS_CLASS	MMS message class
	ADAPTATION	Content adaptation
	TIME_ZONE	
	SERVICE_CODE	
	BILLING_INFO	Billing Identifier

Group Name	Value	Description
	VP_TYPE	Validity Period Type
	VALIDITY	Validity Period
	MESSAGE_TYPE	
	CHARGED_PARTY	
	VAS_ID	
	VASP_ID	
SRR	0	None requested
	1	SME requested
	2	MMX requested
	3	Both requested
RRR	0	Not requested
	1	Requested
SMS_CLASS	0	None
	1	Display (GSM 0)
	2	Mobile Equipment (GSM 1)
	3	SIM (GSM 2)
	4	External (GSM 3)
MW_TYPE	0	None
	1	Voicemail
	2	Fax
	3	Email
	4	Other
MW_SENSE	0	Inactive
	1	Active
MW_GROUP	0	None
	1	Discard
	2	Store
PRIORITY	0	Normal
	1	Interactive
	2	Urgent
	3	Emergency
SINGLE_SHOT	0	False
	1	True
MMS_CLASS	0	None
	1	Personal
	2	Advert

Group Name	Value	Description
	3	Info
	4	Auto
ADAPTATION	0	False
	1	True
VP_TYPE	0	Relative
	1	Absolute
MESSAGE_TYPE	0	Submit
CHARGED_PARTY	0	Neither
	1	Sender
	2	Recipient
	3	Both
	0	*/*
	1	text/*
	...	

Segment Number Branching

Node description

The Segment Number Branching node branches, depending on if the current message is the last (or only) component in a concatenated, multi-part, message. It compares the current segment number with the total number of segments and takes the appropriate exit.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Node exits

This node has one entry and four exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Only Segment	The message contains only one segment.
2	First Segment	There is more than one segment in the message and the segment number is one.

Exit	Cause	Description
3	Middle Segment	There is more than one segment in the message and the segment number does not match the number of segments.
4	Last Segment	There is more than one segment in the message and the segment number matches the number of segments.

Configuration screen

Here is an example Configure Segment Number Branching screen.



Configuring the node

This node requires no configuration data. You may change the **Node name**, if required.

Set Data Coding

Node description

The Set Data Coding node sets the character set of the message to be used when the ACS Control Plan passes the message on to Messaging Manager for delivery.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Set Data Coding nodes as required.

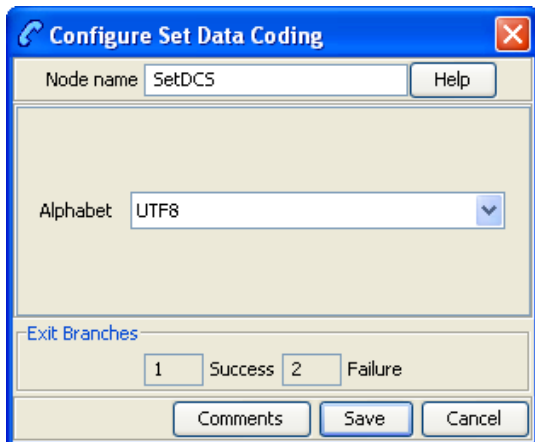
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The configured alphabet has been successfully selected. Note: The Set Data Coding node does not change the data coding in ACS, but it does define the data coding used when the message is returned to Messaging Manager. This occurs when the message is actually ready to be sent. Consequently, the TP-DCS known to ACS in the Control Plan is still the original TP-DCS, and its value does not change when leaving this node through the Success branch.
2	Failure	General error occurred.

Configuration screen

Here is an example Configure Set Data Coding screen.



Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	Select the message alphabet from the Alphabet drop down list.
2	Click Save .

Set Message Attribute

Node description

Allows the modification various attributes of the message data by overriding the options requested by a caller.

To set a message's time zone to the time zone of the user, see *Set Time Zone Message Attribute* (on page 668).

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Set Message Attribute nodes as required.

Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The specified attribute was set successfully.
2	Failure	The node failed to change the specified attribute.

Configuration screen

Here is an example Configure Set A Message Attribute screen.

Configuring the node

Follow these steps to configure the node.

Step	Action
1	Configure this record by entering data in the fields on the Configure Set Message Attribute screen. For more information about the fields on this screen, see <i>Configuration fields</i> (on page 667).
2	Click Save .

Configuration fields

This table describes the function of each field.

Field	Description
Attribute	The message attribute to change.
Value Type	The type of value the attribute will be set to.
Fixed	The value the message attribute will be set to. Note: This field is only available if the Value Type field is set to <code>Fixed</code> .
Enumerated	The value the message attribute will be set to. Notes: <ul style="list-style-type: none"> This field is only available if the Value Type field is set to <code>Enum</code>. The drop down list is populated by the application. The available options cannot be changed. For more information about the available values, see <i>Enumerated fields</i> (on page 661).
Source Location	The profile block which stores the value the message attribute will be set to. Notes: <ul style="list-style-type: none"> This field is only available if the Value Type field is set to <code>Profile</code>. The drop down list is populated by the records on the Profile Tag Details tab of the ACS Configuration screen.
Source Field	The profile field which stores the value the message attribute will be set to. Notes: <ul style="list-style-type: none"> This field is only available if the Value Type field is set to <code>Profile</code>. The drop down list is populated by the records on the Profile Tag Details tab of the ACS Configuration screen. The available profile fields are dependant on the profile selected in the Source Location drop down list.

For more information about profiles, see *Selecting profile locations and fields*.

Set Time Zone Message Attribute

Node description

Sets the message time zone attribute to the user's time zone.

To set other message attributes, see *Set Message Attribute* (on page 665).

To branch on message attributes (including time zone), see *Message Attribute Branching* (on page 658).

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Set time Zone Attribute nodes as required.

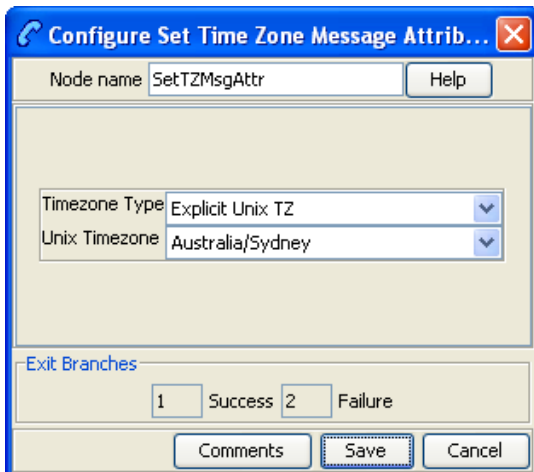
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Success	The time zone was set successfully.
2	Failure	An error occurred and the time zone was not set.

Configuration screen

Here is an example Configure Set Time Zone Message Attribute screen.



Configuring the node

Follow these steps to configure the node.

Step	Action
1	Configure this record by entering data in the fields on the Configure Set Time Zone Message Attribute screen. For more information about the fields on this screen, see <i>Configuration fields</i> (on page 669).
2	Click Save .

Configuration fields

This table describes the function of each field.

Field	Description
Timezone Type	The source of the timezone value.
Unix Timezone	The timezone to use from the standard unix timezone set. Note: This field is only available if Timezone Type is set to <code>Explicit Unix TZ</code> .

For more information about profiles, see *Selecting profile locations and fields*.

Test Data Coding

Node description

The Test Data Coding node checks the message for compatibility with the specified (in this node) destination alphabet.

This node is used to determine if the message can be converted to the specified alphabet. If not then the control plan can be set to compare against another alphabet in another instance of this mode.

Node icon



If the CPE has been configured to use the static panel CPE palette style, the CPE displays the icon shown below to represent the feature node.



Restrictions

A control plan may contain as many Test Data Coding nodes as required.

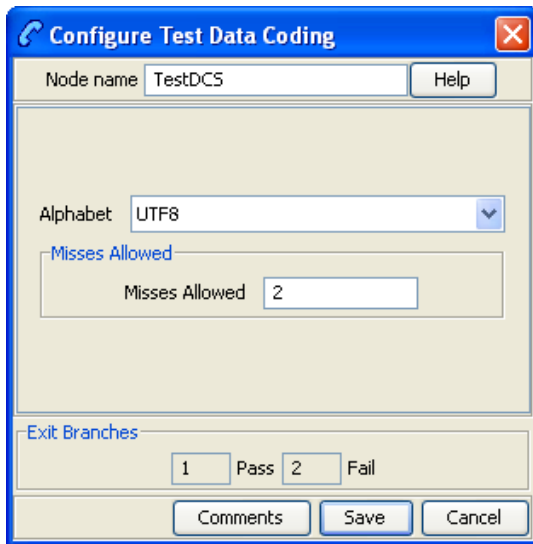
Node exits

This node has one entry and two exits. The number of exits cannot be changed.

Exit	Cause	Description
1	Pass	The message will be convertible to the destination alphabet with less than or equal to the allowed character conversion failures.
2	Fail	The message will not be converted to the destination alphabet without incurring more than the allowed character conversion failures.

Configuration screen

Here is an example Configure Test Data Coding screen.



Configuring the node

Follow these steps to edit the node configuration.

Step	Action
1	Select the destination alphabet for the message to be converted to from the Alphabet drop down list.
2	Enter the maximum number of characters that cannot be converted to the destination alphabet before failing the conversion test in the Misses Allowed field.
3	Click Save .

Glossary of Terms

AAA

Authentication, Authorization, and Accounting. Specified in Diameter RFC 3588.

ACS

Advanced Control Services configuration platform.

ACS_CB

ACS Convergent Billing

ANI

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

API

Application Programming Interface

ASP

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

ATI

Any Time Interrogation - this process is used on a GSM network to interrogate the HLR for location and or subscriber information.

AUS

Application Unique String.

BCSM

Basic Call State Model - describes the basic processing steps that must be performed by a switch in order to establish and tear down a call.

BFT

Billing Failure Treatment - the process that is applied if the system has lost all connections to a billing engine. It allows for limited continuation of call processing functions, if configured.

C7

See SS7.

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.

CAP

CAMEL Application Part

CC

Country Code. Prefix identifying the country for a numeric international address.

CCR

Credit-Control-Request, used in Diameter by the credit-control client to request credit authorization from the credit-control server.

CCS

- 1) Charging Control Services (or Prepaid Charging) 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).

CID

Call Instance Data

CLI

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

Connection

Transport level link between two peers, providing for multiple sessions.

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”.

CORBA

Common Object Request Broker Architecture. It is a framework that provides interoperability between objects built in different programming languages, running on different physical machines perhaps on different networks. It specifies an Interface Definition Language, and API that allows client / server interaction with the ORB.

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*".

CS1

ETSI INAP Capability Set 1. An ITU standard.

DAP

Data Access Pack. An extension module for ACS which allows control plans to make asynchronous requests to external systems over various protocols including XML and LDAP.

Diameter

A feature rich AAA protocol. Utilises SCTP and TCP transports.

DP

Detection Point

DRA

Destination Routing Address. The parameter in the INAP Connect operation, sent from ACS to the SSP. This is the number the SSP is instructed to connect to.

DTMF

Dual Tone Multi-Frequency - system used by touch tone telephones where one high and one low frequency, or tone, is assigned to each touch tone button on the phone.

EMI

Exchange Message Interface protocol

ENUM

E.164 Number Mapping.

ESN

Electronic Serial Number - a 32bit number uniquely identifying the mobile station equipment.

ETSI

European Telecommunications Standards Institute

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 through the MC.

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.

GUI

Graphical User Interface

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.

Hunting

A terminating call feature where a subscriber may request a list of alternate destination addresses. If their mobile station is not attached, or does not answer a call, then the service logic should attempt to reach the supplied alternate destinations in sequence.

ICA

InitiateCallAttempt. A CAMEL/INAP operation sent by the SLC to an SSP request that a voice call is started.

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.

In-Roamer

A roaming subscriber entering a mobile phone network.

IP

- 1) Internet Protocol
- 2) Intelligent Peripheral - This is a node in an Intelligent Network containing a Specialized Resource Function (SRF).

IS-41

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.

ISDN

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

ISUP

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.

ITU

International Telecommunication Union

IVR

Interactive Voice Response - systems that provide information in the form of recorded messages over telephone lines in response to user input in the form of spoken words or, more commonly, DTMF signalling.

LAC

Location Area Code. This is an integer value specified as the third level of detail in the location area information. One LAC contains multiple Cell IDs or SAIs.

LCP

Location Capabilities Pack - set of software components used by other applications to look up the location of mobile devices.

LMSI

The subscriber's Local Mobile Subscriber Identity. When the subscriber is roaming, FDA uses both a LMSI and an IMSI.

MAP

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.

MC

Message Centre. Also known as SMSC.

MCC

Mobile Country Code. In the location information context, this is padded to three digits with leading zeros. Refer to ITU E.212 ("Land Mobile Numbering Plan") documentation for a list of codes.

MDN

Mobile Directory Number

Messaging Manager

The Messaging Manager service and the Short Message Service components of Oracle Communications Convergent Charging Controller product. Component acronym is MM (formerly MMX).

MIN

Mobile Identification Number, also known as an MSID.

MM

Messaging Manager. Formerly MMX, see also *XMS* (on page 683) and *Messaging Manager* (on page 676).

MNC

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, that is, 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 ("Land Mobile Numbering Plan") documentation for a list of codes.

MNP

Mobile Number Portability

MO

Mobile Originated

MOX

Minimal OSA using XDR.

This protocol, based on a modified subset of Parlay/OSA, can be used between the SLC and the Commerce Engine (CE).

MS

Mobile Station

MSC

Mobile Switching Centre. Also known as a switch.

MSID

Mobile Subscriber Identification, also known as an MIN.

MSIN

Mobile Station Identification Number.

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).

MSRN

Mobile Station Roaming Number

MT

Mobile Terminated

NOA

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.

NP

Number Portability

NPI

Number Plan Indicator

Octet

Byte - 8 bits.

ORB

Object Request Broker. Within an Object based communication system, an ORB keeps track of the actual addresses of all defined objects and thus is used to route traffic to the correct destination. The CORBA defines the ORB in a series of standards enabling different platforms to share common information.

OSA

Open Service Access provides a standard interface through which developers can design services that may interact with functions within the network.

Out-Roamer

A roaming subscriber leaving their mobile phone network.

PACUI

Play Announcement and Collect User Information

Parlay/OSA

Defines a set of open, standardised APIs that allow applications to access core network functionality. The APIs are defined using CORBA IDL which models method calls on remote objects.

PC

Point Code. The Point Code is the address of a switching point.

Peer

Remote machine, which for our purposes is capable of acting as a Diameter agent.

PI

Provisioning Interface - used for bulk database updates/configuration instead of GUI based configuration.

PIN

Personal Identification Number

PLMN

Public Land Mobile Network

PSTN

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

RIMS

Routing Information for Mobile Services. Used to cache HLR lookup information.

Note: Now known as "Messaging Manager Navigator".

RTCC

Real Time Call Control. The real-time SLC function which controls pre-paid (or convergent post-paid) voice calls under guidance from a billing platform.

SCCP

Signalling Connection Control Part (part of the SS7 protocol stack).

SCCP Address

Is made up of PC + SSN + GT; or PC +SSN; or GT; or GT + PC.

SCI

Send Charging Information. An INAP operation sent from ACS to the SSP to control real time charging by the SSP.

SCP

Service Control Point. Also known as SLC.

SCTP

Stream Control Transmission Protocol. A transport-layer protocol analogous to the TCP or User Datagram Protocol (UDP). SCTP provides some similar services as TCP (reliable, in-sequence transport of messages with congestion control) but adds high availability.

Service Provider

See Telco.

SES

Subscriber Event Service is an application that enables a service provider to send text messages to roaming subscribers (both their own and foreign subscribers) when they roam in and out of their network.

Session

Diameter exchange relating to a particular user or subscriber access to a provided service (for example, a telephone call).

SGML

Standard Generalized Markup Language. The international standard for defining descriptions of the structure of different types of electronic document.

SGSN

Serving GPRS Support Node

SIM

Usually referred to as a SIM card, the Subscriber Identity Module is the user subscription to the mobile network. The SIM contains relevant information that enables access onto the subscribed operator's network.

SIP

Session Initiation Protocol - a signaling protocol for Internet conferencing, telephony, event notification and instant messaging. (IETF)

SK

Service Key

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.

SMP

Service Management Platform (also referred to as SMS).

SMPP

Short Message Peer-to-Peer protocol

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.

SN

Service Number

SOAP

Simple Object Access Protocol. An XML-based messaging protocol.

SRF

Specialized Resource Function – This is a node on an IN which can connect to both the SSP and the SLC and delivers additional special resources into the call, mostly related to voice data, for example play voice announcements or collect DTMF tones from the user. Can be present on an SSP or an Intelligent Peripheral (IP).

SRI

Send Routing Information - This process is used on a GSM network to interrogate the HLR for subscriber routing information.

SS7

A Common Channel Signalling system is 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.

SSN

Subsystem Number. An integer identifying applications on the SCCP layer.

For values, refer to *3GPP TS 23.003*.

SSP

Service Switching Point

Switching Point

Anything that can send and receive C7 messages.

System Administrator

The person(s) responsible for the overall set-up and maintenance of the IN.

TCAP

Transaction Capabilities Application Part – layer in protocol stack, message protocol.

TCP

Transmission Control Protocol. This is a reliable octet streaming protocol used by the majority of applications on the Internet. It provides a connection-oriented, full-duplex, point to point service between hosts.

TDP

Trigger Detection Point.

Telco

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

Telecommunications Provider

See Telco.

Termination node

Any node which sends, or can send, an INAP Connect operation to the SSP. In ACS, termination nodes are:

- *Unconditional Termination* (see page 33)
- *Attempt Termination* (see page 22)
- *Attempt Terminate to Pending TN* (see page 478)
- *Terminate to Pending TN* (see page 489)
- *Attempt Terminate to Pending TN With Duration* (see page 480)

Termination Number

The final number that a call terminates to. Can be set in control plan nodes such as *Attempt Termination* (see page 22) and *Unconditional Termination* (see page 33) for re-routing numbers such as Toll Free or Follow Me numbers.

UIS

USSD Interactive Services

UPC

USSD Portal Components

URI

Uniform Resource Identifier.

USSD

Unstructured Supplementary Service Data - a feature in the GSM MAP protocol that can be used to provide subscriber functions such as Balance Query and Friends and Family Access.

VLR

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.

VMSC

Visited Mobile Switching Centre

Voice Call

The term "voice call" in this document is intended to denote any call controlled by CAMEL or INAP InitialDP. In practice this also includes fax calls, data-over-voice calls, and also includes 3G voice and video conference calls.

VPN

The Virtual Private Network product is an enhanced services capability enabling private network facilities across a public telephony network.

VSSP

Virtual SSP

VWS

Oracle Voucher and Wallet Server (formerly UBE).

WSDL

Web Services Description Language.

XDR

External Data Representation.

A standard for the description and encoding of data. It is useful for transferring data between different computer architectures.

XDR uses a language to describe data formats. The language can only be used to describe data; it is not a programming language.

XML

eXtensible Markup Language. It is designed to improve the functionality of the Web by providing more flexible and adaptable information identification.

It is called extensible because it is not a fixed format like HTML. XML is a 'metalanguage' — a language for describing other languages—which lets you design your own customized markup languages for limitless different types of documents. XML can do this because it's written in SGML.

XMS

Three letter code used to designate some components and path locations used by the Oracle Communications Convergent Charging Controller *Messaging Manager* (on page 676) service and the Short Message Service. The published code is *MM* (on page 676) (formerly *MMX*).

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