

Contents

[Introduction](#)

[Prerequisites](#)

[Requirements](#)

[Components Used](#)

[Background Information](#)

[Configure](#)

[Route Pattern Configuration](#)

[Additional Route Pattern for 911](#)

[Route Filter Configuration: Restrict Some Calls From the NANP](#)

[Troubleshoot](#)

[Verify](#)

[Related Information](#)

Introduction

This document describes the procedure to configure a typical U.S. dial plan for Cisco CallManager.

Prerequisites

Requirements

Cisco recommends that you have knowledge of the North American Numbering Plan (NANP).

Components Used

The information in this document is based on Cisco CallManager Version 11.0 and later.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Background Information

The development of a national dial plan is an involved process. Fortunately, Cisco CallManagers deployed in North America can make use of the @ symbol in order to represent the various patterns that make up the 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

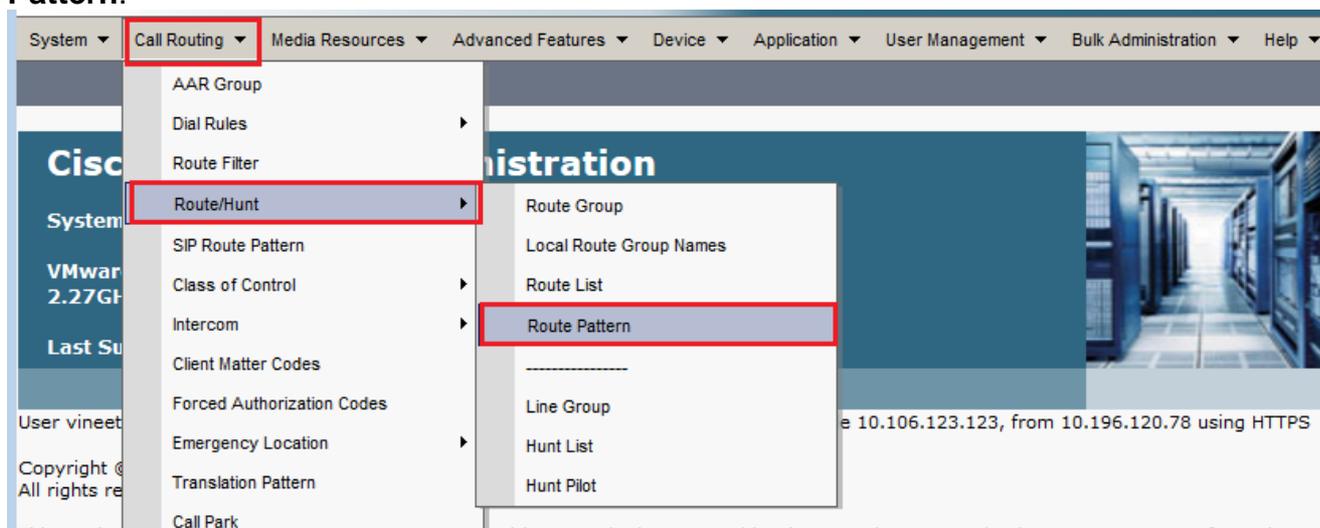
Configure

Route Pattern Configuration

Follow these instructions in order to configure the route pattern.

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

1. In the Cisco CallManager Administration page, choose **Call Routing > Route/Hunt > Route Pattern**.



Route Pattern Configuration

Save

Patterns Definition

Route Pattern* 9.@

Route Partition < None >

Description

Numbering Plan* NANP

Route Filter < None >

MLPP Precedence* Default

Apply Call Blocking Percentage

Resource Priority Namespace Network Domain < None >

Route Class* Default

Gateway/Route List* Trunk_NANP (Edit)

Route Option

Route this pattern

Block this pattern No Error

Call Classification* OffNet

External Call Control Profile < None >

Allow Device Override Provide Outside Dial Tone Allow Overlap Sending Urgent Priority

Require Forced Authorization Codes

Authorization Level* 0

Require Client Matter Code

Calling Party Transformations

Use Calling Party's External Phone Number Mask

Calling Party Transform Mask

Prefix Digits (Outgoing Calls) Default

Calling Line ID Presentation* Default

Calling Name Presentation* Default

Calling Party Number Type* Cisco CallManager

Calling Party Numbering Plan* Cisco CallManager

Connected Party Transformations

Connected Line ID Presentation* Default

Connected Name Presentation* Default

Called Party Transformations

Discard Digits PreDot

Called Party Transform Mask

Prefix Digits (Outgoing Calls)

Called Party Number Type* Cisco CallManager

Called Party Numbering Plan* Cisco CallManager

ISDN Network-Specific Facilities Information Element

Network Service Protocol -- Not Selected --

2. Click **Add New**. This window is displayed.

3. Choose the Gateway/Route list that enables access to the outside.
4. Check the **Provide Outside Dial Tone** check box if you want to hear a secondary dial tone after you dial the leading 9 and click **Insert**. **Note:** For more information in regards to the route filter, see the [Route Filter Configuration: Restrict 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 this configuration example.

1. Enter **911** in the Route Pattern field.
2. Choose the appropriate Gateway/Route List in order to reach the Telco.
3. Make sure that Discard Digits is set to **<None>**, as you want to send all the digits to the public switched telephone network (PSTN) in this

The screenshot displays the 'Route Pattern Configuration' page. The 'Pattern Definition' section is highlighted with red boxes around the following fields: 'Route Pattern*' (911), 'Numbering Plan' (NANP), 'Gateway/Route List*' (Trunk_NANP), and 'Discard Digits' (<None>). Other visible fields include 'Route Partition' (<None>), 'Route Filter' (<None>), 'MLPP Precedence*' (Default), 'Route Class*' (Default), 'Route Option' (Route this pattern), 'Call Classification*' (OffNet), 'External Call Control Profile' (<None>), 'Calling Party Transformations' (Use Calling Party's External Phone Number Mask, Calling Party Transform Mask, Prefix Digits, Calling Line ID Presentation, Calling Name Presentation, Calling Party Number Type, Calling Party Numbering Plan), 'Connected Party Transformations' (Connected Line ID Presentation, Connected Name Presentation), and 'ISDN Network-Specific Facilities Information Element' (Network Service Protocol, Carrier Identification Code, Network Service, Service Parameter Name, Service Parameter Value).

case.

Route Filter Configuration: Restrict Some Calls From the NANP

An important point to remember is that the @ wildcard gives you access to every pattern covered under the NANP. In order to manipulate access and restrictions to different numbers, a basic knowledge of the NANP and route filter is important. In order to understand how route filters work, here is an example.

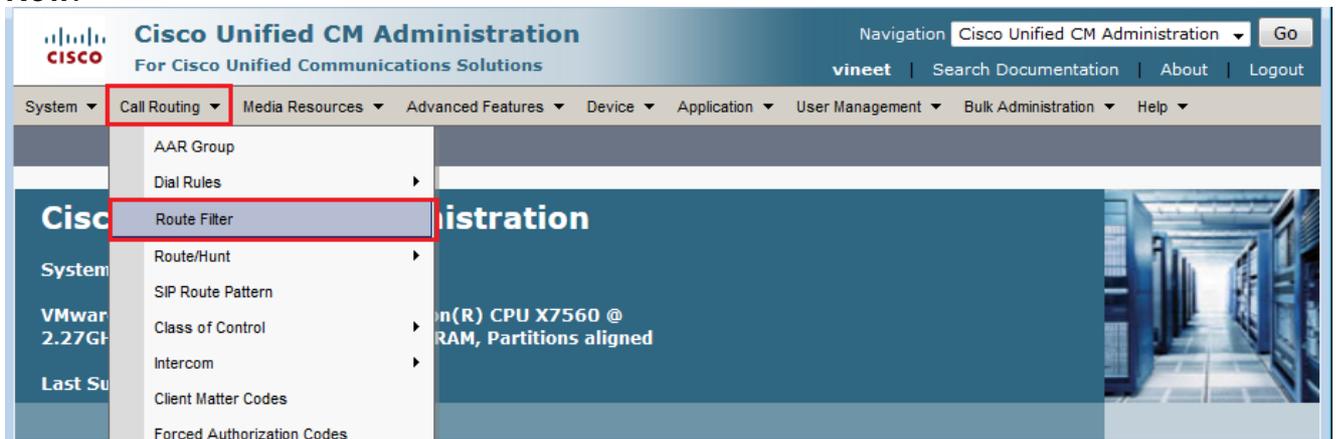
Note: Assume that the @ pattern covers the route patterns shown next.

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

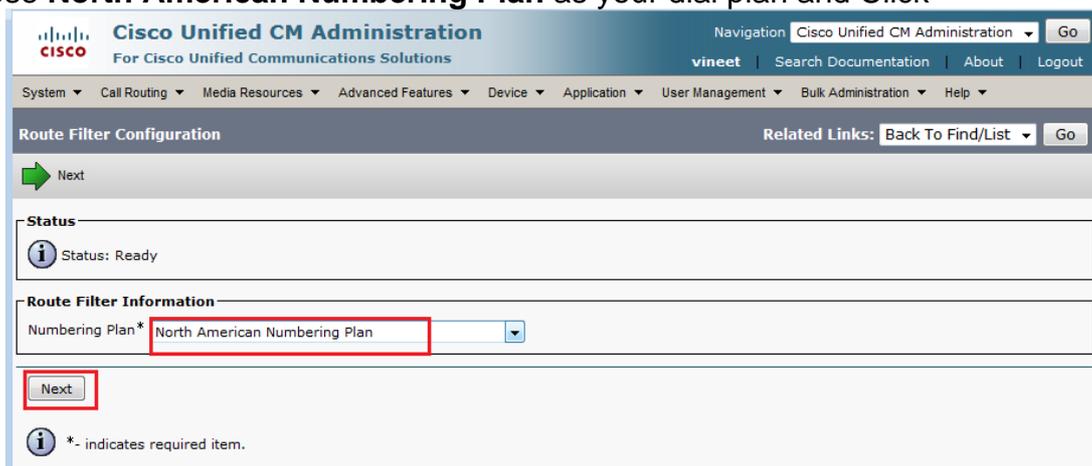
If no route filter is specified in the route pattern configuration, all the route patterns listed in the table will be part of the 9.@ route pattern. However, if you wish to deny access to, for example, international numbers, you must use a route filter that denies the clause International-Access and 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 per your requirements.

Complete the steps below in order to configure the route filter.

1. Choose **Call Routing > Route Filter > Add New**.



2. Choose **North American Numbering Plan** as your dial plan and Click



Next.

3. Give your Route Filter a name.

Route Filter Configuration Related Links: [Back To Find/List](#)

Status
Status: Ready

Route Filter Information
Route Filter Name*
Numbering Plan North American Numbering Plan

Clause Information

AREA-CODE	NOT-SELECTED	AND
COUNTRY-CODE	NOT-SELECTED	AND
END-OF-DIALING	NOT-SELECTED	AND
INTERNATIONAL-ACCESS	NOT-SELECTED	AND
INTERNATIONAL-DIRECT-DIAL	NOT-SELECTED	AND
INTERNATIONAL-OPERATOR	NOT-SELECTED	AND
LOCAL-AREA-CODE	NOT-SELECTED	AND
LOCAL-DIRECT-DIAL	NOT-SELECTED	AND
LOCAL-OPERATOR	NOT-SELECTED	AND
LONG-DISTANCE-DIRECT-DIAL	NOT-SELECTED	AND
LONG-DISTANCE-OPERATOR	NOT-SELECTED	AND
NATIONAL-NUMBER	NOT-SELECTED	AND
OFFICE-CODE	NOT-SELECTED	AND
SATELLITE-SERVICE	NOT-SELECTED	AND
SERVICE	NOT-SELECTED	AND
SUBSCRIBER	NOT-SELECTED	AND
TRANSIT-NETWORK	NOT-SELECTED	AND
TRANSIT-NETWORK-ESCAPE	NOT-SELECTED	AND

i *- indicates required item.

In this route filter, choose 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. In order to better understand every clause and its impact, use the **Help > 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 in order to provide a unique numbering plan specific to countries outside of North America.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

Verify

There is currently no verification procedure available for this configuration.

Related Information

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