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**.

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.

**Addional Route Pattern for 911**

In the configuration in the last section, a user would have to dial the preceeding 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 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.

<table>
<thead>
<tr>
<th>Route Pattern</th>
<th>Example</th>
<th>Tag</th>
</tr>
</thead>
<tbody>
<tr>
<td>[2-9]11</td>
<td>411, 911</td>
<td>Service</td>
</tr>
<tr>
<td>01 1 3[0-469]</td>
<td>International dialing</td>
<td>INTERNATIONAL-ACCESS INTERNATIONAL-DIRECT-DIAL COUNTRY-CODE NATIONAL-NUMBER</td>
</tr>
</tbody>
</table>

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.

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