Calling Party Normalization

This chapter describes the Calling Party Normalization feature. Calling Party Normalization allows you to reformat the display of calling party numbers to a globalized version that includes prefixes such as international country codes or localize the calling party number to a localized version that displays on the called party's phone.

Calling Party Normalization Overview

Calling Party Normalization allows you to globalize and localize phone numbers so that the appropriate calling presentation displays on the phone. Calling Party Normalization enhances the dialing capabilities of some phones and improves callback functionality when a call is routed to multiple geographic locations. The feature allows you to map a global calling party number to its localized variant such that a phone can return a call without modifying the directory number in the call log directories on the phone.

Globalization of the Calling Party Number

By configuring a Calling Party Number Type and prefixes in Cisco Unified CM Administration, you can set Cisco Unified Communications Manager to reformat the calling party number that displays on the called phone to a globalized version that includes prefixes such as international country codes, thereby allowing the number to be dialed from anywhere in the world.

Cisco Unified Communications Manager uses various number patterns, such as route patterns or translation patterns, along with the value for the Calling Party Number Type to globalize a phone number. For example, you can configure Cisco Unified Communications Manager to take a localized German phone number of 069XXXXXXX with a Subscriber calling party number type and globalize it to +49 40 69XXXXXXX, which includes the German country code and city code.

For calls that are routed to multiple geographic locations, the different translation settings that are applied for each routing path can globalize the calling party number uniquely for each call path. Cisco Unified Communications Manager can also be configured such that the phone displays a localized calling party number on the phone screen and the globalized number in the call log directories on the phone. To ensure that the phone user does not need to edit the call log directory entry on the phone before placing a call, map the global calling party number to its local variant.

Localization of the Calling Party Number

For the final presentation of the calling party number, you can configure calling party transformation patterns for each calling party number type (National, International, Subscriber, and Unknown), and apply strip digits and prefix instructions specific to the calling party number type for that call. This allows Cisco Unified Communications Manager to reformat the calling party number such that the calling party number that displays on the called phone is a localized number that does not include unnecessary country codes and international access codes.

For example, assume an incoming number arrives from the PSTN with a globalized number of +49 40 69XXXXXXX where +49 represents the country code, 40 represents the city code, and the calling party number type is Subscriber. Cisco Unified Communications Manager can be configured with a calling party transformation pattern, along with instructions to strip the country code, city code, and add a prefix of 0. After the instructions are applied, the calling party number displays in the dialed phone as 069XXXXXXX.

Map Globalized Calling Party Number to a Localized Version

To ensure that the phone user does not need to edit the call log directory entry on the phone before placing a call, use route patterns and called party transformation patterns to map the global calling party number to a localized version. This ensures that when the called party returns the call, Cisco Unified Communications Manager can route the call to the correct gateway.

Mapping the global calling party number improves callback functionality so that the called party can return a call without having to modify the directory number in the call log directories on the phone.

Calling Party Normalization Prerequisites

Make sure to activate the **Cisco CallManager** service in Cisco Unified Serviceability before you configure Calling Party Normalization. For more information, see the *Cisco Unified Serviceability Administration Guide*.

If you want Cisco Unified Communications Manager to determine the Calling Party Number Type, configure patterns that assign the **Calling Party Number Type** value that matches the calls that you expect. You can create and apply patterns in the following configuration windows:

- Route patterns
- Hunt pilots
- Translation patterns
- Calling party number transformation patterns

Note   Calling Party Transformation works only with the original calling party. Any modifications done for redirecting numbers affect only the diversion header. Review your configuration from the SIP trunk chapter, and add a diversion header on the SIP trunk itself.

Calling Party Normalization Configuration Task Flow

Calling Party Normalization prefixes and strip digits rules can be applied in a variety of ways in Unified Communications Manager. For example, you can apply digit transformations to device pools, route patterns, translation patterns, hunt pilots, gateways, and trunks. The manner in which you apply digit transformations depends on how you deploy your dial plan, devices, and trunks. For details, review topics relating to dial plans, route patterns, translation patterns, and transformation patterns.

Procedure

	Command or Action	**Purpose**
Step 1	If you want Unified Communications Manager to determine the calling party number type, create a pattern and configure the Calling Party Number Type that matches the calls that you expect. You can create and apply patterns in the following configuration windows: • Route patterns • Hunt pilots • Translation patterns • Calling party number transformation patterns	
Step 2	Globalize Calling Party Numbers, on page 3	For incoming calls that arrive through the PSTN, configure settings that will globalize calling party numbers.
Step 3	Set up Calling Search Spaces, on page 4	Set up your partitions and calling search spaces.
Step 4	Create Calling Party Transformation Patterns, on page 5	Create calling party transformation patterns that transform the calling party number to a globalized or localized version and assign each pattern to a partition.
Step 5	Apply Calling Party Transformation Patterns to a Calling Search Space, on page 5	Apply the incoming Calling Party Transformation CSS to your devices such as device pools, gateways, and trunks

Globalize Calling Party Numbers

For incoming calls that arrive via the PSTN, configure settings that will globalize calling party numbers. You can apply settings that will globalize calling party numbers and apply them to a device pool, or to individual devices. Alternatively, you can configure service parameters that will apply calling party normalization settings on a clusterwide basis.

To globalize calling party numbers, perform the following steps:

Procedure

Step 1   If you want to apply calling party normalization settings to particular devices, perform the following steps:

a) Open the configuration window for the device on which you want to apply settings. For example, device pools, gateways, phones, and trunks.

b) In the Incoming Calling Party Settings section for the configuration window, apply prefix and strip digit instructions for each calling party number type.

> **Note**   Cisco Unified Communications Manager includes the prefix in the calling party number field for all additional actions, such as supplementary services including call forwarding, call park, voice messaging, and CDR data that pertain to the call.

Step 2   If you want to use service parameters to globalize calling party numbers on all devices clusterwide, perform the following steps:

a) From Cisco Unified CM Administration, choose **System** > **Service Parameters**.

b) From the **Server** drop-down list, select the server on which you want the service to run.

c) From the **Service** drop-down list, select Cisco CallManager.

d) Click **Advanced**.

e) Configure values for the following parameters, which can be applied on a clusterwide basis to phones, MGCP gateways, or H.323 gateways:

- Incoming Calling Party National Number Prefix
- Incoming Calling Party International Number Prefix
- Incoming Calling Party Unknown Number Prefix
- Incoming Calling Party Subscriber Number Prefix

> **Note**   In order for Cisco Unified Communications Manager to apply the clusterwide service parameter settings on a particular phone, the prefix setting for that phone must be set to the default option at both the device and device pool levels.

Set up Calling Search Spaces

Use this procedure if you are setting up calling search spaces to handle the calling party normalization feature.

Procedure

Step 1   In Cisco Unified CM Administration, choose **Call Routing** > **Class of Control** > **Partitions**.

Step 2   Create partitions for your network.

Step 3   In Cisco Unified CM Administration, choose **Call Routing** > **Class of Control** > **Calling Search Space**.

Step 4   Create calling search spaces for your calling party transformation patterns.

Step 5   For each calling search space, assign partitions to the calling search spaces

Create Calling Party Transformation Patterns

Use this procedure if you are setting up calling party transformation patterns to handle the calling party normalization feature.

Procedure

Step 1 In Cisco Unified CM Administration, choose **Call Routing** > **Transformation Pattern** > **Calling Party Transformation Pattern**.

Step 2 Create transformation patterns.

Step 3 For each calling party transformation pattern that you create, assign prefixes or strip digits commands that will globalize or localize the calling party number.

Step 4 For each calling party transformation pattern, assign a partition that is associated to one of your calling search spaces.

Apply Calling Party Transformation Patterns to a Calling Search Space

For your devices, assign the incoming Calling Party Transformation CSS to your devices such as device pools, gateways, and trunks.

Procedure

Step 1 In Cisco Unified CM Administration, choose the configuration window that applies to the device on which you want to apply calling party transformations.

- Gateways
- Trunks
- Device Pools

Step 2 To localize calling party numbers, in the Calling Search Space drop-down list box, choose the CSS that contains the calling party transformation pattern that you want to apply.

Note If you configure the CSS against the Device Pool, you must also apply that device pool to your phones.

Step 3 To globalize calling party numbers, in the Incoming Calling Party Settings section, choose the calling search space that contains the calling party transformation pattern that you want to apply.

Calling Party Normalization Service Parameter Examples

The following service parameters can be applied on a clusterwide basis to phones, MGCP gateways, or H.323 gateways. In order for a particular device to use the clusterwide parameter, the prefix in the device configuration must be set to Default.:

- Incoming Calling Party National Number Prefix

- Incoming Calling Party International Number Prefix
- Incoming Calling Party Unknown Number Prefix
- Incoming Calling Party Subscriber Number Prefix

The following table provides examples of prefix and strip digits configurations and how these values can be used to transform the display of the calling party number. For the service parameter configurations, the numbers after the colon represent the number of digits to strip from the beginning of the calling party number while the digits after the colon represent the prefix to add to the beginning of the calling party number.

Table 1: Calling Party Number Normalization Service Parameter Examples

Original Calling Number	Service Parameter Value	Description	Final Calling Number
04423452345	+:1	Strip the first digit then add a prefix of +	+4423452345
04423452345	:2	Strip the first two digits	423452345
552345	+1:6	Strip the first 6 digits and then add a prefix of +1	+1
552345	+1:8	Final number is blank because more digits are stripped than are available	
552345	123	Add a prefix of 123	123552345
blank	+1:2	If calling number is blank no prefix is applied	blank
0442345	:26	Calling Party Normalization allows only 24 digits to be stripped	Cisco Unified Communications Manager does not allow this configuration

Calling Party Normalization Interactions and Restrictions

Calling Party Normalization Interactions

The following table describes feature interactions with the Calling Party Normalization feature.

Feature	Interaction
Transferred Calls	Calling Party Normalization may not be supported for some transferred call scenarios because the transfer feature relies on midcall updates and calling party normalization occurs during initial call setup for each call hop. Following is one example of how calling party normalization can work for transfer. Phone A with extension 12345 and phone number of 972 500 2345 calls Phone B with extension 54321 and phone number 972 500 4321. On Phone B, the calling party number 12345 displays, but Phone B transfers the call through a San Jose gateway to Phone C. During the initial transfer, Phone C displays a calling party number of 972 500 4321, but after the transfer completes, Phone C displays the calling party number for Phone A as 12345.
Forwarded Calls	Forwarded calls support globalization and localization of calling party numbers. For example, a caller with Phone F calls Phone G in Dallas through the PSTN, but Phone G has forwarded calls to Phone H in San Jose. On the incoming Dallas gateway the calling party number displays as 555-5555/Subscriber, but the call is forwarded to a San Jose gateway. The outgoing call from Dallas displays as 972 555 5555. On the incoming San Jose gateway the +1 is prefixed and Phone F displays a calling number of +1 972 555 5555.
Call Detail Records	For details of how calling party normalization works with CDR records, see the *Cisco Unified Communications Manager Call Detail Records Administration Guide.*
Cisco Unified Communications Manager Assistant	Cisco Unified Communications Manager Assistant automatically supports localized and globalized calls if you configure the Calling Party Normalization feature. Cisco Unified Communications Manager Assistant can display localized calling party numbers on the user interfaces. In addition, for an incoming call to the manager, Cisco Unified Communications Manager Assistant can display localized and globalized calling party numbers when filter pattern matching occurs. For information on configuring Cisco Unified Communications Manager Assistant, see the *Feature Configuration Guide for Cisco Unified Communications Manager* at http://www.cisco.com/c/en/us/support/unified-communications/unified-communications-manager-callmanager/products-installation-and-configuration-guides-list.html.

Feature	Interaction
Cisco Unity Connection	Cisco Unity Connection does not support the international escape character (+). Therefore, you must ensure that calls to Cisco Unity Connection do not contain the +, so that voice-messaging features work as expected.
	For Cisco Unity Connection to work as expected, treat this application as a device and configure calling party transformations that ensure that the + does not get sent to this voice-messaging application. If the Cisco Unity Connection server uses a North American-based dial plan, localize the calling party number to NANP format before Cisco Unity Connection receives the calling party number. Because no calling party transformation options exist in Cisco Unified Communications Manager Administration for voice-messaging ports, make sure that you configure the calling party number transformations in the device pool that is associated with the voice-messaging ports. To localize the calling party number, also consider adding prefixes for access codes so that the voice-messaging application easily can redial the number for certain features, such as Live Reply. For example, you can convert +12225551234 to 912225551234, and you can convert international number, +4423453456, to include the international escape code, 90114423453456.
Device Mobility	The Calling Party Transformation CSS of the roaming device pool overrides the device-level configuration of the phone roaming within same Device Mobility Group, even when the Use Device Pool Calling Party Transformation CSS check box in the phone configuration window remains unchecked.
	The following examples demonstrate how calling party normalization works with device mobility for a phone with a home location of Dallas which is currently roaming in San Jose.
	When the phone is roaming in San Jose, a call comes through the PSTN from 972 500 1212 <National> in Dallas. On the incoming San Jose gateway, the calling party number gets converted to the global format of + 1 408 500 1212. On the phone that currently is in San Jose, the calling party number displays as 1 972 500 1212.
	When the phone is roaming in San Jose, a call comes through the PSTN from 500 1212 <Subscriber> from a seven-digit dialing area in San Jose. On the incoming San Jose gateway, the calling party number gets converted to the global format of + 1 408 500 1212. On the phone that currently is in San Jose, the calling party number displays as 9 500 1212.

Calling Party Normalization Restrictions

The following table displays restrictions that the Calling Party Normalization feature has with certain features and system components of Cisco Unified Communications Manager.

Table 2: Restrictions with Calling Party Normalization

Feature	Restriction
Share lines	The calling party number that displays for a shared line depends on the sequence of call control events in Cisco Unified Communications Manager. To avoid displaying an incorrect localized calling party number on a shared line, especially when the shared line occurs in different geographical locations, make sure that you configure the same Calling Party Transformation CSS for different devices that share the same line.
SIP trunks and MGCP gateways	SIP trunks and MGCP gateways can support sending the international escape character, (+) for calls. H.323 gateways do not support the +. QSIG trunks do not attempt to send the +. For outgoing calls through a gateway that supports +, Cisco Unified Communications Manager can send the + with the dialed digits to the gateway. For outgoing calls through a gateway that does not support +, the international escape character + gets stripped when Cisco Unified Communications Manager sends the call information to the gateway.
SIP	SIP does not support the number type, so calls through SIP trunks support only the Incoming Number settings for calling party number types of Unknown.
QSIG	A QSIG configuration usually supports a uniform dial plan. Transformation of numbers and prefixes may cause feature interaction issues if you use QSIG.
Calling Party Transformation CSS	For localizing the calling party number, the device must apply the transformation by using digit analysis. If you configure the Calling Party Transformation CSS as **None**, the transformation does not match and does not get applied. Ensure that you configure the Calling Party Transformation Pattern in a non-null partition that is not used for routing.
T1-CAS and FXO ports	The Calling Party Transformation CSS settings do not apply to T1-CAS and FXO ports on the gateway.
Cisco Unity Connection	CiscoUnity Connection does not support the international escape character (+). Therefore, you must ensure that calls to CiscoUnity Connection do not contain the +, so that voice-messaging features work as expected. For detailed information on Cisco Unity Connection, go to http://www.cisco.com/c/en/us/products/unified-communications/unity-connection/index.html.