

A Typical U.S. Dial Plan for Cisco CallManager 3.x and 4.x

Document ID: 5259

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Introduction

The development of a national dial plan is an involved process. Fortunately, Cisco CallManagers deployed in North America can make use of the @ symbol to represent the various patterns that make up the North American Numbering Plan (NANP). In this document, the @ symbol is referred to as a macro as it represents multiple patterns. This document explains how the @ macro works and also how to use the route filters.

The variable length patterns that the @ wildcard and the NANP covers are as follows:

- Emergency number 911
- Other service numbers
- Local numbers
- National numbers
- International numbers
- Toll free numbers
- Toll numbers

Prerequisites

Requirements

Readers of this document should be knowledgeable of the following:

- NANP

Components Used

The information in this document is based on these software versions:

- Cisco CallManager versions 3.0 and later.

The information presented in this document was created from devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If you are working in a live

network, ensure that you understand the potential impact of any command before using it.

Conventions

For more information on document conventions, see the Cisco Technical Tips Conventions.

Configuration on the Cisco CallManager

Route Pattern Configuration

Follow these instructions to configure the route pattern.

Note: Typically in the U.S., corporate users dial 9 to get an outside line and expect a secondary dial tone.

1. In the Cisco CallManager Administration page, go to **Route Plan > Route Pattern**. Click **Add a New Route Pattern**. You will see this screen:

Note: For Cisco CallManager 4.x, go to **Route Plan > Route Pattern/Hunt Pilot > Add a New Route**.

Route Pattern Configuration

[Add a New Route Pattern](#)
[Back to Find/List Route Patterns](#)

Route Pattern: New
Status: Ready
Note: Any updates to this route pattern automatically resets the associated gateway/route list

Pattern Definition

Route Pattern*
Partition
Numbering Plan*
Route Filter
Gateway/Route List*
Route Option Route this pattern Block this pattern
 Provide Outside Dial Tone Urgent Priority

Calling Party Transformations

Use Calling Party's External Phone Number Mask
Calling Party Transform Mask
Prefix Digits (Outgoing Calls)

Called Party Transformations

Discard Digits
Called Party Transform Mask
Prefix Digits (Outgoing Calls)

* indicates required item.

2. Enter **9.@** in the Route Pattern field and select **PreDot** from the Discard Digits drop-down menu at the bottom of the page in the Called Party Transformations section.

By doing this, you will not forward the leading 9 to the PSTN. The Discard Digit instructions will vary depending upon many factors, including gateway selection and dial peer configuration, if applicable.

3. Make sure you select the Gateway/Route list that will enable access to the outside.

4. Check the **Provide Outside Dial Tone** box if you want to hear a secondary dial tone after dialing the leading 9 and click **Insert**.

Note: For more information regarding the route filter, see the Route Filter Configuration: Restricting Some Calls From the NANP section of this document.

Additional Route Pattern for 911

In the configuration in the last section, a user would have to dial the preceding 9 before dialing 911. However, another route pattern can be added for only 911, so that in case a user does not dial the preceding 9, the call will still be connected. You can add this second route pattern for 911 (without the leading 9), as shown in the screen below.

1. Enter **911** in the Route Pattern field.
2. Select the appropriate Gateway/Route List to reach the Telco.
3. Make sure that Discard Digits is set to **<None>**, as we want to send all the digits to the PSTN in this case.

Route Pattern Configuration

[Add a New Route Pattern](#)
[Back to Find/List Route Patterns](#)

Route Pattern: New
 Status: Ready
 Note: Any update to this route pattern automatically resets the associated gateway/route list

Pattern Definition

Route Pattern*

Partition

Numbering Plan*

Route Filter

Gateway/Route List*

Route Option
 Route this pattern Block this pattern

Provide Outside Dial Tone
 Urgent Priority

Calling Party Transformations

Use Calling Party's External Phone Number Mask

Calling Party Transform Mask

Prefix Digits (Outgoing Calls)

Called Party Transformations

Discard Digits

Called Party Transform Mask

Prefix Digits (Outgoing Calls)

* indicates required item.

Route Filter Configuration: Restricting Some Calls From the NANP

An important point to remember is that the @ wildcard will give you access to every pattern covered under the NANP. To manipulate access and restrictions to different numbers, a basic knowledge of the NANP and route filter is important. To understand how route filters work, let's take an example.

Note: Assume that the @ pattern covers the route patterns below.

Route Pattern	Example	Tag
---------------	---------	-----

[2-9]11	411, 911	Service
[2-9]XX[2-9]XX XXXX	10-digit dialing	LOCAL-AREA-CODE OFFICE CODE SUBSCRIBER
01 1 3[0-469]!	International dialing	INTERNATIONAL-ACCESS INTERNATIONAL-DIRECT-DIAL COUNTRY-CODE NATIONAL-NUMBER

If no route filter is specified in the route pattern configuration, all the above route patterns will be part of the 9.@ route pattern. However, if you wish to deny access to, for example, international numbers, you must use a route filter that denies the clause International-Access and then applies this route filter to the route pattern 9.@. In the route filter configuration, a clause exists for every dial plan that is part of the NANP. You can explicitly add or deny them according to your need.

Follow the steps below to configure the route filter.

1. Go to **Router Plan > Route Filter > Add a New Route Filter**.
2. Choose **North American Numbering Plan** as your dial plan and give the route filter a name, as in the screen below.

Route Filter Configuration

[Add a New Route Filter](#)
[Back to Find/List Route Filters](#)

Choose a Dial Plan*

Route Filter Name: **International**

Clause: **(INTERNATIONAL-ACCESS DOES-NOT-EXIST)**

Status: Ready

Route Filter Name*

To add a clause within this route filter, click 'Add Clause'.

AREA-CODE	<input type="text" value="NOT-SELECTED"/>	AND
COUNTRY-CODE	<input type="text" value="NOT-SELECTED"/>	AND
END-OF-DIALING	<input type="text" value="NOT-SELECTED"/>	AND
INTERNATIONAL-ACCESS	<input type="text" value="DOES-NOT-EXIST"/>	AND
INTERNATIONAL-DIRECT-DIAL	<input type="text" value="NOT-SELECTED"/>	AND
INTERNATIONAL-OPERATOR	<input type="text" value="NOT-SELECTED"/>	AND
LOCAL-AREA-CODE	<input type="text" value="NOT-SELECTED"/>	AND
LOCAL-DIRECT-DIAL	<input type="text" value="NOT-SELECTED"/>	AND
LOCAL-OPERATOR	<input type="text" value="NOT-SELECTED"/>	AND
LONG-DISTANCE-DIRECT-DIAL	<input type="text" value="NOT-SELECTED"/>	AND
LONG-DISTANCE-OPERATOR	<input type="text" value="NOT-SELECTED"/>	AND
NATIONAL-NUMBER	<input type="text" value="NOT-SELECTED"/>	AND
OFFICE-CODE	<input type="text" value="NOT-SELECTED"/>	AND

In this route filter, chose the value "DOES-NOT-EXIST" for the clause International-Access. Once you apply the route filter to the route pattern, all international calls will be blocked. To better understand every clause and its impact, use the **Help > For this page** link from the top menu when you are on the route filter configuration page.

Note: If you are not in North America, or you need some other special dial plan, study the dial plan of your country using the guidelines specified in Supporting Variable Length Dial Plans for CallManager Route Patterns – an Exercise in Designing a Route Pattern that Covers a National Dial Plan in case you do not want to use the ! wildcard to match all variable length patterns.

For internationalized dial plans you can download the installation file from International Dial Plan Software Downloads (registered customers only) and install the one you need on your Cisco CallManager to provide a unique numbering plan specific to countries outside of North America.

Related Information

- [Voice Technology Support](#)
 - [Voice and IP Communications Product Support](#)
 - [Troubleshooting Cisco IP Telephony](#)
 - [Technical Support & Documentation – Cisco Systems](#)
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