Cisco BTS 10200 Softswitch Dial Plan Guide, Release 4.5.x

December 9, 2008

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Text Part Number: OL-8001-10

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CHAPTER 3

Preface

Revised: December 9, 2008, OL-8001-10

Introduction

This document provides detailed routing, translation, and dial plan information for the Cisco BTS 10200 Softswitch. It provides detailed digit manipulation, translation, and dial plan information for various routing scenarios. Additionally, this document provides dial plan configuration information.

Objective

The system administrator of a Cisco BTS 10200 Softswitch can use this document to better understand how to configure the Cisco BTS 10200 Softswitch dial plan.

Audience

This document is designed for engineers, technicians, and system administrators who setup and configure the Cisco BTS 10200 Softswitch dial plan.

Organization

This Cisco BTS 10200 Dial Plan Guide contains the following chapters:

- Digit Translations—The Cisco BTS 10200 Softswitch digit manipulation function enables manipulating either the digit string, or the nature of address (NOA), or both.
- Routing—Provides a basic understanding of the Cisco BTS 10200 Softswitch routing types and an explanation of all routing types and explanation of how they function.
- Dial Plans and Routing—Provides detailed dial plan and routing information for the Cisco BTS 10200 Softswitch.
- Command Line Interface Routing—Provides a basic understanding of how the Cisco BTS 10200 Softswitch Command Line Interface (CLI) functions with of the routing types and call types.
- Preparing for Dial Plan Provisioning—Describes the prerequisite tasks that need to be performed before provisioning a dial plan.
- Provisioning Dial Plans—Provides detailed instructions for configuring Cisco BTS 10200 Softswitch configuration dial plans using the Command Line Interface (CLI) and the Cisco Extensible Provisioning and Operations Manager (EPOM).

Conventions

This document uses the following conventions:

Note Means *reader take note.* Notes contain helpful suggestions or references to material not covered in the manual.

Caution Means *reader be careful.* In this situation, you might do something that could result in equipment damage or loss of data.

Updates to this Document for Release 4.5

This document includes all of the information that was contained in the previous issue (the Release 4.5 Cisco BTS 10200 Softswitch Dial Plan Guide, OL-8001-08), and has been updated for the Release 4.5 Cisco BTS 10200 Softswitch Dial Plan Guide, OL-8001-09 as described in this Preface.

Updates are contained in the following chapters of this document:

- Updated Chapter 2, "Routing" as follows:
  - Added the "Operator Services" section on page 2-37 information

The updated from OL-8001-09 to OL-8001-10 included adding the "International WZ1 (INTL_WZ1) Preferred Carrier Routing" section on page 2-26.

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Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
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For a complete listing of Cisco TAC contacts, go to this URL:

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CHAPTER 1

Digit Translations

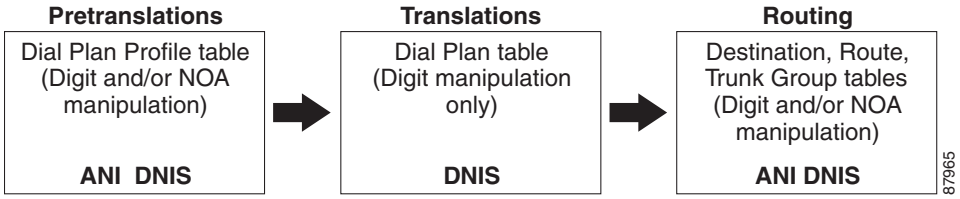
Revised: December 9, 2008, OL-8001-10

Introduction

Note The Auto Callback (AC)/Auto Redial (AR) feature will not function properly if the dialed digit string is changed or translated during the call routing, such as in the table route.

The Cisco BTS 10200 Softswitch digit manipulation or digit translation function enables manipulating or translating either the digit string, or the nature of address (NOA), or both. Digit manipulation or translation can take place at several points in call processing, as illustrated in Figure 1-1.

Figure 1-1 Digit Manipulation Locations and Stages



The digit and/or NOA manipulation rules can be applied during the pre-translations, translations, or routing stages. Additionally, digit manipulations or digit translations can occur at either the originating basic call system manager (OBCSM) or the terminating basic call system manager (TBCSM). The following sections describe the tables and tokens required for digit and/or NOA manipulation at each of these three stages. For details on routing and call processing including actions at specific points in call processing, refer to Chapter 2, "Routing" and to Chapter 3, "Dial Plans and Routing."

Pre-Translations—In the pre-translations stage, the dial-plan-profile table is used to specify if automatic number identification (ANI), dialed number identification service (DNIS) or both are to be manipulated. The purpose of pre-translation stage is to normalize the digits as required during the translations stage. For example: if a region supports 7-digit dialing, you can us DNIS manipulation in the dial-plan-profile to add an home numbering plan area (HNPA) to make it a 10-digit directory number (DN).

Translations—The dial-plan table can be used to manipulate the called party number (DNIS). Simple delete/prefix functionality is supported.

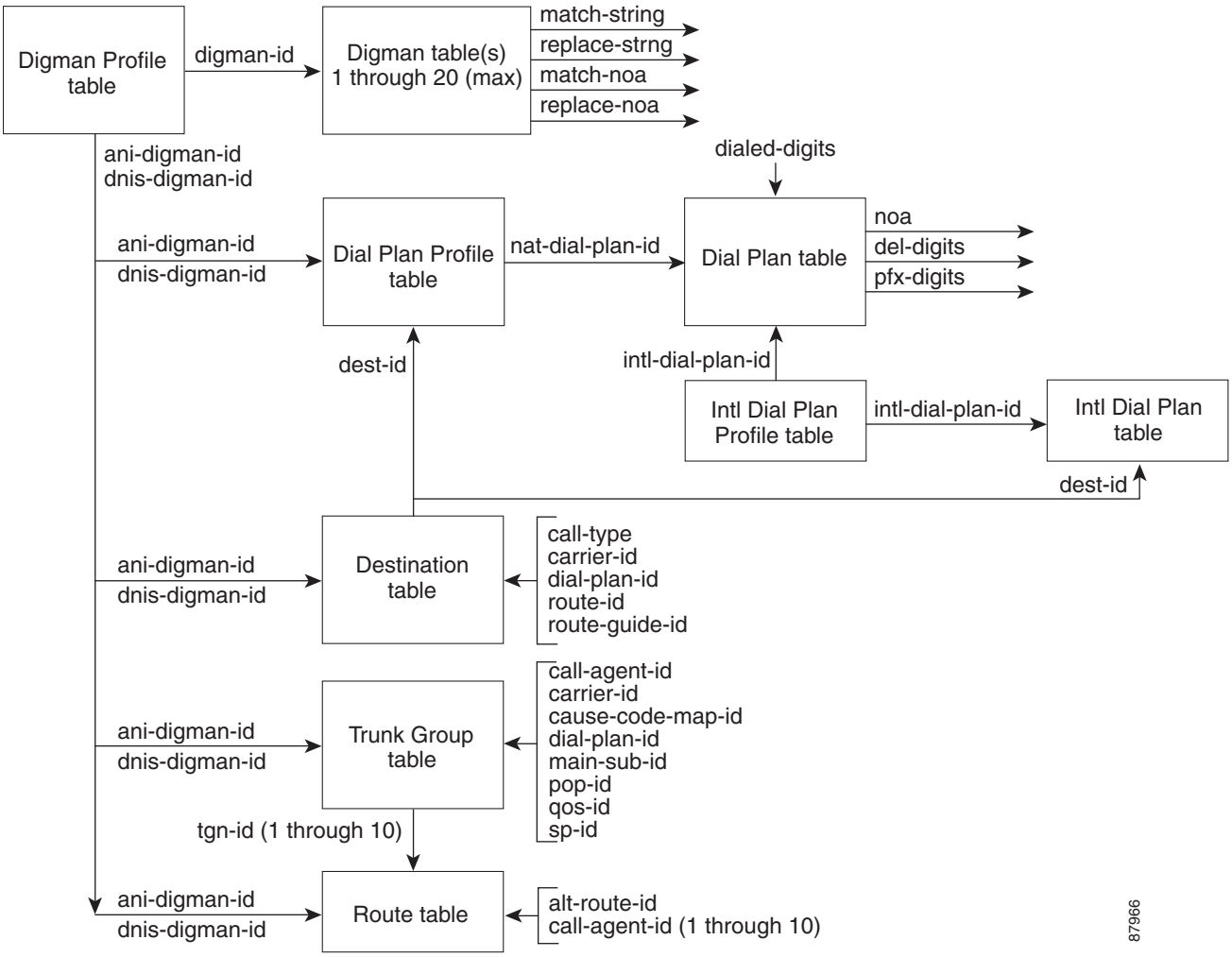
Routing—The Routing is performed in the analyzed info point in call (PIC). The Destination Table and/or Route Table can be used to specify digit manipulation of ANI, DNIS or both. The out-pulsing number can be normalized using the destination table. In addition, if special manipulation is required based on the route selected, then that can be specified with each Trunk Group within a route.

If the Called Party Number terminates within the Cisco BTS 10200 Softswitch, and the subscriber number points to a Trunk Group, then digit manipulation rules for ANI, DNIS, or both can be specified in the Trunk Group Table.

If the call is an interLATA call, or requires Carrier Routing, the ANI/DNIS digit manipulation identification (IDs) specified in the Destination table are ignored and carrier based routing is performed.

Figure 1-2 illustrates the provisioning relationships for Cisco BTS 10200 Softswitch dial plans, which includes the ANI/DNIS digital manipulation functions.

Figure 1-2 Dial Plan Provisioning Relationships



Digit Manipulation

The following is an overview of what the digman tables provide for the Cisco BTS 10200 Softswitch.

Digit manipulation or digit translation is performed based on as many as twenty different digit manipulation (digman) tables as designated by the digman-id and rule number, each of which can have a unique set of match-string and replace-string tokens and/or match-NOA and replace-NOA tokens.

The match-string is compared to the input-string. If a match is found, based on the rules specified here, then the replace-string replaces the matched string in all further call processing actions.

The match-string and replace-string tokens are constructed using the characters specified in Table 1-1.

Table 1-1 Digit Manipulation Rules Specifications

Character(s)	Action
digits 0 through 9, asterisk *, pound sign #	Digits found on a Key-pad. Valid for use at any position in the input-string token, match-string token, and replace-string token.
Caret (^)	Beginning of String Character—Indicates a match to the beginning of the string. The caret character can only be the first character of the match-string. If specified by itself, the input string is prefixed by the replace-string. For examples of the caret character usage, refer to the "Caret (^) Character".
Dollar sign ($)	End of String Character—The dollar sign character can be specified as only the last character of the match string. If specified by itself, the replace-string is appended to the input-string. Is used to specify the end of string. If digits at the end of the string are to be matched, the match-string is terminated by the $ character. For examples of the dollar sign character usage, refer to "Dollar Sign ($) Character".
Dot (.)	If the dot character is specified as a leading character, beginning of the string is assumed. If the dot character is specified as the last character, end of string is assumed. Is used to identify the position of the match. The digits occupying the position specified by the dot character are skipped during the match operation. For examples of the dot character usage, refer to "Dot (.) Character".
Question Mark (?)	The question mark character can appear anywhere but multiple question marks have to be with another question mark. The question mark character can not appear as a single character. If only one digit is to be manipulated, then the ? mark should be preceded by ^ (caret) or followed by a $ (dollar) to signify the first digit or the last digit respectively. Used as a wildcard. Matches any one character. For examples of the question mark character usage, refer to "Question Mark (?) Character". **Note** The "?" character by itself will be treated as a request for help.
Percent sign (%)	Replace Character—The percent sign character can only be specified as the first character of the string. If specified by itself, the input string is replaced by the replace-string. Also used as a wildcard and when specified is used to match 0 or more characters preceding the digits specified in the match-string. For examples of the percent sign character usage, refer to "Percent (%) Character (Match and Replace)".

Table 1-1 Digit Manipulation Rules Specifications (continued)

Character(s)	Action
Ampersand (&)	Prefix Character—The ampersand character can only be specified as the last character of the string. If specified by itself, it is used to indicate that no replace function is required on the matched string, but is used to indicate if the input string matches with the match-string. If it is specified with digits preceding it, the specified digits are prefixed to the matched string. For examples of the ampersand character usage, refer to "Ampersand (&) Character".

None (or none)	Can only be specified by itself.
	Phrase "none" is used to specify NULL string. Can be used for both match-string and replace-string.
	`Example 1: match-string=none; replace-string=4692550000; indicates that when input string is NULL, replace it with 4692550000.`
	`Example 2: match-string=469255; replace-string=none; indicates that if a match is found, replace the matched string with NULL. If input string is 4692551234, after the digit manipulation, the resultant string will be 1234.`

Match-string rules:

- Consist of digits - 0-9, *, #, ^, $, dot(.), question mark (?), Percent (%) or Phrase "none".
- Caret (^) if specified, can only be 1st character of the string.
- Dollar Sign ($) if specified, can only be the last character of the string.
- Percent (%) if specified, can only be 1st character of the string.
- Phrase "none" or "NONE" can only appear by itself.

The following rules are not enforced by the parser.

- Question Mark(s) (?) if specified, can not appear in between a digit string (example: match-string=12??56; is invalid, but match-string=12????; is valid.)
- Dots (.) if specified, can appear as leading dots; trailing dots; or both. (examples: match-string=...555; match-string=555....; match-string=...555....;)

Replace-string rules:

- Consist of digits - 0-9, *, #, ampersand (&) or Phrase "none".
- Ampersand (&) if specified, can appear by itself or be the last character of the string.
- Phrase "none" or "NONE" can only appear by itself.

Character Function

The following subsections provide information on the Cisco BTS 10200 Softswitch character function.

Caret (^) Character

The caret (^) character is used to specify beginning of a string. The caret character is used when specific leading digits are to be deleted or replaced. The caret character is also used when digits are to be prefixed to the input string.

The following examples specify the use of the caret character:

Examples:

```
Example 1: input-string=0119127210112; match-string=^011; replace-string=none. In this
example, the digit string 011 at the beginning of input string will be replaced with NULL.
The resultant output string = 9127210112.

Example 2: input-string=9127210112; match-string=^; replace-string=011. In this example,
since the digit string 011 is prefixed to the input-string. The resultant
output-string=0119127210112.
```

Additional examples:

Example 1:

```
Enter 1 to continue translations 1
Enter input string 14692551234
Match string ^1
Replace string none
MATCHED

Output string = 4692551234
```

Example 2:

```
Enter 1 to continue translations 1
Enter input string 4692551234
Match string ^469255
Replace string 5
MATCHED

Output string = 51234
```

Example 3:

```
Enter 1 to continue translations 1
Enter input string 222
Match string ^
Replace string 1
MATCHED

Output string = 1222
```

Dollar Sign ($) Character

The dollar sign ($) character is used to search from the end of string backwards instead of from the beginning string. The dollar sign character is also used when digits are to be appended to the end of the string, deleted or replaced from the end of the string.

If match-string=1234$, it indicates to look for last 4 digits to be 1234.

If match-string=????$, it indicates to replace last 4 digits with the replace-string.

The following examples show the use of dollar sign character.

Examples:

```
Example 1: input string=4692551234; match-string=????$; replace-string=0000. In this
example, digits 1234 will be replaced with 0000. The resultant output string=4692550000.

Example 2: input string=469255; match-string=$; replace-string=0000. In this example,
digits 0000 will be appended to the input-string. The resultant output string=4692550000.
```

Additional examples:

Example 1:

```
Enter 1 to continue translations 1
Enter input string 4692551234
Match string ????$
Replace string none
MATCHED

Output string = 469255
```

Example 2:

```
Enter 1 to continue translations 1
Enter input string 4692551234
Match string ????$
Replace string 0000
MATCHED

Output string = 4692550000
```

Example 3:

```
Enter 1 to continue translations 1
Enter input string 469255
Match string $
Replace string 0000
MATCHED

Output string = 4692550000
```

Dot (.) Character

The dot (.) character is used to indicate string position at which match operation is to be performed. If a dot character is specified as the first character of the match-string, the digits specified by each dot character are skipped until a question mark or any digit is encountered.

The dot character can also be used to check the length of the input string (see examples below).

Examples:

```
Example 1: match-string="...555" indicates that 555 appear in digit position 4-6. This
will match on the following input string: 4695551234.

Example 2: "555...." Indicates that find a match on 555 where there are 4 more digits that
follow 555. This will match any of the following input strings: 4695551234 or 5551234.
```

Additional examples:

Example 1:

```
Enter 1 to continue translations 1
Enter input string 4695551234
Match string ...555
Replace string &
MATCHED

Output string = 4695551234
```

Example 2:

```
Enter 1 to continue translations 1
Enter input string 4695551234
Match string ..........#CHECK IF INPUT STRING LENGTH=10
Replace string &
MATCHED

Output string = 4695551234
```

Example 3:

```
Enter 1 to continue translations 1
Enter input string 14695551234
Match string ..........
Replace string &
Not MATCHED

Output string = 14695551234
```

Example 4:

```
Enter 1 to continue translations 1
Enter input string 222333
Match string ...33
Replace string none
MATCHED

Output string = 2223
```

Example 5:

```
Enter 1 to continue translations 1
Enter input string 22233
Match string ^...
Replace string none
Not MATCHED

Output string = 22233
```

Question Mark (?) Character

The question mark (?) character is used to specify a wild card character based on its position in the match-string. Each question mark character represents one digit character.

If a question mark is specified as a leading character in a match-string, the beginning of input string is assumed. Match-string "???555" indicates to look for any three digits followed by digits 555. The question mark character can not be specified as the only character as it conflicts with the use of "?" as a help character. So, if the first digit is to be matched, use ^? to represent first digit and ?$ to represent the last digit of a digit-string.

The following examples show the use of question mark (?) character.

Examples:

```
Example 1: "???555" indicates that 555 appear in digit position 4-6. This will match the
following input string: 4695551234.

Example 2: "555????" Indicates that find a match on 555 where there are 4 more digits that
follow 555. This will match any of the following input strings: 4695551234 or 5551234.
Digits 5551234 will be replaced with the replace string.

Example 3: "^?" indicates to match on the 1st digit

Example 4: "?$" indicates to match on the last digit
```

Additional examples:

Example 1:

```
Enter 1 to continue translations 1
Enter input string 14692551234
Match string ^1???
Replace string none
MATCHED

Output string = 2551234
```

Example 2:

```
Enter 1 to continue translations 1
Enter input string 4692551234
Match string ????$
Replace string none
MATCHED

Output string = 469255
```

Example 3:

```
Enter 1 to continue translations 1
Enter input string 4695551234
Match string ???555
Replace string 5
MATCHED

Output string = 51234
```

Example 4:

```
Enter 1 to continue translations 1
Enter input string 4692551234
Match string ???555
Replace string none
Not MATCHED

Output string = 4692551234
```

Percent (%) Character (Match and Replace)

The percent character (%) is used to specify the match and replace function i.e. if a match occurs, replace the matched string with the replace-string. The percent character is also used as a wild card character.

If match-string=%, the whole input-string is replaced by the replace-string.

If match-string=%nn, the input-string is searched from the beginning until it matches pattern nn, and the whole string from the beginning to the end of pattern is replaced with the replace-string.

If match-string=%...nnn, the input-string is searched for pattern nnn in digit positions 4,5 and 6. If a match occurs, the digit string from the beginning including the pattern nnn is replaced with the replace-string.

The following examples show the use of the percent (%) character.

Examples:

```
Example 1: %555 - indicates match on 555 and any number of digits preceding it. This will
match on of the following input string: 4695551234. Digits 469555 will be replaced with
the replace string.

Example 2: % - indicates match on any number of digits.
```

Additional examples:

Example 1:

```
Enter 1 to continue translations 1
Enter input string 4692551234
Match string %
Replace string 55555
MATCHED

Output string = 55555
```

Example 2:

```
Enter 1 to continue translations 1
Enter input string 4692551234
Match string %255
Replace string 5
MATCHED

Output string = 51234
```

Example 3:

```
Enter 1 to continue translations 1
Enter input string 4692551234
Match string %...255MATCH DIGITS 255 IN DIGIT POSITIONS 4,5,6
Replace string 5
MATCHED

Output string = 51234
```

Example 4:

```
Enter 1 to continue translations 1
Enter input string 4692551234
Match string %...255?MATCH DIGITS 255 IN DIGIT POSITIONS 4,5,6 AND 1 MORE DIGIT
Replace string 55
MATCHED

Output string = 55234
```

Ampersand (&) Character

The ampersand character (&) is used in the replace-string to leave the matched string as is without replacing it with the replace string. If ampersand is specified by itself, the digit manipulation leaves the input string as is. If a digit string is specified followed by an ampersand, the digit string is prefixed to the matched string.

The following examples show the use of the ampersand (&) character.

Examples:

```
Example 1: input-string=4695551212; match-string=...555....; replace-string=&; will return
an indication of match, but the output string will be unaffected.

Example 2: input string=4695551234; match-string=???555....; replace-string=1&; In this
example, if the input string is 10 digits long, and digits(4-6) 555, prefix the input
string with 1. The resultant output string=14695551234.
```

Additional examples:

Example 1:

```
Enter 1 to continue translations 1
Enter input string 4692551234
Match string ???255
Replace string 1&
MATCHED

Output string = 14692551234
```

Example 2:

```
Enter 1 to continue translations 1
Enter input string 14692551234
Match string ^1..........
Replace string &
MATCHED

Output string = 14692551234
```

Example 3:

```
Enter input string 4695551212
Match string ^...555....
Replace string &
MATCHED

Output string = 4695551212
```

Example 4:

```
Enter 1 to continue translations 1
Enter input string *85#
Match string *
Replace string &
MATCHED

Output string = *85#
```

Example 5:

```
Enter 1 to continue translations 1
Enter input string *85#
Match string #
Replace string &
MATCHED

Output string = *85#
```

Delete Digits Function

The Cisco BTS 10200 Softswitch digit manipulation function supports the following delete capabilities:

- Deletion of leading digits
- Deletion of specific leading digits
- Deletion of trailing digits
- Deletion of specific trailing digits
- Deletion of leading digits only if the length matches
- Deletion of trailing digits only if the length matches

Leading Digits Deletion

The Cisco BTS 10200 Softswitch digit manipulation functions supports the deletion of leading digits per the following example:

```
Add digman id=del3; match-string=???; replace-string=none; OR
Add digman id=del3; match-string=^???; replace-string=none;
************************************************
Enter input string4692551234
Match string???
Replace string none
MATCHED

Output string = 2551234
************************************************
```

Specific Leading Digits Deletion

The Cisco BTS 10200 Softswitch digit manipulation function supports the deletion of specific leading digits per the following example:

```
Add digman id=del00; match-string=^00; replace-string=none;
************************************************
Enter input string 0012345
Match string ^00
Replace string none
MATCHED

Output string = 12345
************************************************
```

Trailing Digits Deletion

The Cisco BTS 10200 Softswitch digit manipulation function supports the deletion of trailing digits per the following example:

```
Add digman id=dellast4; match-string=????$; replace-string=none;
************************************************
Enter input string 4692551234
Match string ????$
Replace string none
MATCHED

Output string = 469255
************************************************
```

Specific Trailing Digits Deletion

The Cisco BTS 10200 Softswitch digit manipulation function supports deletion of specific trailing digits per the following example:

```
Add digman id=delx1212; match-string=1212$; replace-string=none;
************************************************
Enter input string 4695551212
Match string 1212$
Replace string none
MATCHED

Output string = 469555
************************************************
```

Leading Digits Deletion if the Length Matches

The Cisco BTS 10200 Softswitch digit manipulation function supports the deletion of leading digits only if the length of input-string matches the length implied by the match-string per the following example:

```
Add digman id=del310; match-string=^???.......; replace-string=none; OR
Add digman id=del310; match-string=???.......; replace-string=none;
************************************************
Enter input string 4692551234
Match string ???.......
Replace string none
MATCHED

Output string = 2551234
************************************************
```

Trailing Digits Deletion if the Length Matches

The Cisco BTS 10200 Softswitch digit manipulation function supports deletion of trailing digits only if the length of input-string matches the length implied by the match-string per the following example:

```
Add digman id=dellast4; match-string=......????; replace-string=none; OR
Add digman id=del310; match-string=^......????$; replace-string=none;
************************************************
Enter input string 4692551234
Match string ......????
Replace string none
MATCHED

Output string = 469255
************************************************
```

Prefix Digits Function

The Cisco BTS 10200 Softswitch digit manipulation function supports the prefix of digits. The following prefix functions shall be supported:

- Prefix leading digits
- Prefixing of digits only if length matches

Leading Digits Prefix

The Cisco BTS 10200 Softswitch digit manipulation function supports the prefixing of leading digits per the following example:

```
Add digman id=pfx469; match-string=^; replace-string=469;
************************************************
Enter input string 5551234
Match string ^
Replace string 469
MATCHED

Output string = 4695551234
************************************************
```

Digits Prefix if Length Matches

The Cisco BTS 10200 Softswitch digit manipulation function supports the prefixing of digits only if length matches per the following example:

```
Add digman id=pfx469if7; match-string=^.......; replace-string=469; OR
Add digman id=pfx469if7; match-string=.......; replace-string=469;
************************************************
Enter input string 5551234
Match string ^.......
Replace string 469
MATCHED

Output string = 4695551234
************************************************
```

Replace (Delete and Prefix) Digits Function

The Cisco BTS 10200 Softswitch digit manipulation function supports the digit replacement based on matched string i.e. the matched string will be replaced with the replace-string.

- Replacement of leading digits
- Replacement of trailing digits
- Replacement of specific digits
- Replacement of leading digits only if length matches
- Replacement of specific digits in a specific digit position
- Replacement of digits in a specific digit position
- Replace only if NULL
- Replace any input string

Leading Digits Replacement

The Cisco BTS 10200 Softswitch digit manipulation function supports the replacement (delete and prefix) of leading digits per the following examples:

```
Add digman id=del6pfx5; match-string=??????; replace-string=5; OR
Add digman id=del6pfx5; match-string=^??????; replace-string=5;
************************************************
Enter input string 4692551234
Match string ??????
Replace string 5
MATCHED

Output string = 51234
************************************************
Enter input string 4692551234
Match string ^??????
Replace string 5
MATCHED

Output string = 51234
************************************************
```

Trailing Digits Replacement

The Cisco BTS 10200 Softswitch digit manipulation function supports the replacing trailing digits per the following example:

```
Add digman id=del4rep0000; match-string=????$; replace-string=0000;
************************************************
Enter input string 4692551234
Match string ????$
Replace string 0000
MATCHED

Output string = 4692550000
************************************************
```

Specific Digits Replacement

The Cisco BTS 10200 Softswitch digit manipulation function supports specific digits replacement only if the input string matches specific digits per the following example:

```
Add digman id=del469255pfx5; match-string=469255; replace-string=5;
************************************************
Enter input string 4692551234
Match string 469255
Replace string 5
MATCHED

Output string = 51234
************************************************
```

Leading Digits Replacement if Length Matches

The Cisco BTS 10200 Softswitch digit manipulation function supports leading digits replacement only if the length matches per the following examples:

```
Add digman id=del6pfx5; match-string=469255....; replace-string=5;
************************************************
Enter input string 4692551234
Match string 469255....
Replace string 5
MATCHED

Output string = 51234
************************************************
Enter input string 4692550
Match string 469255....
Replace string 5
Not MATCHED

Output string = 4692550
************************************************
```

Specific Digits Replacement in a Specific Digit Position

The Cisco BTS 10200 Softswitch digit manipulation function supports specific digits replacement specified by position per the following example:

```
Add digman id=rep555; match-string=...555....; replace-string=222;
************************************************
Enter input string 4695551234
Match string ...555....
Replace string 222
MATCHED

Output string = 4692221234
************************************************
```

Digits Replacement in a Specific Digit Position

The Cisco BTS 10200 Softswitch digit manipulation function supports the digits replacement in the specific digit position per the following examples:

```
Add digman id=rep456w222; match-string=...???....; replace-string=222;
Add digman id=replast4; match-string=......????; replace-string=0000;
************************************************
Enter input string 4695551234
Match string ...???....
Replace string 222
MATCHED

Output string = 4692221234
************************************************
Enter input string 4695551234
Match string ......????
Replace string 0000
MATCHED

Output string = 4695550000
************************************************
```

Digits Replacement only if NULL

The Cisco BTS 10200 Softswitch digit manipulation function supports digit replacement if input digit string is NULL per the following examples:

```
Add digman id=repifnull; match-string=none; replace-string=4692550000;
************************************************
Enter input string none
Match string none
Replace string 4692550000
MATCHED

Output string = 4692550000
************************************************
Enter input string 4695551234
Match string none
Replace string 4692550000
Not MATCHED

Output string = 4695551234
************************************************
```

Any Input String Replacement

The Cisco BTS 10200 Softswitch digit manipulation function supports the replacement of any input string with the replace-string per the following examples:

```
Add digman id=replace; match-string=%; replace-string=4692550000;
************************************************
Enter input string none
Match string %
Replace string 4692550000
MATCHED

Output string = 4692550000
************************************************
Enter input string 4695551234
Match string %
Replace string 4692550000
MATCHED

Output string = 4692550000
************************************************
```

Nature of Address Manipulation

The Cisco BTS 10200 Softswitch Digit Manipulation table also supports NOA manipulation.

To perform NOA manipulation only, the match-string and the replace-string should be NULL.

```
Add digman id=dg1; rule=1; match-noa=any; replace-noa=subscriber;
```

If both digit and NOA manipulation rules are defined; the digit manipulation is only performed if the NOA value specified in the match-noa matches with the input noa AND the match-string matches with the input string.

```
Add digman id=dg1; rule=1; match-string=%255; replace-string=5; match-noa=national;
replace-noa=abbr;
```

Table 1-2 Nature Of Address Table

NOA	Description
950	NOA used to specify 950 Call.
ANY	When specified matches any of the other NOAs. This NOA can only be specified in the MATCH-NOA field.
ABBR	NOA used to specify Abbreviated Number.
CUT-THRU	NOA used to specify no number present, Cut-Thru call.
INTL	NOA used to specify International Number
INTL-OPR	NOA used to specify International Number, Operator Requested (Valid for Called Party Number only).
INTL	NOA used to specify Unique International Number.
NATIONAL	NOA used to specify National Number.
NAT-OPR	NOA used to specify National Number, Operator Requested (Valid for Called Party Number only).
NETWORK	NOA used to specify Network.

Table 1-2 Nature Of Address Table (continued)

NOA	Description
NON-UNIQUE-INTL	NOA used to specify non-unique international number (valid for Calling Party number).
NON-UNIQUE-NATIONAL	NOA used to specify non-unique national number (valid for Calling Party number).
NON-UNIQUE-SUBSCRIBER	NOA used to specify non-unique subscriber number (valid for Calling Party number).
NS0	NOA used to specify Network specific (111 1000) Number.
NS1	NOA used to specify Network specific (111 1001) Number.
NS2	NOA used to specify Network specific (111 1010) Number.
NS3	NOA used to specify Network specific (111 1011) Number.
NS4	NOA used to specify Network specific (111 1100) Number.
NS5	NOA used to specify Network specific (111 1101) Number.
NS6	NOA used to specify Network specific (111 1110) Number.
OPERATOR	NOA used to specify an Operator Call.
PORTED-NUMBER-WITHOUT-RN	Digits contain ported DN only (no RN prefix).
PORTED-NUMBER-WITH-RN	The Ported Number is prefixed with the Routing Number (RN + DN).
PRIVATE	NOA used to specify Private Numbering Plan
RESERVED	Reserved NOA.
SPARE0/SPARE2	Spare. Not Used.
SUB-OPR	NOA used to specify Subscriber Number, Operator Requested (Valid for Called Party Number only).
SUBSCRIBER	NOA used to specify Subscriber Number
TEST-LINE	NOA used to specify Test Line Number
UNKNOWN	Nature of Address is Unknown.
VSC	NOA used to specify Vertical Service Code.

Nature of Address Route Profile

The NOA Route Profile (noa-route-profile) table is used to support NOA-based routing on the Cisco BTS 10200 Softswitch. This profile defines the NOA route id. The id can be assigned to a single Dial Plan Profile table or multiple Dial Plan Profile tables.

Table Name: NOA_ROUTE_PROFILE

Table Containment Area: EMS, CA

Command Types add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show noa-route-profile;
add noa-route-profile id=NoaRt;
change noa-route-profile id=NoaRt; description=noa specific route profile ID
delete noa-route-profile id=NoaRt;
```

Usage Guidelines

Primary Key Token(s): ID

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DESCRIPTION	Description: Service provider-defined description. VARCHAR(64): 1-64 ASCII characters. Valid for Command: add, change, delete, show Possible Value: [1_64] Parser: TextParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
ID	Description: Primary key. The NOA Route Profile id. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, delete, show, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser

LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser

START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Nature of Address Route

The NOA Route (noa-route) table defines NOA-based routing on the Cisco BTS 10200 Softswitch. When the NOA-based routing is specified in the Dial Plan Profile table the Cisco BTS 10200 Softswitch uses the received NOA to index the NOA Route table and determine the destination id for further routing. The destination id can point to a specific route based on the NOA or it can point to a dial plan. When a destination id points to a dial plan, the received called party number is translated using the dial plan.

Table Name: NOA_ROUTE

Table Containment Area: EMS, CA

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show noa-route;
add noa-route id=NoaRt; noa=ported-number; dest-id=lnpDP
change noa-route id=NoaRt; noa=ported-number; dest-id=RnDp
delete noa-route id=NoaRt; noa=ported-number;
```

Usage Guidelines

Primary Key Token(s): ID, NOA

Foreign Key Token(s): id, dest-id

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DEST_ID	Description: Foreign key: Destination table. The destination id associated with the received NOA. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, audit, sync Mandatory: add Possible Value: [1_16] Parser: TextParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
ID	Description: Primary key. The NOA Route Profile id. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, delete, show, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser

LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
NOA	Description: Primary key. The Nature of Address. VARCHAR(32): 1-32 ASCII characters. Permitted values are: PORTED-NUMBER-WITH-RN—The ported number is prefixed with Network ID and Switch ID (RN+DN). PORTED-NUMBER-WITHOUT-RN—The ported number may be prefixed with a Network ID, or may not be prefixed with anything (DN or NTWK-ID plus the DN), but does not include the switch id. Valid for Command: add, change, delete, show, audit, sync Mandatory: add, change, delete Possible Value: PORTED_NUMBER_WITH_RN, PORTED_NUMBER_WITHOUT_RN Parser: TextNoCaseParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Automatic Number Identification/Dialed Number Identification Service Manipulation

The Cisco BTS 10200 Softswitch supports DNIS or ANI digit manipulation, it includes digit manipulation or nature of address manipulation or both. When ANI manipulation is defined, it usually refers to the calling party number (CPN) which is normally displayed when a call is terminated to a device with calling number delivery (CND) feature.

In countries like China, there are additional requirements regarding ANI display. The requirements are to display ANI in the "dialable" format. The term dialable means the user can simply call up the display and hit the dial button to place the call based on the received ANI. This requires ANI to contain an area code or national destination code (NDC) for a long distance call while only displaying subscriber number for a local call. The rules defined above can be used to manipulate ANI digits to the desired format.

When call forwarding has occurred, the ANI manipulation is performed as follows:

- If redirecting party number is available, the redirecting party number is manipulated.
- If redirecting party number is not available, but original called number (OCN) is available, the OCN is manipulated.
- If neither redirecting party number nor OCN are available, then the calling party number is manipulated.

The following sections describe the provisioning and actions in each of the three stages in greater detail.

Pre-Translation Stage

In the pre-translations stage, the dial-plan-profile table is used to specify if ANI, DNIS, or both are to be manipulated. The purpose of the pre-translation stage is to normalize the digits, as required, during the translations stage.

In addition to manipulating the ANI/DNIS digits, the pre-translation stage can also be used to determine the NOA of the incoming digits (either ANI or DNIS or both).

The Dial Plan Profile table has been modified to allow provisioning of the ANI and DNIS digit manipulation rules.

Example 1:

In the first example, since the first character of the input string matches the specified match-string (^*), the NOA is changed to a vertical service code (VSC).

```
Add digman id=pretrans; rule=1; match-string=^*; replace-string=&; match-noa=any;
replace-noa=vsc;

Enter input string *55#
Match string ^*
Replace string &
MATCHED

Output string = *55#
```

Example 2:

In the second example, since the last character of the input string matches the specified match-string (#), the NOA is changed to a VSC.

```
Add digman id=pretrans; rule=2; match-string=#; replace-string=&; match-noa=any;
replace-noa=vsc;

Enter input string *55#
Match string #
Replace string &
MATCHED

Output string = *55#
```

Example 3:

In the third example there is no match, so the NOA is not changed and the output-string is the same as the input-string.

```
Add digman id=pretrans; rule=3; match-string=*; replace-string=&; match-noa=any;
replace-noa=vsc;

Enter input string 5555
Match string *
Replace string &
Not MATCHED

Output string = 5555
```

Determining Nature of Address for China

The following table can be used to determine the NOA of incoming calls for China.

Table 1-3 Nature of Address Determination for China

Rule #	Match-String	Replace String	Match-NOA	Replace NOA	Remarks
1	*	&	Any	VSC	If first digit is a *, treat it as a VSC code.
2	#	&	Any	VSC	If first digit is a #, treat it as a VSC code.

Digit Manipulation Profile

The Digit Manipulation Profile (digman-profile) table is used to create unique IDs for digit manipulation. This identification (ID) must be created before provisioning the Digit Manipulation table.

Table Name: DIGMAN_PROFILE

Table Containment Area: EMS, CA

Command Types add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show digman-profile id=ndc10;
add digman-profile id=ndc10; description=Subscriber ANI manipulation digman id;
change digman-profile id=ndc10; description=Subscriber ANI manipulation digman id for
ndc10;
delete digman-profile id=ndc10;
```

Usage Guidelines

Primary Key Token(s): ID

Usage Guidelines and Check Rules:

Add Rules: digman-profile id cannot exist.

Change Rules: digman-profile id must exist.

Delete Rules: digman-profile id must exist.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DESCRIPTION	Description: Service provider-defined description. VARCHAR(64): 1-64 ASCII characters. Valid for Command: add, change, delete, show Possible Value: [1_64] Parser: TextParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

ID	Description: Primary key. The NOA Route Profile id. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, delete, show, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser

START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Digit Manipulation

The DIGMAN table is used to perform digit and NOA manipulation.

Table Name: DIGMAN

Table Containment Area: EMS, CA

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show digman id=ndc10;
add digman id=ndc10; rule=1; match-string=010; replace-string=none;
change digman id=ndc10; rule=1; match-noa=any; replace-noa=subscriber;
delete digman id=ndc10; rule=1;
```

Usage Guidelines

Primary Key Token(s): ID, RULE

Foreign Key Token(s): id

Add Rules:

- digman profile id must exist.
- if match-string is not equal to NULL; then replace-string is not equal to NULL.
- if match-noa is not equal to NULL; then replace-noa is not equal to NULL.

Change Rules:

- id must exist.
- if match-string is not equal to NULL; then replace-string is not equal to NULL.
- if match-noa is not equal to NULL; then replace-noa is not equal to NULL.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DESCRIPTION	Description: Service provider-defined description. VARCHAR(64): 1-64 ASCII characters. Valid for Command: add, change, delete, show Possible Value: [1_64] Parser: TextParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

ID	Description: Primary key. The NOA Route Profile id. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, delete, show, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

MATCH_NOA	Description: Used to match against an input NOA. VARCHAR(40): 1-40 ASCII characters. Permitted values are: 950—950 Call ABBR—Abbreviated number ANY—Any NOA CUT-THRU—No number present, cut-thru call INTL—International number INTL-OPR—International Number, Operator Requested (Valid for Called Party Number only) INTL—Unique International Number NATIONAL—Unique National Number NAT-OPR—National Number, Operator Requested (Valid for Called Party Number only) NETWORK—Network NON-UNIQUE-INTL—Non-unique international number (valid for Calling Party number). NON-UNIQUE-NATIONAL—Non-unique national number (valid for Calling Party number). NON-UNIQUE-SUBSCRIBER—Non-unique subscriber number (valid for Calling Party number). NS0—Network specific (111 1000) NS0—Network specific (111 1000) NS1—Network specific (111 1001) NS1—Network specific (111 1001) NS2—Network specific (111 1010) NS2—Network specific (111 1010) NS3—Network specific (111 1011) NS3—Network specific (111 1011) NS4—Network specific (111 1100) NS4—Network specific (111 1100) NS5—Network specific (111 1101) NS5—Network specific (111 1101) NS6—Network specific (111 1110) NS6—Network specific (111 1110) OPERATOR—No Number, Operator Call (Valid for Called Party Number only) PORTED-NUMBER-WITHOUT-RN—The Ported Number maybe prefixed with the network id, or may not be prefixed with anything (DN or NTWK-ID+DN), but does not include the Switch ID. PORTED-NUMBER-WITH-RN—The Ported Number is prefixed with the network id and switch id (RN+DN). PRIVATE—Private Numbering Plan RESERVED—Reserved NOA SPARE0/SPARE2—Spare. Not Used. SUB-OPR—Subscriber Number, Operator Requested (Valid for Called Party Number only) SUBSCRIBER—Unique Subscriber Number TEST-LINE—Test Line UNKNOWN—Nature of Address is Unknown. VSC—Vertical Service Code Valid for Command: add, audit, change, show Possible Value: 950, ABBR, ANY, CUT_THRU, INTL, INTL_OPR, NATIONAL, NS0, NS1, NS2, NS3, NS4, NS5, NS6, OPERATOR, PRIVATE, RESERVED, SPARE0, SPARE2, SUBSCRIBER, TEST_LINE, UNKNOWN, VSC, NAT_OPR, NON_UNIQUE_INTL, NON_UNIQUE_NATIONAL, NON_UNIQUE_SUBSCRIBER, SUB_OPR, PORTED_NUMBER_WITH_RN, PORTED_NUMBER_WITHOUT_RN Parser: TextParser

MATCH_STRING	Description: Used to match against the input-string. VARCHAR(40): 1-40 ASCII characters. The characters can be one of the following: Digits (0-9, *, #)—Digits found on a keypad. Dot (.)—Used to indicate the string position at which to perform the match operation. If a dot is specified as the 1st character of the match-string, the digits specified by each dot are skipped until a question mark or a digit is encountered. Can also be used to check the length of the input string. Question mark (?)—Used to specify a wild card character based on its position in the match-string. Each question mark (?) represents 1 digit character. Multiple question marks must be used with another question mark. Percent (%)—Used to specify the Match and Replace function. That is, if a match occurs, replace the matched string with the replace-string. Also used as a wild card character. Caret (^)—Used to specify beginning of a string when specific leading digits are to be deleted or replaced. Also used when prefixing digits to the input string. Dollar sign ($)—Used to search from the end of a string backwards instead of from the beginning. Also used when digits are to be appended to the end of the string; deleted or replaced from the end of the string. NONE—the actual word. Valid for Command: add, audit, change, show Possible Value: [1_40] Parser: MatchStringParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser

REPLACE_NOA	Description: If a match on NOA is found, the input NOA is replaced with the NOA specified in this token. VARCHAR(32): 1-32 ASCII characters. Permitted values are: 950—950 Call ABBR—Abbreviated number CUT-THRU—No number present, cut-thru call INTL—International number INTL-OPR—International Number, Operator Requested (Valid for Called Party Number only) INTL—Unique International Number NATIONAL—Unique National Number NAT-OPR—National Number, Operator Requested (Valid for Called Party Number only) NETWORK—Network NON-UNIQUE-INTL—Non-unique international number (valid for Calling Party number). NON-UNIQUE-NATIONAL—Non-unique national number (valid for Calling Party number). NON-UNIQUE-SUBSCRIBER—Non-unique subscriber number (valid for Calling Party number). NS0—Network specific (111 1000) NS0—Network specific (111 1000) NS1—Network specific (111 1001) NS1—Network specific (111 1001) NS2—Network specific (111 1010) NS2—Network specific (111 1010) NS3—Network specific (111 1011) NS3—Network specific (111 1011) NS4—Network specific (111 1100) NS4—Network specific (111 1100) NS5—Network specific (111 1101) NS5—Network specific (111 1101) NS6—Network specific (111 1110) NS6—Network specific (111 1110) OPERATOR—No Number, Operator Call (Valid for Called Party Number only) PORTED-NUMBER-WITHOUT-RN—The Ported Number maybe prefixed with the network id, or may not be prefixed with anything (DN or NTWK-ID+DN), but does not include the Switch ID. PORTED-NUMBER-WITH-RN—The Ported Number is prefixed with the network id and switch id (RN+DN). PRIVATE—Private Numbering Plan RESERVED—Reserved NOA SPARE0/SPARE2—Spare. Not Used. SUB-OPR—Subscriber Number, Operator Requested (Valid for Called Party Number only) SUBSCRIBER—Unique Subscriber Number TEST-LINE—Test Line UNKNOWN—Nature of Address is Unknown. VSC—Vertical Service Code Valid for Command: add, audit, change, show Possible Value: 950, ABBR, CUT_THRU, INTL, INTL_OPR, NATIONAL, NS0, NS1, NS2, NS3, NS4, NS5, NS6, OPERATOR, PRIVATE, RESERVED, SPARE0, SPARE2, SUBSCRIBER, TEST_LINE, UNKNOWN, VSC, NAT_OPR, NON_UNIQUE_INTL, NON_UNIQUE_NATIONAL, NON_UNIQUE_SUBSCRIBER, SUB_OPR, PORTED_NUMBER_WITH_RN, PORTED_NUMBER_WITHOUT_RN Parser: TextParser

REPLACE_STRING	Description: If a match is found, the matched string is replaced with the replace-string. VARCHAR(40): 1-40 ASCII characters. The characters can be one of the following: Digits (A-F, 0-9, *, #) Ampersand (&) NONE (the actual word) Valid for Command: add, audit, change, show Possible Value: [1_40] Parser: ReplaceStringParser
RULE	Description: Valid for Command: add, audit, change, delete, show Mandatory: add, change, delete Possible Value: [1_20] Parser: DecimalParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Dial Plan Profile

The Dial Plan Profile (dial-plan-profile) table creates dial-plan-profile ids before they are assigned to subscribers or trunk groups. The dial-plan-profile id links digit-string entries in the Dial Plan table within a dial plan. Different dial-plan-profile ids are assigned to subscribers and trunk groups. A dial-plan-id must be created in this table before entries can be added to the Dial Plan table.

Note It is critical to specify the correct NANP-DIAL-PLAN value. If the default Y value (North America) is used on an international switch (e.g., in Europe), then digman and dial-plan NOA matching and replacing will not work correctly.

Table Name: DIAL_PLAN_PROFILE

Table Containment Area: EMS, CA

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show dial-plan-profile id=business;
add dial-plan-profile id=business; description=dialing plan for new business users in
dallas;
change dial-plan-profile id=business; description=dialing plan for new business users in
northdallas;
delete dial-plan-profile id=business;
```

Usage Guidelines

Primary Key Token(s): ID

Foreign Key Token(s): intl-dial-plan-id, dnis-digman-id, ani-digman-id, nat-dial-plan-id, noa-route-profile-id

Change Rules: dial-plan-profile id must exist.

Delete Rules:

- ID does not exist in any dial-plan::id.
- ID does not exist in any sub-profile::dial-plan-id.
- ID does not exist in any pop::lnp-dp-id.
- ID does not exist in any trunk-grp::dial-plan-id.
- ID does not exist in any carrier::dial-plan-id.

Syntax Description

ANI_DIGMAN_ID	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DESCRIPTION	Description: Service provider-defined description. VARCHAR(64): 1-64 ASCII characters. Valid for Command: add, change, delete, show Possible Value: [1_64] Parser: TextParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
DNIS_DIGMAN_ID	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser

ID	Description: Primary key. The NOA Route Profile id. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, delete, show, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
INTL_DIAL_PLAN_ID	Description: Foreign key: International Dial Plan Profile table. Specifies which international dial plan ID to use with the dial plan ID. If this field is null, the Call Agent uses the default intl-dial-plan-id values from Appendix A, “Call Agent and Feature Server Configurable Parameters” in the Call Agent Configuration table. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
NANP_DIAL_PLAN	Description: Specifies whether the dial plan is in North American Number Plan (NANP) format. If it is an NANP dial plan, the EMS enforces NANP rules—the digit string must be in the format NXX-NXX-XXXX. CHAR(1): Y/N (Default = Y). Valid for Command: add, audit, change, show Default Value: Y Possible Value: Y, N Parser: BooleanParser

NAT_DIAL_PLAN_ID	Description: Foreign key: Dial Plan table. National dial plan ID to use to retranslate dialed digits. This token is used only if the dial plan ID is different from the dial plan profile ID. VARCHAR(16): 1-16 ASCII characters (Default = dial-plan-profile-id). Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
NOA_BASED_ ROUTING	Description: Specifies whether Nature of Address based routing is required. CHAR(1): Y/N (Default = N) Valid for Command: add, audit, change, show, sync Default Value: N Possible Value: Y, N Parser: BooleanParser
NOA_ROUTE_ PROFILE_ID	Description: Mandatory if noa-based-routing=Y. Foreign key: NOA Route Profile table. Specifies the NOA-specific route id to use for routing. When NOA-based-routing is specified, the NOA is used to index the NOA Route table. If a NOA-specified record is found, processing continues based on the Destination ID specified in the NOA Route table. If no record is found, then the Called Number is translated in the current Dial Plan. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show, sync Possible Value: [1_16] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
OVERDECADIC_ DIGITS_SUPP	Description: Controls provisioning of overdecadic digits in a dial plan. This token can only be set to Y if the nanp-dial-plan token is set to N. CHAR(1): Y/N (Default = N). Valid for Command: add, audit, change, show Default Value: N Possible Value: Y, N Parser: BooleanParser

PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

International Dial Plan Profile

The International Dial Plan Profile (intl-dial-plan-profile) table is used to create unique IDs for international dial plans. This ID must be created before provisioning the International Dial Plan table.

Table Name: INTL_DIAL_PLAN_PROFILE

Table Containment Area: EMS, CA

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show intl-dial-plan-profile id=pop1;
add intl-dial-plan-profile id=pop1; description=default International Dialing plan for
Call Agent;
change intl-dial-plan-profile id=pop1; description=International Dialing plan for POP1;
delete intl-dial-plan-profile id=pop1;
```

Usage Guidelines

Primary Key Token(s): ID

Delete Rules: Id does not exist in any: dial-plan::id; sub-profile::dial-plan-id; pop::lnp-dp-id; trunk-grp::dial-plan-id; or carrier::dial-plan-id.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DESCRIPTION	Description: Service provider-defined description. VARCHAR(64): 1-64 ASCII characters. Valid for Command: add, change, delete, show Possible Value: [1_64] Parser: TextParser

DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
ID	Description: Primary key. The NOA Route Profile id. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, delete, show, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Translations Stage

The Dial-Plan table or International Dial-Plan table is used during the Translations stage to manipulate only the called party number. The previously existing capability of a simple delete and/or prefix digit manipulation function is supported.

Note While the simple delete and/or prefix digit manipulation function is still supported, it is no longer necessary as the same function(s) can now be accomplished in the other two stages.

Dial Plan

Dial plans analyze, screen, and route calls based on dialed digits. The Dial Plan (dial-plan) table holds dial plan information for a specific type of call. It defines valid dialing patterns and determines call routing. All records that share a common dial-plan-profile id are considered a dial plan.

Table Name: DIAL_PLAN

Table Containment Area: EMS, CA

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show dial-plan id=sub; digit-string=972-671;
add dial-plan id=sub; digit-string=972-671; noa=national; dest-id=richardson;
change dial-plan id=sub; digit-string=972-671; noa=national; dest-id=plano;
delete dial-plan id=sub; digit-string=972-671; noa=national; dest-id=plano;
```

Usage Guidelines

Primary Key Token(s): ID, DIGIT_STRING, NOA

Foreign Key Token(s): id, dest-id

Add Rules: dial-plan id cannot exist.

Change Rules: dial-plan id must exist.

Delete Rules: dial-plan id must exist; NOA defaults to unknown. If NOA is other than unknown, NOA is required.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DEL_DIGITS	Description: Specifies the number of digits to delete from the received digit string. SMALLINT: 0-16 (Default = 0). Valid for Command: add, audit, change, show, sync Default Value: 0 Possible Value: [0_16] Parser: DecimalParser
DEST_ID	Description: Foreign key: Destination table. Provides the routing information for the dialed number. ID from Destination table. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show, sync Mandatory: add Possible Value: [1_16] Parser: TextParser
DIGIT_STRING	Description: Primary key. Dialed digits (what was dialed). VARCHAR(16): 1-16 numeric characters entered as NDC-ED-DN. Valid for Command: add, audit, change, delete, show, sync Mandatory: add, change, delete Possible Value: [1_14] Parser: TextParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

FORCED	Description: Specifies whether the system bypasses the parser rules and allows a user to enter a dial plan record as a free format record (ASCII). CHAR(1): Y/N (Default = N). Y—Allows a user to enter a dial plan record as a free format record (ASCII). N—Does not allow a user to enter a dial plan record as a free format record (ASCII). Valid for Command: add Possible Value: Y Parser: TextParser
ID	Description: Primary key. Foreign key: Dial Plan Profile table. Dial plan ID of a subscriber, trunk group, etc. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, delete, show, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
MAX_DIGITS	Description: Maximum number of digits allowed. SMALLINT: 1-64 (Default = 10). Valid for Command: add, audit, change, show, sync Mandatory: add Default Value: 10 Possible Value: [1_64] Parser: DecimalParser

MIN_DIGITS	Description: Minimum number of digits required for a call. SMALLINT: 1-64 (Default = 10). Valid for Command: add, audit, change, show, sync Mandatory: add Default Value: 10 Possible Value: [1_64] Parser: DecimalParser
NOA	Description: Primary key. Nature of address. Use the Variable Default table to change the default value if required. Use noa=unknown for ESRN numbers. VARCHAR(16): 1-16 ASCII characters. Permitted values are: NATIONAL (Default)—National Number. SUBSCRIBER—Subscriber Number. UNKNOWN—Nature of address is unknown. Valid for Command: add, audit, change, delete, show, sync Mandatory: add, change, delete Default Value: NATIONAL Possible Value: NATIONAL, SUBSCRIBER, UNKNOWN Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PFX_DIGITS	Description: Specifies the digits to prefix. VARCHAR(16): 1-16 numeric characters. Valid for Command: add, audit, change, show, sync Possible Value: [1_16] Parser: DigitParser

PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
SPLIT_NPA	Description: Automatically provisioned when a record is added to the split-NPA table. Applies only to NANP. VARCHAR(7): 1-7 ASCII characters. Permitted values are: OLD-NPA—Dialed number is associated with the old NPA. NEW-NPA—Dialed number is associated with the new NPA. NONE (Default)—Not associated with split NPA. Valid for Command: add, audit, change, show, sync Mandatory: add Default Value: NONE Possible Value: NEW_NPA, NONE, OLD_NPA Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

International Dial Plan

The International Dial Plan (intl-dial-plan) table holds international dial plan information for calls to regions outside the NANP. It contains the country code, minimum and maximum digits, the country name, and the route-grp-id.

Table Name: INTL_DIAL_PLAN

Table Containment Area: EMS, CA

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show intl-dial-plan id=intldp1; cc=122;
add intl-dial-plan id=intldp1; cc=122; min-digits=7; max-digits=10;
change intl-dial-planid=intldp1; cc=122; description=France;
delete intl-dial-plan id=intldp1;cc=122;
```

Usage Guidelines

Primary Key Token(s): ID, CC

Foreign Key Token(s): id, dest-id

Add Rules: intl-dial-plan-profile id must exist.

Change Rules: id must exist.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
CC	Description: Primary key. Country code digits. Country code as defined in ITU-T Recommendation E.164. Service provider must determine and enter accordingly. This information is often found in the front of some telephone directories. See Recommendation E.164. VARCHAR(5): 1-5 numeric characters. Valid for Command: add, change, delete, show Mandatory: add, change, delete Possible Value: [1_7] Parser: GenericDNParser
DESCRIPTION	Description: Service provider-defined description. VARCHAR(64): 1-64 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_64] Parser: TextParser
DEST_ID	Description: Foreign key: Destination table. Used only if the service provider is also a carrier and wants to route the international call to the appropriate gateway. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

ID	Description: Primary key. Foreign key: International Dial Plan Profile table. International dial plan profile ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, delete, show, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
MAX_DIGITS	Description: Maximum number of digits allowed. Maximum number of digits for any phone number in the country being added. SMALLINT: 3-64 (Default = 16). Valid for Command: add, change, audit, sync, show Default Value: 16 Possible Value: [3_64] Parser: DecimalParser
MIN_DIGITS	Description: Minimum number of digits required for a call to this country. Minimum number of digits for any phone number in the country being added. SMALLINT: 3-64 (Default = 6). Valid for Command: add, change, audit, sync, show Default Value: 6 Possible Value: [3_64] Parser: DecimalParser

ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PADDED_CC	Valid for Command: add, change, delete, show, audit, sync Possible Value: [1_3] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Variable Digit Dialing

Variable digit dialing is used in the Europe where the length of the dialed number can vary from seven digits to ten digits, mainly in Germany. For a given NDC or EC the DN can vary from the minimum to the maximum specified in the Exchange Code table.

Example:

ndc=349, ec=234; min-digits=7; max-digits=10; (from the Exchange Code table)

DN=3492340 could be a DN

DN=3492341234 could also be a DN belonging to ndc=349, ec=234

DN=349234222 could also be a 9 digit DN

Variable Digit Dialing Provisioning

To provision variable digit dialing according to the example given in the Variable Digit Dialing section, take the following steps:

Step 1 add exchange-code ndc=349, ec=234; min-digits=7; max-digits=10;

Step 2 add office-code ndc=349; ec=234; dn-group=0; (For the DN=3492340)

Step 3 add office-code ndc=349; ec=234; dn-group=1xxx; dn-length= 10; (For the 10 digit DNs)

Step 4 add office-code ndc=349; ec=234; dn-group=2xx; (For the 9 digit DNs in the dn group)

Step 5 add office-code ndc=349; ec=234; dn-group=12x; (For the 9 digit DNs)

Routing Stage

The digit manipulations for an outgoing call can be performed using one of the following methods:

- Destination Table
- Route Table
- Trunk Group Table for subscriber termination

The ANI/DNIS digit manipulation specified in the Destination table is applied during the outgoing call setup. The out-pulsing number can also be normalized using the destination table. In addition, if special digit manipulation is required based on the route selected, it can be specified for each Trunk Group within a route.

If the called number terminates within the Cisco BTS 10200 Softswitch, and the subscriber number points to a Trunk Group, then digit manipulation rules for ANI, DNIS, or both can be specified in the Trunk Group table.

If the call is an interLATA call or requires Carrier routing (ROUTE-TYPE=CARRIER), the ANI/DNIS digit manipulation IDs specified in the destination table are ignored and carrier based routing is performed.

Note Although both **pfx_digits** and **del_digits** still work in the Cisco BTS 10200 Softswitch dial plan table, if the subscriber dials a 7-digit number, but local number portability (LNP) queries require a 10-digit DN, then the digman tables should be set up to add an NPA, making the called number a 10- digit DN before performing an LNP query.

Destination

The Destination (destination) table defines the call type and the routing information for the dialed digits. Multiple digit strings in the Dial Plan table can use the same destination ID.

Table Name: DESTINATION

Table Containment Area: EMS, CA

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show destination dest-id=dallasaustin;
add destination dest-id=dallasaustin; call-type=toll; route-type=route;
route-guide-id=rg10;
change destination dest-id=dallasaustin; route-guide-id=rg11;
delete destination dest-id=dallasaustin;
```

Usage Guidelines

Primary Key Token(s): DEST_ID

Foreign Key Token(s): dnis-digman-id, ani-digman-id, route-guide-id, route-id, dial-plan-id, carrier-id, script-id, call-type, call-subtype

Add Rules: If call-type=nas, then route-type=none.

Delete Rules: ID does not exist in any dial-plan::dest-id.

Delete Rules: ID does not exist in any intl-dial-plan::dest-id.

Upgrade Impact:

- Pre-check on 4.5 before upgrade, if ANNC_ID is not valid, add ANNOUNCEMENT for that ANNC_ID before upgrade.
- CHARGE_TYPE and CHARGE_BAND_UNIT are added in 4.5.x. CHARGE_BAND_UNIT has no default in 4.5.x, set the value to ‘00’ if this field is NULL in 4.5.x.

Syntax Description

ACQ_LNP_QUERY	Description: Specifies whether an LNP Query is required. Applies only if the all-call-query token is set to Y and lnp-db-type=RN in the LNP Profile table. VARCHAR(32): 1-32 ASCII characters. Permitted values are: NA (Default)—Not applicable. ACQ-BASED-ON-CALL-TYPE—Applies only if lnp-db-type in the LNP Profile table is ACQ. Perform an LNP Query based on definition in the Call Type Profile table. If the call type is not found in the Call Type Profile table, then an LNP Query is not performed. PERFORM-LNP-QUERY—Used when a call type-specific query is not required but LNP criteria is defined based on the destination ID. An LNP query is performed if the all-call-query flag in the LNP Profile table is set to Y. NO-LNP-QUERY—Do not perform an LNP query on this destination. Valid for Command: add, change, audit, sync, show Default Value: NA Possible Value: NA, ACQ_BASED_ON_CALL_TYPE, PERFORM_LNP_QUERY, NO_LNP_QUERY Parser: TextNoCaseParser
ANI_DIGMAN_ID	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
ANNC_ID	Description: Mandatory only if route-type=annc or pre-completion-annc=y. Foreign key: Announcement table. Announcement ID. SMALLINT: 1-1000. Valid for Command: add, change, audit, sync, show Possible Value: [1_1000] Parser: DecimalParser
AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser

CALL_SUBTYPE	Description: Foreign key: Call Type table. Specifies the subcategory of a call type for dialed digits: call-type plus call-subtype. Only one call-type/call-subtype pair is permitted per destination. VARCHAR(16): 1-16 ASCII characters. Permitted values are: NONE (Default)—No associated subtype, not applicable. If call-type=test-call the following values are permitted: Valid for Command: add, change, audit, sync, show Mandatory: add Default Value: NONE Possible Value: [1_16] Parser: TextNoNullCaseParser
CALL_TYPE	Description: Foreign key: Call Subtype table. Type of dialed call. VARCHAR(16): 1-16 ASCII characters (Default = VACANT). Valid for Command: add, change, audit, sync, show Default Value: VACANT Possible Value: TEST_CALL, INTL, LOCAL, TOLL, INTERLATA, TANDEM, EMG, NON_EMG, DA, DA_TOLL, REPAIR, RELAY, BUSINESS, TOLL_FREE, 900, 500, 700, 976, VACANT, NATIONAL, TW, INFO, PREMIUM, PCS, NAS, POLICE, FIRE, AMBULANCE, TIME, WEATHER, TRAFFIC, LB_TEST, OPERATOR, CUT_THRU, INTL_OPR, NAT_OPR, AIRLINES, RAILWAYS, SVC_CODE, INTL_WZ1, LRN, UAN Parser: TextNoCaseParser
CARRIER_ID	Description: Mandatory only if route-type=carrier. Foreign key: Carrier table. The call is routed to the specified carrier. Used for 900, 500 type calls. Also used to route 800 calls to Access Tandem Server if the Call Agent does not support 800 Service Control Point (SCP) queries. CHAR(4): 4 numeric characters: 0000-9999. Valid for Command: add, change, audit, sync, show Possible Value: [4_4] Parser: DigitParser
CHARGE_BAND_ UNIT	Valid for Command: add, audit, sync, change, show Mandatory: add Default Value: 00 Possible Value: [2_2] Parser: HexParser
CHARGE_TYPE	Valid for Command: add, change, audit, sync, show Mandatory: add Default Value: NONE Possible Value: NONE, CHARGE_BAND, CHARGE_UNIT Parser: TextNoCaseParser

CLDPTY_CTRL_ REL_ALWD	Description: Called party release control allowed indication. Indicates to the Cisco BTS 10200 Softswitch that this call requires called party control. CHAR(1): Y/N (Default = N). Valid for Command: add, change, audit, sync, show Default Value: N Possible Value: Y, N Parser: BooleanParser
DESCRIPTION	Description: Service provider-defined description. VARCHAR(64): 1-64 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_64] Parser: TextParser
DEST_ID	Description: Primary key. Destination identification. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
DIAL_PLAN_ID	Description: Mandatory if route-type=dp. Foreign key: Dial Plan table. Valid dial plan ID from the Dial Plan table. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
DNIS_DIGMAN_ID	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser

GAP_ROUTING	Description: If set, and a generic address parameter is present, check if the called number in the GAP parameter is a Call Agent PBX subscriber, based on the Office Code table. CHAR(1): Y/N (Default = N). Y—Check called number in the GAP. N—Do not check called number in the GAP. Valid for Command: add, change, audit, sync, show Default Value: N Possible Value: Y, N Parser: BooleanParser
INTRA_STATE	Description: Specifies if dialed digits are for an intrastate (toll) destination. CHAR(1): Y/N (Default = Y). Y—Intrastate N—Interstate Valid for Command: add, change, audit, sync, show Default Value: Y Possible Value: Y, N Parser: BooleanParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
ROUTE_GUIDE_ID	Description: Mandatory only if route-type=route. Foreign key: Route Guide table. Valid route guide ID from the Route Guide table. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
ROUTE_ID	Description: Mandatory only if route-type=route. Foreign key: Route table. Valid Route ID from the Route table. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
ROUTE_TYPE	Description: Routing type. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ANNC—Use annc-id to terminate call. CARRIER—For SAC calls. The call is routed based on the routing specified in the Carrier table. DP—Use dial-plan-id to retranslate based on the new dial plan ID. NONE—No route required. Use for NAS application. RID—Use route-id for routing. ROUTE—Use route-guide-id for routing. SCRIPT—(Not supported) Use a scripting package to terminate a call. SUB—Subscriber termination. Use office code index and last four digits of the DN to find the subscriber. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: SUB, CARRIER, ROUTE, ANNC, RID, DP, NONE, SCRIPT Parser: TextNoCaseParser

SCRIPT_ID	Description: Foreign key: Script table. Specifies a script identifier. A script id is required if route-type=script. The specified script is executed on the end point to perform IVR functions. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ZERO_PLUS	Description: Specifies if 0+ calls are allowed. CHAR(1): Y/N (Default = N). Y—0+ calls are allowed to this destination. N—0+ calls are not allowed to this destination. Valid for Command: add, change, audit, sync, show Default Value: N Possible Value: Y, N Parser: BooleanParser

Route

The Route (route) table contains a list of up to ten trunk groups to route a call. If all the trunk groups are busy or not available, call processing uses the alt-route-id (if specified) to route the call. The Element Management System (EMS) provisions the Call Agent ID field based on the Trunk Group table.

Note This table allows the service provider to provision a list of up to 10 trunk groups (TG1 to TG10), and a parameter for selecting the priority of the TGs for routing (TG-SELECTION). The system attempts to route the call on the highest priority trunk group (TG). If the call cannot be completed on the highest priority TG, the system attempts to use the next (lower priority) TG, a process known as route advance. The system attempts route advance to lower priority TGs up to five times. (Any TG in the list that is administratively out of service is not counted as an attempt.) If all five attempts fail, the call is released, and the system provides a release announcement.

Table Name: ROUTE

Table Containment Area: EMS, CA

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show route id=dallas1;
add route id=dallas1; tgn1-id=dallas-tg; pfx-digits1=972; del-digits1=0;
change route id=dallas1; del-digits1=3;
delete route id=dallas1;
```

Usage Guidelines

Primary Key Token(s): ID

Foreign Key Token(s): alt-route-id, call-agent-id1, tgn1-id, dnis-digman-id1, ani-digman-id1, call-agent-id2, tgn2-id, dnis-digman-id2, ani-digman-id2, call-agent-id3, tgn3-id, dnis-digman-id3, ani-digman-id3, call-agent-id4, tgn4-id, dnis-digman-id4, ani-digman-id4, call-agent-id5, tgn5-id, dnis-digman-id5, ani-digman-id5, call-agent-id6, tgn6-id, dnis-digman-id6, ani-digman-id6, call-agent-id7, tgn7-id, dnis-digman-id7, ani-digman-id7, call-agent-id8, tgn8-id, dnis-digman-id8, ani-digman-id8, call-agent-id9, tgn9-id, dnis-digman-id9, ani-digman-id9, call-agent-id10, tgn10-id, dnis-digman-id10, ani-digman-id10

Delete Rules: id does not exist in any <route-guide, policy-odr, policy-region, policy-percent, policy-tod, policy-prefix, policy-oli, or policy-pop>::policy-id where policy-type = route.

Upgrade Impact:

- Set TYPE to ROUTE.
- For each entry in ROUTE, add an entry into POLICY_PROFILE table.
- If NEXT_ACTION = ENUM_REROUTE, set the value to NONE.
- If NEXT_ACTION IS ALT_ROUTE, then set ANNC_ID AND OVERFLOW_DN to NULL
- If NEXT_ACTION IS ANNC, then set ALT_ROUTE_ID AND OVERFLOW_DN to NULL
- If NEXT_ACTION IS OVERFLOW_DN, then set ANNC_ID AND ALT_ROUTE_ID to NULL

Syntax Description

ALT_ROUTE_ID	Description: Foreign key: Route table. An alternate route to be used if all the trunk groups in this route are busy. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
ANI_DIGMAN_ID1	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
ANI_DIGMAN_ID10	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
ANI_DIGMAN_ID2	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
ANI_DIGMAN_ID3	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser

ANI_DIGMAN_ID4	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
ANI_DIGMAN_ID5	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
ANI_DIGMAN_ID6	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
ANI_DIGMAN_ID7	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
ANI_DIGMAN_ID8	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
ANI_DIGMAN_ID9	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser

ANNC_ID	Description: Mandatory if next-action=annc. Foreign key: Announcement table. Announcement id. INTEGER: 1-1000 numeric digits. Valid for Command: add, audit, change, show, sync Possible Value: [1_1000] Parser: DecimalParser
AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
CALL_AGENT_ID1	Description: Foreign key: Call Agent table. Valid home Call Agent ID for the dialed NPA or NPA-NXX. VARCHAR(8): 1-8 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_8] Parser: TextParser
CALL_AGENT_ID10	Description: Foreign key: Call Agent table. Valid home Call Agent ID for the dialed NPA or NPA-NXX. VARCHAR(8): 1-8 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_8] Parser: TextParser
CALL_AGENT_ID2	Description: Foreign key: Call Agent table. Valid home Call Agent ID for the dialed NPA or NPA-NXX. VARCHAR(8): 1-8 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_8] Parser: TextParser
CALL_AGENT_ID3	Description: Foreign key: Call Agent table. Valid home Call Agent ID for the dialed NPA or NPA-NXX. VARCHAR(8): 1-8 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_8] Parser: TextParser

CALL_AGENT_ID4	Description: Foreign key: Call Agent table. Valid home Call Agent ID for the dialed NPA or NPA-NXX. VARCHAR(8): 1-8 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_8] Parser: TextParser
CALL_AGENT_ID5	Description: Foreign key: Call Agent table. Valid home Call Agent ID for the dialed NPA or NPA-NXX. VARCHAR(8): 1-8 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_8] Parser: TextParser
CALL_AGENT_ID6	Description: Foreign key: Call Agent table. Valid home Call Agent ID for the dialed NPA or NPA-NXX. VARCHAR(8): 1-8 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_8] Parser: TextParser
CALL_AGENT_ID7	Description: Foreign key: Call Agent table. Valid home Call Agent ID for the dialed NPA or NPA-NXX. VARCHAR(8): 1-8 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_8] Parser: TextParser
CALL_AGENT_ID8	Description: Foreign key: Call Agent table. Valid home Call Agent ID for the dialed NPA or NPA-NXX. VARCHAR(8): 1-8 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_8] Parser: TextParser
CALL_AGENT_ID9	Description: Foreign key: Call Agent table. Valid home Call Agent ID for the dialed NPA or NPA-NXX. VARCHAR(8): 1-8 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_8] Parser: TextParser

DEL_DIGITS1	Description: Number of digits to delete. SMALLINT: 0-16 (Default = 0). Valid for Command: add, audit, change, show Default Value: 0 Possible Value: [0_10] Parser: DecimalParser
DEL_DIGITS10	Description: Number of digits to delete. SMALLINT: 0-16 (Default = 0). Valid for Command: add, audit, change, show Default Value: 0 Possible Value: [0_10] Parser: DecimalParser
DEL_DIGITS2	Description: Number of digits to delete. SMALLINT: 0-16 (Default = 0). Valid for Command: add, audit, change, show Default Value: 0 Possible Value: [0_10] Parser: DecimalParser
DEL_DIGITS3	Description: Number of digits to delete. SMALLINT: 0-16 (Default = 0). Valid for Command: add, audit, change, show Default Value: 0 Possible Value: [0_10] Parser: DecimalParser
DEL_DIGITS4	Description: Number of digits to delete. SMALLINT: 0-16 (Default = 0). Valid for Command: add, audit, change, show Default Value: 0 Possible Value: [0_10] Parser: DecimalParser
DEL_DIGITS5	Description: Number of digits to delete. SMALLINT: 0-16 (Default = 0). Valid for Command: add, audit, change, show Default Value: 0 Possible Value: [0_10] Parser: DecimalParser

DEL_DIGITS6	Description: Number of digits to delete. SMALLINT: 0-16 (Default = 0). Valid for Command: add, audit, change, show Default Value: 0 Possible Value: [0_10] Parser: DecimalParser
DEL_DIGITS7	Description: Number of digits to delete. SMALLINT: 0-16 (Default = 0). Valid for Command: add, audit, change, show Default Value: 0 Possible Value: [0_10] Parser: DecimalParser
DEL_DIGITS8	Description: Number of digits to delete. SMALLINT: 0-16 (Default = 0). Valid for Command: add, audit, change, show Default Value: 0 Possible Value: [0_10] Parser: DecimalParser
DEL_DIGITS9	Description: Number of digits to delete. SMALLINT: 0-16 (Default = 0). Valid for Command: add, audit, change, show Default Value: 0 Possible Value: [0_10] Parser: DecimalParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
DNIS_DIGMAN_ID1	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser

DNIS_DIGMAN_ID10	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
DNIS_DIGMAN_ID2	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
DNIS_DIGMAN_ID3	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
DNIS_DIGMAN_ID4	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
DNIS_DIGMAN_ID5	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
DNIS_DIGMAN_ID6	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser

DNIS_DIGMAN_ID7	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
DNIS_DIGMAN_ID8	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
DNIS_DIGMAN_ID9	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
ID	Description: Primary key. The route identification. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, delete, show Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

NEXT_ACTION	Description: Specifies what action to perform after all trunk groups within a route are exhausted. VARCHAR(16): 1-16 ASCII characters. Permitted values are: NONE (Default)—No next action. Play standard no route to destination announcement. ALT-ROUTE—Use alternate route. ANNC—Use an announcement ID. OVERFLOW-DN—Reroute the call using the overflow DN. Valid for Command: add, audit, change, show, sync Default Value: NONE Possible Value: NONE, ALT_ROUTE, ANNC, ENUM_REROUTE Parser: TextParser.toUpperCase()
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PFX_DIGITS1	Description: Digits to be prefixed. Digits are prefixed after the number of specified digits are deleted. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_10] Parser: TextParser
PFX_DIGITS10	Description: Digits to be prefixed for tgn10-id. Digits are prefixed after the number of digits specified have been deleted. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_10] Parser: TextParser
PFX_DIGITS2	Description: Digits to be prefixed for tgn2-id. Digits are prefixed after the number of digits specified have been deleted. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_10] Parser: TextParser

PFX_DIGITS3	Description: Digits to be prefixed for tgn3-id. Digits are prefixed after the number of digits specified have been deleted. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_10] Parser: TextParser
PFX_DIGITS4	Description: Digits to be prefixed for tgn4-id. Digits are prefixed after the number of digits specified have been deleted. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_10] Parser: TextParser
PFX_DIGITS5	Description: Digits to be prefixed for tgn5-id. Digits are prefixed after the number of digits specified have been deleted. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_10] Parser: TextParser
PFX_DIGITS6	Description: Digits to be prefixed for tgn6-id. Digits are prefixed after the number of digits specified have been deleted. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_10] Parser: TextParser
PFX_DIGITS7	Description: Digits to be prefixed for tgn7-id. Digits are prefixed after the number of digits specified have been deleted. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_10] Parser: TextParser
PFX_DIGITS8	Description: Digits to be prefixed for tgn8-id. Digits are prefixed after the number of digits specified have been deleted. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_10] Parser: TextParser

PFX_DIGITS9	Description: Digits to be prefixed for tgn9-id. Digits are prefixed after the number of digits specified have been deleted. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_10] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

TG_SELECTION	Description: Trunk group selection policy. VARCHAR(3). Permitted values are: LCR—Least cost routing P—Priority and weight-based routing RR—Round robin SEQ (Default)—Sequential order Valid for Command: add, audit, change, show Default Value: SEQ Possible Value: LCR, RR, SEQ Parser: TextParser
TG1	Valid for Command: add, change, audit, sync, show Possible Value: [1_20] Parser: TextParser
TG10	Valid for Command: add, change, audit, sync, show Possible Value: [1_20] Parser: TextParser
TG2	Valid for Command: add, change, audit, sync, show Possible Value: [1_20] Parser: TextParser
TG3	Valid for Command: add, change, audit, sync, show Possible Value: [1_20] Parser: TextParser
TG4	Valid for Command: add, change, audit, sync, show Possible Value: [1_20] Parser: TextParser
TG5	Valid for Command: add, change, audit, sync, show Possible Value: [1_20] Parser: TextParser
TG6	Valid for Command: add, change, audit, sync, show Possible Value: [1_20] Parser: TextParser
TG7	Valid for Command: add, change, audit, sync, show Possible Value: [1_20] Parser: TextParser
TG8	Valid for Command: add, change, audit, sync, show Possible Value: [1_20] Parser: TextParser

TG9	Valid for Command: add, change, audit, sync, show Possible Value: [1_20] Parser: TextParser
TGN1_ID	Description: Foreign key: Trunk Group table. The first trunk group within the route. The trunk groups are searched in the order specified unless least cost routing (LCR) applies. If LCR is applied, the Call Agent reads the cost for each trunk group from the trunk-grp table and selects trunks from the least expensive trunk group to the most expensive one. This field can also be provisioned using tg instead of tgn-id. The EMS looks up the tgn-id based on the trunk group and then provisions it. INTEGER: 1-99999999. Valid for Command: add, audit, change, show Possible Value: [0_99999999] Parser: DecimalParser
TGN10_ID	Description: Foreign key: Trunk Group table. The tenth trunk group within the route. This field can also be provisioned using tg instead of tgn-id. The EMS looks up the tgn-id based on the trunk group and then provisions it. INTEGER: 1-99999999. Valid for Command: add, audit, change, show Possible Value: [0_99999999] Parser: DecimalParser
TGN2_ID	Description: Foreign key: Trunk Group table. The second trunk group within the route. This field can also be provisioned using tg instead of tgn-id. The EMS looks up the tgn-id based on the trunk group and then provisions it. INTEGER: 1-99999999. Valid for Command: add, audit, change, show Possible Value: [0_99999999] Parser: DecimalParser
TGN3_ID	Description: Foreign key: Trunk Group table. The third trunk group within the route. This field can also be provisioned using tg instead of tgn-id. The EMS looks up the tgn-id based on the trunk group and then provisions it. INTEGER: 1-99999999. Valid for Command: add, audit, change, show Possible Value: [0_99999999] Parser: DecimalParser
TGN4_ID	Description: Foreign key: Trunk Group table. The fourth trunk group within the route. This field can also be provisioned using tg instead of tgn-id. The EMS looks up the tgn-id based on the trunk group and then provisions it. INTEGER: 1-99999999. Valid for Command: add, audit, change, show Possible Value: [0_99999999] Parser: DecimalParser

TGN5_ID	Description: Foreign key: Trunk Group table. The fifth trunk group within the route. This field can also be provisioned using tg instead of tgn-id. The EMS looks up the tgn-id based on the trunk group and then provisions it. INTEGER: 1-99999999. Valid for Command: add, audit, change, show Possible Value: [0_99999999] Parser: DecimalParser
TGN6_ID	Description: Foreign key: Trunk Group table. The sixth trunk group within the route. This field can also be provisioned using tg instead of tgn-id. The EMS looks up the tgn-id based on the trunk group and then provisions it. INTEGER: 1-99999999. Valid for Command: add, audit, change, show Possible Value: [0_99999999] Parser: DecimalParser
TGN7_ID	Description: Foreign key: Trunk Group table. The seventh trunk group within the route. This field can also be provisioned using tg instead of tgn-id. The EMS looks up the tgn-id based on the trunk group and then provisions it. INTEGER: 1-99999999. Valid for Command: add, audit, change, show Possible Value: [0_99999999] Parser: DecimalParser
TGN8_ID	Description: Foreign key: Trunk Group table. The eighth trunk group within the route. This field can also be provisioned using tg instead of tgn-id. The EMS looks up the tgn-id based on the trunk group and then provisions it. INTEGER: 1-99999999. Valid for Command: add, audit, change, show Possible Value: [0_99999999] Parser: DecimalParser
TGN9_ID	Description: Foreign key: Trunk Group table. The ninth trunk group within the route. This field can also be provisioned using tg instead of tgn-id. The EMS looks up the tgn-id based on the trunk group and then provisions it. INTEGER: 1-99999999. Valid for Command: add, audit, change, show Possible Value: [0_99999999] Parser: DecimalParser

Trunk Group

The Trunk Group (trunk-grp) table identifies the trunk group and maps it to the associated media gateway. Table 1-4 indicates optional tokens that are required during provisioning based on the trunk group type.

The Cisco BTS 10200 Softswitch supports the following trunk group types: announcement, channel associated signaling (CAS), Integrated Services Digital Network (ISDN), Signaling System 7 (SS7) and SOFTSW (Session Initiation Protocol (SIP)). The Trunk Group table defines common information based on the trunk group type. The Cisco BTS 10200 Softswitch supports announcement, CAS, ISDN, SS7 and SOFTSW (SIP) trunk group profiles.

Table Name: TRUNK_GRP

Table Containment Area: EMS, CA

Table 1-4 Required Tokens by Trunk Group

Token	Values	Required Tokens
TG-TYPE	SOFTSW	SOFTSW-TSAP-ADDR, TG-PROFILE-ID, DIAL-PLAN-ID
	ISDN	TG-PROFILE-ID, DIAL-PLAN-ID, ID, TG-TYPE, POP-ID, GLARE, MGCP-PKG-TYPE **Note** For ISDN, GLARE must set to ALL and MGCP-PKG-TYPE must be set to T.
	SS7	CALL-CTRL-ROUTE-ID, DPC, TG-PROFILE-ID, DIAL-PLAN-ID
	CAS	TG-PROFILE-ID, DIAL-PLAN-ID
	ANNC	None

	H323	H323-GW-ID, TG-PROFILE-ID
		Note If you specify the value H323 for the TG-TYPE token, you must provision the association between the trunk group and the H.323 gateway. However, you cannot provision the H.323 trunk group type and the H.323 gateway simultaneously. To provision an H.323 trunk group and H.323 gateway correctly, use the following sequence of commands:
		1. Establish the trunk group type as H.323 by using the TG-TYPE token in the Trunk Group table:
		`add trunk-grp tg-type=H323;`
		2. Establish the association between the H.323 gateway and the trunk group by using the TGN-ID token in the H.323 Gateway table:
		`add h323-gw tgn-id=<trunk group ID from the trunk group table>;`
		3. Establish the association between the specified trunk group and the H.323 gateway by using the H323-GW-ID token in the Trunk Group table.
		`change trunk-grp h323-gw-id=<H.323 gateway ID from the H.323 gateway table>;`

Command Types

add, audit, change, control, delete, help, show, status, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show trunk-grp id=101;
add trunk-grp id=101; call-agent-id=CA146; tg-type=ss7; dial-plan-id=tg-dp;
dpc=101-55-103; tg-profile-id=SS71; call-ctrl-route-id=ccr1;
change trunk-grp id=101; cost=200;
delete trunk-grp id=101;
```

Usage Guidelines

Primary Key Token(s): ID

Foreign Key Token(s): call-agent-id, ani-digman-id, call-control-route-id, carrier-id, cause-code-map-id, dial-plan-id, dnis-digman-id, isdn-dchan, h323-gw-id, main-sub-id, pop-id, qos-id, sp-id, ani-screening-profile-id

Add Rules:

- ID exists in the carrier table; id exists in the subscriber table.
- DIAL-PLAN-ID is required except if tg-typ=ANNC or if main-sub-id is not equal to NULL.

Change Rules:

- Ensure that the id exists in the Subscriber table if entered; ensure the id exists in the Media Gateway table if entered.
- The DPC field cannot be changed.

Delete Rules:

- ID cannot exist in any subscriber::term-id; ID cannot exist in any trunk::term-id.
- ID cannot exist in any mlhg-terminal::term-id.
- Trunk group status must be OOS.

Upgrade Impact:

- IF TG-TYPE=ISDN, Name the ISDN-DCHAN-ID as TGN# (e.g. 9009991)
- STATUS_MONITORING is moved to SIP_ELEMENT table
- Set CUT_THRU_BEFORE_ANSWER (moved from ISDN-TG-PROFILE) to N.
- Pre-check on 4.5 before upgrade, if POP_ID is null, provision a valid POP_ID at 4.5 side before upgrade.

Syntax Description

ALT_ROUTE_ON_ CONG	Description: Specifies whether to use an alternate route when there is traffic congestion. CHAR(1): Y/N (Default = N). Y—SKIP N—BLOCK Valid for Command: add, change, audit, sync, show Default Value: N Possible Value: Y, N Parser: BooleanParser
ANI_BASED_ ROUTING	Description: Used when there are multiple subscribers homing on the same trunk group. The ANI is used to determine the subscriber ID associated with the call. CHAR(1): Y/N (Default = N). Y—Determine subscriber ID based on the ANI. N—Use normal routing. Valid for Command: add, change, audit, sync, show Default Value: N Possible Value: Y, N Parser: BooleanParser
ANI_DIGMAN_ID	Description: Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
ANI_SCREENING	Description: Specifies whether to screen the call against the ANI if set. CHAR(1): Y/N (Default = N). N—Perform normal routing. Y—Determine the subscriber ID based on the ANI Screening table. Valid for Command: add, change, audit, sync, show Mandatory: add Default Value: N Possible Value: Y, N Parser: BooleanParser

ANI_SCREENING_ PROFILE_ID	Description: Mandatory if ani-screening=y. Foreign key: ANI Screening Profile table. ANI screening profile id. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, audit Possible Value: [1_16] Parser: TextParser
AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
CALL_AGENT_ID	Description: Foreign key: Call Agent table. Call Agent ID. Same as ID in Call Agent table. VARCHAR(8): 8 ASCII characters. Format is CAnnn or cannn where nnn = 001-999. 3 characters are reserved for Not Used use. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: [1_8] Parser: TextParser
CALL_CTRL_ ROUTE_ID	Description: Mandatory if tg-type=ss7. Foreign key: Call Control Route table. The Call Control Route ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, sync, show Possible Value: [1_16] Parser: TextParser
CARRIER_ID	Description: Foreign key: Carrier table. Carrier ID if direct trunk group to a carrier. Used during incoming call processing. Same as carrier-id in Carrier table. CHAR(4): 4 numeric characters—leading zeros count. Valid for Command: add, change, audit, sync, show Possible Value: [1_4] Parser: TextParser

CAUSE_CODE_MAP_ID	Description: Foreign key: Cause Code Map table. The cause code map ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
CLLI	Description: Common Language Location Identifier for the remote switch. CHAR(11): Eleven ASCII characters. Valid for Command: add, audit, change, show Possible Value: [11_11] Parser: TextParser
COST	Description: Relative cost value; used if TG selection is based on least cost routing (LCR). SMALLINT: 0-999. Valid for Command: add, change, audit, sync, show Possible Value: [0_999] Parser: DecimalParser
DEFAULT_CHG	Description: Default charge number. VARCHAR(16): 1-16 numeric digits. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DEL_DIGITS	Description: Specifies the number of digits to delete. SMALLINT: 0-14 numeric characters. (Default = 0). Valid for Command: add, change, audit, sync, show Default Value: 0 Possible Value: [0_14] Parser: DecimalParser
DESCRIPTION	Description: Described by the service provider. VARCHAR(64): 1-64 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_64] Parser: TextParser

DIAL_PLAN_ID	Description: Foreign key: Dial Plan table. Specifies which dial plan ID to use. For trunk groups with a main subscriber id (CAS, ISDN), the Call Agent uses the dial-plan-id assigned to the trunk group (if available), else it uses the dial-plan-id assigned to the subscriber profile. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DIRECTION	Description: Direction of the trunk group. Can be incoming only, outgoing only, or both incoming and outgoing. If bothway, the glare parameter is required. VARCHAR(4): 1-4 ASCII characters. Permitted values are: BOTH (Default)—Bothway trunk group (used for both incoming and outgoing calls). OUT—Used for outgoing calls only. IN—Used for incoming calls only. Valid for Command: add, change, audit, sync, show Default Value: BOTH Possible Value: BOTH, OUT, IN Parser: TextParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
DNIS_DIGMAN_ID	Description: Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, audit, change, show Possible Value: [1_16] Parser: TextParser
DPC	Description: Not provisionable. Mandatory if tg-type=SS7. Destination Point Code if SS7. The DPC is automatically provisioned from the call-ctrl-route-id. VARCHAR(16): 1-16 ASCII characters. Valid for Command: audit, sync, show Possible Value: [0_16] Parser: PointCodeParser

EARLY_BKWD_ MSG_TMR	Description: Specifies the amount of time, in seconds, for the Early Backward Message timer. Applies only if send-early-bkwd-msg=Y. INTEGER: 0-30 (Default = 5). Valid for Command: add, change, audit, sync, show Default Value: 5 Possible Value: [0_30] Parser: DecimalParser
GLARE	Description: Used in bothway trunks. Defines how to resolve a glare condition—a bothway (simultaneous) trunk seizure. For example, an incoming and an outgoing call on the same endpoint. For ISDN trunk groups, glare must be set to ALL. Setting glare to SLAVE can cause CIC/trunk instability. VARCHAR(5): 1-5 ASCII characters. Permitted values are: SLAVE (Default)—This trunk group yields any trunk in glare condition. ALL—This trunk group is master of all trunks. EVEN—This trunk group is master of even numbered trunks. ODD—This trunk group is master of odd numbered trunks. PC—Not used. Point code driven. In the absence of an overriding control assignment (such as all or none), the SPCS with the higher assigned signaling point code controls the even numbered circuits, and the SPCS with the lower signaling point code controls the odd-numbered circuits. Valid for Command: add, change, audit, sync, show Default Value: SLAVE Possible Value: ALL, SLAVE, ODD, EVEN, PC Parser: TextParser
H323_GW_ID	Description: Mandatory if tg-type=h323. Foreign key: H.323 Gateway table. Specifies the gateway id for this trunk group. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
ID	Description: Primary key. Trunk group number. INTEGER: 1-99999999. Valid for Command: add, change, show, delete, audit, sync, control, status Mandatory: add, change, delete, control, status Possible Value: [1_99999999] Parser: DecimalParser

LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MAIN_SUB_ID	Description: Foreign key: Subscriber table. Used for PBX subscribers. VARCHAR(30): 1-30 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_30] Parser: TextParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

MGCP_PKG_TYPE	Description: Determines the MGCP Package type for the announcement server. VARCHAR(16): 1-16 ASCII characters (Default = NA). Permitted values are: NA—For SIP and H.323 trunk groups. ANNC-CABLE-LABS—Announcement signaling type based on the Cable Labs package. AUTO—EAOSS signaling. The package is dynamically determined based on the call type (can be MO, MS, MD). Used when sig-type in CAS Trunk Group Profile table is EAOSS. For inbound calls, always use the MS package. (Not supported). DT—DTMF package. IT—ISUP trunk package. LINE—Line package used for Test Line Access. MD—MF FGD package (Not supported). MO—MF operator trunks. MS—MF package. MT—MF terminating package. TCL-CISCO (Default)—Announcement signaling type for the Cisco AS5350/AS5400. T—Trunk package. Valid for Command: add, show, change Default Value: NA Possible Value: T, IT, DT, MS, MT, MO, TCL_CISCO, ANNC_CABLE_LABS, NA, LINE Parser: TextParser.toUpperCase()
MODE	Description: Specifies the information returned by the command. VARCHAR:(8): 1-8 ASCII characters (Default = BRIEF). Permitted values are: BRIEF VERBOSE Valid for Command: control, show Mandatory: control Possible Value: FORCED, GRACEFUL Parser: TextParser
NUM_OF_TRUNKS	Description: Not provisionable. EMS provisions this field when trunks are provisioned for this trunk group. SMALLINT: 1-9999. Valid for Command: audit, sync, show Possible Value: [0_2147483647] Parser: DecimalParser

ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PERFORM_LNP_ QUERY	Description: Specifies whether to perform an LNP query. This token applies only to incoming calls (for ITU local LNP, when the LNP Profile lnp-db-type is RN). CHAR(1): Y/N (Default = N). Y—Perform an LNP Query if required based on the LNP Profile table and the acq-lnp-query token in the Destination table. This applies to both LNP Types: ACQ and QOR. Set this token to Y when the remote switch is not LNP-capable. N—An LNP query is not required as originating switch is LNP-capable or LNP is not required. Valid for Command: add, change, audit, sync, show Default Value: N Possible Value: Y, N Parser: BooleanParser
PFX_DIGITS	Description: Specifies what digits to prefix. Digits are prefixed after the specified number of digits are deleted. VARCHAR(10): 1-10 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [0_10] Parser: GenericDNParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser

POP_ID	Description: Foreign key: POP table. Defines the number of POPs in a Call Agent; used for incoming trunk groups. VARCHAR(16): 1-16 ASCII characters. SValid for Command: add, change, audit, sync, show Mandatory (new): add Possible Value: [1_16] Parser: TextParser
QOS_ID	Description: Foreign key: QOS table. Specifies whether or not to use QOS index for codec selection. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
REGION	Description: Region of the incoming trunk group. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
REMOTE_SWITCH_ LRN	Description: LRN of the previous switch used for billing. VARCHAR(10): 1-10 numeric digits, in the format NPA-NXX-XXXX. (Default = 0). Valid for Command: add, change, audit, sync, show Possible Value: [3_10] Parser: NPAParser
SCRIPT_SUPP	Description: Specifies whether the script package is supported by the trunk group. Used for prepaid service. CHAR(1): Y/N (Default = N). Valid for Command: add, change, audit, sync, show Default Value: N Possible Value: Y, N Parser: BooleanParser

SEL_POLICY	Description: Trunk selection policy. Control the Call Agent out-of-service, then in-service, after changing the selection policy. Then verify that the selection policy is changed. VARCHAR(4): 1-4 ASCII characters (Default = ASC). Permitted values are: ASC—Select trunks in ascending order. When trunks are released, they are released at the top of the queue. When a new trunk is selected, the lower number trunk (CIC) is selected. CASC—Cyclic ascending. Select trunks in ascending order. When trunks are released, they are released at the end of the list, so when a new trunk is selected, the next higher trunk (CIC) is selected. CDSC—Cyclic descending. Select trunks in descending order. When trunks are released, they are released at the end of the list, so when a new trunk is selected, the next lower trunk (CIC) is selected. DSC—Select trunks in descending order. When trunks are released, they are released at the top of the queue. When a new trunk is selected, the higher number trunk (CIC) is selected. EVEN—Select the least recently used even-numbered trunks. LRU—Select the least recently used trunk. MRU—Not used. Select the most recently used trunk. ODD—Select the least recently used odd-numbered trunks. RAND—Not used. Select a trunk randomly. Valid for Command: add, change, audit, sync, show Default Value: ASC Possible Value: ODD, DSC, LRU, ASC, EVEN, MRU, CASC, CDSC Parser: TextParser
SEND_EARLY_ BKWD_MSG	Description: Specifies whether to start the Early Backward Message timer. CHAR(1): Y/N (Default = N). Y—Start early backward message timer. An early message is sent when it expires. N—Do not start early backward message timer. Valid for Command: add, change, audit, sync, show Mandatory: add Default Value: N Possible Value: Y, N Parser: BooleanParser

SEND_RDN_AS_CPN	Description: Use when a call is forwarded and call routing is to the PSTN where Calling Party Number Screening is performed. If redirecting number information is available, the Cisco BTS 10200 Softswitch overwrites the calling party number with RDN. Otherwise, if Original Called number information is available, the Cisco BTS 10200 Softswitch overwrites the calling party number with the OCN. CHAR(1): Y/N (Default = N). Valid for Command: add, change, audit, sync, show Mandatory: add Default Value: N Possible Value: Y, N Parser: BooleanParser
SIGNAL_PORTED_ NUMBER	Description: Used for local number portability (LNP) when the next switch does not support LNP. The local routing number (LRN) from the called party number is removed and the called party number parameter is filled with the called party number from GAP. The translated bit (M-bit) is also reset. CHAR(1): Y/N (Default = N). Y—Send IAM without GAP. N—Send GAP. Valid for Command: add, change, audit, sync, show Default Value: N Possible Value: Y, N Parser: BooleanParser
SOFTSW_TSAP_ ADDR	Description: Mandatory if tg-type=softsw. Unique key between softsw-tsap-addr + trunk-sub-grp. TSAP address of the softswitch if tg-type=softsw. Use different ports if multiple trunk groups to the same softswitch are supported. VARCHAR(64): 1-64 ASCII characters. Domain names cannot begin with a number. Valid for Command: add, change, audit, sync, show Possible Value: [1_64] Parser: DomainParser
SOURCE	Description: Source of the infraction—name in the Users table. Source is actually the username. If you enter source without a start-time or end-time, all infractions are shown. VARCHAR(16): 1-16 ASCII characters. Valid for Command: status Mandatory: status Default Value: AGENT Possible Value: EMS, AGENT Parser: TextParser

SP_ID	Description: Foreign key: Service Provider table. The service provider ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
STATUS	Description: Status of the trunk group.Valid only for the show command. VARCHAR(25): 1-25 ASCII characters. Valid for Command: audit, sync, show Default Value: OOS Possible Value: OOS, INS, MAINT, OOS_PENDING, MAINT_PENDING Parser: TextParser
STATUS_ MONITORING	Valid for Command: add, change, audit, sync, show Default Value: N Possible Value: Y, N Parser: BooleanParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

TARGET_STATE	Description: The state (active or standby) of the Call Agent or Feature Server. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—Call Agent or Feature Server is in active state. STANDBY—Call Agent or Feature Server is in standby state. Valid for Command: control, show Mandatory: control Possible Value: INS, MAINT, OOS Parser: TextParser
TG	Description: Unique key. ASCII name for the trunk group. VARCHAR(20): 1-20 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_20] Parser: TextParser
TG_PROFILE_ID	Description: Mandatory if tg-type=annc. The trunk group profile ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: [1_16] Parser: TextParser
TG_TYPE	Description: Trunk group type. VARCHAR(6): 1-6 ASCII characters. Permitted values are: ANNC—Announcement. SOFTSW—Softswitch trunk group. CAS—Channel associated signaling. ISDN—Integrated Services Digital Network. SS7—Signaling System 7. H323—H.323 trunk group. Valid for Command: add, audit, sync, show Mandatory: add Possible Value: ANNC, SOFTSW, CAS, ISDN, SS7, H323 Parser: TextParser
THROTTLE	Valid for Command: status Mandatory: status Default Value: N Possible Value: Y, N Parser: TextParser

TRAFFIC_TYPE	Description: Specifies the type of traffic carried over this trunk group. It is required for incoming and bothway trunk groups. If it is not specified, the Call Agent defaults to local. VARCHAR(8): 1-8 ASCII characters. Permitted values are: LOCAL (Default)—Local incoming trunk group. PBX—Not used. Incoming PBX trunk group (for ISDN and CAS), DAL, and so forth. TANDEM—Incoming local/tandem trunk group. Calls are allowed to a tandem trunk. USER—Cisco BTS 10200 acts as a user side (PBX) toward the network. Valid for Command: add, change, audit, sync, show Default Value: LOCAL Possible Value: LOCAL, TANDEM, PBX, USER Parser: TextParser
TRUNK_SUB_GRP	Description: Unique key: softsw-tsap-addr+trunk-sub-grp. Identifies a specific trunk group when multiple trunk groups exist between a Cisco BTS 10200 Softswitch and another softswitch. VARCHAR(64): 1-64 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_64] Parser: TextParser
VOICE_INFO_ TRANSFER_CAP	Description: Information sent in the forward direction indicating the type of transmission medium required for the connection. VARCHAR(16): 1-16 ASCII characters (Default = AUTO). Permitted values are: AUTO—Same as configured or received for the incoming leg/ SPEECH—If voice call, override with Speech. 3POINT1KHZ-AUDIO—If voice call, override with 3.1 KHz audio. Valid for Command: add, show, change, audit, sync Default Value: AUTO Possible Value: AUTO, SPEECH, 3POINT1KHZ_AUDIO Parser: TextNoCaseParser

VOICE_LAYER1_ USERINFO	Description: Specifies the voice encoding codec to use for a call. VARCHAR(16): 1-16 ASCII characters (Default = AUTO). Permitted values are: AUTO—Same as configured or received for incoming leg. G711-ULAW—Use the G711 Law codec. G711-ALAW—Use the A-Law codec. Valid for Command: add, show, change, audit, sync Default Value: AUTO Possible Value: AUTO, G711_ULAW, G711_ALAW Parser: TextNoCaseParser
WAIT	Valid for Command: status, control Mandatory: status, control Default Value: N Possible Value: Y, N Parser: BooleanParser

Policy NXX

The Policy NXX (policy-nxx) table is used when a number services call results in a translated number, carrier ID, translated number and a carrier ID, or a route ID.

Table Name: POLICY_NXX

Table Containment Area: EMS, CA, FSAIN

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show policy-nxx id=normalroute;
add policy-nxx id=normalroute;
change policy-nxx id=normalroute; carrier=1234;
delete policy-nxx id=normalroute;
```

Usage Guidelines

Primary Key Token(s): ID

Add Rules: id plus type must exist in the Policy Profile table.

Note Both the carrier and the translated-dn can be entered; however, if route is entered, neither the carrier-id nor the translated-dn can be entered.

Upgrade Impact:

- Set TYPE to NXX.
- Set ROUTE_POLICY_TYPE to ROUTE.
- For each entry in POLICY_NXX, add an entry into POLICY_PROFILE table.
- For each ROUTE if not null, add an entry into POLICY_PROFILE table if it does not exist yet.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
CARRIER	Description: Carrier identification code (CIC). Used for routing a call. CHAR(4): 0000-9999. Valid for Command: add, change, audit, sync, show Possible Value: [4_4] Parser: DigitParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

ID	Description: Primary key. Policy-nxx identification field. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser

ROUTE	Description: Defines a list of trunk groups. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
TRANSLATED_DN	Description: The call is routed to the translated DN. VARCHAR(14): 1-14 numeric digits. Valid for Command: add, change, audit, sync, show Possible Value: [1_14] Parser: GenericDNParser

Call Type Profile

The Call Type Profile (call-type-profile) table defines the Call Type properties supported by the Cisco BTS 10200 Softswitch. Provision this table if the ALL-CALL-QUERY flag in the LNP-PROFILE table is set to Y and the ACQ-LNP-QUERY token in the Destination table is set to ACQ-BASED-ON-CALL-TYPE.

Table Name: CALL_TYPE_PROFILE

Table Containment Area: EMS, CA

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show call-type-profile;
add call-type-profile call-type=mobile; lnp-query=y;
change call-type-profile call-type=mobile; lnp-query=n;
delete call-type-profile call-type=mobile;
```

Usage Guidelines

Primary Key Token(s): CALL_TYPE

Note LATA stands for local access transport area. It is predefined by geographical area.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
CALL_TYPE	Description: Primary key. Foreign key: Call Type table. The call type. Valid call types are defined in the Call Type table. VARCHAR(16): 1-16 ASCII characters. See Appendix G, “Call Types and Subtypes” for a list of valid call types. Valid for Command: add, change, delete, show, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextNoCaseParser

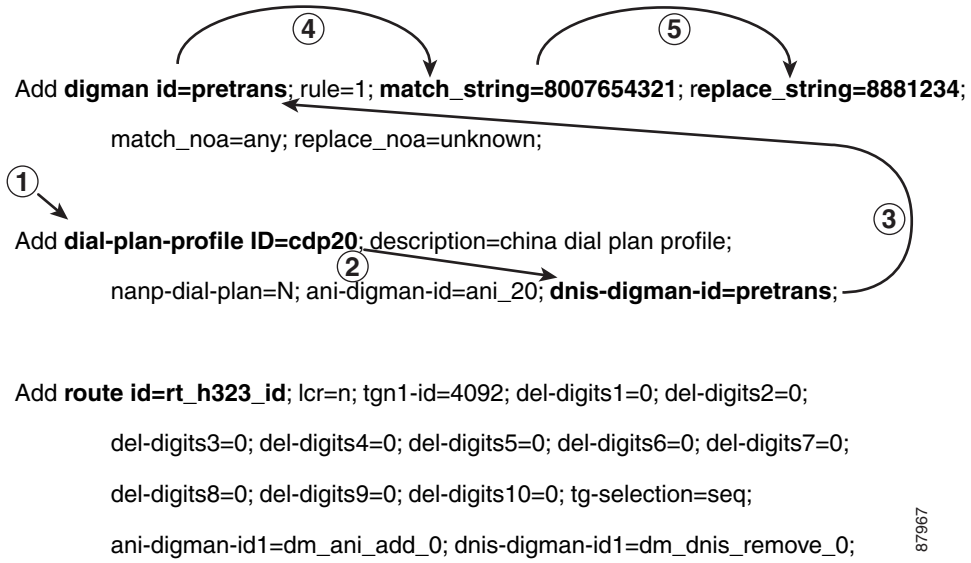
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
LNP_QUERY	Description: Specifies whether to perform an LNP query on the call type. Applies only if the all-call-query token in the LNP Profile table is set to Y and the acq-lnp-query token in the Destination table is set to acq-based-on-call-type. CHAR(1): Y/N (Default = Y) Y—Perform an LNP query. N—Do not perform an LNP query. Valid for Command: add, change, show, audit, sync Default Value: Y Possible Value: Y, N Parser: BooleanParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Sample Provisioning

This section provides a sample provisioning script for the implementation of the digman functionality.

Figure 1-3 Sample Provisioning



Caller A, using dial-plan-id=cdp20, dials 8007654321. The call hits the dial-plan-profile table (1) and uses the pretrans entry (2 and 3). It matches on the 800 number (4) and replaces it with 8881234 (5).

Feature Interaction

When a call is terminated to a subscriber with Call Forwarding activated, a feature interaction occurs when calls are forwarded out of the Cisco BTS 10200 Softswitch. In China, the Cisco BTS 10200 Softswitch uses H323 signaling to route calls to the PSTN; however, this scenario applies to any call which is forwarded over a non-SS7 signaling interface.

The H323 protocol and other non-SS7 signaling protocols do not support the Charge Number parameter, Original Called Party Number, or Redirecting Party Number. When Call Forwarding occurs, the ANI manipulation is performed on the redirecting party number if it is available. The DN of the forwarding party should also be sent as ANI digits and, as such in a forwarding scenario, the called number of the forwarding party should also be manipulated for the call.

CHAPTER 2

Routing

Revised: December 9, 2008, OL-8001-10

Introduction

This chapter provides a basic understanding of the Cisco BTS 10200 Softswitch routing types and an explanation of all routing types and explanation of how they function. Additionally examples of the routing types are provided. This chapter is divided into the following sections:

- Routing Types
- Call Types
- Policy Based Flexible Routing

Routing Types

For call routing to occur there is some basic information needed to process the call route. That information is obtained from either the subscriber table or the trunk group table. The information gathered from the subscriber table or the trunk group table provides the initial starting point for routing a call. Additional information must be gathered from the dial-plan profile table and dial-plan identification (ID) tables. These are the main tables which determine call routing and are instrumental in determining other information needed to route a call, such as call type and destination.

This section provides the Cisco BTS 10200 Softswitch routing type information. The following topics are covered in this section:

- Basic Subscriber Routing—This is the Cisco BTS 10200 Softswitch routing type which is based on subscriber needs, Basic Subscriber Routing can be used for both line and trunk routing.
- Basic Trunk Routing—This is the Cisco BTS 10200 Softswitch routing type which is used for basic trunk routing. Basic Trunk Routing can only be used for trunk routing.
- Service Provider Routing—This is the Cisco BTS 10200 Softswitch routing type which is used in the wholesale network environment where the network operator owns the facility and provides transport facilities to carry voice calls on behalf of smaller service providers. Service Provided Routing can only be used for trunk routing.
- Carrier Based Routing—This is the Cisco BTS 10200 Softswitch routing type which is based on specific carrier needs. Carrier Based Routing can be utilized for both line and trunk routing.
- Basic Dial Plan Routing—This is the Cisco BTS 10200 Softswitch default routing type. Basic Dial Plan Routing can be utilized for both line and trunk routing.
- Automatic Number Identification Based Routing—This is the Cisco BTS 10200 Softswitch routing type based on automatic number identification (ANI) as it comes in on a trunk on a hosted private branch exchange (PBX) configuration. ANI Based Routing can only be utilized for trunk routing.
- Nature of Address Routing—Nature of address (NOA) routing is used to select separate dial plans for directory number (DN) and routing number (RN). The ISDN user part (ISUP) initial address message (IAM) called party number (CdPN) parameter contains a NOA value. The NOA value distinguishes the format of the digits, i.e., DN only vs. RN+DN. In some countries, DN prefixes may be the same as some RNs. In these cases, NOA routing allows using different dial plans for DN routing and RN routing.
- International WZ1 (INTL_WZ1) Preferred Carrier Routing—Enhances the flexibility of preferred carrier routing for INTL_WZ1 calls.

Basic Subscriber Routing

This section provides a detailed description of the Cisco BTS 10200 Softswitch basic subscriber routing. Refer to Figure 2-1 for visual representation of basic subscriber routing flow while reviewing the following detailed step-by-step basic subscriber routing flow.

Step 1 Subscriber incoming received or placed.

Step 2 Get the subscriber table (sub-profile ID).

Step 3 Get the subscriber-profile table (dial-plan identification (DP-ID)).

Step 4 Go to the dial-plan (based on DP-ID).

Step 5 Go to destination table and get the call type and destination.

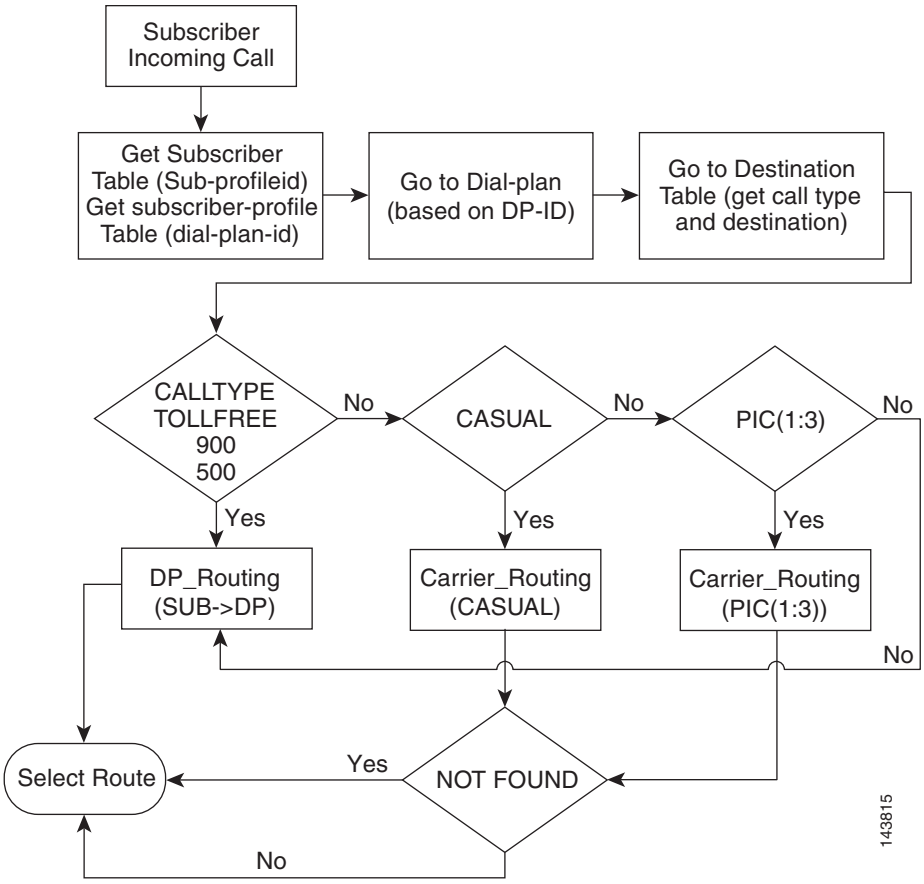
Step 6 Determine the call type. If the call type is toll free, 900, or 500, proceed to Step 7. If the call type is casual, proceed to Step 8. If the call type is via a presubscribed interexchange carrier (PIC), proceed to Step 9.

Step 7 If the call type is toll free, 900, or 500, the Cisco BTS 10200 Softswitch will use the dial plan to select the call route and to route the call.

Step 8 If the call type is casual, the Cisco BTS 10200 Softswitch will use the carrier routing information to select the call route and to route the call.

Step 9 If the call type is via a PIC, the Cisco BTS 10200 Softswitch will user the PIC carrier routing information to select the call route and to route the call.

Figure 2-1 Basic Subscriber Routing



Basic Trunk Routing

This section provides a detailed description of the Cisco BTS 10200 Softswitch basic trunk routing. Refer to Figure 2-2 for visual representation of basic trunk routing flow while reviewing the following detailed step-by-step basic trunk routing flow.

Step 1 Trunk group (TG) call received or placed.

Step 2 Get the DP-ID from the TG.

Step 3 Go to the dial-plan and get the destination based on the digits and DP-ID.

Step 4 Go to the destination table and get the call type and the route.

Step 5 Determine the call type. If the call type is toll free, 900, or 500, proceed to Step 6. If the call type is local traffic, proceed to the Step 7. If the call type is casual service provider (SP), proceed to Step 8. If the call type is transit network selection (TNS), proceed to Step 9. If the call type is TG carrier, proceed to Step 10. If the call type is TG SP, proceed to Step 11.

Step 6 If the call type is toll free, 900, or 500, the Cisco BTS 10200 Softswitch will use the dial plan to select the call route and to route the call.

Step 7 If the call type is local traffic, the Cisco BTS 10200 Softswitch will use the dial plan to select the call route and to route the call.

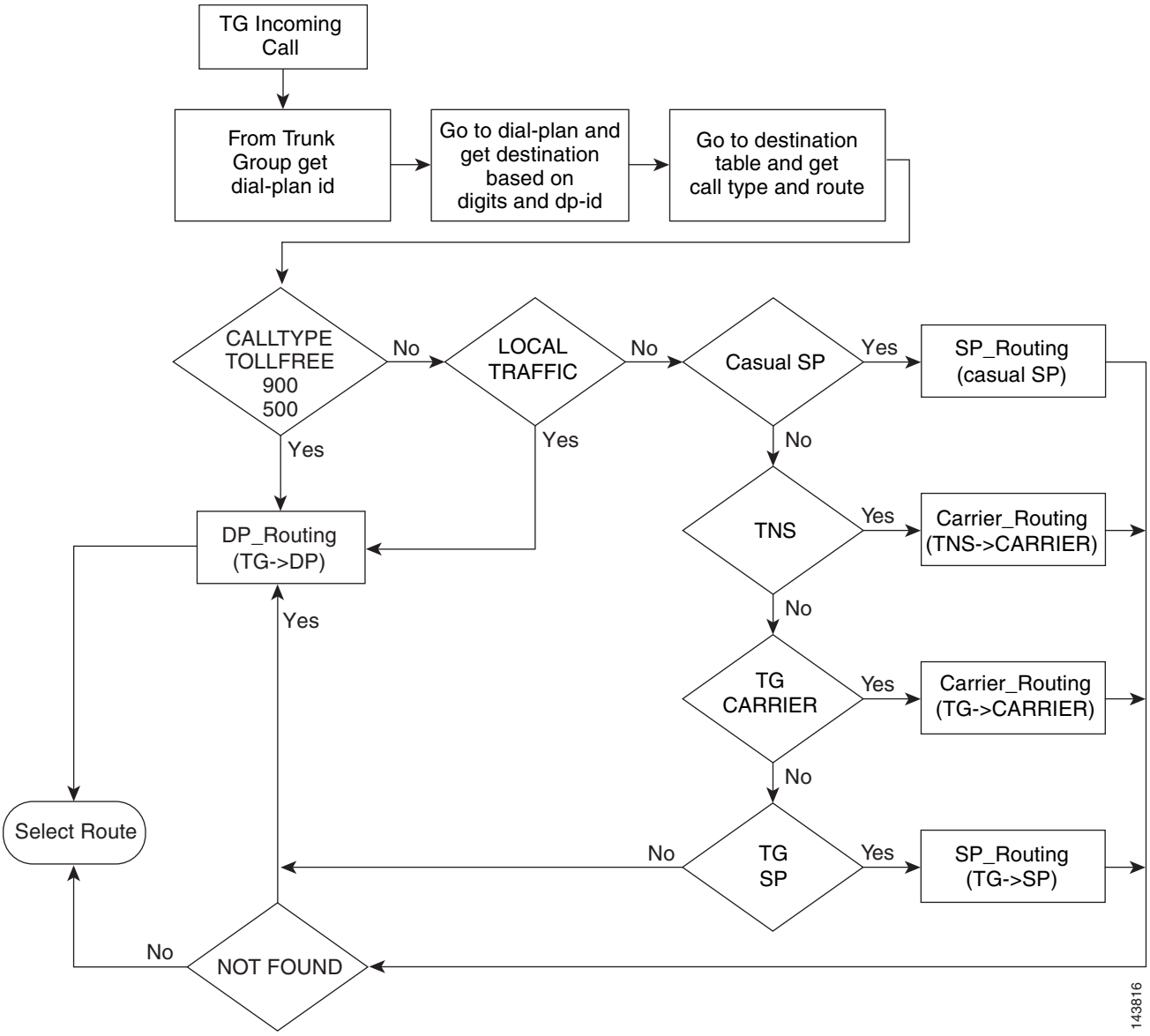
Step 8 If the call type is casual SP, the Cisco BTS 10200 Softswitch will use the SP routing to select the call route and to route the call. If the SP routing is not found, the Cisco BTS 10200 Softswitch will user the dial plan to select the call route and to route the call.

Step 9 If the call type is TNS, the Cisco BTS 10200 Softswitch will use the carrier routing to select the call route and to select the call route and to route the call. If the carrier routing is not found, the Cisco BTS 10200 Softswitch will user the dial plan to select the call route and to route the call.

Step 10 If the call type is TG carrier, the Cisco BTS 10200 Softswitch will use the carrier routing to select the call route and to route the call. If the carrier routing is not found, the Cisco BTS 10200 Softswitch will user the dial plan to select the call route and to route the call.

Step 11 If the call type is TG SP, the Cisco BTS 10200 Softswitch will the SP routing to select the call route and to route the call. If the SP routing is not found, the Cisco BTS 10200 Softswitch will user the dial plan to select the call route and to route the call.

Figure 2-2 Basic Trunk Routing



Service Provider Routing

This section provides a detailed description of the Cisco BTS 10200 Softswitch service provider routing. Refer to Figure 2-3 for visual representation of service provider routing flow while reviewing the following detailed step-by-step service provider routing flow.

Step 1 Service provider call received.

Step 2 Determine if service provider routing is available. If service provider routing is available, proceed to Step 3. If service provider routing is not available, proceed to Step 4.

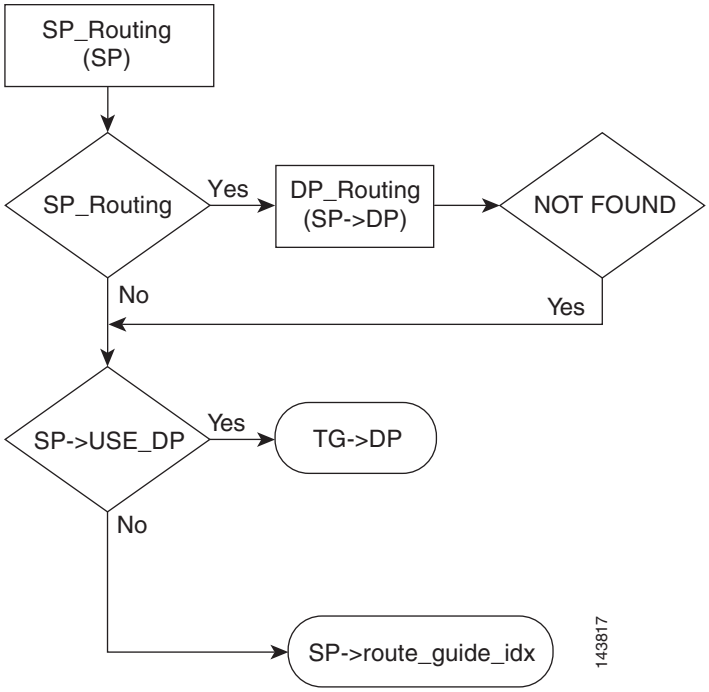
Step 3 If service provider routing is available, the Cisco BTS 10200 Softswitch will use the service provider dial plan to select the call route and to route the call. If the service provider dial plan can not be found, proceed to Step 4.

Step 4 If service provider routing is not available or if the service provider dial plan can not be found, the Cisco BTS 10200 Softswitch will query the service provider which dial plan to use. If a trunk group dial plan is available, proceed to Step 5. If a trunk group dial plan is not available, proceed to Step 6.

Step 5 If a trunk group dial plan is available, the Cisco BTS 10200 Softswitch will use the trunk group dial plan to select the call route and to route the call.

Step 6 If a trunk group dial plan is not available, the Cisco BTS 10200 Softswitch will query the service provider route guide index to select the call route and to route the call.

Figure 2-3 Service Provider Routing



Carrier Based Routing

This section provides a detailed description of the Cisco BTS 10200 Softswitch carrier based routing. Refer to Figure 2-4 for visual representation of carrier based routing flow while reviewing the following detailed step-by-step carrier based routing flow.

Step 1 Carrier based routing call is received.

Step 2 Determine if the carrier is being screened. If the carrier is being screened, proceed to Step 3. If the carrier is not being screened, proceed to Step 4.

Step 3 If the carrier is being screened, the Cisco BTS 10200 Softswitch will determine if the carrier call processing is being remotely blocked (RTM_CP_BLOCK). If the carrier call processing is being remotely blocked, the call can not be completed and will be dropped.

Step 4 If the carrier is not being screened, the Cisco BTS 10200 Softswitch will determine if the carrier is a recognized service provider. If the carrier is a recognized service provider, proceed to Step 5. If the carrier is not a recognized service provider, proceed to Step 6.

Step 5 If the carrier is a recognized service provider, the Cisco BTS 10200 Softswitch will use the service provider routing to select the call route and to route the call.

Step 6 If the carrier is not a recognized service provider, the Cisco BTS 10200 Softswitch will determine if a carrier dial plan is configured. If a carrier dial plan is configured, proceed to Step 7. If a carrier dial plan, is not configured proceed to Step 8.

Step 7 If a carrier dial plan is configured, the Cisco BTS 10200 Softswitch will use the carrier dial plan to select the call route and to route the call.

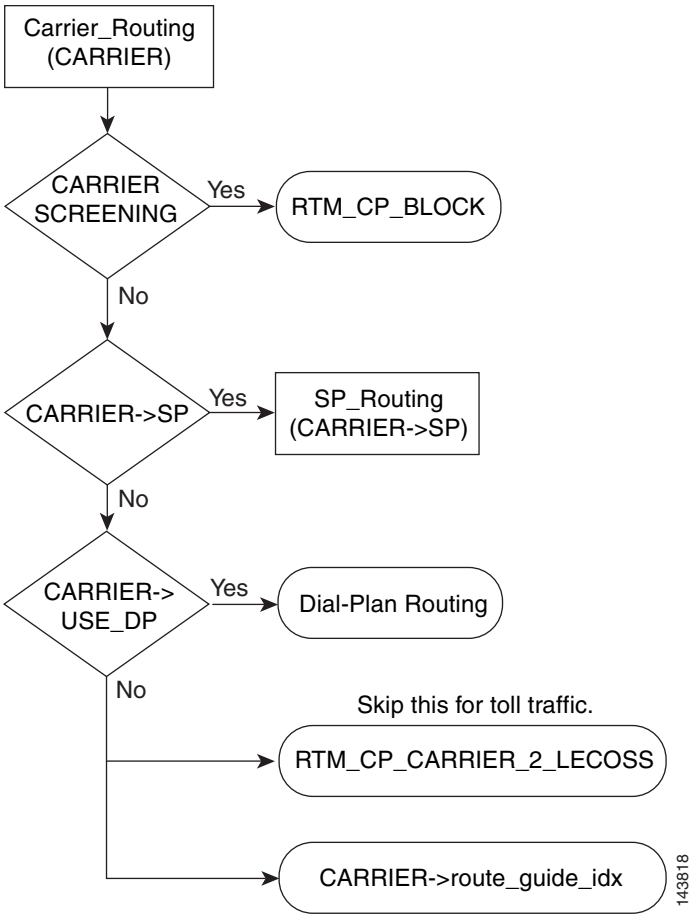
Step 8 If a carrier dial plan is not configured, the Cisco BTS 10200 Softswitch will determine if a carrier remote call processing to local exchange carrier operations support system is available (RTM_CP_CARRIER_2_LECOSS). If the RTM_CP_CARRIER_2_LECOSS is available, proceed to Step 9. If the RTM_CP_CARRIER_2_LECOSS is not available, proceed to Step 10.

Note Step 8 is skipped for toll traffic. If the traffic is toll traffic, proceed to Step 10.

Step 9 If the RTM_CP_CARRIER_2_LECOSS is available and if the traffic is not toll traffic, the Cisco BTS 10200 Softswitch will use the RTM_CP_CARRIER_2_LECOSS to select the call route and to route the call.

Step 10 If the RTM_CP_CARRIER_2_LECOSS is not available, the Cisco BTS 10200 Softswitch will use the carrier guide index to select the call route and to route the call.

Figure 2-4 Carrier Based Routing



Basic Dial Plan Routing

This section provides a detailed description of the Cisco BTS 10200 Softswitch basic dial plan routing. Refer to Figure 2-5 for visual representation of basic dial plan routing flow while reviewing the following detailed step-by-step basic dial plan routing flow.

Step 1 Basic dial plan routing call received.

Step 2 Determine if the NOA for the received call is an international call. If the call is an international call, the Cisco BTS 10200 Softswitch will use the the international dial plan to select the call route and to route the call. If the call is not an international call, proceed to Step 3.

Step 3 Determine if the call destination is found. If the call destination is not found, the Cisco BTS 10200 Softswitch will return a destination not found response (NOT FOUND) and will drop the call. If the call destination is found, proceed to the Step 4.

Step 4 Determine if a call destination subscriber is found. If a call destination subscriber is found, the Cisco BTS 10200 Softswitch will return a subscriber (SUB) response and will use the subscriber information to select the call route and to route the call. If a call destination subscriber is not found, proceed to Step 5.

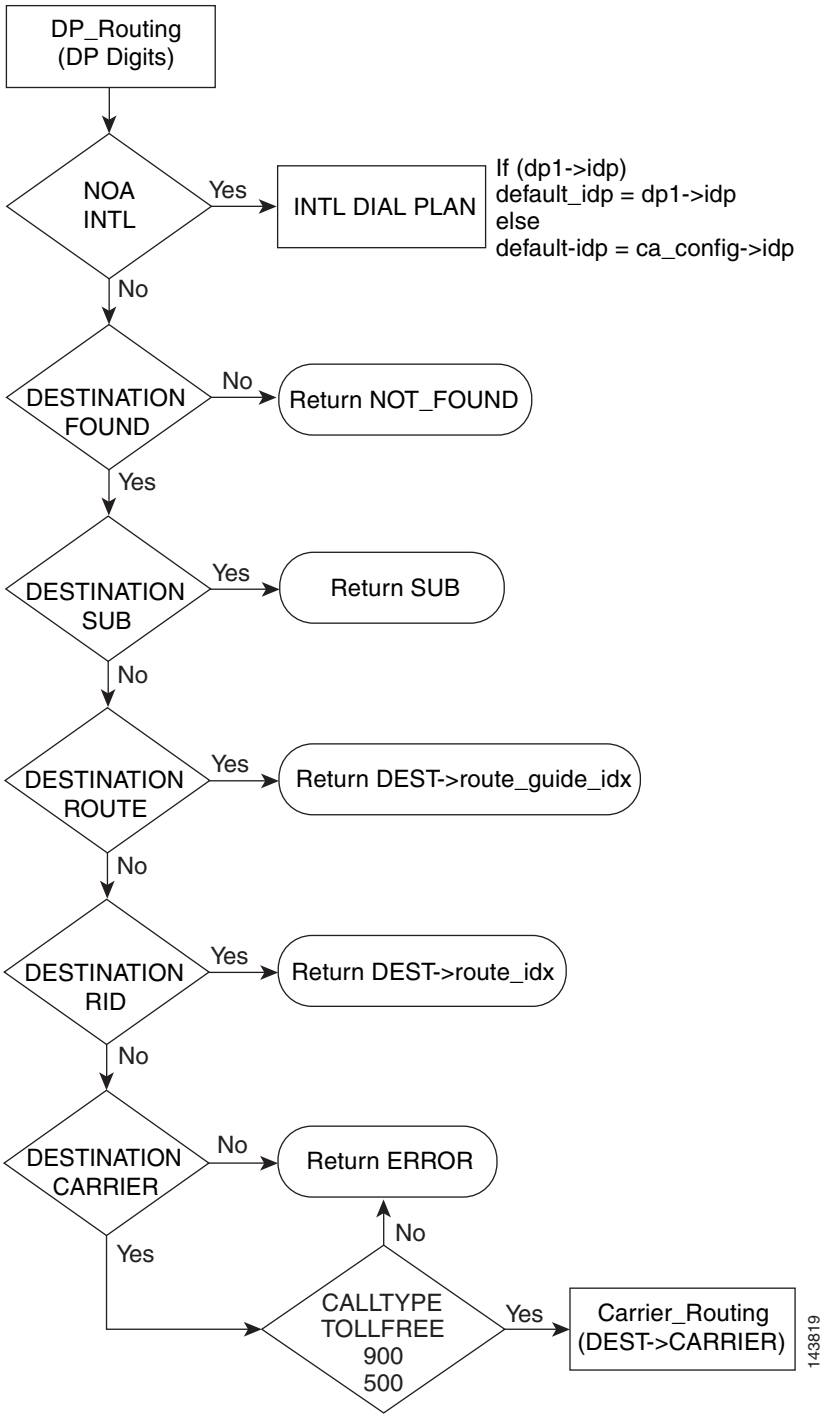
Step 5 Determine if a call destination route is found. If a call destination route is found, the Cisco BTS 10200 Softswitch will return a destination (DEST) response and will use the route guide index to select the call route and to route the call. If a call destination route is not found, proceed to Step 6.

Step 6 Determine if a call destination route identification (RID) is found. If a call destination RID is found, the Cisco BTS 10200 Softswitch will return a DEST response and will user the route index to select the call route and to route the call. If a call destination RID is not found, proceed to Step 7.

Step 7 Determine if a destination carrier is found. If a destination carrier is found, proceed to the Step 8. If a destination carrier is not found, the Cisco BTS 10200 Softswitch will return an error and will drop the call.

Step 8 Determine the call type. If the call type is toll free, 900, or 500, the Cisco BTS 10200 Softswitch will select the call route and to route the call using the destination carrier routing. If the call type is not toll free, 900, or 500, the Cisco BTS 10200 Softswitch will return an error and will drop the call.

Figure 2-5 Basic Dial Plan Routing



Automatic Number Identification Based Routing

This section provides a detailed description of the Cisco BTS 10200 Softswitch ANI based routing. Refer to Figure 2-6 for visual representation of ANI based routing flow while reviewing the following detailed step-by-step ANI based routing flow.

Step 1 A TG incoming call is received.

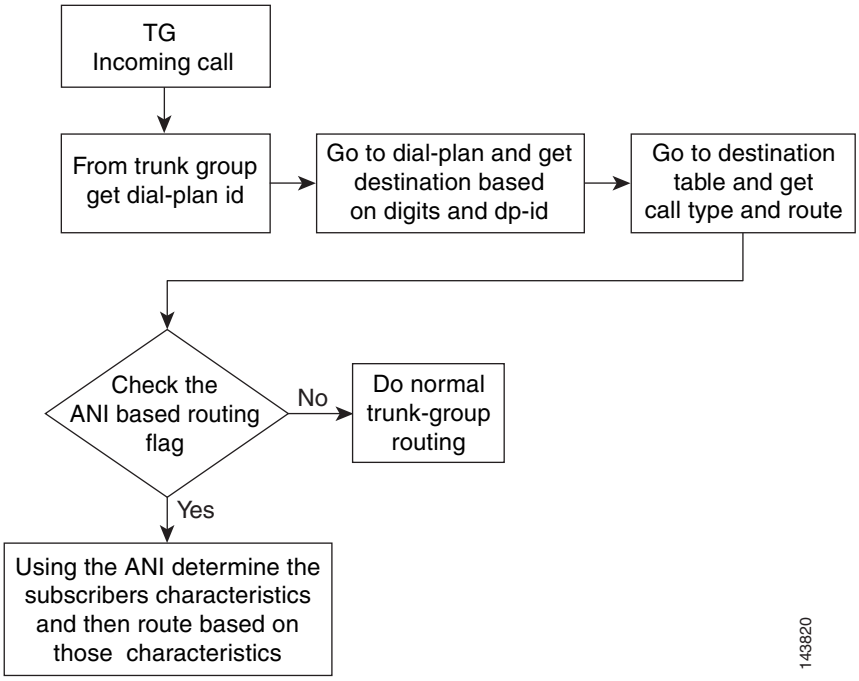
Step 2 Get the dial plan ID from the TG.

Step 3 Go to the dial plan and get the call destination based on the digits and the dial plan ID.

Step 4 Go to the destination table and the get the call type and call route.

Step 5 Check for the ANI based routing flag. If the ANI based routing flag is available, the Cisco BTS 10200 Softswitch will use the ANI to determine the subscriber characteristics and then will route the call based on the those characteristics. If the ANI based routing flag is not available, the Cisco BTS 10200 Softswitch will select the call route and will route the call using normal TG routing.

Figure 2-6 Automatic Number Identification Based Routing



Nature of Address Routing

NOA routing is used to select separate dial plans for DN and RN. The ISUP IAM CdPN parameter contains a NOA value. The NOA value distinguishes the format of the digits, i.e., DN only vs. RN+DN. In some countries, DN prefixes may be the same as some RNs. In these cases, NOA routing allows using different dial plans for DN routing and RN routing.

For a call where the CdPN is a normal DN, the NOA is set to the ITU Q.769 value of 3, meaning national (significant) number. After a local number portability (LNP) query for a ported number, the CdPN consists of the RN and DN concatenated together. The ITU Q.769 NoA value of 8 is used to indicate that the CdPN is in the RN + DN format.

Routing Number

A RN, also known as network routing number, is used to route the call to a ported number after an LNP query to the recipient network or switch. In some countries, the RN consists of a network ID plus an equipment ID. For example, in some countries, the RN consists of a two digit operator code plus a two digit equipment code. Together, the operator code and equipment code, combined as the RN, can be used to route to any possible recipient switch. In some countries, for example, Sweden, the RN contains only the network ID. The call is routed to the recipient , and then another LNP query is required to obtain an RN that identifies the specific recipient switch.

Switch Types

In LNP call scenarios, the BTS can be considered to be one of the following switch types:

- Originating Switch—Subscriber origination. An originating switch is the end office where a subscriber dials a ported directory number (DN). A switch that initiates call forwarding (CFU/CFB/CFNA) is considered the originating switch with respect to the forwarded leg of the call.
- Transit Switch—An incoming trunk call is routed out to another switch. Also known as an intermediate switch.
- Donor Switch—Processes a call originating from a subscriber or trunk to a called directory number (DN) of a subscriber ported out of the given Cisco BTS 10200 Softswitch donor switch to a recipient switch. In some cases, the donor switch may also be the originating or intermediate switch.
- Recipient Switch—Receives a call originating from a subscriber or trunk and has a called DN of a subscriber ported in to the given BTS 10200 Softswitch. In some cases, the recipient switch may also be the originating switch.

Query Types

The Cisco BTS 10200 Softswitch performs queries of its internal database in order to route a call. It may also be configured to perform queries for another backward switch that is not capable of LNP queries.

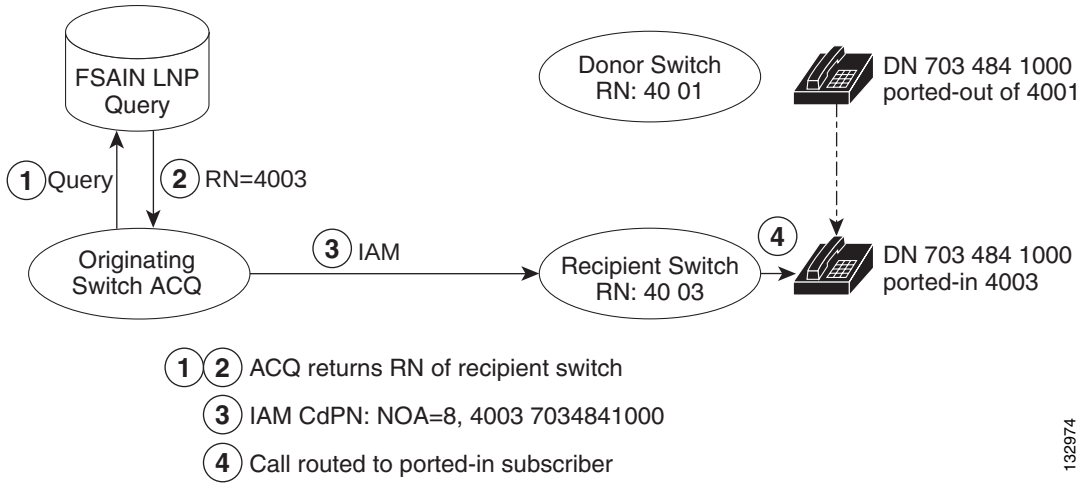
ITU LNP supports the following query types:

- All Calls Query (ACQ)—An LNP query is performed by the Cisco BTS 10200 Softswitch on all originating calls by BTS subscribers. In some cases, the BTS performs an ACQ for another switch that does not have the capability. This method is efficient for networks with many ported subscribers.
- Query On Release (QOR)—A call is routed without a query. When it reaches the donor switch, the call is released backward with the QOR cause code of OOR: Ported Number (14). The originating switch receives the REL with QOR, performs the LNP query, and routes the call on to the recipient switch. This method is efficient for networks with few ported subscribers.
- Onward Donor Based Routing (ODBR), also known as Onward Call Routing (OCR)—LNP queries are only performed in a donor switch when it is determined that the called party is ported-out of the switch. The donor switch performs the query and routes the call onward to the recipient switch. This method is efficient for networks with very few ported subscribers.

All Calls Query (ACQ)

All Calls Query (ACQ), shown in Figure 1, usually applies to a subscriber origination (originating switch). A subscriber is ported out of the donor switch and ported in to the recipient switch. The ACQ query is performed on the originating switch before routing the call directly to the recipient switch. The originating switch queries the LNP database for the routing number of the ported switch.

Figure 2-7 All Calls Query



ACQ might also be performed by an intermediate or donor switch for another switch or network.

Intermediate or Donor Switch Performs ACQ for Another Switch or Network

The Cisco BTS 10200 Softswitch may be required to perform ACQ for another switch that does not have that capability. For example, an international gateway exchange may not have access to the local country LNP database, so the ACQ is performed at the point of interconnect (POI) by the intermediate switch.

To configure the BTS to perform ACQ on incoming calls from a particular trunk group, set the ALL-CALL-QUERY=Y in the LNP Profile table and the token PERFORM-LNP-QUERY=Y in the incoming Trunk Group table.

A query will then be performed on each call received from that trunk group unless not allowed by the destination used for a particular call. For more information, see the Destination Table ACQ Controls section.

Destination Table ACQ Controls

- ACQ-LNP-QUERY=NA in the Destination table is used when an ACQ is not applicable, for example, when the country does not support LNP or ACQ or when the operator does not want the Destination table to have any affect on LNP queries as configured in the LNP Profile and Trunk Group tables.
- ACQ-LNP-QUERY=LNP-QUERY-BASED-ON-CALL-TYPE in the Destination table is provided to allow or prevent ACQ queries for certain call types. For example, LNP queries should not be performed for emergency calls. When ACQ-LNP-QUERY=LNP-QUERY-BASED-ON-CALL-TYPE, in the Destination table, the value of the LNP-QUERY token in the Call Type Profile table determines whether a query will be allowed for a given call type (and the value of the PERFORM-LNP-QUERY in the Trunk Group table, if the call is an incoming trunk group).

Note For call types EMG, FIRE, POLICE, or AMBULANCE an ACQ query will not be performed under any circumstances.

- ACQ-LNP-QUERY=PERFORM-LNP-QUERY and ACQ-LNP-QUERY=NO-LNP-QUERY—ACQ queries are performed for a subset of calls based on the called number prefix. To support this requirement, ALL-CALLS-QUERY=Y in the LNP Profile table. In addition, calls to the specific prefixes requiring ACQ have dial-plan entries pointing to destinations with ACQ-LNP-QUERY , in the Destination table, set to PERFORM-LNP-QUERY. For calls to these ACQ destinations, if the call originates on a trunk, then the Trunk Group table PERFORM-LNP-QUERY also must be set to 'Y' for a query to be performed.
- ACQ-LNP-QUERY=NO-LNP-QUERY—There is a requirement to block queries on outgoing carrier calls. The value ACQ-LNP-QUERY=NO-LNP-QUERY, in the Destination table, indicates that a query will not be performed on any call to this destination.

ACQ and Call Forwarding

A call to a BTS subscriber may be forwarded to another number, for example, in the case of CFU, CFB, or CFNA. For the purposes of LNP, the forwarded call is considered a new subscriber origination, and the switch where the forwarding occurs is the originating switch. If ACQ is configured, a query is performed on the forwarding leg using the forwarded-to DN.

ACQ Matrix

Table 2-1and Table 2-2 illustrate which token combinations result in a query. In general, a query must be allowed at all applicable levels for a query to be performed. For each row in the table, the particular combination of LNP-Profile table ALL-QUERY=Y/N, Destination table ACQ-LNP-QUERY value, plus Call Type Profile value, where applicable, result in a BTS ACQ query being performed or not performed.

Table 2-1 Subscriber Origination ACQ Matrix

LNP Profile ALL-CALL-QUERY	Destination ACQ-LNP-QUERY = NA	Destination ACQ-LNP-QUERY = PERFORM-LNP-QUERY	Destination ACQ-LNP-QUERY = NO-LNP-QUERY	Destination (ACQ-LNP-QUERY = ACQ-BASED-ON-CALL-TYPE) and (Call-Type-Profile for call type LNP-QUERY = Y	Destination (ACQ-LNP-QUERY = ACQ-BASED-ON-CALL-TYPE) and (Call-Type-Profile for call type not present or LNP-QUERY = N	BTS ACQ Query Performed?
Y	X					Y
Y		X				Y
Y			X			N
Y				X		Y
Y					X	N
N	X					N
N		X				N
N			X			N
N				X		N
N					X	N

Table 2-2 Trunk Origination ACQ Matrix

LNP Profile ALL-CALL-QUERY	Incoming Trunk Grp PERFORM-LNP-QUERY	Destination ACQ-LNP-QUERY = NA	Destination ACQ-LNP-QUERY = PERFORM-LNP-QUERY	Destination ACQ-LNP-QUERY = NO-LNP-QUERY	Destination (ACQ-LNP-QUERY = ACQ-BASED-ON-CALL-TYPE) and (Call-Type-Profile for call type LNP-QUERY = Y	Destination (ACQ-LNP-QUERY = ACQ-BASED-ON-CALL-TYPE) and (Call-Type-Profile for call type not present or LNP-QUERY = N	BTS ACQ Query Performed?
Y	Y	X					Y
Y	Y		X				Y
Y	Y			X			N
Y	Y				X		Y
Y	Y		-	-	-	X	N

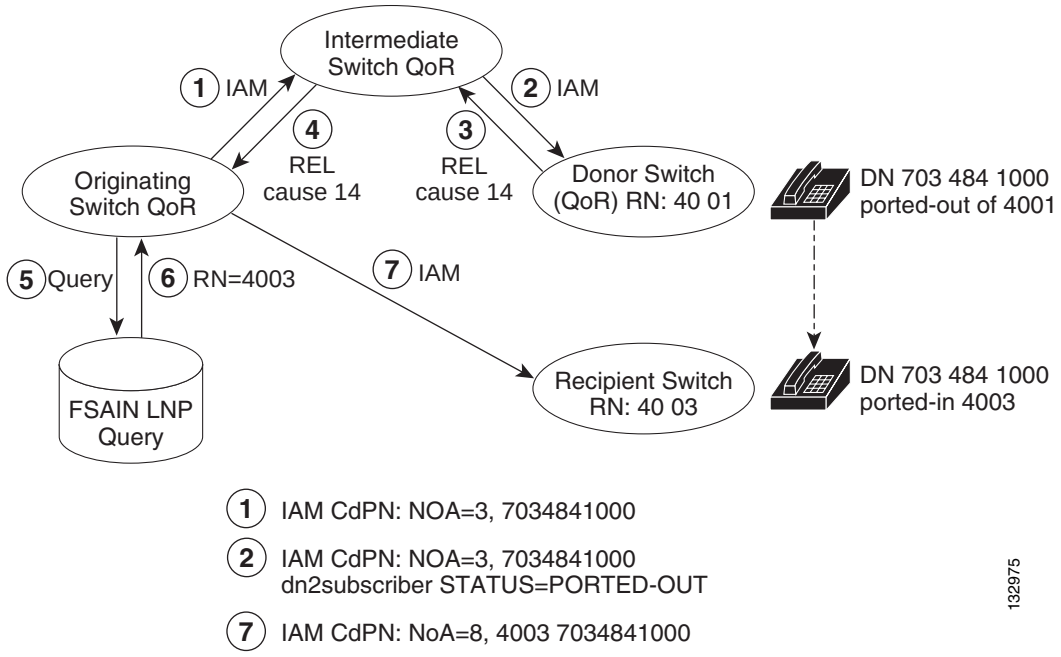
Table 2-2 Trunk Origination ACQ Matrix (continued)

LNP Profile ALL-CALL-QUERY	Incoming Trunk Grp PERFORM-LNP-QUERY	Destination ACQ-LNP-QUERY = NA	Destination ACQ-LNP-QUERY = PERFORM-LNP-QUERY	Destination ACQ-LNP-QUERY = NO-LNP-QUERY	Destination (ACQ-LNP-QUERY = ACQ-BASED-ON-CALL-TYPE) and (Call-Type-Profile for call type LNP-QUERY = Y	Destination (ACQ-LNP-QUERY = ACQ-BASED-ON-CALL-TYPE) and (Call-Type-Profile for call type not present or LNP-QUERY = N	BTS ACQ Query Performed?
Y	N	X					N
Y	N		X				N
Y	N			X			N
Y	N				X		N
Y	N					X	N
N	Y	X					N
N	Y		X				N
N	Y			X			N
N	Y				X		N
N	Y		-	-	-	X	N
N	N	X					N
N	N		X				N
N	N			X			N
N	N				X		N
N	N					X	N

Query On Release (QOR)

For Query on Release (QOR), illustrated in Figure 1, calls are routed normally, with no LNP query, until a call is received for a ported-out subscriber at the donor switch. The donor switch supporting QOR clears the call and sends backward release (REL) with the QOR cause code specified by the network, cause value QOR: Ported Number (14) in ITU/ETSI networks. Each intermediate/transit switch in turn clears backward with the same QOR release cause until finally the originating switch receives the backward REL. This originating switch performs the QOR query and re-routes the call onward towards the recipient switch.

Figure 2-8 Query On Release



A BTS is configured for QOR when the LNP Profile Table's QUERY-ON-RELEASE token is set to Y.

Note For a call attempting to terminate to a ported-out subscriber (donor switch), ODBR will take precedence over QOR. For a subscriber origination (originating switch), ACQ takes precedence over QOR, so the call will be initially correctly routed to the recipient switch, and no REL with cause value QOR: Ported Number (14) will be received (other than for a network routing error).

The BTS performs one of the following functions for QoR:

- Donor Switch
- Intermediate or Transit Switch
- Originating Switch

Donor Switch

- Normal case—When the BTS receives a call to a DN with a DN2subscriber record, if the STATUS has a value of PORTED-OUT, and if the LNP Profile table indicates QUERY-ON-RELEASE=Y, then a backward release (REL) is sent with the QOR ported number release cause defined in the LNP Profile table (defaults to cause value QOR: Ported Number (14)).
- QOR not supported by backward switch—For a trunk originated call to a ported-out subscriber, the incoming trunk group may indicate that QOR is not supported by the previous switch or network and that the BTS is expected to perform the QOR query (LNP Profile table QUERY-ON-RELEASE=Y and Trunk Group table PERFORM-LNP-QUERY =Y). In this case, a QOR query is performed by the BTS and the call is re-routed onward to the recipient switch.
- Misrouted call or configuration error—If the dn2subscriber record STATUS has a value of PORTED-OUT, but the LNP Profile table QUERY-ON-RELEASE=N and ONWARD-CALL-ROUTING=N, a network routing error has occurred (for example, the CRD LNP database is incorrect, the originating switch performing ACQ misrouted the call, or the BTS DN2subscriber or LNP Profile flags are incorrect). For a misrouted call where the CdPN contained a regular non-ported DN, the BTS will clear the call with a non-LNP release cause indicating an unallocated number ; otherwise, if the CdPN contained the ported NOA as a result of the incoming trunk call or subscriber origination on this switch, then the cause misrouted ported number is used.

Intermediate or Transit Switch

- Normal case—When the BTS receives a backward REL with the QOR ported number release cause, the BTS clears the call and sends a backward REL with the same release cause.
- QOR not supported by backward switch—If the incoming trunk group indicates that QOR is not supported by the previous switch or network and that the BTS is expected to perform the QOR query (LNP Profile table QUERY-ON-RELEASE =Y and Trunk Group table PERFORM-LNP-QUERY=Y) , a QOR query is performed by the BTS and the call is re-routed onward to the recipient switch.

Originating Switch

- Normal case—When the BTS receives a backward REL with the QOR ported number release cause, if the LNP Profile table QUERY-ON-RELEASE=Y, a query is preformed. The call is then re-routed onward to the recipient switch.
- When the BTS receives a backward REL with cause QOR: Ported Number (14), if the LNP Profile table QUERY-ON-RELEASE=N, this cause value is not defined as a QOR ported number cause value. If the operator desires explicit cause mapping for this cause, cause-code mapping should be provisioned.
- When the BTS receives a backward REL with the QoR ported number release cause, and the LNP Profile table QUERY-ON-RELEASE=Y, if the BTS determines that a query was done previously (ACQ) which did not find an RN and the call was routed with the DN, the call is cleared with a cause unallocated number.
- When the BTS receives a backward REL with the QOR Ported Number release cause, if the BTS determines that a query was done previously (ACQ) that returned an RN, and the call was routed using the RN and NOA for ported number, then the call is cleared with a cause 31 unspecified This case is normally not expected to occur. If the BTS is the donor switch in this case and receives a called party number with ported NOA, then REL with cause unallocated number is sent back to the originating switch. Cause QoR: Ported Number (14) is not used for an incoming call containing a ported number NOA.

Intermediate or Donor Switch Performing QoR for Another Switch or Network

For QoR, the LNP query is only done on the originating switch, unless the BTS is required to perform the QoR query for another switch that does not have that capability. For example, an international gateway exchange may not have access to the local country-specific LNP database, so the query is performed by the intermediate switch.

QoR and Call Forwarding

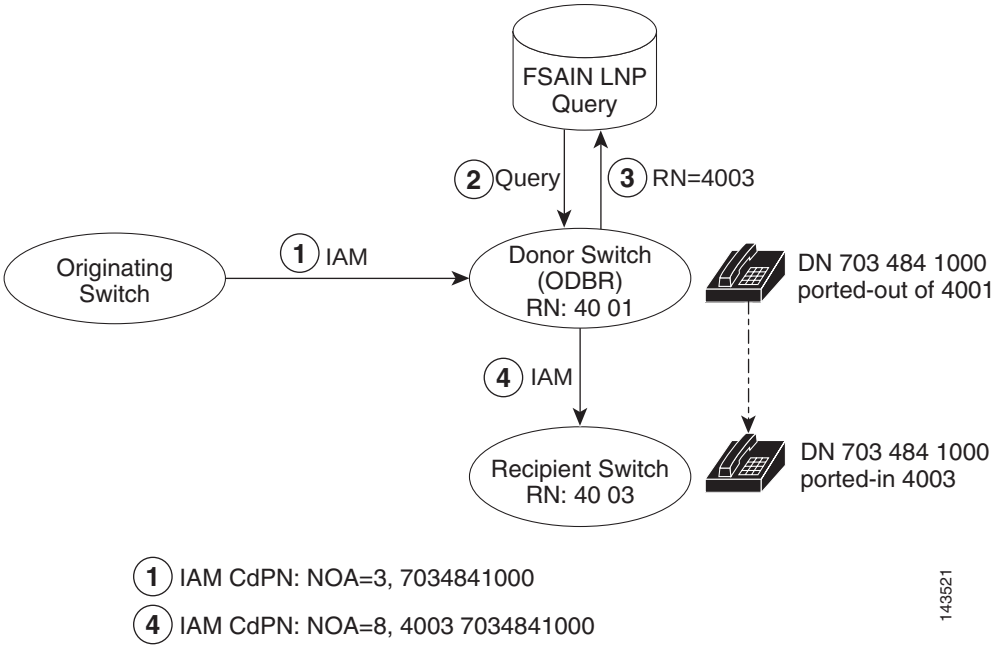
A call terminating to a BTS subscriber may be forwarded to another number, for example, in the case of CFU, CFB, or CFNA. In the case of LNP, the forwarded call is considered a new subscriber. If a backward REL with the ported number release cause is received, and QoR is configured, a query is performed to route the forwarding leg to the new recipient switch.

Onward Donor Based Routing (ODBR)

For ODBR, also known as Onward Call Routing (OCR), LNP queries are performed in a donor switch. The called party number is used to access the DN2subscriber table and, if the STATUS=PORTED-OUT or LNP-TRIGGER=Y, an LNP query is performed. After the query, the donor switch routes the call onward to the recipient switch.

ODBR is illustrated in Figure 2-9.

Figure 2-9 ODBR Routing



Subscriber Based LNP Trigger on a Donor Switch

The LNP-TRIGGER token in the DN2subscriber table is an alternative to porting by changing the DN2subscriber STATUS token to PORTED-OUT. It allows a seamless transition on a donor switch. However, it is not recommended if porting procedures normally require provisioning changes at the time the porting becomes effective.

During the transition period of a local subscriber porting out, the DN2subscriber record LNP-TRIGGER token may be set to Y, which forces an LNP query to determine whether the LNP database indicates the subscriber's DN is ported out or not.

If the LNP query returns an RN for a different switch, then the subscriber has ported out. In this case, if the switch performs ODBR queries, then the call is routed onward to the recipient switch; otherwise, if the switch is configured for QoR queries, then the donor switch sends backward REL with the QoR cause code.

If the LNP query does not find an RN, or returns the RN of this switch, then the subscriber is not ported yet (or has ported out and back in again), so the call is routed to the subscriber.

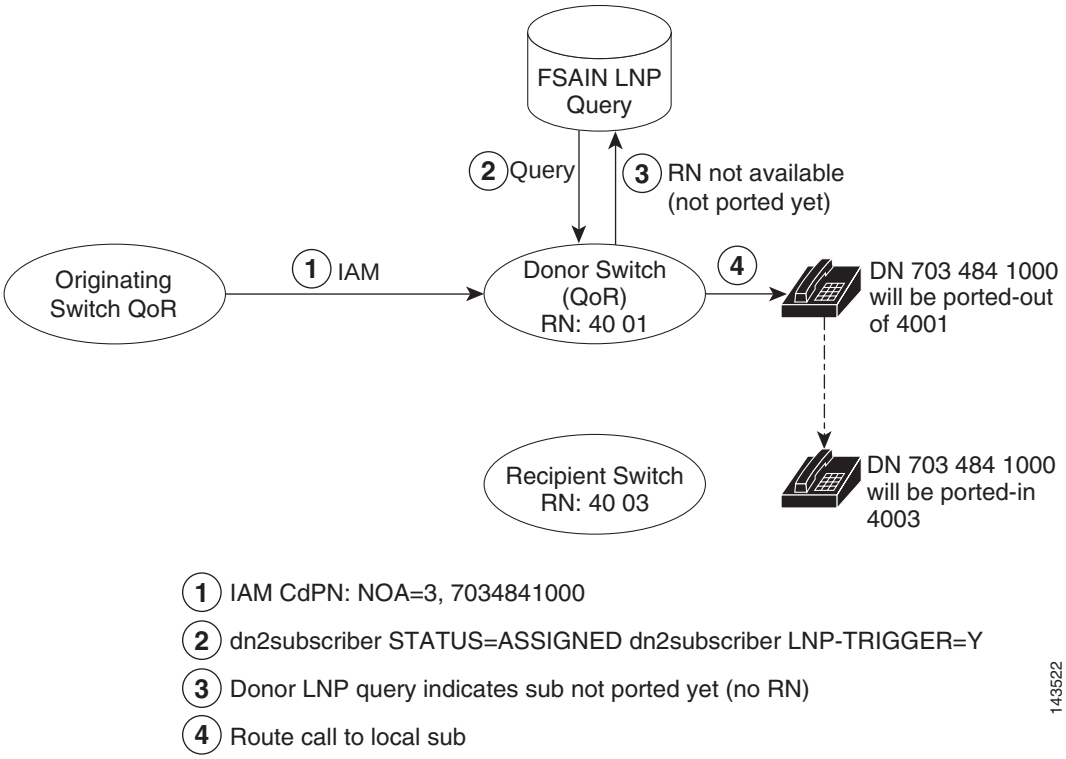
The subscriber-based LNP trigger makes it easy for the operator because configuring of the subscriber ported status is not required to be synchronized with the porting window. The operator sets the subscriber query (LNP-TRIGGER) flag in advance of the porting time window and can set the subscriber STATUS to PORTED-OUT sometime later, after the porting.

Note The LNP-TRIGGER flag is not applicable for ACQ.

Example 1: QoR Donor Transition Period

Figure 2-10 and Figure 2-11 illustrate a call scenario for a QoR donor transition period. In Figure 2-10, the subscriber is ported out, the LNP-TRIGGER token has been set to Y, and the local database has no entry.

Figure 2-10 Before Subscriber Porting

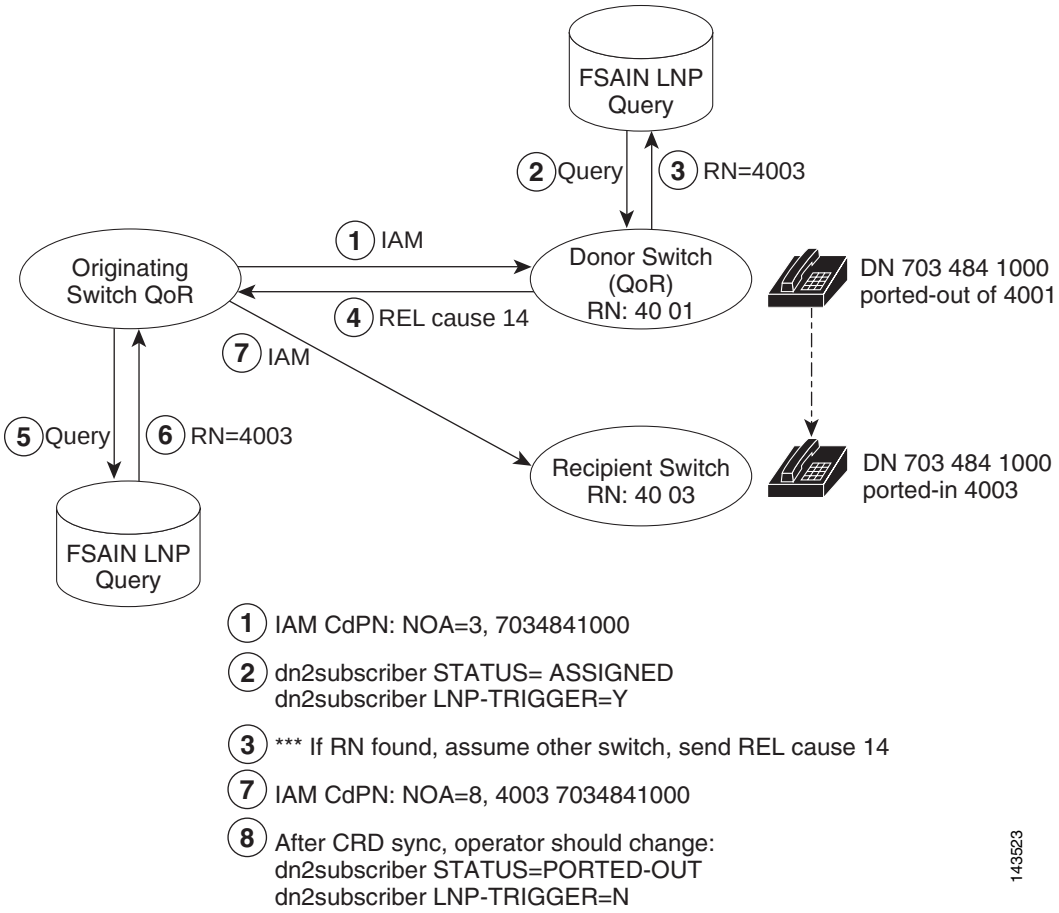


1. The originating switch sends an IAM to the donor switch with NOA=3 and DN=7034841000.
2. In the DN2subscriber table on the donor switch, STATUS=ASSIGNED and LNP-TRIGGER=Y. Since the LNP-TRIGGER=Y, the donor switch performs a query.
3. The query does not return a RN to the donor switch, indicating that the subscriber is not yet ported out.
4. The donor switch routes the call to the local subscriber.

Example 2: QOR Donor Transition Period

In Figure 2-11, it is after the start of the porting window. The subscriber is ported out, and the LNP-TRIGGER token has been set to Y. The local database now shows the subscriber as ported out (contains an RN for the subscriber).

Figure 2-11 After Subscriber Porting



1. The originating switch sends an IAM to the donor switch with NOA=3 and DN=7034841000.
2. In the DN2subscriber table on the donor switch, STATUS=ASSIGNED and LNP-TRIGGER=Y. Since the LNP-TRIGGER=Y, the donor switch performs a query.
3. The query returns RN=4003.
4. The donor switch sends REL cause QoR: Ported Number (14) to the originating switch.
5. The originating switch performs an LNP query of it's local database.
6. The query returns RN of the recipient switch.
7. The originating switch sends an IAM to the recipient switch.

Precedence of Query Types

Operators can choose different options among ACQ, ODBR, QoR, or a combination of these. Countries starting with only ODBR or QoR may eventually transition to ACQ as more numbers become ported. Therefore, during the transition, a given network or switch may be a combination of ACQ plus QoR or ACQ plus ODBR.

The BTS LNP Profile tokens for ALL-CALLS-QUERY (ACQ), ONWARD-CALL-ROUTING (ODBR), and QUERY-ON-RELEASE (QoR) give the operator complete flexibility to configure the BTS for any possible combination in a mixed network by simply changing the LNP Profile tokens.

In general, ACQ takes precedence over ODBR, which takes precedence over QoR, and finally LNP-TRIGGER. Note that a query due to ODBR or QoR requires the called DN status, in the dn2subscriber table, to be PORTED-OUT. Note that for a query to result from LNP-TRIGGER=Y, the dn2subscriber status cannot be PORTED-OUT (and either the ONWARD-CALL-ROUTING or QUERY-ON-RELEASE must be Y).

Table 2-3 illustrates query type precedence. The first five columns indicate configuration values, and the last four columns indicate whether a query is performed or another action, such as sending a REL for QoR, on the respective originating, intermediate, donor, and recipient switches. Note the following for Table 2-3:

- N values (for example, LNP Profile table ALL-CALL-QUERY=N) is shown as a blank cell in the table, to improve readability.
- ODBR indicates an all call query is performed, and the call is routed onward to the recipient switch.
- REL indicates the donor switch detects that the subscriber is ported-out, so the call is cleared (REL with cause QoR: Ported Number (14)).
- REL QOR indicates the originating switch receives REL with cause QoR: Ported Number (14), does a query, and routes the call onward to the recipient switch.

Table 2-3 Precedence of Query Matrix

LNP Profile ALL-CALL-QUERY	LNP Profile ONWARD-CALL-ROUTING	LNP Profile QUERY-ON-RELEASE	DN2SUBSCRIBER status PORTED-OUT)	DN2SUBSCRIBER LNP-TRIGGER (and not PORTED-OUT)	Trunk Grp PERFORM-LNP-QUERY	Originating Switch Query?	Intermediate Switch Query?	Donor Switch Query?	Recipient Switch Query?
Y						ACQ			
	Y		Y					ODBR	
		Y				REL QOR		REL	
				Y				Note 3	
					Y				
Y	Y		Y			ACQ		ODBR	
Y		Y	Y			ACQ		REL	
Y				Y		ACQ		Note 3	
Y					Y	ACQ	ACQ	ACQ	
	Y	Y	Y					ODBR	
	Y			Y				Note 1	

Table 2-3 Precedence of Query Matrix (continued)

	Y		Y		Y			ODBR	
		Y		Y				Note 2	
		Y			Y	REL QOR	REL QOR	REL QOR	
Y	Y	Y	Y			ACQ		ODBR	
Y	Y	Y		Y		ACQ		Note 1	
Y	Y	Y			Y	ACQ	ACQ	ACQ	
Y	Y	Y		Y	Y	ACQ	ACQ	ACQ	

Note 1: case A: Donor switch dn2subscriber LNP-TRIGGER=Y and dn2subscriber STATUS=PORTED-OUT with ONWARD-CALL-ROUTING=Y: ODBR query. If query result returns an RN, then the if the RN is for another switch the call routed onward to the recipient switch; otherwise, the call cannot be routed to the ported-out subscriber, so the call fails with unallocated number cause.

case B: Donor switch dn2subscriber table LNP-TRIGGER=Y and dn2subscriber table STATUS=ASSIGNED with ONWARD-CALL-ROUTING=Y: LNP-TRIGGER query. If query result returns an RN, then if the RN is for another switch the call routed onward to the recipient switch; otherwise, the call is routed to the local subscriber

Note 2: case A: Donor switch dn2subscriber table LNP-TRIGGER=Y with QUERY-ON-RELEASE=Y and dn2subscriber STATUS=PORTED-OUT: Call is cleared backward with REL and QOR: ported number cause.

case B: Donor switch dn2subscriber table LNP-TRIGGER=Y with QUERY-ON-RELEASE=Y and dn2subscriber table STATUS=ASSIGNED: LNP-TRIGGER query. If query result returns any RN or other switch, then the call is failed with QoR release cause such as unallocated number (not cause QoR: Ported Number (14)). Otherwise, an attempt is made to route the call to the local subscriber

Note 3: Donor switch dn2subscriber LNP-TRIGGER=Y, but not ODBR or QoR. Route call to subscriber with no query.

Dial Plan and Nature of Address Routing

In some countries, there may be an overlap between the RNs and the leading digits of a DN, that is, the beginning digits of an RN and DN may be the same. The NOA is used to distinguish a DN from a concatenated RN + DN combination. A new capability, NOA routing, is added to the Cisco BTS 10200 Softswitch for LNP in order to associate different dial plans for DN routing and RN routing.

Normal dial plans for subscriber and trunk originations are used to route to DNs. The new NOA Route table contains ported NOA values and destination IDs which point to RN dial plans.

Examples illustrating NOA routing are provided below. For the dial plan used for the subscriber or trunk origination, the dial-plan-profile table new NOA-ROUTING field is set to 'Y', with an associated NOA-ROUTE-PROFILE-ID. The new NOA Route table associated with the NOA Route Profile table has entries for the ported NOA. The NOA Route ITU Q.769 value '8', specified as PORTED-NUMBER-WITH-RN in the NOA Route table entry). If a matching NOA is found in the NOA ROUTING table, then the destination in the NOA Routing entry is used to route the call, and possibly point to a new dial plan for routing based on the RN. The following call scenarios show how this works :

Normal routing for Called Party Number with a Non-Ported Nature of Address with Directory Number

An incoming trunk call is received with the Called Party Number containing the NOA associated with a DN. There will be no matching entry in the NOA Route entry. The normal dial-plan associated with the incoming trunk group is used to route the call.

Routing Number Routing for Called Party Number With Ported Nature of Number and Routing Number + Directory Number

An incoming trunk call is received with the Called Party Number containing the NOA associated with a ported DN. There will be a matching entry in the NOA Route entry and a destination ID. That is, the NOA Route entry with NOA of PORTED-NUMBER-WITH-RN (which is the value associated with NOA ITU Q.769 value 8). This destination ID may then contain a dial-plan ID for a dial plan for RN routing.

Local Number Portability Query Returns Routing Number for Ported Directory Number

When the Cisco BTS 10200 Softswitch performs an LNP query and finds an RN for a ported number that is not in this switch, the call is routed onward. The dial-plan-profile associated with the originating subscriber or trunk has NOA-ROUTING=Y, and the NOA Route Profile ID of the NOA Route that contains a destination ID. Note that for a country such as France, which uses an RN prefix but with a standard NOA (3, National), after an LNP query on the Cisco BTS 10200 Softswitch, digit manipulation must be used to replace the NOA value ported- number with RN value to national.

International WZ1 (INTL_WZ1) Preferred Carrier Routing

This section describes the preferred carrier (PIC) routing for an international world zone 1 call. In the past releases, the BTS 10200 supported preferred carrier (PIC) routing based on the routing application defined for the North America PSTN environment. Table 2-4 lists the general preferred carrier routing behavior in prior releases of the BTS 10200.

Table 2-4 General Preferred Routing

CALL TYPE	PIC	Description
CALLTYPE_INTERLATA CALLTYPE_INTL_WZ1	PIC1	Uses SUBSCRIBER.PIC1 to route the call. If PIC1 is not provisioned then route the call to POP.LECOSS.
CALLTYPE_TOLL	PIC2	If POP.ITP is set to Y then uses SUBSCRIBER.PIC2 to route the call. Otherwise, route the call according to the provisioning defined in DIAL_PLAN.
CALLTYPE_INTL	PIC3/PIC1	Uses SUBSCRIBER.PIC3 to route the call if PIC3 is provisioned. If PIC3 is not provisioned then use SUBSCRIBER.PIC1 to route the call. If neither PIC1 nor PIC3 is provisioned then route the call to POP.LECOSS.

Because different customers have different needs regarding the routing for INTL_WZ1 calls, the flexibility of preferred carrier routing for INTL_WZ1 calls has been enhanced as shown in Table 2-5.

Table 2-5 Enhanced Preferred Routing

CALL TYPE	PIC	Description
CALLTYPE_INTERLATA	PIC1	Uses SUBSCRIBER.PIC1 to route the call. If PIC1 is not provisioned then route the call to POP.LECOSS. Filter: CARRIER: INTER
CALLTYPE_INTL_WZ1	PIC1	CA-CONFIG:INTL_WZ1_USE_PIC3 = N Uses SUBSCRIBER.PIC1 to route the call. If PIC1 is not provisioned then route the call to POP.LECOSS. Filter: CARRIER: INTER or CARRIER: INTL (Allow call goes through if either one set to Y)
	PIC3/PIC1	CA-CONFIG:INTL_WZ1_USE_PIC3 = Y Uses SUBSCRIBER.PIC3 to route the call if PIC3 is provisioned. If PIC3 is not provisioned then use SUBSCRIBER.PIC1 to route the call. If neither PIC1 nor PIC3 is provisioned then route the call to POP.LECOSS. Filter: CARRIER: INTER or CARRIER: INTL (Allow call goes through if either one set to Y)
CALLTYPE_TOLL	PIC2	If POP.ITP is set to Y then uses SUBSCRIBER.PIC2 to route the call. Otherwise, route the call according to the provisioning defined in DIAL_PLAN. Filter: CARRIER: INTRA
CALLTYPE_INTL	PIC3/PIC1	Uses SUBSCRIBER.PIC3 to route the call if PIC3 is provisioned. If PIC3 is not provisioned then use SUBSCRIBER.PIC1 to route the call. If neither PIC1 nor PIC3 is provisioned then route the call to POP.LECOSS. Filter: CARRIER: INTL

There is no change to CALLTYPE_INTERLLATA, CALLTYPE_TOLL, and CALLTYPE_INTL. The CALLTYPE_INTL_WZ1 has two different flavors of preferred carrier routing controlled by the CA-CONFIG:INTL_WZ1_PIC3 flag.

For operator assisted calls, there are minor differences between PIC2 and PIC1/PIC3. A call associated with PIC1 or PIC3 is routed to the PIC1/PIC3 carrier if the SUB_PROFILE.EA_USE_PIC1 is set to Y, otherwise the call is routed to POP.LECOSS. A associated with PIC2 is routed to the PIC2 carrier.

Note When a call is routed to any PICx carrier but the specific carrier does not support it (CARRIER.OP-SERVICES=N), the will be rerouted to POP.LECOSS.

Casual calls are routed to PICx carrier according to the call type if the specified carrier supports casual calls (CARRIER.CASUAL=N), otherwise the call is blocked.

Note Enhanced preferred routing affects the entire system for CALL TYPE INTL_WZ1 routing. All subscriber originated CALL TYPE INTL_WZ1 calls use preferred carrier routing. In another words, the BTS 10200 does not allow one subscriber to use PIC1 while other subscribers use PIC3 for CALL TYPE INTL_WZ1 calls.

Call Types

This section provides detailed information on the Cisco BTS 10200 Softswitch call types. Information on the following call types is provided:

- 1+ Interlata Call
- 1+ Intralata Call
- 0+ Interlata Call
- 0+ Intralata Call
- Ported-In Call Processing
- Call-Type After Multiple Digit Translations
- Operator Services

1+ Interlata Call

This section provides a detailed description of the Cisco BTS 10200 Softswitch routing and call flow for 1+ interlata calls. Refer to Figure 2-12 for visual representation of the 1+ interlata call routing flow while reviewing the following detailed step-by-step 1+ interlata call routing flow.

Step 1 A 1+ interlata call is received.

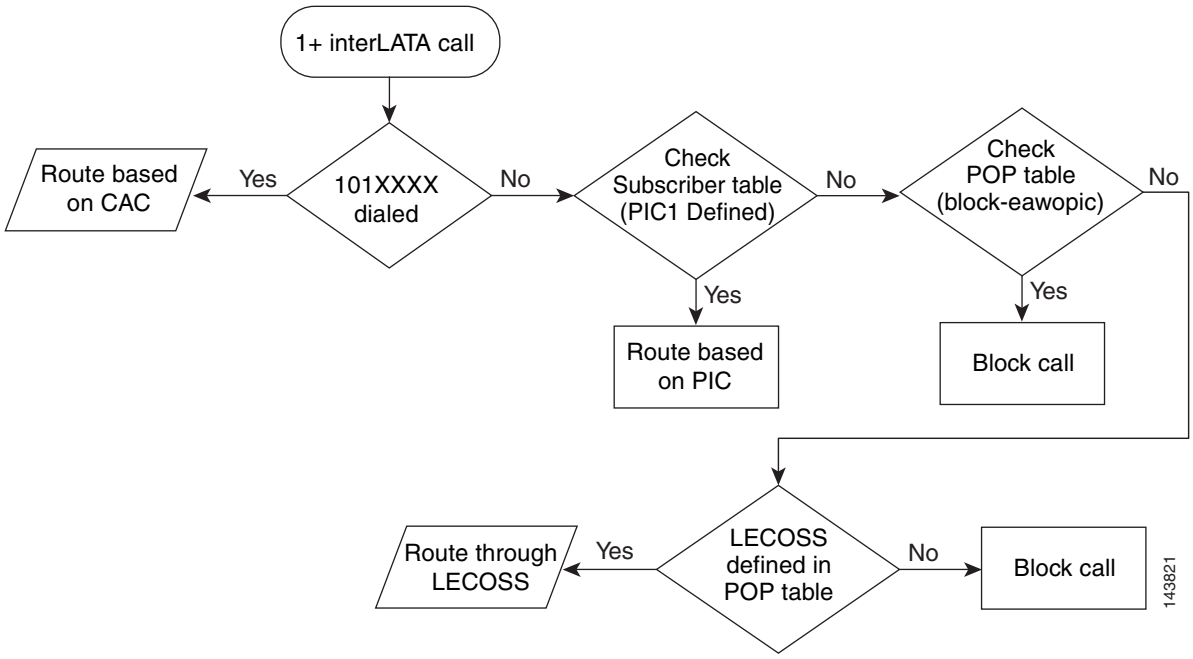
Step 2 Determine if a 101XXXX number has been dialed. If a 101XXXX number has been dialed, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the carrier access code (CAC). If a 101XXXX number has not been dialed, proceed to Step 3.

Step 3 Check the subscriber table to determine if a PIC is defined. If a PIC is defined, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the PIC information. If a PIC is not defined, proceed to Step 4.

Step 4 Check the point of presence (POP) table and verify if a block-eawopic is configured. If the a block-eawopic is configured, the Cisco BTS 10200 Softswitch will block the call. If a block-eawopic is not configured, proceed to Step 5.

Step 5 Determine if a local exchange carrier operations support system (LECOSS) is defined in the POP table. If a LECOSS is defined in the POP table, the Cisco BTS 10200 Softswitch will select route the call via the LECOSS. If a LECOSS is not defined in the POP table, the Cisco BTS 10200 Softswitch will block the call.

Figure 2-12 1+ Interlata Call



1+ Intralata Call

This section provides a detailed description of the Cisco BTS 10200 Softswitch routing and call flow for 1+ intralata calls. Refer to Figure 2-13 for visual representation of the 1+ intralata call routing flow while reviewing the following detailed step-by-step 1+ intralata call routing flow.

Step 1 An 1+ intralata call is received.

Step 2 Determine if 101XXXX number has been dialed. If a 101XXXX number has been dialed proceed to Step 3. If a 101XXXX number has not been dialed, proceed to Step 4.

Step 3 Check the carrier table for a carrier access code (CAC). If a CAC is available, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the CAC. If a CAC is not available, proceed to Step 3a.

a. Determine if a LECOSS is defined in the POP table. If a LECOSS is defined in the POP table, the Cisco BTS 10200 Softswitch will select the call route and route the call via the LECOSS. If a LECOSS is not defined in the POP table, the Cisco BTS 10200 Softswitch will block the call.

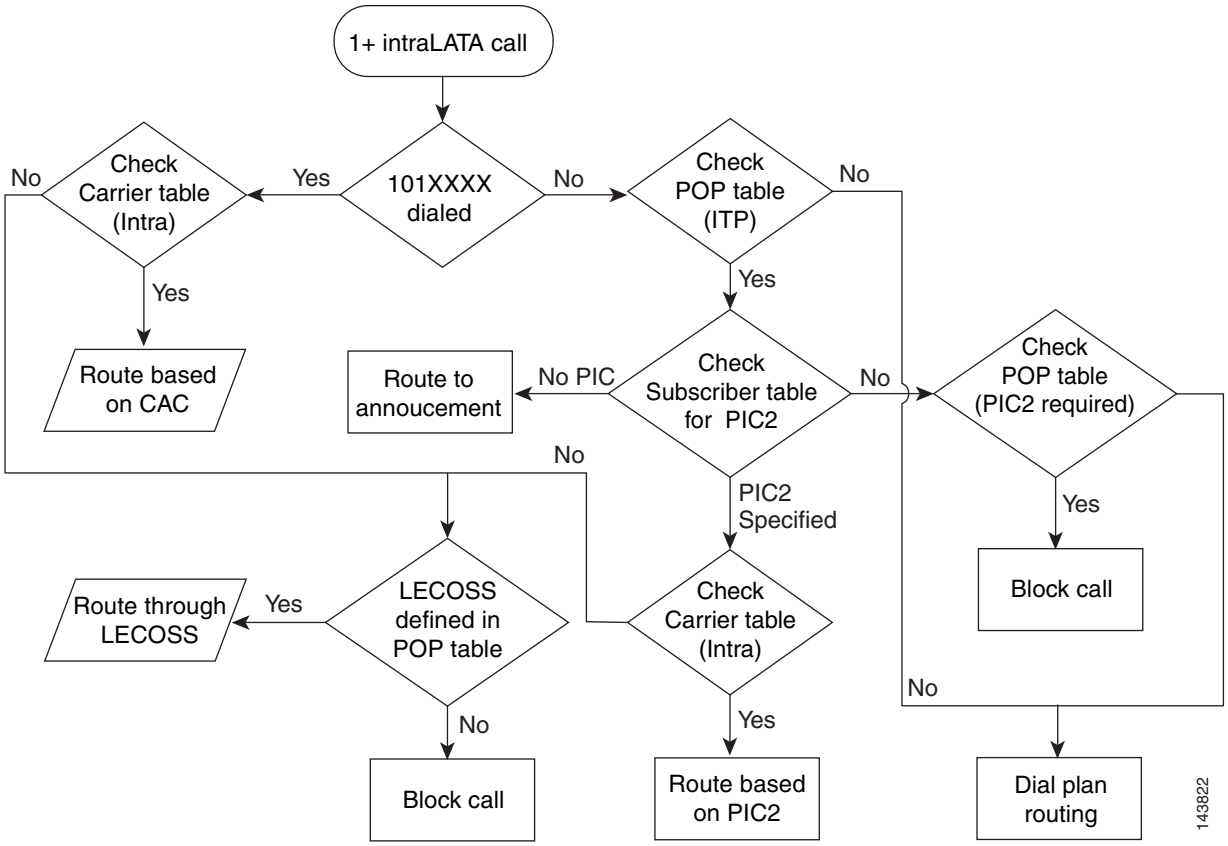
Step 4 Check the POP table for a configured IP transfer point (ITP). If an ITP is configured, proceed to Step 4a. If an ITP is not configured, the Cisco BTS 10200 Softswitch will route the call via dial plan routing.

a. Check the subscriber table for a specified PIC. If a PIC is specified, proceed to Step 4b. If a PIC is not specified, the Cisco BTS 10200 Softswitch will route the call to the announcement server and will check the POP table for a specified PIC. If a PIC is not specified, the Cisco BTS 10200 Softswitch will block the call or if a dial plan is available, the Cisco BTS 10200 Softswitch will select the call route and route the call according to the dial plan routing information.

b. Check the intra carrier table for a specified PIC. If a PIC is specified in the intra carrier table, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the PIC information. If a PIC is not specified in the intra carrier table, proceed to Step 4c.

c. Determine if a LECOSS is defined in the POP table. If a LECOSS is defined in the POP table, the Cisco BTS 10200 Softswitch will select the call route and route the call via the LECOSS. If a LECOSS is not defined in the POP table, the Cisco BTS 10200 Softswitch will block the call.

Figure 2-13 1+ Intralata Call



0+ Interlata Call

This section provides a detailed description of the Cisco BTS 10200 Softswitch routing and call flow for 0+ interlata calls. Refer to Figure 2-14 for visual representation of the 0+ interlata call routing flow while reviewing the following detailed step-by-step 0+ interlata call routing flow.

Step 1 A 0+ interlata call is received.

Step 2 Determine if a 101XXXX number has been dialed. If a 101XXXX number has been dialed proceed to Step 3. If a 101XXXX number has not been dialed proceed to Step 5.

Step 3 Check the carrier table for a CAC. If a CAC is available, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the CAC. If a CAC is not available, proceed to Step 4.

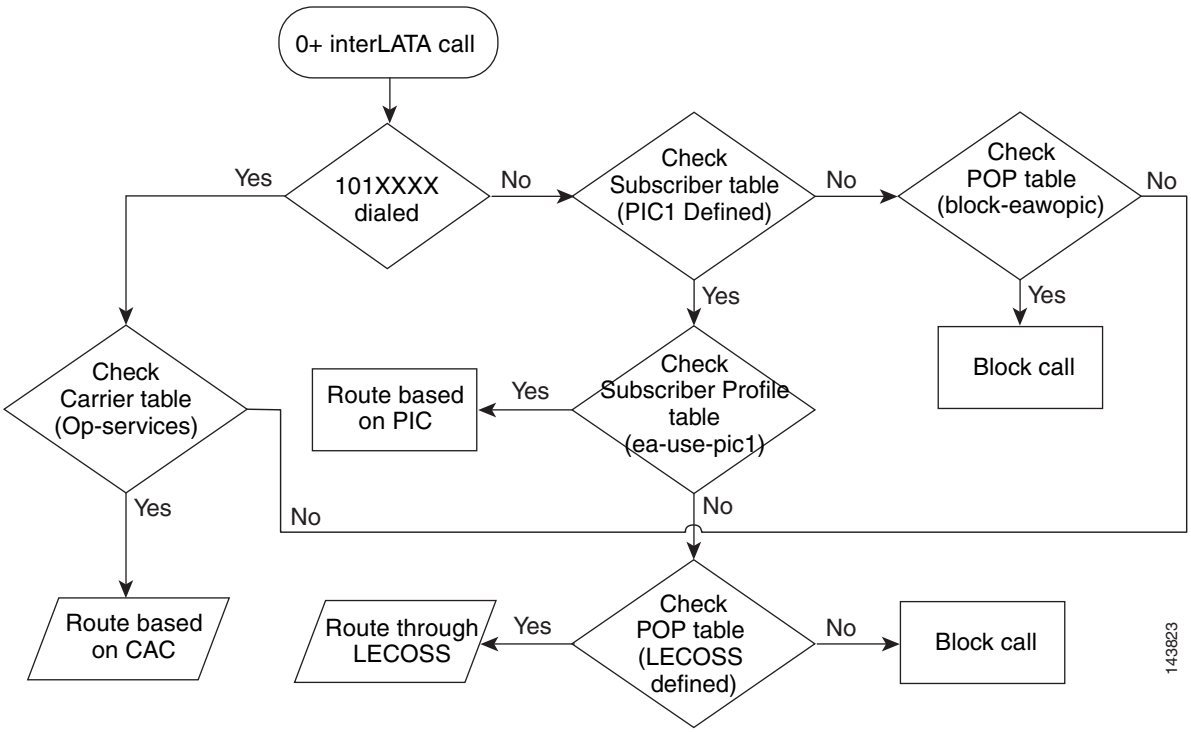
Step 4 Check the POP table for a defined LECOSS. If a LECOSS is defined in the POP table, the Cisco BTS 10200 Softswitch will route the call via the LECOSS. If a LECOSS is not defined in the POP table, the Cisco BTS 10200 Softswitch will block the call.

Step 5 Check the subscriber table for a defined PIC. If a PIC is defined in the subscriber table, proceed to Step 6. If a PIC is not defined in the subscriber table, proceed to Step 7.

Step 6 Check the subscriber profile for ea-use-pic entry. If the subscriber profile contains an ea-use-pic entry, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the PIC information. If the subscriber profile does not contained an ea-use-pic entry, return to Step 4.

Step 7 Check the POP table for a block-eawopic entry. If the POP table contains a block-eawopic entry, the Cisco BTS 10200 Softswitch will block the call. If the POP table does not contain a block-eawopic entry, return to Step 4.

Figure 2-14 0+ Interlata Call



0+ Intralata Call

This section provides a detailed description of the Cisco BTS 10200 Softswitch routing and call flow for 0+ intralata calls. Refer to Figure 2-15 for visual representation of the 0+ intralata call routing flow while reviewing the following detailed step-by-step 0+ intralata call routing flow.

Step 1 A 0+ intralata call is received.

Step 2 Determine if a 101XXXX number was dialed. If a 101XXXX number was dialed, proceed to Step 3. If a 101XXXX number was not dialed, proceed to Step 5.

Step 3 Check the carrier table for a CAC. If a CAC is available, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the CAC. If a CAC is not available, proceed to Step 4.

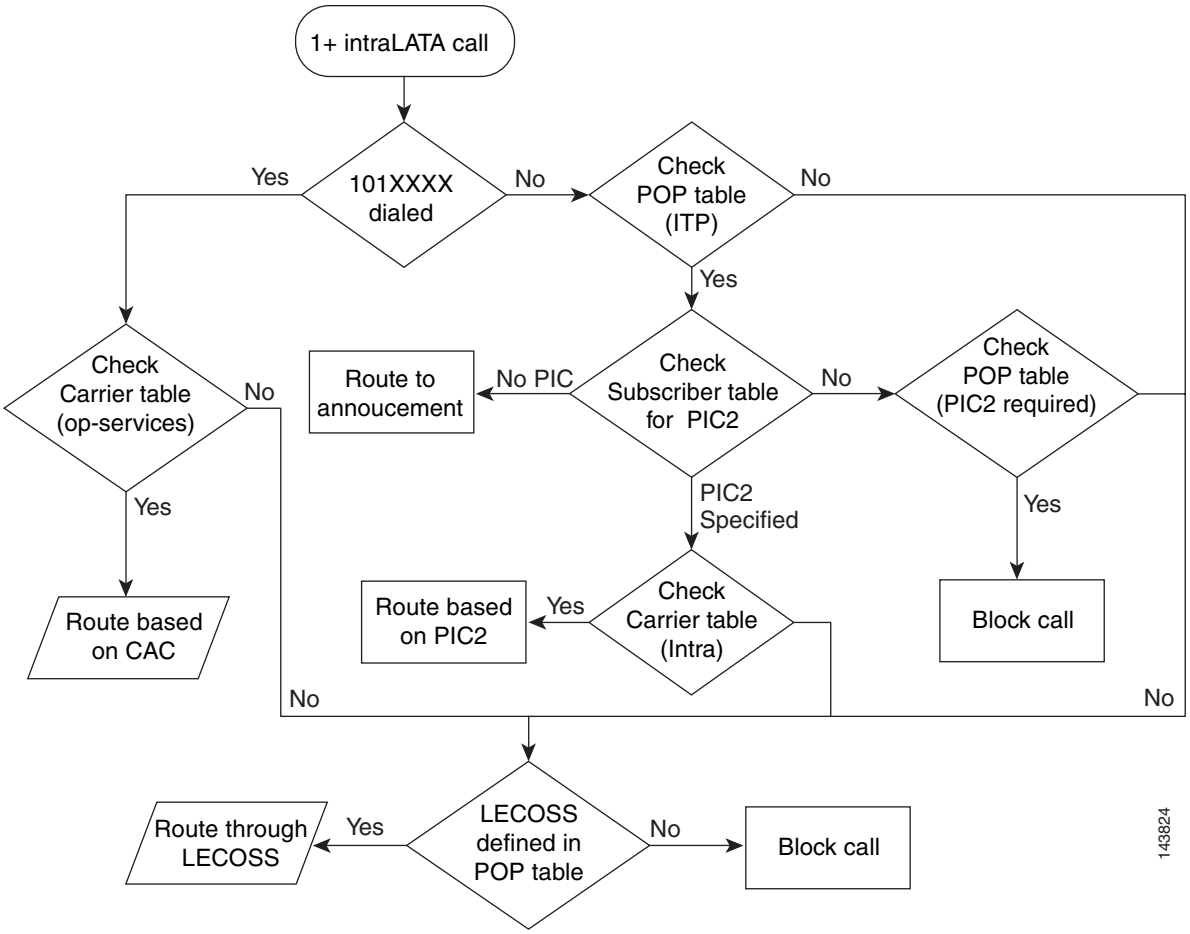
Step 4 Check the POP table for a defined LECOSS. If a LECOSS is defined in the POP table, the Cisco BTS 10200 Softswitch will route the call via the LECOSS. If a LECOSS is not defined in the POP table, the Cisco BTS 10200 Softswitch will block the call.

Step 5 Check the POP table for a configured ITP. If an ITP is configured, proceed to Step 6. If an ITP is not configured return to Step 4.

Step 6 Check the subscriber table for a specified PIC. If a PIC is specified, proceed to Step 7. If a PIC is not specified, the Cisco BTS 10200 Softswitch will route the call to the announcement server. Additionally, if a PIC is not specified in the subscriber table, the Cisco BTS 10200 Softswitch will check the POP table for a specified PIC. If a PIC is specified in the POP table, the Cisco BTS 10200 Softswitch will block the call. If a PIC is not specified in the POP table, return to Step 4.

Step 7 Check the intra carrier table for the specified PIC. If the specified PIC is included in the intra carrier table, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the PIC information. If the specified PIC is not included in the intra carrier table, return to Step 4.

Figure 2-15 0+ Intralata Call



Ported-In Call Processing

This section provides a detailed description of the Cisco BTS 10200 Softswitch routing and call flow for ported-in call processing calls. Refer to Figure 2-16 for visual representation of the ported-in call processing call routing flow while reviewing the following detailed step-by-step ported-in call processing call routing flow. Note that in Figure 2-16 the call flow logic applies to American National Standards Institute (ANSI)/North America; for International Telecommunication Union (ITU) local number portability (LNP), the logic is different. For a complete explanation of the call processing logic for ITU LNP, refer to the *ITU Local Number Portability Feature Module*.

Step 1 A ported-in call is received. If a query has already been performed (e.g., Forward Call Indicators (FCI) is set to "number translated", then a query is not performed in the Cisco BTS 10200 Softswitch. Proceed to Step 7.

Step 2 The office code is not assigned to the Cisco BTS 10200 Softswitch.

Step 3 Determine if the office code is in the ported-in office code table. If the office code is in the ported-in office code table, proceed to Step 4. if the office code is not in the ported-in office code table, perform normal call processing.

Step 4 Determine if the in-call agent flag is set. If the in-call agent flag is set, proceed to Step 5. If the in-call agent flag is not set, the Cisco BTS 10200 Softswitch will perform an LNP query. Please note that a query is not performed if it has already been completed on a previous switch.

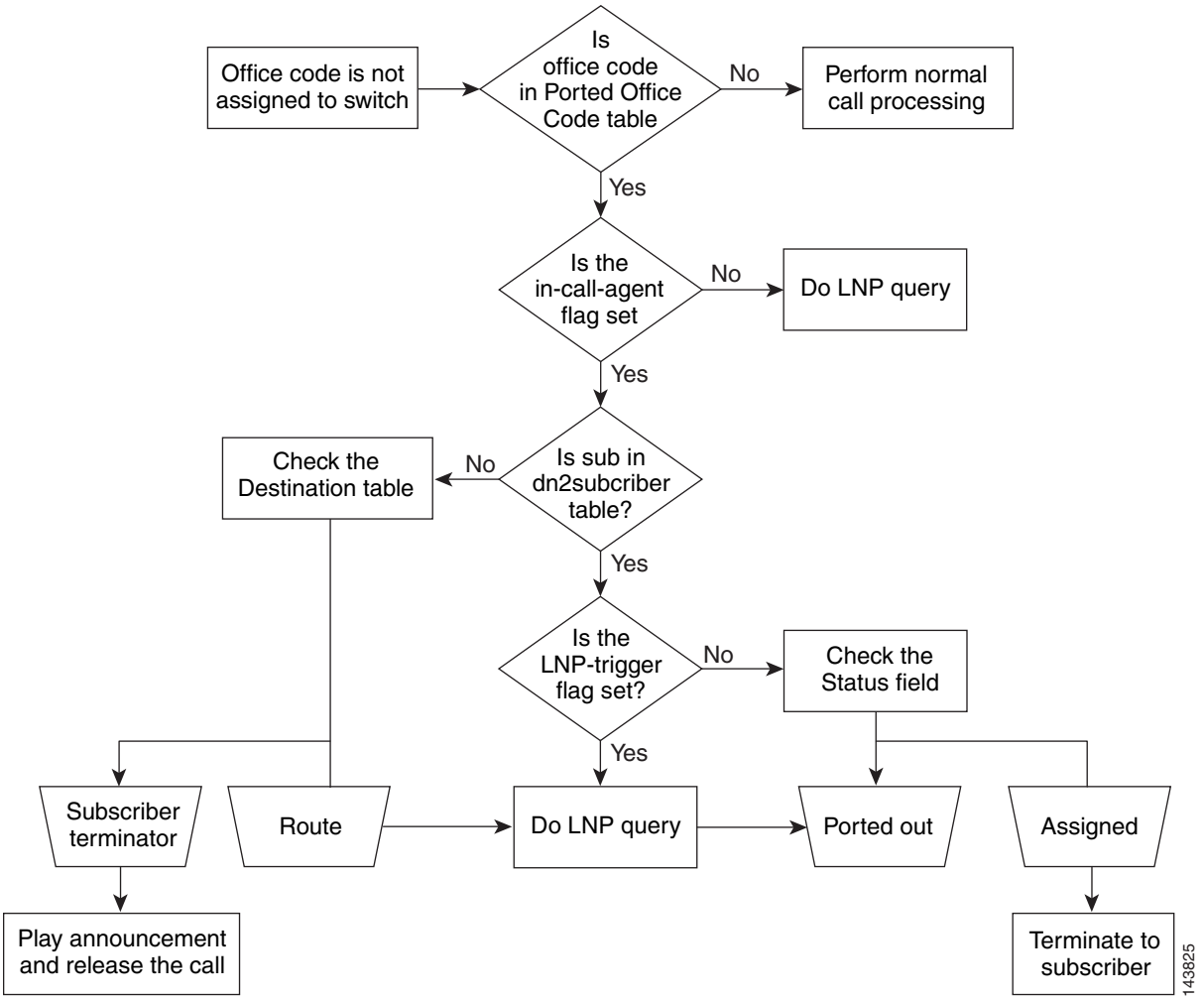
Step 5 Determine if the subscriber is included the dn2subscriber table. If the subscriber is included in the dn2sunscriber table, proceed to Step 6. If the subscriber is not included in dn2subscriber table, proceed to Step 7.

Step 6 Determine if the LNP trigger flag is set. If the LNP trigger flag is set, the Cisco BTS 10200 Softswitch will perform an LNP query and port out the call. If the LNP trigger flag is not set, the Cisco BTS 10200 Softswitch will check the status field to determine if a LNP trigger has been assigned and will port out the call or terminate the call to the subscriber. Please note that a query is not performed if it has already been completed on a previous switch.

Alternately, if dn2subscriber status = PORTED-OUT, or LNP-TRIGGER = Y an LNP query is performed, and depending upon the result of the query (whether or not an local routing number (LRN) is found), the call may be routed to a ported-in DN, routed out to a DN ported-in to another switch, routed in or out if the DN is not ported at all, or the call may fail if routing is not possible.

Step 7 Check the destination table for the subscriber information. Based on the destination table information, the Cisco BTS 10200 Softswitch will route the call or issue a subscriber terminator, release the call, and play the released call announcement. As part of routing the call, the Cisco BTS 10200 Softswitch will perform an LNP query and , if necessary, port out the call. Please note that a query is not performed if it has already been completed on a previous switch.

Figure 2-16 Ported-In Call Processing



Call-Type After Multiple Digit Translations

Normally after a digit translation, the call-type is retrieved from the resulting Destination. It is possible that further digit translations will occur, for example, the re-translation on the LRN after an LNP query. Normally the call-type from the original translation is used after subsequent translations. So, the call-type in the Destination resulting from the LRN translation is ignored, in favor of the original call-type resulting from the original called DN translation. An exception is that the call-type can change from a translation for policy-nxx. For example, dialed digits 611 translate to a Destination with call-type REPAIR, which has a route-guide containing policy-type=NXX, with a policy-nxx containing a new "translated-dn". In this case, a new translation on the translated-dn occurs, and the new Destination call-type is used subsequently during the call. This is necessary to prevent problems related to a possible > NXX (800 toll-free) translation.

Operator Services

The Operator Services feature allows routing of operator calls to a Feature Group D Operator Trunk (FGD OS) using the CAS MF Operator Package (MO). The following operator calls are included:

- 0-
- 0+
- 00
- 01+CC+NN
- 10XXXXX + 0-
- 10XXXXX + 0+
- 10XXXXX + 00
- 10XXXXX + 01+CC+NN

The operator call is routed to a CAS MO trunk group by sending the called number followed by information digits (I or II) and the calling number (ANI). All these digits are outpulsed to the CAS MO trunk group using multifrequency (MF) signaling. The information digits and ANI can be delivered in any one of these formats (configurable on a per terminating trunk basis):

- I + 7 digit ANI
- I + 10 digit ANI
- II + 7 digit ANI
- II + 10 digit ANI

Prerequisites

The Dial Plan table must be provisioned with a dial plan for operator calls.

An operator CAS MO terminating trunk group must be provisioned.

Supported Interfaces

Table 2-6 shows the interface support between call origination and termination.

Table 2-6 Operator Services Supported Interfaces

	RGW termination	CAS termination	SS7 termination	ISDN termination	SIP termination
RGW origination		X			
CAS origination		X			
SS7 origination		X			
ISDN origination		X			
SIP origination		X			

Note These calls can be terminated to another type of trunk group such as ISDN, SS7, and SIP, but in these cases the calls are treated as regular calls.

Provisioning Operator Services

To provision operator services, perform the following steps:

Step 1 Add the CAS trunk group profile and the operator trunk group.

```
add cas-tg-profile id=cas-OPS0; type=MO-10II; oss-sig=y; test-line=n;

add trunk-grp id=1500; tg-type=CAS; dial-plan-id=dpcas; sel-policy=LRU;
direction=outgoing; glare=ODD; tg-profile-id=cas-OPS0; call-agent-id=CA166; status=oos;
```

Step 2 Add the operator trunk terminations to the Termination Prefix table.

```
add termination prefix=cas/ops/mo/; mgw-id=224.14:2434; type=TRUNK; mgcp-pkg-type=MO;
port-start=1; port-end=24;

add trunk cic-start=5; cic-end=8; tgn-id=1500; termination-prefix=cas/ops/mo/;
mgw-id=224.14:2434; termination-port-start=5; termination-port-end=8;
```

Step 3 Add the operator routes.

```
add route id=ops1500; tgn1-id=1500; lcr=y;

add route-guide id=ops1500; policy-type=route; policy-id=ops1500;
```

Step 4 Add the carrier ID and put the carrier in service.

```
add carrier id=0510; intra=y; intl=y; route-guide-id=ops1500; use-dial-plan=y;

change carrier id=0510; status=ins;
```

Step 5 Add the destination IDs.

```
add destination dest-id=ops-toll; call-type=toll; route-type=ROUTE;
route-guide-id=ops1502; zero-plus=y;

add destination dest-id=ops-interlata; call-type=interlata; route-type=ROUTE;
route-guide-id=ops1501; zero-plus=y;

add destination dest-id=ops-intl; call-type=intl; route-type=ROUTE;
route-guide-id=ops1503; zero-plus=y;
add dial-plan id=dpcas; digit-string=817-313; reqd-digits=10; dest-id=ops-toll;
```

Step 6 Add the dial plan and international dial plan.

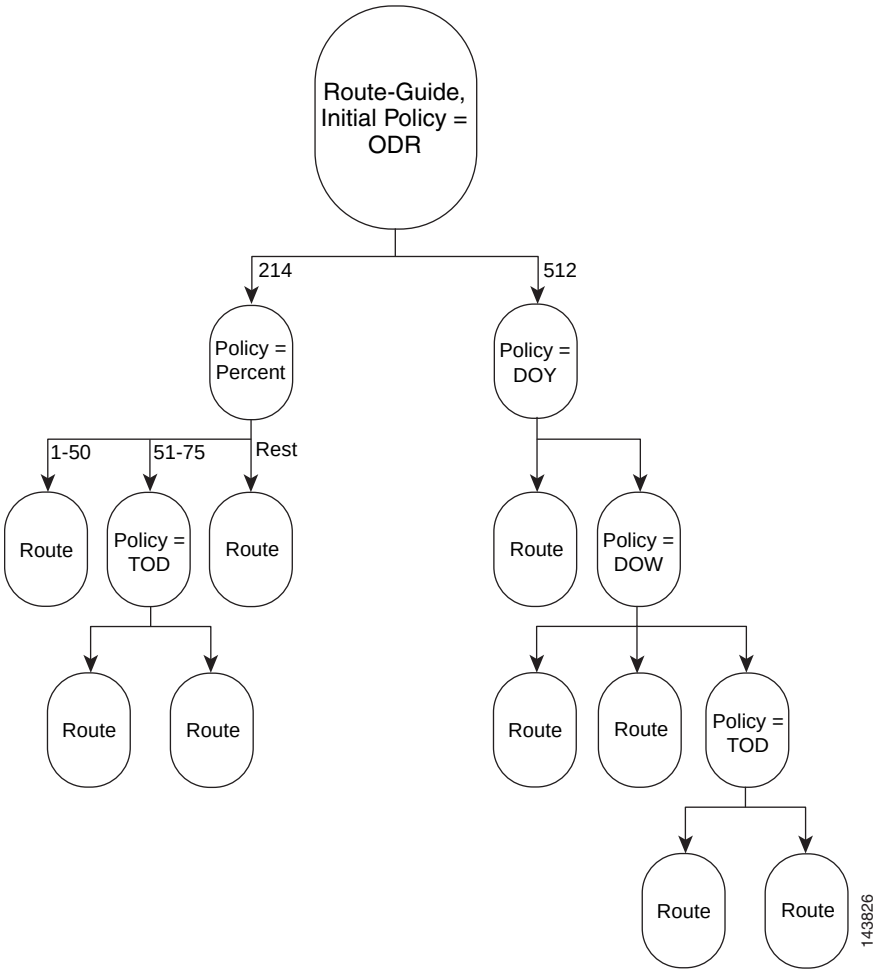
```
add dial-plan id=dpcas; digit-string=404-313; reqd-digits=10; dest-id=ops-interlata;

add intl-dial-plan cc=42; min-digits=6; max-digits=16; dest-id=ops-intl;
```

Policy Based Flexible Routing

The Cisco BTS 10200 Softswitch policy based flexible routing use policy based routing tree decisions to select the call route and to route the call. Flexible routing allows service providers to provision policy based flexible routing by configuring the route guide table using the policy variables. Please note that the order of the policies is provisionable and one or more policies may be assigned. Figure 2-17 illustrates the Cisco BTS 10200 Softswitch flexible routing tree structure. This section includes information describing each of the Cisco BTS 10200 Softswitch policy types.

Figure 2-17 Flexible Routing Tree Structure



Each of the following policies are described:

- Policy Day of Year, Day of Week, and Time of Day
- Policy Origin Dependent Routing
- Policy Originating Line Information
- Policy NXX
- Policy Percent
- Policy Point of Presence
- Policy Prefix
- Region Profile
- Policy Region

Policy Day of Year, Day of Week, and Time of Day

The Policy Day of Year, Day of Week, and Time of Day enables the flexible routing of calls via the Cisco BTS 10200 Softswitch by day of year (DOY), day of week (DOW), time of day (TOD).

Table Name: POLICY_TOD

Table Containment Area: EMS, CA, FSAIN

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show policy-tod id=basictime;
add policy-tod id=basictime; doy1=03-01; doy1-policy-type=route;
doy1-policy-id=dallasaustin; start-dow1=mon; stop-dow1=fri; start-time1=07:00;
stop-time1=17:00; policy-type1=per;
policy-id1=texaspercent;default-policy-id=dallasaustin;
change policy-tod id=basictime; doy2=07-04;
delete policy-tod id= basictime;
```

Usage Guidelines

Primary Key Token(s): ID

Add Rules: id exists in the Policy Profile table.

Change Rules: policy-id exists in policy-<policy-type>::id if entered.

Upgrade Impact:

- Set TYPE to TOD.
- For each entry in POLICY_TOD, add an entry into POLICY_PROFILE table with (DEFAULT_POLICY_ID, DEFAULT_POLICY_TYPE) if not null.
- For each TOD#_POLICY_ID if not null, add an entry into POLICY_PROFILE table.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DEFAULT_POLICY_ID	Description: Use default policy ID when there is no match with the above schedule. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DEFAULT_POLICY_TYPE	Description: Points to the default policy type to use if the next route is not found in the Policy table. Policy routing continues until policy-type=route or policy-nxx is reached. All policy types except Route point to the Policy Type table where type = ctype| odr | tod | percent | prefix | oli | pop | nxx. If policy-type = route, the Route table is used for routing. The policy-id is used to index to the Policy or Route table. Some examples are: If policy-type=tod, then the Policy TOD table is indexed with policy-id. If policy-type=route, then the Route table is indexed with policy-id. VARCHAR(7): 1-7 ASCII characters. Permitted values are: CC—Circuit code based routing. CTYPE—Call type based routing. NXX—Use translated DN. ODR—Origin dependent routing. OLI—Originating line information. POP—Point of presence. PERCENT—Percentage based routing. PREFIX—Prefix-based Routing. REGION—Region based Routing ROUTE—Go to Route table. TOD—Time of day routing. Valid for Command (is): audit, sync, show Valid for Command (was): add, change, audit, sync, show Possible Value: ODR, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser

DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
DOY1	Description: Month and day (day of year provisioning). CHAR(5): 5 characters in the format mm-dd. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: DateParser
DOY1_POLICY_ID	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. Points to the next policy type table to be used in the sequence. Policy routing continues until policy-type=route or policy-nxx is reached. All policy-types except route point to the policy-$type table where $type = odr | tod | percent | prefix | oli | pop | nxx. If policy-type = route, the route table is used for routing. The policy-id indexes the Policy or Route table, whatever the case may be. Examples: If policy-type=tod, then policy-tod table is indexed with policy-id. If policy-type=route, then Route table is indexed with policy-id. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser

DOY1_POLICY_TYPE	Description: Foreign key: doyn -policy-type plus the doy n-policy-id to Policy Profile table. Points to the next policy type table to be used in the sequence. Policy routing continues until policy-type=route or policy-nxx is reached. All policy-types except route point to the policy-$type table where $type = odr | tod | percent | prefix | oli | pop | nxx. If policy-type = route, the route table is used for routing. The policy-id indexes the Policy or Route table, whatever the case may be. Examples: If policy-type=tod, then policy-tod table is indexed with policy-id. If policy-type=route, then Route table is indexed with policy-id. VARCHAR(7): 1-7 ASCII characters. Permitted values are: CC—Circuit Code based routing. CTYPE—Call Type based routing. NXX—Use translated DN. ODR—Origin Dependent Routing. OLI—Originating line information. PERCENT—Percentage based routing POP—Point of presence. PREFIX—Prefix-based routing. REGION—Region-based routing. ROUTE—Go to Route table. TOD—Time-of-day routing. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
DOY10	Description: Month and day (day of year provisioning). CHAR(5): 5 characters in the format mm-dd. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: DateParser
DOY10_POLICY_ID	Description: See DOY1-POLICY-ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser

DOY10_POLICY_TYPE	Description: See DOY1-POLICY-TYPE. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
DOY2	Description: Month and day (day of year provisioning). CHAR(5): 5 characters in the format mm-dd. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: DateParser
DOY2_POLICY_ID	Description: See DOY1-POLICY-ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DOY2_POLICY_TYPE	Description: See DOY1-POLICY-TYPE. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
DOY3	Description: Month and day (day of year provisioning). CHAR(5): 5 characters in the format mm-dd. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: DateParser
DOY3_POLICY_ID	Description: See DOY1-POLICY-ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DOY3_POLICY_TYPE	Description: See DOY1-POLICY-TYPE. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser

DOY4	Description: Month and day (day of year provisioning). CHAR(5): 5 characters in the format mm-dd. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: DateParser
DOY4_POLICY_ID	Description: See DOY1-POLICY-ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DOY4_POLICY_TYPE	Description: See DOY1-POLICY-TYPE. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
DOY5	Description: Month and day (day of year provisioning). CHAR(5): 5 characters in the format mm-dd. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: DateParser
DOY5_POLICY_ID	Description: See DOY1-POLICY-ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DOY5_POLICY_TYPE	Description: See DOY1-POLICY-TYPE. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
DOY6	Description: Month and day (day of year provisioning). CHAR(5): 5 characters in the format mm-dd. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: DateParser

DOY6_POLICY_ID	Description: See DOY1-POLICY-ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DOY6_POLICY_TYPE	Description: See DOY1-POLICY-TYPE. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
DOY7	Description: Month and day (day of year provisioning). CHAR(5): 5 characters in the format mm-dd. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: DateParser
DOY7_POLICY_ID	Description: See DOY1-POLICY-ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DOY7_POLICY_TYPE	Description: See DOY1-POLICY-TYPE. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
DOY8	Description: Month and day (day of year provisioning). CHAR(5): 5 characters in the format mm-dd. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: DateParser
DOY8_POLICY_ID	Description: See DOY1-POLICY-ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser

DOY8_POLICY_TYPE	Description: See DOY1-POLICY-TYPE. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
DOY9	Description: Month and day (day of year provisioning). CHAR(5): 5 characters in the format mm-dd. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: DateParser
DOY9_POLICY_ID	Description: See DOY1-POLICY-ID. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DOY9_POLICY_TYPE	Description: See DOY1-POLICY-TYPE. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
ID	Description: Primary key. Unique identifier for this policy-tod. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser

MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
POLICY_ID1	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID10	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser

POLICY_ID2	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID3	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID4	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID5	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID6	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID7	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser

POLICY_ID8	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID9	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_TYPE1	Description: Foreign key: policy-type n plus the policy-id n to Policy Profile table. Points to the next policy type table to be used in the sequence. Policy routing continues until policy-type=route or policy-nxx is reached. All policy-types except route point to the policy-$type table where $type = odr | tod | percent | prefix | oli | pop | nxx. If policy-type = route, the route table is used for routing. The policy-id indexes the Policy or Route table, whatever the case may be. Examples: If policy-type=tod, then policy-tod table is indexed with policy-id. If policy-type=route, then Route table is indexed with policy-id. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE10	Description: See POLICY-TYPE1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE2	Description: See POLICY-TYPE1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser

POLICY_TYPE3	Description: See POLICY-TYPE1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE4	Description: See POLICY-TYPE1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE5	Description: See POLICY-TYPE1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE6	Description: See POLICY-TYPE1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE7	Description: See POLICY-TYPE1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE8	Description: See POLICY-TYPE1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser

POLICY_TYPE9	Description: See POLICY-TYPE1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
START_DOW1	Description: Day of week that this policy begins (day of week provisioning). Start-dow1 and stop-dow1 define a range of days. The DOW begins on MON and ends on SUN, such as when specifying range, START-DOWn = STOP-DOWn. CHAR(3). Permitted values are: MON—Monday TUE—Tuesday WED—Wednesday THU—Thursday FRI—Friday SAT—Saturday SUN—Sunday Examples: START-DOW1=MON; STOP-DOW1=FRI; is valid. START-DOW1=FRI; STOP-DOW1=MON; is invalid. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
START_DOW10	Description: See START-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
START_DOW2	Description: See START-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
START_DOW3	Description: See START-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser

START_DOW4	Description: See START-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
START_DOW5	Description: See START-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
START_DOW6	Description: See START-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
START_DOW7	Description: See START-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
START_DOW8	Description: See START-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
START_DOW9	Description: See START-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
START_TIME1	Description: The time in hours and minutes (24-hour clock) that this policy starts (time of day provisioning). CHAR(5): HH:MM. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser

START_TIME10	Description: The time in hours and minutes (24-hour clock) that this policy starts (time of day provisioning). CHAR(5): HH:MM. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
START_TIME2	Description: The time in hours and minutes (24-hour clock) that this policy starts (time of day provisioning). CHAR(5): HH:MM. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
START_TIME3	Description: The time in hours and minutes (24-hour clock) that this policy starts (time of day provisioning). CHAR(5): HH:MM. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
START_TIME4	Description: The time in hours and minutes (24-hour clock) that this policy starts (time of day provisioning). CHAR(5): HH:MM. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
START_TIME5	Description: The time in hours and minutes (24-hour clock) that this policy starts (time of day provisioning). CHAR(5): HH:MM. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
START_TIME6	Description: The time in hours and minutes (24-hour clock) that this policy starts (time of day provisioning). CHAR(5): HH:MM. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser

START_TIME7	Description: The time in hours and minutes (24-hour clock) that this policy starts (time of day provisioning). CHAR(5): HH:MM. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
START_TIME8	Description: The time in hours and minutes (24-hour clock) that this policy starts (time of day provisioning). CHAR(5): HH:MM. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
START_TIME9	Description: The time in hours and minutes (24-hour clock) that this policy starts (time of day provisioning). CHAR(5): HH:MM. Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
STOP_DOW1	Description: Day of week that this policy ends. Start-dow1 and stop-dow1 define a range of days. The DOW begins on MON and ends on SUN, such as when specifying range, START-DOWn = STOP-DOWn. CHAR(3). Permitted values are: MON—Monday TUE—Tuesday WED—Wednesday THU—Thursday FRI—Friday SAT—Saturday SUN—Sunday Examples: START-DOW1=MON; STOP-DOW1=FRI; is valid. START-DOW1=FRI; STOP-DOW1=MON; is invalid. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser

STOP_DOW10	Description: See STOP-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
STOP_DOW2	Description: See STOP-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
STOP_DOW3	Description: See STOP-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
STOP_DOW4	Description: See STOP-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
STOP_DOW5	Description: See STOP-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
STOP_DOW6	Description: See STOP-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
STOP_DOW7	Description: See STOP-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
STOP_DOW8	Description: See STOP-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser
STOP_DOW9	Description: See STOP-DOW1. Valid for Command: add, change, audit, sync, show Possible Value: SUN, MON, TUE, WED, THU, FRI, SAT Parser: TextParser

STOP_TIME1	Description: The time in hours and minutes (24-hour clock) that this policy ends (time of day provisioning). CHAR(5): HH:MM Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
STOP_TIME10	Description: The time in hours and minutes (24-hour clock) that this policy ends (time of day provisioning). CHAR(5): HH:MM Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
STOP_TIME2	Description: The time in hours and minutes (24-hour clock) that this policy ends (time of day provisioning). CHAR(5): HH:MM Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
STOP_TIME3	Description: The time in hours and minutes (24-hour clock) that this policy ends (time of day provisioning). CHAR(5): HH:MM Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
STOP_TIME4	Description: The time in hours and minutes (24-hour clock) that this policy ends (time of day provisioning). CHAR(5): HH:MM Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
STOP_TIME5	Description: The time in hours and minutes (24-hour clock) that this policy ends (time of day provisioning). CHAR(5): HH:MM Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser

STOP_TIME6	Description: The time in hours and minutes (24-hour clock) that this policy ends (time of day provisioning). CHAR(5): HH:MM Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
STOP_TIME7	Description: The time in hours and minutes (24-hour clock) that this policy ends (time of day provisioning). CHAR(5): HH:MM Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
STOP_TIME8	Description: The time in hours and minutes (24-hour clock) that this policy ends (time of day provisioning). CHAR(5): HH:MM Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
STOP_TIME9	Description: The time in hours and minutes (24-hour clock) that this policy ends (time of day provisioning). CHAR(5): HH:MM Valid for Command: add, change, audit, sync, show Possible Value: [5_5] Parser: TimeParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Policy Origin Dependent Routing

The Policy Origin Dependent Routing enables the flexible routing of calls via the Cisco BTS 10200 Softswitch by the use of origin dependent routing (ODR). The numbering plan area (NPA) (or NPA-NXX) of the calling party number selects a route. If no match is found based on the calling party number, the route marked as default routes the call.

Table Name: POLICY_ODR

Table Containment Area: EMS, CA, FSAIN

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show policy-odr id=ca200; digit-string=512;
add policy-odr id=ca200; digit-string=512; policy-type=tod; policy-id=tod101;
change policy-odr id=ca200; digit-string=512; policy-type=tod; policy-id=tod102;
delete policy-odr id=ca200; digit-string=512;
```

Usage Guidelines

Primary Key Token(s): ID, DIGIT_STRING

Add Rules: policy-id exists in policy-<policy-type>::id if entered.

Change Rules: policy-id exists in policy-<policy-type>::id if entered.

Delete Rules: id does not exist in any <route-guide, policy-region, policy-percent, policy-tod, policy-prefix, policy-oli, or policy-pop>::policy-id where policy-type = odr.

Upgrade Impact:

- Set TYPE to ODR.
- For each entry in POLICY_ODR, add an entry into POLICY_PROFILE table.
- For each POLICY_ID, add an entry into POLICY_PROFILE table if it does not exist yet.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DIGIT_STRING	Description: Primary key. Longest match based on the calling party number. The calling party number can be specified as the NDC, NDC+EC or the full DN. VARCHAR(10): 1-10 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_14] Parser: GenericDNWithDefaultParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
ID	Description: Primary key. Unique identifier for this policy-tod. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser

MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
POLICY_ID	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: [1_16] Parser: TextParser

POLICY_TYPE	Description: Points to the next policy type table to use in the sequence. Policy routing continues until policy-type=route or policy-nxx is reached. All policy-types except route point to the Policy-$type table where $type = odr | tod | percent | prefix | oli | pop | nxx. If policy-type = route, the Route table is used for routing. The policy-id indexes the Policy or Route table, whatever the case may be. VARCHAR(7): 1-7 ASCII characters. Permitted values are: CC—Circuit Code based routing CTYPE—Call Type based routing NXX—Use translated DN. ODR—Origin Dependent Routing. OLI—Originating line information. PERCENT—Percentage based routing POP—Point of presence. PREFIX—Prefix-based routing. REGION—Region-based routing. ROUTE—Go to Route table. TOD—Time-of-day routing. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Policy Originating Line Information

The Policy Originating Line Information enables the flexible routing of calls via the Cisco BTS 10200 Softswitch by the use of originating line information (OLI). The Policy Originating Line Information performs routing based on the originating line information of the calling party number.

Table Name: POLICY_OLI

Table Containment Area: EMS, CA, FSAIN

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show policy-oli id=normalroute; oli=00;
add policy-oli id=normalroute; oli=00; policy-type=tod; policy-id=holiday;
change policy-oli id=normalroute; oli=00; policy-type=tod; policy-id=regular;
delete policy-oli id=normalroute; oli=00;
```

Usage Guidelines

Primary Key Token(s): ID, OLI

Add Rules: policy-id exists in policy-<policy-type>::id if entered.

Change Rules: policy-id exists in policy-<policy-type>::id if entered.

Delete Rules: id does not exist in any <route-guide, policy-odr, policy-region, policy-percent, policy-tod, policy-prefix, or policy-pop>::policy-id where policy-type = oli.

Upgrade Impact:

- Set TYPE to OLI.
- For each unique ID in POLICY_OLI (multiple OLI with same ID), add an entry into POLICY_PROFILE table, set default route as (POLICY_ID, POLICY_TYPE) for that entry if OLI=255. Remove this entry from POLICY_OLI if OLI=255.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
ID	Description: Primary key. Unique identifier for this policy-tod. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

OLI	Description: Primary key. Originating line information parameter. SMALLINT: 0-99. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [0_255] Parser: DecimalParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
POLICY_ID	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: [1_16] Parser: TextParser

POLICY_TYPE	Description: Points to the next policy type table to use in the sequence. Policy routing continues until policy-type=route or policy-nxx is reached. All policy-types except route point to the Policy-$type table where $type = odr | tod | percent | prefix | oli | pop | nxx. If policy-type = route, the Route table is used for routing. The policy-id indexes the Policy or Route table, whatever the case may be. VARCHAR(7): 1-7 ASCII characters. Permitted values are: CC—Circuit Code based routing CTYPE—Call Type based routing NXX—Use translated DN. ODR—Origin Dependent Routing. OLI—Originating line information. PERCENT—Percentage based routing POP—Point of presence. PREFIX—Prefix-based routing. REGION—Region-based routing. ROUTE—Go to Route table. TOD—Time-of-day routing. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Policy NXX

The Policy NXX enables the flexible routing of calls via the Cisco BTS 10200 Softswitch when a number services call results in a translated number, carrier ID, translated number and a carrier ID, or a route ID.

Table Name: POLICY_NXX

Table Containment Area: EMS, CA, FSAIN

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show policy-nxx id=normalroute;
add policy-nxx id=normalroute;
change policy-nxx id=normalroute; carrier=1234;
delete policy-nxx id=normalroute;
```

Usage Guidelines

Primary Key Token(s): ID

Add Rules: id plus type must exist in the Policy Profile table.

Upgrade Impact:

- Set TYPE to NXX.
- Set ROUTE_POLICY_TYPE to ROUTE.
- For each entry in POLICY_NXX, add an entry into POLICY_PROFILE table.
- For each ROUTE if not null, add an entry into POLICY_PROFILE table if it does not exist yet.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
CARRIER	Description: Carrier identification code (CIC). Used for routing a call. CHAR(4): 0000-9999 Valid for Command: add, change, audit, sync, show Possible Value: [4_4] Parser: DigitParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
ID	Description: Primary key. Unique identifier for this policy-tod. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser

MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
ROUTE	Description: Defines a list of trunk groups. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser

TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
TRANSLATED_DN	Description: The call is routed to the translated DN. VARCHAR(14): 1-14 numeric digits. Valid for Command: add, change, audit, sync, show Possible Value: [1_14] Parser: GenericDNParser

Policy Percent

The Policy Percent enables the flexible routing of calls via the Cisco BTS 10200 Softswitch based on percent allocation. This type of traffic distribution is used primarily for local 8XX routing and Tandem applications.

Table Name: POLICY_PERCENT

Table Containment Area: EMS, CA, FSAIN

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show policy-percent id=texaspercent;
add policy-percent id=texaspercent; begin-range1=1; end-range1=90; policy-type1=tod;
policy-id1=tod001;
change policy-percent id=texaspercent; begin-range2=91; end-range2=100; policy-type1=tod;
policy-id1=tod002;
delete policy-percent id=texaspercent;
```

Usage Guidelines

Primary Key Token(s): ID

Add Rules: policy-id exists in policy-<policy-type>::id if entered.

Change Rules: policy-id exists in policy-<policy-type>::id if entered.

Delete Rules: id does not exist in any <route-guide, policy-odr, policy-region, policy-tod, policy-prefix, policy-oli, or policy-pop>::policy-id where policy-type = percent.

Upgrade Impact:

- Set TYPE to PERCENT.
- For each entry in POLICY_PERCENT, add an entry into POLICY_PROFILE table with (DEFAULT_POLICY_ID, DEFAULT_POLICY_TYPE) if not null.
- For each POLICY_ID# if not null, add an entry into POLICY_PROFILE table.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
BEGIN_RANGE1	Description: At least one range must be specified. Defines the beginning percent range (beginning and ending percents) for the first destination. SMALLINT: 1-100. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: [1_100] Parser: DecimalParser
BEGIN_RANGE2	Description: Defines the beginning percent range (beginning and ending percents) for the second destination. SMALLINT: 1-100. Valid for Command: add, change, audit, sync, show Possible Value: [1_100] Parser: DecimalParser

BEGIN_RANGE3	Description: Defines the beginning percent range (beginning and ending percents) for the third destination. SMALLINT: 1-100. Valid for Command: add, change, audit, sync, show Possible Value: [1_100] Parser: DecimalParser
BEGIN_RANGE4	Description: Defines the beginning percent range (beginning and ending percents) for the fourth destination. SMALLINT: 1-100. Valid for Command: add, change, audit, sync, show Possible Value: [1_100] Parser: DecimalParser
BEGIN_RANGE5	Description: Defines the beginning percent range (beginning and ending percents) for the fifth destination. SMALLINT: 1-100. Valid for Command: add, change, audit, sync, show Possible Value: [1_100] Parser: DecimalParser
DEFAULT_POLICY_ID	Description: ID of a Policy or Route table matching the policy type. Indexes the ID to the type. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser

DEFAULT_POLICY_TYPE	Description: Points to the default policy type to use if the next route is not found in the Policy table. Policy routing continues until policy-type=route or policy-nxx is reached. All policy types except Route point to the Policy Type table where type = ctype| odr | tod | percent | prefix | oli | pop | nxx. If policy-type = route, the Route table is used for routing. The policy-id is used to index to the Policy or Route table. Some examples are: If policy-type=tod, then the Policy TOD table is indexed with policy-id. If policy-type=route, then the Route table is indexed with policy-id. VARCHAR(7): 1-7 ASCII characters. Permitted values are: CC—Circuit code based routing. CTYPE—Call type based routing. NXX—Use translated DN. ODR—Origin dependent routing. OLI—Originating line information. POP—Point of presence. PERCENT—Percentage based routing. PREFIX—Prefix-based Routing. REGION—Region based Routing ROUTE—Go to Route table. TOD—Time of day routing. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
END_RANGE1	Description: Defines the end of the percent range (beginning and ending percents) for the first destination. SMALLINT: 1-100. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: [1_100] Parser: DecimalParser

END_RANGE2	Description: Defines the end of the percent range (beginning and ending percents) for the second destination. SMALLINT: 1-100. Valid for Command: add, change, audit, sync, show Possible Value: [1_100] Parser: DecimalParser
END_RANGE3	Description: Defines the end of the percent range (beginning and ending percents) for the third destination. SMALLINT: 1-100. Valid for Command: add, change, audit, sync, show Possible Value: [1_100] Parser: DecimalParser
END_RANGE4	Description: Defines the end of the percent range (beginning and ending percents) for the fourth destination. SMALLINT: 1-100. Valid for Command: add, change, audit, sync, show Possible Value: [1_100] Parser: DecimalParser
END_RANGE5	Description: Defines the end of the percent range (beginning and ending percents) for the fifth destination. SMALLINT: 1-100. Valid for Command: add, change, audit, sync, show Possible Value: [1_100] Parser: DecimalParser
ID	Description: Primary key. Unique identifier for this policy-tod. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser

MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
POLICY_ID1	Description: ID of the Policy or Route table matching the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: [1_16] Parser: TextParser
POLICY_ID2	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser

POLICY_ID3	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID4	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID5	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser

POLICY_TYPE1	Description: Points to the next policy type table to be used in the sequence. Policy routing continues until policy-type=route or Policy-nxx is reached. All policy-types except route point to the Policy-$type table where $type = odr | tod | percent | prefix | oli | pop | nxx. If policy-type = route, the Route table is used for routing. The policy-id indexes the Policy or Route table, whatever the case may be. Examples: If policy-type=tod, then the policy-tod table is indexed with policy-id. If policy-type=route, then the route table is indexed with policy-id. VARCHAR(7): 1-7 ASCII characters. Permitted values are: CC—Circuit Code based routing. CTYPE—Call Type based routing. NXX—Use translated DN. ODR—Origin Dependent Routing. OLI—Originating line information. PERCENT—Percentage based routing POP—Point of presence. PREFIX—Prefix-based routing. REGION—Region-based routing. ROUTE—Go to Route table. TOD—Time-of-day routing. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE2	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE3	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser

POLICY_TYPE4	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE5	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Policy Point of Presence

The Policy Point of Presence enables the flexible routing of calls via the Cisco BTS 10200 Softswitch based on the point of presence (POP). The POP based policy routing routes a call to the nearest trunk group when there are multiple trunk groups. There are several situations where a policy POP can be used. If a Call Agent serves several POPs, each POP can have its own announcement server. A POP-specific announcement server can be more efficient than a centralized announcement server. InterLATA carriers also have a point of presence in each POP. Route interLATA or international calls to the nearest carrier location using policy POP routing.

Table Name: POLICY_POP

Table Containment Area: EMS, CA, FSAIN

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show policy-pop id=car9999; pop-id=dallaspop;
add policy-pop id=car9999; pop-id=dallaspop; policy-type=tod; policy-id=tod101;
change policy-pop id=car9999;pop-id=dallaspop;policy-type=oli;policy-id=tod101;
delete policy-pop id=car9999;
```

Usage Guidelines

Primary Key Token(s): ID, POP_ID

Add Rules: policy-id exists in policy-<policy-type>::id if entered.

Change Rules: policy-id exists in policy-<policy-type>::id if entered.

Delete Rules: id does not exist in any <route-guide, policy-odr, policy-region, policy-percent, policy-tod, policy-prefix, or policy-oli>::policy-id where policy-type = pop.

Upgrade Impact:

- Set TYPE to POP.
- For each entry in POLICY_POP, add an entry into POLICY_PROFILE table.
- For each POLICY_ID, add an entry into POLICY_PROFILE table.
- Need a pre-check to make sure POP_ID is valid in POP table.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
ID	Description: Primary key. Unique identifier for this policy-tod. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
POLICY_ID	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: [1_16] Parser: TextParser

POLICY_TYPE	Description: Points to the next policy type table to use in the sequence. Policy routing continues until policy-type=route or policy-nxx is reached. All policy-types except route point to the Policy-$type table where $type = odr | tod | percent | prefix | oli | pop | nxx. If policy-type = route, the Route table is used for routing. The policy-id indexes the Policy or Route table, whatever the case may be. VARCHAR(7): 1-7 ASCII characters. Permitted values are: CC—Circuit Code based routing CTYPE—Call Type based routing NXX—Use translated DN. ODR—Origin Dependent Routing. OLI—Originating line information. PERCENT—Percentage based routing POP—Point of presence. PREFIX—Prefix-based routing. REGION—Region-based routing. ROUTE—Go to Route table. TOD—Time-of-day routing. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POP_ID	Description: Primary key. Foreign key: Point of Presence table. The pop-id assigned to the subscriber profile or the incoming trunk group to be used. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser

START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Policy Prefix

The Policy Prefix enables the flexible routing of calls via the Cisco BTS 10200 Softswitch based on prefix (type of call). Typical call types include 1+ dialing, international calls, toll-free, and so on. The Policy Prefix is used mainly for carrier routing.

Table Name: POLICY_PREFIX

Table Containment Area: EMS, CA, FSAIN

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show policy-prefix id=standard;
add policy-prefix id=standard; prefix1=national; policy-type1=tod; policy-id1=tod01;
change policy-prefix id=standard; prefix2=da; policy-type=tod; policy-id=tod99;
delete policy-prefix id=standard;
```

Usage Guidelines

Primary Key Token(s): ID

Foreign Key Token(s): policy-type n plus policy-id n

Add Rules: policy-id exists in policy-<policy-type>::id if entered.

Change Rules: policy-id exists in policy-<policy-type>::id if entered.

Delete Rules: id does not exist in any <route-guide, policy-odr, policy-region, policy-percent, policy-tod, policy-oli, or policy-pop>::policy-id where policy-type = prefix.

Upgrade Impact:

- Set TYPE to PREFIX.
- For each entry in POLICY_PREFIX, add an entry into POLICY_PROFILE table with (DEFAULT_POLICY_ID, DEFAULT_POLICY_TYPE) if not null.
- For each POLICY_ID# if not null, add an entry into POLICY_PROFILE table.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DEFAULT_POLICY_ID	Description: ID of a Policy or Route table matching the policy type. Indexes the ID to the type. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser

DEFAULT_POLICY_TYPE	Description: Points to the default policy type to use if the next route is not found in the Policy table. Policy routing continues until policy-type=route or policy-nxx is reached. All policy types except Route point to the Policy Type table where type = ctype| odr | tod | percent | prefix | oli | pop | nxx. If policy-type = route, the Route table is used for routing. The policy-id is used to index to the Policy or Route table. Some examples are: If policy-type=tod, then the Policy TOD table is indexed with policy-id. If policy-type=route, then the Route table is indexed with policy-id. VARCHAR(7): 1-7 ASCII characters. Permitted values are: CC—Circuit code based routing. CTYPE—Call type based routing. NXX—Use translated DN. ODR—Origin dependent routing. OLI—Originating line information. POP—Point of presence. PERCENT—Percentage based routing. PREFIX—Prefix-based Routing. REGION—Region based Routing ROUTE—Go to Route table. TOD—Time of day routing. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
ID	Description: Primary key. Unique identifier for this policy-tod. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser

LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
POLICY_ID1	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: [1_16] Parser: TextParser

POLICY_ID10	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID2	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID3	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID4	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID5	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID6	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID7	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser

POLICY_ID8	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
POLICY_ID9	Description: See policy-id1. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser

POLICY_TYPE1	Description: Foreign key: Policy-type n plus the policy-id n to the Policy Profile table. Points to the next policy type table to be used in the sequence. Policy routing continues until policy-type=route or policy-nxx is reached. All policy-types except route point to the Policy-$type table where $type = odr | tod | percent | prefix | oli | pop | nxx. If policy-type = route, the Route table is used for routing. The policy-id indexes the Policy or Route table, whatever the case may be. Examples: If policy-type=tod, then the Policy-tod table is indexed with policy-id. If policy-type=route, then Route table is indexed with policy-id. VARCHAR(7): 1-7 ASCII characters. Permitted values are: CC—Circuit Code based routing. CTYPE—Call Type based routing. NXX—Use translated DN. ODR—Origin Dependent Routing. OLI—Originating line information. PERCENT—Percentage based routing POP—Point of presence. PREFIX—Prefix-based routing. REGION—Region-based routing. ROUTE—Go to Route table. TOD—Time-of-day routing. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE10	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser

POLICY_TYPE2	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE3	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE4	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE5	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE6	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE7	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser

POLICY_TYPE8	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
POLICY_TYPE9	Description: See policy-type1. VARCHAR(7): 1-7 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: ODR, TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser
PREFIX1	Description: Type of call being provisioned. VARCHAR(10): 1-10 ASCII characters. Permitted values are: NATIONAL—National call (1+) INTL—International call (011+) OPERATOR—Operator call (0-, 00) NAT-OPR—National operator call (0+ call) INTL-OPR—International operator call (01+ call) TOLL-FREE—Toll free call (8XX) CUT-THRU—Cut-through call (101XXXX+#) DA—Directory assistance call Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: NATIONAL, INTL, OPERATOR, NAT_OPR, INTL_OPR, TOLL_FREE, CUT_THRU, DA Parser: TextParser
PREFIX10	Description: See prefix1. VARCHAR(10): 1-10 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: NATIONAL, INTL, OPERATOR, NAT_OPR, INTL_OPR, TOLL_FREE, CUT_THRU, DA Parser: TextParser
PREFIX2	Description: See prefix1. VARCHAR(10): 1-10 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: NATIONAL, INTL, OPERATOR, NAT_OPR, INTL_OPR, TOLL_FREE, CUT_THRU, DA Parser: TextParser

PREFIX3	Description: See prefix1. VARCHAR(10): 1-10 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: NATIONAL, INTL, OPERATOR, NAT_OPR, INTL_OPR, TOLL_FREE, CUT_THRU, DA Parser: TextParser
PREFIX4	Description: See prefix1. VARCHAR(10): 1-10 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: NATIONAL, INTL, OPERATOR, NAT_OPR, INTL_OPR, TOLL_FREE, CUT_THRU, DA Parser: TextParser
PREFIX5	Description: See prefix1. VARCHAR(10): 1-10 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: NATIONAL, INTL, OPERATOR, NAT_OPR, INTL_OPR, TOLL_FREE, CUT_THRU, DA Parser: TextParser
PREFIX6	Description: See prefix1. VARCHAR(10): 1-10 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: NATIONAL, INTL, OPERATOR, NAT_OPR, INTL_OPR, TOLL_FREE, CUT_THRU, DA Parser: TextParser
PREFIX7	Description: See prefix1. VARCHAR(10): 1-10 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: NATIONAL, INTL, OPERATOR, NAT_OPR, INTL_OPR, TOLL_FREE, CUT_THRU, DA Parser: TextParser
PREFIX8	Description: See prefix1. VARCHAR(10): 1-10 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: NATIONAL, INTL, OPERATOR, NAT_OPR, INTL_OPR, TOLL_FREE, CUT_THRU, DA Parser: TextParser

PREFIX9	Description: See prefix1. VARCHAR(10): 1-10 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: NATIONAL, INTL, OPERATOR, NAT_OPR, INTL_OPR, TOLL_FREE, CUT_THRU, DA Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Region Profile

The Region Profile (region-profile) table groups North American Numbering Plan (NANP) digits to an originating region. There can be many ID and digit-string combinations for a given region. In this conceptual relationship, a number of digit patterns (digit-string) can belong to a given region and a number of originating regions comprise a region profile (id). Use the value specified in the ca-config record as the default region where type=default-region.

Table Name: REGION_PROFILE

Table Containment Area: EMS, CA, FSAIN

Command Types add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show region-profile id=e911; digit-string=210-470;
add region-profile id=e911; digit-string=210-470; region=sanantonio;
change region-profile id=e911; digit-string=210-470; region=sanantonio;
delete region-profile id=e911; digit-string=210-470;
```

Usage Guidelines

Primary Key Token(s): ID, DIGIT_STRING

Note This table allows the service provider to provision a list of up to10 trunk groups (TG1 to TG10), and a parameter for selecting the priority of the TGs for routing (TG-SELECTION). The system attempts to route the call on the highest priority TG. If the call cannot be completed on the highest priority TG, the system attempts to use the next (lower priority) TG, a process known as route advance. The system attempts route advance to lower priority TGs up to five times. (Any TG in the list that is administratively out of service is not counted as an attempt.) If all five attempts fail, the call is released, and the system provides a release announcement.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DIGIT_STRING	Description: Primary key. Longest match based on the calling party number. The calling party number can be specified as the NDC, NDC+EC or the full DN. VARCHAR(10): 1-10 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_14] Parser: GenericDNWithDefaultParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

ID	Description: Primary key. Unique identifier for this policy-tod. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser

REGION	Description: Region assigned to the calling party number. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add Possible Value: [1_16] Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Policy Region

The Policy Region enables the flexible routing of calls via the Cisco BTS 10200 Softswitch based on the call region. The region is derived using the Region Profile table from the Route Guide table and the calling party number ANI. If ANI is not available or the Region Profile table is not provisioned, the region assigned to the trunk group is used for trunk origination. If a record cannot be found based on the region, the record with region=default (if provisioned) is used for routing.

Table Name: POLICY_REGION

Table Containment Area: EMS, CA, FSAIN

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show policy-region id=ca200; region=sanantonio;
add policy-region id=ca200; region=sanantonio; policy-type=tod; policy-id=tod101;
change policy-region id=ca200; region=sanantonio; policy-type=tod; policy-id=tod102;
delete policy-region id=ca200; region=sanantonio;
```

Usage Guidelines

Primary Key Token(s): ID, REGION

Foreign Key Token(s): policy-type n plus policy-id n

Add Rules: region-profile id must exist; policy-id exists in policy-<policy-type>::id if entered.

Change Rules: id must exist; policy-id exists in policy-<policy-type>::id if entered.

Delete Rules: id does not exist in any <route-guide, policy-odr, policy-percent, policy-tod, policy-prefix, policy-oli, or policy-pop>::policy-id where policy-type = region.

Upgrade Impact:

- Set TYPE to REGION.
- For each entry in POLICY_REGION, add an entry into POLICY_PROFILE table.
- For each POLICY_ID, add an entry into POLICY_PROFILE table.

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

ID	Description: Primary key. Unique identifier for this policy-tod. Assigned by service provider. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)—System is active (currently running). STANDBY—System is in standby mode. EMS—Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser

POLICY_ID	Description: ID of the Policy or Route table that matches the policy type. Indexes the ID to the type. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: [1_16] Parser: TextParser
POLICY_TYPE	Description: Points to the next policy type table to use in the sequence. Policy routing continues until policy-type=route or policy-nxx is reached. All policy-types except route point to the Policy-$type table where $type = odr | tod | percent | prefix | oli | pop | nxx. If policy-type = route, the Route table is used for routing. The policy-id indexes the Policy or Route table, whatever the case may be. VARCHAR(7): 1-7 ASCII characters. Permitted values are: CC—Circuit Code based routing CTYPE—Call Type based routing NXX—Use translated DN. ODR—Origin Dependent Routing. OLI—Originating line information. PERCENT—Percentage based routing POP—Point of presence. PREFIX—Prefix-based routing. REGION—Region-based routing. ROUTE—Go to Route table. TOD—Time-of-day routing. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: TOD, PERCENT, PREFIX, OLI, POP, ROUTE, NXX, REGION Parser: TextParser

REGION	Description: Primary key. Region is derived from the Region Profile table based on the ANI. If the region cannot be derived from the region-profile, use the region assigned to the incoming trunk group. If a region is not available, use the default region to route the call. VARCHAR(16): 1-16 ASCII characters. The character string default defines the default route for the specified ID. If a record based on the region based on the calling party number or incoming trunk group is not found, the Call Agent searches for the default record. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA—Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)—Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)—Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

CHAPTER 3

Dial Plans and Routing

Revised: December 9, 2008, OL-8001-10

Introduction

This chapter provides detailed dial plan and routing information for the Cisco BTS 10200 Softswitch. The following subjects are discussed in this chapter:

Originating Basic Call State Machine (CS2 Call Model)

This section provides detailed information on the partial originating basic call state machine (OBCSM). Refer to Figure 3-1 while reviewing the following detailed step-by-step explanation of the CS2+ call model.

Step 1 0 null - Off hook condition – Call setup begins.

Step 2 Origination attempt decision point. Hot line feature information and denied origination information is obtained from the feature server.

Step 3 Authorize origination attempt.

Step 4 Origination attempt authorized decision point. Provide dial tone and request digits.

Step 5 Collect information. Digits information or timeout information is provided.

Step 6 Collected information decision point. Warm line feature information and speed calling information is obtained from the feature server.

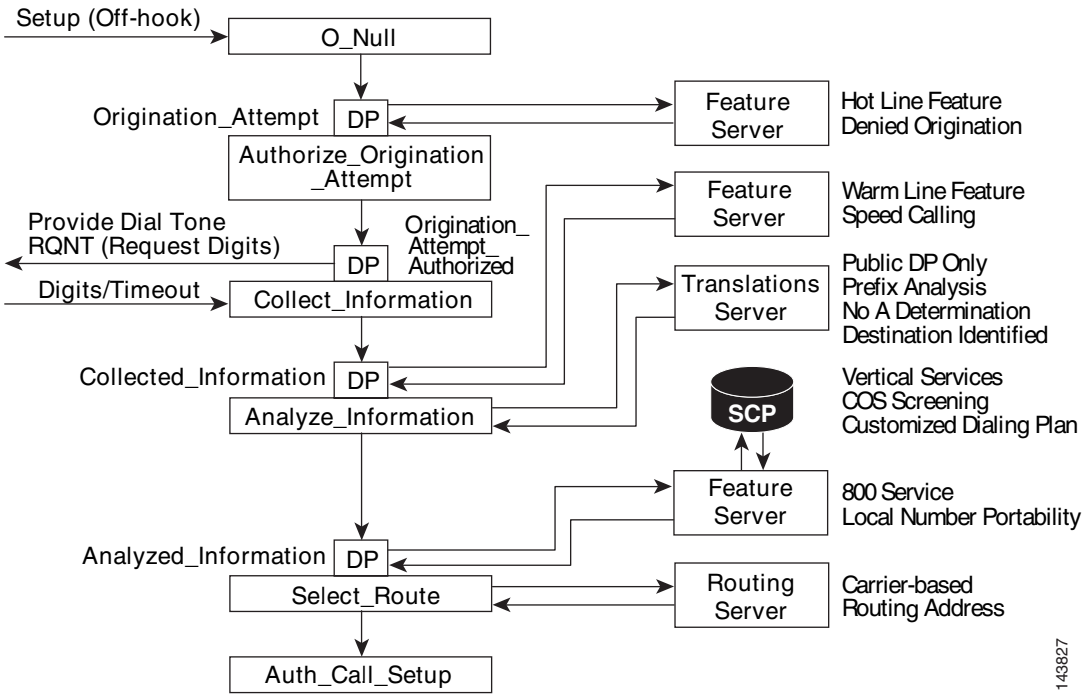
Step 7 Analyze information. Public dial plan only information, prefix analysis information, no “A” determination information, and destination identified information is obtained from the translation server.

Step 8 Analyzed information decision point. Local number portability information and 800 service information is obtained from the feature server. The service control point provides the vertical services, class of service (COS) screening, and customized dialing plan information.

Step 9 Select route. The carrier-based information and routing address information is provided by the routing server.

Step 10 Authorize call setup.

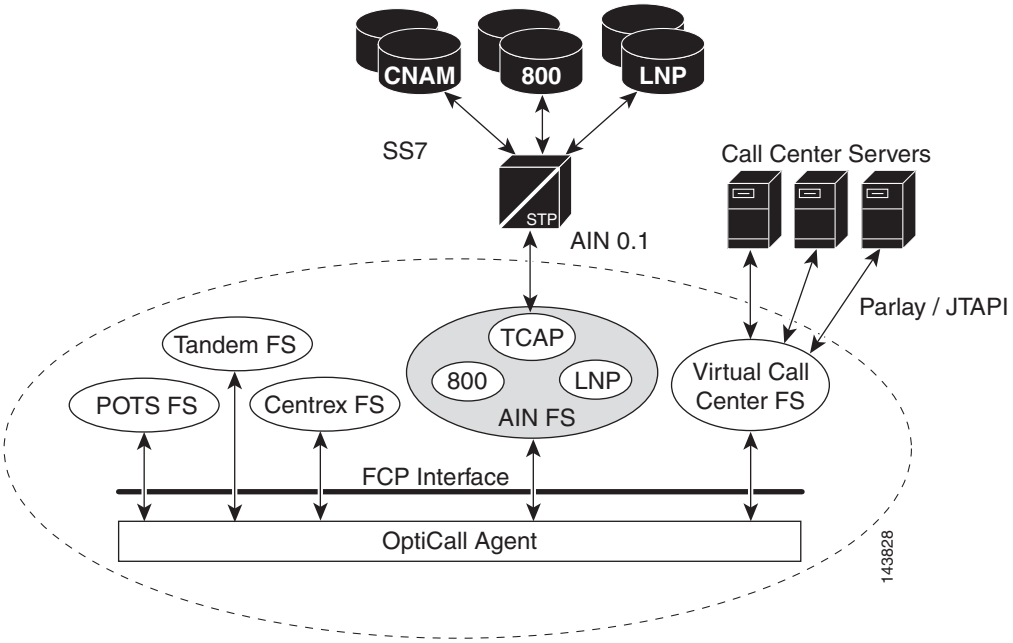
Figure 3-1 Originating Basic Call State Machine (CS2 Call Model)



Cisco BTS 10200 Softswitch Feature Server Strategy

Figure 3-2 provides an illustrated example of the Cisco BTS 10200 Softswitch feature service strategy.

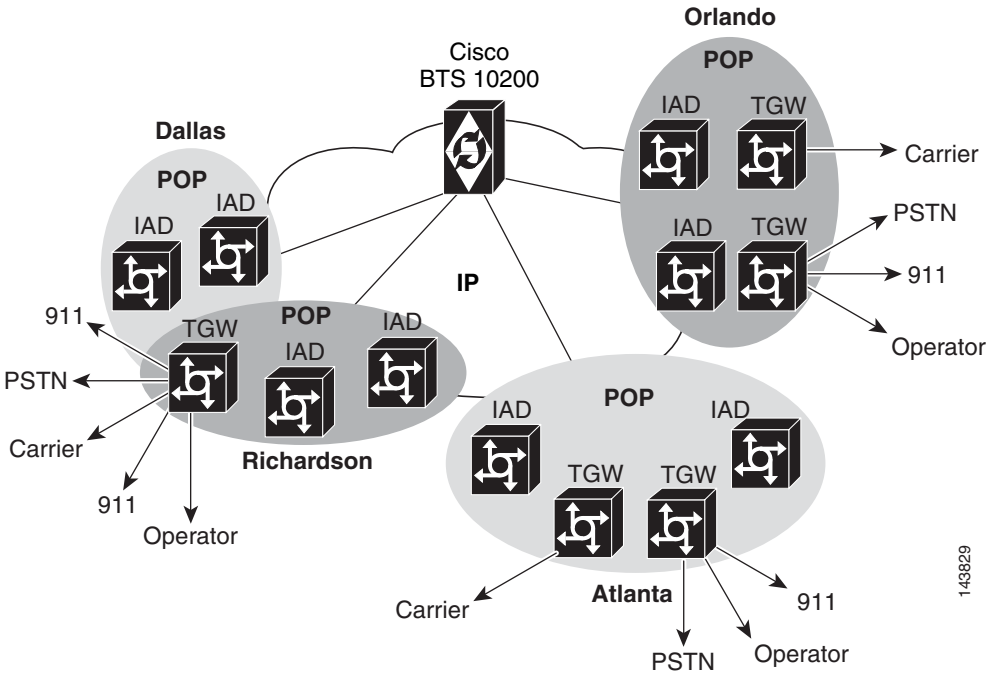
Figure 3-2 Cisco BTS 10200 Softswitch Feature Server Strategy



Point of Presence

Figure 3-3 provides an illustrated example of the Cisco BTS 10200 Softswitch ability to process and route calls between multiple points of presence (POPs).

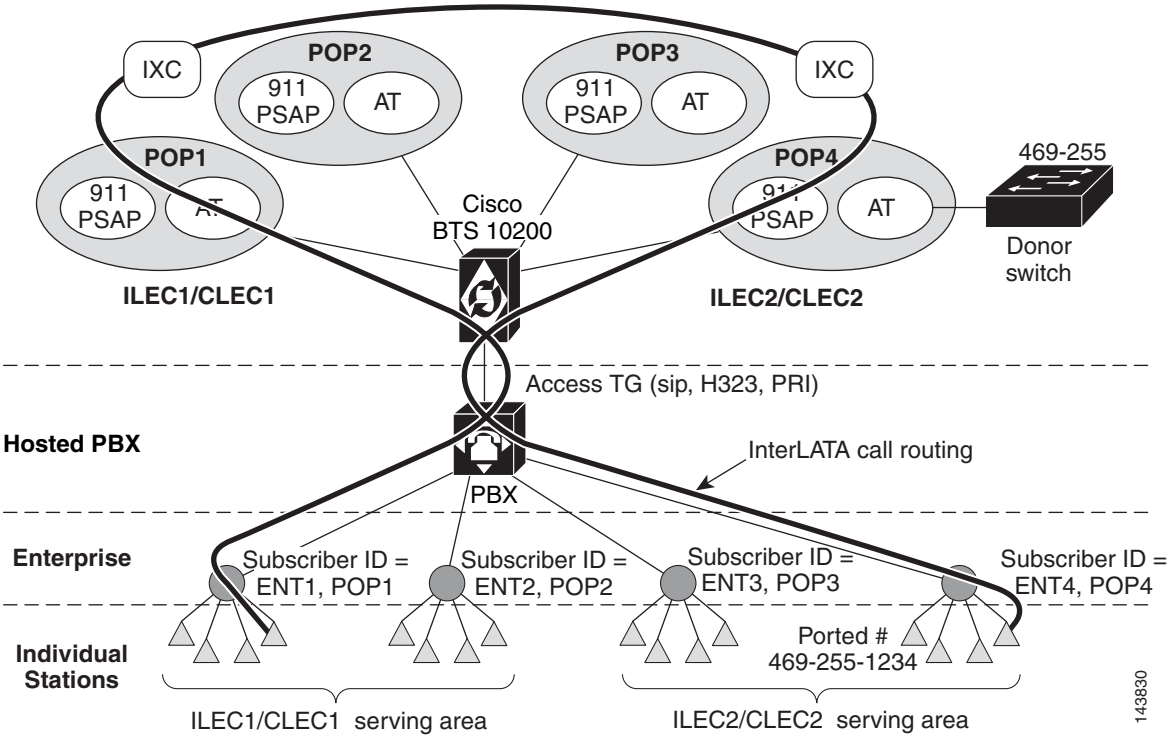
Figure 3-3 Point of Presence



Network Configuration

Figure 3-4 provides an illustrated example of a typical Cisco BTS 10200 Softswitch network configuration.

Figure 3-4 Network Configuration



Subscriber Types

This section describes the Cisco BTS 10200 Softswitch subscriber types. The following subjects are discussed:

- Individual
- Centrex
- Interactive Voice Response
- Multi-line Hunt Group
- Private Branch Exchange
- Remote Activation of Call Forwarding

Individual

Individual is the Cisco BTS 10200 Softswitch default subscriber type. The individual subscriber type is assigned to individual subscribers.

Centrex

The Centrex (CTX) subscriber type is assigned to the main subscriber ID of a Centrex group. Additionally, Centrex subscribers types include CTXG-INDIVIDUAL subscribers, CTXG-MLHG subscribers, and CTXG-TG subscribers. CTXG-INDIVIDUAL subscriber type is assigned to a Centrex subscriber. CTXG-MLHG subscriber type is assigned to a Centrex Multi-line Hunt Group (MLHG) (for example, attendant). CTXG-TG subscriber type is assigned to a Centrex trunk group.

Interactive Voice Response

Interactive voice response (IVR) subscriber type is assigned access to a DN for IVR.

Multi-line Hunt Group

The MLHG subscriber type is assigned to the main subscriber ID of a MLHG. Additionally, MLHG subscribers types include MLHG-INDIVIDUAL subscribers and MLHG-PREF-INDIV subscribers. MLHG-INDIVIDUAL subscriber type is assigned to a subscriber within an MLHG. MLHG-PREF-INDIV subscriber type is assigned to the main subscriber ID of a preferential hunt list.

Private Branch Exchange

The private branch exchange (PBX) subscriber type is assigned to the main subscriber ID of a PBX.

Remote Activation of Call Forwarding

The remote activation of call forwarding (RACF) subscriber type is assigned access to a DN for remote activation of call forwarding.

Digit Collection

The Digit Map (digit-map) table tells a media gateway (MGW) how to collect and report dialed digits. The Call Agent uses a default digit-map id for normal digit collection unless a specific digit map ID is assigned to the subscriber. There are two types of subscribers:

- Plain old telephone service (POTS) (individual/residential)
- Centrex (business group)

POTS subscribers use a public dialing plan. Centrex subscribers use a customized dialing plan.

It is possible to create digit maps using two-digit and three-digit star code patterns. The length of the star code depends on the first digit of the star code. If the first digit is 2-3, then the star code length is three digits. If the first digit is 4-9, then the star code length is two digits.

For example:

```
*2-3xxx
*4-9xx
```

The following example shows the addition of a typical digit-map allowing two-digit star codes only.

Example:

```
add digit-map id=default;
digit-pattern=0T|00|[2-9]11|[2-9]xx[2-9]xxxxxx|1[2-9]xx[2-9]xxxxxx|0[2-9]xx[2-9]xxxxxx|011
xxxxxx.T|01xxxxxx.T|101xxxx|#|*xx|11xx|xxxxxxxxxxxxxxxxxxx;
```

The following example shows the addition of a typical digit-map allowing both two- and three-digit star codes.

Example:

```
add digit-map id=cwd;
digit-pattern=0T|00|[2-9]11|[2-9]xx[2-9]xxxxxx|1[2-9]xx[2-9]xxxxxx|0[2-9]xx[2-9]xxxxxx|011
xxxxxxxxxxxxx.T|101xxxx|#|*[4-9]x|*[2-3]xx|11xx|[2-9]#|[2-4]x#|[2-9]T|[2-4]xT|01xxxxxxxxxx
x;
```

Table 3-1 describes the components of a two-digit star code digit map that is created by issuing the add digit-map command.

Table 3-1 Component Breakdown of Add Digit Map Command (Two-Digit Star Code)

Component	Description
# 0T	Operator call (0-)
# 00	Carrier operator (00)
# [2-9]11	N11 dialing
# 0[2-9]11	0+N11 dialing (0+911)
# 1[2-9]11	1+N11 dialing (1+911, 1+411)
# [2-9]xx[2-9]xxxxxx	10-digit Local in home numbering plan area (HNPA) (972, 973)
# 1[2-9]xx[2-9]xxxxxx	1+ 10 digit
# 0[2-9]xx[2-9]xxxxxx	0+ 10 digit
# 011xxxxxx.T	International direct dial domestic (IDDD), minimum 6 digits
# 01xxxxxx.T	Operator-assisted IDDD, minimum 6 digits

Table 3-1 Component Breakdown of Add Digit Map Command (Two-Digit Star Code)

Component	Description
# 101xxxx	Casual dialing
# "#"	End of dialing or cut-through
# *xx	Vertical service code
# xxxxxxxxxxxxxxxxxx	Maximum digit string (19 digits = 011+16 digits for international call)

Digit-pattern = 0T

T starts 4-second timing. But if digits are dialed within that 4 seconds, that digit pattern is skipped. If no digits are dialed within 4 seconds, or the pound sign (#) is pressed, then end-of-dial is assumed and a match occurs with the specified digit pattern. The collected digits are reported to the Call Agent.

Example: 0T indicates that match occurs only if user only dials digit 0 (with 4-second time out) or user dials 0#. A # indicates to cancel 4-second timing and report digits immediately.

Digit-pattern = x.T

In this table, T also starts 4-second timing. The dot represents any number of digits. The gateway keeps collecting digits until either 4 seconds elapses between digits or until the pound sign (#) is pressed.

Caution The Cisco BTS 2200 does not check the syntax for digit maps. Therefore, before you deploy a new or modified digit-map table, ensure that you first test its operability in a non-production environment.

Specifically, you must not attempt to implement a digit pattern in which a bracket is left unbound. For example, in the syntax [1-9] xxxxx], the closing bracket is unbound. This syntax error can cause a media gateway to fail when it receives a RQNT message in which a digit pattern was incorrectly specified.

Casual Carrier Dialing

Use the following instructions to add a casual carrier entry (101xxxx + 1 + npa-nxx-xxxx) to the dial-plan.

Step 1 add carrier id=0333; inter=Y; intra=Y; intl=Y; use-dial-plan=N; route-guide-id=dpc1-rg; cut-thru=N; status=INS; description=Sprint casual dial 1010333 + 1 + npa-nxx-xxxx (301-286-2009);

Step 2 add destination dest-id=casual_carrier; call-type=interlata; route-type=carrier; carrier-id=0333;

Step 3 add dial-plan id=dp-1; digit-string=1010333; min-digits=17; max-digits=18; dest-id=casual_carrier; forced=Y;

Note The "forced=Y" flag is necessary to avoid the NANP NPA-NXX-xxxx formatting requirements.

Dial Plans

The following topics are discussed in this section:

- National Dial Plan
- International Dial Plan
- Custom Dial Plan

National Dial Plan

The national dial plan analyzes, screens, and routes calls based on dialed digits. The National Dial Plan table holds dial plan information for a specific type of call. It defines valid dialing patterns and determines call routing. All records that share a common dial-plan-profile id are considered a dial plan.

International Dial Plan

The International Dial Plan (intl-dial-plan) table holds international dial plan information for calls to regions outside the NANP. It contains the country code, minimum and maximum digits, the country name, and the route-grp-id.

Custom Dial Plan

The Custom Dial Plan (custom-dial-plan) table translates Centrex calls. If the result of a custom dial plan (CDP) is a POTS access code, call processing uses the POTS Dial Plan table to translate the digits dialed after the POTS access code. Speed call codes are provisioned in this table as nod=speed-call and fname = SC1D (or SC2D). Screening does not apply to speed dialing.

Digit Manipulation

The Digit Manipulation (digman) table is used to perform digit and NOA manipulation. Examples of digit manipulation are:

- Blind delete and prefix capability (delete 3, prefix 972)
- Based on string comparison (replace ^972 with NULL)
- Based on string length (if 7 digits, prefix with 972)
- Pattern matching (if 469255, replace with 5)
- Nature of address (if NOA=subscriber, prefix with 972)

Digit Analysis

This section contains information related to the dialed digit analysis. The dialed digit analysis determines the destination and routing of the placed call. The following topics are discussed:

- Destination

- Local Serving Area

Destination

This section contains related the placed call destination determination. The following topics are discussed:

- Call Type
- Route Guide
- Route
- Carrier

Call Type

The Call Type (call-type) table contains the valid call types supported by the Call Agent. It is not provisionable.

Route Guide

The Route Guide (route-guide) table holds routing information based on policy-type.

Route

The Route (route) table contains a list of up to ten trunk groups to route a call. If all the trunk groups are busy or not available, call processing uses the alt-route-id (if specified) to route the call. The Element Management System (EMS) provisions the Call Agent ID field based on the Trunk Group table.

Note This table allows the service provider to provision a list of up to 10 trunk groups (TG1 to TG10), and a parameter for selecting the priority of the TGs for routing (TG-SELECTION). The system attempts to route the call on the highest priority TG. If the call cannot be completed on the highest priority TG, the system attempts to use the next (lower priority) TG, a process known as route advance. The system attempts route advance to lower priority TGs up to five times. (Any TG in the list that is administratively out of service is not counted as an attempt.) If all five attempts fail, the call is released, and the system provides a release announcement.

Carrier

The Carrier (carrier) table defines the characteristics and capabilities supported by interLATA carriers, intraLATA carriers, international carriers, and provides routing information.

Note LATA stands for local access transport area. It is predefined by geographical area.

Local Serving Area

The local service area (LSA) table provides extended local service. If a NANP dialed call results in an intraLATA toll or an interLATA call, and the subscriber has an LSA ID assigned, the LSA table is screened to check if the dialed digits appear in the subscriber's LSA area. If the dialed digits are found in the Lsa table, the call is converted to a local call.

Class of Service Screening

Class of service (COS) screening allows subscribers, or a group of subscribers, to have different collections of privileges and features assigned to them.

The COS Restrict (cos-restrict) table identifies the restrictions on a subscriber's class of service, including restrictions on the calls the subscriber can make (screening).

Call type and casual call screening are not performed for NANP and international operator calls, even though NANP or casual call restrictions are requested for a calling party.

Account codes are not collected for:

- 0+, NANP operator calls
- 01+, international operators calls
- local calls

Class of call screening examples are:

- Block based on call types (900, 411, operator)
- NANP restrictions based on call type (local, intraLATA, national, or all NANP)
- International restrictions (all CC, none, B/W list)
- Casual call restrictions (no restrictions, no casual calls, B/W list)
- Originating line information (OLI) restrictions for tandem calls
- Account codes
- Authorization codes

Routing

This section provides information relating to the routing of calls by the Cisco BTS 10200 Softswitch. The following topics are discussed:

- Office Code
- Ported Office Code
- Route Guide
- Route
- Trunk Group

Office Code

The Office Code (office-code) table specifies the office codes assigned to a particular Call Agent. The office codes defined in this table normally terminate to a subscriber. This table defines the office-code-index (normalized office code) that is used as an index in the DN2Subscriber table.

Ported Office Code

The Ported Office Code (ported-office-code) table specifies numbers, or ranges of numbers, that might have been ported-in to this switch. If a called number matches any of the ported numbers, or is within any of the specified ranges of numbers, the Call Agent queries the DN2subscriber table to determine the current status of the DN.

Route Guide

The Route Guide (route-guide) table holds routing information based on policy-type.

Route

The Route (route) table contains a list of up to ten trunk groups to route a call. If all the trunk groups are busy or not available, call processing uses the alt-route-id (if specified) to route the call. The EMS provisions the Call Agent ID field based on the Trunk Group table.

Note This table allows the service provider to provision a list of up to 10 trunk groups (TG1 to TG10), and a parameter for selecting the priority of the TGs for routing (TG-SELECTION). The system attempts to route the call on the highest priority TG. If the call cannot be completed on the highest priority TG, the system attempts to use the next (lower priority) TG, a process known as route advance. The system attempts route advance to lower priority TGs up to five times. (Any TG in the list that is administratively out of service is not counted as an attempt.) If all five attempts fail, the call is released, and the system provides a release announcement.

The route table enables:

- 10 trunk groups per route
- Digit manipulation per trunk group
- Multiple routes can be linked

Trunk Group

The Trunk Group (trunk-grp) table identifies the trunk group and maps it to the associated media gateway.

Trunk Group Types

The Cisco BTS 10200 Softswitch supports the following trunk group types: announcement, channel associated signaling (CAS), Integrated Services Digital Network (ISDN), Signal System 7 (SS7), and SOFTSW (Session Initiation Protocol (SIP)). The Trunk Group table defines common information based on the trunk group type. The Cisco BTS 10200 Softswitch supports announcement, CAS, ISDN, SS7 and SOFTSW trunk group profiles. The following trunk group types are discussed:

Announcement

The Announcement Trunk (annc-trunk) table is used when an announcement server is required in an Asynchronous Transfer Mode (ATM) network.

Channel Associated Signaling

The CAS Trunk Group Profile (cas-tg-profile) table holds common information on a CAS trunk group. It supports the following signaling types: dual tone multifrequency (DTMF) loop start, DTMF ground start, multifrequency (MF) im start, MF wink start, DTMF im start, DTMF wink start. A cas-tg-profile record can be shared by multiple CAS trunk groups.

Integrated Services Digital Network

The ISDN Trunk Group Profile (isdn-tg-profile) table holds common information regarding an ISDN trunk group. This table is used to configure the Cisco BTS 10200 Softswitch to interact with various types of private branch exchanges (PBXs) having different configurations (such as non-facility associated signaling (NFAS), facility associated signaling (FAS), and so forth), initialization procedures (service or restart), or supporting different call control or maintenance timer values. The isdn-tg-profile record can be shared by multiple ISDN trunk groups. The table tokens configure the Call Agent to communicate with a particular PBX.

Signaling System 7

The SS7 American National Standards Institute (ANSI) Trunk Group Profile (ss7-ansi-tg-profile) table holds common information regarding an SS7 trunk group such as continuity test (COT). This table can be shared by multiple SS7 trunk groups.

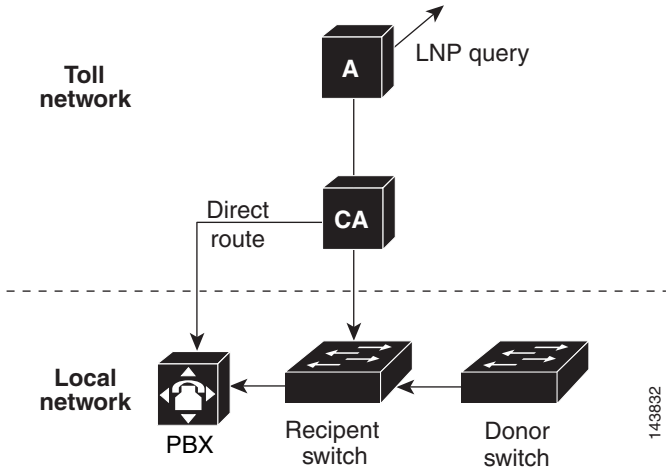
Session Initiation Protocol

The Softswitch (SIP) Trunk Group Profile (softsw-tg-profile) table holds all the information specific to a Softswitch trunk, such as id, protocol, indicators and echo suppression. The softsw-tg-profile record can be shared by multiple softswitch trunk groups. An ID must be created in this table before entries can be added to the Softswitch Trunk Group table.

Generic Address Parameter Based Routing

Figure 3-5 shows an illustrated example of generic address parameter (GAP) based routing.

Figure 3-5 Generic Address Parameter Based Routing



Tandem Provisioning

This section provides general information on tandem provisioning. The following topics are discussed:

Automatic Number Identification

The ANI table is used for the ANI screening feature. The table keeps track of allowed/blocked status ANI. If the ANI status is blocked, the call is not allowed.

Automatic Number Identification Screening

The ANI Screening (ani-screening) table performs ANI screening on calls received over a trunk group. Normally, ANI screening is performed on calls received from a PBX (ISDN, H.323, and Session Initiation Protocol (SIP)). This table allows performing ANI-based routing in addition to ANI screening. When a record is found that matches the incoming ANI, the subscriber ID associated with the record is used for further digit analysis and routing.

Automatic Number Identification Screening Profile

The ANI Screening Profile (ani-screening-profile) table defines an id to perform ANI screening. The ID is assigned to a trunk group when ANI screening is required or when ANI-based routing is required for calls originating over a trunk group.

Cause Code Map

The Cause Code Map (cause-code-map) table processes cause codes received from an outgoing interface, and also when sending cause codes to a previous switch over an incoming interface. It also specifies why a call was released.

When used for an outgoing interface, this table serves the following purposes:

- Determines what action the Cisco BTS 10200 Softswitch takes for cause codes received over an outgoing interface.
- Maps received cause codes to normalized cause codes.

When used for an incoming interface, the table maps normalized cause codes to a cause code sent over the incoming interface. If no entry is found in the table, the Cisco BTS 10200 Softswitch uses the cause code as is.

Cause Code Map Profile

The Cause Code Map Profile (cause-code-map-profile) table defines cause code map IDs, defines default mappings to a standard cause code (Q.850), and defines default actions to take. These IDs must be provisioned before provisioning either the Cause Code table or the Trunk Group table.

H.323 Gateway

The H.323 Gateway (h323-gw) table defines the capabilities of each H.323 protocol gateway. There can be four instances of an H.323 gateway running on the Call Agent at any one time.

H.323 Gateway to Gatekeeper

The H.323 Gateway to Gatekeeper (h323-gw2gk) table describes gatekeeper characteristics for each gateway in an H.323 network. Multiple gateways can have the same gatekeeper, or there can be a different gatekeeper for each gateway. However, a gateway can be registered to one gatekeeper at a time. A gatekeeper identifies, controls, counts, and supervises gateway traffic, including, but not limited to, gateway registration, address resolution, bandwidth control, and admission control.

H.323 Terminal

The H.323 Terminal (h323-term) table holds information about H.323 terminals (such as H.323 audio/video phones) managed by the Call Agent and known in advance. This table is specific to H.323 subscribers.

H.323 Terminal Profile

The H.323 Terminal Profile (h323-term-profile) table defines the characteristics of group of H.323 terminals (or phones). An h323-term-profile id must be created in this table before any H.323 subscriber entries can be added. This table contains almost all the same fields as from the H.323 Trunk Group Profile table, except for some that are specific to trunk side (such as Generic Transparency Descriptor (GTD)).

H.323 Trunk Group Profile

The H.323 Trunk Group Profile (h323-tg-profile) table defines the characteristics of each H.323 trunk. An h323-tg-profile id must be created in this table before H.323 trunk group entries can be added.

II White Black List

The II White Black List (ii-wb-list) table allows or blocks calls from certain types of lines. The COS Restrict ID specifies if the list is to be used as a White List or Black List.

Service Provider

The Service Provider (service-provider) table is used when there are multiple service providers providing service via a single logical Call Agent.

Technical Prefix Group Profile

The Technical Prefix Group Profile (tech-prefix-grp-profile) table identifies the IDs used for the Technical Prefix Group table. These IDs must be created in this table before entries can be added to the Technical Prefix Group table.

Technical Prefix Group

The Technical Prefix Group (tech-prefix-grp) table provides a list of technical prefixes supported by a gateway. The same tech-prefix-list ID can be shared by multiple gateways. Each gateway must register the tech-prefixes supported to their respective gatekeepers.

Technical prefixes allow the inclusion of special characters in a called number. These special characters are commonly designated as a 1#, 2#, 3#, and so forth, and can be configured to prepend called number on the outgoing VoIP dial peer. The gatekeeper then checks its gateway technical prefix table for gateways registered with that particular tech prefix. Technology prefixes can also be used to identify a type, class, or pool of gateways.

The gatekeeper can be provisioned with technical prefixes in one of the following ways:

- Dynamically registered technical prefixes. The H.323 gateway registers one or more technical prefixes with the gatekeeper.
- Statically registered technical prefixes. The gatekeeper is provisioned with the technical prefixes and the gateways supporting them.
- Default technical prefixes also registered statically at the gatekeeper. If the gatekeeper does not receive a technical prefix in the admission request (ARQ), the gatekeeper uses the default technical prefixes.

A group of one or more of technical prefixes can be provisioned in Cisco BTS 10200 Softswitch and this group can be associated to an H.323 gateway. The Cisco BTS 10200 Softswitch H.323 gateway process instance registers the technical prefixes from its technical prefix group with its primary gatekeeper. The technical prefix is encoded in the terminal Alias field of a registration request (RRQ) message as E.164 addresses. The gatekeeper routes calls to the Cisco BTS 10200 Softswitch H.323 gateway based on the technical prefixes.

Trunk Group Feature Data

The Trunk Group Feature Data (trunk-grp-feature-data) table performs COS screening for Tandem calls. If the received ANI is not found in the ANI table, and the casual-call flag is set to Y, the call is allowed. If the casual-call flag is set to N, the call is blocked. The cos-restrict-id performs the COS screening.

Trunk Group Service Profile

The Trunk Group Service Profile (trunk-grp-service-profile) table links a trunk group to services.

Local Toll-Free Service Provisioning

The purpose of toll-free services is to have the called party, rather than the calling party, charged for the call. These calls are prefixed with the 1+8XX service access codes. The seven digits following the 8XX codes are used for routing the call. For an inbound/outbound 8XX call, the Cisco BTS 10200 Softswitch checks the local toll-free database first. If the corresponding DN is not found in the local toll-free database, the system sends a query to the service control point (SCP) to request the corresponding DN. All aspects of toll-free calling are transparent to the caller. A caller expects to dial 1-8XX-NXX-XXXX to reach the desired destination. The company that translates the number to a specific DN, and the company that routes the call, must appear transparent to callers. Most callers are not aware that their dialed 8XX number is changed into a specific DN. What matters to the callers is that they reach what they perceive to be the called number, and they are not billed for the call.

The following additional topics are discussed in this section:

- Local Toll-Free Database
- Service Control Point Based Toll-Free Services
- Automatic Number Identification White/Black List
- Customer Group
- DN2 Customer Group
- II Restrict List

Local Toll-Free Database

The Cisco BTS 10200 Softswitch provides the ability to translate inbound/outbound 8XX numbers at the Feature Server (FS) using a local 8XX database. The 8XX service supports the following features:

- Origin-dependent routing
- Time-of-day routing
- Percentage-based routing
- Information digit-based screening
- Black/white list screening

The Cisco BTS 10200 Softswitch also supports optional dialed number identification service (DNIS) service. In an 8XX DNIS service, when a call is terminated to a PBX (call center), 4 digits are outpulsed to the PBX to identify the originally dialed 8XX number. In case of custom DNIS, up to 22 digits can be outpulsed with additional information such as:

- Original 8XX number dialed
- Automatic number identification (ANI)
- Originating line information of the calling party

When a translated number (for an original 8XX call) is received, the Analyzed Info Dial Plan (DP) triggers the FS. The Cisco BTS 10200 Softswitch looks up the DNIS and TG information for the call. The DNIS information is then outpulsed to the PBX. If an overflow condition is encountered, the call is routed to the overflow trunk. The overflow trunk can be a public switched telephone network (PSTN) trunk.

Service Control Point Based Toll-Free Services

The Cisco BTS 10200 Softswitch communicates with an SCP-based database called the toll-free database service, which contains information for routing the call. The database service provides information about the network service provider selected to complete the call, and information for translating the toll-free number to a specific 10-digit DN. The routing of the call can vary depending on the arrangements made between the toll-free subscriber and the network service provider. These arrangements can include selective routing based on the time of day, day of week, and location from which the call originates.

Automatic Number Identification White/Black List

The ANI White Black List (ani-wb-list) table performs ANI screening on 800 calls. The Customer Group specifies if the list is to be used as a White List or a Black List. A White Black List specifies whether calls are allowed to connect (white) or not allowed to connect (black).

Customer Group

The Customer Group (cust-grp) table defines the cust-grp-id and how ANI call forwarding and call restrictions are applied.

DN2 Customer Group

The DN2 Customer Group (dn2cust-grp) table provides translation of inbound/outbound 8XX (toll free) numbers to a local number and designated carrier.

II Restrict List

The II Restrict List (II-restrict-list) table restricts certain types of originating line services for a given group. The use of the list is determined by provisioning in the Customer Group table. This is a Black List (restrict) only. It cannot be a White List.

Carriers/Service Providers

This section provides general carrier/service provider information. The following subjects are discussed:

- Carrier
- Route Guide
- Circuit Code
- Service Provider

Carrier

The Carrier (carrier) table defines the characteristics and capabilities supported by interLATA carriers, intraLATA carriers, international carriers, and provides routing information.

Route Guide

The Route Guide (route-guide) table holds routing information based on policy-type. The Policy Prefix (policy-prefix) table provides information for call routing based on prefix (type of call). Typical call types include 1+ dialing, international calls, toll-free, and so on. This table is used mainly for carrier routing. The Policy Point of Presence (policy-pop) (POP) based policy routing routes a call to the nearest trunk group when there are multiple trunk groups. There are several situations where a policy POP can be used. If a Call Agent serves several POPs, each POP can have its own announcement server. A POP-specific announcement server can be more efficient than a centralized announcement server. InterLATA carriers also have a point of presence in each POP. Route interLATA or international calls to the nearest carrier location using policy POP routing. The Policy Origin Dependent Routing (policy-odr) table is used for origin-dependent routing. The numbering plan area (NPA) (or NPA-NXX) of the calling party number selects a route. If no match is found based on the calling party number, the route marked as default routes the call. The Policy Region (policy-region) table performs region-based routing. The region is derived using the Region Profile table from the Route Guide table and the calling party number ANI. If ANI is not available or the Region Profile table is not provisioned, the region assigned to the trunk group is used for trunk origination. If a record cannot be found based on the region, the record with region=default (if provisioned) is used for routing.

Circuit Code

The Circuit Code (circuit-code) table defines the circuit code value for the transit network selection (TNS) parameter. The circuit code value is defined based on the line, class of service, and call type. Special circuit code values are assigned to calls from coin or hotel motel lines. If special circuit code values are not required, the default circuit code values are based on the call type sent.

Service Provider

The Service Provider (service-provider) table is used when there are multiple service providers providing service via a single logical Call Agent.

Carrier Based Routing

Carrier based routing enables the routing of Cisco BTS 10200 Softswitch calls based on carrier. Carrier based routing provides multiple service provider support. Additionally, carrier based routing enables matching of the carrier ID and the trunk group to individual service providers. Individual dial plans can be configured for each service provider or default routing can be enabled.

Call Processing Flow

This section describes the Cisco BTS 10200 Softswitch call processing flow for calls terminating on a trunk and for calls terminating at a subscriber. The following topics are discussed:

Trunk Termination

The trunk termination call flow is:

- Termination
- Subscriber
- Dial-plan
- Destination
- Route-guide
- Route
- Trunk group
- Trunk
- Termination

Subscriber Termination

The subscriber termination call flow is:

- Termination
- Subscriber
- Dial-plan
- Destination
- Office-code
- DN2Subscriber
- Subscriber
- Termination

CHAPTER 4

Command Line Interface Routing

Revised: December 9, 2008, OL-8001-10

Introduction

This chapter provides a basic understanding of how the Cisco BTS 10200 Softswitch Command Line Interface (CLI) functions with of the routing types and call types. This chapter is divided into the following sections:

- Routing Types
- Call Types
- Command Line Interface Routing Examples

Routing Types

This section provides the Cisco BTS 10200 Softswitch CLI routing type information. The following topics are covered in this section:

- Basic Subscriber Routingthe following
- Basic Trunk Routing
- Carrier Based Routing
- Basic Dial Plan Routing

Basic Subscriber Routingthe following

This section provides a detailed description of the Cisco BTS 10200 Softswitch basic subscriber routing and provides CLI example references. Refer to Figure 4-1 for visual representation of basic subscriber routing flow while reviewing the following detailed step-by-step basic subscriber routing flow.

Step 1 Subscriber incoming received or placed.

Example:

Subscriber Test1

Step 2 Get the subscriber table (sub-profile identification (ID)).

Step 3 Get the subscriber-profile table (dial-plan-identification (DP-ID)).

Example:

Subsciber and Sub-Profile

Step 4 Go to the dial-plan (based on DP-ID).

Step 5 Go to destination table and get the call type and destination.

Example:

Destination

Step 6 Determine the call type. If the call type is toll free, 900, or 500, proceed to Step 7. If the call type is casual, proceed to Step 8. If the call type is via a presubscribed interexchange carrier (PIC), proceed to Step 9.

Examples:

Destination

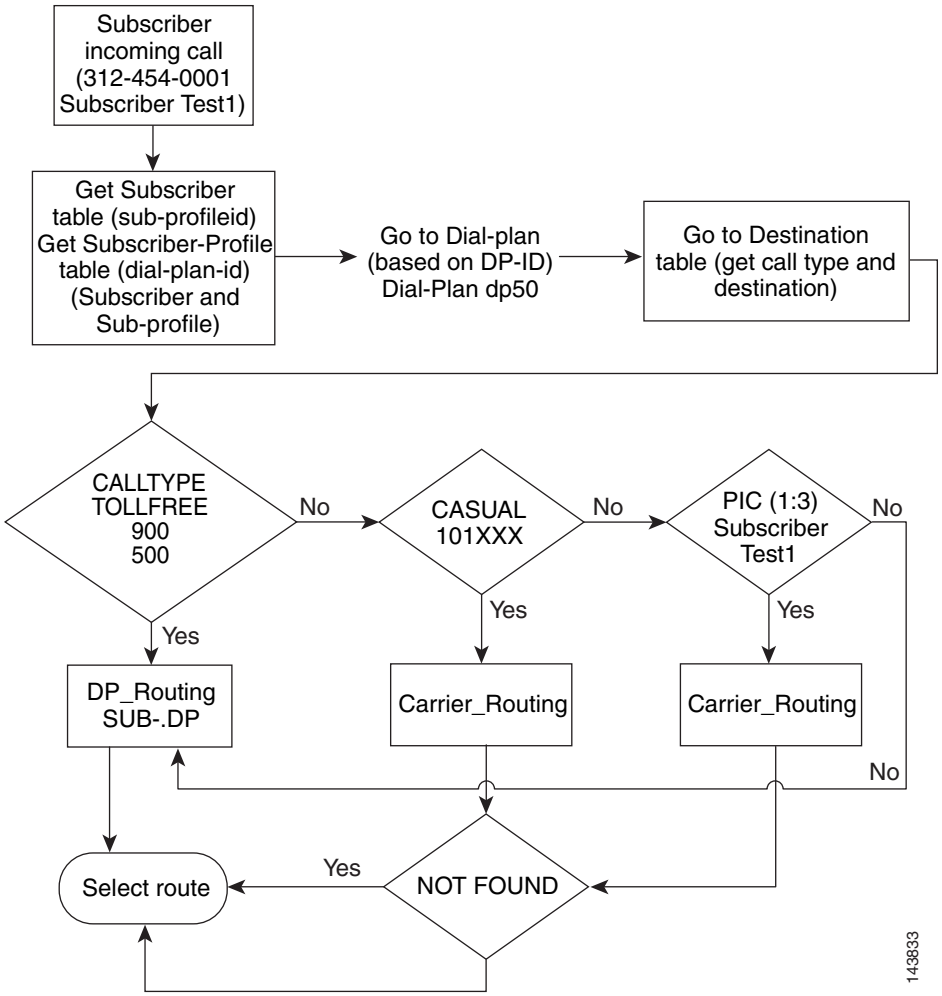
Subscriber Test1

Step 7 If the call type is toll free, 900, or 500, the Cisco BTS 10200 Softswitch will use the dial plan to select the call route and to route the call.

Step 8 If the call type is casual, the Cisco BTS 10200 Softswitch will use the carrier routing information to select the call route and to route the call.

Step 9 If the call type is via a PIC, the Cisco BTS 10200 Softswitch will user the PIC carrier routing information to select the call route and to route the call.

Figure 4-1 Basic Subscriber Routing



Basic Trunk Routing

This section provides a detailed description of the Cisco BTS 10200 Softswitch basic trunk routing and provides CLI example references. Refer to Figure 4-2 for visual representation of basic trunk routing flow while reviewing the following detailed step-by-step basic trunk routing flow.

Step 1 Trunk group (TG) call received or placed.

Example:

Trunk-grp 6969

Step 2 Get the DP-ID from the TG.

Example:

Trunk-grp 6969

Step 3 Go to the dial-plan and get the destination based on the digits and DP-ID.

Example:

Dial-Plan

Step 4 Go to the destination table and get the call type and the route.

Example:

Destination

Step 5 Determine the call type. If the call type is toll free, 900, or 500, proceed to Step 6. If the call type is local traffic, proceed to the Step 7. If the call type is casual service provider (SP), proceed to Step 8. If the call type is transit network selection (TNS), proceed to Step 9. If the call type is TG carrier, proceed to Step 10. If the call type is TG SP, proceed to Step 11.

Example:

Destination

Step 6 If the call type is toll free, 900, or 500, the Cisco BTS 10200 Softswitch will use the dial plan to select the call route and to route the call.

Examples:

Dial-Plan

DN2sub

Step 7 If the call type is local traffic, the Cisco BTS 10200 Softswitch will use the dial plan to select the call route and to route the call.

Examples:

Trunk-grp 6969

Dial-Plan

DN2sub

Step 8 If the call type is casual SP, the Cisco BTS 10200 Softswitch will use the SP routing to select the call route and to route the call. If the SP routing is not found, the Cisco BTS 10200 Softswitch will user the dial plan to select the call route and to route the call.

Examples:

Dial-Plan

DN2sub

Step 9 If the call type is TNS, the Cisco BTS 10200 Softswitch will use the carrier routing to select the call route and to select the call route and to route the call. If the carrier routing is not found, the Cisco BTS 10200 Softswitch will user the dial plan to select the call route and to route the call.

Examples:

Dial-Plan

DN2sub

Step 10 If the call type is TG carrier, the Cisco BTS 10200 Softswitch will use the carrier routing to select the call route and to route the call. If the carrier routing is not found, the Cisco BTS 10200 Softswitch will user the dial plan to select the call route and to route the call.

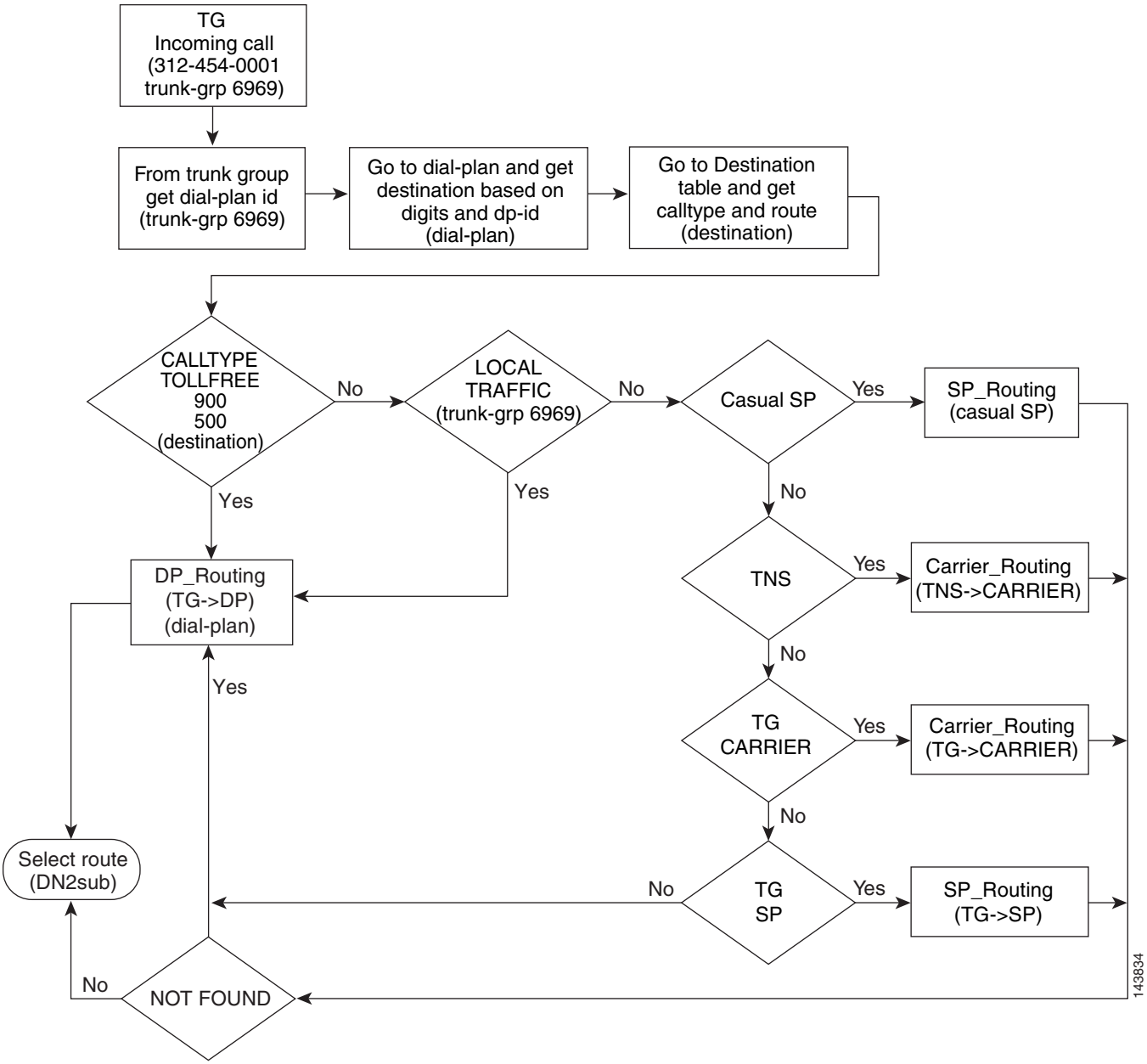
Step 11 If the call type is TG SP, the Cisco BTS 10200 Softswitch will the SP routing to select the call route and to route the call. If the SP routing is not found, the Cisco BTS 10200 Softswitch will user the dial plan to select the call route and to route the call.

Examples:

Dial-Plan

DN2sub

Figure 4-2 Basic Trunk Routing



Carrier Based Routing

This section provides a detailed description of the Cisco BTS 10200 Softswitch carrier based routing and provides CLI example references. Refer to Figure 4-3 for visual representation of carrier based routing flow while reviewing the following detailed step-by-step carrier based routing flow. Additionally, LNP-QUERY has been added to the call flow. LNP-QUERY specifies whether to perform an local number portability (LNP) query on the call type. Applies only if the ALL-CALL-QUERY flag in the LNP-PROFILE table is set to Y and the ACQ-LNP-QUERY token in the Destination table is set to ACQ-BASED-ON-CALL-TYPE.

Step 1 Carrier based routing call is received.

Step 2 Determine if the carrier is being screened. If the carrier is being screened, proceed to Step 3. If the carrier is not being screened, proceed to Step 4.

Example:

Carrier 9999 Use Dial-Plan “N”

Step 3 If the carrier is being screened, the Cisco BTS 10200 Softswitch will determine if the carrier call processing is being remotely blocked (RTM_CP_BLOCK). If the carrier call processing is being remotely blocked, the call can not be completed and will be dropped.

Step 4 If the carrier is not being screened, the Cisco BTS 10200 Softswitch will determine if the carrier is a recognized service provider. If the carrier is a recognized service provider, proceed to Step 5. If the carrier is not a recognized service provider, proceed to Step 6.

Example:

Carrier – Service-Provider

Step 5 If the carrier is a recognized service provider, the Cisco BTS 10200 Softswitch will use the service provider routing to select the call route and to route the call.

Example:

Service Provider

Step 6 If the carrier is not a recognized service provider, the Cisco BTS 10200 Softswitch will determine if a carrier dial plan is configured. If a carrier dial plan is configured, proceed to Step 7. If a carrier dial plan, is not configured proceed to Step 8.

Example:

Carrier Use Dial-Plan “Y”

Carrier 9999 Use Dial-Plan “N”

Step 7 If a carrier dial plan is configured, the Cisco BTS 10200 Softswitch will use the carrier dial plan to select the call route and to route the call.

Step 8 If a carrier dial plan is not configured, the Cisco BTS 10200 Softswitch will determine if a carrier remote call processing to local exchange carrier operations support system is available (RTM_CP_CARRIER_2_LECOSS). If the RTM_CP_CARRIER_2_LECOSS is available, proceed to Step 9. If the RTM_CP_CARRIER_2_LECOSS is not available, proceed to Step 10.

Note Step 8 is skipped for toll traffic. If the traffic is toll traffic, proceed to Step 10.

Step 9 If the RTM_CP_CARRIER_2_LECOSS is available and if the traffic is not toll traffic, the Cisco BTS 10200 Softswitch will use the RTM_CP_CARRIER_2_LECOSS to select the call route and to route the call.

Example:

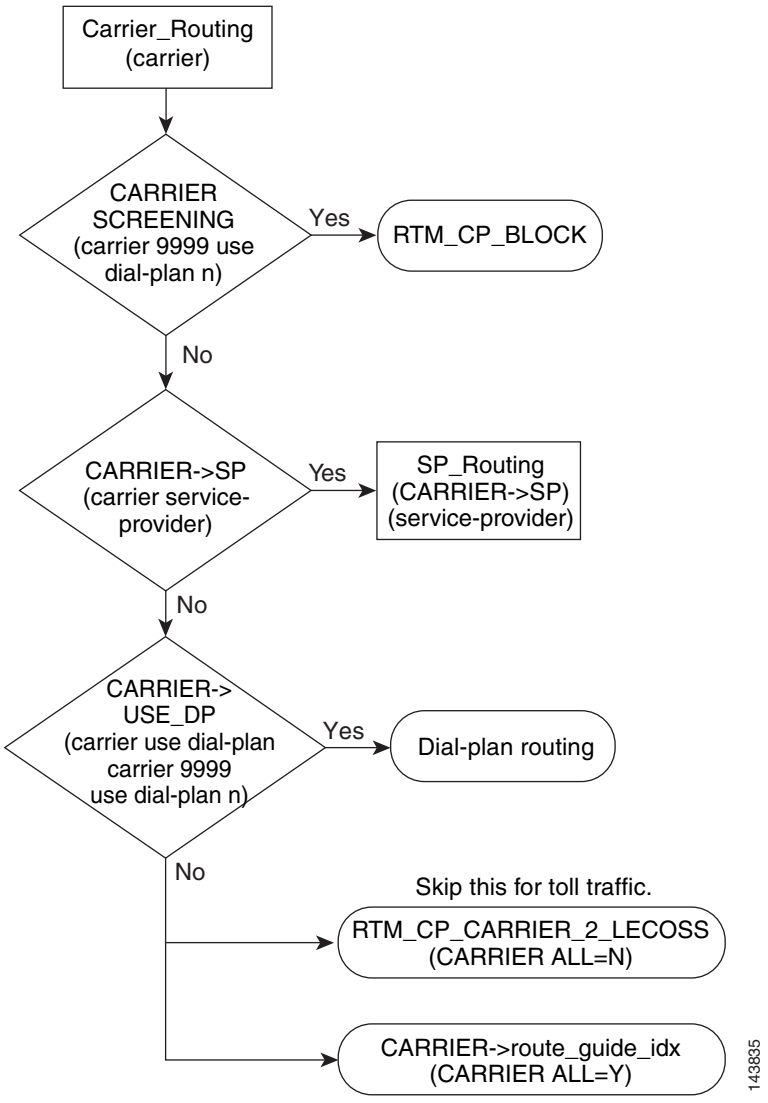
Carrier All = N

Step 10 If the RTM_CP_CARRIER_2_LECOSS is not available, the Cisco BTS 10200 Softswitch will use the carrier guide index to select the call route and to route the call.

Example:

Carrier All = Y

Figure 4-3 Carrier Based Routing



Basic Dial Plan Routing

This section provides a detailed description of the Cisco BTS 10200 Softswitch basic dial plan routing and provides CLI example references. Refer to Figure 4-4 for visual representation of basic dial plan routing flow while reviewing the following detailed step-by-step basic dial plan routing flow.

Step 1 Basic dial plan routing call received.

Step 2 Determine if the nature of address (NOA) for the received call is an international call. If the call is an international call, the Cisco BTS 10200 Softswitch will use the the international dial plan to select the call route and to route the call. If the call is not an international call, proceed to Step 3.

Example:

Dial-Plan Ca-Config

Step 3 Determine if the call destination is found. If the call destination is not found, the Cisco BTS 10200 Softswitch will return a destination not found response (NOT FOUND) and will drop the call. If the call destination is found, proceed to the Step 4.

Step 4 Determine if a call destination subscriber is found. If a call destination subscriber is found, the Cisco BTS 10200 Softswitch will return a subscriber (SUB) response and will use the subscriber information to select the call route and to route the call. If a call destination subscriber is not found, proceed to Step 5.

Example:

Destination SUB

Step 5 Determine if a call destination route is found. If a call destination route is found, the Cisco BTS 10200 Softswitch will return a destination (DEST) response and will use the route guide index to select the call route and to route the call. If a call destination route is not found, proceed to Step 6.

Example:

Destination ROUTE

Step 6 Determine if a call destination route identification (RID) is found. If a call destination RID is found, the Cisco BTS 10200 Softswitch will return a DEST response and will user the route index to select the call route and to route the call. If a call destination RID is not found, proceed to Step 7.

Example:

Destination RID

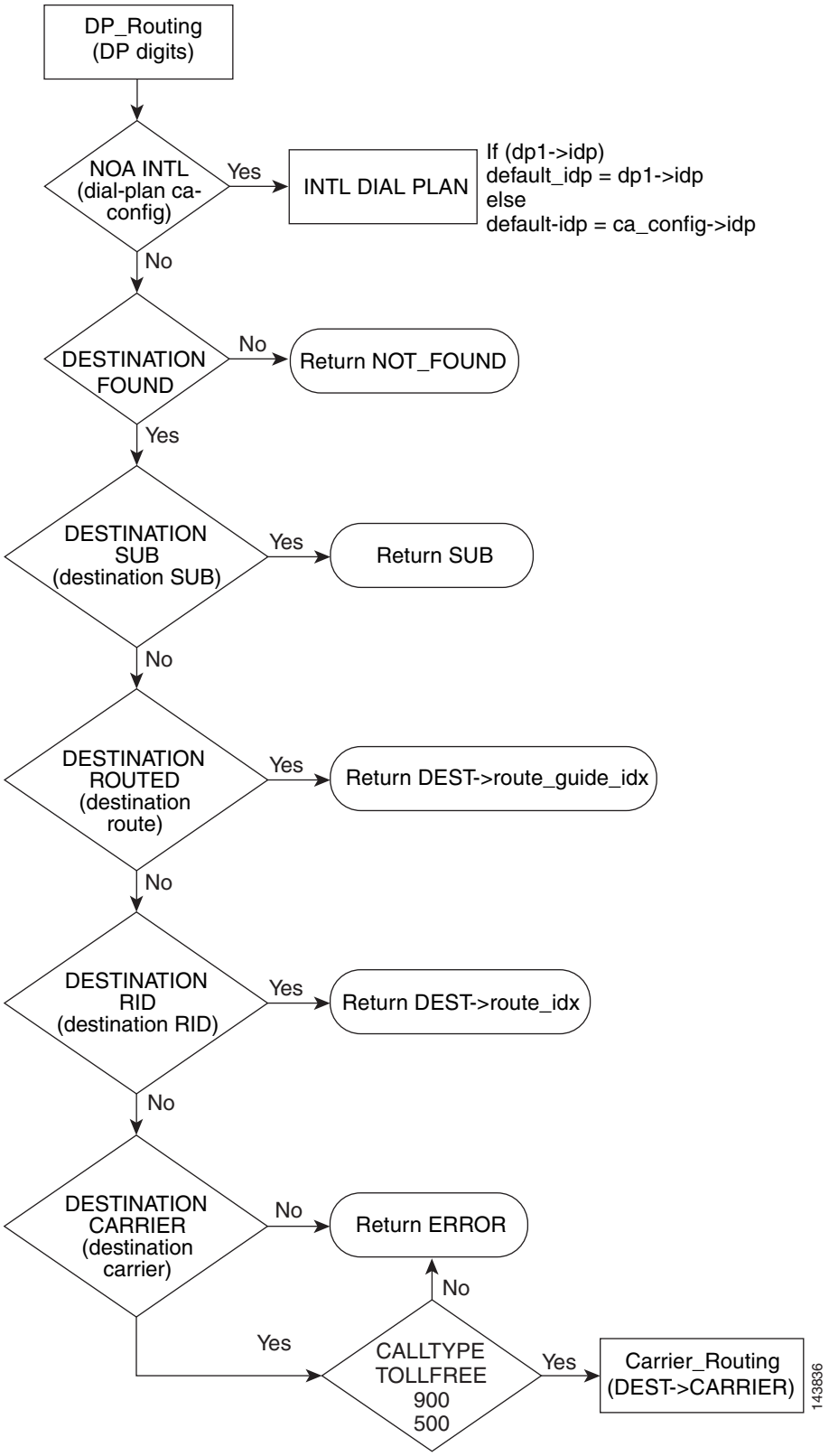
Step 7 Determine if a destination carrier is found. If a destination carrier is found, proceed to the Step 8. If a destination carrier is not found, the Cisco BTS 10200 Softswitch will return an error and will drop the call.

Example:

Destination Carrier

Step 8 Determine the call type. If the call type is toll free, 900, or 500, the Cisco BTS 10200 Softswitch will select the call route and to route the call using the destination carrier routing. If the call type is not toll free, 900, or 500, the Cisco BTS 10200 Softswitch will return an error and will drop the call.

Figure 4-4 Basic Dial Plan Routing



Call Types

This section provides detailed information on the CLI usage for the Cisco BTS 10200 Softswitch call types. CLI information on the following call types is provided:

- 1+ Interlata Call
- 1+ Intralata Call
- 0+ Interlata Call
- 0+ Intralata Call
- Ported-In Call Processing

1+ Interlata Call

This section provides a detailed description of the Cisco BTS 10200 Softswitch routing and call flow for 1+ interlata calls and provides CLI example references. Refer to Figure 4-5 for visual representation of the 1+ interlata call routing flow while reviewing the following detailed step-by-step 1+ interlata call routing flow.

Step 1 A 1+ interlata call is received.

Examples:

Subscriber Test1

Dp50 Digit-String = 202

Step 2 Determine if a 101XXXX number has been dialed. If a 101XXXX number has been dialed, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the carrier access code (CAC). If a 101XXXX number has not been dialed, proceed to Step 3.

Step 3 Check the subscriber table to determine if a PIC is defined. If a PIC is defined, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the PIC information. If a PIC is not defined, proceed to Step 4.

Example:

Subsciber and Sub-Profile

Step 4 Check the point of presence (POP) table and verify if a block-eawopic is configured. If the a block-eawopic is configured, the Cisco BTS 10200 Softswitch will block the call. If a block-eawopic is not configured, proceed to Step 5.

Examples:

POP 50 No Block

POP 50 Block

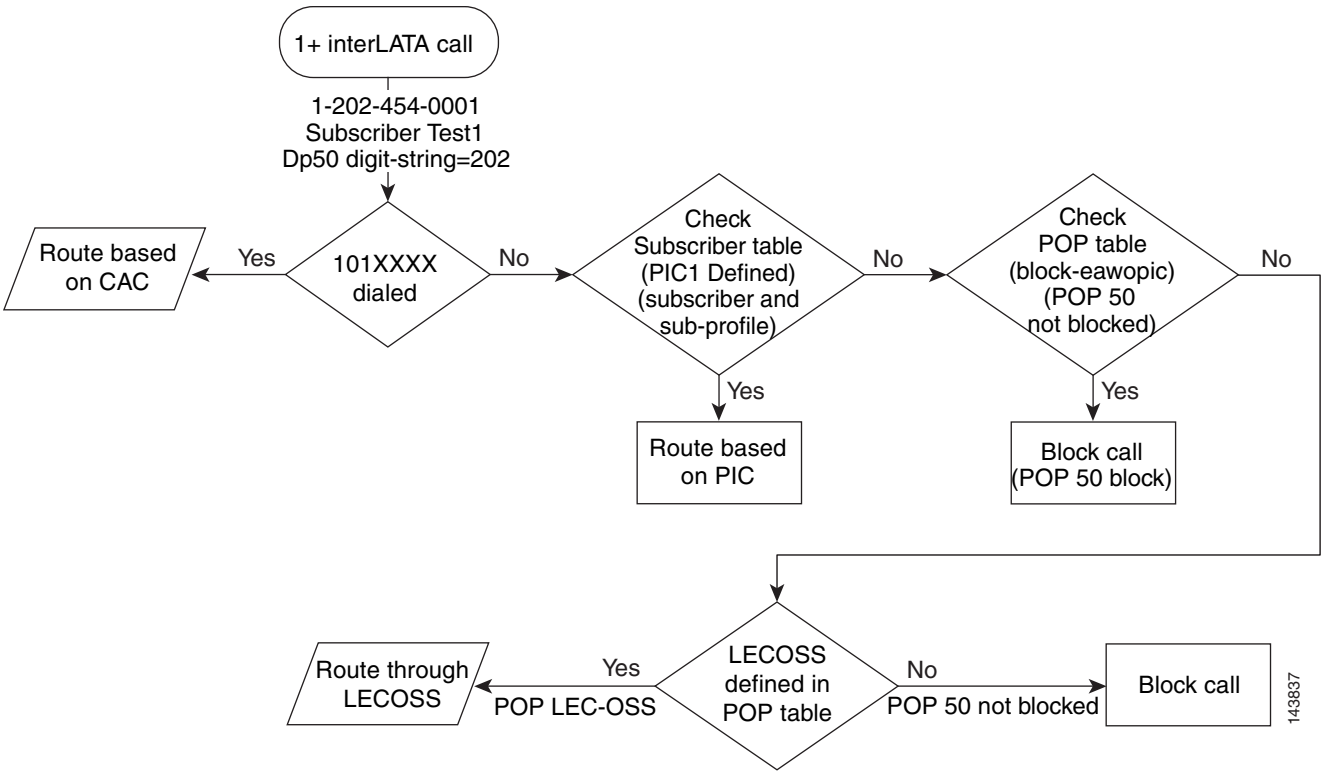
Step 5 Determine if a local exchange carrier operations support system (LECOSS) is defined in the POP table. If a LECOSS is defined in the POP table, the Cisco BTS 10200 Softswitch will select route the call via the LECOSS. If a LECOSS is not defined in the POP table, the Cisco BTS 10200 Softswitch will block the call.

Examples:

POP LEC-OSS

POP 50 No Block

Figure 4-5 1+ Interlata Call



1+ Intralata Call

This section provides a detailed description of the Cisco BTS 10200 Softswitch routing and call flow for 1+ intralata calls and provides CLI example references. Refer to Figure 4-6 for visual representation of the 1+ intralata call routing flow while reviewing the following detailed step-by-step 1+ intralata call routing flow.

Step 1 An 1+ intralata call is received.

Examples:

Subscriber Test1

Sub DP Dest Intralata

Step 2 Determine if 101XXXX number has been dialed. If a 101XXXX number has been dialed proceed to Step 3. If a 101XXXX number has not been dialed, proceed to Step 4.

Step 3 Check the carrier table for a CAC. If a CAC is available, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the CAC. If a CAC is not available, proceed to Step 3a.

Example:

Carrier Intra = Y

a. Determine if a LECOSS is defined in the POP table. If a LECOSS is defined in the POP table, the Cisco BTS 10200 Softswitch will select the call route and route the call via the LECOSS. If a LECOSS is not defined in the POP table, the Cisco BTS 10200 Softswitch will block the call.

Step 4 Check the POP table for a configured IP transfer point (ITP). If an ITP is configured, proceed to Step 4a. If an ITP is not configured, the Cisco BTS 10200 Softswitch will route the call via dial plan routing.

Example:

POP ITP = Y

a. Check the subscriber table for a specified PIC. If a PIC is specified, proceed to Step 4b. If a PIC is not specified, the Cisco BTS 10200 Softswitch will route the call to the announcement server and will check the POP table for a specified PIC. If a PIC is not specified, the Cisco BTS 10200 Softswitch will block the call or if a dial plan is available, the Cisco BTS 10200 Softswitch will select the call route and route the call according to the dial plan routing information.

Examples:

Subscriber Test1

Sub DP Dest Intralata

b. Check the intra carrier table for a specified PIC. If a PIC is specified in the intra carrier table, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the PIC information. If a PIC is not specified in the intra carrier table, proceed to Step 4c.

Example:

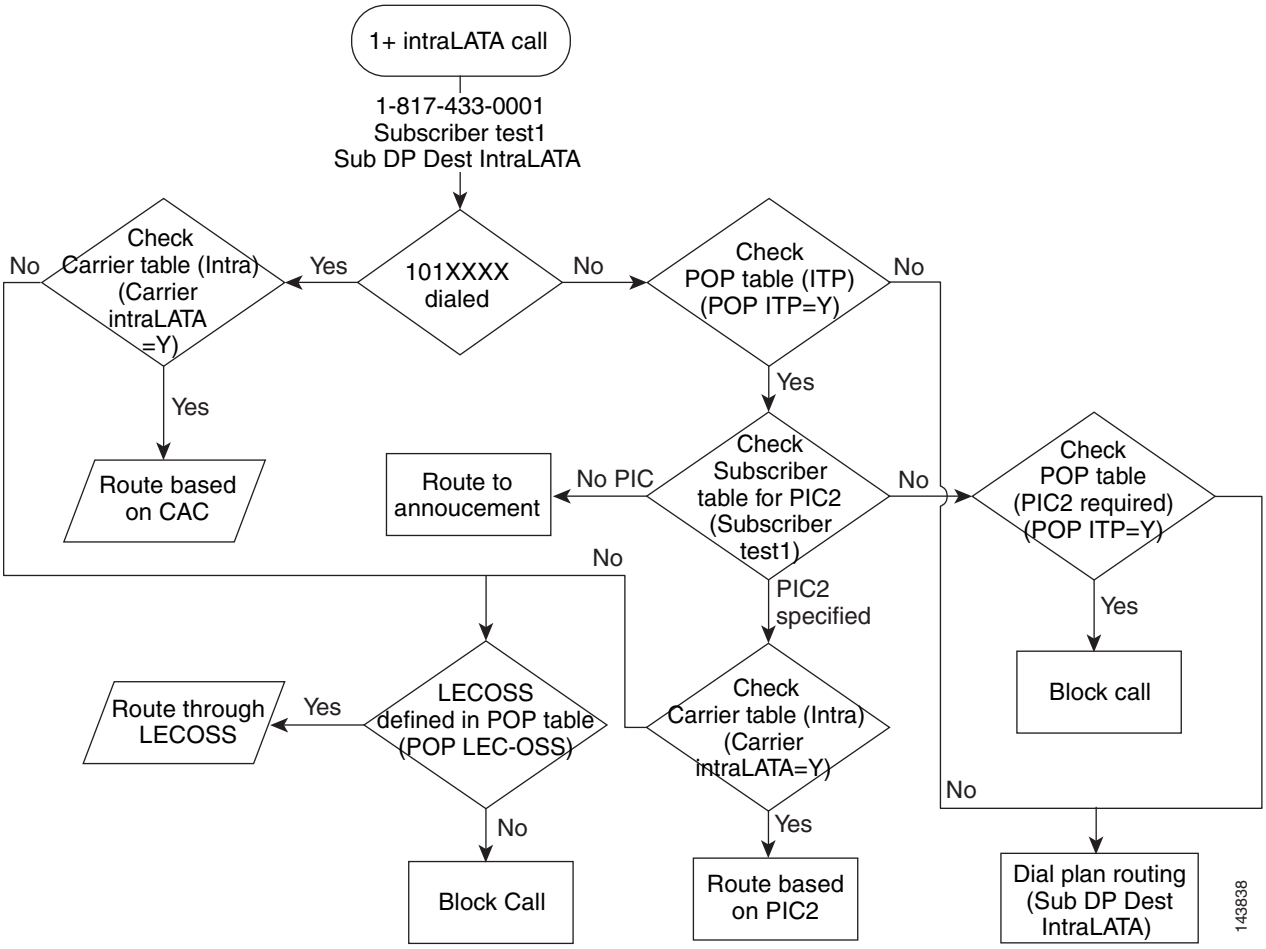
Carrier Intra = Y

c. Determine if a LECOSS is defined in the POP table. If a LECOSS is defined in the POP table, the Cisco BTS 10200 Softswitch will select the call route and route the call via the LECOSS. If a LECOSS is not defined in the POP table, the Cisco BTS 10200 Softswitch will block the call.

Example:

POP LEC-OSS

Figure 4-6 1+ Intralata Call



0+ Interlata Call

This section provides a detailed description of the Cisco BTS 10200 Softswitch routing and call flow for 0+ interlata calls and provides CLI example references. Refer to Figure 4-7 for visual representation of the 0+ interlata call routing flow while reviewing the following detailed step-by-step 0+ interlata call routing flow.

Step 1 A 0+ interlata call is received.

Examples:

Subscriber Test1

Sub DP Dest Interlata

Step 2 Determine if a 101XXXX number has been dialed. If a 101XXXX number has been dialed proceed to Step 3. If a 101XXXX number has not been dialed proceed to Step 5.

Step 3 Check the carrier table for a CAC. If a CAC is available, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the CAC. If a CAC is not available, proceed to Step 4.

Example:

Carrier Op-Serv = Y

Step 4 Check the POP table for a defined LECOSS. If a LECOSS is defined in the POP table, the Cisco BTS 10200 Softswitch will route the call via the LECOSS. If a LECOSS is not defined in the POP table, the Cisco BTS 10200 Softswitch will block the call.

Example:

POP LEC-OSS

Step 5 Check the subscriber table for a defined PIC. If a PIC is defined in the subscriber table, proceed to Step 6. If a PIC is not defined in the subscriber table, proceed to Step 7.

Example:

Subscriber Test1

Step 6 Check the subscriber profile for ea-use-pic entry. If the subscriber profile contains an ea-use-pic entry, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the PIC information. If the subscriber profile does not contained an ea-use-pic entry, return to Step 4.

Examples:

Ea-Use = Y

POP Ea-use = N

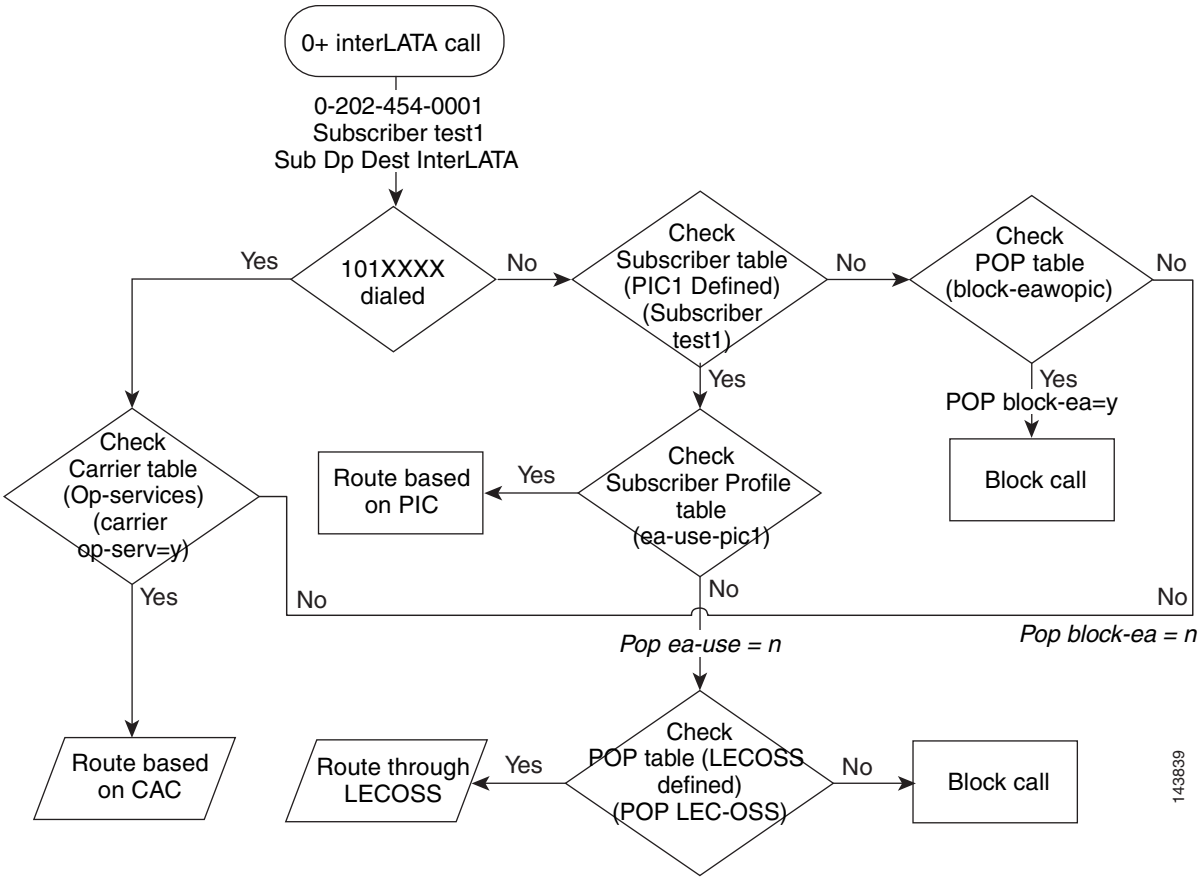
Step 7 Check the POP table for a block-eawopic entry. If the POP table contains a block-eawopic entry, the Cisco BTS 10200 Softswitch will block the call. If the POP table does not contain a block-eawopic entry, return to Step 4.

Examples:

POP Block-ea = N

POP Block-ea = Y

Figure 4-7 0+ Interlata Call



0+ Intralata Call

This section provides a detailed description of the Cisco BTS 10200 Softswitch routing and call flow for 0+ intralata calls and provides CLI example references. Refer to Figure 4-8 for visual representation of the 0+ intralata call routing flow while reviewing the following detailed step-by-step 0+ intralata call routing flow.

Step 1 A 0+ intralata call is received.

Examples:

Subscriber Test1

Sub DP Dest Intralata

Step 2 Determine if a 101XXXX number was dialed. If a 101XXXX number was dialed, proceed to Step 3. If a 101XXXX number was not dialed, proceed to Step 5.

Step 3 Check the carrier table for a CAC. If a CAC is available, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the CAC. If a CAC is not available, proceed to Step 4.

Example:

Carrier Op-Serv = Y

Step 4 Check the POP table for a defined LECOSS. If a LECOSS is defined in the POP table, the Cisco BTS 10200 Softswitch will route the call via the LECOSS. If a LECOSS is not defined in the POP table, the Cisco BTS 10200 Softswitch will block the call.

Example:

POP LEC-OSS

Step 5 Check the POP table for a configured ITP. If an ITP is configured, proceed to Step 6. If an ITP is not configured return to Step 4.

Example:

POP ITP = Y

Step 6 Check the subscriber table for a specified PIC. If a PIC is specified, proceed to Step 7. If a PIC is not specified, the Cisco BTS 10200 Softswitch will route the call to the announcement server. Additionally, if a PIC is not specified in the subscriber table, the Cisco BTS 10200 Softswitch will check the POP table for a specified PIC. If a PIC is specified in the POP table, the Cisco BTS 10200 Softswitch will block the call. If a PIC is not specified in the POP table, return to Step 4.

Examples:

Subscriber Test1

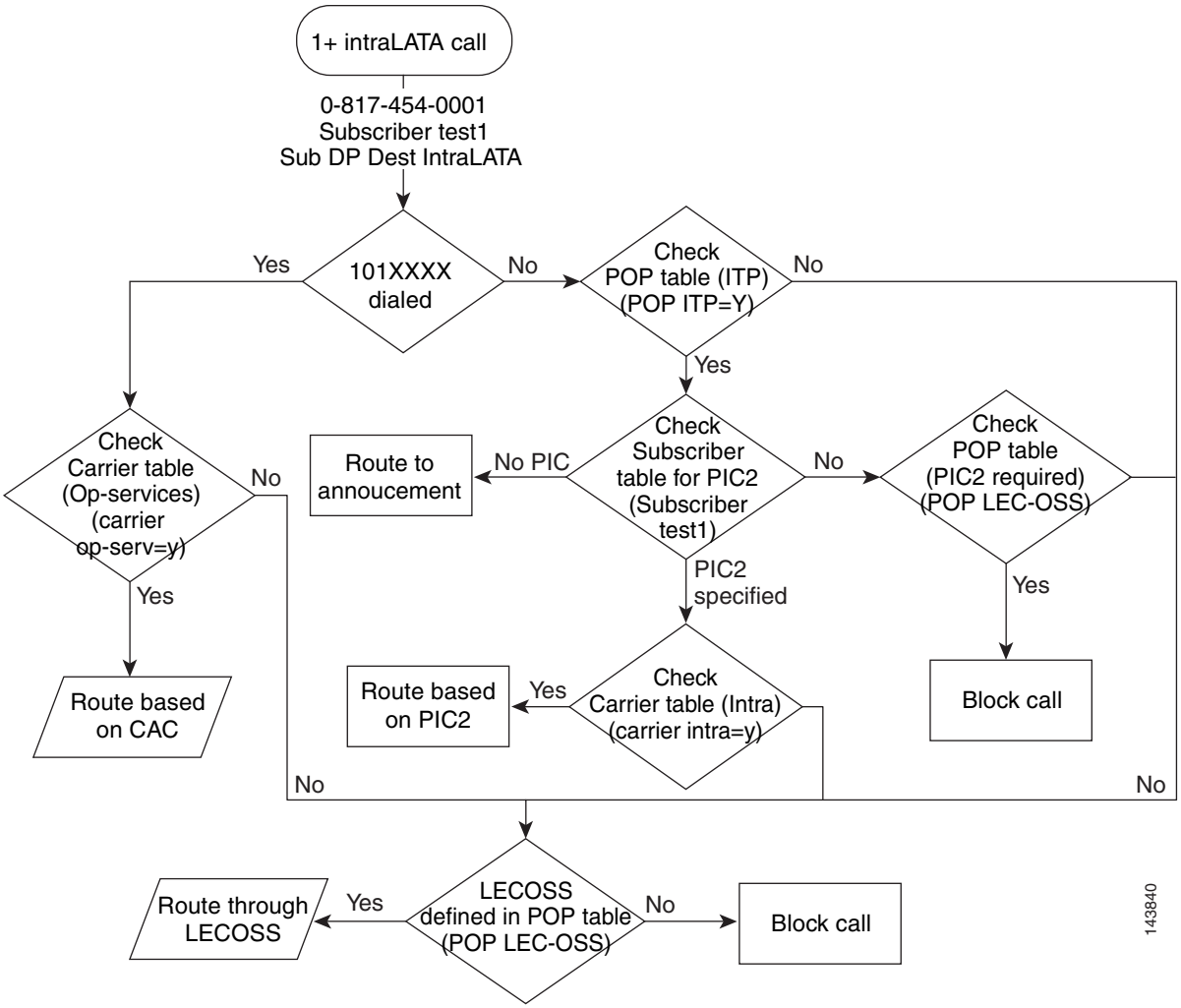
POP LEC-OSS

Step 7 Check the intra carrier table for the specified PIC. If the specified PIC is included in the intra carrier table, the Cisco BTS 10200 Softswitch will select the call route and route the call based on the PIC information. If the specified PIC is not included in the intra carrier table, return to Step 4.

Example:

Carrier Intra = Y

Figure 4-8 0+ Intralata Call



Ported-In Call Processing

This section provides a detailed description of the Cisco BTS 10200 Softswitch routing and call flow for ported-in call processing calls and provides CLI example references. Refer to Figure 4-9 for visual representation of the ported-in call processing call routing flow while reviewing the following detailed step-by-step ported-in call processing call routing flow.

Step 1 A ported-in call is received.

Step 2 The office code is not assigned to the Cisco BTS 10200 Softswitch.

Step 3 Determine if the office code is in the ported-in office code table. If the office code is in the ported-in office code table, proceed to Step 4. if the office code is not in the ported-in office code table, perform normal call processing.

Example:

Ported-Office-Code in CA

Step 4 Determine if the in-call agent flag is set. If the in-call agent flag is set, proceed to Step 5. If the in-call agent flag is not set, the Cisco BTS 10200 Softswitch will perform an local number portability (LNP) query.

Examples:

Ported-Office-Code in CA = N

Ported-Office-Code in CA

Step 5 Determine if the subscriber is included the dn2subscriber table. If the subscriber is included in the dn2sunscriber table, proceed to Step 6. If the subscriber is not included in dn2subscriber table, proceed to Step 7.

Examples:

In DN2Sub

Not in DN2Sub

Step 6 Determine if the LNP trigger flag is set. If the LNP trigger flag is set, the Cisco BTS 10200 Softswitch will perform an LNP query and port out the call. If the LNP trigger flag is not set, the Cisco BTS 10200 Softswitch will check the status field to determine if a LNP trigger has been assigned and will port out the call or terminate the call to the subscriber.

Examples:

LNP Trigger = Y

In DN2Sub

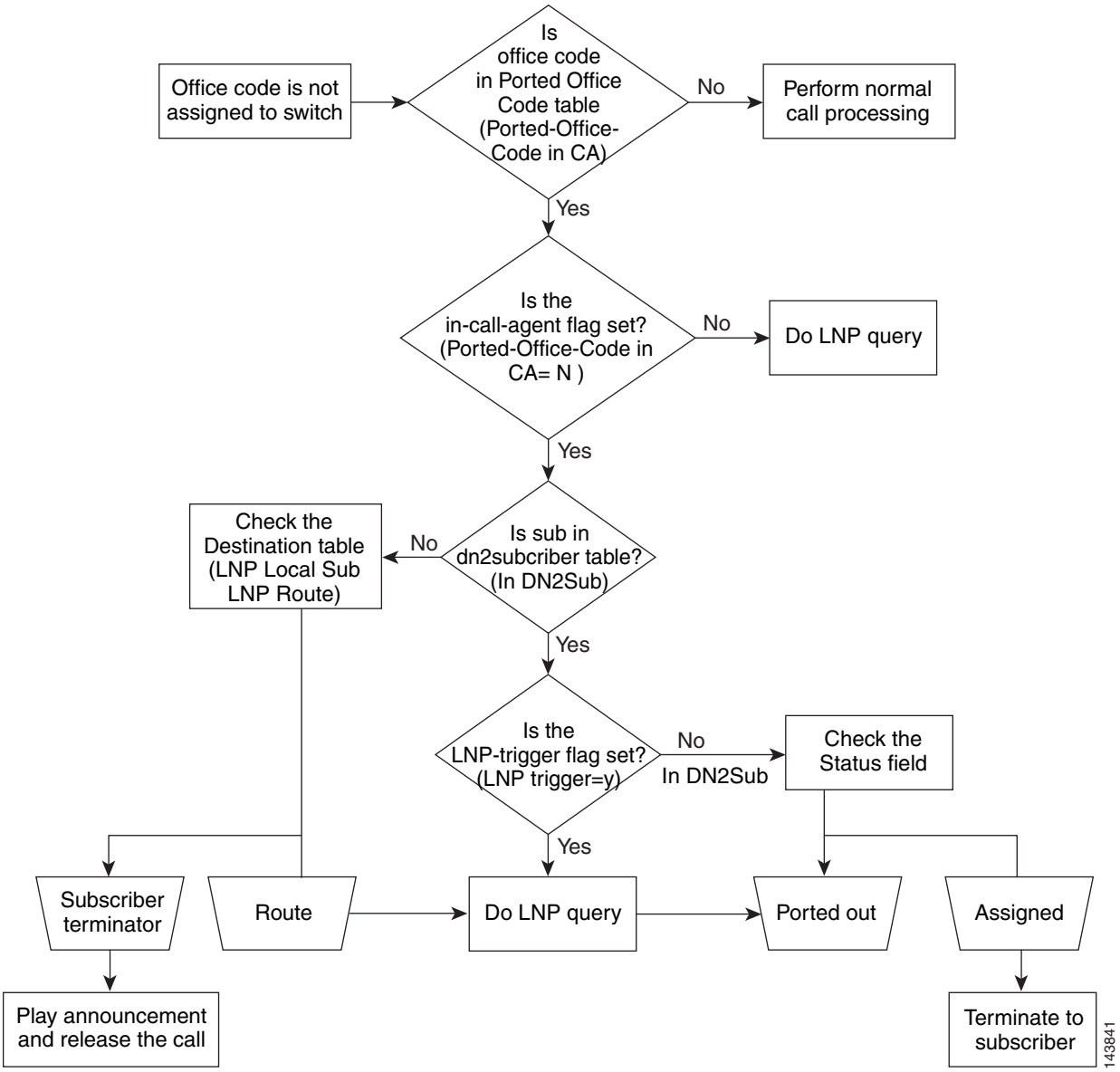
Step 7 Check the destination table for the subscriber information. Based on the destination table information, the Cisco BTS 10200 Softswitch will route the call or issue a subscriber terminator, release the call, and play the released call announcement. As part of routing the call, the Cisco BTS 10200 Softswitch will perform an LNP query and , if necessary, port out the call.

Examples:

LNP Local Sub

LNP Route

Figure 4-9 Ported-In Call Processing



Command Line Interface Routing Examples

This section provides CLI routing examples. The following CLI examples are provided:

- Carrier – Service-Provider
- Carrier 9999 Use Dial-Plan “N”
- Carrier All = N
- Carrier All = Y
- Carrier Intra = Y
- Carrier Op-Serv = Y
- Carrier Use Dial-Plan “Y”
- Destination
- Destination Carrier
- Destination Interlata
- Destination RID
- Destination ROUTE
- Destination SUB
- Dial-Plan
- Dial-Plan Ca-Config
- Dial-Plan “dp50”
- DN2sub
- Dp50 Digit-String = 202
- Ea-Use = Y
- In DN2Sub
- LNP Local Sub
- LNP Route
- LNP Trigger = Y
- Not in DN2Sub
- POP 50 Block
- POP 50 No Block
- POP Block-ea = N
- POP Block-ea = Y
- POP Ea-use = N
- POP ITP = Y
- POP LEC-OSS
- Ported-Office-Code in CA
- Ported-Office-Code in CA = N
- Service Provider
- Sub DP Dest Interlata

- Sub DP Dest Intralata
- Subscriber Test1
- Subscriber Test2
- Subsciber and Sub-Profile
- Trunk-grp 6969

Carrier – Service-Provider

The Carrier – Service-Provider CLI example is used in the Carrier Based Routing routing example.

Carrier – Service-Provider Example:

```
CLI>show carrier id=7777
Reply : Success: Entry 1 of 1 returned.

ID=7777
STATUS=INS
INTER=Y
INTRA=N
INTL=N
CASUAL=Y
CUT_THRU=Y
OP_SERVICES=Y
SEND_CN=N
SEND_CSP=N
USE_DIAL_PLAN=N
ROUTE_GUIDE_ID=test
SP_ID=test
NETWORK_TYPE=NOTUSED
NATIONAL_NETWORK_PLAN=NOTUSED
```

Carrier 9999 Use Dial-Plan “N”

The Carrier 9999 Use Dial-Plan “N” CLI example is used in the Carrier Based Routing routing example.

Carrier 9999 Use Dial-Plan “N” Example:

```
CLI>show carrier id=9999
Reply : Success: Entry 1 of 1 returned.

ID=9999
STATUS=INS
INTER=Y
INTRA=N
INTL=N
CASUAL=Y
CUT_THRU=Y
OP_SERVICES=Y
SEND_CN=N
SEND_CSP=N
USE_DIAL_PLAN=N
NETWORK_TYPE=NOTUSED
NATIONAL_NETWORK_PLAN=NOTUSED
```

Carrier All = N

The Carrier All = N CLI example is used in the Carrier Based Routing routing examples.

Carrier All = N Example:

```
CLI>show carrier id=7777
Reply : Success: Entry 1 of 1 returned.

ID=7777
STATUS=INS
INTER=N
INTRA=N
INTL=N
CASUAL=N
CUT_THRU=N
OP_SERVICES=N
SEND_CN=N
SEND_CSP=N
USE_DIAL_PLAN=N
ROUTE_GUIDE_ID=test
NETWORK_TYPE=NOTUSED
NATIONAL_NETWORK_PLAN=NOTUSED
```

Carrier All = Y

The Carrier All = Y CLI example is used in the Carrier Based Routing routing examples.

Carrier All = Y Example:

```
CLI>show carrier id=7777
Reply : Success: Entry 1 of 1 returned.

ID=7777
STATUS=INS
INTER=Y
INTRA=Y
INTL=Y
CASUAL=Y
CUT_THRU=Y
OP_SERVICES=Y
SEND_CN=N
SEND_CSP=N
USE_DIAL_PLAN=N
ROUTE_GUIDE_ID=test
NETWORK_TYPE=NOTUSED
NATIONAL_NETWORK_PLAN=NOTUSED
```

Carrier Intra = Y

The Carrier Intra = Y CLI example is used in the 1+ Intralata Call and 0+ Intralata Call routing examples.

Carrier Intra = Y Example:

```
CLI>show carrier id=9999
Reply : Success: Entry 1 of 1 returned.

ID=9999
STATUS=INS
INTER=Y
INTRA=Y
INTL=N
CASUAL=Y
CUT_THRU=Y
OP_SERVICES=Y
SEND_CN=N
SEND_CSP=N
USE_DIAL_PLAN=Y
NETWORK_TYPE=NOTUSED
NATIONAL_NETWORK_PLAN=NOTUSED
```

Carrier Op-Serv = Y

The Carrier Op-Serv = Y CLI example is used in the 0+ Interlata Call and 0+ Intralata Call routing examples.

Carrier Op-Serv = Y Example:

```
CLI>show carrier id=7777
Reply : Success: Entry 1 of 1 returned.

ID=7777
STATUS=INS
INTER=Y
INTRA=N
INTL=N
CASUAL=Y
CUT_THRU=Y
OP_SERVICES=Y
SEND_CN=N
SEND_CSP=N
USE_DIAL_PLAN=N
ROUTE_GUIDE_ID=test
SP_ID=test
NETWORK_TYPE=NOTUSED
NATIONAL_NETWORK_PLAN=NOTUSED
```

Carrier Use Dial-Plan "Y"

The Carrier Use Dial-Plan "Y" CLI example is used in the Carrier Based Routing routing example.

Carrier Use Dial-Plan "Y" Example:

```
CLI>show carrier id=8888
Reply : Success: Entry 1 of 1 returned.

ID=8888
STATUS=INS
INTER=Y
INTRA=N
INTL=N
CASUAL=Y
CUT_THRU=Y
OP_SERVICES=Y
SEND_CN=N
SEND_CSP=N
USE_DIAL_PLAN=Y
DESCRIPTION=TEST
NETWORK_TYPE=NOTUSED
NATIONAL_NETWORK_PLAN=NOTUSED
```

Destination

The Destination CLI example is used in the Basic Subscriber Routingthe following and Basic Trunk Routing routing examples.

Destination Example:

```
CLI>show destination

DEST_ID=local-sub
CALL_TYPE=LOCAL
ROUTE_TYPE=SUB
ZERO_PLUS=N
INTRA_STATE=Y
GAP_ROUTING=N
```

Destination Carrier

The Destination Carrier CLI example is used in the Basic Dial Plan Routing routing example.

Destination Carrier Example:

```
CLI>show destination dest-id=800;
Reply : Success: Entry 1 of 1 returned.

DEST_ID=800
CALL_TYPE=TOLL_FREE
ROUTE_TYPE=CARRIER
CARRIER_ID=7777
ZERO_PLUS=N
INTRA_STATE=Y
GAP_ROUTING=N
```

Destination Interlata

The Destination Interlata CLI example is used in the 1+ Interlata Call routing example.

Destination Interlata Example:

```
CLI>show destination dest-id=interlata
Reply : Success: Entry 1 of 1 returned.

DEST_ID=interlata
CALL_TYPE=INTERLATA
ROUTE_TYPE=ROUTE
ROUTE_GUIDE_ID=test
ZERO_PLUS=N
INTRA_STATE=Y
GAP_ROUTING=N
```

Destination RID

The Destination RID CLI example is used in the Basic Dial Plan Routing routing example.

Destination RID Example:

```
CLI>show destination dest-id=65019
Reply : Success: Entry 1 of 1 returned.

DEST_ID=65019
CALL_TYPE=LOCAL
ROUTE_TYPE=RID
ZERO_PLUS=N
INTRA_STATE=Y
ROUTE_ID=65019
GAP_ROUTING=N
```

Destination ROUTE

The Destination ROUTE CLI example is used in the Basic Dial Plan Routing routing example.

Destination ROUTE Example:

```
CLI>show destination dest-id=65019
Reply : Success: Entry 1 of 1 returned.

DEST_ID=65019
CALL_TYPE=LOCAL
ROUTE_TYPE=ROUTE
ROUTE_GUIDE_ID=local6561200
ZERO_PLUS=N
INTRA_STATE=Y
GAP_ROUTING=N
```

Destination SUB

The Destination SUB CLI example is used in the Basic Dial Plan Routing routing example.

Destination SUB Example:

```
CLI>show destination dest-id=65019
Reply : Success: Entry 1 of 1 returned.

DEST_ID=65019
CALL_TYPE=LOCAL
ROUTE_TYPE=SUB
ZERO_PLUS=N
INTRA_STATE=Y
GAP_ROUTING=N
```

Dial-Plan

The Dial-Plan CLI example is used in the Basic Trunk Routing routing example.

Dial-Plan Example:

```
CLI>show dial-plan id=dp50;digit-string=312-454;
Reply : Success: Entry 1 of 1 returned.

ID=dp50
DIGIT_STRING=312454
REQD_DIGITS=10
DEST_ID=local-sub
SPLIT_NPA=NONE
MIN_DIGITS=10
MAX_DIGITS=10
NOA=NATIONAL
```

Dial-Plan Ca-Config

The Dial-Plan Ca-Config CLI example is used in the Basic Dial Plan Routing routing example.

Dial-Plan Ca-Config Example:

```
CLI>show dial-plan-profile id=dp51
Reply : Success: Entry 1 of 1 returned.

ID=dp51
INTL_DIAL_PLAN_ID=dp50
NANP_DIAL_PLAN=Y

CLI>show dial-plan-profile id=dp50
Reply : Success: Entry 1 of 1 returned.

ID=dp50
DESCRIPTION=dialing plan 1
NANP_DIAL_PLAN=Y

CLI>show ca-config TYPE=DEFAULT-INTL-DIAL-PLAN-ID;
Reply : Success: Entry 1 of 1 returned.

TYPE=DEFAULT-INTL-DIAL-PLAN-ID
DATATYPE=STRING
VALUE=DEFAULT
```

Dial-Plan “dp50”

The Dial-Plan “dp50” CLI example is used in the Basic Subscriber Routingthe following routing example.

Dial-Plan “dp50” Example:

```
CLI>show dial-plan id=dp50
Reply : Success:  Entries 1-3 of 3 returned.

ID=dp50
DIGIT_STRING=212454
REQD_DIGITS=10
DEST_ID=local-sub
SPLIT_NPA=NONE
MIN_DIGITS=10
MAX_DIGITS=10
NOA=NATIONAL

ID=dp50
DIGIT_STRING=312454
REQD_DIGITS=10
DEST_ID=local-sub
SPLIT_NPA=NONE
MIN_DIGITS=10
MAX_DIGITS=10
NOA=NATIONAL

ID=dp50
DIGIT_STRING=412454
REQD_DIGITS=10
DEST_ID=local-sub
SPLIT_NPA=NONE
MIN_DIGITS=10
MAX_DIGITS=10
NOA=NATIONAL
```

DN2sub

The DN2sub CLI example is used in the Basic Subscriber Routingthe following and Ported-In Call Processing routing examples.

DN2sub Example:

```
CLI>show ndc digit-string=312
Reply : Success: Entry 1 of 1 returned.

DIGIT_STRING=312

CLI>show exchange-code ndc=312
Reply : Success: Entry 1 of 1 returned.

NDC=312
EC=454
OFFICE_CODE_INDEX=1188
MIN_DN_LENGTH=10
MAX_DN_LENGTH=10

CLI>show office-code ndc=312; ec=454
Reply : Success: Entry 1 of 1 returned.

DIGIT_STRING=312454
OFFICE_CODE_INDEX=1188
DID=N
CALL_AGENT_ID=CA552
DIALABLE=Y
NDC=312
EC=454
DN_GROUP=xxxx

CLI>show dn2subscriber office-code-index=1188
Reply : Success: Entry 1 of 1 returned.

OFFICE_CODE_INDEX=1188
DN=0001
STATUS=ASSIGNED
RING_TYPE=1
LNP_TRIGGER=N
NP_RESERVED=N
SUB_ID=test2
```

Dp50 Digit-String = 202

The Dp50 Digit-String = 202 CLI example is used in the 1+ Interlata Call routing example.

Dp50 Digit-String = 202 Example:

```
CLI>show dial-plan id=dp50; digit-string=202;
Reply : Success: Entry 1 of 1 returned.

ID=dp50
DIGIT_STRING=202
REQD_DIGITS=10
DEST_ID=interlata
SPLIT_NPA=NONE
MIN_DIGITS=10
MAX_DIGITS=10
NOA=NATIONAL

CLI>show destination dest-id=interlata
Reply : Success: Entry 1 of 1 returned.

DEST_ID=interlata
CALL_TYPE=INTERLATA
ROUTE_TYPE=ROUTE
ROUTE_GUIDE_ID=test
ZERO_PLUS=N
INTRA_STATE=Y
GAP_ROUTING=N
```

Ea-Use = Y

The Ea-Use = Y CLI example is used in the 0+ Interlata Call routing example.

Ea-Use = Y Example:

```
CLI>show sub-profile id=sp50
Reply : Success: Entry 1 of 1 returned.

ID=sp50
DIAL_PLAN_ID=dp50
LOCAL_PFX1_OPT=NR
TOLL_PFX1_OPT=RQ
POP_ID=50
OLI=0
EA_USE_PIC1=Y
```

In DN2Sub

The In DN2Sub CLI example is used in the Ported-In Call Processing routing examples.

In DN2Sub Example:

```
CLI>show office-code digit-string=214-387
Reply : Success: Entry 1 of 1 returned.

DIGIT_STRING=214387
OFFICE_CODE_INDEX=657
DID=N
CALL_AGENT_ID=CA552
DIALABLE=Y
NDC=214
EC=387
DN_GROUP=xxxx

CLI>show dn2subscriber OFFICE_CODE_INDEX=657;dn=1000
Reply : Success: Entry 1 of 1 returned.

OFFICE_CODE_INDEX=657
DN=1000
STATUS=ASSIGNED
RING_TYPE=1
LNP_TRIGGER=N
NP_RESERVED=N
SUB_ID=test1
```

LNP Local Sub

The LNP Local Sub CLI example is used in the Ported-In Call Processing routing examples.

LNP Local Sub Example:

```
CLI>show dial-plan id=dp50;digit-string=214-387
Reply : Success: Entry 1 of 1 returned.

ID=dp50
DIGIT_STRING=214387
DEST_ID=local-sub
SPLIT_NPA=NONE
MIN_DIGITS=10
MAX_DIGITS=10
NOA=NATIONAL

CLI>show destination dest-id=local-sub
Reply : Success: Entry 1 of 1 returned.

DEST_ID=local-sub
CALL_TYPE=LOCAL
ROUTE_TYPE=SUB
ZERO_PLUS=N
INTRA_STATE=Y
GAP_ROUTING=N
```

LNP Route

The LNP Route CLI example is used in the Ported-In Call Processing routing examples.

LNP Route Example:

```
CLI>show dial-plan id=dp50;digit-string=214-387
Reply : Success: Entry 1 of 1 returned.

ID=dp50
DIGIT_STRING=214387
DEST_ID=out
SPLIT_NPA=NONE
MIN_DIGITS=10
MAX_DIGITS=10
NOA=NATIONAL

CLI>show destination dest-id=local-sub
Reply : Success: Entry 1 of 1 returned.

DEST_ID=out
CALL_TYPE=LOCAL
ROUTE_TYPE=ROUTE
ROUTE_GUIDE_ID=test
ZERO_PLUS=N
INTRA_STATE=Y
GAP_ROUTING=N
```

LNP Trigger = Y

The LNP Trigger = Y CLI example is used in the Ported-In Call Processing routing examples.

LNP Trigger = Y Example:

```
CLI>show dn2subscriber OFFICE_CODE_INDEX=657;dn=1000
Reply : Success: Entry 1 of 1 returned.

OFFICE_CODE_INDEX=657
DN=1000
STATUS=ASSIGNED
RING_TYPE=1
LNP_TRIGGER=Y
NP_RESERVED=N
SUB_ID=test1
```

Not in DN2Sub

The Not in DN2Sub CLI example is used in the Ported-In Call Processing routing examples.

Not in DN2Sub Example:

```
CLI>show office-code digit-string=214-387
Reply : Success: Entry 1 of 1 returned.

DIGIT_STRING=214387
OFFICE_CODE_INDEX=657
DID=N
CALL_AGENT_ID=CA552
DIALABLE=Y
NDC=214
EC=387
DN_GROUP=xxxx

CLI>show dn2subscriber OFFICE_CODE_INDEX=657;dn=1000
Reply : Success: Database is void of entries.
```

POP 50 Block

The POP 50 Block CLI example is used in the 1+ Interlata Call routing example.

POP 50 Block Example:

```
CLI>show pop id=50
Reply : Success: Entry 1 of 1 returned.

ID=50
STATE=tx
COUNTRY=usa
TIMEZONE=CST
LOCAL_7D_DIALING=Y
ITP=N
ZERO_MINUS=LEC
BLOCK_EAWOPIC=Y
CNAM_OPTION=NONE
PIC2_REQD=N
TREAT_IMS_ANONYMOUS=N
```

POP 50 No Block

The POP 50 No Block CLI example is used in the 1+ Interlata Call routing example.

POP 50 No Block Example:

```
CLI>show pop id=50
Reply : Success: Entry 1 of 1 returned.

ID=50
STATE=tx
COUNTRY=usa
TIMEZONE=CST
LOCAL_7D_DIALING=Y
ITP=N
ZERO_MINUS=LEC
BLOCK_EAWOPIC=N
CNAM_OPTION=NONE
PIC2_REQD=N
TREAT_IMS_ANONYMOUS=N
```

POP Block-ea = N

The POP Block-ea = N CLI example is used in the 0+ Interlata Call routing example.

POP Block-ea = N Example:

```
CLI>show pop id=50
Reply : Success: Entry 1 of 1 returned.

ID=50
STATE=tx
COUNTRY=usa
TIMEZONE=CST
LOCAL_7D_DIALING=Y
ITP=Y
ZERO_MINUS=LEC
BLOCK_EAWOPIC=N
CNAM_OPTION=NONE
PIC2_REQD=N
LECOSS_ROUTE_GUIDE_ID=test
TREAT_IMS_ANONYMOUS=N
```

POP Block-ea = Y

The POP Block-ea = Y CLI example is used in the 0+ Interlata Call routing example.

POP Block-ea = Y Example:

```
CLI>show pop id=50
Reply : Success: Entry 1 of 1 returned.

ID=50
STATE=tx
COUNTRY=usa
TIMEZONE=CST
LOCAL_7D_DIALING=Y
ITP=Y
ZERO_MINUS=LEC
BLOCK_EAWOPIC=Y
CNAM_OPTION=NONE
PIC2_REQD=N
LECOSS_ROUTE_GUIDE_ID=test
TREAT_IMS_ANONYMOUS=N
```

POP Ea-use = N

The POP Ea-use = N CLI example is used in the 0+ Interlata Call routing example.

POP Ea-use = N Example:

```
CLI>show sub-profile id=sp50
Reply : Success: Entry 1 of 1 returned.

ID=sp50
DIAL_PLAN_ID=dp50
LOCAL_PFX1_OPT=NR
TOLL_PFX1_OPT=RQ
POP_ID=50
OLI=0
EA_USE_PIC1=N
```

POP ITP = Y

The POP ITP = Y CLI example is used in the 1+ Intralata Call and 0+ Intralata Call routing examples.

POP ITP = Y Example:

```
CLI>show pop id=50
Reply : Success: Entry 1 of 1 returned.

ID=50
STATE=tx
COUNTRY=usa
TIMEZONE=CST
LOCAL_7D_DIALING=Y
ITP=Y
ZERO_MINUS=LEC
BLOCK_EAWOPIC=Y
CNAM_OPTION=NONE
PIC2_REQD=N
LECOSS_ROUTE_GUIDE_ID=test
TREAT_IMS_ANONYMOUS=N
```

POP LEC-OSS

The POP LEC-OSS CLI example is used in the 1+ Interlata Call, 1+ Intralata Call, 0+ Interlata Call, and 0+ Intralata Call routing examples.

POP LEC-OSS Example:

```
CLI>show pop id=50
Reply : Success: Entry 1 of 1 returned.

ID=50
STATE=tx
COUNTRY=usa
TIMEZONE=CST
LOCAL_7D_DIALING=Y
ITP=N
ZERO_MINUS=LEC
BLOCK_EAWOPIC=Y
CNAM_OPTION=NONE
PIC2_REQD=N
LECOSS_ROUTE_GUIDE_ID=test
TREAT_IMS_ANONYMOUS=N
```

Ported-Office-Code in CA

The Ported-Office-Code in CA CLI example is used in the Ported-In Call Processing routing examples.

Ported-Office-Code in CA Example:

```
CLI>show ported-office-code digit-string=214-387
Reply : Success: Entry 1 of 1 returned.

DIGIT_STRING=214387
IN_CALL_AGENT=Y
```

Ported-Office-Code in CA = N

The Ported-Office-Code in CA = N CLI example is used in the Ported-In Call Processing routing examples.

Ported-Office-Code CA = N Example:

```
CLI>show ported-office-code digit-string=214-387
Reply : Success: Entry 1 of 1 returned.

DIGIT_STRING=214387
IN_CALL_AGENT=N
```

Service Provider

The Service Provider CLI example is used in the Carrier Based Routing routing example.

Service Provider Example:

```
CLI>show service-provider id=test
Reply : Success: Entry 1 of 1 returned.

ID=test
SP_BASED_ROUTING=N
USE_DIAL_PLAN=Y
ANI_WB_LIST=NONE
```

Sub DP Dest Interlata

The Sub DP Dest Interlata CLI example is used in the 0+ Interlata Call routing example.

Sub DP Dest Interlata Example:

```
CLI>show sub-profile id=sp50
Reply : Success: Entry 1 of 1 returned.

ID=sp50
DIAL_PLAN_ID=dp50
LOCAL_PFX1_OPT=NR
TOLL_PFX1_OPT=RQ
POP_ID=50
OLI=0
EA_USE_PIC1=Y

CLI>show dial-plan id=dp50;digit-string=202
Reply : Success: Entry 1 of 1 returned.

ID=dp50
DIGIT_STRING=202
REQD_DIGITS=10
DEST_ID=interlata
SPLIT_NPA=NONE
MIN_DIGITS=10
MAX_DIGITS=10
NOA=NATIONAL

CLI>show destination dest-id=interlata
Reply : Success: Entry 1 of 1 returned.

DEST_ID=interlata
CALL_TYPE=INTERLATA
ROUTE_TYPE=ROUTE
ROUTE_GUIDE_ID=test
ZERO_PLUS=Y
INTRA_STATE=Y
GAP_ROUTING=N
```

Sub DP Dest Intralata

The Sub DP Dest Intralata CLI example is used in the 1+ Intralata Call and 0+ Intralata Call routing examples.

Sub DP Dest Intralata Example:

```
CLI>show sub-profile id=sp50
Reply : Success: Entry 1 of 1 returned.

ID=sp50
DIAL_PLAN_ID=dp50
LOCAL_PFX1_OPT=NR
TOLL_PFX1_OPT=RQ
POP_ID=50
OLI=0
EA_USE_PIC1=Y

CLI>show dial-plan id=dp50;digit-string=817
Reply : Success: Entry 1 of 1 returned.

ID=dp50
DIGIT_STRING=817
DEST_ID=toll
SPLIT_NPA=NONE
MIN_DIGITS=10
MAX_DIGITS=10
NOA=NATIONAL

CLI>show destination dest-id=toll
Reply : Success: Entry 1 of 1 returned.

DEST_ID=toll
CALL_TYPE=TOLL
ROUTE_TYPE=ROUTE
ROUTE_GUIDE_ID=test
ZERO_PLUS=N
INTRA_STATE=Y
GAP_ROUTING=N
```

Subscriber Test1

The Subscriber Test1 CLI example is used in the Basic Subscriber Routingthe following, 1+ Interlata Call, 1+ Intralata Call, 0+ Interlata Call, and 0+ Intralata Call routing examples.

Subscriber Test1 Example:

```
CLI>show subscriber id=test1
Reply : Success: Entry 1 of 1 returned.

ID=test1
CATEGORY=INDIVIDUAL
NAME=c2421-227-2-1
STATUS=ACTIVE
BILLING_DN=2124540001
DN1=2124540001
PRIVACY=NONE
RING_TYPE_DN1=1
TERM_ID=aaln/S1/1
MGW_ID=c2421-227-2
PIC1=NONE
PIC2=NONE
PIC3=NONE
GRP=N
USAGE_SENS=Y
SUB_PROFILE_ID=sp50
TERM_TYPE=TERM
IMMEDIATE_RELEASE=N
TERMINATING_IMMEDIATE_REL=N
SEND_BILLING_DN=N
```

Subscriber Test2

The Subscriber Test2 CLI example is used in the Basic Subscriber Routingthe following and Basic Trunk Routing routing examples.

Subscriber Test2 Example:

```
CLI>show sub id=test2
Reply : Success: Entry 1 of 1 returned.

ID=test2
CATEGORY=INDIVIDUAL
NAME=c2421-227-125-1
STATUS=ACTIVE
BILLING_DN=3124540001
DN1=3124540001
PRIVACY=NONE
RING_TYPE_DN1=1
TERM_ID=aaln/S1/1
MGW_ID=c2421-227-125
PIC1=NONE
PIC2=NONE
PIC3=NONE
GRP=N
USAGE_SENS=Y
SUB_PROFILE_ID=sp50
TERM_TYPE=TERM
IMMEDIATE_RELEASE=N
TERMINATING_IMMEDIATE_REL=N
SEND_BILLING_DN=N
```

Subsciber and Sub-Profile

The Subsciber and Sub-Profile CLI example is used in the Basic Subscriber Routingthe following and 1+ Interlata Call routing examples.

Subsciber and Sub-Profile Example:

```
CLI>show subscriber id=test1
Reply : Success: Entry 1 of 1 returned.

ID=test1
CATEGORY=INDIVIDUAL
NAME=c2421-227-2-1
STATUS=ACTIVE
BILLING_DN=2124540001
DN1=2124540001
PRIVACY=NONE
RING_TYPE_DN1=1
TERM_ID=aaln/S1/1
MGW_ID=c2421-227-2
PIC1=NONE
PIC2=NONE
PIC3=NONE
GRP=N
USAGE_SENS=Y
SUB_PROFILE_ID=sp50
TERM_TYPE=TERM
IMMEDIATE_RELEASE=N
TERMINATING_IMMEDIATE_REL=N
SEND_BILLING_DN=N

CLI>show sub-profile id=sp50
Reply : Success: Entry 1 of 1 returned.

ID=sp50
DIAL_PLAN_ID=dp50
LOCAL_PFX1_OPT=NR
TOLL_PFX1_OPT=RQ
POP_ID=50
OLI=0
EA_USE_PIC1=Y
```

Trunk-grp 6969

The Trunk-grp 6969 CLI example is used in the Basic Trunk Routing routing example.

Trunk-grp 6969 Example:

```
CLI>show trunk-grp id=6969
Reply : Success: Entry 1 of 1 returned.

ID=6969
CALL_AGENT_ID=CA552
TG_TYPE=SS7
NUM_OF_TRUNKS=96
DPC=19-1-1
TG_PROFILE_ID=3
STATUS=OOS
DIRECTION=BOTH
SEL_POLICY=ASC
GLARE=SLAVE
ALT_ROUTE_ON_CONG=N
SIGNAL_PORTED_NUMBER=N
DIAL_PLAN_ID=dp50
DEL_DIGITS=0
OPER_STATUS=NF
TRAFFIC_TYPE=LOCAL
ANI_BASED_ROUTING=N
NO_ANSWER_TMR=185
```

CHAPTER 5

Preparing for Dial Plan Provisioning

Revised: December 9, 2008, OL-8001-10

Introduction

This chapter describes the prerequisite tasks you need to perform before you can begin provisioning a dial plan. It also describes the tools you will use, and provides detailed information on the dial plan parameters and syntax conventions that you will need to be familiar with as you create your dial plan. This chapter includes the following sections:

- Provisioning Prerequisites
- Provisioning Tools
- Creating a Dial Plan

Note The Cisco BTS 10200 Softswitch can use two servers, an active and a standby, for maximum reliability. The dial plans discussed in this chapter apply to both the active and standby server. You need only create one dial plan and deploy that dial plan on both the active and standby server.

The following sections describe recommended practices to assist you in provisioning dial plans for the Cisco BTS 10200 Softswitch.

Provisioning Prerequisites

This section describes the tasks that must be completed and the information that you need before you start dial plan provisioning.

Prerequisite Tasks

The following steps describe the tasks you should perform prior to using this dial plan guide.

Step 1 Plan and diagram your network configuration in detail.

A detailed network diagram is essential when creating a dial plan. *Refer to the respective solution overview and provisioning documentation for detailed information about a particular solution.*

Step 2 Set up the Cisco BTS 10200 Softswitch and install all required software.

Before you start the dial planning process, you should prepare the Cisco BTS 10200 Softswitch as described in the following manuals:

- *Site Preparation and Network Communications Requirements*
- *Network Site Survey for Software Installation Cisco BTS 10200 Softswitch*
- Cisco BTS 10200 Softswitch Building Environment and Power Site Survey
- Cisco BTS 10200 Softswitch Cabling, VLAN, and IRDP Procedures
- Cisco BTS 10200 Softswitch CD Jumpstart Procedure for Solaris 10 Based Duplex Systems
- Cisco BTS 10200 Softswitch Application Installation
- Cisco BTS 10200 Softswitch Provisioning Guide

Step 3 Complete all provisioning worksheets and site surveys, including filling in the names and IP addresses of all devices, attributes, and all other necessary information.

Prerequisite Information

Before you can complete the dial plan provisioning, you must collect the Cisco BTS 10200 Softswitch dial plan provisioning information. Table 5-1 provides space for you to enter the following information:

- **id**—dial plan identification
- **dest_id**—destination identification
- **digit_string**—dial plan digit string
- **max_digits**—maximum number of digits
- **min_digits**—minimum number of digits
- **noa**—nature of address
- **split_npa**—split number plan area
- **del_digits**—deleted digits
- **pfx_digits**—prefix digits

Table 5-1 Trunk Worksheet Example

id	dest_id	digit_string	max_digits	noa	split_npa	del_digits	pfx_digits

Provisioning Tools

The Cisco BTS 10200 Softswitch includes two tools that you can use to provision the dial plan:

- Command Line Interface (CLI)
- Extensible Provisioning and Operations Manager (EPOM)

You can use both the CLI and EPOM to provision the dial plan for a Cisco BTS 10200 Softswitch.

Command Line Interface

The Command Line Interface can be used to provision and deploy dial plans for the Cisco BTS 10200 Softswitch.

- For more information on provisioning a dial plan with the CLI, refer to "Provisioning a Dial Plan with the Command Line Interface" section on page 6-1

Extensible Provisioning and Operations Manager

The EPOM visual interface can be used to provision and deploy dial plans for the Cisco BTS 10200 Softswitch.

- For detailed instructions on using the CLI, refer to *the Cisco Extensible Provisioning and Operations Manager Getting Started Guide.*
- For more information on provisioning a dial plan with the EPOM, refer to "Provisioning a Dial Plan with the Extensible Provisioning and Operations Manager" section on page 6-9

Creating a Dial Plan

The remaining sections in this chapter describe how to plan for dial plan provisioning and provide sample dial plans for the Cisco BTS 10200 Softswitch.

Add a Dial Plan Profile

The Dial Plan Profile (dial-plan-profile) table creates dial-plan-profile-ids before they are assigned to subscribers or trunk groups. The dial-plan-profile-id links digit-string entries in the Dial Plan table within a dial plan. Different dial-plan-profile-ids are assigned to subscribers and trunk groups. A dial-plan-id must be created in this table before entries can be added to the Dial Plan table.

Command	Purpose
`add dial-plan-profile id=dp1; description=dialing plan profile id;`	Adds a dial plan profile

Add a Dial Plan

A dial plan analyzes, screens, and routes a call based on dialed digits. The Dial Plan (dial-plan) table holds dial plan information for a specific type of call. It defines valid dialing patterns and determines call routing. All records that share a common dial-plan-profile-id are considered a dial plan.

Command	Purpose
`add dial-plan id=sub; digit-string=469-255; noa=national; dest-id=local_call;`	Adds a dial plan

Cisco BTS 10200 Softswitch Provisioning Sequence

The order in which you provision dial plan tables is important. The following list identifies the recommended sequence for Cisco BTS 10200 Softswitch provisioning:

1. Add a media gateway profile.
2. Add a media gateway.
3. Add a termination.
4. Add a destination.
5. Add a dial plan profile.
6. Add a dial plan.
7. Add a subscriber profile.
8. Add a subscriber.
9. Generate a DN2Subscriber.
10. Control a media gateway.
11. Equip a subscriber termination
12. Control a subscriber termination.

For additional Cisco BTS 10200 Softswitch provisioning information, refer to the *Cisco BTS 10200 Softswitch Provisioning Guide*.

CHAPTER 6

Provisioning Dial Plans

Revised: December 9, 2008, OL-8001-10

Introduction

This chapter provides detailed instructions for configuring Cisco BTS 10200 Softswitch configuration dial plans using the Command Line Interface (CLI) and the Cisco Extensible Provisioning and Operations Manager (EPOM). The following subjects are discussed:

- Provisioning a Dial Plan with the Command Line Interface
- Provisioning a Dial Plan with the Extensible Provisioning and Operations Manager

Provisioning a Dial Plan with the Command Line Interface

This section provides the detailed instructions for managing dial plans in the Cisco BTS 10200 Softswitch configuration using the CLI. The CLI also allows you to perform show, add, change, and delete dial plans. The following subjects are discussed:

- Dial Plan
- Dial Plan Profile
- International Dial Plan
- International Dial Plan Profile
- Custom Dial Plan
- Custom Dial Plan Profile

Dial Plan

Dial plans analyze, screen, and route calls based on dialed digits. The Dial Plan (dial-plan) table holds dial plan information for a specific type of call. It defines valid dialing patterns and determines call routing. All records that share a common dial-plan-profile id are considered a dial plan. For additional Dial Plan table information, refer to the "Dial Plan" section on page 1-45.

Dial Plan Profile

The Dial Plan Profile (dial-plan-profile) table creates dial-plan-profile ids before they are assigned to subscribers or trunk groups. The dial-plan-profile id links digit-string entries in the Dial Plan table within a dial plan. Different dial-plan-profile ids are assigned to subscribers and trunk groups. A dial-plan-id must be created in this table before entries can be added to the Dial Plan table. For additional Dial Plan Profile information, refer to the "Dial Plan Profile" section on page 1-37.

International Dial Plan

The International Dial Plan (intl-dial-plan) table holds international dial plan information for calls to regions outside the North American Numbering Plan (NANP). It contains the country code, minimum and maximum digits, the country name, and the route-grp-id. For additional International Dial Plan table information, refer to the "International Dial Plan" section on page 1-50.

International Dial Plan Profile

The International Dial Plan Profile (intl-dial-plan-profile) table is used to create unique IDs for international dial plans. This ID must be created before provisioning the International Dial Plan table. For additional International Dial Plan Profile table information, refer to the "International Dial Plan Profile" section on page 1-42.

Custom Dial Plan

The Custom Dial Plan (custom-dial-plan) table translates Centrex calls. If the result of a custom dial plan (CDP) is a POTS access code, call processing uses the POTS Dial Plan table to translate the digits dialed after the POTS access code. Speed call codes are provisioned in this table as nod=speed-call and fname=SC1D (or SC2D). Screening does not apply to speed dialing.

Table Name: CUSTOM_DIAL_PLAN

Table Containment Area: EMS, FSPTC

Command Types

add, audit, change, delete, help, show, sync

Caution Sync is a restricted command and is intended for repairing data only. Improper use may corrupt database and disrupt call processing. Use with caution.

Examples

```
show custom-dial-plan id=cisco plan; digit-string=4xx;
add custom-dial-plan id=cisco plan; digit-string=9; nod=pots-access;
cat-string=1111111111;
change custom-dial-plan id=cisco plan; digit-string=4xx; nod=vsc; fname=CFUA;
delete custom-dial-plan id=cisco plan; digit-string=*72;
```

Usage Guidelines

Primary Key Token(s): ID, DIGIT_STRING

Foreign Key Token(s): id, fname

Related Commands

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y--Queries the database for the most current data. N--Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
CAT_STRING	Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextParser
DIGIT_STRING	Description: Primary key. NDC-EC-XXXX to be assigned to a region. VARCHAR(14): 1-14 numeric characters. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_7] Parser: TextParser
DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

FNAME	Description: Primary key. Foreign key: Feature table. Type of screening feature. VARCHAR(16): 1-16 ASCII characters. Permitted values are: SCR--Selective call rejection SCF--Selective call forwarding SCA--Selective call acceptance DRCW--Distinctive ringing NSA--No Solicitation Valid for Command: add, change, audit, sync, show Possible Value: [1_16] Parser: TextNoCaseParser
ID	Description: Network ID of a specific CA or FS. Valid for the download to Standby CA or FS command. VARCHAR(8):1-8 ASCII characters consisting of any valid, provisioned CA, FSPTC, or FSAIN ID. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
NOD	Description: Primary key. Foreign key: Nature of Dial table. Nature of dial. VARCHAR(16): 1-16 ASCII characters. Valid for Command: add, change, audit, sync, show Mandatory: add Possible Value: VSC, ATTENDANT_ACCESS, POTS_ACCESS, EXTENSION, SPEED_CALL Parser: TextParser

ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(51200): 1-51200 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)--System is active (currently running). STANDBY--System is in standby mode. EMS--Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA--Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)--Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)--Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Custom Dial Plan Profile

The Custom Dial Plan Profile (custom-dial-plan-profile) table defines custom dial plan IDs (CDP IDs) assigned to Centrex groups.

Table Name: CUSTOM_DIAL_PLAN_PROFILE

Table Containment Area: EMS

Command Types

add, change, delete, help, show

Examples

```
show custom-dial-plan-profile id=cisco plan;
add custom-dial-plan-profile id=cisco plan;
change custom-dial-plan-profile id=cisco plan; description=main dialing plan for cisco;
delete custom-dial-plan-profile id=cisco plan;
```

Usage Guidelines

Primary Key Token(s): ID

Delete Rules: ID does not exist in any custom-dial-plan::id

Syntax Description

AUTO_REFRESH	Description: Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y--Queries the database for the most current data. N--Queries the database for the most current data only if the cached data is unavailable. Valid for Command: show Default Value: Y Possible Value: Y, N Parser: BooleanParser
DESCRIPTION	Description: Described by the service provider. VARCHAR(64): 1-64 ASCII characters. Valid for Command: add, change, audit, sync, show Possible Value: [1_64] Parser: TextParser

DISPLAY	Description: Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1-1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser
ID	Description: Network ID of a specific CA or FS. Valid for the download to Standby CA or FS command. VARCHAR(8):1-8 ASCII characters consisting of any valid, provisioned CA, FSPTC, or FSAIN ID. Valid for Command: add, change, show, delete, audit, sync Mandatory: add, change, delete Possible Value: [1_16] Parser: TextParser
LIMIT	Description: Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1-100000000 (Default = 100000000). Valid for Command: show Default Value: 100000000 Possible Value: [1_100000000] Parser: DecimalParser
MASTER	Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser
ORDER	Description: Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(51200): 1-51200 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma. Valid for Command: show Possible Value: [1_1024] Parser: TextParser

PLATFORM_STATE	Description: State of an active or standby system shared memory database; use to audit an active or standby system shared memory database. Valid for the audit database and audit table name commands. VARCHAR(7): 1-7 ASCII characters. Permitted values are: ACTIVE (Default)--System is active (currently running). STANDBY--System is in standby mode. EMS--Audits the active EMS to the standby EMS. Valid for Command: sync, audit Default Value: ACTIVE Possible Value: ACTIVE, STANDBY Parser: TextParser
START_ROW	Description: Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1-100000000 (Default = 1). Valid for Command: show Default Value: 1 Possible Value: [1_100000000] Parser: DecimalParser
TARGET	Description: Specifies the network element to receive the request. VARCHAR(5): 1-5 ASCII characters. Permitted values are: CA--Network identifier of a Call Agent. FSPTC (POTS/Tandem/Centrex Feature Server)--Network identifier of a specific Feature Server. FSAIN (AIN Feature Server)--Network identifier of AIN Feature Servers. Valid for Command: sync Mandatory: sync Possible Value: [1_10] Parser: TextParser

Provisioning a Dial Plan with the Extensible Provisioning and Operations Manager

This section provides the detailed instructions for adding a dial plan to the Cisco BTS 10200 Softswitch configuration using the Extensible Provisioning and Operations Manager (EPOM). Additionally, detailed instructions are provided for using EPOM to manage configured dial plans. The EPOM also allows you to perform add, delete, and edit commands on multiple dial plans with a single operation. The following subjects are discussed:

- Adding a Dial Plan to the Cisco BTS 10200 Softswitch Configuration
- Applying an EPOM Template to a Selected Dial Plan
- Editing a Dial Plan in the Cisco BTS 10200 Softswitch Configuration
- Deleting a Dial Plan from the Cisco BTS 10200 Softswitch Configuration
- Adding Multiple Dial Plans to a Cisco BTS 10200 Softswitch Configuration
- Editing Multiple Dial Plans in the Cisco BTS 10200 Softswitch Configuration
- Deleting Multiple Dial Plans in the Cisco BTS 10200 Softswitch Configuration

For additional details on using the EPOM, refer to the *Cisco Extensible Provisioning and Operations Manager Getting Started Guide*.

Adding a Dial Plan to the Cisco BTS 10200 Softswitch Configuration

Tip Make sure that you have the configuration information for the component that you want to add to the Cisco EPOM inventory.

Add components to the Cisco EPOM inventory to build a managed network. The device information includes static and dynamic selections to other parts of the configuration. Follow this example to add a dial plan.

Step 1 From the Domain window, select the *domain* > **BTS10200s** > the *Cisco BTS 10200 Softswitch EMS server.*

Step 2 Click **Config**.

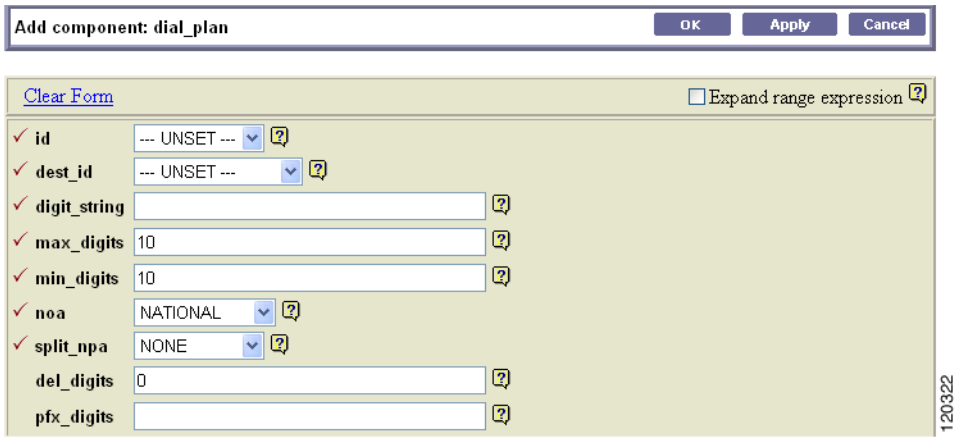
The Cisco BTS 10200 Softswitch Component Status window opens.

Step 3 In the Configuration tree, choose **Office Tables > dial_plan**.

The Cisco BTS 10200 Softswitch Component window opens showing a list of dial plans. If this is the first dial plan (or device of this type) that you are adding, the list is empty.

Step 4 Click **Add**.

The Cisco BTS 10200 Softswitch Component Add window opens.



Step 5 Define the device. Required fields are identified with a red check mark.

Step 6 Click **OK** or **Apply**.

- When you click **OK**, the component is added and the list of components in the Component: *name* window appears.
- When you click **Apply**, the component is added, but you remain in the Add component window for further tasks.

You return to the Cisco BTS 10200 Softswitch Component window. The new dial plan is added to the list.

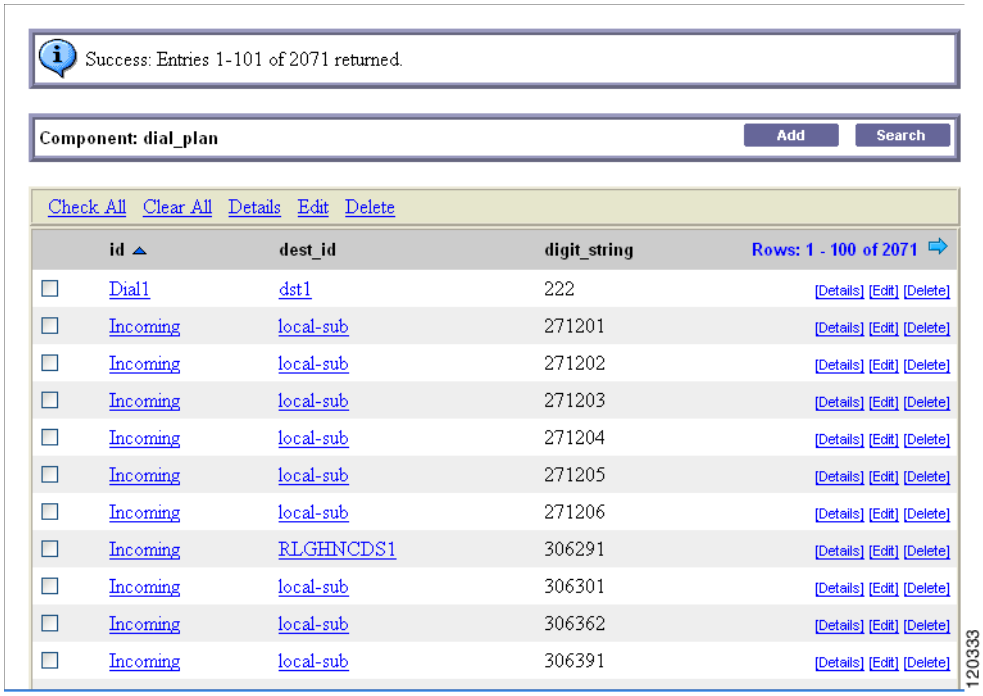
To edit a single component, see the ""Editing a Dial Plan in the Cisco BTS 10200 Softswitch Configuration" section on page 6-12; to delete a single component, see the ""Deleting a Dial Plan from the Cisco BTS 10200 Softswitch Configuration" section on page 6-14.

Applying an EPOM Template to a Selected Dial Plan

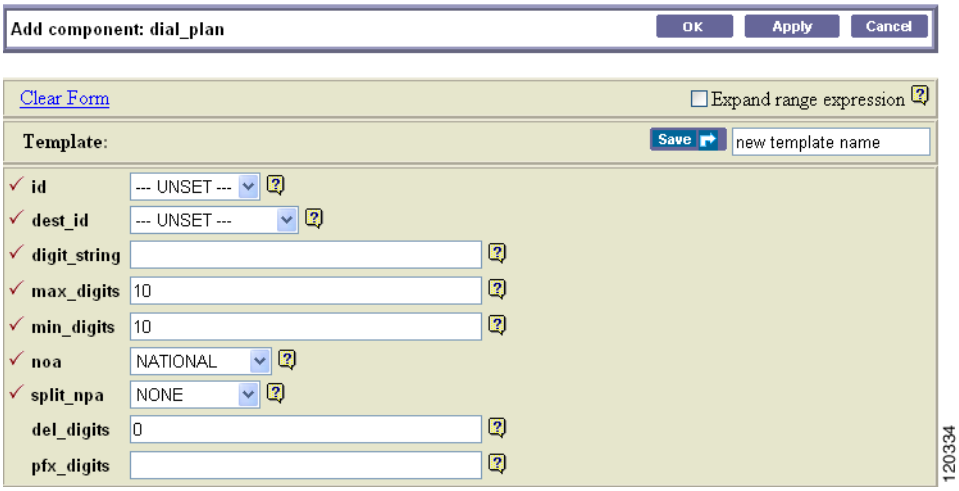
Step 1 In a Domain view, select the **desired domain > BTS10200s > the desired Cisco BTS 10200 Softswitch EMS server**.

Step 2 Click **Config**. The Cisco BTS 10200 Softswitch Component Status view opens.

Step 3 In the Configuration tree, select **Office Tables > dial_plan**. The Cisco BTS 10200 Softswitch Component view opens showing a list of dial plans. If this is the first dial plan (or device of this type) that you are adding, the list is empty.



Step 4 Click **Add**. The Cisco BTS 10200 Softswitch Component Add view opens.



Step 5 Select a template from the list.

Step 6 Click **Load**.

Click **OK** or **Apply**.

- When you click **OK**, the component is added and the list of components in the Component name window is displayed.
- When you click **Apply**, the component is added, but you remain in the Add component window for further operations. The new dial plan is added to the list when you return to the Cisco BTS 10200 Softswitch Component view.

Note The ID field is unique to each device and cannot be repeated among devices. Assign a unique ID for the device before adding it to the Cisco EPOM inventory. You can either specify a value in the ID field to be used as a prefix, or leave a blank field that forces the user to specify a valid, unique ID.

To create a new template from this screen, make changes to the existing component details and save the resulting dial plan as a template by entering a template name and clicking **Save**.

Editing a Dial Plan in the Cisco BTS 10200 Softswitch Configuration

Step 1 From the Domain window, choose the *domain* > **BTS10200s** > the *Cisco BTS 10200 Softswitch EMS server*.

Step 2 Click **Config**.

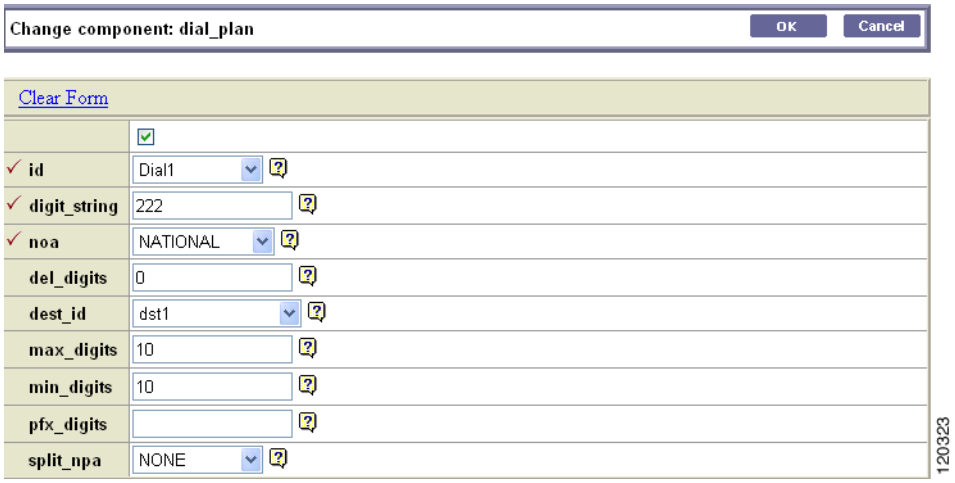
The Cisco BTS 10200 Softswitch Component Status window opens.

Step 3 In the Configuration tree, choose **Office Tables** > **dial_plan**.

The Cisco BTS 10200 Softswitch Component window shows a list of currently configured dial plans.

Step 4 Select the row that you wish to edit and click **Edit**.

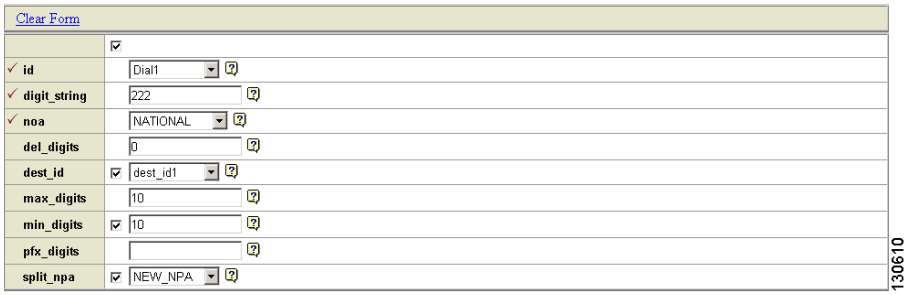
The Change component window appears.



Note The first (blank) row with the checked box indicates that the component identified in the window title was selected for displaying details, editing, or deletion.

Step 5 Make the required changes to the attribute fields. To make changes follow the steps mentioned below.

a. Enter the new value in the text field or select a new value from the drop down box. This action displays a check box against the changed field. This check box is enabled by default.

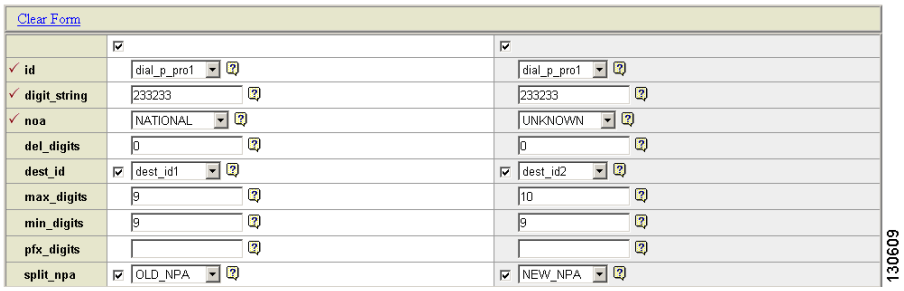


b. Click **OK** to save changes. EPOM will send only the checked elements along with the mandatory fields to Cisco BTS 10200 Softswitch, instead of sending whole edit page elements. This will update the Cisco BTS 10200 Softswitch Server with the new values along with the mandatory attributes.

Note Mandatory attributes cannot be edited, hence no check box will be displayed against it when the user tries to change its value.

Caution If the user decides to revert back and retain the old values then it has be to done before saving. It can be done by un checking the check box. This way the same old values are send to the database when the user clicks **OK** to save the changes.

Step 6 EPOM provides the option to edit multiple nouns in a single instance. Select the nouns which needs to be updated in template and click **Edit**. The browser displays multiple templates.



Note EPOM provides option to edit multiple nouns in a single instance. Select the nouns which needs to be updated in template and click **Edit**. The browser displays multiple templates.

Step 7 Click **OK**.

You return to the Cisco BTS 10200 Softswitch Component window. The edited dial plan appears in the list.

To add a single component, see the ""Adding a Dial Plan to the Cisco BTS 10200 Softswitch Configuration" section on page 6-9; to delete a single component, see the ""Deleting a Dial Plan from the Cisco BTS 10200 Softswitch Configuration" section on page 6-14.

Deleting a Dial Plan from the Cisco BTS 10200 Softswitch Configuration

Step 1 Choose the *domain* > **BTS10200s** > the *Cisco BTS 10200 Softswitch EMS server* from the Domain window.

Step 2 Click **Config**.

The Cisco BTS 10200 Softswitch Component Status window opens.

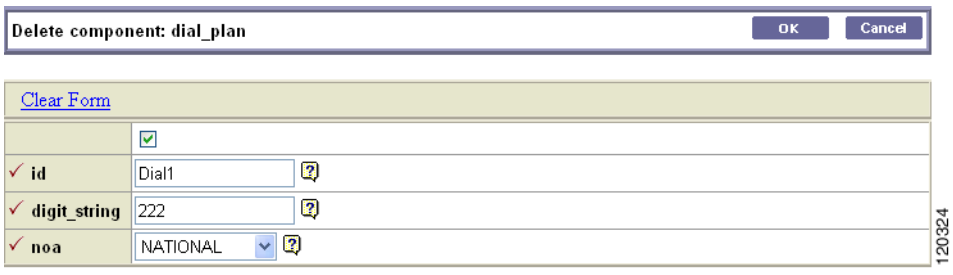
Step 3 In the Configuration tree, choose **Office Tables** > **dial_plan**.

The Cisco BTS 10200 Softswitch Component window shows a list of currently configured dial plans.

Step 4 In the Component: *name* window, select one or more dial plans to delete.

Step 5 Click **Delete**.

The Delete component window with the requested deletion appears.



Note The first (blank) row with the checked box indicates that the component identified in the banner title was selected for displaying details, editing, or deletion.

Step 6 Click **OK**.

To add a single component, see the ""Adding a Dial Plan to the Cisco BTS 10200 Softswitch Configuration" section on page 6-9; to edit a single component, see the ""Editing a Dial Plan in the Cisco BTS 10200 Softswitch Configuration" section on page 6-12.

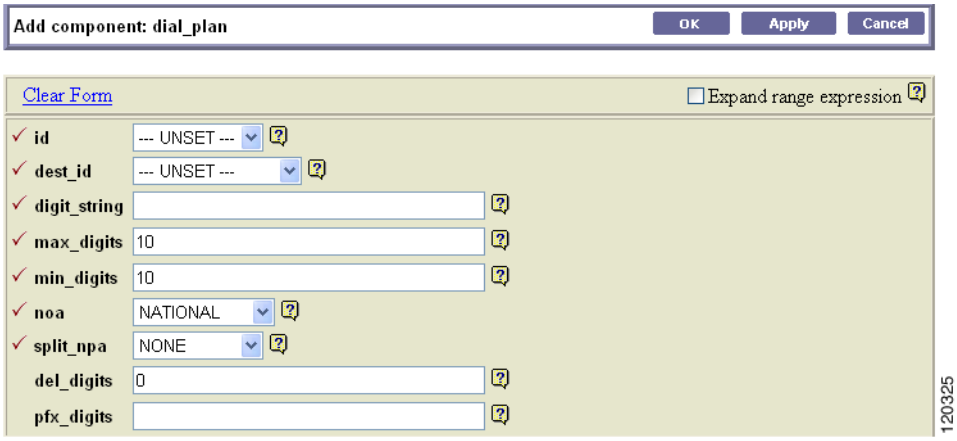
Adding Multiple Dial Plans to a Cisco BTS 10200 Softswitch Configuration

Step 1 In the ems-server window left pane, click a component.

The Component: *name* window appears.

Step 2 Click **Add**.

The Add component window appears.



Step 3 Select the **Expand range expression** check box.

If you fail to select this check box, you get an error message when you enter a range expression.

Tip For information on acceptable range expressions, move your cursor over the "?" symbol next to the Expand range expression field.

Step 4 In the id field, enter a range expression in square brackets [ ].

For example, to add a group of 10 dial plans with the id prefix dp001_new, enter dp001_new[01-10]. Doing so adds dial plans dp001_new01, dp001_new02, through dp001_new10.

Step 5 Enter information in the remaining attribute fields.

Step 6 Click **OK** or **Apply**.

- When you click **OK**, the component is added and the list of components in the Component: *name* window appears.

- When you click **Apply**, the component is added, but you remain in the Add component window for further operations.

You have now added multiple dial plans to the Cisco BTS 10200 Softswitch EMS network.

Editing Multiple Dial Plans in the Cisco BTS 10200 Softswitch Configuration

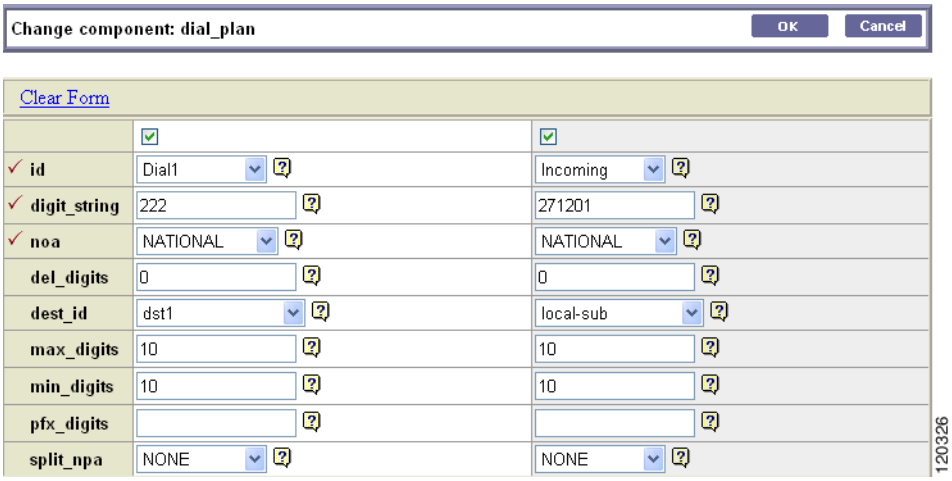
Step 1 In the ems-server window left pane, click a component.

The Component: *name* window appears.

Step 2 In the Component: *name* window, select one or more components that you want to edit.

Step 3 Click **Edit**.

The Change component window appears.



Note The first (blank) row with the checked box indicates that the component in the window title was selected for displaying details, editing, or deletion.

Step 4 Make the required changes to the attribute fields.

Step 5 Click **OK**.

Step 6 You have now edited multiple components in the Cisco BTS 10200 Softswitch EMS network.

Deleting Multiple Dial Plans in the Cisco BTS 10200 Softswitch Configuration

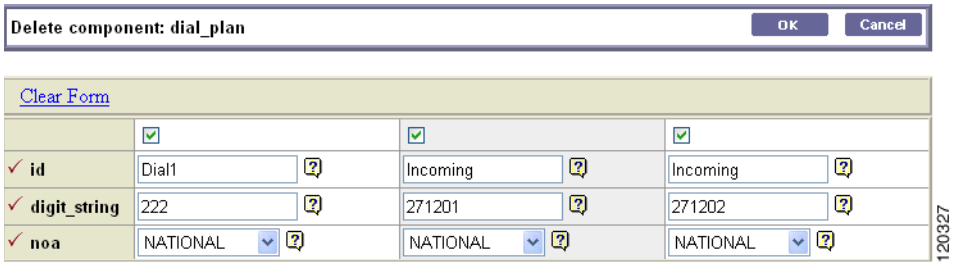
Step 1 Step 1 In the ems-server window left pane, click a component.

The Component: *name* window appears.

Step 2 In the Component: *name* window, select one or more components that you want to delete.

Step 3 Click **Delete**.

The Delete component window appears with the requested deletions.



The first (blank) row with the checked box indicates that this component was selected for displaying details, editing, or deletion.

Step 4 Click **OK**.

You have now deleted multiple dial plans in the Cisco BTS 10200 Softswitch EMS network.

GLOSSARY

Revised: December 9, 2008, OL-8001-10

A

ABBR	abbreviated
ACQ	all calls query
ADDR	address
AIN	Advanced Intelligent Network
ALT	alternate
ALWD	allowed
ANSI	American National Standards Institute
ANI	automatic number identification
ANNC	announcement
ARQ	admission request
AS	application server
ASC	ascending
ASCII	American standard code for information interchange
AT	access tandem
ATM	Asynchronous Transfer Mode

B

BKWD	backward
BLV	business line verification

C

CA	California
CA	call agent
CAC	carrier access code
CAP	competitive access provider
CAS	channel associated signaling
CASC	cyclic ascending
CC	country code
CD-ROM	compact disk-read only memory
CdPN	called party number
CDP	custom dial plan
CDSC	cyclic descending
CHAR	character
CHG	charge
CLDPTY	called party
CLI	Command Line Interface
CLLI	Common Language Location Identifier
CND	calling number delivery
COMM	communication
COS	class of service
COT	continuity test
CPN	calling party number
CTRL	control
CTX	Centrex

D

DA directory assistance

DBM database management

DDD direct distance or domestic dialing

DEL delete

DEST destination

DIGMAN digital manipulation

DN directory number

DNIS dialed number identification service

DOW day of week

DOY day of year

DP dial plan

DP-ID dial-plan identification

DPC destination point code

DSC descending order

DT CAS DTMF endpoints

DTMF dual tone multifrequency

E

EMEA Europe, Middle East, and Asia

EMG emergency

EMS Element Management System

ENUM electronic number mapping

EPOM Extensible Provisioning and Operations Manager

F

FA	faulty
FA-RB	faulty remotely blocked
FAS	facility associated signaling
FGD	Feature Group D
FS	Feature Server

G

GAP	generic address parameter
GRP	group
GTD	Generic Transparency Descriptor
GW	gateway

H

HNPA	home numbering plan area

I

IAM	initial address message
ID	identification
IDDD	international direct dial domestic
IDs	identification
INFO	information
INTL	international
INTL-OPR	international operator
ISDN	Integrated Services Digital Network
ISUP	ISDN user part
IT	ISUP trunk
ITP	IP transfer point

ITU International Telecommunication Union

IVR interactive voice response

J

K

L

LATA local access transport area

LB loop-back

LCR least cost routing

LECOSS local exchange carrier operations support system

LNP local number portability

LRN local routing number

LRU least recently used

LS load sharing

LSA local service area

M

MAX maximum

MD MF FGD package

MF multifrequency

MGCP Media Gateway Control Protocol

MGW media gateway

MIN minimum

MLHG Multi-line Hunt Group

MO MF operator trunk

MRU most recently used

MS CAS MF endpoints

MSG message

MT MF terminating trunk

N

NA not applicable

NANP North American Numbering Plan

NAS network access server

NAT national

NAT-OPR national operator

NCT network continuity test

NDC national destination code

NF non-faulty

NF-RB non-faulty remotely blocked

NFAS non-facility associated signaling

NLB network loop-back

NOA nature of address

NPA numbering plan area

NS0 network specific (111 1000)

NS1 network specific (111 1001)

NS2 network specific (111 1010)

NS3 network specific (111 1011)

NS4 network specific (111 1100)

NS5 network specific (111 1101)

NS6 network specific (111 1110)

NTWK network

NUM number

O

OBCSM originating basic call state machine

OCN original called number

ODD odd-numbered

ODR origin dependent routing

OLI originating line information

OPR operator

OPER operational

P

PBX private branch exchange

PC point code

PCS personal communications services

PFX prefix

PIC point in call, presubscribed interexchange carrier

PKG package

POP point of presence

POTS plain old telephone service

PSTN public switched telephone network

Q

QOR query on release

QOS quality of service

R

RACF remote activation of call forwarding

RAND random

RDN Redirecting Number Information Element

REL release

RID route identification

RN routing number

RPF registration and profiling tool

RR round robin

RRQ registration request

S

S1 severity 1

S2 severity 2

S3 severity 3

S4 severity 4

SAC service access code

SCP service control point

SEL selection

SEQ sequential

SIP Session Initiation Protocol

SOFTSW Session Initiation Protocol (SIP)

SP service provider

SS7 Signaling System 7

SUB subscriber

SUB-OPR subscriber operator

SUPP supported

T

TAC	Technical Assistance Center
TBCSM	terminating basic call system manager
TCL	tool command language
TDM	telecommunications data link monitor
TG	trunk group
TGN	trunk group number
TM	trunk member
TMR	timer
TNS	transit network selection
TOD	time of day
TSAP	transport service access point
TW	time weather call

U

UAN	universal access number
URL	uniform resource locator
US	United States
USA	United States of America

V

VARCHAR	variable character
VSC	Vertical Service Code

W

X

Y

Z